Sailplane and Glider

The First Journal devoted to Soaring and Gliding

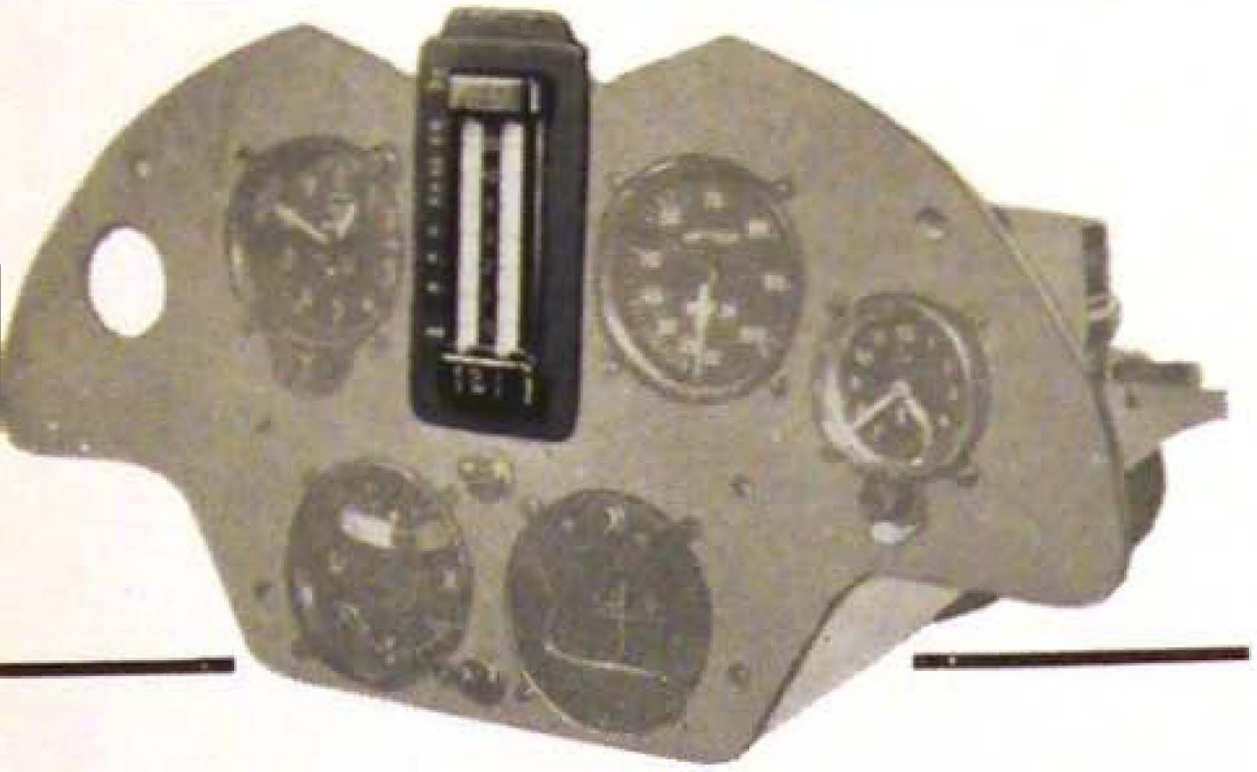


MARCH 1952

2/-

The

COSIM
VARIOMETER



TAKES
PRIDE OF PLACE ON ALL
SAILPLANE INSTRUMENT PANELS

COBB-SLATER INSTRUMENT CO. LTD
RUTLAND STREET - - - MATLOCK

Soaring ★

One of the few magazines in the world devoted exclusively to motorless flight.

Send 10/- for three sample copies and the booklet—

Soaring in America

Increase your knowledge of soaring. You are invited to send £1 for membership in the Soaring Society of America, which includes a year's subscription to *Soaring*.

SOARING SOCIETY OF AMERICA, INC.,
3778, Marion-Ave., Memphis, Tenn., U.S.A.

SCOTTISH GLIDING UNION

BISHOPHILL AND BALADO AIRFIELD

Entrance Fee £1. 1s. : Subscription £3. 3s.

Write to Hon. Secretary

D. HENDRY
THE SCOTTISH GLIDING UNION
BALADO AIRFIELD
MILNATHORT
KINROSS-SHIRE



GOEVIER—TWO-SEATER

old quality · new production

WOLF HIRTH · Gmb H · NABERN · TECK
GERMANY

Sailplane and Glider

Founded in 1930

and ULTRA LIGHT AIRCRAFT

THE FIRST JOURNAL DEVOTED TO SOARING AND GLIDING

MARCH 1952 ★ Vol XX No 3

Editor :
VERNON BLUNT
MA, LLB (Cantab), FRMetS

Asst. Editor :
VERONICA PLATT

Production Manager :
RONALD BISHOP

Editorial
and
Advertisement Offices :
8, Lower Belgrave Street
Victoria, SW1
PHONE: SLO 7287

The *Sailplane and Glider* is published on the 5th of every month. Price Two Shillings per copy : 25s. 6d. per year posted. Advertising Rates on application.

Published for the licencees, Glider Press Ltd., by the Rolls House Publishing Co., Ltd., and printed by The Mendip Press, Ltd., London and Bath.

CONTENTS

Editorial 1

Flight and Natation, by Denys Jones 2

Scottish Club's Effort to Promote Widespread Interest in Gliding . 6

Tragic Death of Glider Ace in Record Bid 7

The Plain Man's Guide to Gliding, by Godfrey Lee. Concluded . 8

How I Won the Wave Competition of the French Alpine Club, by Guy Borgé 10

Soarers Do Nearly 80 Miles a Flight 12

Correspondence 17

The Sailplane—Twenty-One Years Ago. 20

Royal Aero Club Certificates . 24

COVER PHOTO :
Long Mynd, Church Stretton, Midland Gliding Club.

Editorial

THE recent competition in *Sailplane* in which entrants were asked to name the features in our pages which they liked in order of preference, resulted in a marked predilection for the Editorial. Bowing and blushing your Editor modestly applauds the good sense of those who said so. For *Sailplane* is a professional journal produced on professional lines, and not being tied to any group, is enabled to carry out the true function of the Press, and its Editor is able to carry the true function of an Editor.

A famous American editor, Mr. Roy Howard, President and Editor of the *New York Telegram and Sun*, has been replying to a man who threatened to stop buying his newspapers because he objected to two of his regular writers, one being Mrs. Roosevelt. He said : "Editorship of an independent newspaper, properly administered involves no rights or privileges or intellectual dictatorship. Rather an editorship is a trusteeship to be administered in the public interest, to ensure to the readers the fullest access to the truth and the greatest possible divergency of viewpoint. Only on the basis of such knowledge and opinions can intelligent citizens form sound judgments."

Something like this should be the aim of every Editor, but it must be impossible for some Editors, who are controlled by their proprietors. As to whether this is a good or bad thing depends on the particular Editor, his 'Line' and that of his proprietor. The background of that judgment is the Public Weal. But if honestly used, and without bias, the freedom of an Editor is a very much to be prized virtue. It can, of course, be abused, but it very rarely is, at least in this country.

This is our answer to our critics therefore who have deplored our comments and disclosures about the B.G.A. and its affairs. We are not, of course, in the confidence of the B.G.A. or its council, and it would not do if we were. We can only judge by what we see and hear and what is published by the B.G.A. in its own journal. We believe that so far as the politics of the B.G.A. are concerned, it is a good thing that we are independent and free to say what we like (or nearly—we are waiting for the new Libel Act to come into force), and we hope our readers will feel likewise and feel free to ventilate any point of public importance which they feel ought to be more widely known.

Do wooden gliders suffer from structural failure due to fatigue? Do the metal fittings on sailplanes ever fracture or crack for any other reason than violent contact with the ground or other hard object? These questions are prompted by the recent disclosure that some 'Viking' aircraft and some 'Doves,' have been grounded because of structural cracks due to metal fatigue.

Enquiry at the Accidents Board of the M.C.A. elicited the reply that they have no record of structural failure of wooden gliders due to fatigue. But we have often wondered whether it is always possible to tell cause from effect, and whether there may not be some cases in which wing root fittings, ailerons and tail unit controls have broken thus causing the aircraft to crash, whereas it has been thought that the crash has caused the break. We recall several crashes where wings have been torn off, or tail units displaced, where the possibility of failure due to fatigue does not seem to have been explored.

When the German, Eric Klochner, soared a 'Kranich' to 37,800 feet in the Moazagotl in 1940, he reported that he was not a little alarmed by the cracking sound from the hull and wood spars of the aircraft, which he attributed to the intense cold (–55 degrees). Curiously enough his machine seems to have been none the worse for the experience. All soaring pilots become used to the aircraft creaks that accompany every thermal and slope-soaring flight.

When the A.R.B. immediately after the war began to strip British Gliders of all covering, during C. of A. inspections, in order to confirm that there were no signs of structural cracks, the whole Gliding Movement rose in arms against the cost of this unnecessary requirement. The A.R.B. were eventually dissuaded from this proceeding by the argument that the Clubs were best able to ensure airworthiness, as they had the most complete and continuous knowledge of their aircraft.

We know that gliders have been stripped for various reasons ; what we and our readers would like to know is whether there is any evidence of structural damage due to fatigue where the glider has not been soared in extraordinary circumstances, such as cu nim, etc. We therefore hope that anyone with first-hand knowledge of such occurrences will write and tell us for the benefit of the whole gliding world.

Flight and Natation

By

Denys Jones

FLIGHT in this article is the natural flapping flight of birds, bats, and some insects ; natation, the swimming motion employed by the normal types of fish and cetacea. Inclusion of this somewhat marine atmosphere will be seen to be both necessary and very much to the point.

Although a number of some quite classical and spectacular attempts have been made to imitate bird-flight artificially, neither the aerial nor the aquatic method of natural propulsion has ever been successfully reproduced by man merely because the identical principle underlying both have never been recognised until now.

Flapping flight and fish-tail natation are identical forms of movement. The wings of a bird and the tail of a fish not only move and act alike, they are constructed alike, to perform like functions in a largely similar type of ' fluid '—and in many cases they even look alike.

FEW SATISFACTORY EXPLANATIONS

A bird during normal flapping flight across the sky moves its wings *up and down*, and yet propels its body *forward*. Most people are aware of this ; but few can give a satisfactory explanation of the resultant forward movement.

A goldfish in a tank makes a single and almost imperceptable ' flip ' of its tail and so darts from one end of the tank to the other.

If we had cared to visit an aquarium or some far-distant ocean, and observed instead of the goldfish a whale or a porpoise, with a tail on a horizontal instead of a vertical plane, we would have seen that this tail, like the bird's wings, moved *up and down* as it drove its owner forward.

Here then we have a bird in the air, and if not a fish, a fish-like cetacean in the water, both moving forward by means of similar movements. The one performs these movements with its wings, the other with its tail. Later we will compare, not only the actions and effects of these two apparently dissimilar kinds of limb, but also their shape.

Now it has long been established that certain experiments connected with flight can be conducted in water. Air and water are both fluids, and in many ways their behaviour is similar, with the distinction that water currents can be observed more easily than air currents.

CONFUSING THE THEORY

If the behaviour of water is at all similar to that of air, it should follow that a body capable of flying through air by moving certain limbs is capable of ' flying ' through water by continuing to move the same limbs in the same way. In other words, birds by flapping their wings up and down ought to be able to swim through, that is under, water. Owing to the differences in density between air and water we must not expect the converse to be true ; and any investigation into the case of ' flying-fish ' at this stage will only tend to confuse and not support our theory.

Certain birds of the diving class, however, notably Razorbills, Guillemots, Puffins, and Penguins (which cannot fly !) do swim under water by moving their wings with a flapping action very much as if they were flying.

We have already noticed that the wing movements of a bird in the air appear to be similar to the tail movements of a fish in the water. We now see, in the case of these diving birds, that underwater wing movements are similar to wing movements in air, and produce a similar result, namely forward movement.

We must therefore recognise that the underwater wing movements of a bird are similar to the underwater tail movements of a fish, especially since these movements both result in forward movement also.

If bird and fish are propelled forward by similar movements in the same fluid as well as in different fluids, and we have observed that the effect of these similar movements is the same, we must conclude that the same principle of propulsion is employed by both creatures in either fluid.

In order to discover what this principle is, and how it brings about forward movement, we must pause here for a moment to scrutinize the propeller—that man-made device which also accomplishes forward movement in both air and water.

(When reference is made here to the propeller, the type under consideration is the simple two-bladed propeller which for the purposes of this work affords the simplest means of comparison).

Every propellor, aerial or marine, loses much of its potential forward movement or thrust because of the

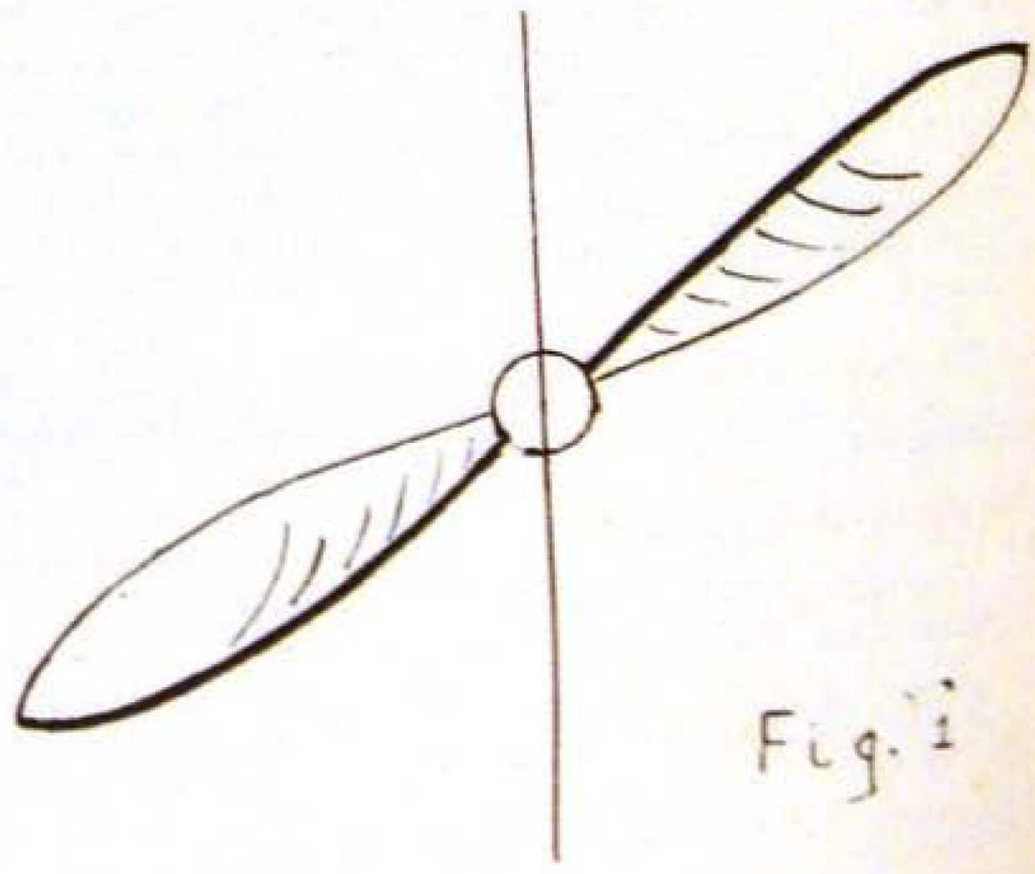


Fig. 1

'thinness' or lack of resistance of the fluid in which it works. This wastage—'slip'—in most cases amounts to a considerable percentage of the energy expended on rotating the propeller.

DISSECTION OF A PROPELLER

Let us however dissect a propeller and examine one of its blades on its own. (Fig. 1).

Now let us examine the action of this single-blade during a limited arc of rotation (from *a* to *b*—Fig. 2), as it would move if it were still part of a complete propeller.

Clearly the force exerted by the convex and inclined rear-surface of the blade against the air (or water) has already during the short distance *a* to *b* caused forward movement so that the blade at *b* is no longer in the same vertical plane as *a*, but is in advance of it. It is also clear that if the blade were to continue to rotate a permanent current (slip) would be set up in the wake of the whirling convex rear-surface, a natural and unavoidable consequence of the vacuum caused by the movement of the blade through the fluid. Clearly too, this rotating current

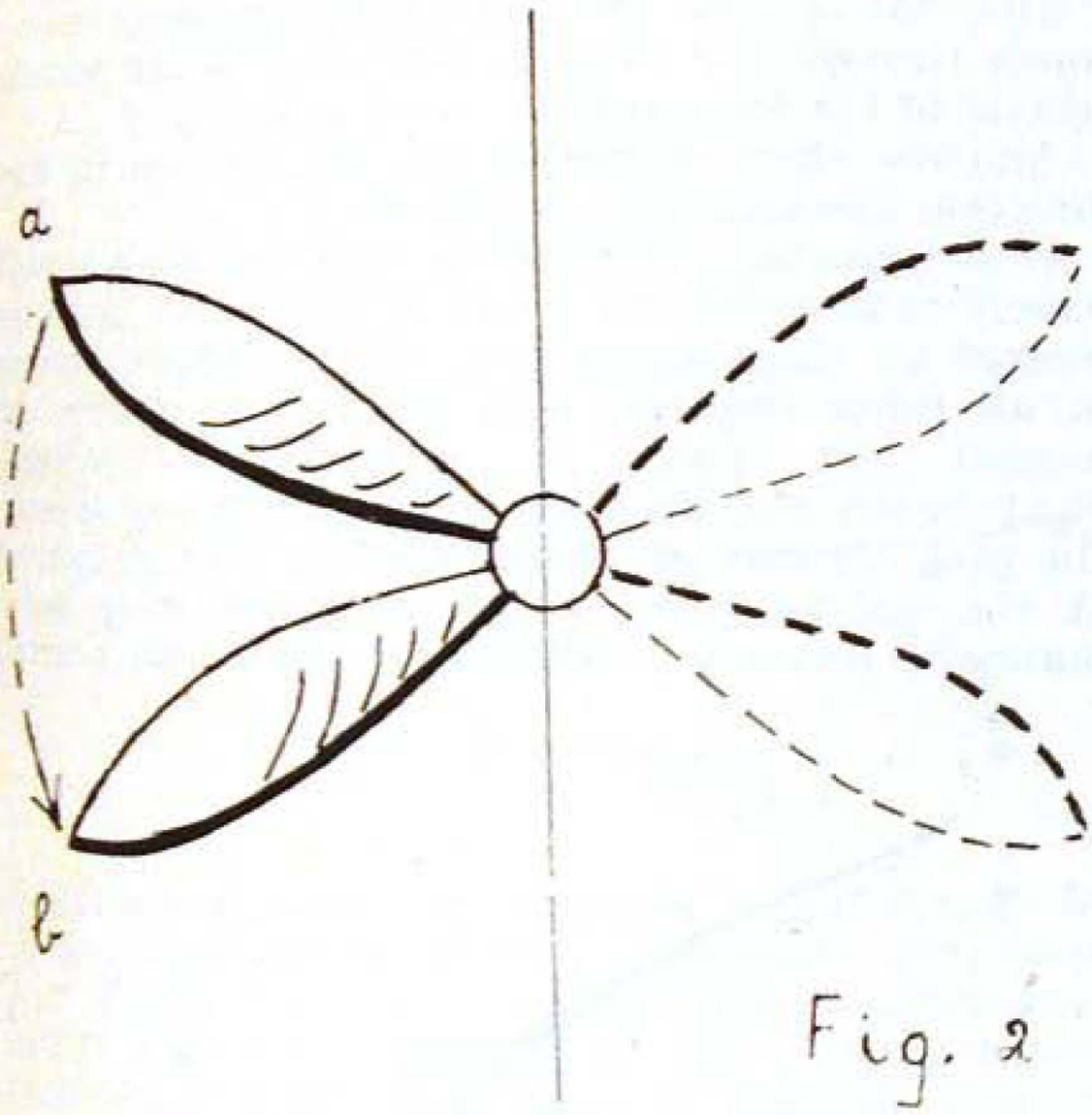


Fig. 2

has a serious effect on the gripping power of the rotating blade, since both are rotating in the same direction.

But now let us suppose that the single blade having reached the position at *b*, Fig. 2, does not continue its arc of rotation. Instead, the blade is reversed in its socket in the hub, and at the same time its sectional shape is so altered as to reverse its two surfaces, so that the previously convex rear-surface becomes the concave front-surface, and its new rear-surface (which now has to act against the fluid) becomes convex. (Fig. 3).

The direction of rotation is now reversed; and the readjusted blade travels back from *b* to a_1. (Fig. 4).

Again it is clear that thrust is obtained by this reversed movement of the blade whose surfaces have also been reversed, and that the final position at a_1 is in advance of the previous position at *b* just as *b* was in advance of *a*.

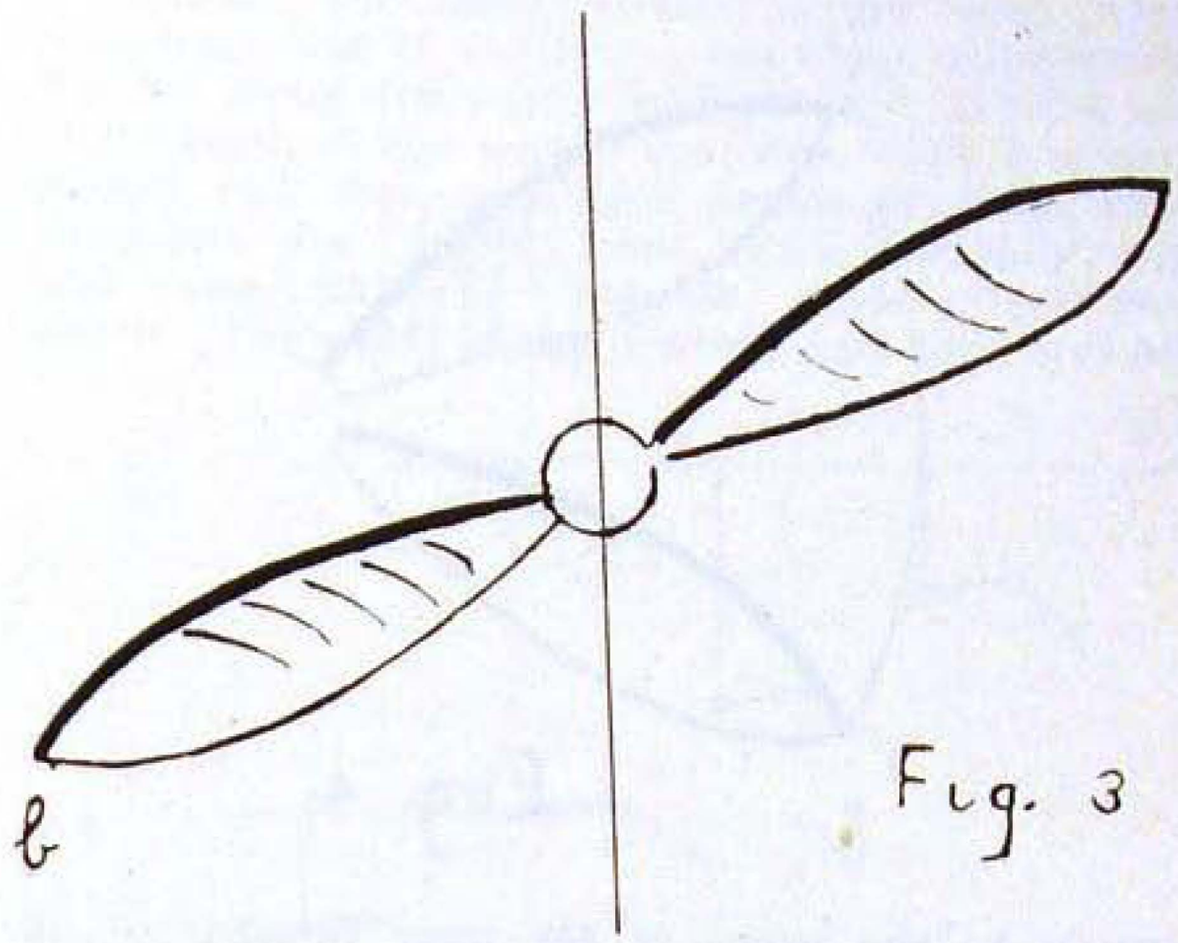


Fig. 3

This time, however, bearing in mind the eddy already set up by the convex surface travelling from a to *b*, we notice that the blade while travelling back in the reverse direction will find this same eddy to be now a *counter-eddy* which increases the pressure or grip of the fluid against the blade during this arc of rotation instead of decreasing it as we saw above what happens when the rotation is all one way. Thus the thrust obtained by this returning blade is greater than the thrust obtained by a blade without a counter-eddy, and of course much greater than that obtained in an eddy or slip rotating in the same direction as the blade.

If the blade is now turned once more as in Fig. 1, swept or flapped down again as in Fig. 2, again twisted as Fig. 3, and then flapped up as in Fig. 4, and so on continuously, we will see that every movement of the blade both reacts against the eddy set up by the previous movement and also forms its own new eddy which will be reacted against by the ensuing movement.

In practice, therefore, there is a continuous alternation of counter-eddies and new eddies, each travelling towards one another, but not on the same vertical plane because all the time the blade is thrusting itself ahead.

We have thus seen that the eddies set up by the *rotating* blade are always in the same direction, and so are lost; while those set up by the reversing or *flapping* blade are in alternate contra-directions, and so are utilized by each ensuing up or down movement of the blade.

This is an important aspect of flapping flight and natation, and will be dealt with in greater detail later.

While we have been studying Figs. 2 and 4 we may have been reminded, if not of the up and down positions of one of a bird's wings in flight, then perhaps of one wing of a flying locust, a crane-fly, or similar creature.

CONFINED INVESTIGATION

However, although there is little doubt that flying insects fly by means of the same flapping-flight principle as that employed by birds (or bats for that much) we will confine our investigations and com-

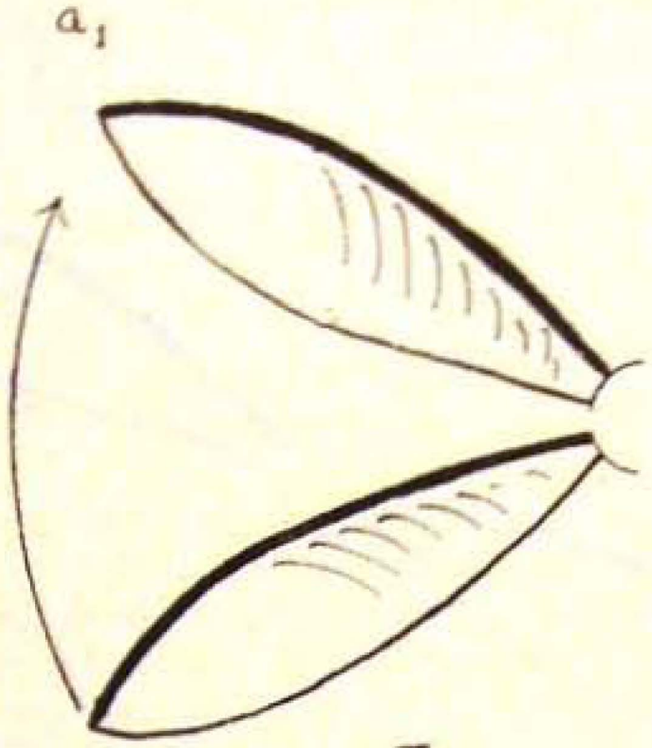


Fig. 4

parisons to the wings of the most familiar of all exponents of flapping flight—birds.

For the propeller blade of Figs. 1 to 4 we will substitute a bird's single wing, and discover first its conformation during a down-stroke, comparable to the downward arc of the propeller blade in Fig. 2.

If a bird's wing were to adopt the aerofoil angle and the downward movement shown in Fig. 2 for the propeller, then we would have a drawing something like Fig. 5.

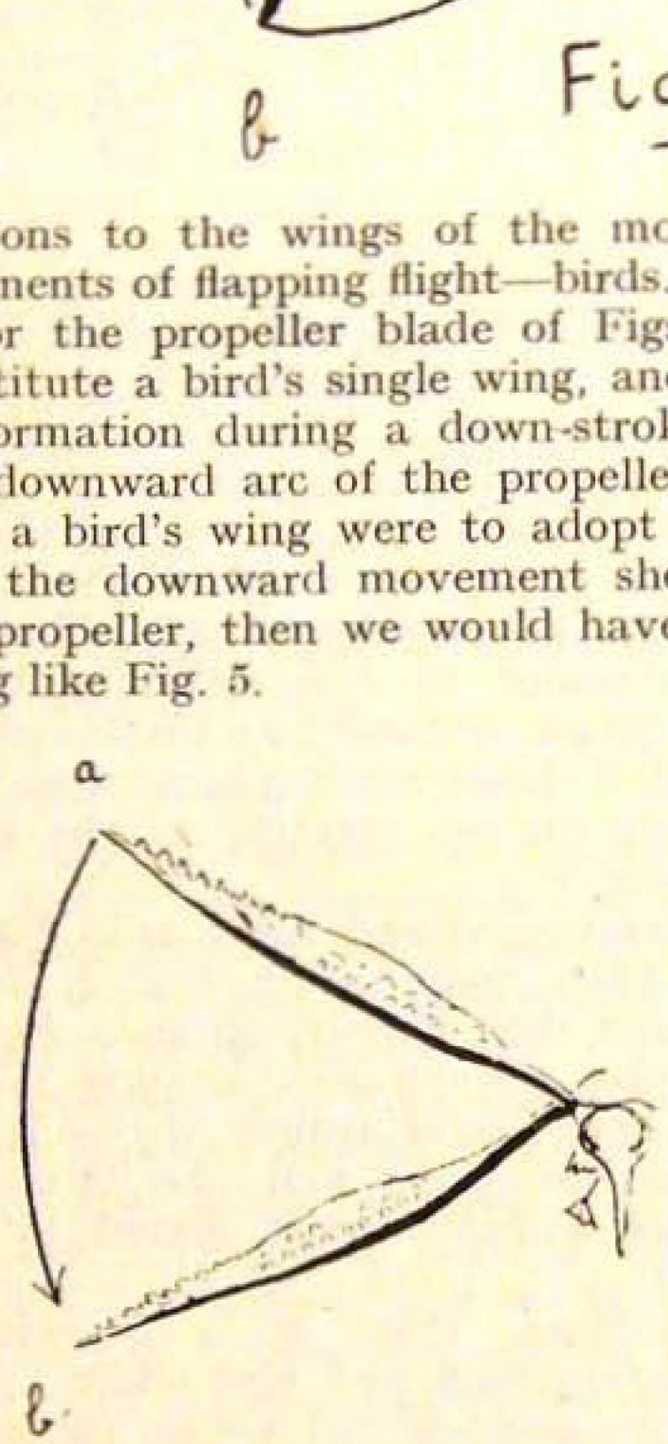


Fig. 5

As clearly then as from Fig. 2 we see that forward thrust is obtained by this downward movement.

Now we must consider a further movement : the reverse or up-stroke similar to that of Fig. 4.

Fig. 6 illustrates this movement ; and here again it is equally clear that thrust is obtained by this upward movement of this reversed ' blade ' or wing.

But now, before we go any deeper into this subject, we must ask ourselves : *Is this a true picture of a bird's wing during flight ?*

Let us therefore admit that when studying a flying bird's flapping wing it is exceedingly difficult to detect, even with the help of ciné films, any alteration or reversal of the wing surface angle (i.e. of the angle of incidence of the aerofoil).

Yet we have already seen that such alteration causes forward movement, or thrust.

Since we cannot observe such alteration, let us discover whether such alteration would be possible.

We have seen how in the case of the propeller of Figs. 1 to 4 it was necessary to twist the blade in its socket in order to keep a leading edge both vertically and horizontally in advance of a trailing edge, and at the same time to alter the shape and angle of the aerofoil section so that the surface thrusting against the air or water was always convex and inclined.

The flying bird can accomplish no such manipulation. *But the wing itself, by its own action against the air in which it moves, may easily adopt these various conformations automatically.*

A SPRINGING MOVEMENT

If we examine a bird's extended wing we discover that, unlike the rigidly constructed propeller blade, it can easily be bent or sprung—especially towards its rear or trailing edge. In fact we soon discover that the arrangement of the feathers is such as to encourage such a springing movement ; for along the leading edge there extends the rigid or semi-rigid ' fore-arm ' of bone covered with muscle and skin and reinforced with several layers of feathers. As the wing extends rearwards these layers of feathers grow fewer, layer by layer, until there is but one single thin row of highly pliable feathers forming the trailing edge.

Thus the obvious effect of moving the wing downwards through the air is an alteration of the normal section of the wing and its angle, as in Fig. 7.

And the effect of moving the wing in the reverse direction upwards, is as in Fig. 8.

It is important to recognise that the wing is not merely bent under the force of unequal air pressure created by these movements, but in addition, being at all times resilient, it is tending to recover its normal ' at rest ' or glider-aerofoil section. Immediately the wing stops flapping for any reason, the wing resumes its normal section ; and of course, at the end of every stroke when the wing automatically reverses itself it also adopts this normal

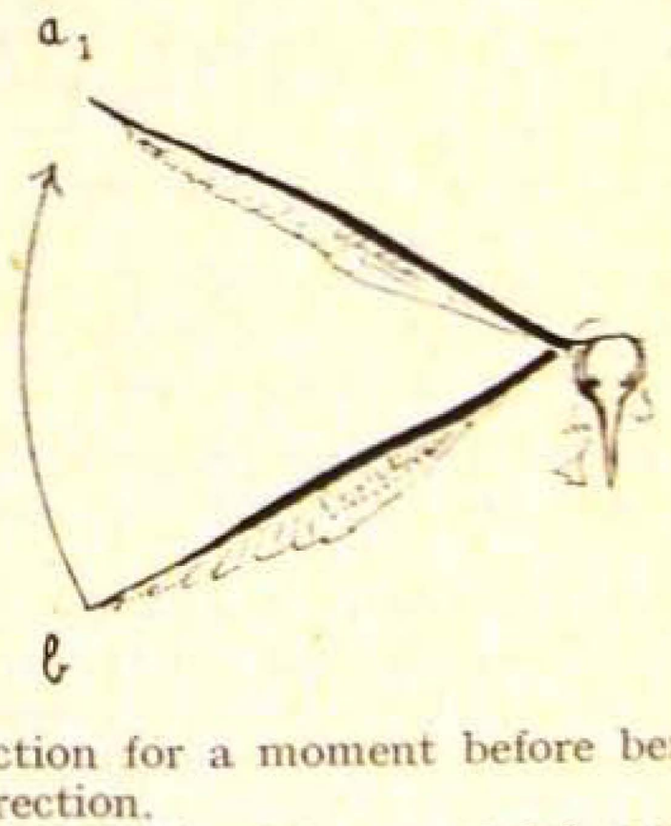


Fig. 6

section for a moment before bending in the reverse direction.

In practice it is essential that the degree or strength of such resilience shall vary according to the size and/or weight and/or resistance of the body which it is required to propel.

We have already explained that these varying conformations are in practice difficult to detect. The inference is, however, not that they do not take place (for we have already seen how a pliable device such as a wing tends to adopt these conformations when swept or flapped through the air, and we have also seen that such conformations cause thrust) but

that they take place in a lesser degree than that suggested by the diagrams. In other words our diagrams are exaggerated.

It is because the changes in conformation are so slight that they are so difficult to detect; and they are slight because the power or thrust obtained is so great that for the purposes of obtaining a serviceable flying speed there is no need for the wing section to be bent at any steeper angle.

Now with regard to this imperceptibility of change in conformation there is a further point to consider:

DUTIES OF A WING

The duties of a wing are twofold. It has to propel its owner forward; but it also has to lift and support its owner in the air.

Therefore we find that the bending of the wing section does not suggest a true picture unless we realize that such bending or pliability as we have described is not true of the entire aerofoil from leading edge to trailing edge, nor is this pliability evenly distributed along the length of the wing from 'shoulder' to tip. The inner, shoulder, end of the

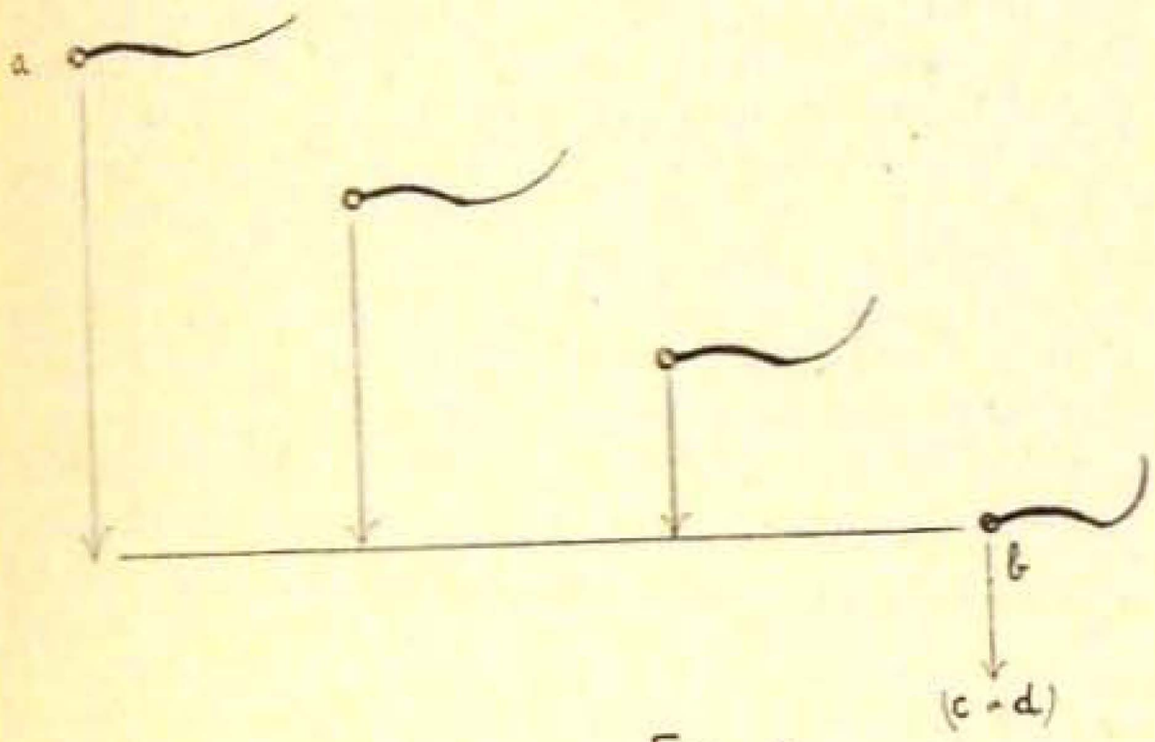


Fig. 7

wing tends to move less in section (and obviously less in arc) than the middle and outer parts. This inner end provides most of the purely downward pressure, or lift (during the down-stroke only), and is so constructed with reinforcements of feathers upon its upper surface that its aerofoil here does not bend upwards during this lifting down-stroke, but *does* bend downwards—valve-like—during the up-stroke, thus doing nothing during this up-stroke to tend to press itself or its owner back downwards again, but rather bending in a manner already shown for the wing in general in Fig. 8, and so contributing with the rest of the wing to forward thrust during the up-stroke.

This point is illustrated in Figs. 7 and 8 where this more or less unchanging leading part of the aerofoil has been included to help produce a truer picture of the whole process of flapping flight in the same diagrams.

However, the shoulder end of the wing, while providing most of the lift, is not alone in providing it; for along the entire leading edge, around and immediately in the rear of the bone, there is a least-pliable and even semi-rigid extent of wing which comprises the 'hinge' from which gradually more and more pliable or 'flapable' parts extend rearwards. The whole of this leading semi-rigid area also

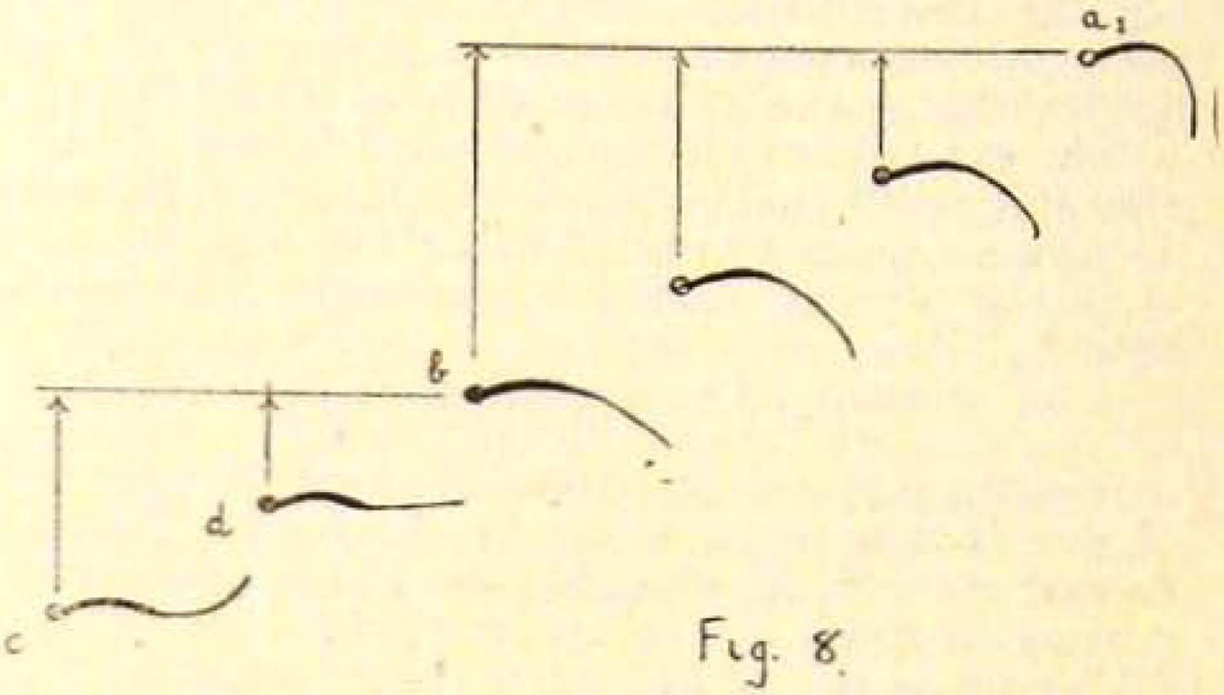


Fig. 8

provides downward pressure, lift, during a down-stroke. Thus we find that the permanent unchanging aerofoil shown in Figs. 7 and 8 is true of a section anywhere along the wing, remembering that as the wing narrows towards its tip so this unchanging section becomes proportionally shorter.

We should be careful to remember too that this semi-rigidness refers to the aerofoil section, or to the leading part of the aerofoil section, and not to the span-section or end-on view of the flapping wing, which as shown in Figs. 5, 6 and 10 are slightly pliable. This shoulder to tip pliability will be dealt with in a separate paper.

We must also remember that there is no definite point or line of junction between the leading rigid part of the wing and the trailing pliable part. The two parts merge together; it is only the sectional taper of the wing which really determines that the one part shall be stiff and the other bendable. At no point can we say therefore that the trailing part is hinged like an aileron to the leading part. The diagrams in Figs. 7 and 8 do suggest such a non-existent hinge, so that once again we have had to

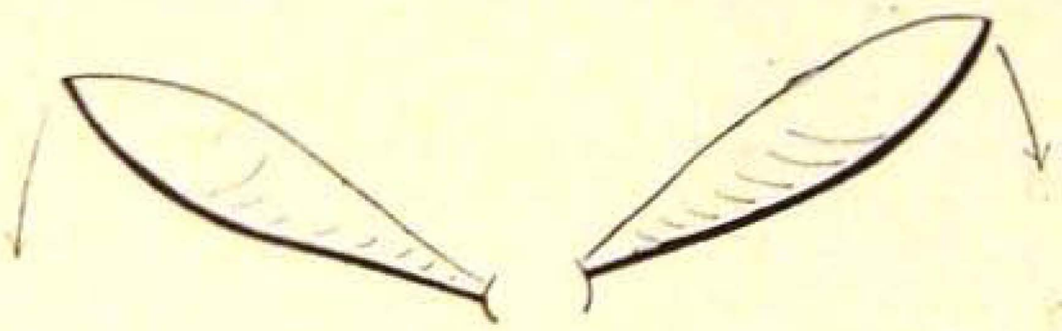


Fig. 9

Scottish Club's Effort to Promote Widespread Interest in Gliding

SCOTTISH Gliding Union are going to town with their display at the Festival of Sport being held at Waverly Market, Edinburgh, from March 14-29.

The exhibition is being sponsored by the Central Council of Physical Recreation (Scottish Section) to foster interest in our National forms of physical recreation and to raise the standards achieved in them.

SPIRIT OF ADVENTURE

In particular, the sponsors believe that the salvation of our race is to be found in the latent spirit of Adventure and last year they backed up Ski-ing by putting on shows in London and Edinburgh.

This year the S.G.U. have been asked to use stand space at this indoor Festival of Sport, with the possible follow-on in the summer of a large gliding display near Edinburgh.

At Waverly Market, all kinds of outdoor sports will be represented—pitches for soccer, tennis, badminton, etc., and stalls for mountaineering, gliding, etc.

B.R.M. ON SHOW

The Royal Air Force will have a link trainer at their stand, and the Scottish Car Club are hoping to put the B.R.M. on show.

The S.G.U. have a side gallery stall containing two bays similar to two large shop windows. They are playing up the slogan that gliding is a 'happy, healthy adventure, exploring rising airways, on silent floating wings.'

One bay has a few selected phrases and diagrams on a continuous background showing how a glider stays aloft, and travel across-country. Scale models of auto- and aero-tow launches are shown. Also pictures of the operation of gliding clubs.

METEOROLOGICAL SECTION

In the other bay, against a cloud background, will be exhibited models (loaned by the Editor), and instrument layout with instructions on them, a meteorological section with barographs open and closed, anemometers, weather charts, etc. This bay will also display gliding literature, some for sale.

'A Gliding Holiday For You' is the slogan of the club in No. 1 photograph section, along with details and enlarged photographs taken at past courses, together with entry form brochures. In No. 2 photo section there will be a number of enlarged pictures of gliders and sailplanes in flight.

In addition there will be a collection of photographs

(Continued on page 7)

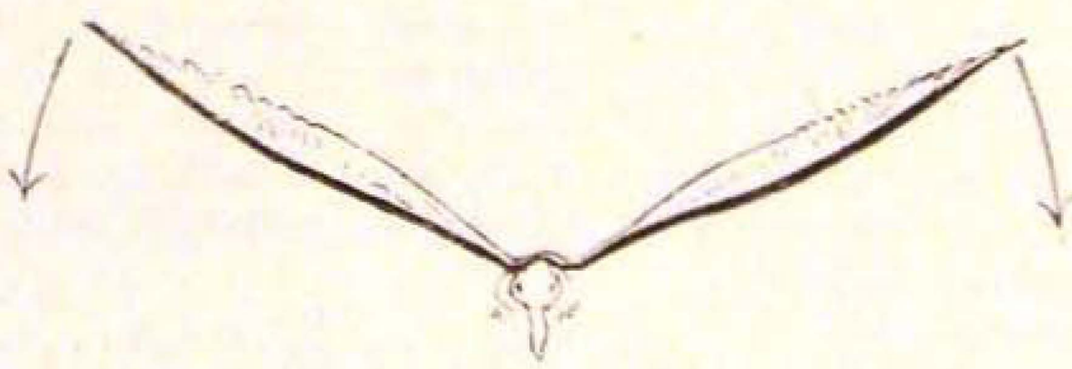
Flight and Natation—(*continued from previous page*)

exaggerate diagrams in the cause of clarity.

Now, finally, we have to recognise that a flying creature accomplishes flapping flight by means of at least two wings which, in the case of most birds, work in unison: during the down-stroke both wings beat downwards at the same time and describe the same length of arc, and also accomplish a certain amount of lift; while during the up-stroke both wings are lifted upwards in unison. To revert to our propeller blade for a moment, if we wish to demonstrate this double wing action we must use two single independent blades working in contrary directions (Fig. 9). Or a bird's wings moving as in Fig. 10.

With these pictures firmly in mind we will leave the subject of bird's wings literally in the air for a while, and turn again to the vertical and horizontal tails with which fish and cetaceans propel themselves in a much more dense and buoyant fluid than air.

(*To be concluded in the April issue*).



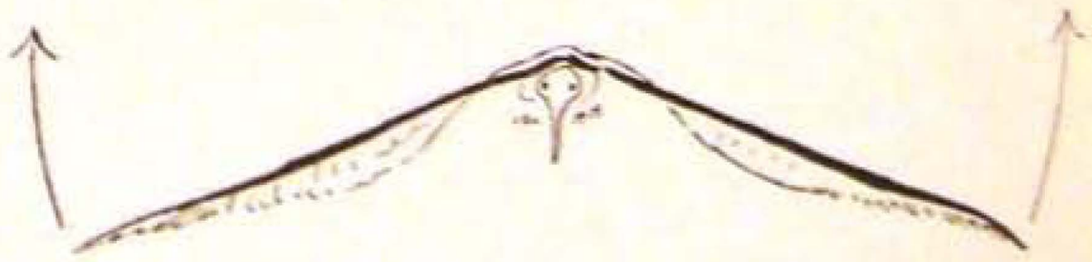


Fig. 10

Tragic Death of Glider Ace

In Record Bid

IT is with regret that we report the story of the death of Karl Erik Ovgaard who lost his life whilst flying in the Sierra Wave, Bishop, California, on December 18 last.

Mr. J. D. Graves, President of the Southern California Soaring Association has written the following letter :—

'It is with regret and sadness that I write concerning the death of Karl Erik Ovgaard while flying in the Sierra Wave on December 18.

WAVE—STRONGEST EVER

'On this particular day, the wave was probably the strongest that has ever been flown. Robinson and Parker went to 42,000 ASL, and Larry Edgar and Dr. Kuettner went above 38,000. The wave lift was extremely turbulent with the 'Project Pratt Reads' registering plus 4 and minus 2 G's up to 38,000 feet.

'Karl took off in a privately-owned 'P-R' for an attempt to break the Swedish altitude record. He was warned not to exceed 35,000 feet since he was using a diluter-demand type oxygen mask (the ship had a pressure-demand regulator), and he agreed to stay below this limit. He never returned.

'A very extensive air search both by civil and military aircraft was carried out until Friday, December 21, when one of the search aircraft spotted the wreckage. It was located about 4 miles north-east of Independence Airport (Independence, Calif., is located about 50 miles south of Bishop in the Owens Valley), and Karl's body was found in the wreckage.

'The sailplane had lost both wings and the horizontal tail. There were definite traces of anoxia found by the Coroner. The barograph was recovered and will be studied although much of the trace was obliterated.

'A camera was recovered and although badly damaged it is hoped that the film will be of some value. The barogram indicates a maximum altitude of about 45,000 feet ASL.

'It is not known whether or not Karl was conscious during the portion of the flight between 36,000 and 45,000 feet. He was not wearing a shoulder harness (the ship did not have a harness installed), and it seems possible that sometime during the flight that the pilot while unconscious fell forward against the control stick and that this resulted in a high speed dive and consequently structural failure. The total flight time is estimated to be one hour and thirty minutes.'

Please note that the above writing is not published as fact, since there are many understandable uncertainties.

A WORLD AUTHORITY

This brilliant Swedish meteorologist and soaring pilot lost his life in pursuit of further knowledge of the phenomena of the 'Standing Wave.' This subject had been one that had captured the imagination of Professor Ovgaard for quite some time and he had become one of the world authorities on the subject.

His investigations and explorations had taken him to several countries in Europe and finally to the United States in June last year. He had written several papers on the subject of the 'wave' phenomena and had any number of his writings on the subject published in aviation and scientific journals throughout the world.

Professor Ovgaard had met Dr. August Raspet and Dr. Wolfgang Klemperer in Sweden in 1950 during the World Soaring Contests. Hearing a paper given at the meeting of the OSTIV, by Dr. Klemperer on the subject of the Bishop Wave, Professor Ovgaard became intensely interested in a personal investigation.

He went to the United States and stayed first with the Ben Shupacks in New York and attended the 18th National Contests at Elmira in July. Here he gave two very interesting lectures on his favourite subject and exhibited motion pictures of some of his European observations of the 'Standing Wave.' At Elmira he became acquainted with a large number cf the American soaring fraternity.

After Elmira he proceeded to State College, Mississippi, and an extended visit with Dr. Raspet at the Research Station there. Thence to the west coast and on his way he stopped at Bishop where he was the guest of the Carseys and T.S.A., lecturing at one of their meetings.

Karl Erik Ovgaard was a gentleman of great charm and made friends wherever he went. His devotion to the sciences was unlimited, he was a soaring pilot of exceptional skill and his contributions in the field of meteorology will live long.

(*Acknowledgments to 'Spirals'*)

Scottish Club's Effort (*continued from page 6*)

of the B.G.A. cups, as a background to the Royal Aero Club King's Cup, which will be on display.

B.G.A. ties and scarves, etc., and a diagram showing the relationship (family tree principle) of civilian and service aero and gliding clubs through B.G.A., Royal Aero Club, M.C.A. to the International bodies. There will also be a large map showing beflagged sites of other B.G.A. clubs and indication of record flights. Over the layout will be a banner "The Sport of the Age.'

MAIN ROOF EXHIBITS

On the Main Roof Display it is hoped to hang a full scale sailplane from the girders of the hall, and leading the eye down to the S.G.U. stall from the machine, by draping an open parachute from underneath the glider, to the stall. This, however, may have to be substituted by hanging two 12 ft. span models of the 'Sky' which will be turning slowly as if in circling flight. A spotlight is to be focussed on the roof display.

The Plain Man's Guide to Gliding

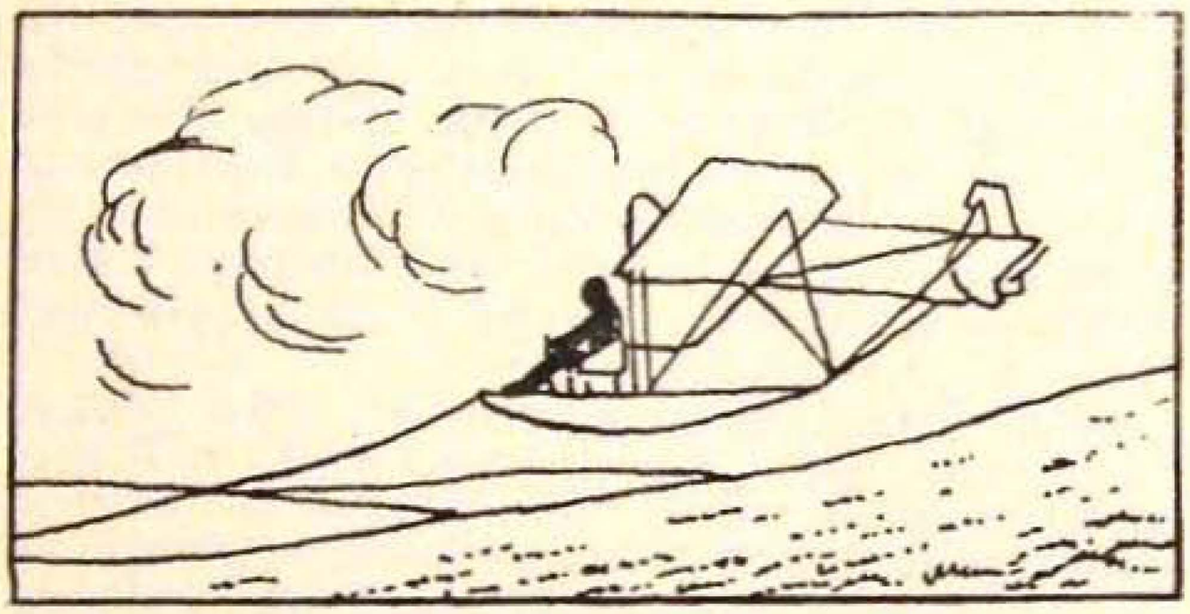
By Godfrey Lee **Concluded** *Illustrations—Derek A. Mossman*

WHY YOU GLIDE

The short answer to this question is that those who glide do so because they like it. Therefore in order to understand why people glide it is necessary to explain wherein the attraction of gliding lies.

Most of the sports and recreations that human beings enjoy contain some or all of the following ingredients :

(1) The opportunity for a change of mental and physical activity.
(2) A chance for the person concerned to pit his skill and ability against a worthy opponent.
(3) The companionship of kindred spirits.
(4) An element of chance.



(5) An element of danger.
(6) An opportunity to get out into the fresh air and to enjoy agreeable natural surroundings.

There is no doubt that a sense of achievement is very dear to the heart of Man. To feel that something worth while has been done, that difficulties and dangers have been successfuly overcome and that opposition has been beaten down by a man's own efforts undoubtedly gives to him a real joy in life and imparts a fresh impetus to his energies, whatever their end may be. For this reason the existence of competition, against either human opponents or the laws of nature or chance, and the added savour of a small dash of risk are very important parts of a satisfactory sport for those who are active in mind and body.

Gliding has all the components listed above. Perhaps the best way to understand the character of the sport is to say that in spirit it is probably most closely akin to mountaineering or rock climbing, while physically it is closest to yachting. In both climbing and gliding the laws of nature, and in particular the law of gravity, provide worthy opposition. Like climbing, gliding is of almost no practical value, though occasionally it does bring to light useful new scientific technical data as a by-product. Like climbing it takes one into the country and both are, to a very great extent, dependent on the weather. All climbers will remember the holidays with six days of bad weather followed by one good day at the very end ; gliding can be like that too. Climbing gets the devotee cold, wet, tired, hungry and at times scared to death : so does gliding. But think of the near-ecstasy as you look down at the view from the top of a good climb : there's nothing like it, except the feelings one experiences when your sailplane emerges near the top of a cumulus cloud after a climb up inside it. Think of the warm glow of satisfaction and sense of achievement that one experiences after getting back home from a good day in the mountains, just so does the glider pilot feel after doing a good cross-country flight, or after having done his first flight off the top of the hill while he is under training ; the same terrific 'kick' is there.

On the physical or mechanical plane gliders stand in the same relationship to powered aeroplanes and air liners as do sailing yachts to motor boats and steam ships. Sailplanes and sailing yachts both have beautiful lines and represent the peak 'pure' aircraft or ship design ; both move by virtue of the wind and to get good results the man in charge must be very weather wise. But the man who wants to go from A to B does so in an air-liner or a steam ship as the case may be. A man may be a brilliant skipper of a sailing dinghy, but would probably knock down the quay if he tried to bring the *Queen Elizabeth* alongside ; similarly a fine sailplane pilot would be liable just to dig a very big hole in the runway if he tried to land a large air-liner.

The spirit of comradeship amongst gliding people is very strong. The great uniting force is an identity of interest, of over-riding interest. When gliding people meet they talk about gliding and gliding and gliding.

I have several times mentioned an element of danger. Let me explain here, as I do not wish to scare people off, that there is some chance of being hurt at gliding, but the risk is very, very small. I am sure, for example, that climbing is a lot more dangerous than gliding and I should think that the chances of minor injury are much greater on a rugger field than when gliding. It is surprising how many people have walked away unharmed from a crash which has practically tied the glider in knots. Gliding is much safer than flying powered aeroplanes, firstly because everything happens more slowly in a glider so that any crashes that occur are a great deal less severe, and secondly there is no danger of an engine catching fire, either in the air or after a crash. Incidentally, a glider pilot does not have to worry about an engine failure ; he hasn't got one to fail and can land without hurting himself almost anywhere ; the pilot of a powered aircraft may at times be in considerable difficulty if his engine stops unexpectedly.

Well, I hope that this has given you some idea of what gliding is like, but it is really just not possible to describe it on paper. There's only one real way

to find out what it is like and that is to TRY IT FOR YOURSELF. WHY DON'T YOU HAVE A GO?

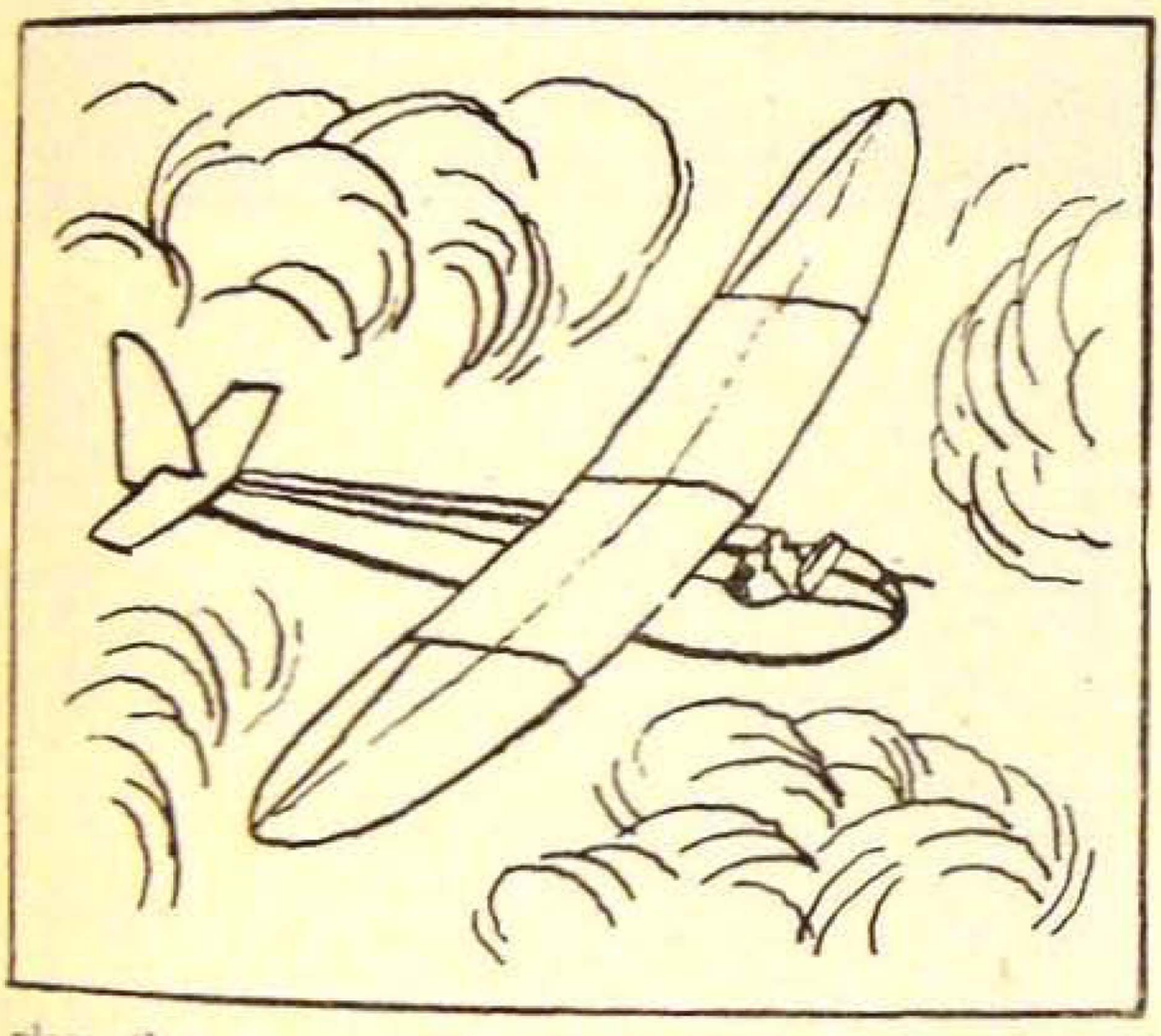
WHERE YOU GLIDE

Where do you glide? Why, at the London Gliding Club, Dunstable, of course! I thought even the Intelligent Reader knew that!

Seriously, though, as you can see from the foregoing, gliding is not a pastime that can easily be undertaken by two or three people on their own, though occasionally some very resolute souls have succeeded on their own in a small way. The need for instruction and training and the rather complicated launching procedure alone make it practically essential that gliding should be carried out at an established club. Only a club could reasonably afford the outlay required to purchase the series of training machines, the launching winches and so on.

Most clubs provide accommodation for the aircraft, a hangar where they can be kept, and for the members' eating and sleeping accommodation, the degree of luxury varying with local conditions.

While the appearance and the details of management of the clubs vary considerably from place to



place, the same sort of spirit, the result of a love of gliding and soaring, will be found in all of them. To make a wide generalisation, gliding clubs consist of a lot of friendly people whose main purpose, in their spare time, is to glide. When at the club as much time as possible is spent flying or helping others to fly while the remainder is spent either talking about gliding, or repairing gliders or winches or other 'club assets,' as the balance sheet calls them. They usually take a little time off to eat and drink, the latter commonly taking place in the evenings when it can most conveniently be combined with talking about gliding. Wives, families and girl-friends (or husbands and boy-friends, for we do have feminine glider pilots) are often brought out to gliding clubs and tend to get together and, well, who knows what they talk about then. The dress worn by gliding club members is clearly the result of a very thorough-going application of the famous 'four (to put the number no higher) freedoms.' Flying costumes have varied from a pair of shorts to hunting pink.

To get a glider into the air, many jobs have to be done (inspection for airworthiness, transport across the field, winch driving, etc.), so gliding is very definitely a team effort; this helps members to appreciate their fellows and promotes a tolerant and friendly atmosphere.

It is not possible to carry these generalisations any further, so to end with I think the best plan will be to give a brief description of an actual gliding club in this case the London Gliding Club.

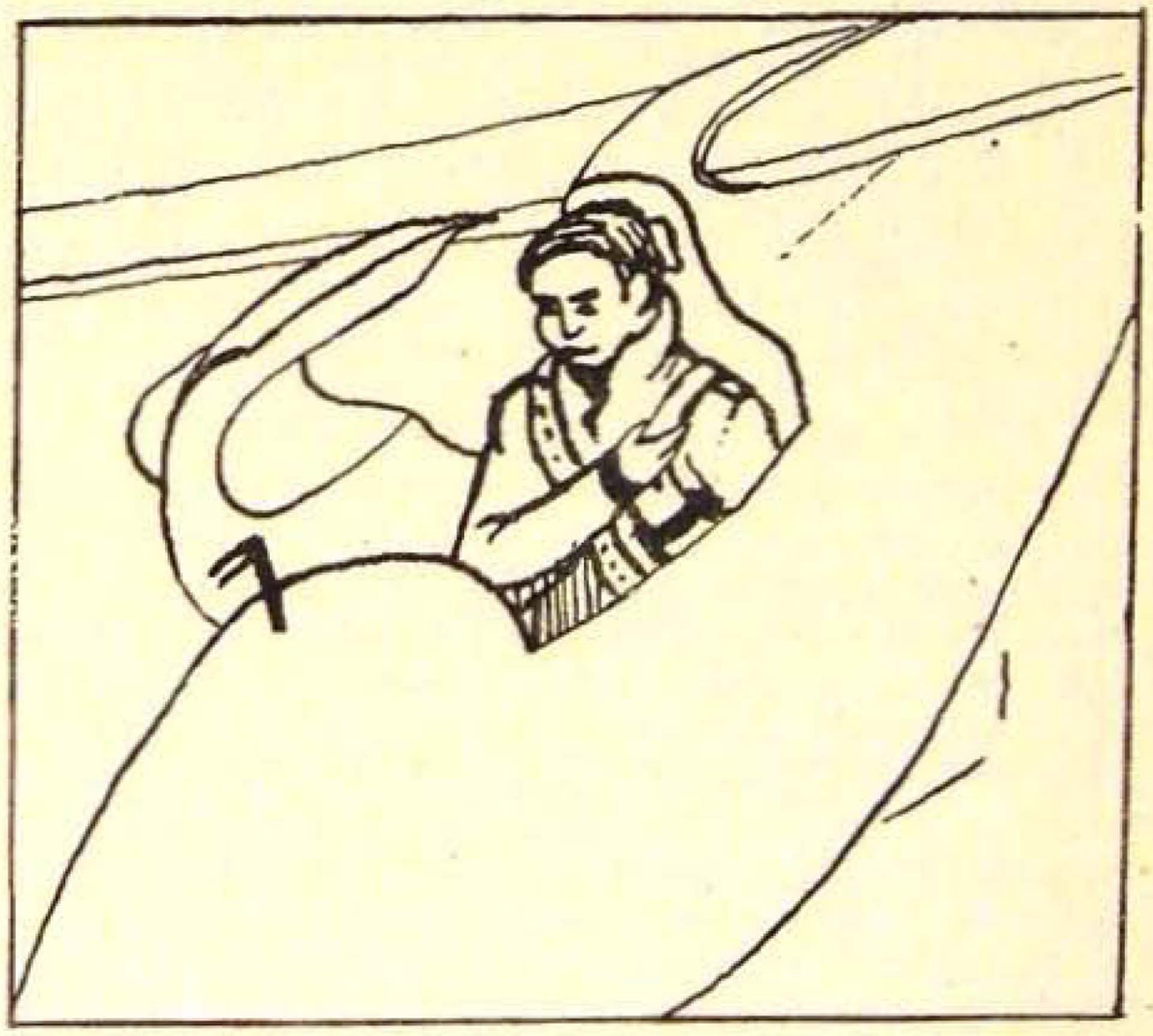
The London Gliding Club is situated about two miles west of Dunstable, in Bedfordshire. The buildings and the greater part of the land owned by the club lie at the foot of Dunstable Downs (a chalk escarpment facing just north of west), though a strip of the club's land runs right up to the top of the hill.

The principal building comprises the main hangar, capable of accommodating about 20 fully assembled gliders, a workshop, the combined restaurant and lounge, the bar, some sleeping quarters and washing accommodation. In addition to this building, there are a number of other, smaller, buildings and huts which serve as dormitories, offices, stores for glider parts and so on.

The club fleet (i.e. the fleet of gliders actually owned by the club) consists of some twelve machines, ranging from the most elementary training types to advanced sailplanes and including a two-seater. In addition, there are roughly an equal number of privately owned sailplanes permanently based at Dunstable.

The full time staff of the club at the time of writing consists of three people—the flying instructor, the ground engineer and club steward, and a winch driver-cum-assistant ground engineer.

The existence of these three gentlemen means that gliding can take place on any day of the week



when conditions are suitable. Because most of the members have to earn their livings, naturally the greatest attendance is at week-ends. In the summer,

Continued on page 22

SOARING IN FRANCE

How I Won The Wave Competition of the FRENCH ALPINE CLUB

By GUY BORGÉ

SCIENTIFIC STUDY OF WAVES

IN 1951 the French Alpine Club (Club Alpin Français) organized a competition among French pilots, to stimulate the scientific study of waves, and I was lucky to win it with a climb above the Lyon-Corbas airfield.

On the morning of March 11, 1951, I observed a strong South wind with good formations of stationary clouds, promising good wave effect; several lenticular altocumulus had settled just above the centre of Lyons and in view of their promising shape I immediately went to the airfield.



Lyon-Corbas—March 11, 1951. *Lenticular clouds.* *Photo : Borgé*

But the friends of the Soaring section did not seem interested in wave currents, and remained dubious about the possibilities of soaring in such a gale. To prove my notion, I asked a friend to make an impartial test with a light aeroplane, a 65 h.p. ' Piper Cub.' We took-off easily in spite of extreme turbulence, but very soon we penetrated smooth air and the variometer needle went up to + 16 ft./sec. At 330 feet, just above the airfield, we entered the wave lift. In a few seconds we attained 1,000 feet, and I closed the throttle to come back to 0 on the variometer ; I had to reduce the engine speed to 950 r.p.m. to lose climb and keep height, when the normal rate is 2,150 r.p.m. at cruising speed. We landed immediately to advise our fellows of our discoveries, and to get out the winch and the sailplanes from the hangars.

CAST OFF AT 1,300 FEET

At 1 p.m. I was launched, in a ' Nord 2000 Olympia,' and cast off at 1,300 feet. Violent turbulence ; the variometer stayed at 0, descends and I thought that the wave had disappeared. In fact, starting by winch from a perfect plain, without any slope, I thought, it is extremely difficult to pick up wave lift ? But I tried to drift westwards flying at 50 m.p.h. A happy result : I endured powerful gusts, the wing tears, swings, but the variometer becomes optimistic— 6 ft./sec., 9 ft./sec. at 50 m.p.h. ASI.

Just above my head a roll of stratocumulus was forming and in a few minutes became of abnormal length. I flew exactly under it and arrived at its base, at 4,600 feet above the airfield. Without a turn indicator and a compass, I did not want to fly blind because of the strength of the wind and the possibility of severe icing. I advanced in front of the roll, still climbing, and I had the impression of soaring along a snowy slope. But the cloud development vertically was not great—1,000 feet, and at 5,600 feet I came back and flew directly above the cloud. I then realised its immensity : it began in the south-west, made a large curve in crossing the Rhône river, and became lost to view in the east. It was at least 30 miles long, and about 12 miles upwind another roll of similar appearance and length had also formed, and appeared that it was joined to the other roll. It seemed to me that an enormous ring surrounded my sailplane.

BRUTAL GUSTS CAUSE ROLL

Lift above the first roll was absolutely calm, and I flew several miles quietly as though slope soaring. However, by degrees, the variometer reached 10 ft./sec., 16 ft./sec. and brutal gusts buffeted the wings, raised the nose and the sailplane stalled or began a sort of very steep roll.

After the landing I learnt that during a circuit, a pupil lost his control inside similar turbulence and dived his ' Nord 1300 Baby ' against a tree. Happily he received only a few bruises, but there was a ' Baby ' out of service.

But, at my altitude of 7,000 feet above the roll, I was unaware of the sad events taking place on the ground. I decided to progress against the wind to study the lift of the second roll. The variometer fell to —15, —20 ft./sec., and the altimeter also descended ; it was impossible to progress against a wind of 50 m.p.h., and to cross the down-currents,

so at 4,000 feet I turned downwind, was shocked to find lift, and began to circle as if in a thermal, and after several turns attained again the base of the first roll.

Again I ascended in front of it, then over it. At 7,000 feet a strong rain, due to the upper layer of altostratus, began to fall, and I reached its base at 8,850 feet without daring to enter inside it. I foresaw the approach of a warm front and I wanted to land before its heavy rains began. I opened the brakes to land at 4 p.m. One hour later the front arrived and visibility became nil in continuous rain. The great roll had disappeared.

DETAILS OF THE FLIGHT

Plane : 'Nord 2000' nr 58—winch launch—Time of flight : 3 hours—casting off at 1,300 feet ; altitude reached above the field : 8,850 feet ; above sea : 9,500 feet. Gain of 7,900 feet.

In low levels south wind of 30 knots ; from 3,200 feet south-west wind of 40 knots. Nebulosity of 8/8 by stratocumulus at 4,600 feet and alto-stratus at 9,000-10,000 feet. Strong inversion from ground to 8,200 feet. From 8,200 feet, a layer of conditionally unstable air.

Isotherm 0 degree C. at 10,150 feet above field.

Isotherm +10 C. at 11,150 feet.

In my opinion it must be possible in Lyons to make important gains of altitudes in waves. They seem to be caused by the Rhone valley which tends to make the wind blow from the south to 3,300 feet. From 3,300 feet action from the valley does not occur and the wind shears in taking its general direction of south-west. Frequently during winter, from October to May, the strong and stable south wind blows in Lyons because of the Rhône valley, even when there is no general wind gradient, and it is accompanied on each occasion by interesting features, like numerous varieties of lenticular clouds which cover a vast area.



Lyon-Corbas—March 11, 1951. View towards west. Part of the great stratocumulus roll created by wave lift and which permitted the flight. Photo : Borgé

STRATOCUMULUS 75 MILES LONG

On one day I observed during a journey to Paris that the stationary rolls of stratocumulus were forming from Lyons to Chalon sur Saône, about 75 miles, and certainly would permit fast cross-country soaring. A case of special interest would occur, when the general wind is weak, to soar exactly at the 'border' of the wind at the precise place where the effect of the valley begins. For instance, I have noted on many occasions that a weak wind, at Bourgoin (25 miles east from Lyons) becomes a strong gale of 30/50 knots in Lyons, and that the change is not progressive but extremely brutal. In 100 yards, between Bourgoin and Lyons, frequently at the same place, the wind takes up its force, and it is clearly visible in looking at the trees. What currents exist above this narrow border, perhaps some powerful lift ?

Another fact of interest arises from the possibility to find at Corbas the wave lift near the ground without using a slope or an aero-tow start. From my experience in the 'Piper Cub' the lift can begin at 330 feet above the field ; but I do not believe that these favourable circumstances exist in many places.

To date, this height of 9,500 feet is the maximum reached in wave at Corbas. But a friend of mine climbed one day to 13,100 feet at Cessieu, near Corbas, and I am sure that the Lyons atmosphere holds numerous more interesting possibilities for soaring.

12,000 FEET ON FEBRUARY 3rd AT GREAT HUCKLOW

FLYING an 'Olympia,' twenty-six year old Christopher Hughes, of the Derbyshire and Lancashire Gliding Club, reached a height of 12,000 feet on February 3, in 22 degrees of frost—clad in only a sports coat and flannels.

Mr. Hughes, whose home is at Stretford, Manchester, had to fly through a 2,000 foot cloud bank over the Club's site at Great Hucklow, Derbyshire, his performance being only 2,000 feet short of the Club's altitude record.

STANDING WAVE AND CUMULOUS

His flight is remarkable for this time of the year and Mr. J. S. Armstrong, a flying instructor at the Club, commented : 'It is a remarkable phenomenon to find a 'standing wave,' on which Mr. Hughes flew, and a cumulous cloud layer at the same time. For most of the time he would be cut off from the ground.'

Christopher Hughes remained at 12,000 feet for only about ten minutes.

THE . .
HAWKRIDGE AIRCRAFT CO. LTD.
for

- Crash repairs and C. of A. overhauls to Light Aircraft, Gliders and Sailplanes.
- Modifications and experimental work.
- Used Gliders and Sailplanes.
- Reconditioned and special components.
- Plans Service and Constructional Kits.
- Trailers.

Write :

HAWKRIDGE AIRCRAFT COMPANY LTD.
KNIGHTON WAY LANE, NEW DENHAM
Nr. UXBRIDGE, MIDDX.

Soarers Do Nearly 80 Miles a Flight

By "Wings" Special Representative at the South African National Gliding Rally

THE 1951 National Gliding Rally at Baragwanath in November was held in the worst weather this annual event has so far known. No flying took place on five days out of the twelve, and on three of the remaining seven thermic activity began only after mid-day. Nevertheless, with only two high performance machines competing, in 36 cross-countries an average of just under 80 miles a flight was attained, and nine flights of more than 100 miles were made. Six of these were in intermediate machines.

High wind prevented flying on the first three days, and gave the Durban team time to repair their 'Bowlus Baby,' which had been damaged in a test-flight on the Sunday. On Thursday clouds built up fast at about 11 o'clock, and Pat Beatty ('Baby') the first away, found conditions good for 50 miles. Thereafter, under a now completely overcast sky, he drifted along finding only weak lift, eventually landing north of Kinross (79 miles).

The only others to get away were Sparky Davidson ('S-18') and Peter Leppan ('H-17'). Both at one stage reached good height with wisps of clouds forming below them, but were forced down by lack of activity under the high stratus, covering 59 and 34 miles respectively. Wind caused more unfavourable conditions on the Friday, and it was only by the skilful location of hill-shadow thermals combined with a certain amount of ridge-soaring that Hans Wurth ('S-15') was able to cover 45 miles towards Balfour.

The following day was also overcast, but this broke into streets after lunch. The performance of the 'Bowlus Baby' in its first competitive flight came as a surprise to many. Eric Tollis reached a maximum of 9,000 feet above ground, and covered 89 miles, landing near Trichardt. A farmer and his wife rushed to the scene with blanket and bottled reviver, because, they said, the propellor having been 'lost,' they knew there was going to be a crash. In view of the late start Alec Farquharson ('Baby') nominated Balfour (47 miles). Conditions were such that he reached it one hour after setting course. He flew straight-and-level under a cloud street for about 30 miles, and thereafter found it necessary to circle in only one thermal.

In his first-ever cross-country (which took just under two and a half hours) Bill Teague ('S-18') came low at Heidelberg, pinched someone else's thermal, and from there cruised fast and high landing at Platrand (109 miles). Hans Wurth also struck trouble at Heidelberg, but got back to base, and kept close to it to reach his nominated goal of Standerton (89 miles) in less than two hours. The 'Moswey,' flown by René Comte,





PROMINENT AT THE RALLY.—Above (left to right): Eric Tollis, winner of the George Ward Memorial Trophy (Junior Championship) and of the Pilots' Award balloted for by the competitors, for the outstanding flight of the rally, Ernie Jacoby and Vic Knott, all members of the Durban team

Left: Pat Beatty, Johannesburg Soaring Centre, who came second in the National Championship and Junior Championship and with Alec Farquharson won the Argus Trophy

Photos: Bobby Keartland



BILL TEAGUE BECOMES NEW CHAMPION

Bill Teague, of the Johannesburg Soaring Centre, who is the new South African Gliding Champion. He also won the H. R. Lasch Trophy for the longest flight to a nominated goal and the Kelvin Bottomley and Baird Trophy for the longest flight of the National Gliding Rally at the end of last year

was last off at 15.30. Ten miles out, René went into cloud with his variometer showing over 30 foot per second, but had to come out at 20,000 feet above sea-level, as he had nc oxygen. With an indicated air-speed of 75 m.p.h. he covered 55-60 miles, picked up to base again, and went past Standerton in a straight glide. Clouds were now decaying, and so he turned back, preferring the aerodrome to an unknown field. Lew Kayne (' Baby ') picked the wrong cloud street, did a little ridge-soaring and had to land after 39 miles. Roy Lilienfeld (' H-17 ') fell down in attempting to match the ' Moswey's ' glide across a gap between clouds. Bruce Arbuthnot (' Schweizer 119 ') in his first thermal flight, was airborne for more than an hour and covered nearly 15 miles.

The Sunday was windy and overcast. Fracto-cumulus started forming in the afternoon, and Jackie Pullen (' Baby ') managed to cover 26 miles, the last ten being at between 500 and 1,000 feet. The next day the wind was 55 knots at 6,000 feet above Baragwanath, and, although weaker, was still strong on the Tuesday.

It was moderate on the Wednesday, but an absolutely cloudless sky misled pilots into delaying take-off. Hans Wurth flying a passenger in the ' Kranich ' found strong lift, and there was a rush to become airborne. Ken Newman (' S-15 ') was first away, and, obtaining good lift was soon over Springs. Premature jubilation at the march stolen over the others led to a dearth of thermals, and a long straight glide to Devon (51 miles). Another early starter was Ted Pearson (' Baby '). After being on tow for only two minutes, he released at 1,400 feet and climbed rapidly to 8,000. Drift appeared a little southerly, and so he abandoned his goal of Bethal, and headed for Standerton. Very strong down brought him low at Heidelberg and also at Greylingstad but from there on, finding fairly regular thermals he was between 5,000-8,000 feet for some time. Thermic activity lessened and he was down to 1,000 feet at Standerton, where he landed. Nigel Arbuthnot (' Schweizer 119 ') on his first cross-country, nominated Nigel. Lift was better than map-reading, and while circling his goal in an attempt to identify it, he was carried up higher. Once up he set course along the Bethal road, found one or two more good thermals, and eventually landed at Leslie (59 miles). Flying the ' Bowlus Baby ', Ernie Jacoby encountered only three thermals but covered 36 miles.

UNOFFICIAL RECORD

Peter Leppan met strong down and was on his approach at Germiston, and was again very low near Brakpan. From there on he found strong thermals (coming off ploughed fields) every 10-15 miles. These in general took him to the top of the inversion (12,000 feet A.S.L.), and enabled him to maintain a ground-speed of more than 40 m.p.h. from Devon onwards. He left Davel at 11,500 feet, with 20 miles to do his nominated goal of Ermelo (123 miles). Thermic activity was now almost negligible, but five miles outside the town at a fairly low height he spotted Sparky Davidson circling over a ploughed field, and picked up 500 feet. This was just sufficient to enable him to reach the town where he landed on the golf course, and thus set an unofficial South African record for a goal-flight in the intermediate class.

Davidson, who had set course 20 minutes after Leppan, had found similar conditions and had also twice been on his approach in the early stages. From Davel, however, he had been in occasional weak lift at a height of 1,500-2,000 feet above ground. The golf course did not appeal, so he turned back and landed in an open field a little way short of town. Down to 500 feet over Nigel, Pat Beatty battled for height, and then encountered good conditions to Bethal. From there on it was a straight glide with no further lift to Davel (104 miles).

Thursday gave the best conditions of the rally. High cumulus started forming mid-day. Winds were light, and Helli Lasch (' Moswey ') nominated Potchefstroom and return. Until 15 miles from goal he cloud-hopped at 14,000 foot A.S.L. Over the town there was clear sky but a good thermal gave

him height, and after taking photographs, he found cloud again ten miles out Cloud-hopping gave him a fast return journey, and the 'Moswey' sounded like a jet as it came over Baragwanath. In three and a half hours 128 miles had been covered to establish a new South African out-and-return record.

Other competitors set course along the Durban road. Roy Lilienfeld got away late and missed the best of the street, landing near Val (70 miles). Jackie Pullen had to mend a skid and got away even later. Over Heidelberg he entered cloud at 9,200 feet above ground, and on emerging took the Villiers instead of the Standerton road. He thus unwittingly avoided the now-decaying patch. Following the Vaal from Villiers, at 17.15 he found a thermal which took him back to base at 20 feet per second and enabled him to reach his nominated goal of Standerton with height in hand.

Pat Beatty cloud-hopped to the same place in two hours, and then picked an old cloud and took half-an-hour to gain height again. He set course along the street towards his goal of Volksrust, and for what followed must certainly become this year's holder of the brass monkey. Unfamiliar with the area, he arrived over Paardekop (120 miles) with 5,000 feet in hand and mistook it for Volksrust. He used dive-brakes to get down. Had this not happened final placings in two of the trophies might well have been different.

Ken Newman climbed 7,000 feet in seven minutes and covered the first 50 miles with very little circling. He climbed to base at Balfour, hopped to Greylingstad, and then struck a good street under which he flew at 60 m.p.h. to Standerton. The sky was now almost clear. After one more good thermal, a solitary cloud near Amersfort gave a little lift and he landed at Sandspruit (132 miles) eight miles short of his goal.

The 'Bowlus,' again flown by Eric Tollis, achieved one of the longest flights made in the country by an intermediate machine. Tollis found good lift to Standerton, but each time he circled in an attempt to reach Amersfort he drifted more to the south. At Paardekop he reached the end of the street, and after losing most of his height, joined Bill Teague's thermal. This gave him 4,500 feet, and abandoning his goal he headed south-east. He got to Charlestown with 2,000 feet, did not like the landing area, and so went back to the airfield at Volksrust (140 miles). At the beginning of the rally, although long connected



Scharfoldendorf—February 1. Flying instruction continued despite wintry conditions. Wing/Cdr. W. F. Lamb, Chairman of the 2nd T.A.F. Gliding Club, and Cpl. McKercher, Instructor, brief Mrs. Godfrey Harwood of the Wahnerheide Club for a ridge soaring flight in a two-seater 'Kranich.' Mrs. Harwood later the same day qualified for her 'C' badge with a 55-minute flight in a 'Grunau Baby.'

with gliding, he had under 30 hours to his credit, and this flight won him the Pilots' Award, which is decided by vote of the competitors.

LONGEST FLIGHT

The longest flight of the day was by Bill Teague to his goal Newcastle (159 miles). This won him the Lasch Trophy for the longest nominated flight, the Kelvin, Bottomley and Baird Trophy for the longest flight of the rally, and, because it took more than five hours, his Silver 'C.' The cloud-street gave him a good trip to Standerton, where, in attempting to cross a gap, he found such strong down that he was on his last approach before hitting a thermal, which took him back to base. Near Paardekop he was again very low, but eventually reached Charlestown at 11,500 A.S.L. Not liking the country he turned back to Volksrust, where he picked up to 12,000. From there in zero-zero he flew at 40-45 m.p.h. to Newcastle, reaching it with 8,000 feet in hand. Not realising how close he was to Gold 'C' distance, he circled the town until his five hours had elapsed and then used dive-brakes and landed at 18.25.

On the Friday clouds began popping just before mid-day, and rapidly covered almost the entire sky, giving an easy get-away, but difficulties thereafter. Climbs of up to 20 feet per second were recorded, but subsequent down was even more violent. Alec Farquharson battled southwards towards Villiers and sunny patches, cruised at 60 m.p.h. under a short street, and then had to struggle again near Standerton. Another street took him to Amersfort, where he reached 12,400 A.S.L. He found no further lift and did a straight glide to Sandspruit (132 miles).

Ted Pearson reached 9,200 above ground in the bowl of a cloud near Palmietfontein, but ran into the overcast at Balfour and got down to 500 feet. Spotting a bonfire he circled in zero-zero with a determination that very deservedly resulted in a Silver 'C', because it was an hour-an-a-half later, still over Balfour, that he reached 5,000 feet. From here he jumped from one sunlit patch to another, eventually reaching Standerton with 4,000 feet. Finding only gradual sink he circled for half-an-hour, and achieved his five hours—a very well-earned Silver 'C.' Helli Lasch covered considerable mileage before hitting a big hole at Heidelberg (30 miles).

LIKE DIVE-BOMBING

Davidson and Leppan both staved off disaster there, but together with Hans Wurth found such down near Balfour (47 miles) that their descent resembled dive-bombing. Vic Knott ('Bowlus') went south to begin with, flew along the edge of cloud north of the Durban road from Heidelberg, and finished his first cross-country just short of Standerton, after covering 84 miles.

The last day of the rally produced very stormy conditions that spread rapidly. Bill Teague, after a slow climb to base, flew fast under a long black street, until lightning and violence made him decide that discretion was the better part of valour. From 11,500 A.S.L. he used dive-brakes and landed west of Springs (38 miles).

Getting mixed up with a thunder-storm, Lew Kayne found himself unexpectedly in cloud, from which he emerged at 14,500 feet above ground. He photographed his turning point of Heidelberg, but ran into heavy rain and landed in very bad visibility after covering a total of 42 miles. Ken Newman did ten miles in a south-westerly direction, before running into storms. The whole area looked bad so he came back, and then headed north, cloud-hopping towards Pretoria. From there he covered 20 miles eastwards before running into more storms. He again turned back into clearer weather and, after dodging further storms, landed at Wonderboom (44 miles).

René Comte, the last off, headed for a blackening sky and Bloemfontein. Ten miles out, under a towering cumulo-nimbus, and between rain storms, he encountered ten feet per second. Circling he soon entered cloud, and as he passed through light rain, the lift built up to an estimated 50 feet per second. Lift remained smooth, but the rain became heavy, and then turned to hail. Light icing occurred, and it became impossible to judge speed by sound. Flying on the artificial horizon, and with oxygen on, René put his hand out to test the hail. Finding it relatively small, he continued, until with the outside temperature at —40° Centigrade, and the altimeter reading 32,000 feet A.S.L. lightning sparked on his head and through his stick.

By now it was getting lighter. He set course and soon came out. Looking back it appeared that he had very nearly reached the summit. He was in clear air for half-a-minute, before getting into high overcast. For 40 minutes he sat on a compass-course, flying through heavy down, until he emerged at about 12,000 foot A.S.L. approximately 70 miles from base. Finding rain all around, he headed west, and then tried to get through to the sun in a southerly direction. Heavy rain and further down, however, forced him to land at Vredefort (74 miles).

Unfortunately he did not have his own high-altitude barograph, and only 27,000 feet was recorded. Eleven minutes was spent above this height. It is felt that 32,000 feet is probably as high as a sailplane has been in cloud, and is a height not frequently exceeded even in wave, which makes the lack of a suitable barograph even more regrettable. The gain recorded was approximately 25,000 feet and thus qualifies René for a coveted Diamond.

TEAGUE'S QUICK ADVANCE

This brought to a close a rally, ill-fated by weather, but during which some exceptionally good flights had been made. Points were awarded for distance only, with a 25 per cent. bonus for a goal-flight, and a 50 per cent. bonus for a completed out-and-return flight. The National Championship was decided on the best three flights, and the Junior Championship on the best two. Bill Teague ('S-18') a power pilot who took up gliding less than a year ago, became National Champion, with Pat Beatty ('Baby') second. The Junior Championship (for those flying intermediate machines) was won by Eric Tollis ('Bowlus Baby') with, once again, Pat Beatty second. The Argus Trophy was won by Beatty and Farquharson, with Hans Wurth and Ken Newman second.

(*Continued on page* 22)

An Early Glider—

A Fatal Day

THE death of Lord Braye, of Stanford Hall, near Rugby, recently, brings us to recall that he was a friend and helper of an Englishman who came near to anticipating the Wright brothers in the first powered aircraft flight.

English pioneer was a young engineer, Percy Pilcher, who experimented with gliders, which he often tested at Stanford Park. Lord Braye, then the Hon. Adrian Verney-Cave, was keenly interested in the trial flights.

By September, 1899, Pilcher had several times flown up to three hundred yards, and was planning to fit a glider with a light oil engine. While awaiting this engine he risked a last glide on an unsuitable windy day.

The glider, towed at first by two horses, rose, flew some distance, but was then struck by a violent gust of wind and crashed. Pilcher, badly injured, died at his friend's home, and a tall stone pillar in Stanford Park was erected to mark the site of the fatal accident.

There seems to be a reasonable chance that the glider could have been powered and, under right conditions, flown with the engine Pilcher had ordered.

Note.—Lord Braye died whilst on his way to the funeral of our late King, last month.

Help with Gold 'C's'

At London Club

AT the annual dinner of the London Gliding Club, Dunstable, on February 2, the President, Capt. A. G. Lamplugh, C.B.E., F.R.Ae.S., M.I.Ae.E., F.R.G.S., presented the chairman, Mr. Dudley Hiscox, with a cheque for £10. 10s. 0d.

This money he said was to be at the disposal of the Flying Committee to assist members attempting to take a Gold 'C.' Captain Lamplugh also made another ten guineas available which the Club has donated to the fund to send the British Team to Spain.

Fifty-four sat down to dinner and afterwards about two hundred were entertained and danced to the music of Geraldo's band, thanks to the good offices of Derek Abbott who is a member of this well-known combination.

Personal

THE Editor would be grateful to hear from anyone at home or abroad, who would be willing to loan him 16 mm. films on gliding for a period of six months. They may be sound or silent, coloured or black and white.

They are wanted for showing by Air Attaches in various Near Eastern countries. Write *Sailplane* office.

Aberdeen Club Progresses

SINCE training began on May 20 last year, the total number of launches, including winch and auto tow, up to December 31 was 470, 400 of which were made during the five months ending October 14, and the remainder during December.

The aircraft used were a 'Hols der Teufel' and a 'Cadet,' the latter being flown for the first time during the last week of July. Certificates obtained were 5 'A' and 8 'B.'

Although our site at Fraserburgh Airfield, with its runways, has been very useful indeed, and will continue to be, especially for ab-initio training, a hill site has become an outstanding need. Some possible hill sites nearer Aberdeen, with one particularly in mind, will be tried out during the summer.

ANOTHER MACHINE?

A second winch is in the process of being built by members, and it is hoped that a third glider will become a reality within the next few months.

A film show which proved very popular, was held in November, and a Christmas dance exceeded expectations. Another film show will have been held by the time this report is published.—F.W.C.

Seager Cup Winner

Trained 500 Instructors

THE Seager Cup, awarded annually by the British Gliding Association for the best two-seater gliding flight of the year, is to be presented to Flight-Lieutenant Charman Thomas, R.A.F., for his out-and-return flight last July of 4½ hrs. from Camphill, in the Peak District, to Derby, a distance of 64 miles.

The flight was made in a 'Slingsby Sedbergh' glider during the National Gliding Championships. The pilot's passenger was Cadet Corporal Nigel J. Thomas, of St. Paul's School Combined Cadet Force (Air Section).

The presentation will be made on March 8 at the Royal Aero Club Centre, Londonderry House, Park Lane, London, W.

Flight-Lieutenant Thomas, who is 34, was a night fighter pilot during the war, and was in Malta during the siege. He was later shot down over Tunisia and taken prisoner of war. He went to R.A.F. Station, Detling, as gliding instructor in July 1949, and during his stay there trained and examined nearly 500 gliding instructors of the R.A.F.V.R..

British Aircraft to Scale

CONSIDERABLE interest has been shown in plan view drawings of aircraft, and *Flight* have produced in booklet form *British Aircraft to Scale*, which contains plan view drawings of 85 different civil, Service and research aircraft.

Apart from the interest provided by the scale contrasts—for example, the 'Dart Kitten' (31 ft. 9 in. span) is shown alongside the 'Brabazon' (230 ft.) —the booklet forms a useful work of reference, for in addition to the illustrations, detailed tables of data on all current civil and military types are included. Publication price is 1s. 6d.

Frenchmen Claim World Record 53 hours 4 minutes

TWO French flying instructors—Albert Carraz and Jean Branswyck—landed at an aerodrome in Sant-Remy-de-Provence, near Marseilles, on February 6, after having been aloft for fifty-three hours and four minutes in a French-built glider.

They claim to have beaten the International record, held since 1938 by the Germans Boeckner and Zandr with a flight of 50 hours and 26 minutes duration.

MR. DAVID INCE, recently appointed Chief Flying Instructor of the Midland Gliding Club, has been chosen as reserve pilot for the British team to compete in the International contests in Spain this summer.

Mr. Ince (30), a Scot, made his longest flight in 1949 from the Long Mynd (site of the Midland Club) to Caister, on the Norfolk coast—192 miles away.

Mrs. Ann C. Douglas (34), mother of two, again captains the team. This is the third time that she has done so.

Jersey was Sunniest Place in the British Isles last year

ALTHOUGH the full list of sunshine records taken at its 290 stations will not be available for some time, the Meteorological Office is able to report that Jersey, heading the list with 1,974 hours of bright sunshine, was the sunniest place in the British Isles last year.

Chichester was next with 1,891 hours, followed closely by Shanklin with 1,887 hours, Falmouth 1,886 hours, Guernsey 1,885 hours, Eastbourne 1,866 hours, Sandown 1,844 hours and Worthing 1,838 hours.

There was far more bright sunshine in England and Wales than in Scotland or Northern Ireland. In Scotland, Tiree had 1,555 hours, Leuchars 1,546 hours, Arbroath 1,545 hours and St. Andrews 1,536 hours.

Castle Archdale, with 1,341 hours, was the sunniest place in Northern Ireland, followed by Hillsborough 1,332 hours, Aldergrove 1,327 hours, and Armagh 1,301 hours.

Britannia Trophy Award

FOR piloting Queen Elizabeth and the Duke of Edinburgh across the Atlantic for their Canadian tour, Captain Oscar P. Jones, of the British Overseas Airways Corporation, has been awarded the Royal Aero Club's Britannia Trophy for the most meritorious performance in the air during 1951.

Previous holder of the Trophy was Mr. P. A. Wills, of Maidenhead, chairman of the British Gliding Association, who won it for his gliding achievements.

CORRESPONDENCE

SIR,

Congratulations on your February issue. An outstanding number.—**Major J. E. G. Haywood, Land Commissioner's Office, Dusseldorf, B.A.O.R. 4.**

'DAKOTA' TRIP TO SPAIN

Thanks for publishing my letter.

I will take up *two* seats in aircraft to Huesca return in May/June for a week or a fortnight—as long as I know within a month—at a cost of £20/25 each.

At any rate I propose to visit Spain this year and I have my visa.—**F/O L. Bond, 50, Ellesboro Road, Harborne, Birmingham.**

SIR,

With reference to the 'Dakota' to Huesca idea, originated by F/O L. Bond in last month's *Sailplane*.

Provided that the cost is appreciably below scheduled airlines, I shall consider booking for the return journey.—**A. Pratt, Tinley Garth, Kirby-moorside, Yorks.**

SIR,

With reference to one of your reader's suggestion that a 'Dakota' be chartered to Huesca for the Gliding Contests I am interested and would like to have any further informat on if a sufficient number of people can be found.—**Miss A. M. Gray, Grosvenor Place, Jesmond, Newcastle-on-Tyne, 2.**

So far these are the only ones who have written. If YOU are interested write to me NOW.—Ed.

THE 'SKY' AND 'OLYMPIA'

SIR,

Your Editorial in the January issue of the *Sailplane* contained a statement from which it would seem that you are under the impression that the Slingsby 'Sky' is a development of the 'Meise' or 'Olympia' sailplane. This could not be further from the truth. The 'Sky' is a direct development of the 'Gull IV' and in no important respect are either of these machines similar to the 'Olympia,' or for that matter, its predecessor, the 'Weihe.'

The suggestion that the 'Sky' is based on the 'Olympia' is particularly unfortunate as at the end of the war Slingsby Sailplanes considered building 'Olympia's' or a similar machine based on that design. The idea was, however, rejected as it was considered that, although the 'Olympia' was an excellent design, it had been outdated by advances made during the war. It was therefore decided that more progress could be made by having a completely fresh start and designing an entirely new machine. The outcome of this policy was the 'Gull IV' which the B.G.A. test group number one stated to be better than the 'Olympia' in almost every respect.

At a time when the Sailplane manufacturers in this country are trying to capture markets abroad, it is particularly regrettable that it should be suggested

that machines of purely British design are based on German aircraft. It is not generally realised by the gliding movement that since the war Britain has exported more gliders than any other country in the world. On the design side alone Slingsby Sailplanes have designed and flown fourteen entirely different prototype gliders since the war. I think you will agree that the mass of information obtained from these projects make it quite unnecessary for the firm to 'crib' foreign designs.—**J. C. Reussner, Chief Draughtsman, Slingsby Sailplanes.**

P.S.—I hope you will see your way clear to publish this letter so as to correct any false impression left by your Editorial.

HATS OFF TO WALLY

DEAR SIR,

I am very interested in Wally Wiberg's account of 'How not to complete a Diamond C' in the January issue, and I must say at once that I take my hat off to a man who will recount his failures for the benefit of others. The temptation to keep quiet about the whole thing must have been terrific.

His article, however, contains a popular fallacy concerning gyro horizons, which, I feel, it will be to everyone's benefit to thrash out. He says: "... the gyro had obviously stabilized in a turn ....,' and again later '... the gyro continued to show variations from the steady turn as variations from straight and level.'

Now, I am no Instrument Expert, but I have an old scrap gyro horizon, and after dissecting this, I am prepared to argue with anyone on this point. If the gyro itself is spinning at anything like its proper rate, then the instrument not only *does* not, but *cannot* stabilize in a turn and show variations from steady turn as variations from straight and level. When functioning normally, the axis of the gyro is vertical; and hanging below the gyro is a pendulum, displacement of which in any direction is arranged to exert a small force tending to bring the axis of the gyro into line with the pendulum (let us not confuse the issue by discussing the details of this device. It does not matter whether it is mercury in a bowl making various electrical contacts or whether it is a series of actual pendulums operating air valves—the principle is the same.)

Now we will suppose that you go into a steady left hand turn. The gyro axis remains vertical, and the horizon bar therefore remains horizontal, giving you the indication of bank. At the same time, the pendulum swings over to the right by centrifugal force, and therefore begins to exert its correcting force, which in this case can be visualised as a force trying to pull the bottom of the gyro axis towards your starboard wing-tip.

At first glance it is easy to imagine that if this force is maintained for long enough, i.e. if you keep in a continuous left hand turn, it will eventually succeed in pulling the gyro over until the instrument reads straight and level again. This, however, is not the case, as the gyro is trying to maintain its position *in space*, and is not in the least concerned when you turn your aeroplane around.

Our constant force towards the starboard wing-tip, therefore, is constantly changing direction relative to the gyro; at one moment it is pulling the bottom of the gyro axis to the east, next to the north, then through west and south, back to east again. The correcting force, therefore, cancels out and the gyro keeps on spinning with a vertical axis as before, continuing to give you correct indications of your altitude.

Of course, if you keep on circling for a *very* long time, the gyro, having no *effective* correcting force, will be subject to the usual precession errors due to friction in the bearings, and also to an apparent error due to the earth's rotation, but these are both outside the present argument.

So much for what *does* happen. Now, to drive the argument home, let us consider what *would* happen *if* the correction force *did* succeed in pulling the gyro over until it indicated straight and level while actually in a turn. As it happens, we can simulate this condition by uncaging the gyro while in a turn.

Let us suppose, for convenience, that you are in a steady, left hand, 40° turn, and at the moment of uncaging you are heading east. At this moment the instrument will read straight and level, and (if you are in the British Isles) the axis of the gyro will be pointing approximately towards the Pole Star. By the time you are heading north (i.e. only 4 or 5 seconds later, at Sailplane speeds) the gyro axis will still be pointing to the Pole Star, and since you are flying at a constant altitude relative to the ground, the instrument will now indicate 40° left bank plus 40° climb.

In another 4 or 5 seconds, when you are heading west, it will indicate level in pitch but 80° left bank; and again when you are heading south it will show 40° left bank plus 40° dive, returning to indicate straight and level when you have completed the full circle. This effect can be demonstrated at any time by uncaging the spinning gyro whilst in a turn.

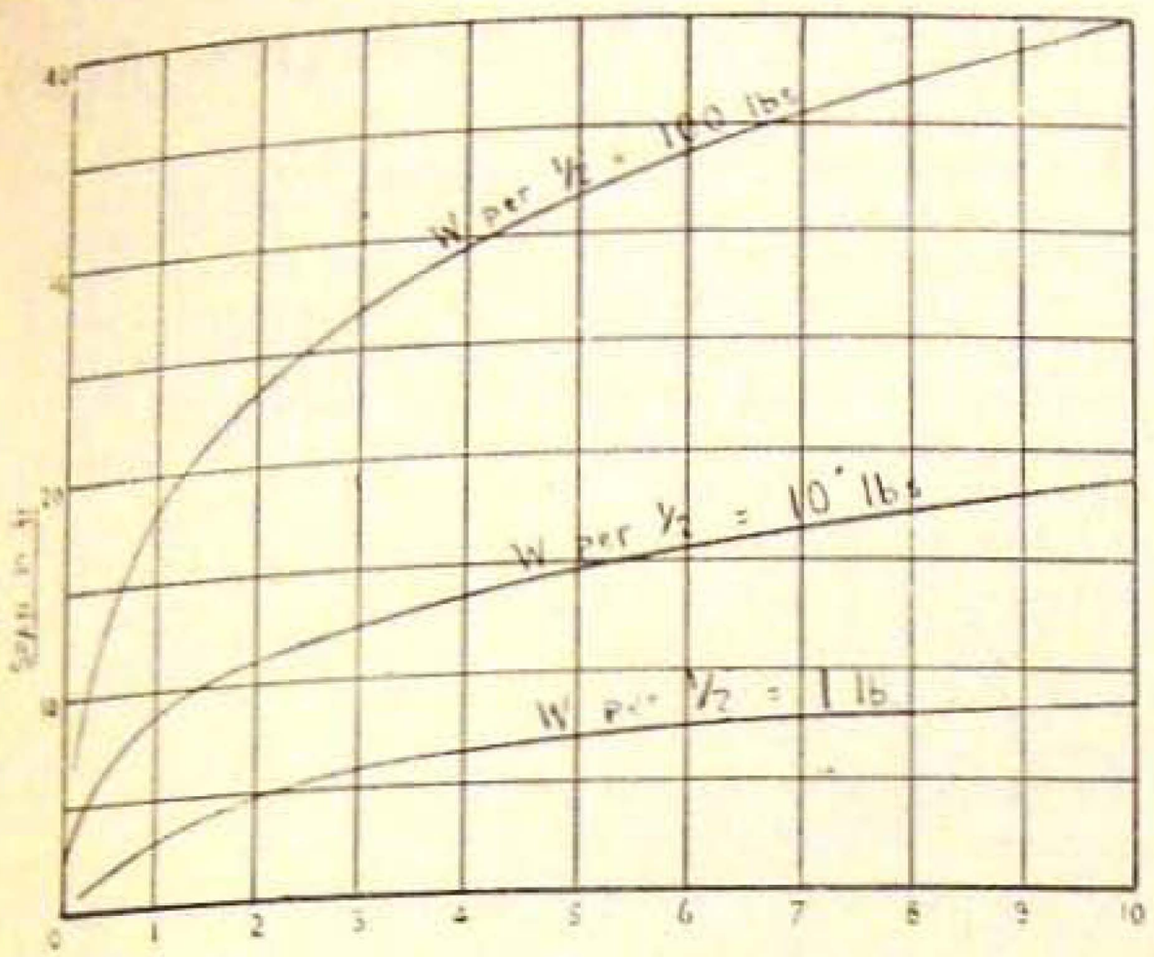
It will be seen therefore, that if the gyro is spinning properly and is uncaged, it is quite impossible for it to indicate a steady straight and level when in fact you are in a steady turn, because the only position in which it will give a steady reading at all is with its axis vertical, in which case it will correctly indicate your altitude.

Apart from dispelling the fallacy of 'Stabilizing in turns,' this line of thought also leads one to the conclusion that if the instrument is giving a steady reading at all, then it must be working correctly—quite a comforting thought to have at the back of one's mind.

G. O. SMITH, Park Grove, Derby.

SIR,

I would like to draw your attention to an article appearing in the October, November and December, 1951 issues of *Sailplane and Glider*, by Mr. K. B. Wilkinson, on 'Design of Sailplane for High Performance,' in which he attempts to analyse the basic requirements for maximum performance in thermal soaring. I am sorry to say that I cannot understand what Mr. Wilkinson is trying to show.



It appears to me that Mr. Wilkinson's analysis is based on wrong assumptions and thus all his calculations will lead to wrong results in practice as they are based on assumed formulae to be corrected by 'constants' determined by comparing the calculated results with those obtained in actual practice.

It is unfortunate that the tables of the large number of present-day Sailplanes given by Mr. Wilkinson specify only the span, weight and aspect ratio. It would have been very interesting if he had given the minimum flying speed just before stalling and corresponding sinking speed, the minimum sinking speed and corresponding flying speed, the sinking speed for the best flying speed and at double this speed and also some more of the constructional details. Without these particulars we cannot make any comparison between the different machines.

It appears to me that Mr. Wilkinson's article serves to show how little the problem of soaring flight is understood by present-day aerodynamic technicians. It reminds me of the period when the 'Newton formula' was used to prove conclusively that bird flight was impossible.

In the table attached I have given the weight in lbs., span in feet, and area in sq. ft. for soaring birds from 0.034 lbs. to 36 lbs. and for two gliders designed by me of which one has been flown and the performances of which agreed closely with my calculations. I also give the curve showing the relation between weight and span for up to 1,000 lbs. weight.

Incidentally the article by Mr. Heinz Kensche, published in the November issue of the *Sailplane*, gives the dimensions of a machine for soaring flight which curiously, coincide most closely with those of my glider.

I once sent particulars, dimensions and performance of my gliders to the Technical Committee of the British Gliding Association, hoping that they would help me to get into touch with someone better equipped mathematically than I am, but the Committee would not accept my figures for the performance and refused my request for assistance. With the same object I also approached the National Physical Laboratory with specimen calculations according to my theory (without any 'variable constant') of the Tern (0.11 Kg) and the Brabazon I (130 tons), but I was told the results were a coincidence and was advised to buy an elementary book on aerodynamics!

The dimensions of my present glider are: Weight, 225 Kg.; Span, 10.5 m.; Area of Wings, 4.45 sq.m.; and the slowest landing speed observed in calm weather was 35 m.p.h. For a starting speed of 55 m.p.h. it flew 500 yds. in 20 secs. at a height of not more than 2 m. before it hit a fence at the end of the field in a flight made by Mr. T. Saffery of the London Gliding Club. The sinking speed worked out to be about 1 in 50 of the flying speed.

Mr. Edwards of the Midland Gliding Club, Mr. F. Costin of the London Gliding Club and Test Pilot Mr. Clear have also flown the machine, and all have expressed surprise at the small drag.

Mr. Slazinger of the Cambridge Gliding Club also flew the machine but unfortunately always flew under semi-stalled conditions. He did, however, prove that, when stalled it could be brought under control again in a comparatively short dive. When flying the machine myself I was once given too big a starting speed for the 600 yds. field and I had to stall three times during the flight to avoid hitting the boundary trees and still was able to make a normal unstalled landing.

It would be interesting to see what Mr. Wilkinson's analysis would make of these figures.

As I have been unable to arouse any interest in the technical members of the gliding community I shall now try to interest the practical flying men.

Unfortunately, I cannot now fly the machine myself, I am 79, but I am hoping to find an experienced glider pilot who is willing to undertake the further experimental flights and, perhaps, continue my work in developing a glider based on the principle of bird flight. I must state that it may take some few days to learn to fly the machine in unstalled condition even in calm weather.

Is there a practical pilot willing to spend part of his holiday here with me in Worcester to learn to fly my glider as a preliminary to taking it to an established flying ground? If so I would be happy to hear from him.—**T. G. NYBORG, Boughton Villas, School Road, Bransford Road, St. Johns, WORCESTER**

Name of Bird	*Weight lbs.*	*Span ft.*	*Area sq. ft.*
Swallow (small) ..	0.034	0.85	0.1
Swallow (big) ..	0.046	1.12	0.147
Nightjar	0.142	1.8	0.355
Tern	0.22	2.4	0.43
Sparrow Hawk ..	0.241	2.0	0.6
Black Headed Gull	0.428	2.85	0.69
Common Gull ..	0.980	3.55	1.15
Kite	2.3	5.1	3.75
B.B. Gull	5.0	6.5	5
Sea Eagle	9	7.2	6
Golden Eagle ..	16	9	9
W. Albatross ..	23.5	10	7
L. Albatross.. ..	23.0	15	11.5
Condor	36	14	13.5
T.G.N. Glider I ..	500	34	51
T.G.N. Glider II ..	1000	40	72

THE SAILPLANE AND GLIDER



A glider-cum-outboard motor boat. An American device which might have possibilities for tuition. (*Issue* : *March* 13, 1931)

SERVICE STATIONS

JUST lean back in your favourite armchair, close your eyes for a few minutes, and let me give you an imaginative peep at Gliding in 1960. Up and down the country are gliding stations, where those who are travelling by sailplane may stop and house their machines. They are the service stations of gliding. We will follow the adventures of Mr. Jones, who lives at Dulwich and is going to spend a few days at Torquay. The day is warm and sunny. A few cumulus clouds are almost stationary in the southerly breeze.

Mr. Jones jumps into his baby monocar and is at the top of Anerley Hill at a few minutes to 10 in the morning. He enters the gliding station which has replaced the Crystal Palace, now used as hangars. Having parked his car in the annexe, Mr. Jones enters the Palace, passing the hundreds of sailpanes

WILL IT BE LIKE THIS IN 1960?
By L. Howard-Flanders,
M.I.Ae.E., A.F.R.Ae.S., A.M.I.Mech.E.

stored in rows. There is a wide gangway and trolley for running them out on to the launching platform.

'E.X.T.' LAUNCHING GUNS

There are sailplanes of all sorts and dates—some old wooden machines with polished wooden covering to the wings, some with fabric on metal frames, others entirely made of shining Magnesium Beryllium Alloy, costly, but very light. Almost all of them are fitted with the 'E.X.T.' launching-gun, because since the strike of glider launching teams 10 years before—when their Trade Union was smashed—hand launching has never regained its universal popularity.

One of these all-metal sailplanes, 'ELSA,' is a recent acquisition of Mr. Jones, who is proud of its

TWENTY-ONE YEARS AGO

Throughout the coming year we are publishing in each issue under the above heading items from the pages of 'Sailplane and Glider' twenty-one years ago. This month the feature is devoted entirely to one article which appeared in the issue of March 13, 1931

fine gliding angle and splendid appearance. From the parcel that he is carrying, Mr. Jones takes out six charges for his 'E.X.T.' gun, which, has a revolving breech, an exclusive feature built into the latest model of B.A. sailplanes. Another great point is that although the gun can be reached by the pilot in flight, the tube is extended to carry the gases well away from the machine. The increased power of 10 horse-power for 5 minutes in each 3 lb. charge is a most useful improvement.

The attendant brings up the trolley and lifts the 'ELSA' on board. At the same time he hands Mr. Jones the log book, showing him the engineer's signature certifying that the 'ELSA' has been found airworthy and ready for flight.

When the trolley reaches the launching platform, situated where the beautiful terraces and fountains used to be, Mr. Jones remembers, as he climbs into the pilot's seat, the lost beauty of the Crystal Palace grounds with some regrets. He adjusts the wind-screen and sets his instruments to zero.

IGNITION BUTTON PRESSED

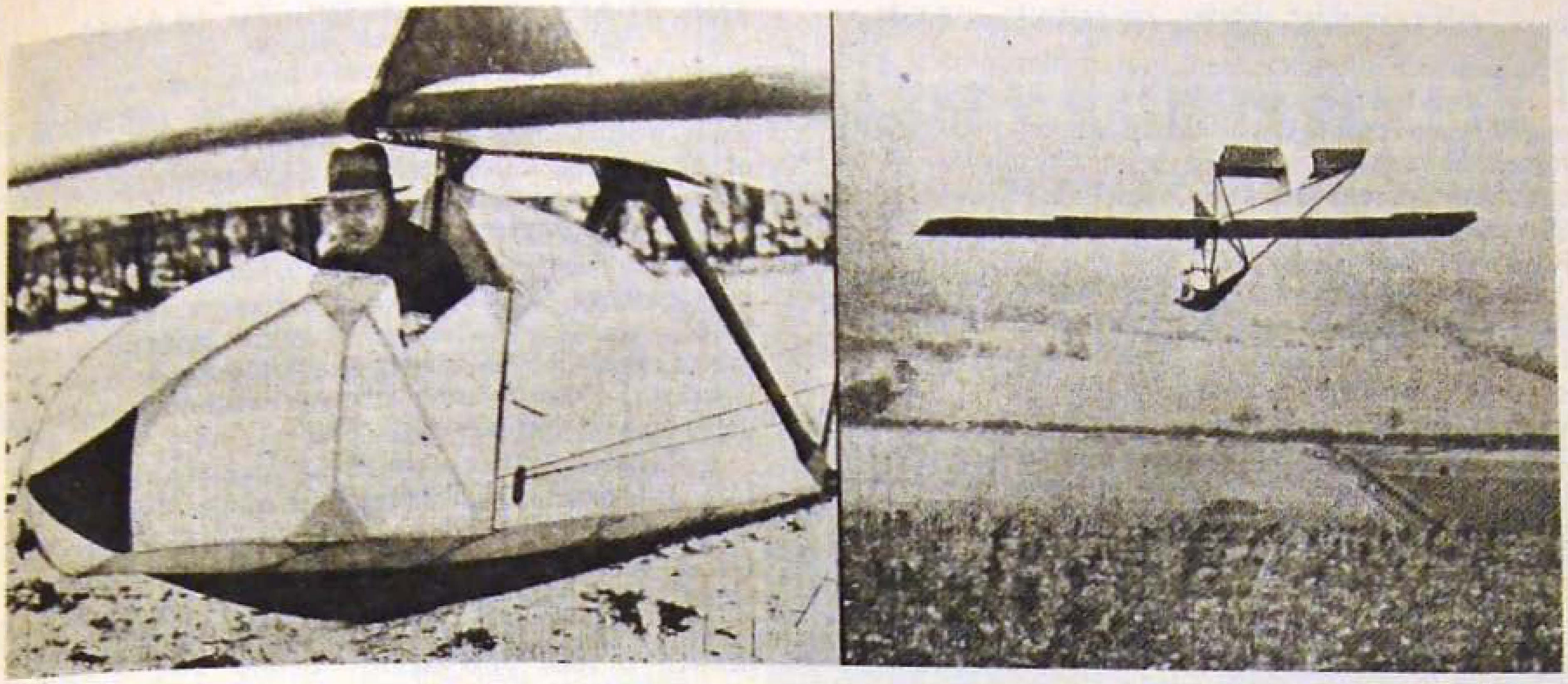
When the attendant has turned the sailplane to a suitable position, the pilot gives the signal to stand clear and presses the ignition button. There is a steady hissing noise, and the craft glides off, rapidly gaining speed, until, after a run of 100 feet, it rises into the air and starts to climb rapidly. The owner-pilot, who rather fancies that a cumulus cloud over Streathan Common looks full of lift, directs the 'ELSA' in that direction, and circling in large figures of '8' loops, reaches the cloud in 4½ minutes. As there is power left in his gun for half-a-minute, he uses that time to explore the air-currents and to find what part of the cloud gives him the best lift.

As the charge in the gun dies out with a sigh, the pilot is circling through the cloud, relying on his instruments only, until he should come out into the sunshine on the top of the cloud. The variometer shows a high rate of climb. Yes, it is a good cloud, and in 10 minutes he emerges at the top of the cloud, 6,000 feet above the start.

This is a splendid beginning to the journey; it enables him to glide at his highest speed, just over 80 miles an hour, down to Epsom Downs with enough height left to turn east and make Box Hill in one long glide. Here the pilot circles the 'ELSA' from east to west for some 10 minutes, but is only gaining height slowly—1,000 feet then 2,000 feet, and that seems to be the ceiling. He is trying to gain sufficient height to reach Chanctonbury Ring in one glide to save the slow task of contour sailing over the low hills in between, or else to take the uninteresting route by the Hog's Back and Salisbury Plain.

7,000 FEET—10 MINUTES

Mr. Jones looks around. Yes, there is a cloud forming. Can he reach it? He alters course in an



At Scarborough.—The nacelled 'Zogling' with Mr. A. E. Thompson at the controls. Right: Mr. Slingsby 'Zoggles' at Flixton. (Issue: March 13, 1931)

easterly direction and soars along the ridge over the village of Buckland. Here he finds the lift from the underside of the cloud, and in 10 minutes emerges from the top with his altimeter showing 7,000 feet. This is an excellent climb, which enables him to make a straight, high-speed glide direct to the coast at Chanctonbury Ring, which he reaches in 15 minutes. Clouds with clear-cut edges, cumulus clouds, all along the South Downs is the welcome sight that meets the pilot's eye.

Five minutes' circling between the Ring and the Dew Pond and the 'ELSA' is in the clouds, to emerge a few minutes later at 4,000 feet altitude. Mr. Jones then decides to fly at a height almost as high as the top of the clouds on the seaward side. This position gives a wonderful view of the Channel, with the sunlight reflected from the waves, and the little towns of Angmering, Littlehampton and Bognor bathed in sunshine.

Arundel Castle is in the shade of heavy cloud. The towers of the Castle and the Church at the top of the hill look dark and unfriendly. Mr. Jones now consults his charts to decide the best course to follow. Bognor, with its heavy down-currents, is to be avoided at all cost. Should he try for the Isle of Wight, circle round to gain height, then proceed to Durlston Head in one long glide across the sea? What does the chart say? The rate of descent over this section of the route is −2 feet per second; well, if he leaves the Isle flying at 4,000 feet that will carry him safely to the top of the Head. Yes, it is safe to go by the Isle of Wight in this weather.

Proceeding along the hills, making use of the clouds which were rather few and far between, after leaving the thunder clouds over Arundel, Mr. Jones finds to his joy that he has 3,000 feet altitude when he arrives at Portsdown. A straight glide takes him across the Island to the South Coast.

FRESH CHARGE IN POSITION

When he reaches Ventnor a few figures of eight bring him up to the 4,000 feet that he calculates will enable him to reach Durlston Head in one straight glide. First he sees that he has turned the barrel of the gun to bring a fresh charge into position, and then turns westward over the sea. Having left the Needles behind, he glances over to the starboard side and is struck by the beauty of the stretch of heather, trees and grass-land of the New Forest reaching to the green heights of Salisbury Plain in the far distance.

The sunlight reflected on the waves seems rather close, so the pilot glances at his variometer and finds the rate of descent faster than he had allowed for. He is now within about two miles of his objective. Mr. Jones presses the button on the instrument board, and the loud hissing sound tells him that the gun has fired. He is now climbing rapidly and passes over the headland with 500 feet to spare. As he does so, he congratulates himself that he has a new type of gun for his sailplane which can be reloaded in the air, otherwise he would have been forced to turn and land in the New Forest, have his machine carried to the nearest starting platform and make a fresh start, a delay of very possibly two hours.

TIME FOR LUNCH

By now the 'ELSA' is 4,000 feet over Corfe Castle, the Downs, almost unbroken from here to Dawlish would give perfect air currents for contour sailing. Time? He has been three hours since the start. It is now luncheon time. The gliding station at Corfe Castle is well-known for its cuisine. It is a pity to sacrifice the 4,000 feet obtained from the last charge fired in the gun, but Mr. Jones circles down and lands on the platform. An attendant comes up. 'Park for lunch, have the 'ELSA' examined and ready for start in an hour' is the instruction.

LAST LAP—TORQUAY

Having seen a party of friends off, who are gliding on their way to Dover for the start of a trip to the Continent, Mr. Jones has the 'ELSA' placed into

OXFORD'S NEW GLIDING CLUB

IN pre-war days Oxford had a flourishing gliding club which enjoyed the expert leadership of the most famous of all the early glider pilots, Robert Kronfeld, who, a refugee from his native Austria, was later to win the D.S.O. and D.F.C. and to give his life for Britain as a Squadron-Leader in the Royal Air Force.

Under his tuition gliding enthusiasts from the City and County enjoyed excellent training in a field near the 'Lambert Arms,' which gave good scope for soaring above the slopes of the Chilterns. Among his keenest pupils were the Oxford Air Defence Cadets (now 150 Squadron, A.T.C.).

The war put an end to gliding as a sport, but it has now been revived, a new club being formed to operate at the Oxford Airport, Kidlington. It owes its existence to Professor G. C. Varley and Mr. R. C. Stafford-Allen, who by sheer persistence have overcome obstacle after obstacle and, after two years of effort, have at last launched the club with a membership of twenty-five and two gliders—one a primary trainer, and the other an advanced type. The Club also has an ex-R.A.F. balloon winch for launching.

Members of the Club are enthusiastic about the thrills of gliding and are encouraging their friends of both sexes to join in the sport. The annual subscription is £5 and the charge for each flight is half-a-crown—*Oxford Times.*

LONDON CLUB COURSES

COURSES for non-members, limited to twelve pupils, £15 with accommodation. Meals extra. April 15-25; June 9-20; July 14-25; September 1-12. Write Course Secretary, L.G.C., Dunstable.

'AUSTRALIAN GLIDING'

NEW South Wales Gliding Association have published the first issue of their *Australian Gliding*, a news sheet, produced as an experiment to help weld Australian gliding people more closely together.

Club secretaries send material to: Allan Ash, 3, Bowden Street, Parramatta, N.S.W.

21 Years Ago (*continued from preceding page*)

position and starts, with the third charge hissing from the gun. Lulworth Cove, like a little blue shell in a white and green setting, appears more beautiful than usual. The coast slips under the sailplane like a carpet, silent and unreal in the brilliant sunshine. Weymouth, then Portland, its green slopes scarred by the quarries of remorse and regret. Lyme Regis, Seaton, with its narrow gap in the Downs where the River Exe runs into the sea, Beer, Sidmouth, Exmouth where a glide of two miles brings the 'ELSA' into the contour currents again at Dawlish.

Here is need for care. Teignmouth is of bad repute, for the descending currents and difficulties must be avoided with this light wind, so a course is flown inland, using the tors of Dartmoor to circumnavigate Teignmouth and make one long glide to the platform of the gliding station on the top of the hill. Torquay is reached at 3.30. Deducting the time for lunch, the journey has taken 4¼ hours—this is nearly as good as the train, a really splendid glide.

THE PLAIN MAN'S GUIDE TO GLIDING

(*Continued from page 9*)

however, a considerable amount of mid-week flying is done, either by members spending part or all of their annual holiday at Dunstable, or through one of the several Instructional Courses that are run during the summer months. These courses, lasting about a fortnight, are run primarily for non-regular members of the club, the idea being to provide the opportunity for an ordinary member of the British Public to spend a couple of weeks learning to glide. Quite a lot of them attain considerable proficiency during the course and afterwards often join the club as ordinary members.

Full catering is available at the club at week-ends, but not normally during the week, the exceptions being during the Instructional Course periods when full board and lodging are provided. Members can sleep at the club, however, at any time.

But now, I feel on the back of my neck the hot breath of the Intelligent Reader who, I know, is going to ask another really pertinent question. Here it is: 'Interesting though all these details are, the real question is, how much gliding per year can you actually *do*?'

Like many vital questions, this one cannot be answered in a simple, straight out way, since the amount of gliding done per year depends greatly on the enthusiasm of the individual in question, and, of course, on the weather, though the latter tends to average-out over the twelve months. But to make a guess, I would say that a pretty keen club member who spends about two-thirds to three-quarters of his week ends at Dunstable and who gives a week in the summer to gliding should get about 40 or 50 hours' flying in the year without any difficulty. Really extra-keen people can do a good deal better than this and can notch-up 100 hours or more.

Well, Readers, Intelligent and otherwise, there it is. I do not think any more can be done on paper. If, as I hope, you are still interested, the only thing to do now is to come out to Dunstable and TRY GLIDING FOR YOURSELF. Come on, HAVE A GO!

Soarers Do Nearly 80 Miles a Flight—

(*Continued from page 15*)

Detailed results:

Name	*Aircraft*	*National Championship Pidsley Memorial Trophy*	*Junior Championship George Ward Memorial Trophy*
Teague	S-18	346	
Beatty	Baby	305	226
Leppan	H-17	235	201
Tollis	Bowlus	229	229
Newman	S-15	227	183
Davidson	S-18	224	
Lasch	Moswey	222	
Wurth	S-15	207	162
Farquharson	Baby	181	181
Pearson	Baby	178	178
Comte	Moswey	163	
Pullen	Baby	137	137
Knott	Bowlus	85	85
Kayne	Baby	81	81
Lilienfeld	H-17	70	70
N. Arbuthnot	Schweizer 119	59	59
Jacoby	Bowlus	36	36

Southdown Club Lose £30 but no Increase in Subs.

ALTHOUGH they made a loss of £30 during 1951 the Southdown Gliding Club decided not to raise subscriptions or flying fees at their annual meeting at Eastbourne on Saturday, February 2.

Revealing the loss, the treasurer, Dr. J. E. Jameson, said that a large amount of the deficit was caused by a ' purely arbitrary ' figure of depreciation on the new ' Olympia.'

At present, full flying members of the Club pay an annual subscription of four guineas, with an entrance fee of three guineas, plus 1s. shareholding fee.

2,242 LAUNCHES

Mr. Ray Brigden, C.F.I., said in his report that there had been 2,242 launches during the year and 438 flying hours had been put in. The new ' Olympia ' had been launched 240 times and had done 90 flying hours.

Secretary, Mr. Eric Jarvis, said that thirty-eight new members had been enrolled in the year making a total membership of about eighty-five. ' We are now one of the senior clubs in the country ,' he declared.

Mr. Donald Snodgrass, chairman, described the Friston gliding site as ' one of the best in the country.'

The following officers were elected : President, Marshall of the Royal Air Force Sir John Salmond ; chairman, Mr. D. Snodgrass ; vice-chairman, Mr. K. R. Ashton ; secretary, Mr. E. R. Jarvis ; membership secretary, Mr. C. Wells ; treasurer, Dr. J. E. Jameson ; chief flying instructor, Mr. R. Brigden ; ground engineers, Messrs. K. Fripp and L. Baber ; British Gliding representative, Mr. J. Godley ; motor transport officers, Messrs. L. Banks and J. Murray ; officer-in-charge of site and buildings, Mr. W. Jordan ; Press representatives, Messrs. K. R. Ashton and A. Simmonds ; deputy C.F.I., Mr. D. Parsey ; committee member, Mr. F. Foord.

Proposing the toast of ' the Club ' the President, Marshall of the Royal Air Force Sir John Salmond, thanked Lord Gage, who was present, for allowing the Club to use his land at Firle Beacon.

Responding, Mr. D. Snodgrass, chairman, congratulated Mr. J. Hahn on gaining his Silver C.' The toast of ' the Visitors ' was proposed by Mr. S. G. Stevens, a vice-president. Lieut. Denis Hunter, R.N. Gliding Association, Gosport, replied, and also proposed the toast of ' British Gliding.'

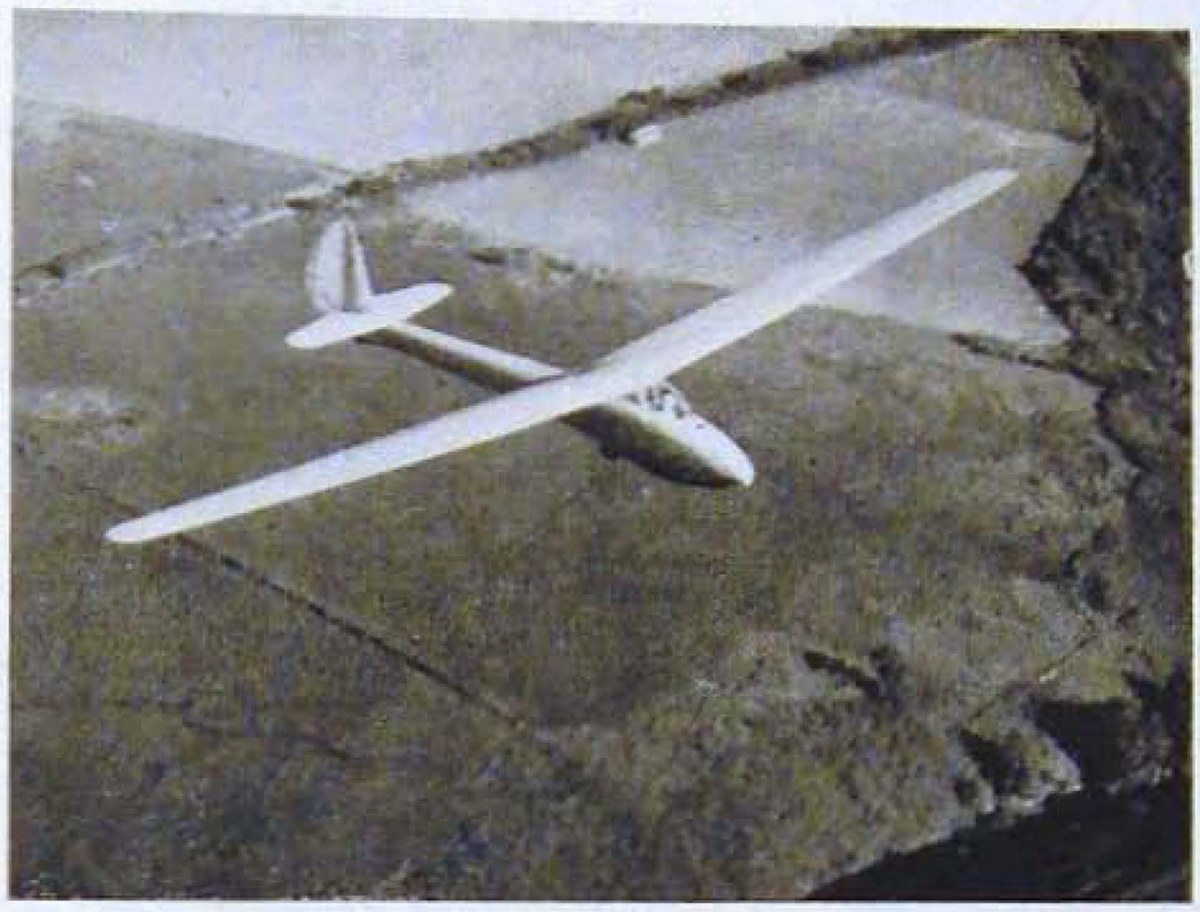
The President presented the following prizes : Leaney Cup, for a long distance flight, Mr. J. Hahn ; Yorke Cup, for an outstanding flight, Mr. D. Parsley ; Cup for the highest flight, Mr. C. Hughes.

£1,300 so far Subscribed

OVER £1,300 has so far been raised by public subscription to send the British Gliding Team to this year's International Championships in Spain from June 30 to July 15, inclusive.

SLINGSBY SAILPLANES LTD.

Here is the 'SKY'



Winner of the 1951 British National Gliding Championships.

Britain's finest High Performance Sailplane.

A SLINGSBY PRODUCTION

No finer workmanship goes into any Sailplane. British and Best.

کسی سیل پلین میں کاریگری کی یہ باریکیاں مرت نہیں ہوئیں

برطانیہ کا بنا ہوا اور بہترین بنا ہوا

DÜNYANIN EN MÜKEMMEL YAPILI PLANÖRLERI BERİTANYA MAMULU PLANÖRLERDİR -

ان صناعة هذه الطائرة الشراعية لا تعوقها أية صناعة أخرى
هي بريطانية وأحسن الطائرات الشراعية

" εἰς οὐδὲν ἔτερον ἀνεμόπλοιον οὐ συγκρίνονται κολλητέον ἐργασίαν. εἶναι βρεττανικῆς κατασκευῆς καὶ βέλτιστον "

Kirbymoorside - Yorks

TELEPHONE 312

ROYAL AERO CLUB CERTIFICATES

(Issued under delegation by the B.G.A.) JANUARY, 1952

CERTIFICATES 'A' .. 67 (14251-14317)
'B' .. 48
'C' .. 1.
Silver 'C' —
Gold 'C' —

'B' CERTIFICATES

No.	*Name.*	*A.T.C. School or Gliding Club.*	*Date taken*
6777	Peter J. Parsons	Oxford G.C.	29.12.51
11639	Michael J. Cheeseman	No. 166 G.S.	20. 1.52
11806	Gerald Dexter	No. 44 G.S.	6. 1.52
13644	Keith L. Ryder	No. 146 G.S.	5. 1.52
13664	Graham E. Leach	No 105 G.S.	2. 9.51
13743	Derek W. Southgate	No. 89 G.S.	2.12.51
13783	Colin Wilson	No. 146 G.S.	5. 1.52
13793	William A. Matthews	No. 123 G.S.	14.10.51
14038	John H. Lowe	No. 146 G.S.	13. 1.52
14046	Michael Headley	No. 23 G.S.	20. 1.52
14210	Robert G. Deans	No. 5 G.S.	16.12.51
14252	Eric R. Stow	Oxford G.C.	29.12.51
14253	Thomas J. Burns	No. 89 G.S.	1. 7.51
14254	Brian H. Dockerty	No. 42 G.S.	2.12.51
14255	Anthony W. Stafford	No. 125 G.S.	2.12.51
14257	Cedric E. Pike	H.Q. 2nd R.A.F. Scharfoldendorf	1. 7.51
14258	Peter G. La Barre	Scottish G.U.	15. 2.48
14260	Charles F. Rose	R.E. Flying Club	18.12.51
14261	Leonard G. Blaber	Southdown G.C.	2.12.51
14262	Alfred L. Clark	R.A.F. Celle G.C.	18. 8.51
14263	Sidney J. R. Herbert	Oxford G.C.	29.12.51
14264	Reginald S. Whittington	R.A.F. Bridgnorth	6. 1.52
14268	Richard A. E. Tremlett	No. 123 G.S.	6. 1.52
14269	Archibald Gall	No. 1 G.S.	29. 7.51
14271	Alexander J. Park	No. 31 G.S.	3. 9.50
14272	John R. Damas	Army G.C.	3.11.51
14273	Robert Jamieson	Oxford G.C.	13. 1.52
14274	Lionel C. Mills	No. 168 G.S.	13. 1.52
14278	George R. Whitfield	Cambridge Univ. G.C.	8. 3.51
14281	Max H. Hirst	No. 24 G.S.	28.10.51
14288	John L. Stevens	R.E. F.C.	2.12.51
14289	George H. Chesterton	H.C.G.I.S.	14. 1.52
14290	John E. Tipton	No. 123 G.S.	17.10.51
14296	Gordon B. Cummings	No. 1 G.S.	22. 7.51
14299	David B. Hales	No. 84 G.S.	29. 7.51
14300	Jane L. D. Senior	Wahnerheide G. & S.C.	3. 8.51
14302	Christopher C. Taylor	R.A.F. College G.C.	2.12.51
14303	David C. E. England	R.A.F. College G.C.	27. 1.52
14304	Lionel H. R. Pitt	R.A.F. Kabrit	29. 7.51
14307	John Emery	No. 22 G.S.	20. 1.52
14308	Michael H. Letton	No. 161 G.S.	27. 1.52
14309	Else Bartaune	1947/8 4th Arm. Bd. G.S.	14. 8.47
14312	David W. Snell	No. 146 G.S.	13. 1.52
14314	Ian L. Patterson	Perak F.C.	29. 7.51
14315	William Lowry	No. 203 G.S.	2. 9.51
14316	Patrick J. Taylor	R.A.F. Scharfoldendorf	21.12.51
14317	Michael J. Hemingway	No. 23 G.S.	20. 1.52
14313	Wilbur H. Talberg	No. 123 G.S.	4. 7.51

'C' CERTIFICATES

11876	James A. N. Merrills	R.N. Fulmar G.C.	7. 8.51
• 12491	Robert D. Borrill	No. 64 G.S.	15. 8.51
13419	Eric J. Pagram	London G.C.	2.12.51
13798	William A. S. Murray	Derby & Lancs.	5. 1.52
14139	Roger Sweatman	Southdown G.C.	23.12.51
14257	Cedric E. Pike	H.Q. 2nd T.A.F. Scharfoldendorf	6.10.51
14258	Peter G. La Barre	Scottish G.U.	11. 7.48
14278	George R. Whitfield	Cambridge Univ. G.C.	14. 3.51
14309	Else Bartaune	1947/8 4th Arm. Bd. G.S.	13. 6.48
14314	Ian L. Patterson	Perak G.C.	28.10.51

FOR SALE

'OLYMPIA' Glider and Trailer. 'Olympia' in first-class condition with C. of A. until the end of the year; complete with all instruments. Plywood trailer, also first-class condition, with new tyres. Near London. May be inspected. Price at present site £600. Parachute and Fuess barograph extra. Write Box 277.

GOOD French type Pocket Barograph in excellent condition, including 120 unused charts. £15. Box 278.

MIDLAND Gliding Club has for disposal an 'Eon Baby' sailplane in excellent condition with open or closed cockpit cover, air brakes, tail trimmer and instruments. Current C. of A. £350 or near offer. Apply: 39, Silhill Hall Road, Solihull, Birmingham.

CAMBRIDGE II Sailplane, in sound flying condition, launching rope, trailer, barograph, maintenance materials. Must be sold. Offers to Leonard E. Thatcher, 23, Buckingham Way, Wallington, Surrey (WAL. 2553 & GRO. 2692).

THE MIDLAND GLIDING CLUB LIMITED

The Long Mynd, Church Stretton, Shropshire. Telephone: Linley 206.

New members welcome. Ab-initio training by two-seaters. Slope, thermal and wave soaring. Resident engineer. Dormitory. Catering at week-ends.

Secretary: F. G. Batty, F.C.A., 2, Lombard Street West, West Bromwich, Staffs.

THE DERBYSHIRE AND LANCASHIRE GLIDING CLUB

Camphill, Great Hucklow, Derbyshire.

2 seater ab initio training a speciality.

Fully licensed Club House.

Resident Steward and Stewardess.

For further details apply to the Secretary.

THE LONDON GLIDING CLUB LTD.

Dunstable Downs, Beds.

Tel.: Dunstable 419

Flying Membership:

Entrance Fee £5. 5s. 0d.
Annual Sub. £6. 6s. 0d.
(*or* 11/6 *monthly*)

Non-Flying Membership:

Entrance Fee Nil
Annual Sub. £2. 2s. 0d.

Resident instructor, two resident engineers, dormy houses, licensed bar, full catering at week-ends. Flying instruction every day except Tuesdays.

Twelve club aircraft.

Link Trainer Instruction Available.

THE YORKSHIRE GLIDING CLUB, SUTTON BANK, YORKSHIRE.

Flying facilities are offered to all *Private Owners, Soaring and Power Pilots.*

For full particulars apply to: L. A. ALDERSON, "Lyndhurst," Sinnington, York. Hon. Secretary, Yorkshire Gliding Club.

Sailplane and Glider

8, LOWER BELGRAVE STREET
VICTORIA, S.W.1
SLO 7287

Sailplane and Glider

Suggested Gifts for Your Friends

Subscription to 'SAILPLANE'

INLAND

25/6 PER YEAR 12/9 6 MONTHS

OVERSEAS

26/6 PER YEAR 13/3 6 MONTHS

BOUND VOLUMES

Attractively bound volumes of 'SAILPLANE & GLIDER' for 1951 are now being prepared. Supplies are, we regret, limited—make sure of yours by ordering now and avoid disappointment. Price Two Guineas. A few vols. available for 1948 and 1950.

SPECIAL OFFER

A complete set of 'SAILPLANE'S' for 1951 in the EASIBINDER, leaving room to contain all next year's issues, is offered at the specially reduced price of **35/-.**

THE TERENCE HORSLEY BOOKS

'Soaring Flight' — **16/6**
(Eyre & Spottiswoode)
The classic English book on the subject.

'The Long Flight' — **18/6**
(Country Life)
'A Grand Book'—*Sailplane.*

'Gliding and Power Flying' — **6/4**
by 'Stringbag.'
(Oxford University Press)
Drawings by Stanley Sproule.
A delightful little handbook.

'Weather Forecasting' — **25/9**
(Longmans)
S.W.C. Pack.
'Invaluable'—*Royal Aero Society.*

'Gliding and Advanced Soaring' — **16/6**
by A. C. Douglas.
(John Murray)

★ *All PRICES include Postage and Packing to any part of the World.*

AND—

BACK NUMBERS

We possess a small selection of back numbers dating from 1934 onwards. If readers desirous of obtaining copies will state their precise requirements we shall endeavour to accommodate them.

Price: 2/- per copy. January, 1948 onwards; 2/6d. for all preceding issues.

To THE GLIDER PRESS, LTD.,
8, LOWER BELGRAVE STREET,
LONDON, S.W.1

Please send to the address below the following :—

.....

.....

.....

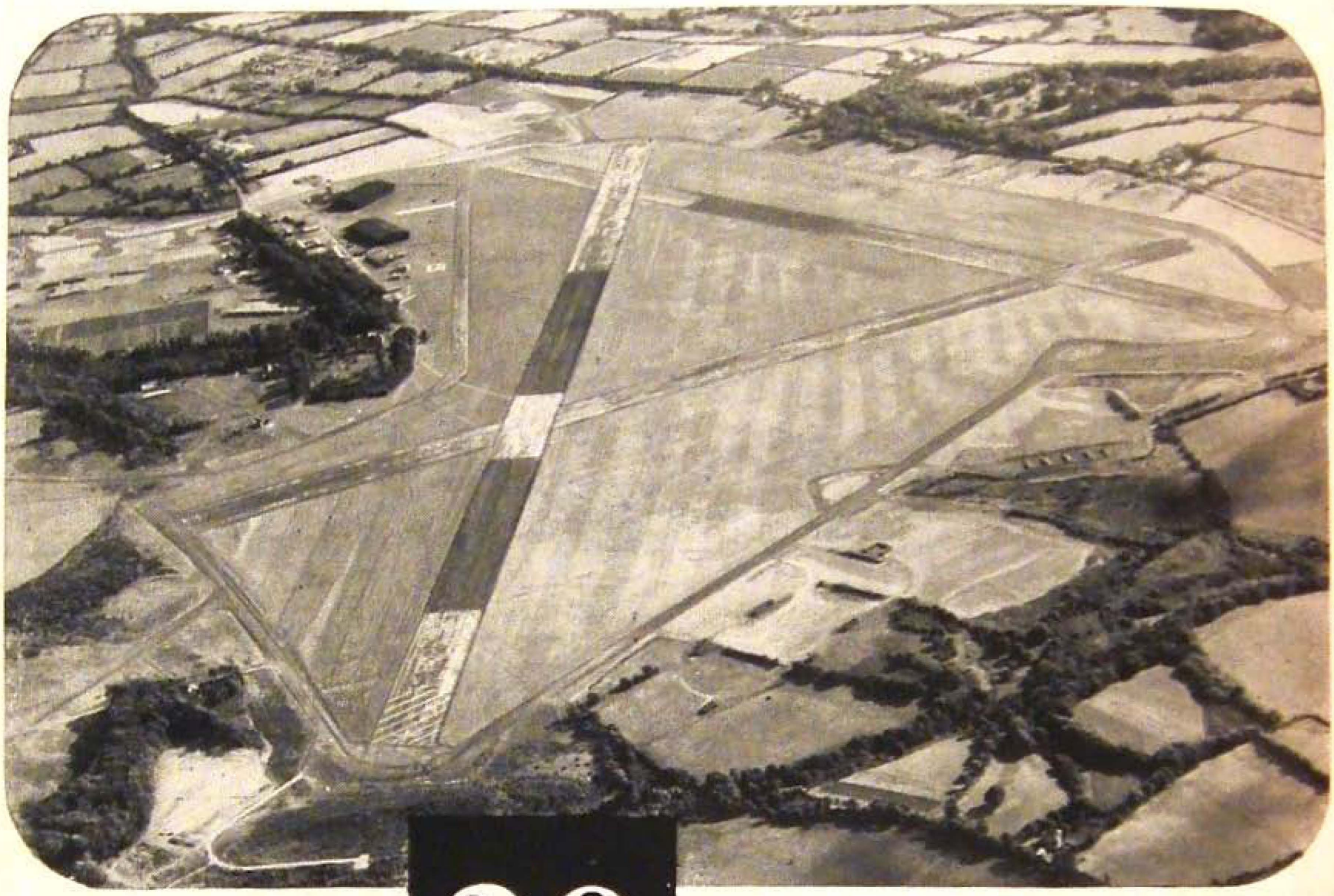
Name .....

Address .....

.....

CHEQUE/POSTAL ORDER for [ ] enclosed herewith.

Do you know your airfields?



20

Recognise this airfield? It's No. 20 in this series of puzzle photographs. You'll find the answer below on the right ★

If you are about to fly a long distance, remember Shell and BP Aviation Service will give you all the information you require to plan your fuelling in advance.

The Shell and BP Aviation Service operates at twenty-five of the larger aerodromes in Britain, and Shell and BP fuels are available at most of the other civilian airfields.

Shell and BP Aviation Service

Shell-Mex and B.P. Ltd., Shell-Mex House, Strand, London, W.C.2.
Distributors in the U.K. for the Shell
and Anglo-Iranian Oil Groups.

★ Haverfordwest (Withybush)