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1945

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AND GLIDER

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Sailplane and Glider

THE FIRST JOURNAL DEVOTED
TO SOARING AND GLIDING

FEBRUARY 1945 ★ Vol XIII No 1

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WHY NOT NOW?

HARDLY a day passes without the Editor receiving a visit or a letter from some soaring enthusiast from overseas. Americans, Canadians, Australians, New Zealanders, Swedes, Norwegians, Poles, Dutch, French, even ex-German refugees, have called to see the Editor. The sole Empire exception seems to be that so far no South African has either written or called. If this meets the eye of any Soaring enthusiast from that fair country it is hoped that they will accept this as an invitation to call.

In general the purpose of the visits is to enquire where some Soaring may be obtained in Great Britain, and the answer is always extremely disappointing, because the Air Ministry, (through the Director of Civil Aviation) in its wisdom, has banned Soaring, besides impressing for the use of the A.T.C. almost every primary, secondary and two-seater machine in the country. But even if the machines were there, the absence of petrol for winch launches aero-tows would make operations very difficult.

Yet strangely enough these restrictions do not damp the ardour of these Soaring enthusiasts. "We have one or two machines," they say, "we can scrounge the material for primaries (goodness knows where from), and we can use bunnies instead of winches, and horses instead of retrieving cars, so 'Let's get cracking.' What reason is there now for preventing us, provided we keep within reasonable limits? We can arrange with the Observer Corps that we are not to be mistaken for Typhoons, Me 163's, Flying Bombs or Rockets, and we need never trouble Fighter Command, even at Dunstable or in Kent, much less the rest of the country." And this certainly seems reasonable, if we had machines.

All sorts of activities are allowed in wartime—football, cricket, even the use of priceless paper for books and journals of no value, because they are "morale builders." Surely the same applies even more to Soaring, and most of all, it might appear, for war-tired pilots and members of air-crew, not a few of whom have talked or written to us on these lines.

The sort of objection which we could expect the Air Ministry to use is that there is neither a British Gliding Association to control the flying, nor an effective Air Registration Board to regulate design and construction of Sailplanes. But neither of these objections is insuperable. There are signs that several clubs are beginning to stir from their war-sleep and to prepare for action. Announcements in support of this statement are to be found elsewhere in this issue. And if the A.R.B. has not the Staff to carry out the inspections necessary surely they can delegate the limited powers required for Soaring purposes to a few selected amateurs who would be delighted to perform this service so that their fellow Soarers and Sailflyers could enjoy their unique sport.

A start has to be made sometime, and if we have to wait for the end of the war we might have to wait a very long time. Even if it ended to-morrow we should no doubt have to fight hard for the restitution of the freedom of the air to Sailflyers, so we might as well begin now to press for the removal of restrictions for the existence of which there does not seem any valid reason. Indeed, more than one person qualified to judge has said that they were founded either on ignorance or prejudice, and certainly it seems that this might regrettably be true. What is certain is that no move will be made unless it is inspired by the Clubs themselves.

It is worthy of consideration, too, that the stronger the Movement the sooner it will be able to do without a Subsidy; but a Subsidy anyway would only be granted to active Clubs.

Whilst on the subject of visitors and letters from abroad, it is worthy of note, first, what a high regard is felt in the Empire for British Sailflying, and how much interest and respect is shown even by such experts as the Poles and Americans. And secondly, how often the sentiment is expressed that after the war there will be a never-ending round of international visits for the mutual enjoyment of the finest sport in the world—a sentiment which is sincerely echoed by all its devotees.

Elsewhere in this issue is an account of some sterling pioneering and propaganda work by Norman Hyde and R. Duckworth, who gave up their holiday to doing this job in Australia. On behalf of Empire Soaring we both thank and congratulate them on an excellent effort.

Pioneers of British Gliding—10.

CHRISTOPHER NICHOLSON

IN the early summer of 1933 "Kit" Nicholson discovered that the London Gliding Club offered certain facilities which the Savile hadn't got. So he took a share in the newly-built "Willow Wren" and, being already an aeroplane pilot, started soaring it on July 1st before he had time to obtain even the "B" certificate. In those days, before the "Wren" had its wings twisted, it needed little provocation to spin, and on August 6th it precipitated Nicholson into a bush on the top of Dunstable Downs. But he got himself repaired before the "Wren," and on October 8th was flying Slingsby's "British Falcon" at the Sutton Bank Competitions.

SPINNING WREN

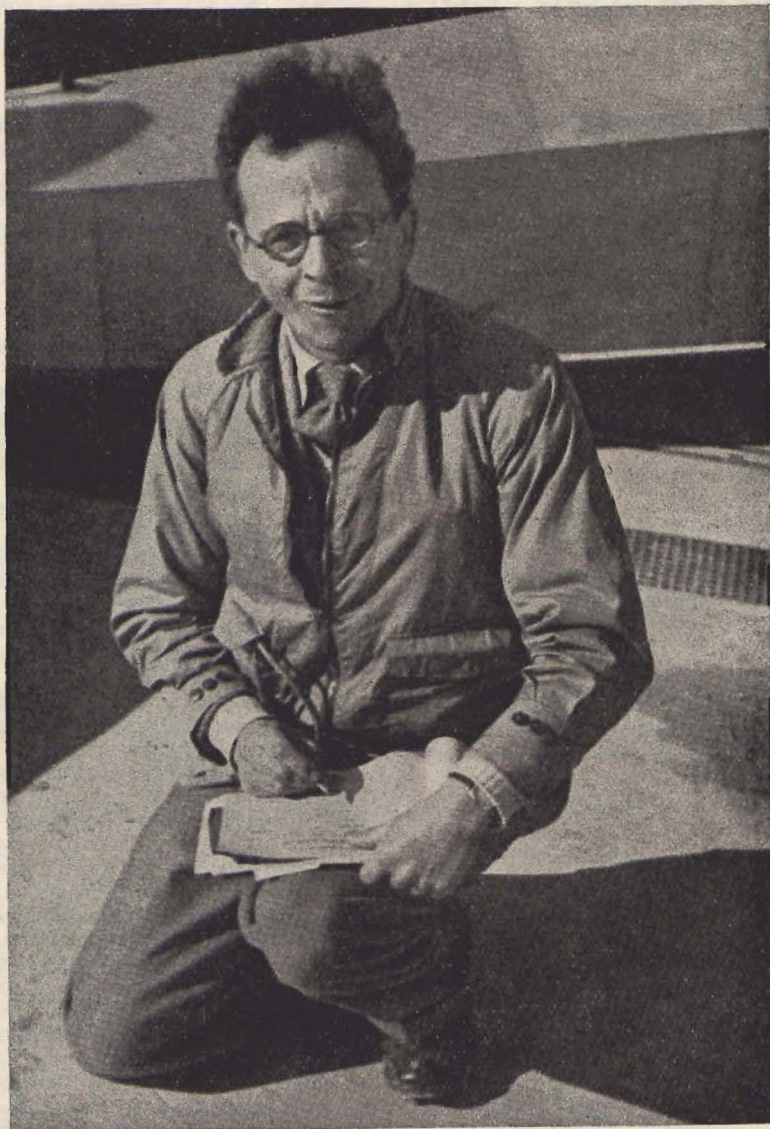
By the following year's Contests he had learned to climb in thermals, and took the "Wren" to 1,700 feet; but next day one of its other owners spun in it, so Nicholson secured a half-share in a "Scud II" which its manufacturers had brought to the site in confident expectation that just such an opportunity would occur for effecting a sale. Then, of course, the "Scud" got damaged too.

RHONBUSSARD

For two years Nicholson had quietly gathered in the knowledge needed to make a high-performance sailplane pilot, and then, at the National Contest of 1935, suddenly jumped into the first rank by doing all the "Silver C" tests and carrying off a prize. In March that year he had, with R. P. Cooper and J. P. Dewsbery, acquired the "Rhönbusard" formerly used in Cobham's Display, and on August 27th he flew this machine 48 miles from Sutton Bank to Catfoss aerodrome. It was a partly cross-wind flight, as he glided southwards between thermals and drifted eastwards when in them. Cloud base was at 3,300 feet, so he ascended inside a cloud to 4,800 feet to make sure of "Silver C" height. Two days later he put in the five-hour flight and thus became the sixth British "Silver C" pilot, his number being 177 in the international list.

THE LONDON CLUBHOUSE

But Nicholson had other talents to place at the service of sailflying



CHRISTOPHER NICHOLSON

A. E. Slater

progress. In 1935 the London Club decided that their odd assortment of huts and hangars of wood and tin should be replaced by a single permanent building, so who should be called on to design it but that well-known architect, Christopher Nicholson. The style, being up-to-date, was rather too "functional" to please the local Authority, who, however, passed the plans with a recommendation the the frontage should be made

more "attractive." On January 11th, 1936, the first meal was eaten in the dining room; the date of the first drink served in the bar is unrecorded. The hangar space, at double the estimated requirements on completion, filled up in no time and soon had to be extended by 50 per cent.; even then the privately-owned machines were eventually crowded out and had to be kept in trailers.

There is no doubt that this

hangar and clubhouse, with its air of permanence and prosperity, justified its expense by bringing in new recruits, and also helped to convince the administrators of the Subsidy that gliding clubs were in a position to make good use of it.

RHONSPERBER INTO STONE WALL

To return to the flying:—at the beginning of 1936 Nicholson took a share in a newly-arrived machine, the "Rhönsperber," which probably had the best performance of any sailplane at that time in the country. He gave it its aerial baptism on January 4th, and at Easter took it to the inaugural meeting of the Derbyshire and Lancashire Club. Here, after a short cross-country flight, he had to land in a valley full of eddies and hit a stone wall, but little damage was done.

At the National Contests that year conditions were poor for any but duration soaring, and on the only cross-country day the "Sperber" reached cloud base but did not leave the site.

At Easter, 1937, returning from a meeting at Sutton Bank, Nicholson called in at the Derbyshire site on the way home, found a spot-landing competition in progress, paid a shilling entrance fee, and won the first prize, a silver tankard, with a landing 8 yards from the mark.

NATIONAL CONTEST

At the 1937 National Contests, held in Derbyshire, the "Rhönsperber," flown by Nicholson, Dewsbery and Cooper, won the Club Team Prize. Nicholson's chief contributions to the machine's maximum score were a flight of 67 miles to Leconfield, including an encounter with a "cold front," and 48 miles to Scanton; he also flew F. S. Coleman's home-made "Grunau" to Doncaster with the help of the owner's original and ingenious soap-bubble variometer.

On April 17th, 1938, while at the Cambridge Club's camp in Wiltshire, he set up a new British distance record by flying 120 miles to Bigbury-on-Sea, landing on the strip of sand which connects Brough Island with Bigbury at low tide. But he only held this record for 24 hours, for next day J. S. Fox, who was attending the same meeting, went 144 miles in the "Rhönadler."

PRIZES TUMBLED IN

The National Contests of 1938 were held at Dunstable. Nicholson was in excellent form, and this time the prizes just came tumbling in. There were the Manio Cup for the best goal flight, 87 miles to Lympne, which also won the Daily Prize; the Carpmal Prize for best all-round performance; the prize for the longest distance (106 miles to Lowestoft); the first prize in the Open Contest, awarded on points, which the "Rhönsperber" won against 27 competitors; and the last of six prizes for greatest aggregate distance. The Lympne flight was made across the wind, which on that day was blowing towards Norwich; Nicholson was in the air for 5½ hours. The most difficult part was in the murky haze over the Thames district east of London, and only some bonfire smoke saved him. The Lowestoft flight began with over three hours' slope-soaring at Dunstable, waiting for "polar air" to come along; when it did so, the 106 miles took only 2 hours and 20 minutes to cover, including a detour from Lowestoft to Yarmouth and back in search of landing grounds.

WINCH LAUNCH THERMAL

Nicholson's next outstanding flight was from the Oxford Club's site to Weston-super-Mare, 88 miles, on June 4th, 1939. It started by the catching of a thermal off a winch launch for the first time in his life. The sky was practically cloudless, and only a careful inspection of the ground below showed where thermals were likely to arise.

We now come to the National Contests of 1939, held in Derbyshire, and (of course) more prizes. The "Rhönsperber," whose flying he shared with F. T. Gardiner, again came first in the Open Contest. And the Wakefield Trophy was awarded to Nicholson for the finest flight (so far) of his career—162 miles from Bradwell Edge to Southend.

This flight started with a difficult and anxious four hours, in a sky nine-tenths overcast, but after that the cumulus clouds were just perfect. From Cambridge, which he reached at 4 p.m., he continued at first down-wind towards the coast in Ipswich direction, but it soon became obvious that all the best clouds were well east of this line. So he reached Southend,

with plenty of height to spare but not enough to cross the Thames estuary, at the unusually late thermal-soaring hour of 7 p.m., or 18 hours G.M.T.

FORMATION FLIGHT

Another flight during the Contest was one of 83 miles to Holbeach in Lincolnshire. And before the war finally clamped down on cross-countries, Nicholson was one of three pilots who flew in company (more or less) from Huish in Wiltshire to Dunstable—a distance of 65 miles if any of the three had travelled in a straight line.

Soon after the war began he secured the job of meteorologist, solely on his soaring experience, and went off to control the weather for the Navy in the north of Scotland. But not before attending a course at which the instructor presumed to give Nicholson some most inaccurate information about diurnal changes in the height of cloud base. The fellow had never done any soaring!

The latest news is that Kit Nicholson has been flying again, somewhere in Hampshire—but alas!—not in sailplanes. A. E. S.

THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS

THE Society of Model Aeronautical Engineers (who are the governing body for model aeronautics in Great Britain by agreement with the Royal Aero Club) take pleasure in announcing that the first International Competition for petrol engine driven model aircraft to be held since the outbreak of war will take place in the Spring of 1945.

This will be for the Bowden International Trophy, which needs no introduction to our American Allies, many of whom competed for it in pre-war years.

It is known that there are a large number of American, Canadian, Polish, New Zealand, Australian, etc., model aircraft enthusiasts at present in this country, and the S.M.A.E. invite them all to contact the Honorary Secretary, A. G. Bell, 70, Nelson Road, Hornsey, N.8 (Tel.: MOUNTVIEW 7322) as soon as possible, so that the most suitable arrangements can be made.

British Soaring Contests—7

THE B.G.A. NATIONAL CONTESTS



"Condor" Sailplane over Egham Edge.
National Contests 1937.

THE National Soaring Competition, Aug. 29th—Sept. 5 at Bradwell Edge, the site of Derbyshire and Lancashire Club, were the most successful of any of the contests so far held in this country. Some 23 machines were entered, and flown by 50 pilots, 12 of whom obtained their Silver C Certificates during the meeting.

The high standard of flying was especially encouraged by the allotment of points for all performances above a certain minimum, which was a new innovation; and also by the keen rivalry of the several club teams. Weather was good, and although stable on four of the eight days, hill soaring was possible almost continuously. On the remaining days, however, soaring conditions improved tremendously, and were used with great skill by the competitors.

POOR CROSS COUNTRY CONDITIONS

Sunday, August 29th, the first day of the contests, brought a light wind between S.W. and W., and

although thermals were not infrequent, conditions for cross-country flying were poor away from the site. This was discovered by both Lingford and Rushton, who made attempts on the "Daily Dispatch" £100 prize for the flight to Blackpool.

The ordinary Daily Prize was given for the greatest height of the day and was won by Capt. R. S. Rattray in the Cambridge II, who climbed to 3,600 feet in the thermal current caught directly off the winch launch; his flight lasting 1½ hours. Philip Brown, a newcomer to the competitions, who was only flying a Falcon secondary sailplane, came a very close second, when he gained over 3,000 feet on a flight of 2½ hours, wandering round the district.

INDOOR GLIDING

Monday was useless for both competition and practice flying, as it was raining, with cloud resting on the ground, but a programme of excellent gliding films was put on at the local cinema at Tideswell, which passed the time most pleasantly.

On the 31st August, Tuesday, Little arrived with his Tern, having driven overnight from Brighton. His arrival made the 1937 contests unique in being the only ones in which every entrant had turned up. The weather cleared during

the afternoon, and the Daily Prize, given for Duration, was won by Smart of the Newcastle Club with a flight of 4 hours. He was closely chased by the Cambridge Club with only one point less, and by the Derby and Lancs., and Midland Clubs, lacking only 2 points. On the Wednesday morning, however, Cooper of the London Club was launched in the Rhonsperber at 7 a.m., and proceeded to collect 32 points straight off by a flight of over 5 hours in very turbulent conditions. In the afternoon, enthusiasm was worked up to fever heat, when L. R. Robertson, flying the Home Club's Rhonbussard, flew for 7½ hours, and brought the Derby and Lancs. total up to 89½ points, and into leading place. 62 hours 8½ minutes flying were put in on this day, constituting a record for any single day for any British club site.

GREATEST DAY

So far, as it was now to turn out, everyone had really been merely messing about, for Thursday, September 2nd, became the greatest day of cross-country flying that this country had yet seen; a total distance of 670 miles was flown, and this with a field of sailplanes of which only 4 could possibly be put in the high performance class, while a further 4 were merely training machines.



Egham Edge the South Slope of Derbyshire and Lancashire Club site.

DEWSBERY 86 MILES

The wind was westerly and strong, and well marked cloud sheets formed before 10 in the morning, and continued nearly all day. Practically every machine went away, so it will be difficult to describe even the most important flights in other than brief and tabulated form. The longest flight, which won the Daily Prize, was won by Dewsbury in the Rhonsperber. He realised that he would have to work across wind early in the flight so as not to arrive at the coast while good soaring conditions were still prevailing: he set off, therefore, in a northerly direction, passing upwind of Sheffield, and finally reached the sea at Flamborough Head, 86 miles away, having attained a height of 3,600 feet. This may not seem a great altitude, but is typical of cross-country flying in conditions of high ground speed.

WILLS 75 MILES

Wills in Hjordis also realised the necessity of working across wind early in the flight, but where Dewsbury went North, he went South, landing at North Coates Aerodrome 75 miles away. He was carried there so fast, that he had reached the coast before being able to do much traversing.

Other notable flights were those of J. E. Simpson in a Kirby Kite, 78 miles to Withernsea, Rushton, in G.B. II, 76 miles to Roos, with a maximum height of only 1,700 feet and a ground speed of 46 miles an hour, and especially Philip Brown in the Falcon Secondary, who flew 56 miles to Horkstow, reaching a height of 4,000 feet and obtaining his Silver C Certificate by so doing. The total flying hours put in exceeded the previous day's record by 4 hours 18 minutes.

On Friday, 3rd September, conditions were again excellent, but, although not so perfect for distance flying, allowed of a slightly greater average height to be reached.

The longest flight, which was also a goal flight and which won the Daily Prize, was that of Wills, who took Hjordis 72 miles to East Driffild. He spent a great deal of time flying in and out of cumulonimbus storm clouds up to 6,000 feet above sea level. He discovered later that the tops of the same clouds had reached 11,000 feet. Nicholson, trying for the



A. E. Slater.

National Contests 1937. Several Sailplanes over Egham Edge.

same goal, was however not so fortunate, being 20 minutes behind Wills, and he got tangled up in a broken patch of frontal air and was forced to land at Leconfield aerodrome 67 miles away.

FIVE GOT ONE "LEG"

This day was an excellent one for those pilots struggling to obtain their Silver C's, as it enabled 5 of them to take one step forward with the completion of one or other of the necessary flights. Smart achieved the required distance (32½ miles). The veterans (in age) Eustace Thomas, and (in hours) Joan Price, both obtained the height (3,300 feet). And Thomson and L. R. Robertson (who made the third best flight of the day) gained both.

Saturday, 4th September, again produced soaring conditions, but of poorer quality than that previously. The day was, however, started off in a manner which had now become quite commonplace—the dawn launch of Cooper in the Rhonsperber on his morning round for the collection of Duration points.

Wills and Nicholson again got away together, and once again Nicholson was the less fortunate, finding conditions so poor near the Trent that he landed at Scampton 48 miles away. Wills repeated his

goal flight of the 2nd to North Coates Aerodrome, by flying a slightly more northerly course.

NEWCOMER'S PERFORMANCE

The best flight of the day, however, was that of Lingford, of relatively little soaring experience, in a medium performance Kite, who flew 80 miles to Easington on the coast, taking 4 hours on the way. His course lay even further to the North than Wills's, as he had declared for Doncaster, and had several difficult moments before reaching it. After his arrival at 1,500 feet, conditions improved to such an extent, that he was tempted onwards to good effect.

ANTI-CLIMAX

On the final day, Sunday, conditions quietened down very considerably, which was perhaps as well, as the previous three days had repeatedly encouraged pilots to rush off to the seaside on the least provocation. Several declared goals from force of habit, but no one got away, or even scored any points! The traditional final evening's entertainment and supper had been held the night before, and the (also traditional) excellence of this had doubtless introduced a feeling of comfortable well-being and lethargy into the hitherto dashing spirits of the competitors.

(Continued on page 11)

SOARING METEOROLOGY: II CIRCULATION

By J. A. SIMPSON

President, Soaring Association of Canada

II—CIRCULATION

OF greatest importance in the selection of gliding sites and flying fields is a study of the prevailing direction of the surface winds.

Reference to a map of air circulation over the earth will show that in Western Canada the winds are predominantly from the north-west, winter and summer. East of the Great Lakes, however, the prevailing winds are north-west in winter but south-west to south in summer.

The above rules hold true for the upper air; surface winds (*i.e.* below 1,500 feet) may be affected by ground contours, as explained

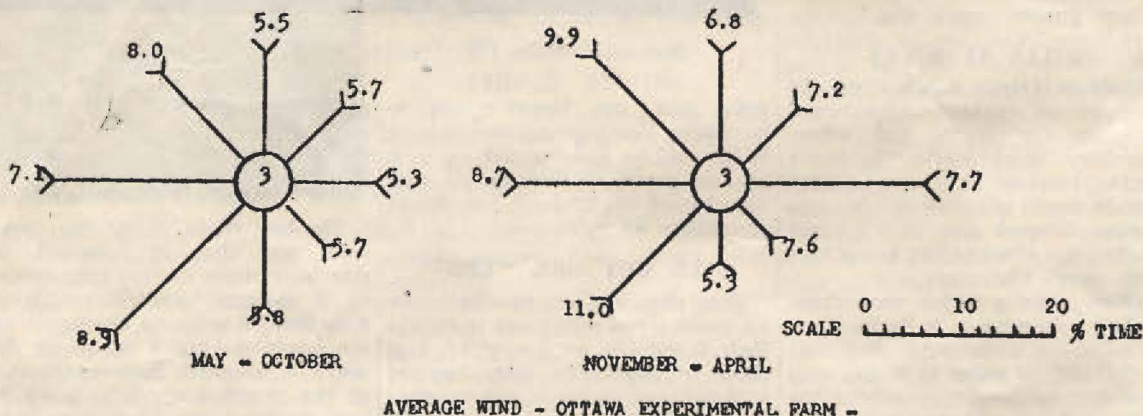
in Part I. This means that in choosing a gliding site, too much reliance should not be placed on the above generalities, but reference made to local records of surface winds. It also means that it is not always possible to forecast accurately local surface wind direction.

A record of the average wind directions and velocities over a period of time is usually shown by means of a wind rose. These may be drawn in several different ways, but the most common type is shown below. They have been drawn from the records of the Central Experimental Farm, Ottawa, and are averaged over a period of twelve

years. The monthly averages have been here averaged into two groups, for summer and winter months. May to October and November to April respectively. The number of days in each hundred during which the wind blows from each direction is indicated by the length of the lines; the average strength by the figures at the end of the lines; the per cent. calm by the figure in the centre.

These wind roses show that a hill facing south-west should be soarable 52 per cent. of the time in the summer, and 49 per cent. of the time in the winter.

Reference: Any modern meteorology text; chapter on circulation.



DEEP WATER BIRDS AND GUST SOARING

By Captain L. C. DUGDALE

DURING my voyage overseas in 1942 I had ample opportunity for studying and watching the flight of deep water birds, although I was ignorant of their type names. I don't think I ever saw an albatross, but as the birds I did see seemed to have remarkable soaring flight endurance, their flight was no less interesting.

Generally speaking, these birds have a high efficiency wing of high aspect ratio and presumably a fairly high wing loading, because their speed in soaring flight is fast.

A typical bird will, having gained a height of about 15 feet above the water, dive down to a foot or so of

the water, flatten out and glide low and fast very close indeed to the water, following the wave contours up and down, often making quite a long climb up the lee of a wave. While doing this it sometimes appears to use the slope lift of the wave by turning along a crest, but no great increase in height is apparent. What probably happens is that it is able to increase speed without loss of height.

VELOCITY GRADIENT

When the excess speed is running out it becomes necessary to increase the speed again, and this can be done in two ways. Either by

flapping, which is rare if there are any waves about, or by using the remaining excess speed to climb steeply and suddenly from the slow moving air near the surface into the high speed wind belt flowing above and well clear of the waves. This quick change of air speed will, of course, give it a greater lift and on this the bird can continue to climb until it has reached sufficient height to dive down again to the water and repeat the process. With a wind velocity of approximately 15 m.p.h., these birds appeared to be able to maintain soaring flight for hours. At speeds of 25 m.p.h. or over the available lift appeared

too great and when climbing wing spread seemed to be reduced.

In the flight of flying fish there is evidence which throws further light on gust soaring. These fish take off in any direction irrespective of wind direction. This seems to indicate that air speed close to the surface of the water is practically nil.

If that is so then a bird flying low over the water against, say, a 20 m.p.h. breeze, might in fact be flying against a wind of only 5 m.p.h. or less. If the speed of the bird in still air is 20 m.p.h. then by rising very quickly from the 5 m.p.h. wind zone to the 20 m.p.h. wind zone it may increase its air speed by over 30 m.p.h., even allowing for a slight loss of speed during the start of the climb.

The amount of climb the bird makes before gaining its greater lift appears to be very little indeed.

THERMALS OVER THE OCEAN

Once when well out in deep water I saw a group of birds soaring in a thermal. Whether it was a bubble, left by one of the convoy, which presently broke or whether it was caused by a local patch of warm water, there was no evidence to show. But the fact that a number of gust soaring birds were using it would seem to indicate that they were not strangers to that form of lift.

Flying Fish

My observations of flying fish were mostly carried out from the deck of a troopship and sometimes from a porthole halfway to the water line. As a result I came to the conclusion, rightly or wrongly, that these creatures have a greater flying ability than is generally realised.

Such articles on this subject that I have read describe the take off as resulting from powerful sculling of the water with the tail while the rest of the body is out of the water with the wings extended. With this I agree. The speed so gained seems to be well in excess of flying speed. As a result of this a climb to 2 or 3 feet can be made followed by a fast glide over quite a long distance. The distance given by the latest and best article I have read gives a flight of 25 yards as maximum, but to me it sometimes seemed much longer, approaching 100 yards but this may be an over-estimate.

Now the description I have read also say that if a fish wishes to prolong its flight the tail is dropped into the water and speed is motored up again. I have only seen this done occasionally, usually the fish drops back into the water.

FORE AND AFT CONTROL

While gliding, which is carried out at quite high speed, the fish can fly up and down over the lee and crest of the waves, thus indicating fore and aft control. Also by use of the wings quite sharp turns can be made. This appears to coincide with the lifting of the outer wing rather than a normal bank. This indicates lateral control.

I was not able to discern any indication of soaring ability.

Take off was made in any direction irrespective of wind or wave direction, and turns, if made after becoming airborne, did not appear to be influenced by desire to head into wind or down a trough or along a slope or for any other reason than a desire to go somewhere.

FLAPPING FLIGHT?

As mentioned above, all authorities that I have read state that after the take off these fish can glide only. On the other hand it appeared to me that one or two of the larger species flap their wings while in the air to increase their speed for prolongation of flight. A fish will get up and glide gradually losing speed, then there occurs a quick flutter while still well above the water, and the glide will be continued again. This does not happen, usually, more than once in a flight. I have, however, seen it happen twice before the creature dropped back into the water.

HIGH ASPECT RATIO

The flying fish vary in size a great deal from about a couple of inches to perhaps a foot. Colours vary considerably. Wings are of high aspect ratio, tapered to rounded tips, apparently of thin section and probably highly loaded. The wing is a single stiff structure when extended.

Flapping flight, if indulged, must be on bat principles. All movements are, however, so very quick that at times it is quite impossible to analyse them even with binoculars.

Rotation of Thermals

Before the war there was once considerable argument as to whether or not thermals rotate. It was eventually decided, I believe, that they do.

Thereupon, someone suggested the theory that owing to the rotation of the earth, thermals would rotate one way in the northern hemisphere and the opposite way in the southern hemisphere. This led to the suggestion that bath-water running out of the plug hole might be similarly affected and that observation of plug holes might solve the problem of thermal rotation. I believe the bath-water theorists were let down by the bath-water and no-one was any the wiser about thermal rotation.

VISIBLE THERMALS

Major C. A. Kaye recently wrote an article on visible thermals in Iraq, but he did not discuss rotation. I have since met Major Kaye and discussed this point with him, and we agree regarding our observations of rotation of thermals. Out here in southern Iraq this is easy to watch in the late summer and early autumn, because there is very strong thermal activity which lifts dust and sand in whirling funnels up to 1,500 to 2,000 feet. As a result of watching these closely I am definitely of the opinion that they rotate in one direction only, namely, the nearer face of the thermal as you look at it moves from left to right. Diagrammatically, looked at from above, anticlockwise. Only once can I positively state that I have seen one revolving clockwise, and that was near the Palestine border. I am not prepared to state categorically that all the others were rotating anticlockwise because at a distance it is often difficult to tell, but their appearance always seemed more in sympathy with anticlockwise rotation than with clockwise.

These visible thermals occur in many parts of the world, and it would be interesting if the observations of others could be brought to light.

BIRDS NO GUIDE

It was noticeable that birds soaring in thermals circled in either direction and therefore no indication of the rotation could be gained from them.

I Learned to Fly a Glider

By FREDERICK W. RUBLINE, Jr.

ONE cool April evening in 1943 my father told me of a glider flight and construction course the University of Denver was offering. He had heard about it through a luncheon-club discussion.

I was interested at once, for I have been very air-minded for at least thirteen of my seventeen years.

I knew nothing of gliding and soaring. I had always thought of flying in terms of fighter planes doing all sorts of manoeuvres—not motorless, man made birds, doing slow, silent, spiralling movements through the air!

My father, also being an aviation enthusiast, said that this glider school might lead to the aviation career I desired, and that I might be wise to look into it. The very next day after school I went down to the Glider School shop and talked with Mr. Ardelt, the director. Mr. Ardelt advised me to take a construction course first, as it would familiarize me with the equipment I would fly, and would help me later on if I were to purchase or construct a glider of my own. I enrolled in one of the construction classes soon to start, and began anticipating just what sort of a pilot I would make.

CONSTRUCTION CLASSES FIRST

My construction class met every Friday evening and Saturday morning. On Friday nights there were three or four men besides our instructor, who helped. They got us started on projects so that we could finish them by ourselves on Saturday morning. At first I did very little work, but just wandered about the shop examining the ships that were under construction.

There were about fifteen in my class. Like myself, they were mostly high school students, a few being slightly younger. First we studied the plans. Next we were all assigned two or three ribs to make. After this we all worked together on the assembly of the wings. Then we worked on the fuselage, nacelle, etc.

Before long I began to understand the internal structure of gliders, as well as power planes, as there is little difference except in materials used. I next began to

wonder just how I would feel to fly. I got in the ships and operated the controls, and imagined that I was flying. I began figuring that it would take a lot of nerve to fly, but I thought maybe I could master it.

ABOUT RIGHT

We were given one flight for every ten hours we put in on construction. It was after I had earned my sixth flight that Mr. Ardelt told me I could soon begin my long anticipated flying.

In late August Mr. Ardelt made arrangements for me to begin my flying under Mr. Kunz, the flight instructor. There were four of us from my class that met at the glider shop on a particular August morning. We were all enthusiastic and anxious to get started toward the field, which is a two square-mile pasture. We were soon under way, and before long arrived at the field where we were to see glider flying for the first time in our lives. All of the ships were single place, which necessitated all solo instruction with ground tows.

AILERON CONTROL FIRST

Mr. Kunz made one flight to test the ship and to show us what we were hoping to accomplish eventually. Next we "flipped" to see who would take the first ground tow, and so on down the line. I came out next to last, which suited me fine, as it would give me a chance to watch the procedure of the tows. First, we were told to keep firm pressure on both rudder pedals, and not to use them, but only use the stick to keep our wings level. Our instructor showed us how to manoeuvre the stick in order to obtain the necessary aileron movement in keeping the wings level. He then told us to "keep the stick forward" so as not to take off. He hooked on the tow rope and hopped into the tow car, his seat facing rearward toward the glider.

THE WADDLING DUCK

The car started out, and the dust began to fly. First one wing would flop over with a thump, and as I gave opposite aileron, it would come up, and the other wing would go down. This kept up steadily for the first tow, and I doubt if I was

doing any better at the end of the tow than at the start. I just waddled behind the tow car like a duck. After the first tow my instructor walked back from the tow car with a smile on his face and said, "You can't fly this machine on its wing tips." He explained how I should stop giving opposite aileron as soon as the wing started to come up, and that I should even use reverse aileron to keep it from going on over to the other wing tip.

GOT IT

We started on the next ground tow. I tried doing some of the things my instructor told me, and found that his way was much better than mine. Before long my wing tips stopped banging into the ground. After two more tows, making four all told, my instructor explained the rudder pedals. He said, "If you want your nose to point to the right, push your right rudder pedal. If you want to go to the left, push the left rudder pedal." I then proceeded to "keep my wings level, and if I had time, to use rudder." On my fifth tow I used my rudder pedals correctly, and went along behind the tow car in fine style, but forgot all about my wings, which would flop to one side or the other. Then when I corrected my wings, my rudder action was lacking, and so it went. But on my sixth tow I just seemed to get the "knack" of it, and on the first half of the tow kept concentrating on my controls. Then I began to sense a great desire to pull back on the stick. While I was thinking about pulling back, I did just that! All of a sudden there was a sudden lurch as I hit a bump; BINGO! I was in the air. I wasn't up over a foot, but the feeling was the same as if it had been 100 feet. This was enough for me, so I pushed forward on the stick, while at the same time the tow car slowed down upon seeing me rise. I dropped with a thump, and continued the rest of the tow with the stick well forward.

AIRBORNE BUT—

My instructor came back and asked me if I would like to go up high enough and do real flying. I said, "Sure, I would like to very

much." So he towed me into position for a take off into the wind. He next changed my tow rope for a stronger, and longer one, and began giving me instructions. I was to pull back on the stick until I rose high enough to be sure of staying in the air, and to level off *very slowly*, and to establish a gentle glide and slowly pull back on the stick just as I touched the ground. This seemed all very simple, and I went through the motions of the stick four or five times to make sure. As soon as the instructor was in the tow car I motioned that I was ready, and we began to move. I held the stick back just about half way and let the speed of the tow car take me off. First we were bumping along and then swish! Everything was just as smooth and calm, but I was never so scared in all my life! I went up to approximately ten feet and levelled off very nicely, but as soon as I started to come down, I could see the ground coming up to meet me, so without thinking on my part, I pulled the stick all the way back to my stomach. The ship lurched with a terrific "swoosh." I then shoved the stick all the way forward and then all the way back again when WHAM! I hit!

YOU MUST THINK

I was sure that the ship must be in its original state—a pile of lumber. This was not the case, however, as I learned in my construction course that gliders are very rugged, and are able to stand tremendous stresses. I was so nervous that I just got out of the ship and stood watching the tow car approach me, expecting a good "dress-down." Instead, my instructor just smiled, and told me, "To fly, you **MUST** think at all times—even when you are scared speechless." This I took to heart, and have found my way out of many difficult situations by this method alone.

My instructor gave me another try at it, and I did better. At least, I landed softer!

PONDER MISTAKES

I kept thinking about my mistakes during the following three days until my next flying appointment. By the time I again entered our training glider I had mentally solved many of my previous problems, and was determined to correct them in practice. I did



J. RUBLINE IN THE DENVER PRIMARY.

correct a number of them, but still I ran into new ones that were much more difficult.

TURNS

After I had twenty flights, and had released by myself, which is done by lowering the nose of the ship to maintain flying speed, and pulling the release lever, I was told that I might start turns. Turning correctly in an aircraft is a manoeuvre that takes much practice and a good deal of skill. Turning may be compared to straight flying as driving an automobile is to learning all the traffic rules. My instructor told me just three things about turns, stating that the rest was up to me to pioneer for myself through feel and actual experience. The three things he told me were: To turn right I must use right rudder and right stick—reverse for a left turn. To keep up flying speed no matter what; and to move my controls back to neutral after I had the degree of turn I wished.

SEEMS SIMPLE

This all seemed very simple to me and I told my instructor that I was quite ready to try turns. He told me

to get as much altitude as I possibly could; release, and start my turn to the left. I did just this. I levelled off at one hundred and fifty feet, and released. I then pushed left rudder and left aileron simultaneously. The ground turned up on its side and gave me the impression that I was going to fly right into it. Everything was on an angle and sliding beneath me. I got to thinking that the wings are made for manoeuvrability only when the air is flowing over them from front to rear at a certain regulated speed. When this ceases you might just as well be flying a barn door. Here I was in a glider with no motor to pull me around the turn. Gently but steadily I pushed the stick forward, the ground came up to meet me very fast. At last the moment arrived when I either pulled out or smacked into the ground. I pulled the stick back in a quick motion, and luckily I pulled out smoothly enough not to zoom and landed. This was another time when I had a good scare. I have never unintentionally dived in a turn since.

(Acknowledgments to "Soaring.")

(To be continued)

ABRIDGED GLOSSARY OF SOARING TERMS

Edited by ICARUS

Aerofoil.—The section of a wing calculated to produce lift; ribs occasionally resemble the aerofoil used. Most aerofoils possess two entirely different sets of characteristics, depending on whether they are being described by the sailplane designer or pilot.

Air Speed Indicator.—An instrument calibrated, for the sake of appearance, in M.P.H. The pointer can be seen to move when dial is tapped vigorously. Unless connected to a pitot tube the results are discouraging.

Brakes, Air.—Devices fitted on modern sailplanes to obviate putting the fear of death into pilots when carrying out prolonged dives. Generally succeed, when applied, in putting the fear of death into pilots.

Bulkheads.—Small and elaborately constructed wooden frameworks, justified mainly by their usefulness in keeping the longerons apart.

Centre of Gravity.—An abstract phenomena once attributed to gremlins. Very elusive and definitely allergic to progress, spending the greater part of its life in retreating slowly backwards along the fuselage.

Cable.—Perfect example of misapplied ingenuity on the part of metallurgists. Strength varies from nil to infinitely strong in inverse proportion to requirements of winch crew and pilot.

Dope.—An evil smelling fluid supplied in various colours which perversely turns white on application. It has been repeatedly demonstrated that the description "Highly inflammable" on the tin is a masterpiece of understatement. Must be used in conjunction with a brush so designed that the bristles come out at every stroke.

Dunstable.—Small town in Bedfordshire generally accepted by habitues as the source of all progressive trends in soaring. Notable for a superior club-house and Whipsnade Zoo. We understand there is little connection between the two.

Elastic Launching.—An archaic method of becoming airborne. Was

used with great success to decimate ranks of enthusiasts at a time when opposers of soaring movement were not so obvious about their intentions as is the case nowadays.

Empennage.—Flamboyant word for tail assembly. May not be loosely banded about in conversation unless speaker definitely flew before 1909.

Fittings.—Numerous small metal parts arranged in two positions on sailplanes. Positions (a) are invariably inaccessible unless the machine is sawn apart; positions (b) are carefully calculated to cause the maximum personal injury every time the machine is rigged. Fittings can usually be recognised by their colour which resembles rust.

Fuselage.—Streamlined (or partially so) extension fore and aft of the cockpit. As this part has to bear the weight of the pilot it is invariably made immensely heavy.

Gliding Angle.—Sometimes known as L/D or the relation between lies and downright lies. For advertising purposes any ratio over 20:1 is suitable providing it can be guaranteed that machines are never launched from hills with a less steep gradient than 5:1.

Glue.—A white coloured viscous liquid which usually has to be made with cold water on very frosty days. Glue is a very satisfactory and lasting adhesive for certain materials, notable clothing.

Hill Soaring.—A debatable phase of the art, spurned by all who have made their first cross-country and enthused upon by all who have not.

Hook, Launching.—A device of a secret nature installed near the blunt end of the fuselage to which is attached two cables. One of these is permanent and should be attached to the winch. Efforts should be made to avoid this latter cable being a permanent fixture.

Incidence.—A general term much used in statistics as, for example—"the incidence of skid replacements per 100 landings," etc. Also much used by draughtsmen when talking their way out of more than usually inaccurate calculations on wings.

Instruments.—Before the war a favourite, though subtle, method of

class warfare between clubs. A wealthy club installed very comprehensive instrument panels on their sailplanes (which was sheer snobbery). They then pretended they could interpret the readings of the instruments (which was sheer optimism).

Joints, Spliced.—The designer's favourite loophole when he has found out that wood won't bend half as much as he had expected. See **Glue** above, a small quantity of which should for preference be inserted between the surfaces of any **Joint, Spliced**.

Landing.—That part of a gliding or soaring flight immediately prior to the insurance company's investigation of your claim. In certain cases when the above does not hold good, **Landing** refers to a refined form of psychological torture which, by some strange coincidence, affects both pupil and instructor.

Lift Co-efficient.—A purely arbitrary figure banded about by rival sailplane manufacturers. Fully described in the first (and easiest) chapter of any book on aerodynamics, hence the previous sentence.

Main Planes.—Long and narrow surfaces fairly securely fixed to each side of the fuselage and suitable, in most cases, for the attachment of ailerons. Because of the latter the **Mainplanes** made ideal fairings for the control cables. Mainplanes afford shelter of an inadequate nature on a rainy day. Pilots are advised not to avail themselves of this feature when in flight.

Material.—This term embraces a wide field of substances from the things you read about in manufacturers' catalogues to the collection of odds and ends under the bench in the hangar, including the bench in the hangar.

Nose Ply.—A special type of reinforcing put on the leading edges of wings for two reasons. Firstly because it baffles all those who were looking forward to making holes in the wing when lifting the machine. Secondly, because it comes in handy as a seat when being photographed.

(To be continued)

The B.G.A. National Contests.*(Continued from Page 5)*

The final placing of machines was as follows:—P. A. Wills, with Hjordis, came first with 477 points; he also won the Manio and Wakefield Cups. The Rhonsperber of Nicholson, Cooper and Dewsbery, obtained 408 points, and second prize, also winning the Club Team and Distance prizes. Third came the Kirby Kite of Lingford and Simpson: they gained the Open Team prize.

BEST SO FAR

As mentioned in the article on the 1935 Competition, British Gliding and Soaring had, by that year, become established and was about to enter a period of interesting development. The 1937 Contests showed how active that development had become, as one of the outstanding features was the number of pilots of little competition or even soaring experience, whose performance was consistently good, and who carried off several of the prizes. This was proof not only of the excellent basic training provided by the British Clubs, but of the general enthusiasm, and desire to progress, which was prevalent in the movement.

Deep Water Birds.*(Continued from Page 7)*

Also it would seem that there can be no particular advantage to be gained by circling against the rotation of the thermal.

Conclusions

The foregoing notes are simply my recorded observations of birds and flying fish, and I think that certain conclusions can be deduced.

First, that there is a layer of air close to the water which is practically motionless as far as the wind is concerned. In view of the fact that the top of the waves often have a loup on them and also that birds can apparently fly in a slope wind along some crests, it would seem that this layer of motionless air is not deeper than wave height and will vary from period to period with the height of the seas.

Second, that the crests of the waves appear to be affected by a moving current of air, and it may be accepted that a fairly strong current of air blows at mean crest height, although this is probably slowed down quite a lot on account of skin friction. This would be the layer that the soaring bird would enter to get its initial lift.

Third, above this crest wind layer there is a full speed wind layer unhampered by restrictions such as surface friction. There is evidence of this in the power of the soaring climb of the sea birds.

Australian Gliding Association.*(Continued from Page 17)*

the explanation which is as follows:—Parties of approximately 20 horsemen were organized to search the scrub from a line north of Weston's Flat to a line north of Overland Corner, with instructions to send up a smoke signal if the plane was found; this smoke signal would recall all other searchers. The first signal sent up by Mr. Taylor attracted the aerial searchers but could not be seen by the ground parties, so a larger fire was made about 3 miles from the wreck, and it was this fire which got out of control.



THE

" OLYMPIA "

SAILPLANE



OUTSTANDING PERFORMANCE

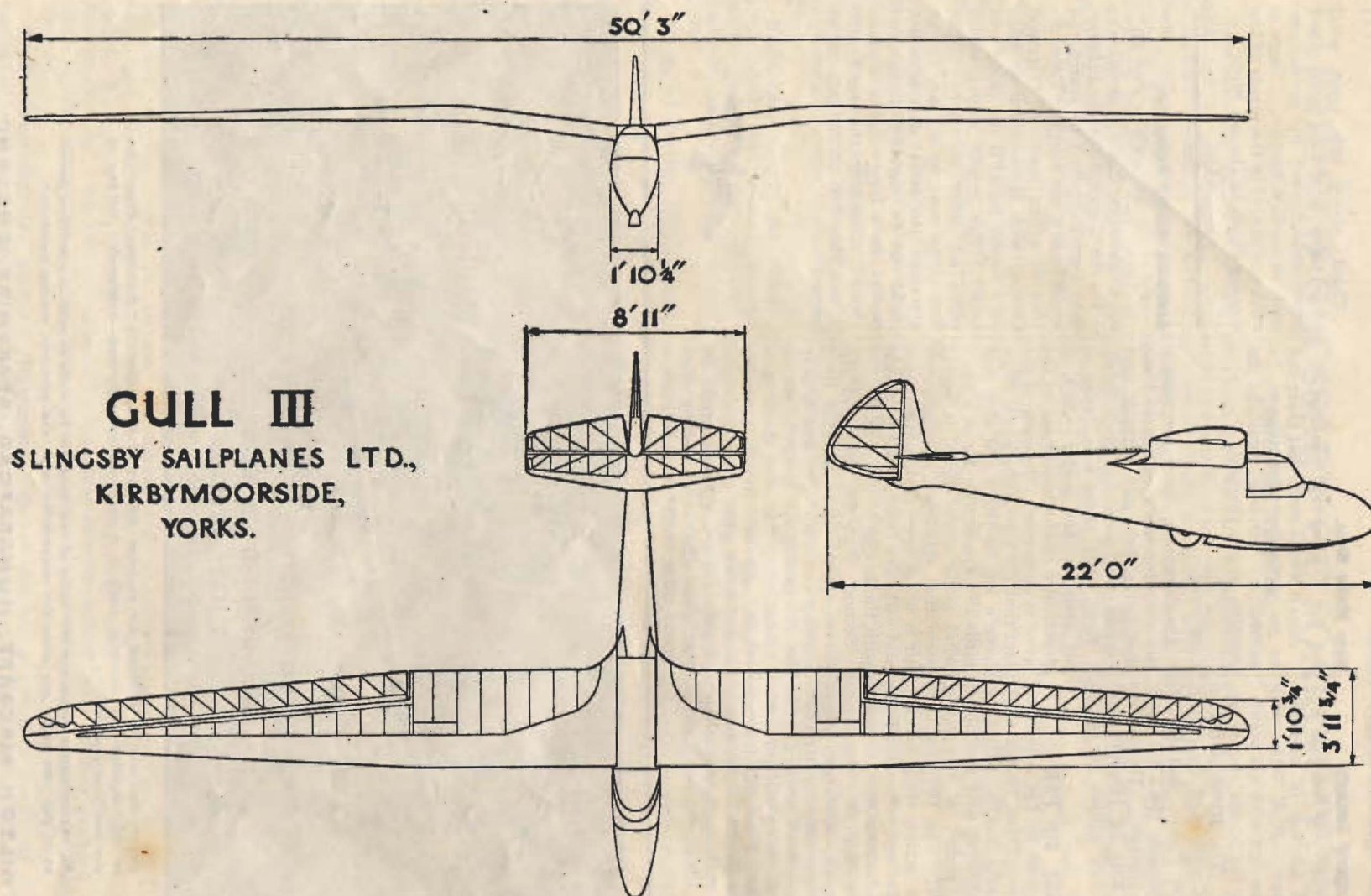
SUPERLATIVE CONTROL

FULLY AEROBATIC

Orders can now be accepted for post-war delivery of the "Olympia" Sailplane. Production of this machine will continue until it is decisively out-performed.—presumably by one of our own later types.

An announcement about our full range of machines will be made as soon as conditions permit us to put into action our plans for co-operation with the post-war soaring movement.

CHILTON AIRCRAFT, HUNGERFORD, BERKSHIRE, ENGLAND.



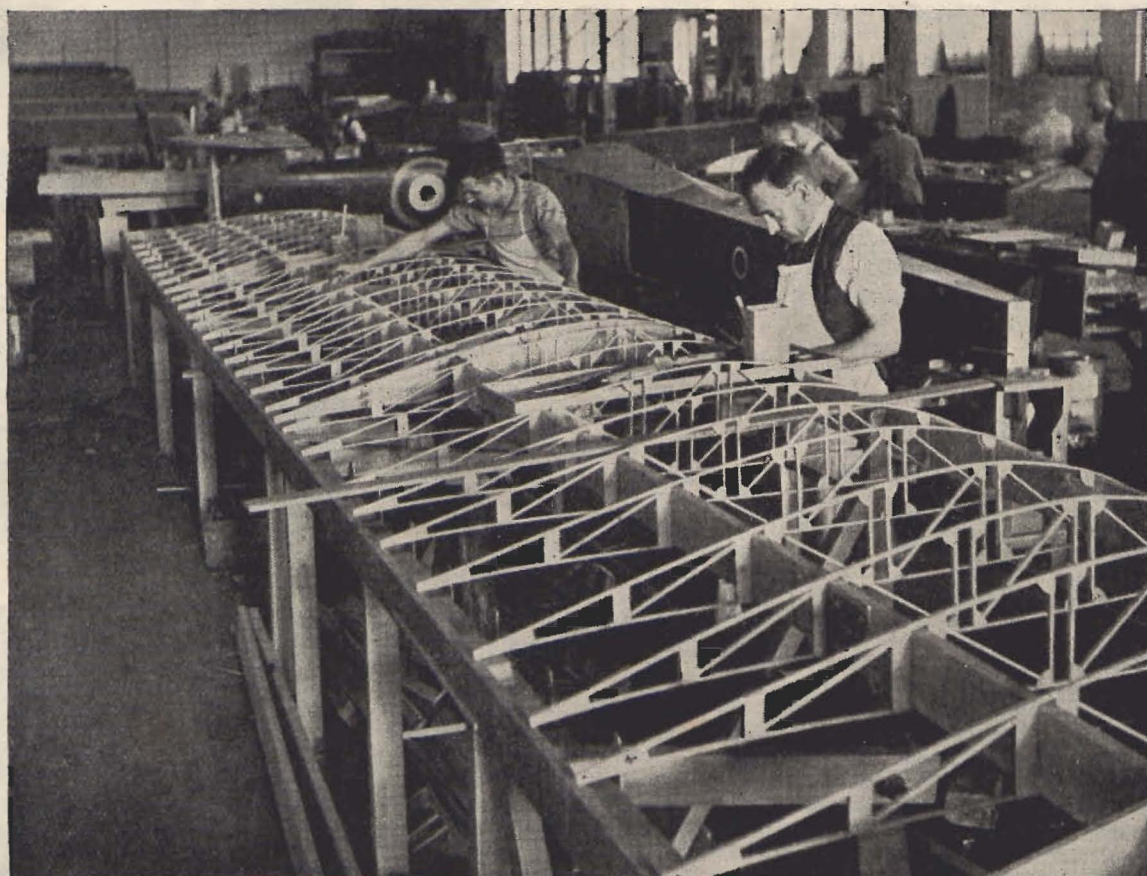
GULL III
 SLINGSBY SAILPLANES LTD.,
 KIRBYMOORSIDE,
 YORKS.

SLINGSBY "GULL III."

The post war version of the famous Slingsby "Gull I." The Gull III has full cantilever wings, central landing wheel tail trimmer, spoilers and many other features. Numerous flight tests of the prototype have satisfied the designer that the "Gull III" has a performance well ahead of any other sailplane in its class.



The New Slingsby Tandem Two-Seater.



Assembling Kirby "Cadet" Wings.

AUSTRALIAN GLIDING ASSOCIATION

VISIT TO CLUBS IN S.A. AND N.S.W.

Mr. Norman Hyde, President of the Gliding Club of Victoria, and R. Duckworth, A.G.A. Secretary, visited the **WAIKERIE GLIDING CLUB (INC.)**, South Australia, between 7th and 10th October, 1944, inclusive. The Club arranged flying days on each of the first three days.

"Kite I" Sailplane and "Pelican" two-seater were flown by Rex Coats, Ken Riebe, Jock Barratt and Norman Hyde. The "Utility" (Pratt) was flown by Jack Moody and the "Primary" by Bill Rowe. Most launchings (all winch) were to approximately 1,000 feet, using 4,000 to 5,000 feet of wire. The highest launch was to about 1,600 feet in the "Kite I."

Details of the number of flights and times are not yet available. Miss Laffer, Secretary of the Women's Air Training Corps of S.A., and Miss Davies, Deputy-Commandant, were present on the 7th, 8th and 9th October, and had passenger flights in the "Pelican." Films of the Club's activities, including aerial views from the "Pelican," were taken by R. Duckworth. On 7th October, in the evening a meeting was held in the School Hall, and a talk on gliding was given by R. Duckworth, and 800 feet of 16 mm. Silent Film of gliding in Australia screened. Arrangements were made with the Club and the W.A.T.C. (S.A.) for future co-operation.

In **ADELAIDE**, gliding enthusiasts, Mr. H. O. Bradley, of 34, Hereford Avenue, Trinity Gardens, and Dr. J. B. Thiersch, of the Adelaide Hospital, were called upon. The Chief of Staff of the *News* newspaper was interviewed and gliding publicity obtained. (*Adelaide News*, 13/10/44.)

BROKEN HILL was visited on 12th and 13th October, 1944. It was ascertained that the Broken Hill Gliding Club which was formed in 1940 was in recess for the duration of the war. Mr. Bill Welsh, of 518, McGowan Street, Broken Hill, and Mr. Mervyn Lewis, of 241, Morgan Lane, Broken Hill, were contacted, and a meeting of enthusiasts was held at the

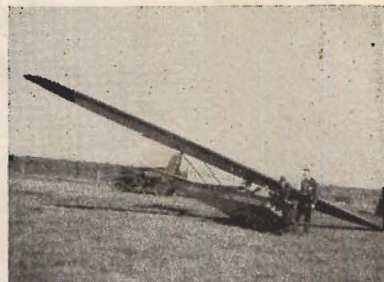
home of Mr. Tomkins, 600, William Street, Broken Hill, on 12th October, 1944. The gliding films were screened and arrangements were made for future co-operation. Primary glider at home of Bill Welsh, was inspected. It was stated that about 100 flights had been made in this machine—all car towing at Stevens' Creek, near Broken Hill. Gliding publicity was obtained in the *Barrier Miner* and the *Barrier Daily Truth*, 13/10/44. Broken Hill has a population of 26,000, and is situated in an isolated position in desert terrain in Western N.S.W.

SYDNEY was visited between 18th and 22nd October, 1944, inclusive. A meeting of gliding enthusiasts had been called by Mr. Cliff Springall at Shell House, for the 18th October, 1944, and at this meeting a decision was reached to revive the N.S.W. Gliding Association as a Company. Provisional Office Bearers appointed were:—*President*, Mervyn Waghorn; *Vice-President*, Harry Ryan; *Secretary*, Cliff Springall; *Treasurer*, Gilbert Miles. Gliding film previously mentioned was screened to an audience of approximately 150, and a short talk on Gliding in Australia was given by R. Duckworth. The necessity of obtaining permanent flying grounds, hangars and standard machines was stressed.

Workshop of A. W. A. GLIDING CLUB at rear of 190, Croydon Road, Croydon, was visited and primary glider under overhaul was seen.

BEAUFORT GLIDING CLUB (CHULLORA) workshop at King Street, Enfield, was visited on Saturday afternoon, 21/10/44, and plans of two-seater design by Vic Dawson and Dagling type primary being reconditioned were inspected. Some films of this activity were taken.

On Sunday, 22nd October, 1944, **MATRAVILLE FLYING GROUND** was visited and flying operations of Jack Munn and party assisted with. Flights were had in the "Falcon" two-seater from winch launchings. Films were taken. See further report for details.



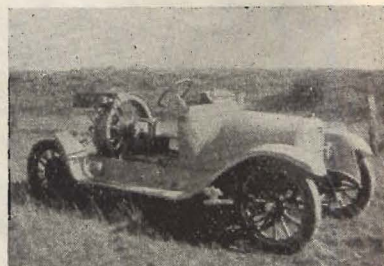
"Merlin" Two-Seater.



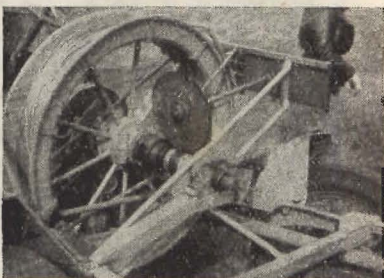
H-17 built by Ken Davies.



H-17 at Beveridge.



First Winch.



Close Up.

VICTORIA THE GLIDING CLUB OF VICTORIA

N. Hyde, Recorder of Flights, has furnished the following details of flying from 1st January to 5th November, 1944. Flying was carried out on 22 days.

"Grunau"

2 hours 56½ min. for 27 flights.

"Merlin"

8 hours 15½ min. for 194 flights.

"H.17"

23½ min. for 8 flights.

"U.T.I."

27 min. for 13 flights

TOTAL. 12 hrs. 2½ min. for 242 flights.

NEW TRAINING GROUP

There were 12 applications for the next training group, and the successful applicants were:—Messrs. G. Nixon, D. Doolan, W. Hallowell, K. Chamberlin, J. Hocking and Mrs. G. Roberts.

Work is progressing on the rigging of the "Eagle" primary, which will be used for training at Mordialloc. On 12/11/44 it was found that the Mordialloc Hangar had been broken into, and the "Moon," winch stripped of distributor cap, rotor, ignition wires and coil, also that petrol pipe had been wrenched off and petrol either stolen or else just run on the ground. Mordialloc police were informed.

CHRISTMAS HOLIDAY GLIDING CAMP

Preliminary arrangements have been made for a camp at Belmont Common Aerodrome, Geelong, for the Christmas New Year period.

VICTORIAN MOTORLESS FLYING GROUP

In a letter dated 13/11/44, Mr. A. Fawcett, Hon. Secretary, advises that the group is preparing a reconstructed primary machine of 40 feet span by 4 feet chord, weight approx. 220 rounds. Membership is at present 16 flying members and 2 honorary members.

RADIO TALK

Through courtesy of the Australian Broadcasting Commission a talk, entitled "The Sport of Gliding in Australia," was given by R. Duckworth over station 3.L.O., Melbourne (State Program) 770 K.C., 390 metres, on Monday evening, 4th December, 1944, from 9.15 p.m. to 9.30 p.m.

NEW SOUTH WALES

SYDNEY SOARING CLUB

Gliding at Box Hill, Eight Hours Day week-end. Following details have been made available by Harry Ryan:—

October 1st and 2nd,—Pilots present: J. Munn, H. Evans, S. Newbigin, W. Haase, M. Waghorn, J. Watt.

Machines used: Falcon, Gull, Kite 11.

Number of launches: 45. Total flying time, 4 hours 51½ mins. H. Ryan in the Gull reached 3,200 ft. duration 37 mins. M. Waghorn also in the Gull reached 2,400 ft., 2,200 ft. and 1,700 ft. for flights of 25 mins., 33 mins. and 19½ mins. respectively.

GLIDING WEEK-END AT MATRAVILLE.

Jack Munn, in a letter dated 6/11/44, has forwarded the following details of flights made on 21st and 22nd October, 1944, with "Falcon" two-seater. He also states that a preliminary meeting has been held with a view to forming a club to be called the "Sydney Metropolitan Gliding Club," and that a new winch is being constructed with a Vauxhall engine.

Matraville, Saturday and Sunday, 21st and 22nd October.

Falcon two seater flown by J. Munn, M. Waghorn and N. Hyde. 26 launches; total flying time 1 hr. 31½ mins. Winch launches.

Mervyn Waghorn took the Secretary of the Australian Gliding Association (R. Duckworth) for a 500 ft. launch.

SOUTH AUSTRALIA WAIKERIE GLIDING CLUB

FATAL ACCIDENT TO KEN RIEBE

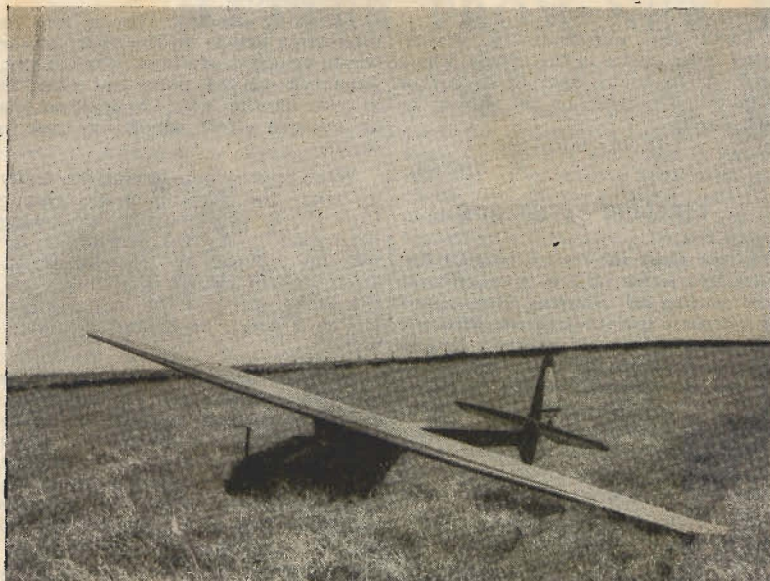
Letter dated 6/11/44 from Hon. Secretary, Jack Moody, and copies of reports on accident in which Ken Riebe was killed when "Kite I" Sailplane broke up in the air on 28th October, 1944. He states:—"Thanks a lot for your telegrams re Ken. As you can imagine it was a pretty big knock to our Club. Ken was one of the mainstays both as a pilot and a worker, apart from being such a decent chap, and of course the loss of 'Kite I' will curtail our activities very con-

siderably. However, we have the young chaps coming on and we will do the best we can with the machines we now have and hope that at some future date we will be able to either buy or build another high performance job. In regard to the accident, there was no doubt in our minds that Ken had the altitude record in the bag at the time of the crash. I am not sending any of the press reports, there were several, only one of which was issued by the Club, the others, as is usual in such cases, were inaccurate. The two attached reports are those which we prepared for the Civil Aviation Board, and we consider that they give the only reasonable explanation of the accident."

Extracts from report by Secretary of Waikerie Gliding Club.

Report of Fatal Accident at Waikerie on Saturday, 28th Oct., 1944, when Kenneth Herman Riebe, 35 years, Orchardist, single, of Waikerie, was killed during a soaring thermal flight in the sailplane "Kite I."

In a gentle S.S.W. breeze, K. Riebe left the Waikerie drome at 3.20 p.m. from a 1,000 ft. launch, immediately connected with good thermals and circled steadily to an estimated altitude of 7,000 feet, and while doing so drifted almost due north over very hostile tall mallee country. When last observed he was approximately 10 to 12 miles north of launching site still circling. At 4.30 it was plainly seen that he had struck very bumpy air conditions. It must have been exceedingly rough for members to have noticed the unevenness of the flight at that distance, so much so that the Instructor, Mr. E. H. Barratt, remarked to the launching crew words to the effect that "He's struck something there." The machine was not observed after this, and the Club members on the drome made preparation to set out with the trailer to retrieve the machine. As it is an unwritten law among flying members that on all cross-country flights pilots are to follow only well-defined roads and if possible to land near farm homesteads, it was thought that the pilot had turned east to come on to the Morgan-Renmark Road, and at the time last seen he had sufficient altitude to do this, the



A "KITE I."

when stalled but would go into a gentle dive coming back to normal at flying speed. Since becoming the property of this Club it has done 330 launches for approximately 54 hours' flying time.

Weather Conditions on day of Accident. At time of launching a gentle wind from the S.S.W. which later freshened to approximately 15 m.p.h. and shifted to nearly due South. Cloud base estimated at 12,000 to 15,000 feet. Temperature moderately warm, dropping towards evening to an almost frosty night. Leaving the winch wire at 3.30 p.m. at approx: 1,000 feet pilot was observed to turn west under fairly large but flat cloud, where he immediately picked up lift in the region of 3 feet per second and began climbing. He continued circling under this cloud gently drifting North for about an hour, when he was seen to straighten out and fly S.S.W. along a broken cloud street. A few minutes later he was observed to fly into a much stronger thermal in which he tight circled, gaining height rapidly. At this point of the flight it appeared that he was making erratic circles, which could have been caused by exceedingly rough air conditions or by the pilot becoming air sick or suffering from other disabilities. From this point at 4.35 p.m. the machine was not

seen again. As the machine was approximately 11 to 12 miles away it was only seen while circling in front of a cloud background.

Nature of Country where Accident happened. Situation approximately 11 miles due north of Waikerie drome in sandy country densely timbered with tall mallee and sandy porcupine ridges.

COMMENTS AND CONCLUSIONS. On arriving at the wreckage the first thing noted was the position of the pilot. He was lying on his left side with his left foot in the rudder pedal and right hand grasping the bottom of the rubber grip (an ordinary bicycle handle grip about 5 inches long) which covered the top of the control column; he was strapped almost in flying position, except that the back rest and seat had gone. It appeared that the main impact was taken on the front end of the skid after which the remainder of the wreckage collapsed on top of the pilot. It is the considered opinion of Instructor E. R. Barratt, Assistant Instructor R. Coats, and Club Secretary, J. E. Moody, who made a very thorough inspection of the position and condition of the wreckage, that:—The first portion of the machine to fail was the main spar of the centre section of the wing, which broke at both ends in clean wood simultaneously at

identical spots 3 inches in from the end of metal butt joints—the butt joints on examination of the wreckage were found to be intact. The only cause of this breakage is excessive equal stress on both wings caused by either an inside or outside loop done at excessive speed and the condition of the wreckage leads us to believe that it was an outside loop, because the wings must have collapsed while in an inverted position, because this is the only attitude from which the wings could have folded back on to the nacelle. The milling wing tips then cutting the nacelle to pieces, and we think dealing a possible fatal blow to the pilot. The weight of the pilot would bring the machine to a more normal diving attitude, and as there was no tail boom found in the wreckage it is evident that the twirling wing tips cut through the tail boom, collecting the tail plane control wires, and the tail plane in its turn, after shedding the rudder, twisted the rudder and elevator control wires in a tight knot around the aileron wires and fittings; the tail plane was found almost intact with the main wreckage, thus indicating that at the time when the main plane spars broke the whole of the tail plane was intact and had not caused the dive because if the front fitting of the fixed portion had given way causing an excessive angle of attack on the tail plane this would have in turn have caused an excessive dive collapsing the elevator as well as the wings.

The only other alternative is loss of control by the pilot, and this is quite a possibility. Judging by his persistence in steadily climbing and knowing his keen competitive spirit, we are quite convinced that he was endeavouring to better the present Australian altitude record of 11,800 feet. From observation and calculation of estimated angles and distance we believe he had attained an altitude of anything from 10,000 to 15,000 feet. If such was the case it is more than likely that he lost consciousness through lack of oxygen, slumping forward on the controls for long enough time to cause the machine to go into an outside loop.

Wreckage Destroyed by Fire.

It is most unfortunate that the wreckage was destroyed by fire,

(Continued on page 11)

Letters to the Editor

Woodside,
Rhu,
Dumbartonshire.

DEAR SIR,

I am horrified to find some most dangerous advice published in the article entitled "Thermal Flying: A Note For Newcomers," on pages 6 and 7 of the December issue. The advice which I consider so dangerous is that given on page 7 under the sub-heading "Circling Technique," in which the contributor advocates tight flat turns. If newcomers follow his advice, there is going to be plenty of crashery of both newcomers and gliders, as a result of the spins they will almost certainly get into.

There is only one kind of turn that should be used, either in gliding or any other normal kind of flying, and that is the correctly banked turn. It can be steep or flat, but the degree of bank depends only on the Rate of Turn, and is independent of the type of aircraft or the speed at which it is flying, although of course one has to be careful not to choose a low speed if one wants to do a tight turn.

If a so-called flat turn is done, there is an abnormal drag caused by the fact that the fuselage is presenting its large side area to the air instead of its small frontal area. This results in a loss of speed and a higher sinking speed and a steeper gliding angle, and may easily end up in a spin.

It is only due to the fact that most gliders are difficult to spin that so many people have so far got away with this flat-turn technique.

The kind of turn to make in a thermal, or rather the rate of turn, depends on (a) the nature of the thermal, i.e. wide and weak or narrow and strong; (b) one's position in relation to the hill if hill soaring at low altitude, and (c) the skill and experience of the pilot.

The next statement in the article is also contrary to accepted theory, that a sailplane held to fly a straight course would automatically tend to circle on entering a large thermal. One is left to assume that it would circle IN the thermal, whereas, if it tended to circle at all, it would turn AWAY from the thermal, and this only if it flew into the thermal obliquely. This is commonly made use by thermal fliers, who know that if the wings suddenly tip, say to the right, then the cause is most likely either an up-current under the port wing or a down-current on the starboard wing, the action to be taken in either case being to turn left, that is against the natural tendency of the sailplane. Eric Collins was the first in this country to realize this, and he any many others have made thermal

flights without the use of a vario-meter, by this method.

There are, unfortunately, several other inaccuracies in the article, which lead one to doubt whether its author is qualified to write on the subject he has chosen.

Yours faithfully,

J. C. NEILAN.

CIRCLING TECHNIQUE

DEAR SIR,

I was most interested to read Mr. Furlong's letter in the January issue commenting on "Circling Technique," as his main point disagrees with my own observations. Lest there be any misunderstanding, let me explain that I have never done any thermal flying in a sailplane—but I do know something about thermals. My knowledge of their behaviour is based principally on the observation of model aeroplanes (3 to 5 ft. wing span) in soaring flight.

Now a model is automatically stable and hence its reactions are a good indication of the various influences disturbing it during normal flight. All models show a definite tendency to tighten their natural circle when striking a thermal, and tend to remain in that thermal until it expires—just as the ping-pong ball stops on the water spout at a shooting gallery. To take extreme cases: one model trimmed with a fairly tight circle entered a thermal, rose rapidly at first and then spun out, *because the thermal had so further tightened the turn*; and the other case, a model trimmed for approximately straight flight can take advantage of a thermal and will commence to circle up with it (although this is not a general rule). Why a full size sailplane should react differently is hard to imagine—unless it is the sub-conscious "correction" applied by the pilot.

If it were the *automatic* reaction of a sailplane to turn out of a thermal then a model should do likewise—but the absolute reverse is true. Some further comment by "thermal fliers" would, I feel sure, be welcome on what threatens to become an interesting controversy.

No! Mr. Furlong—I have no illusions as to all sailplanes normally making flat turns—but I do know how sinking speed can rapidly increase with increasing angle of bank. When my little models can do flat turns perfectly well (with no increase in sinking speed)—and this because they are spirally stable, affecting wing and vertical tail surface design—I rather feel that there is more in thermal circling than merely holding a machine in the correct bank for that particular radius of turn and gliding speed adopted—particularly as there is circulation in a thermal, whether in Mr. Furlong's direction or my own.

R. H. WARRING.

DEAR SIR,

Thanking Dudley Hiscox for his interesting article on the effect of the wind velocity gradient (SAILPLANE, January), may I point out that, in quite another way, the gradient has an adverse effect which one has to watch.

When approaching to land (normally up-wind) the machine is descending through a progressively weakening head-wind. As the inertia of the machine prevents any forward acceleration without change of gliding angle, the flying speed of the machine gets less as it nears the ground (boundary layer).

Novices must be warned not to fly in slowly or they will approach the stall while nearing the ground. The opposite effect will be noticed when landing down-wind, but as far more ground speed is necessary (despite the small advantages from the velocity gradient) this is a practice to be carried out only under expert guidance.

Turning near the ground is full of grave risk unless one has bags of speed for the same reason. With so many A.T.C. pupils waiting to start out for their B and C certificates these comments appear justified.

J. C. RICE,
M44, E.G.S., A.T.C.

c/o Mrs. Carter,
19, Milton Road,
Highgate, N.G.
21/1/45.

DEAR SIR,

With reference to Mr. Dudley Hiscox's article on the "Down-wind Turn" in the January issue of your periodical, surely a simpler explanation of the effects when turning down-wind would be as follows:—

Lift depends upon the velocity of the plane relative to the air. Thus if the plane has a velocity of v /ft./sec. relative to the air, and the wind has a velocity of s /ft./sec. relative to the ground, then when the plane turns down-wind its velocity relative to the air is momentarily reduced by $2s$ ft. sec. The lift will decrease and a stall result.

His statement that when the plane is "high enough up to be above the influence of the earth's drag in the wind flow, there can be no difference in lift or control when flying up-wind or down-wind" somewhat puzzles me. After all, if a velocity gradient exists or not, the plane's velocity relative to the ground will have to be increased so as to maintain the same conditions of lift and control.

Yours sincerely,
H. R. HILBORNE.

LETTER FROM NEW ZEALAND

Auckland, N.Z.
8th October, 1944.

DEAR SIR,

Thanks very much for your letter which I received a few days ago.

A JOKE

The A.T.C. in England seem to be part and parcel of the R.A.F., one might say a junior section. Out here it seems to be a separate organization, evidently they have no money for themselves, and the three Tigers allocated to them tour the various squadrons about once every six months, so you see that our A.T.C. don't get very much flying out of it. Personally I think the A.T.C. here is taken as a joke by our Air Force, why, I couldn't say, although I have heard that they are regarded as a nuisance on some of the aerodromes, maybe because they ask so many questions!

I believe that some rumours are going around that there has been some inquiries about gliding for the A.T.C. here at last, but they have no machines or instructors available, so evidently it sounds as if they don't intend to let the gliding clubs, who were operating before the war, in on it, or perhaps it is a half-hearted inquiry just to keep the boys quiet, because I know that there has been a lot of agitation from various quarters to bring it into practice.

I think the main trouble is that there is a general idea amongst the officers, especially power pilots, that gliding is pretty useless, and anyhow, the pupil who was a good glider pilot would have to be taught to fly all over again to conform with their own ideas of instruction. I have seen power pilots with some hundreds of hours in the air, and heard then say "Oh! anyone can fly one of these things!" and make one of the worst flights in all their flying careers. Generally they are gracious enough to admit later that flying a primary isn't as easy as it looks. Mainly it is the slow speed which they can't get used to, to start with.

WE HOPE TO GET A "FALCON III"

One club member here said, "When we get a 'Falcon III,' we must take a machine gun along with us, so that we can shoot the pilot down in case he wants to stay up too long." From what I can gather about the machine the trouble is not to stay up but to get down. Anyway, after the war we are going to try and prevail on some of our local moneybags to donate either a complete machine or a kit-set, here's hoping!

RADIO INSTRUCTION

I was extremely interested in an article on short-wave instruction in your July issue. I see someone has

beaten us to it. To my mind it is the ideal way to instruct a pupil, especially in the first stages when, he or she, needs the instructor's help and advice most. I think I am right in saying that the most crashes have been just about the hopping stage and are mostly caused by the pupil getting himself in a jam, losing his head, and over-controlling. With short wave the instructor could tell him exactly what to do, which would be a long way towards avoiding a crash. Thinking of this reminds me of a lovely crash we had.

This particular pupil had not hopped, but was just about ready to do so. We were giving him a fast ground slide to accustom him to the sensitivity of the controls, when for some unaccountable reason he heaved back on the stick. He went straight up in a glorious zoom, with the instructor yelling like mad to get his stick forward; by this time he was about 60 feet up, he heard the instructor's yells, and got his stick forward just before he stalled, down he came in a vertical dive; meanwhile the instructor was yelling to get his stick back, again he heard him and heaved the stick back. The machine just started to flatten out when it struck at about a 30 degree angle, the pupil had a free flight through the air adorned only in his clothes and the safety belt, which had broken, trailing behind him. He carried on by himself about 4 feet up for about 25 feet and then did a normal spot landing—on his face; luckily he only lost a bit of skin and was well shaken up. Meanwhile the nose of the machine broke off near the king post, and the rest of it turned over on its back. As the rudder came over it missed the pilot as he was sailing through the air by a gnat's whisker; we measured the depth the nose went into the ground. It was nine inches, and we estimated he dived in about 50 m.p.h. Anyhow it only took about four of us to cart what was left of the machine sorrowfully back to the hangar. If we had had short wave to tell him what to have done I am certain we could have saved that machine. This pupil understood the instructor's yells, but unfortunately he was too slow with the controls.

One or two articles in the *Sailplane* on power gliders interested me also, because I had often thought of putting a small motor in a machine we used to have some years ago, which was very much like the Kirby "Kadet," only in those days we knew very little about gliding, and still less about flying gliders.

PIONEER MACHINE

A friend and myself first had the urge to build a glider when we were

going to school about 1928-29; we drew up rough-and-ready plans and started in to build this crate. We built the fuselage and tail unit and then were forced to desist through lack of funds; when we came to the wings, however, a friend of ours came forward with the necessary cash later and we finished it. It was hopped a few times, the greatest height being about 10 to 15 feet up. It might interest you to know that we used auto-tow. We smashed it up one day, and brought it back home, added a six-foot centre section, and increased the area of the tail unit. The original spread of the wings was 30 feet. So now we had a 36-foot spread with strut bracing, the previous bracing being piano wire.

This was the machine in which I had my first hops, and round which was formed our gliding club, about 1930-31. Later it went the way of most pioneer craft, being completely written off in a crash. Nevertheless, we had a lot of fun with it. We were using a rubber rope at this time for launching. At Alfriston we used to use winch launching. At Mangere we used car towing, which we found most satisfactory, being on flat country.

AUTO-TOWING TO COME

After this war I hope to do some aero-towing, which will complete my experience of the four best known types of launching.

I am very much indebted to you for using so much of your valuable space on us, for I have a good idea how tough the paper shortage is. It never entered my head that my letter might be printed, so it came as a pleasant surprise, which I appreciate.

I will let you know how we get on when we start flying again, which I hope will be soon, if all goes well. We hope to get back on our aerodrome again. When the Aero Club starts its own flying again I am certain that we will have to start looking for another field to fly on, and so we progress.

After the war I have an idea that gliding and soaring will boom here, one never knows, but one may see the air-tug system out here at some future date. I think it would catch on very quickly, for there are a lot of places that could be fed by gliders here, especially freight carriers.

Once again I have started out to write a letter, and finished up with much about nothing. So at last I will close this epistle.

Yours sincerely,

P. T. CHINNERY-BROWN.

CLUB ANNOUNCEMENTS

LEICESTER GLIDING CLUB

Fixtures.—February 9th, Comdr. Alan Goodfellow; February 23rd, Mr. Dudley Hiscox and film; March 9th, Comdr. D'Erlanger; March 16th, Victory Hotel Dance; March 23rd, General Meeting. For details contact Secretary. Theory and construction classes, with wind tunnel models, now enrolling. Prepare now for your post-war soaring. "Sic itur ad celeste." Secretary, Park Road, Blaby, Leicester. Wigston 89289.

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The Secretary invites enquiries re post-war programme at Long Mynd. Subscription rates, etc., forwarded to those interested on application to:—F. G. Batty, F.C.A., 2, Lombard Street West, West Bromwich, Staffs.

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SAILPLANE MAINTENANCE

By NORTHERN NOMAD

Rigging Notes No. 1.

AILERON CONTROLS

WE hear all sorts of travellers' tales on how various people adjust the aileron setting of training machines—sailplanes too.

Many have the idea that the adjustment should be made to give about $\frac{1}{2}$ " of aileron droop at the trailing edges, i.e. in relation to the trailing edges of the fixed portion of the wing. Some go as far as 1" droop; probably on the assumption that more lift will result. Well, extra lift will most certainly result; so will extra drag, tendency to drop a wing and perhaps a nasty spin.

A machine should not be rigged with pronounced aileron droop, of course. The aircraft is designed with the trailing edges of the aileron lineable (at the aileron root) with the trailing edge of the rest of the wing when controls are in a neutral position.

If the control cables are slack and both ailerons are "up" in flight, the cable carrying the air loads should be taken up. The maximum permissible droop should not exceed $\frac{3}{16}$ " when the aircraft is on the ground. If you are in doubt play safe and rig the machine with no aileron droop.

The ailerons will perhaps be "up" a little in flight, but you will have much better lateral control, and obviate the danger of a spin—unless you really deserve one.

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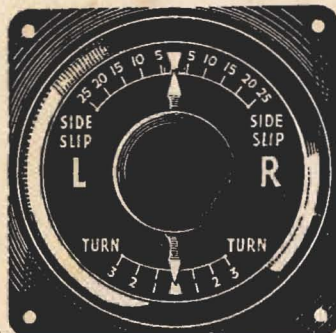
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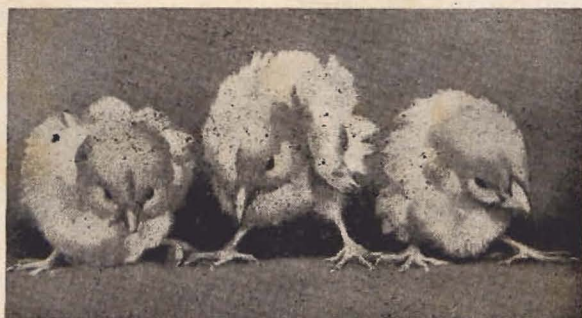
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