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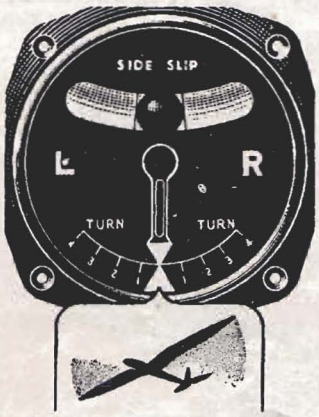
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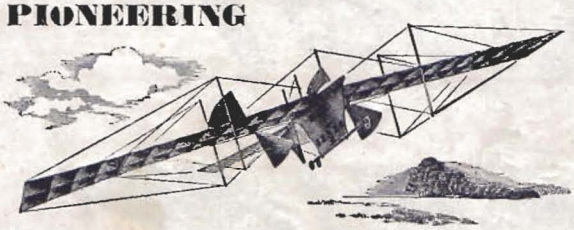
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Sailplane and Glider

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BY the time that readers receive this copy of the Journal, the ban on private flying and gliding will have been lifted, and once more pilots will be able to look forward to the apparently insoluble enigma of working out just how they are going to fit the maximum amount of flying into their weekends and holidays.

As most people realise, things are not going to be easy. Many clubs have still to get their sites and buildings de-requisitioned, and put into useable order again. Some clubs have not any sailplanes or ground equipment other than those which exist in the mind. Everything is expensive ; there is as yet no subsidy and no petrol.

But, in spite of all this, 1946 can be a year to be remembered. The true gliding club member gets along best when things are difficult, and this coming season should see the release of six years' pent up energy. It should be the greatest get-together British Gliding has ever had.

It must, however, be a year in which to look forward, and not back. In six years many of us have grown more than a few grey hairs, and from what one hears of many old club members, there is a vast new generation almost ready to run at the wing tip, and hurry forward with innocent generosity at the call of "lifting." But in between these two extremes will come other enthusiasts, glider pilots of the A.T.C., The Services Soaring and Gliding Clubs, and wartime pilots generally. All are welcome, it is the leaven which makes good bread.

Yes, 1946 is the year on which British sporting gliding may have to stand for a very long time, and from what one sees and hears, it looks as though it will be well able to do so.

BRITISH GLIDING CLUBS IN GERMANY.

Elsewhere in this issue will be found an account of the visit of the Editor and the Associate Editor to Germany. Memory will long hold that wonderful trip in mind, with its boundless hospitality and friendliness, its wealth of Soaring facilities, and its richness "beyond the dreams of avarice" of first class sailplanes. The R.A.F. will bring a vast access of strength to the Gliding Movement, and although the old hands will murmur "Ten years too late" they welcome the R.A.F. none the less heartily. Now there has been even this slight degree of recognition from the Air Staff, it is the earnest hope of all, that the R.A.F. will take the lead and hold it, so that British Gliding and Soaring shall be world pre-eminent. It certainly will if the Air Vice-Marshals and Air Commodores whom we saw waiting their turn for trips in the "G.B.'s" and "Kranich's" have anything to do with it. Tell it not in Gath, but we saw an Air Commodore take eight trips in the primary. That is the right spirit, and in that spirit the R.A.F. can do nothing but good.

IT won't be a very bumpy trip: as you can see, it's a nice, fine sunny day". The officer at Croydon who sought to reassure his passengers with this *non sequitur* was blissfully unaware that he had two glider pilots aboard. However, it wasn't as sunny as all that, as a thick haze damped down the worst of the thermals until we had climbed through its surface to the unsoarable air above.

After being earthbound for five years—not merely six months like the Editor, one found more than enough to claim attention: fracto-cumulus floating on the Kentish haze, gust structure over the North Sea and the distribution of "white horses" in space and time, the pattern of strato-cumulus "cells" over Holland, and finally the dive through the clouds into Germany, the land where Soaring Flight was first put on its feet.



W./C. Peter Dudgeon after his first 36 min. flight. "Even the birds follow me!"

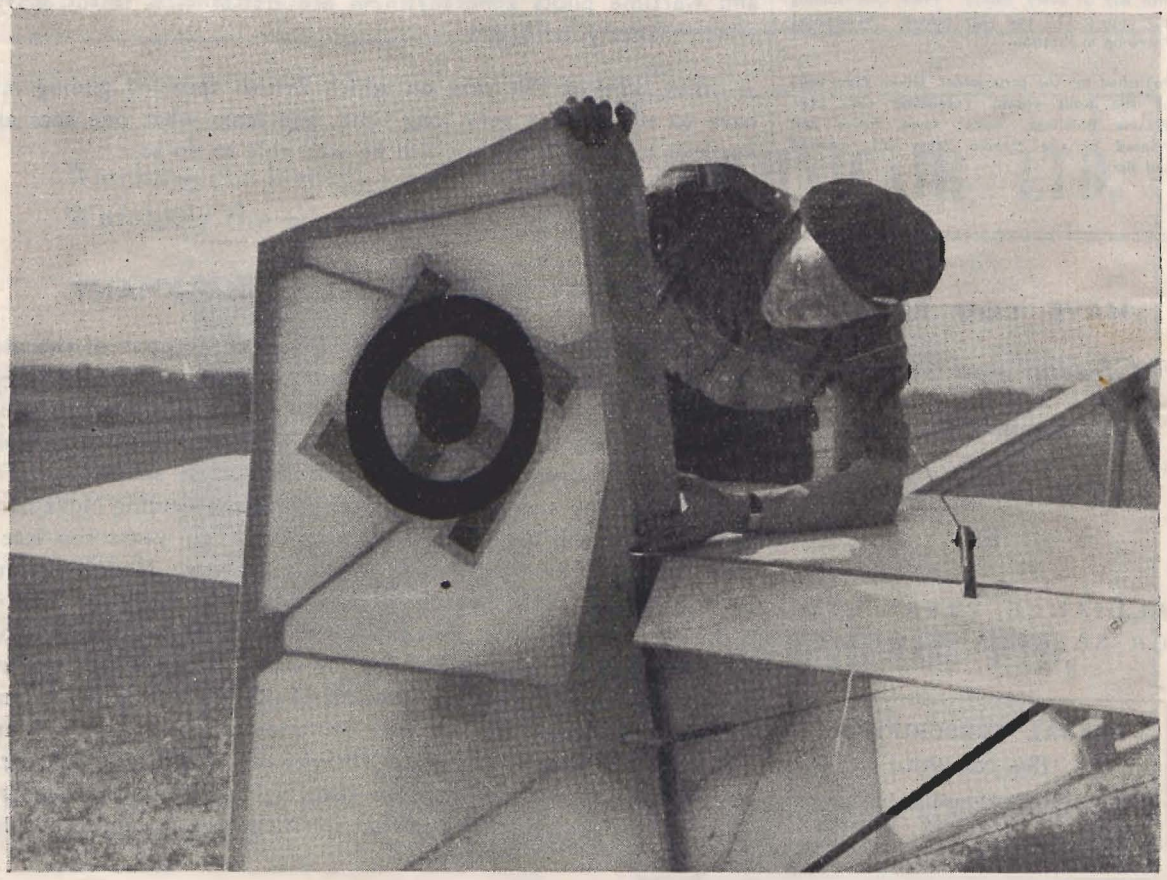
B.A.F.O. CLUB

Our first assignment was to the B.A.F.O. Glider and Sailplane Club, which operates on an aerodrome at Minderheide, outside Minden, about 8 miles west of the Bückeberg headquarters of the British Air Force of Occupation. We were made honorary members of the Club by the Hon. Sec., S/L. Sullivan, and given membership cards, also log-books with space for recording eleven hundred flights. So off we went to Mindeheide on Saturday afternoon, October 20, to make a start with filling up the log-book.

The first sight on which to feast the eye was a confused sea of sailplanes inside the vast hangar. One could pick out "Minimoas," a "Weihe" and an "Olympia," and sundry Two-seaters, but the "Grunau Babies" and the "Primaries", with and without nacelle, were just too numerous

GERMANY RE-VISITED

By A. E. SLATER



to count. A " Mu 13 " (Atalante type) and a " Kranich " had been recently pranged, but a " Rhönsperber ", some " Grunaus " and a " Nacelle " or two were in action. Some half a mile away, at the far end of the aerodrome (and of a field telephone), a winch was barely visible.

FLYING AGAIN

Those gliding addicts who went through the war without any flying, and are wondering how long they will take to pick it up again, may be interested to know that the process can occupy only a fraction of a second. In spite of not having handled the controls for five years, I felt perfectly at ease the moment the " Grunau " got off the ground, and the instructor's only criticism was of flat turns and slow speed. The machine was certainly rather sloppy at 50 km. (which is 31 miles an hour), though it responded well at 55. All German " Grunaus " incorporate spoilers on the wings, top and bottom, so perhaps they are a little heavier than the British makes.

2,000 FT. LAUNCHES

Most winch-launches that day were to 300 or 400 metres (1,300 feet), but we learned that in a strong wind 600 metres (nearly 2,000 feet) had once been reached, using a " belly hook ". The winching was done by a highly skilled German winch driver, and his technique was all that could be desired. Another German expert, L. Fasholz, supervised operations at the launching end. British and German personnel shared the job of driving the retrieving cars; the hooking-on was in the safe hands of self-appointed German children, and hordes of other nippers took turns at hanging on to the cars like flies as they tore across the field.



The Club Room at lunch. Barntrupp.



Minderheide. Willing retrievers.

" AUSTER " AERO-TOWS

On Sunday we were out again at the Club all day. The proceedings began when Sullivan started off on the first aero-tow of his life in a " Rhönsperber ". The towing 'plane, an " Auster ", was flown by Air Commodore Hatcher, and the pair were bound for the Club's future hill-soaring site at Scharf Oldendorf, where the other German instructor, a " Silver C " pilot, awaited them. This place is at one end of a magnificent sharp-crested ridge known as Der Ith, twenty miles long, with its slopes on either side facing south-west and north-east respectively.

At Minderheide, as the morning wore on, some pilots began finding lift here and there, in spite of a high overcast. One member achieved 16 mins. 52 secs., from the cast-off, by investigating a small area of lift at 200 metres over some houses to the North. But the up-current refused to drift down-wind with him, and he had to return to the same place to find it again. Another pilot, circling directly above him, only managed 11 minutes.

SOARING POSSIBILITIES

But the sensation of the day, also brought off before lunch, was

a flight of 36 mins. 40 secs. by Wing-Commander Peter Dudgeon. After a launch to 320 metres, he crossed a belt of trees along the southern edge of the airfield and started going up at 1 metre per second. He flew due west until the lift had dropped to ½ a metre and then turned and retraced his track. By flying to and fro along the same beat he was able to climb to 550 m. (1800 feet) above ground level.

The only possible explanation of this belt of lift, although only a light S.S.E. wind blew, appears to be that a standing wave was set up by a line of hills about 5 miles to the south. Certainly a line of stationary cloud, with the wind blowing through it, remained in approximately the same position, a little to the south of us, throughout most of the day, and at times it formed one of a series of distinctly lenticular clouds.

Needless to say, Dudgeon was overjoyed, as this was the first time he had ever found this evasive "lift" that other people talked about so much. And, when told at lunch that a kestrel had been seen circling up after him, he exclaimed: "If the birds were following me, then I *must* have been good!" (*See photo*).

An excellent picnic lunch and tea were served, and it was like the old days to see an Air Vice-Marshal hurrying over his tea for fear of missing his turn in a "Grunau", and afterwards offering to help in putting the machines away.



The 'Sperber' is launched.

The belt of lift was still in evidence during the afternoon, but became more difficult to hold on to. Nothing that could certainly be ascribed to thermal lift appeared, though thermals have been found on several previous occasions.

The members of this Club were almost all new to gliding, with the principal exception of S./L. McBean, an old Cambridge Club member, who was away in England during our visit. Nevertheless they appear to have been well and truly bitten, and it is a good sign that many of their colleagues at B.A.F.O. (*a*) think them crazy and (*b*) want to join too.

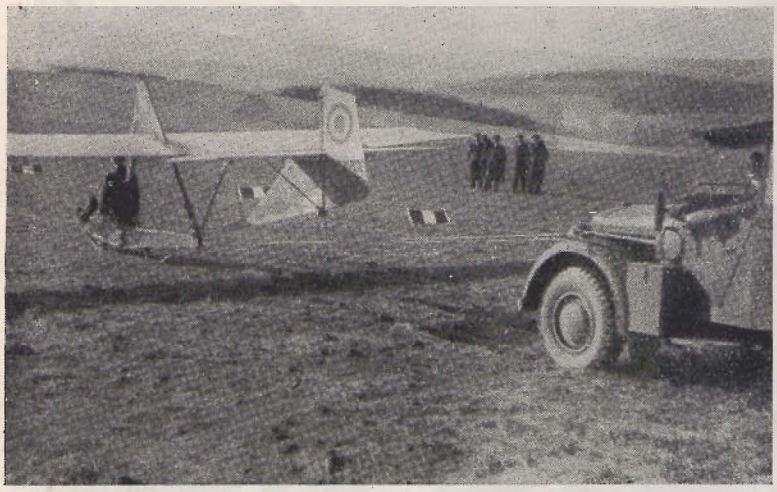
DETMOLD AND SALZGITTER

Of the two other clubs we visited, Salzgitter and Detmold, the former must wait till next month for a description.

The Detmold Club has its site on a hill overlooking Barntrupp, 20 miles E.N.E. from the town. The best wind for lift is south-west, but the slopes are rather irregular and not very long, and it is not easy to stay up in slope lift.

Here also we spent a week-end. The pupils include a large proportion of airmen, some of whom, as *ab initios*, have made quite spectacular progress. The German staff is headed by Peter von Husen, "Silver C" No. 13 and "Golden C" No. 11 in the international list. Among the others, Moessinger, a "Silver C", learned his advanced soaring in company with Eric Collins at the Hornberg. Then there is Fraulein Schwengler, known to the troops as "Mabel", who instructs on the Pendelbock.

The Pendelbock is an ingenious contrivance for suspending a "Primary" just above its centre of gravity. The four supporting legs are splayed out so that the lower middle portion of the fuselage can swing freely between them, and the glider can thus be made to respond to all three controls in



Drawing the S.G.38 back to stretch the bunjy.

a wind while hanging a foot or so above the ground.

BUSY TRAFFIC

Thanks largely to Group Captain Thompson, this Club is excellently organized, with all its various activities going at full blast simultaneously. In fact, a visiting Air Vice-Marshal, who began by asking everybody: "Is this a good day for gliding?", soon found it superfluous to persist in his attempt to get a plain answer to a plain question. Two winch cables were in action for launching the "Grunaus" and a pair of "Kranich" Two-seaters which were up and down all day giving dual instruction in slope-soaring.

HOP, SLIDE, AND A JUMP

A lot of time is saved by a novel method of giving repeated primary hops. After each landing the pupil stays in his seat and the retrieving car pulls him backwards to the starting point. On the way back, the bunjy (whose two front ends are fixed to stakes) is hooked on and becomes stretched as the car continues to pull the glider backwards. The moment full stretch is attained, the car driver pulls a release and the "Primary" shoots forward into the air once more.

After being winched up in a "Grunau" I got a first view of the slope system, but by that time had forgotten the precise wind direction. However, a semi-detached wooded hill delayed the descent, after which I put down on the marked landing-place without using spoilers, in defiance of local custom, having forgotten for the moment that I was not in England.



Barntrupp. "Mabel" on the Pendelbock.

GERMAN LABOUR

The machines in regular use are kept in a hangar on the hill-top, but the main building is at the bottom. Here, on the ground floor, are some excellent workshops, where skilled German hands are only too pleased to carry on their trade for 90 pfennigs an hour; while overhead a series of rooms are being fitted up to allow pupils taking a course to live on the spot. Its half-finished state gave just the right atmosphere of a gliding club when we assembled there for informal meals.

In this Club it is obvious enough that everybody concerned enjoys every minute of the time spent there. The spring and summer should bring better thermals and more unstable air for improved hill-lift, and—who knows?—perhaps a standing wave from the Teutoburger Wald which lines the horizon.

(To be continued).



Air Vice-Marshal Russell, Air Commodore Distrey and S./L. Sullivan getting out the machines.

THE ALLWING HORTEN PARABOLA

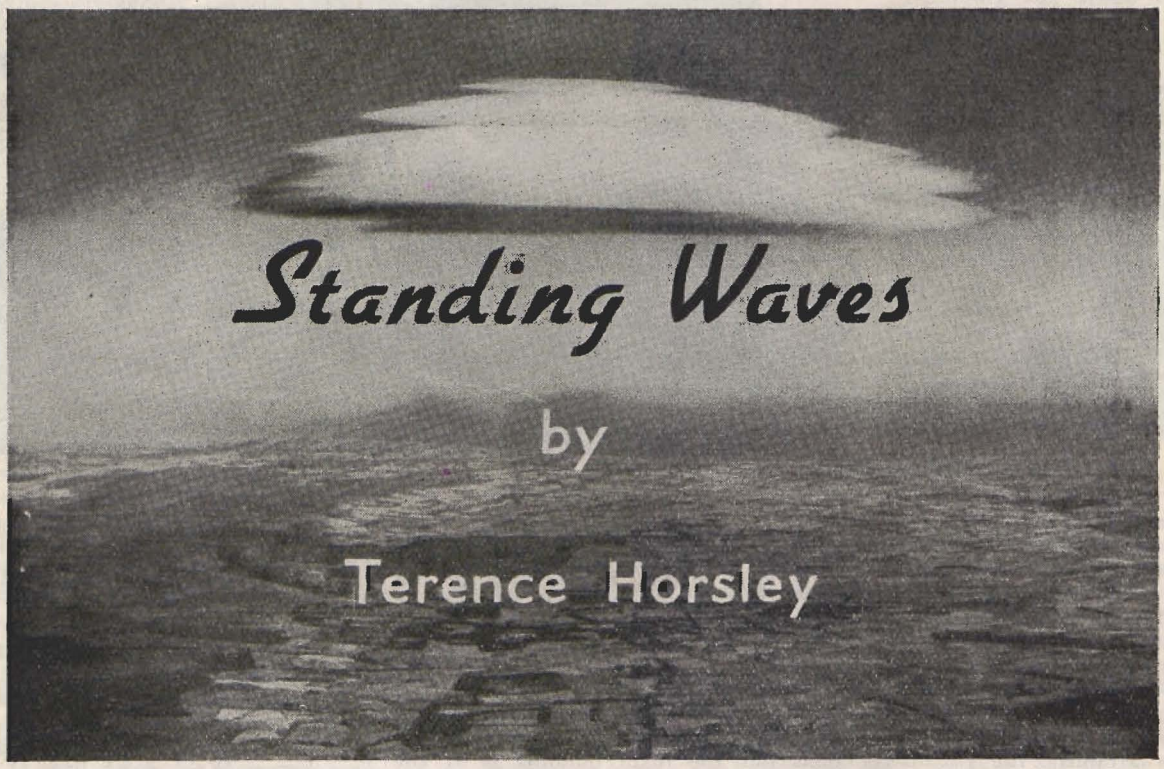
(Continued from page 22).

control. With pure elevator control, stick back, deflecting both outer flaps upwards, there would be no automatic splitting of the flap. The inner flaps worked chiefly as a negative elevator. All flaps (on ball bearings) were activated by push rods.

The undercarriage was the same as in "Horten II and III" where the front wheel is retractable.

The wing is in three parts. The centre piece 2.4 m. broad. Structure was built up of steel tubes, the forming members out of plywood and fabric. The outer wings were entirely built of plywood and fabric. Span 12 m., W/A 33.2 sq. m. (339.6 sq. ft.), A/R 4.3, Wt. empty 90 kg. (198 lbs.), Wt. full 170 kg. (373 lbs.), W/L 5.12 kg./sq. m. (1.04 lbs./sq. ft., sink 0.64 m/sec. (1.8 ft./sec.), G/A 19.

Radius of turn (centre to C.G. point on sailplane with Ca equals 1.0 and 30 deg. of bank is 9.6 m. 31.4 feet).



Standing Waves

by

Terence Horsley

No. 1.—This photograph, taken at 10,000 ft., shows the first of the three bars. The view is endwise, the camera facing north-east towards the distant coast, with Lundie Hill and the higher ground by which the wave was formed in the lower left-hand corner of the picture.

A SAILPLANE pilot never entirely forgets his training, so that even the hours spent behind an engine are not entirely wasted. I have spent many such hours during recent years, and in the course of them, much which is of interest to soaring pilots has thrust itself on my notice.

Leaving aside the anxieties which it has given passengers to be circled in thermal lift, I have myself been surprised on many occasions by the extent of it, and most of all by that other type of lift categorised generally under the heading of " the standing wave ". In the dark years of ignorance (circa 1939) it was widely supposed that the phenomena was rare in this country. It is not. It manifests itself in many places and on many occasions—and it almost invariably provides a smooth ride to the ten thousand feet mark required for a " Golden C ".

SOARING TO 10,000 FT.

The accompanying photographs are my first offering in the way of evidence. I took them on October 6th, 1945, at 10,000 feet after a smooth passage up the face of one of the waves with which they were associated. They show lenticular clouds at 12,000 feet over the eastern spurs of the Grampians. There were two well defined sets, the first on a line which runs between Edzell and Loch Lintrathen, and the second deep in the mountains themselves over the summit of Lochnagar. This second wave was in the midst of the wildest country with three thousand foot peaks on every hand.

Twenty miles to the south-east, on repeated occasions, similar waves have formed on the lee-side of the Sidlaw hills, which are a low range averaging 1,000 feet and separated from the main bulk of the highland by the broad Isla valley. Some very significant figures emerged as a result of their investigation, throwing what appears at first sight to be fresh light on the whole subject. In the meantime, it is sufficient to say that they were all blood brothers of the Hartside " Helm " in which Noel McLean broke the British height record in June 1939, and to which I humbly contributed as a ground-slave.

ORIGIN OF THE " STANDING WAVE "

First, however, it may be well to remind readers who are out of meteorological practice, that a standing wave is the result of an air stream flowing over a step, to set up waves on the lee-side, exactly as a submerged stone in a smoothly flowing river will set up standing ripples on the down-stream side. In the first instances

which I have mentioned, it was a north-westerly wind blowing across the high Grampians that provided the step, while the atmospheric conditions provided the critical requirements for building up the waves.

ASCENDING " ANSONS "

On October 6th I was flying an " Anson " with a view to taking a photograph of the summit of Lundie Hill which lay immediately below the bar-cloud between Edzell and the foothills to the south-west. I should have known better than to attempt the project on a day when this cloud was in the sky, for on previous occasions I had encountered it in exactly the same position, and invariably with dramatic results. Yet the rest of the sky was a calm blue through which the sun was blazing in an Indian summer, while the wind on the ground was the gentlest zephyr. Everywhere, except in the vicinity of the two sets of waves, there was not a ripple in the air.

2,000 FT. P.M. !

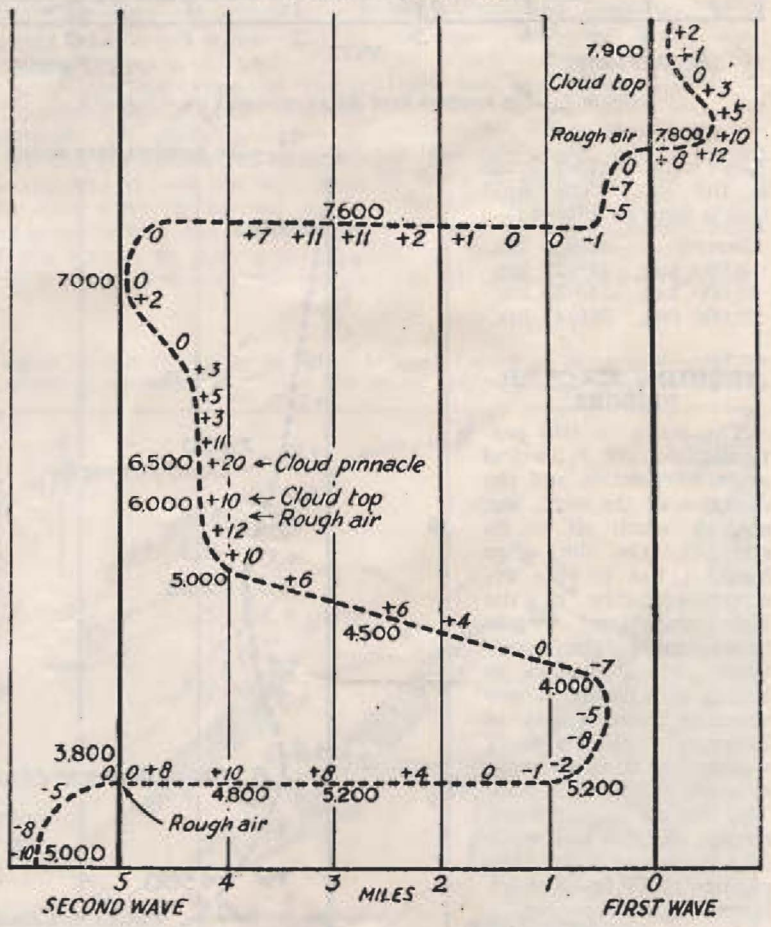
I flew into the area over Lundie Hill at 1,000 feet, passing suddenly from an area of smooth air into another of considerable turbulance. For a moment or two the photographer in the back struggled to take his picture, and at the same time to avoid being brained on the roof of the aircraft, while I myself hung on to the wheel for support. The rate of climb indicator was leaping from zero to 2,000 feet a minute climb in spasmodic jerks—partially through the violence of sudden upward gusts, and partially through my efforts to retain contact with the control column. At 2,000 feet the air smoothed and the rate of climb indicator settled down to a climb of 1,200 feet a minute. At this stage I decided to abandon the original project, and investigate the wave in which I was in. The procedure involved setting the revs and boost to the cruising position, and maintaining the aircraft in level flight by the artificial horizon. I had done this on previous occasions, and was reasonably satisfied that, with the additional check of the air speed indicator, that the conditions of flight approximated to those of a sailplane.

12,000 FT.

With the help of the bar overhead, it was possible to identify the shape and position of the wave, and so to fly backwards and forwards along its length of approximately five miles. From 3,000 feet up to 12,000 feet the air was completely smooth, a characteristic noticed on previous occasions, while the rate of climb varied from 500 feet per minute to 1,500 feet per minute. This again was identical with results obtained in waves formed over the Sidlaw Hills. I flew upwards past the side of the lenticular in lessening lift, finding stable air over its crest. But this was preceded by a brief period of mild instability at cloud level and about two hundred yards away from it. This again confirmed other experiences. On the other hand, I had always found in the past continuing lift over the top of the bar, as though the upper up-stream had been bent to conform to the shape of the wave below. On this occasion there was no sign of it. The meteorological conditions were interesting.

The area was on the edge of a high pressure system. Cold air was coming in from below it, setting up an isothermal layer, so that there was no temperature drop between ground level and 3,000 feet. But above 3,000 feet there was a constant lapse rate of 2.9 degrees (F), which placed freezing level at 12,000 feet—or the same height as the lenticulars.

Figure 1.—The small numbers show the rate of climb in hundreds of feet per minute. The large, the height in feet.



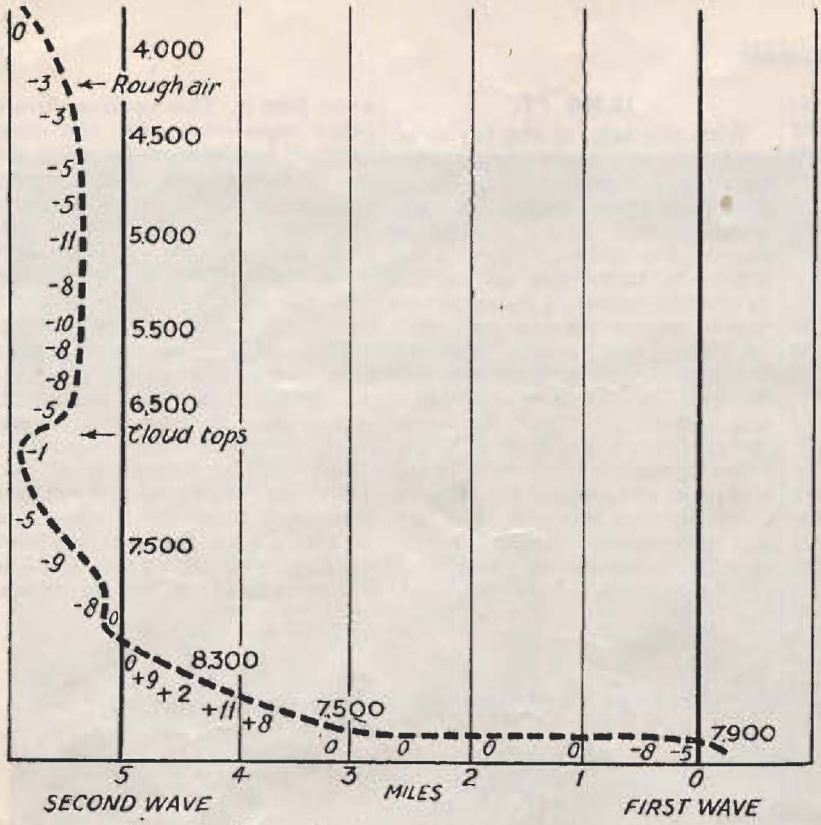


Figure 2.—The numbers here denote the same as in Figure 1.

down all round me. In the course of half an hour, one thousand trees fell, but long before that I was out of the coverts and clinging for dear life to a fence in an open field. (See photograph). The wind speed rose on the ground to an estimated 100 m.p.h. It was interesting to discover that 20 miles away at my air station the maximum gust during the period in question had been 70 m.p.h.

THE HOME OF THE DEVIL

A study of the map fails to reveal why the wave should form here in a wind from 340 degrees, and nowhere else. The contours fall gently from 2,200 feet to 400 feet, where the valley of the West Water provides a shallow depression before the rise to the shoulder of Lundie Hill some 700 feet high at this point. There is no apparent reason why there should ever be such a blast at ground level as occasionally takes toll of the coverts, but only at this particular place. It was not

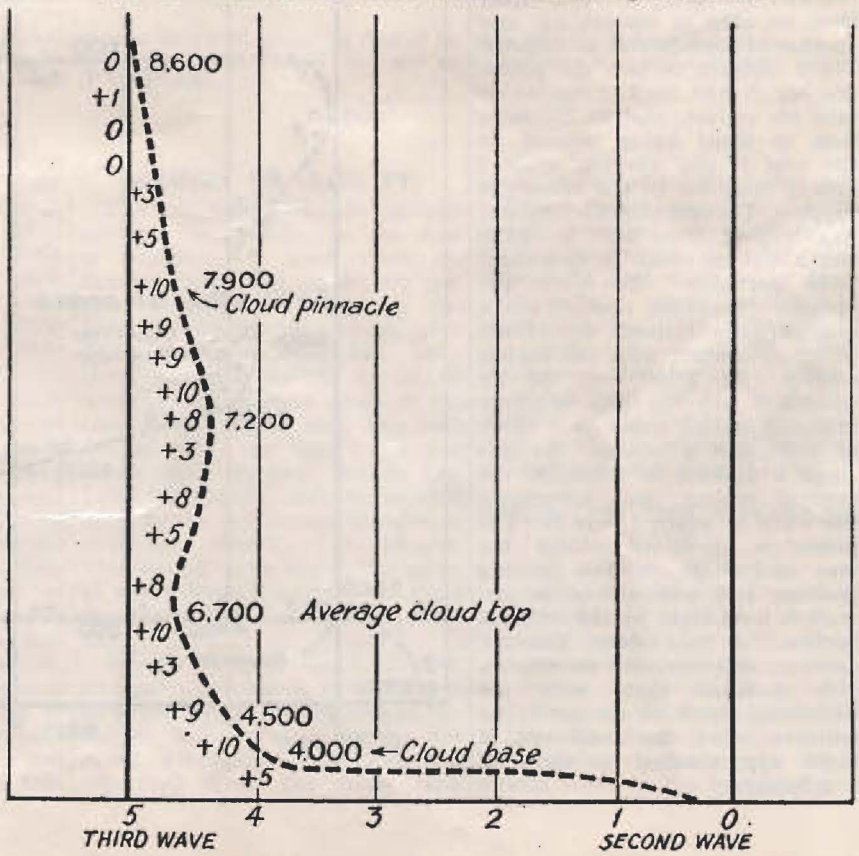
There were no other clouds in the sky. The wind speeds were as follows :—

Ground	340/ 5 kts.
5,000 feet,	340/25 kts.
10,000 feet,	350/35 kts.
20,000 feet,	350/45 kts.

SHOOTING 100 M.P.H. PIGEONS

The wave in this particular locality is critical as to its position and the direction of the wind, but not so much as to its strength. On the other hand, it has all the destructive habits of the Helm wave and wreaks havoc among the woods below—which happen to belong to a friend. I was shooting these woods in February, 1943, when I was treated to an alarming example of its capabilities. The bar on this occasion formed at 4,000 feet while I was waiting for the pigeons to flight—a much lower height than usual—and within a few minutes the trees began to come

Figure 3.—The numbers here denote the same as in Figures 1 and 2.



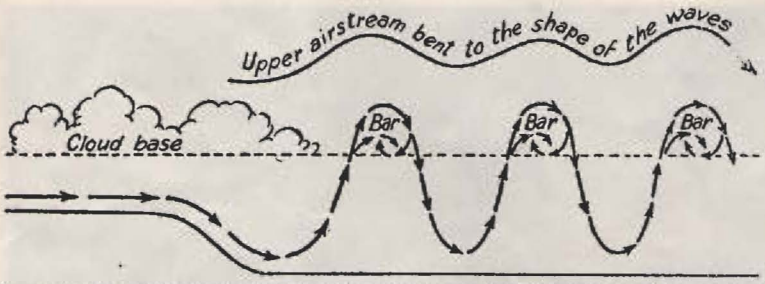


Figure 4.—The above diagram is a rough illustration of the manner in which a standing wave is likely to form on the down-wind side of high ground.

here, however, but in the lee of the Sidlaw Hills 20 miles away where the most interesting figures were obtained. On each of three occasions I was able to take the opportunity of flying in the vicinity for a considerable period.

Stretching from Forfar in the north-east to Perth in the south-west, the hills form a line about 25 miles long, with the low lying coastal plain along the estuary of the Tay for as far as Arbroath on one side, and the great valley of the Isla on the other.

4,000 FT. CLOUD !

On the 29th September, 1944, I noticed three distinct lines of stationary clouds standing down-wind of the hills. They were each about 12 miles long and were separated by some 5 miles of clear air, the last one extending from Lunan Bay to Carnoustie. Each of the clouds had lenticular characteristics, although in each one of them there were cumulus like protuberances on their upper surfaces. Thus it was that while the cloud base was at 4,000 feet, the crests varied from 6,000 feet up to pinnacles reaching to nearly 8,000 feet. In this respect, they were unlike the clouds formed at Lundie.

The area was under the influence of a vigorous frontal system which was bringing with it winds approaching gale force. At ground level the wind speed was gusting to 40 m.p.h., while at 2,000 feet it was approximately 15 m.p.h. faster. The lapse rate was 3.5° (F). This had helped to create vast masses of orographical cloud over the big mountains to the west, leaving the coastal area and the Sidlaw Hills clear except for the three distinct bar clouds.

NOW FOR THE FIGURES

A total of about 100 readings were taken after setting the aircraft in straight and level flight with constant boost and revolutions. They are shown in *Figs.* 1, 2, and 3. All three waves were flown on both their up-draught and down-draught sides. The significant facts which emerged may be tabulated as follows :—

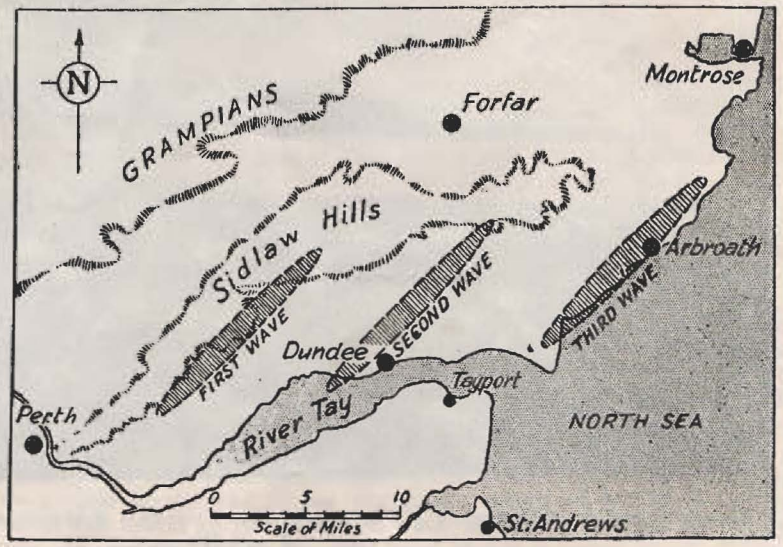
1. The strength of lift in the second and third waves was as strong as it was in the first.

2. A cumulus type of turret in the third wave rose to 7,900 feet, alongside of which a climb of 1,000 feet per minute was recorded. As this was at least ten miles from the first wave, it seemed extraordinary to find the full activity of the system at such a point.

3. Flying level with the crests of each wave on the rising side, it was found that the up-lift was continued for more than 3 miles from the cloud itself. For instance, flying between the lenticulars of the first and second waves at a height of 7,000 feet, it was found that the rate of climb at one, two and three miles was respectively 700 feet a minute, 1,100 feet a minute, and 200 feet a minute. Beyond three miles, I was approaching the influence of the wave behind it on the down-wind side. At four miles—which was only one mile from the crest of the first wave—the rate of climb indicator stood at zero. It was not until I approached within half a mile that a down current was recorded. One would have expected, in view of this, to have found it extremely powerful, in that it was apparently concentrated into a narrow belt. On the other hand, the biggest reading was a loss of only 700 feet a minute at 7,500 feet. When the down-draught of the second wave was tested later, this produced a maximum of only 1,100 feet per minute. The outstanding characteristic was the manner in which the rising air on the windward side extended in front of each wave for a considerable distance, whereas the downward portion was concentrated into a much narrower belt.

4. All three waves were perfectly

Figure 5.—A sketch map of the district in Scotland where the author experienced the curious air phenomenon discussed in this article. (Wind 40 m.p.h. from 270 degrees.)

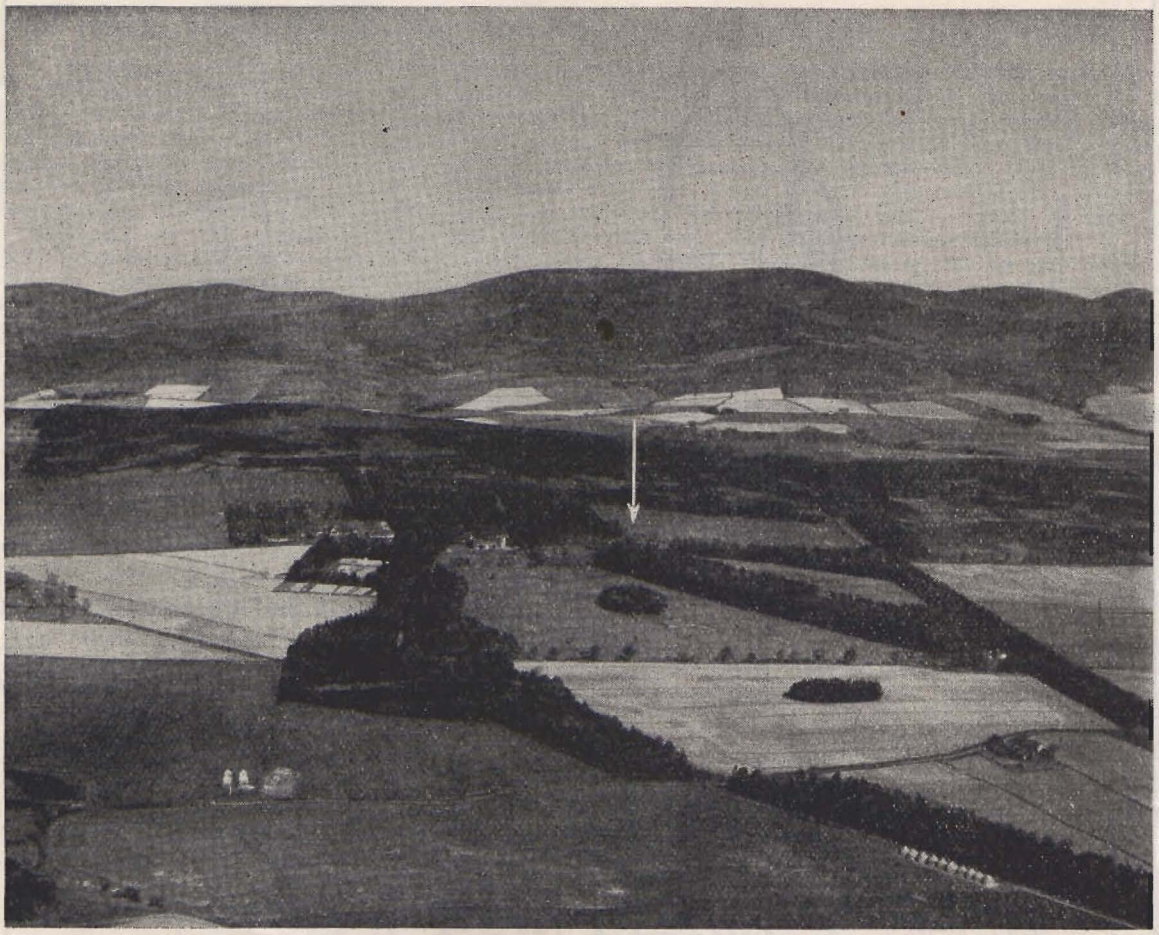




No. 3.— In this photograph all three bar clouds are shown and are taken from the sunny side, which accounts for the lack of definition in the negative.



The same cloud as in photograph No. 1, taken from one side of it at approximately the same level. The second bar is seen beyond it.



The head of the arrow shows the swath cut in the woods during the phenomenon of February 1943. *It also denotes the direction of the wind and illustrates the innocent-looking character of the ground. While on that occasion the wind force at ground level was probably* 100 *m.p.h., the wave of October* 1945 *was accompanied by a dead calm at ground level and clear sky.*

smooth, except in two places. The area immediately under the bar was rough—but not excessively rough. I crossed several times from the upside to the downside, finding a brief area of turbulence as the rate of climb indicator changed its direction from a rise to a fall. Again at the crest of the bar cloud which varied from 6,000 feet to 8,000 feet, there were patches of mildly rough air.

5. The lift continued for approximately 1,000 feet over the crests of each of the waves. The maximum height reached was 8,600 feet.

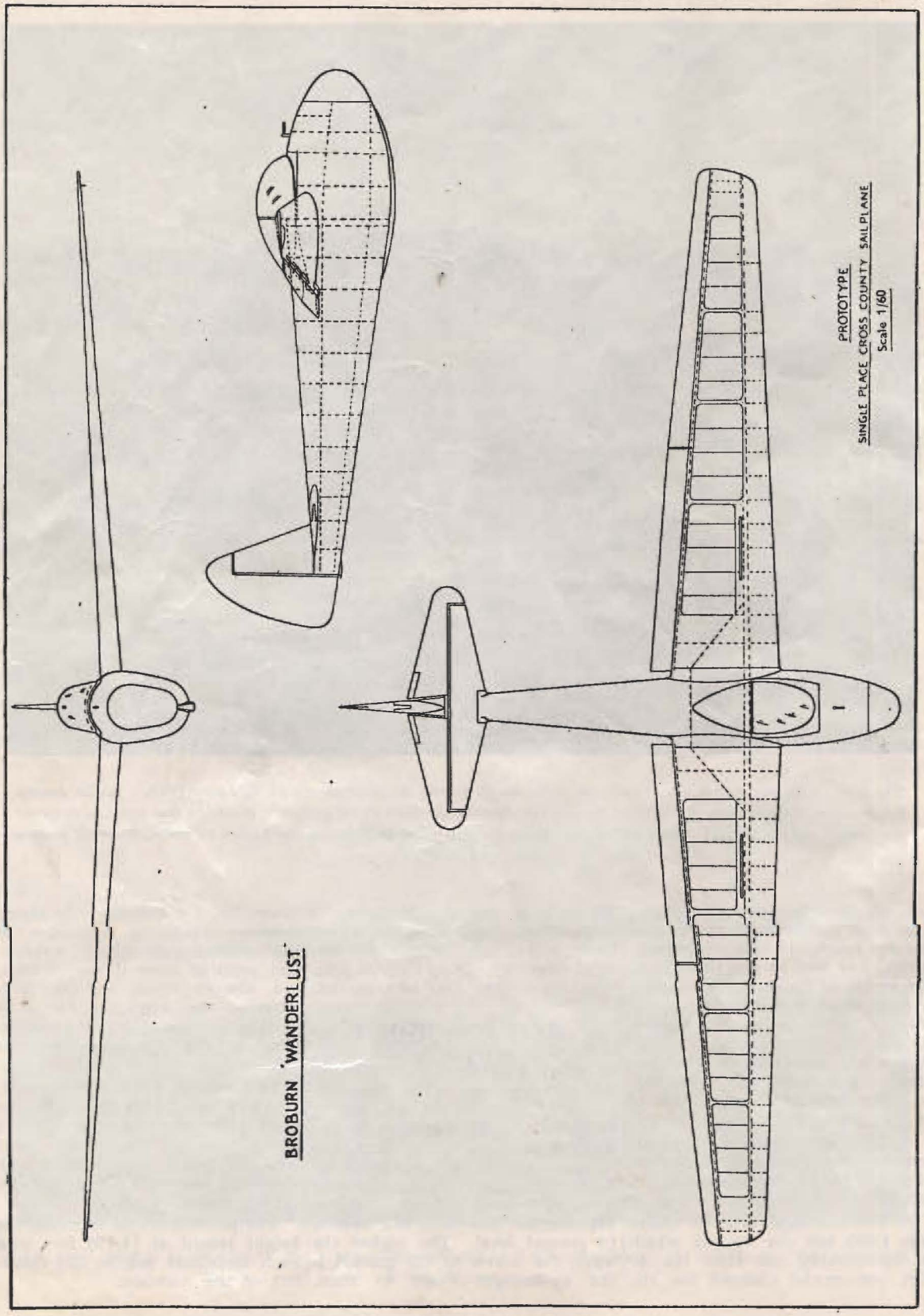
6. The average rate of climb was 1,000 feet per minute, which is considerably less than the 40 feet per second claimed for the Hartside ascent by Maclean. I think it will be found that where these waves are formed in low wind velocities, say up to 40 m.p.h., this rate of climb may be expected.

GREAT POSSIBILITIES

From a sailplane pilot's point of view, I think that there are useful inferences to be borne in mind. The first is that the degree of turbulence at the base of the wave is uncomfortable, but not dangerous. In this connection, I would suggest that where a wave is formed in a wind of low velocity, its base does not extend to ground level. The higher the wind, the nearer to the ground is the up-draught likely to start. Secondly, I think there is strong evidence that the velocities in the second and third waves—and possibly more if they exist—are always equal to the first. Thirdly, the lenticular bar is a certain indication of its presence, but is not necessary to the phenomena.

In October, 1944, for instance, I identified two waves in the same place when there was not a cloud of any kind in the sky. The air was extremely dry and elsewhere above 1,500 feet completely stable.

The possibilities of breaking the height record of 14,170 feet with such assistance are by no means out of the question.


BROBURN 'WANDERLUST'
PROTOTYPE
SINGLE PLACE CROSS COUNTY SAILPLANE
Scale 1/60

F.A.I. SILVER & GOLD GLIDING BADGES

AT the first meeting of the Directing Committee of the Fédération Aéronautique Internationale to be held since the war, amongst the other items discussed was the position caused by the disappearance of the I.S.T.U.S.

The F.A.I. is the association which controls International competitions, sporting events or trials in connection with aeronautics, and lays down the regulations to be observed so that certain records and certificates are internationally recognised. Its membership is composed of the National Aero Clubs of each country, each of which undertakes to see that the internationally agreed conditions are complied with. In the U.K. the national controlling authority is the Royal Aero Club.

INCORPORATION OF I.S.T.U.S.

The Royal Aero Club raised the question of the issue of the higher gliding certificates and badges, commonly known in this country as " Silver C " and " Gold C ". Until the war these had been awarded by the I.S.T.U.S. an organisation set up in Germany to study gliding and soaring, and which worked as a sub-commission of the F.A.I. The I.S.T.U.S. had evolved certain tests and requirements for gliding performances, and issued certificates and badges to British pilots after the Royal Aero Club had certified that the tests had been carried out. The actual tests were observed by B.G.A. official observers, under powers delegated by the Royal Aero Club.

The decisions reached by the F.A.I. were :

1. The F.A.I. will take over the functions of the I.S.T.U.S. and through each National Aero Club will award Silver and Gold gliding badges to pilots who carry out tests similar to those previously in force.

2. National Aero Clubs will in future only apply for F.A.I. badges.

3. National Aero Clubs will award equivalent F.A.I. Silver and Gold badges to pilots under their jurisdiction who have already qualified for, but never received, I.S.T.U.S. badges.

ISSUE OF BADGES

It is unlikely, under present conditions, that it will be possible for some time for the Royal Aero Club to issue the new F.A.I. badges. However, there is nothing to deter gliding pilots from carrying out the necessary tests for these badges and certificates, and the badges will be issued as soon as supplies become available.

The forms setting out the tests for the Silver and Gold badges may be obtained from the Royal Aero Club. The cost of each badge has been provisionally fixed at 10/-.

The following is a brief summary of the requirements for the badges :

Silver Badge : The pilot must already hold a R.Ae.C. " C " Gliding Certificate, and carry out (*a*) a Duration test of at least 5 hours : (*b*) a Distance test of at least 50 kilometres (31 miles) : (*c*) a Height test of at least 1,000 metres (3281 feet).

Gold Badge : The pilot must already hold a Silver Badge and carry out : (*a*) a Distance test of at least 300 kilometres (186.5 miles) ; (*b*) a Height test of at least 3,000 metres (9843 feet).

Before the war British pilots had qualified for one Gold badge and 59 Silver badges.

A NEW DESIGN

TWO young designers, Rodbourn and Brown, of Reading, have designed and have almost finished building a Sailplane which is intended for high performance work.

It is being built entirely in their workshop without the aid of any machine tools whatever, except for the few turned pieces which are required.

The general considerations which have guided the designers of the " Wanderlust," as the new machine is called, are that it should require small storage space, and hence a smaller trailer, that it should handle easily on the ground, and being small will be quicker to build, requiring less materials to build and will therefore be cheaper to produce.

The outstanding feature of the design is the incorporation of flaps along the whole length of the wings, as well as spoilers.

In spite of its small dimensions, the cockpit is roomy, with adjustable rudder pedals.

It is hoped that the selling price in quantity production would be lower than the average price now ruling for high performance Sailplanes, and, if the design proves successful after test, it could be made available in " Kit " form for building by owners. This would also serve to solve in some degree the problem of freight to foreign countries. Progress will be reported in future editions of SAILPLANE.

DATA.

Span	34 ft. 0 ins.
O.A. Length	18 ft. 3 ins.
Height (Tail down)	4 ft. 0 ins.
Wing Area	75 sq. ft.
Flap Area (Total)	13.2/3 sq. ft.
Aileron Area (Total)	13 sq. ft.
Tailplane and Elevator Area	12 sq. ft.
Fin and Rudder Area	7¾ sq. ft.
Root Chord	40 ins.
Tip Chord	18 ins.
Aspect Ratio	15.4
Root Section	N.A.C.A. 23021
Tip Section	N.A.C.A. 4312
Dihedral	4 deg.
Weight (Empty)	190 lbs.
Weight (All up)	375 lbs.
Wing loading	5 lbs. sq. ft.

A SAILPLANE PILOT IN CHINA

Last year Mr. John Simpson, of the Cambridge Club, went out to China to work with the Friends' Ambulance Unit, and while there he has managed to contact the Chinese Gliding Movement. The following extracts from three of his letters give an account of his experiences.— A.E.S.

Kutsing, Yunnan. July, 1944.

I HAVE been in the Middle Kingdom about a month now, and find myself quite surprisingly at home here. Perhaps this is because the Chinese being really civilised do almost everything the opposite way to those unfortunates in the Far West. Even their name for a sailplane shows their sense, for instead of using the vulgar word " glider " (or even Aerial Barge) they say " hua hsiang chi " or " Slippery soar machine ". " Hua hsiang " is what a vulture or kite does in a thermal, a sort of delicately balanced spiralling.

"THUNDERHEADS AND ANVILS"

The first flight, over " the Hump," was interesting. We flew above a fine cumulus sky for the first four hours and then landed on a strip in the jungle where we had some spam and coffee which was miraculously ready for us. Then up towards the most massive collection of thunderheads and anvils I have ever seen. We had to climb very high, and at one point I passed out, but was brought round with some oxygen, and so hardly missed any of the almost terrifyingly impressive surroundings. As possibly the first " Silver C " pilot to be ferried over the Himalayas, it gave me something to think about from the up-current point of view.

Even on the ground here, life continues to give satisfaction. Kutsing is a little town, with nowhere big enough to rig an H.-17, but it is 7,000 feet up, and there are mountains all around. I have found driving on The Road a partial sublimation of my sail-flying instincts. There seems something familiar about swinging one's truck round hairpin bends above the clouds, with glimpses of paddy fields and forests showing through three or four thousand feet below. However, the truck I have driven so far feels more like a " Horsa " than a " Kirby Kite ".

THREE WORMS TO BEGIN WITH !

We have American, Chinese and English members of the Unit here. Naturally we are discussing building a " hua hsiang chi ". I have brought a Slater-Cobb variometer with me which should serve as a good foundation. We can get Bamboo and Chinese Pine, but I don't know about plywood. One of our Chinese garage workers is a very good hand with the axe, and I can just imagine him peeling strips from tree trunks with it. Fabric might be difficult and Chinese paper has been suggested. However a better idea is to use silk. One of our members has three silkworms, and we might make a start on this quite soon.

Kutsing. 30th Dec., 1944.

After 6 months working in this country with people who, although pleasant in many ways, don't understand about thermals and the noise of splintering " Daglings," I have at last contacted some keen sail-flying students, so felt I must write to you about it.

Some months ago at somewhere in Yunnan I met some people with primaries and G.B.'s and H.17's and the right ideas. No soaring facilities, so I had to fly a " Primary " !

DEAR OLD DUN SH TA BAO

The day before yesterday, I visited the Gliding Club at Chungking, and met a man called Chou Chin Chien who has a " B ". He had studied English books and to my intense delight showed me two copies of the SAILPLANE. One was the issue with the 1937 camp flights in it, most of which he knew more or less by heart. As this included my ride to Withernsea, I gained considerable " face ".

I did not see any machines, but saw photographs of a Chinese-built " Rhönsperber ", which looked very good. The only Chinese " Silver C " is Li Kuo Sheng, who obtained it in Germany.

Mr. Chou gave me a copy of the Chinese Gliding periodical, which contained an article on " Gliding at Dunstable " translated from the English. I am hoping to be able to translate this back into English again. The Chinese for Dunstable is Dun Sh Ta Bao; the literal meaning of the characters seems to be " The Low-Walled Pagoda of the Honest Scholars ". I have also a Chinese Handbook to Gliding; in this they don't alter the names, and in the middle of a Mass of characters you see " P. A. Wills ", or " J. S. Sproule " written vertically.

Kutsing. 30th July, 1945.

Since I wrote to you last I have done quite a number of things, including spending a Gliding Week-end in the Flowery Kingdom.

At the beginning of this month I returned to Chungking from a 5,000-mile journey delivering drugs for Mongolia. This was an interesting journey, one of the things that interested me most was being able to see dust-devils in the Desert (Little Gobi). Some of them were wide and diffuse with a rotary movement, but I saw two really fine ones, looking just like waterspouts. They were perhaps 50 feet wide and up to 2,000 feet high.

I WORSHIP "TIEN O"

When I got back to Chungking I met Michael Crosfield of the Cambridge Club and we were invited by Mr. Ho Gun Sun, the Director of Physical Education, to visit the Club at Bei-Pei, about 40 miles up the Jia Ling River.

The Club has a grass landing strip beside the river beach, and inside the hangar we found many primaries, H.-17 and a real live " Rhönsperber " ! This was named " Tien O ", or " Sky Hawk ", and well fitted out with instruments. It had been built two years previously in China. Painted light green, it was a fine sight, we couldn't take our eyes off it, and stood around for a long time worshipping it.

Eventually we left to attend a feast, at which some entertainment was produced by Hsin Pu Sun (Simpson) and Guo Sh Der's attempts to speak Chinese.

WORKING UP . . . .

The next morning, after the usual breakfast of poached eggs and lotus seeds in a bowl of sweet wine, we inspected the landing field and were glad to see power wires near one end, just like home.

Later Miss Pang Yung Fang, instructor, hopped the " Rhönsperber ", and so did I.

The sky was overcast, so after lunch with Col. Li of the Chinese Air Force we were taken by Instructor Chen of the Chungking Club, a few miles up the river gorge to the hot springs and the Temple.

All the time our conversation was punctuated with innumerable cups of hot water and water-melons of incredible size and flavour.

HAVE MY SCRATCH AND— AWAY !

The next day was fine, and I was invited to fly the " Rhönsperber " from the Dragon Mountain, 1,100 ft. above the river.

It was cool crossing the river in the sampan, but hot walking up the mountain (shade temperature about 102 degrees). We climbed up through bamboo groves and little villages, and came out on the ridge. The launching point was triangular and had been flattened out on the very summit just to fit a sailplane and bunjy crew.

The wind was unfortunately blowing gently down the mountain, but thermal gusts were coming up every five minutes or so. After a final water-melon I was screwed down and launched into one of these. I scratched around holding height for a few minutes, and then flew the two miles away to the field in the father and mother of all down-currents.

My flying experience during the past two years has been confined to driving trucks above the clouds on the Burma Road and being sick in the back of D.C. 3's, so it felt very good to be rotating the earth about the wings of a sailplane again.

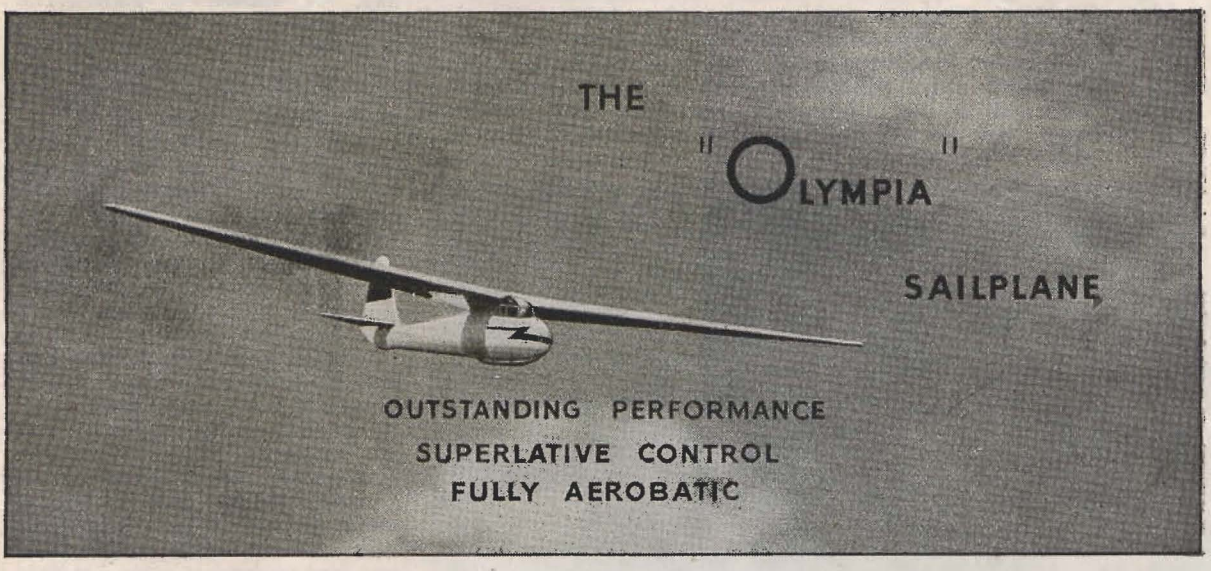
There was quite a little ceremony back on the field. Mr. Kuang Yan Ch'uan, the " Stationmaster ", presented me with a Chinese Glider Pilot's wings and a little Chinese scroll which will look well on the wall by the " Silver C " one.

I AM CROWNED

This time I had an interpreter for a speech, which made things go a bit better ! I told them how much I admired them for building up a soaring movement in China at a time of war when it was forbidden in England (the Ministry of Education are in charge of it), and hoped, if civil gliding is permitted again in England, some of them would one day visit Dun Sh Ta Bao.

We spent the last morning sitting on a bank overlooking the " Rhönsperber " and learning each others technical gliding terms (and eating more melons !) A met. handbook was produced and we were delighted to see that the Beaufort Notation was almost word for word. I noted my old friend No. 6,—literally " raise umbrella cause distress ".

The members were all interested to hear news of English gliding, but only had two copies of the SAILPLANE.



More Orders for Chilton OLYMPIAS have already been received than for any other high performance sailplane ever built or sold in Great Britain. Purchasers include some of the best-known personalities in the pre-war British soaring movement.

" The Olympia, is in my view, one of the finest pieces of balanced aerodynamic poetry which has been created by man.—*Philip Wills.*

CHILTON AIRCRAFT, HUNGERFORD, BERKSHIRE, ENGLAND

B.A.F.O. GLIDER AND SAILPLANE CLUB

THE history of the Occupation Forces' Gliding in Germany is not so much a story of co-ordinated effort on the part of some central body, but rather that of small bands of enthusiasts working individually, and, to a small extent, separately, to the same ends.

As far as Air Headquarters, British Air Force of Occupation is concerned, the conception of forming a Gliding Club came about as the result of three or four very " browned-off " officers sitting in a dreary office in an equally dreary part of Western Germany, wondering how they were going to spend their time when they moved to their final occupation areas in Germany. At that time, of course, the final Headquarters' location was known, and although all the hills in that particular area most inconsiderately ran from east to west with a general prevailing west wind, thus precluding slope soaring, there seemed to be a possibility that a site might be found.

THE GERM GROWS

Enthusiasm was spontaneous, and immediately a minute was addressed to the " powers that be ", asking them whether German gliders could be taken over for the purpose of forming this Club. The " powers that be " agreed, and from then on, as gliders were uncovered, reports began to flow in, and machines were ordered. Unfortunately, a considerable number of machines were damaged, both by Germans, to prevent their falling into our hands, and by over-zealous Allied personnel whose instructions to destroy enemy aircraft were interpreted a little too literally. Also, it appeared that several other people had come to the same conclusion that gliding would be a practical hobby and pastime, and inevitable wrangles developed over the obtaining of the desired equipment.

SIGHTING THE SITE

Whilst this was going on we moved to our final location and started looking for a site. All the hills—alas !—were heavily wooded and the only reasonable soaring site near Buckeberg had been ploughed up. Eventually, we decided to cut our losses and to take over an unused airfield at Minderheide, just N.W. of Minden. This decision was taken because we wanted to have reasonable hangar accommodation and we also wanted to have a site which would permit Club members to be able to glide in the evenings after they had finished work.

We engaged a small nucleus of Germans as staff (all of whom were qualified engineers, and themselves glider pilots), and, eventually, towards the end of July, our first gliders (terrific thrill !) arrived. They were a fairly mixed bag, including a certain number of the standard German " Primary ", the " SG. 38 ", " Baby Grunaus ", a " Rhönsperber ", an " Olympia ", and a " Kranich ". Our German engineers led us to find a Ford V-8 winch car, which consisted of the standard Ford V-8 coupe chassis with everything behind the driver's seat sawn off, and a rather ingenious quick jacking and quick engaging winch running off the two back wheels by means of wooden friction rollers.

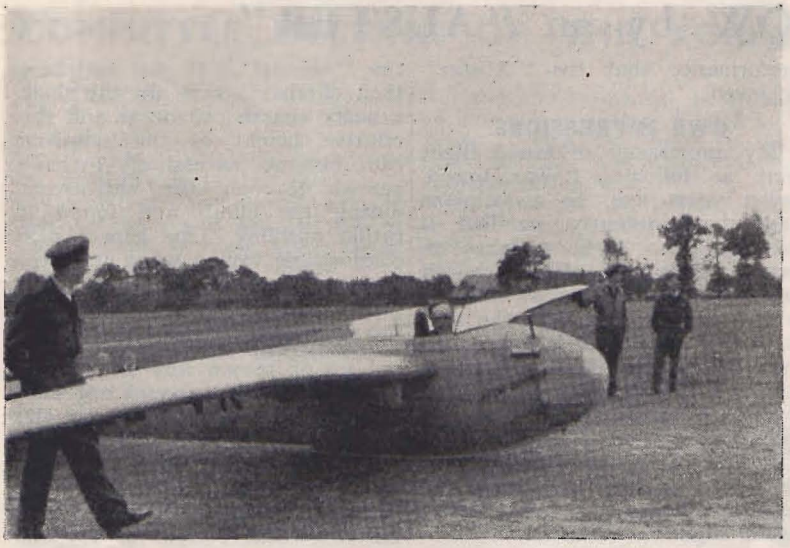
BEGINNING THE BEGIN

We called a meeting of the Club and a committee was selected. G/Capt. M. T. Judd, D.S.O., D.F.C., A.F.C. was elected as President, and S/Ldr. R. J. Sullivan and S/Ldr. G. Abel were elected as Secretary and Treasurer. The Club was limited, to start with, to 30 members, and the following Sunday, which happened to be a glorious day, we started to glide. The membership of the Club was designed to give roughly 50 per cent flying personnel and 50 per cent ground personnel, including three WAAF officers.

Our first few days' gliding were uneventful, the GD personnel quickly going through every elementary stage, and were flying " Grunaus " around quite happily. Unfortunately, thermal conditions were not present (or at least, evident !), but an average flight in a " Grunau " lasted from three to five minutes with an 800 foot launch. A week or so later, A/Cdr. Porter, C.B.E., astonished us all by finding a fat cumulus and staying under it for 17 minutes. Undoubtedly, he could have stayed longer if he had been willing to move off with it. As it was, he found himself caught a little short and had to land in a cricket field about a ¼ of a mile away from the aerodrome. Gradually, it became apparent that there were thermal conditions present in the area on the right sort of day, as we had several flights of 10 minutes and even one of 15 minutes quite recently by S./Ldr. MacBean.



Senior Commander Philip Wills, C.B.E., S./L. Sullivan and a ' Sperber ' at Minderheide.



After the flight in the Rhönsperber.

PATIENCE !

After everybody had become fairly proficient on " Grunaus ", we decided to rig the " Sperber ", not so much, it must be said, because we thought it was any better than the " Olympia ", but more because of the undoubted beauty of its lines. However, nothing spectacular has been achieved so far concerning endurance with any of the high performance sailplanes, mainly, I think, because we all have a lot to learn.

OURS IS A NICE CLUB . . . .

Sunday, 16th September, was rather a " Field Day " for us as we were very honoured to have a visit from Mr. Philip Wills. Unfortunately, it was an extremely bad day, and he was unable to repeat the performance that I had seen him give at 84 G.P. Gliding Club at Salzgitter a few days earlier, when he had disappeared with an " Mu. 13 " for a couple of hours, suddenly arriving back, to our great surprise. This Sunday, also brought F/Lt. Haynes and F/Lt. Ward from Salzgitter with a " Fieseler Storch ", and gave us our first aircraft tows. The cloud base was, however, down to about 1,200 feet and so we did not get anything more than a little practice out of the towing. Haynes and Ward were in very good form and gave us an excellent display of aerobatics in our " Sperber ".

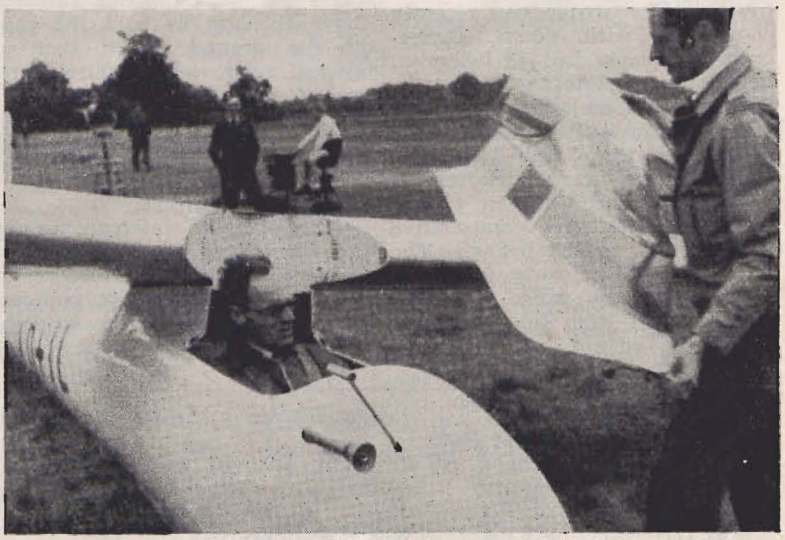
'THE OLYMPIA' *Flight Tested by* PHILLIP WILLS, C.B.E.

Span : 15.00 metres.
Empty weight : 160 kgs.
Gliding angle : 1 : 25.5 at 69 kms./hour.
Minimum sinking speed : 0.71 m./sec. at 59.4 kms./hour.
Wing loading : 17.000 kgs. per sq. metre.
Aspect ratio : 15.00.

" Meise " is German for " tit-mouse," but I can't trace any common qualities. It was the design selected from all entrants as the standard machine to be used at the Olympic Games which were cancelled by the outbreak of war. The Olympia is, in my view, one of the finest pieces of balanced aerodynamic poetry which has yet been created by man.

At 55 kilometres an hour (35 miles an hour) the controls are uniform, finger-light, highly responsive, and yet completely stable. The machine possesses almost perfect neutral stability. In a turn of any degree of steepness one can take one's hand off the stick, and she stays exactly in the turn until you take her out. I have heard on reliable authority that once a loop has been started, she will complete it very prettily with hands off the stick. Chasing very mild hill-litt on the 200 feet Gitter slope, she seemed to wriggle in and out of the small serrations of the hill almost on the thought-power of the pilot alone. On paper, the performance is not quite so good as the " Mu 13", but, unless practice enables one to cope with the latter machine more than I should think likely, I should back the " Olympia " against the " Mu 13," except possibly in light-wind thermal-catching off winch launches, where a very low flying speed is helpful.

(*Continued on page* 23)



Philip Wills about to test the " Olympia."

AERO-TOW by an "AUSTER"

WITH the prospect of civilian gliding starting again, a few remarks about to-day's aero-towing position are needed. The country is covered with aerodromes from which the cross-country sailplane pilot can be retrieved, and it is the writer's aim to institute a towing service at Leicester—the heart of the country—for the benefit of the gliding community. This would save derigging and the long night trek for the trailer crew. To do this efficiently we will need a tug that is not expensive to run but has enough power for the work. Before the war the machine best suited to the work was the ancient "Avro" 504 N. with a giant "Lynx" engine of about 250 h.p. This aircraft, in the hands of the late Capt. Phillips of Cornwall Aviation Ltd., would haul sailplanes to 2,000 feet at the surprising rate of one in every five minutes. With the queue of machines waiting to be launched into the coming front this was necessary. It was found however, that the petrol consumption was enormous, with the result that the "Gipsy Moth" was tried. This amiable aireraft did the job well, but it took 15 mins. per sailplane. Though the hourly consumption was much less, the amount of fuel used per sailplane was just the same, and instead of getting 12 launches per hour the rate was reduced to four. This all indicates the special nature of towing. The writer has recently co-operated with Messrs. Taylorcraft Aeroplanes Ltd. of Leicester, in obtaining performance details, with the civilian version, of the famous "Auster" following tests made with the "Gull III" and the "Minimoa" early in September when these machines were piloted by Prince Bira. The comparative figures are given below. The "Grunau Baby" was towed in conditions of no wind, and with memories of the pre-war tugs, the writer did not expect the fine performance that the "Auster" achieved.

OWN IMPRESSIONS

My impressions of towed flight were as follows. I was towed, seven years ago, in a sailplane and more recently handled a "Horsa", so I knew what to expect. This form of flight is not nearly so hair-raising as a fierce winch launch. One feels the slip-stream as the signal is given, and very gently the sailplane eases forward. As the acceleration is less than with a winch the run over the ground is longer. The sailplane leaves the ground and the pilot holds it at about 10 feet. In my case I eased down again slightly, watching the tow-rope most carefully to avoid slack. This easing helps the tug to get airborne. The air-speed now makes the glider super-sensitive on the controls, but it is not difficult to hold it just above the tug. I was operating with a rather long rope, (330 ft.), as I felt that aero-towing is wanted when thermal activity is pronounced, and such a margin is necessary, particularly with trainees in tow. The long rope however is more difficult to control and is inclined to droop. During the test on Saturday last I flew over the A.T.A. display at Ratcliffe. The tug pilot (Mr. Jerry Derbyshire) went in low over the airfield. Following him down I found a tendency to overshoot and I had to fly about 150 feet above the tug to hold the rope off the ground. Even then it touched once, which shows that care is very necessary when the two machines are going down. With a normal glider launch this does not occur.

"DON'TS"

Other points to watch are turning and traversing the slip-stream. Unless a turn is made very accurately by the towed pilot applying slight outside rudder the sailplane will creep up on the tug by cutting the "corner". If the sailplane then climbs to take up the slack a nasty snatch can occur and the relative height of the sailplane can become excessive. I have passed through the slip-stream during the climb and found it rather thrilling. One gets a nice comfortable feeling when it stops. But my advice is—keep your place.

ACHTUNG "C" PILOTS!

I see no reason why the normal "C" glider pilot should not take a straight aero-tow without the slightest danger or discomfort, and when experienced he can go on to turns, shallow dives and bumpy conditions. The "Grunau Baby" which I have used (built by those keen pre-war amateurs the Hobson Brothers of the Lancs. and Derby Club) has a celluloid cockpit cover. Without this, one could get rather cold. Two holes in the sides give an organ effect and the excessive sound is rather worrying until one gets used to it. After casting off from the 50 to 60 m.p.h. tug the complete absence of sound at the normal gliding speed is uncanny and one is inclined to fly too fast until a careful check on the A.S.I. is made.

A ROSY FUTURE

We must hope that before long every hill soaring site will have prepared a landing strip so that the week-end visitor can be towed over and released at the site, using the strip for the tug to land and tow off again for the return. Sutton Bank has such a strip. The Long Mynd site is flat enough near the hangar to easily clear the surface for the purpose. At Camp Hill the ground is rather rougher but in time it will be levelled. At Dunstable the natural surface of the downs is good enough.

I see therefore, a rosy future for aero-towing. The "Auster" is a most practical and economical aeroplane, well suited to the needs of the average amateur, and I am glad to find it has added so effectively to its long list of remarkable achievements, the towing of civil gliders. Hot news reaches me as I write that Mr. Geoffrey Edwards, Chief Test Pilot for "Austers", has just returned from trials in Germany where he towed off the two-seater

(*Continued on page* 21)

TUG. "Auster" Type J-1, *engine Blackburn Cirrus Minor I I,* 100 *h.p. Consumption* 4½ *g.p.h.*

Sailplanes	Weight (empty)	All up weight (approx.)	Take-off run (tug)	Climb
"Grunau Baby"	230 lbs.	410	200 yds.	380 ft./min.
"Gull III"	376 lbs.	556	230 yds.	350 ,,
"Minimoa"	441 lbs.	621	245 yds.	340 ,,

COMMITTEE MEETING OF THE YORKSHIRE GLIDING CLUB

A MEETING of the Committee of the Yorkshire Gliding Club was held at the Golden Fleece, Thirsk, on Saturday, 27th October, with Mr. A. M. Verity in the Chair.

The Secretary was pleased to report that the Club still had the use of Sutton Bank as their main Flying Ground and that the original lease had been extended to 40 years. This so stabilizes the Club's tenure of this famous soaring centre that it can once more adopt a bold and progressive policy.

Despite the grave difficulties ahead the whole atmosphere of the meeting was one of tremendous and cheerful enthusiasm. Never, even in its palmiest days, had the Committee shown greater confidence in the Club's future or greater determination to carry on its splendid traditions no matter how severe the many handicaps of the present situation appeared to be.

START SOARING JAN. 1st

The Club expects to be in the position to offer soaring facilities at Sutton Bank immediately the ban on Gliding is lifted on the 1st January, 1946. in both Two-seater and Single-seater sailplanes.

Even after taking into account the greatly increased costs and the added difficulties of replacing machines and equipment, which were commandeered from us for war training, the Club still anticipates starting the post war period with sufficient facilities to take advantage of the growing enthusiasm for the sport and desire for club membership which the war years have created.

Not only the A.T.C., but some of the finest Service Glider Pilots—both R.A.F. and Army—were trained on our requisitioned club type Two-seater and Single-seater sailplanes, with the result that we shall commence operations with brand new sailplanes and equipment. In addition we have a large first class brick built hangar (which can hold 12 fully rigged machines) and a small amount of money in the bank.

The Club will be able to offer: (*a*) full soaring facilities for private and syndicate owners and (*b*) dual instruction and solo flying for *approved* aeroplane and glider pilots.

NO SUBSIDY, NO AB-INITIO TRAINING

Ab-initio Training, into which we put so much effort before the war is *NOT* regarded as economical and will *NOT* be undertaken unless the Government asks us to do so and provides a subsidy to prevent this form of activity being a drain on our resources, and so interfering with the soaring side of the Club.

The Committee agreed that the inevitable decision must be "No subsidy, no ab-initio training" for some long time to come. Further we do not of necessity seek a subsidy and certainly do not think the Gliding Movement should go "cap in hand" to ask for one. It is for the Government to decide whether they want the Clubs to do ab-initio training—if they don't then no subsidy is justifiable. Nevertheless, the Committee is very emphatically of the opinion that the Government got *exceptionally* good value out of the nominal amount paid out in Gliding Subsidy before the war.

INEXPENSIVE FEES

The Committee decided that for the first year ending July 31st, 1946, there would be no entrance fee but that after that date a substantial one would have to be insisted upon. The Subscription for this first period would remain at £3 3s. 0d., for Provisional Flying Membership, and £1 1s. 0d. for Provisional Non-Flying Membership. These rates to be revised in the light of post war experience for the year commencing August 1st, 1946.

Two-seater passenger and instruction flying for members was fixed at 15*s. per half-hour.*

Solo machines would be bought by syndicates paying £5 per member with small overheads for launches, hangarage, etc., in lieu of Flying Fees.

The Club firmly believes that this or a similar scheme is the only foundation on which a club can operate under present conditions to be financially sound and suggests that some of the decisions taken should be discussed and agreed upon on a National basis through the B.G.A. so as to secure uniformity on such general questions as *Country Membership*, standard of members acceptable without ab-initio training, etc. etc. We are only too ready to discuss with the B.G.A. any subject which will provide as cohesive a policy as possible on those fundamental matters of mutual interest to all clubs.

In conclusion the Committee emphatically believes in a greater and more successful future of the Gliding Movement than ever before—subsidy or no subsidy—and are facing up to their present problems with the same cheerful, though maturer, determination that characterised the old pioneering days. If the same confident and enthusiastic spirit permeates all the other clubs in like degree, our Movement will rapidly advance to the very forefront of out-door sports and we shall take our place as one of the leading Gliding Nations of the world.

Full particulars and applications for membership can be had from:—

L. A. ALDERSON,
The Hon. Secretary, YORKSHIRE GLIDING CLUB, LYNDHURST, SINNINGTON, YORK.

AERO-TOW by an "AUSTER"—*Continued from page* 20.

"Kranich" with an all-up weight of well over 900 lbs. and a G.B. but this was using the Mark V military type "Auster" with a Gipsy Major engine of 130 h.p. The following performance details. were obtained with the 130 h.p. engine:—

	All up weight	Rate of Climb	Speed	Take-off run	Time per Launch *
"Grunau Baby"	450 lbs.	560 ft./min.	60 m.p.h	175 yds.	6.20
"Kranich"	990 lbs.	500 ft./min.	60 m.p.h.	205 yds.	6.47

* Time taken from take-off to tow the sailplane to 2,000 feet, drop the cable and land the tug.

I hope it will not be long, dear reader, before you are sitting behind tug and tow-rope having your Perspex fitted, and hearing your attendant say, "Have you anything more to say before the current is turned on?"

J. CECIL RICE,
Chairman Leicestershire Gliding Club.

THE ALLWING HORTEN PARABOLA

(Continued from November Issue) *(With acknowledgements to R.T.P.—3 M.A.P.)*

The construction of such a special sailplane must emphasize the primary importance of very good aerodynamical form and finish, because we unavoidably get a large induced drag component.

Our many calculations have shown us that for a stable wing a parabolic lift distribution over the span achieved by a parabolic leading edge and a parabolic tapering give a plan shape which produces the least drag. With this layout and an aspect ratio of 4.3 [weight (empty) 90 kg. (198 lbs.), pilot's weight 80 kg. (175 lbs.), W/L 5.1 kg/sq. m. (1.04 lbs. per sq. ft.)] this specification for a sailplane would not really justify such a project. Yet the development of Allwing high-speed aircraft requires research into the aerodynamical behaviour of these wings under different angles of relative wind. The distribution of lift on wings with extreme sweep back can be simply studied on a parabolic sailplane with threads of wool, etc.

With this specification the design of the parabolic sailplane was begun in 1935, and in 1937 the construction started. Unfortunately the sailplane was not completed in time for the Rhon competitions of 1938, owing to our limited production powers as the construction required 25,000 man-hours (! ! !).

Owing to the war it was not possible to stage the thorough tests which we had in mind for this sailplane.

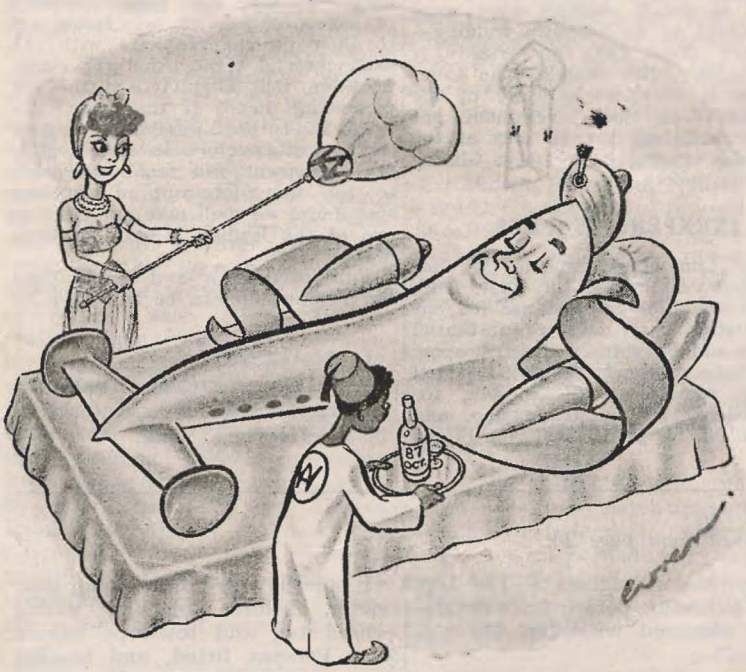
CURVED JIG

As already shown in the specifications, emphasis had to be placed on minimum structure weight in this construction. So an empty weight of *only* 90 *kg.* (198 lbs.) for a wing area of 33.2 sq. m. (339.6 sq. ft.) was achieved. The plan form required that the spar should be built up on a curved jig and a special construction of the wing nose in front of the main spar (see illustration in last month's number). The leading edge was plywood covered, 1.0 m/m to 0.6 m/m stepped down in stages of 0.1 m/m). A corresponding ultra-light construction appeared in all the other parts. The control system was similar to that of the "Horten III" with the additional arrangement that the outer flaps could be split independently of the amount of aileron or elevator control in use, to give a rudder effect (one-sided increase in drag).

VERSATILE FLAPS

To balance the yawing moments when using full aileron control (*e.g.* stick right) the outer flap on the (right) wing which is deflected upwards automatically splits slightly — this could, however, always be increased or diminished by use of the foot pedals for rudder

(*Continued on page 7*)



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ROYAL AERO CLUB GLIDING CERTIFICATES

		School.	Date taken.
"B" Certificates (33).			
3339	Melvin Kenneth Drowley Porter ..	B.A.F.O. Gliding & Sailplane Club ..	19. 8.45
3349	Charles Abbott Ball	S.W.83 E.G.S., Moreton Valence ..	26. 8.45
3359	Josef Hein Schade	84 Group Gliding Club, R.A.F., Salzgitter	26. 7.45
3360	Colin Harry Thomas Cables	Ditto	2. 8.45
3361	Allen Howson Billam	Ditto	2. 8.45
3376	John Stockton Bancroft..	M.43 E.G.S., Walsall	10. 7.45
2182	John Derrick Bones	L.145 E.G.S., Birch	8. 9.45
2952	Jean Michael Hahn	S.E.161 E.G.S., Brighton	23. 9.45
3388	Ludvik Jaroslav Nemec	L.147 E.G.S., Bulphan	27. 7.45
3401	John Bassett Nadin	M.45 E.G.S., Meir	20. 9.45
3381	Leonard Patrick Sanday	N.W.190 E.G.S., Cranage	9. 9.45
3424	Peter John Garner	S.W.81 E.G.S., Yeovil	11. 8.45
2440	Roger Anfray Mann	N.E.30 E.G.S., Sherburn-in-Elmet ..	16. 9.45
3444	Cecil Augustus Newham	Ditto	2. 9.45
2001	Albert John Chadd	L.149 E.G.S., Gravesend	23. 9.45
3471	Bernard Nevill Goudge	L.141 E.G.S., Kidbrooke	4. 3.45
3473	Samuel George Tolman	S.W.84 E.G.S., Haldon	9. 9.45
3485	Henry James Bullock	L.145 E.G.S., Birch	5. 8.45
3489	Ronald Broadbent	S.W.83 E.G.S., Moreton Valence ..	30. 9.45
3503	John Robert Wistow	84 Group Gliding Club, R.A.F., Salzgitter	13. 7.45
3504	Pierre Jean Pacco	Ditto	10. 8.45
3506	George Carpenter Abel	B.A.F.O. Gliding Club, Minderheide ..	23. 9.45
3516	Leonard Arthur Corder	E.104 E.G.S., Ipswich	15. 7.45
3519	Alexander Tennant Cameron	84 Group Gliding Club, R.A.F., Salzgitter	22. 9.45
3520	John Bevis Thompson		
2160	John Raymond Denley		
3434	Patrick John Cowles Loney		
3548	Nicholas Edward Bowen		
3549	Robert Bentley Carr		
3561	Dugald Andrew Carmichael		
2170	Michael Stanley Hebditch		
2180	Maurice Raymond Seward		
2513	Edward John Hurworth		
"C" Certificates (14).			
3339	Melvin Kenneth Drowley Porter ..		
1047	Wray Gerald Grapwell Goodwin ..		
3503	John Robert Wistow		
1708	Sidney David Charles Ryall		
2876	Ronald James Sullivan		
3102	Janusz Josej Lewkowicz		
3104	George William Watson		
1897	Alistair Robin Worters		
3146	Henry Charles Herbert Graves ..		
3192	Jean Dabos		
3205	Kenneth Frank James Parfitt ..		
2352	Arthur Nigel Kitching		
1727	Peter Donald Farquharson		
3293	Harold Anthony Edwards		

THE "OLYMPIA"—*continued fr*

The "Olympia" gives one ar extraordinary feeling of clean crisp ness. The stall is clean and crisp also (as I found when, in pure ham, I attempted to land it uphil with insufficient speed for the last-minute change of attitude, and broke the skid). But the recovery is smooth and quite normal.

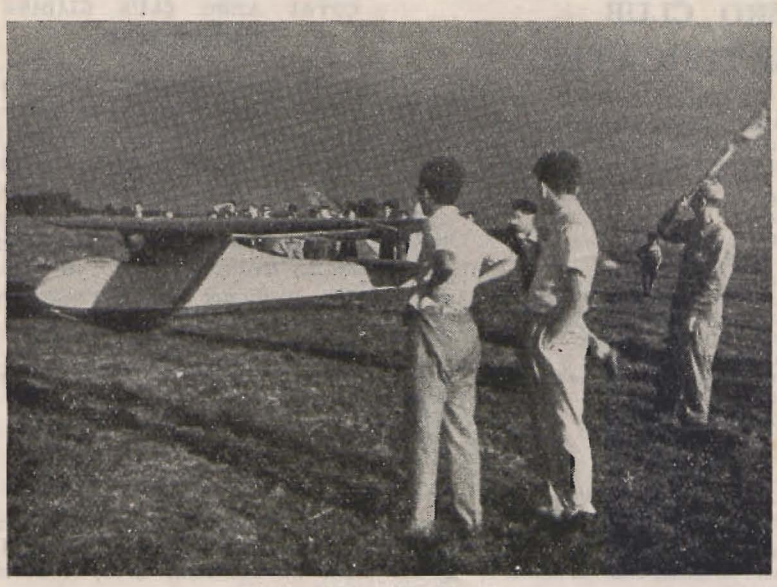
ROYAL AERO CLUB GLIDING CERTIFICATES.

We regret that owing to the large number of these now coming forward each month—in the matter of 250—we shall be unable to publish the list of those who gain "A" certificates for some time to come. It is hoped later to include them in a special supplement. For the time being only "B" and "C" certificates will be gazetted in SAILPLANE.

KENT GLIDING CLUB

Will all ex-members and others interested and living in the Maidstone or Chatham area, contact the Secretary:

M... R. H. HADDOCK



A Snap from the Argentine.

CLUB ANNOUNCEMENTS

LEICESTER GLIDING CLUB

An aerodynamic course with wind-stream models is being instituted, also a construction group. Those interested should get details from the Secretary, who will also supply details of the visits, etc., arranged for the summer, Leicester Gliding Club, Park Road, Blaby, Leicester.

Second Annual Ball, Bell Hotel, Dec. 6th. Lectures: Senior Cmdr. Phillip Wills, Feb. 2nd, and S./Ldr. R. Kronfeld, A.F.C., March 14th. Special Club Field Day, Feb. 3rd.

THE MIDLAND GLIDING CLUB LIMITED

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.

DERBYSHIRE & LANCASHIRE GLIDING CLUB, GREAT HUCKLOW, TIDESWELL, DERBYSHIRE

Still on the active list. Club activities will commence as soon as civil flying is permitted. Full particulars, booklets, etc., from Secretary, 87, Fargate, Sheffield, 1.

NEWCASTLE GLIDING CLUB, Ltd.

(founded Feb. 1930)

Applications for Membership now invited in Reorganised Post War Club.

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THE SURREY GLIDING CLUB.

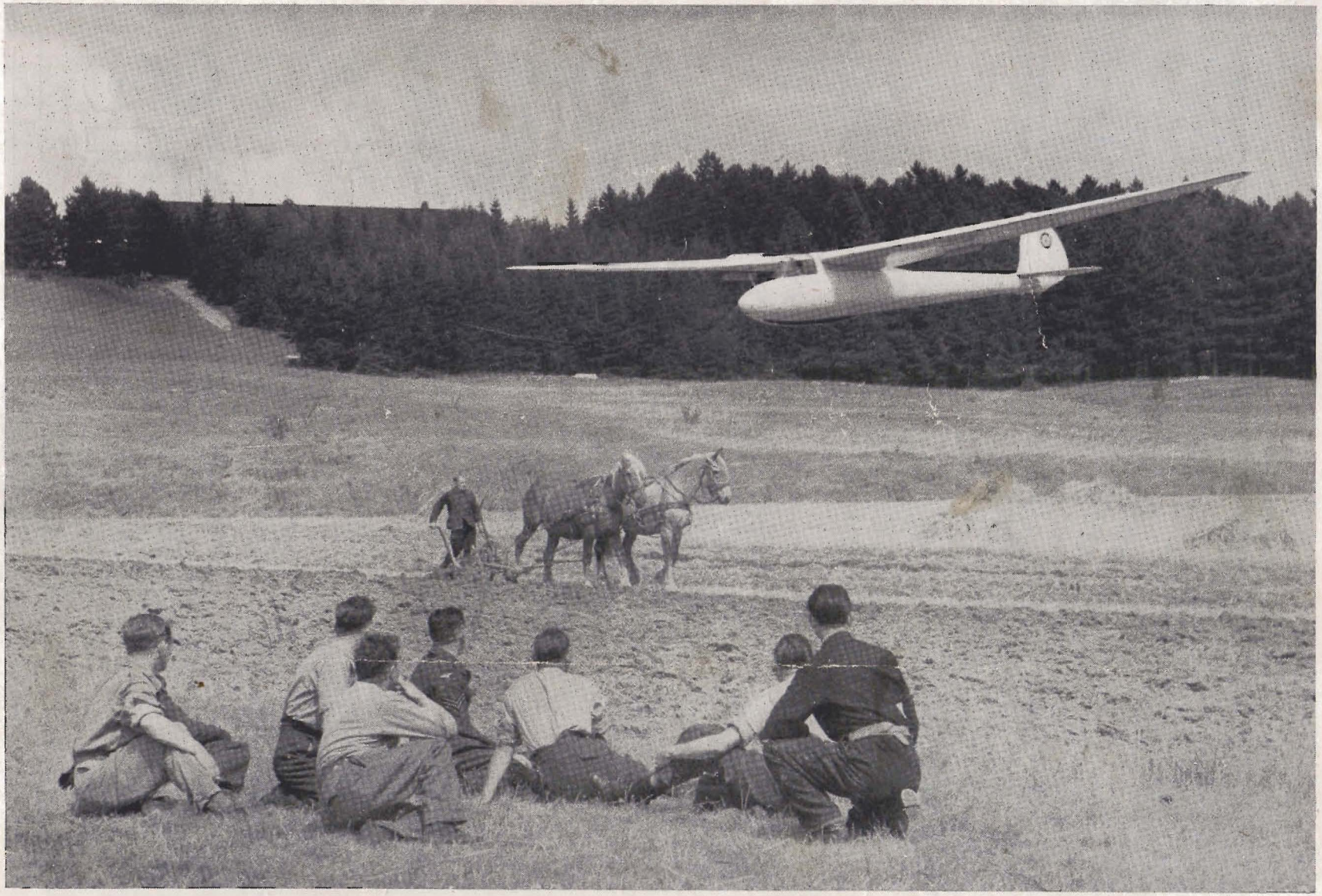
The Surrey Gliding Club will re-open near Redhill as soon as the ban is lifted, and adequate facilities for members can be made available.

A further announcement will be made here giving details of aircraft, subscriptions, and other relevant information, when these can be finally determined.

The Secretary is: A. Dukinfield Jones, 23, Rose Hill, Dorking; but in the meantime, prospective members are kindly asked not to write for general information.

The Surrey Gliding Club is intending to offer full training and soaring facilities, with winch launching and aero-towing available throughout the week.

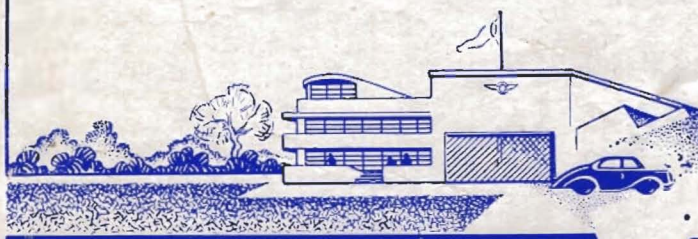
THE YEAR'S BEST PHOTOGRAPH



The "Olympia" coming into land at the bottom of the hill, at the 84 Group Gliding Club at Salzgitter, Germany. The group in the foreground are soldiers and airmen awaiting their turn of instruction on Primaries and Secondaries, whilst watching with envy, the flight of the more experienced pilots.

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