



SOARING AT USK

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2nd EDITION



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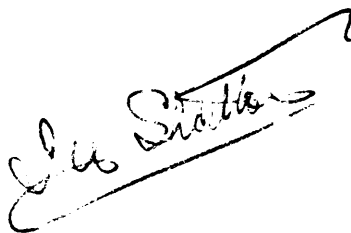
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Gliding and Soaring at Usk

- Introduction:** Need for notes, visitors, history of club. Locations, etc. Plan. Tug pilots.
- Field Operations:** Efficiency, ground and air. Safety, ground and air. Effects of weather and wind. The circuits.
- Ridge Soaring:** N.W. Wind. Local Ridges. N. Wind. Westerlies. N.E. Wind. E. Wind. S.E. Wind.
- Wave Soaring:** Brief principles. Layout of Waves. Dangers. Techniques. Finding site. The North Wave.
- Thermal:** Effect of Sea. Effects of Mountains.

Illustrations:



INTRODUCTION

Since moving from our mountain site near Caerphilly, we have discovered that our Usk site is popular with visitors for wave soaring, and has such a range of possibilities, that only study of notes such as these will give visitors full benefit from a short visit.

The site, although flat, has in addition to the usual peculiarities of operation, many additional features needing explanation.

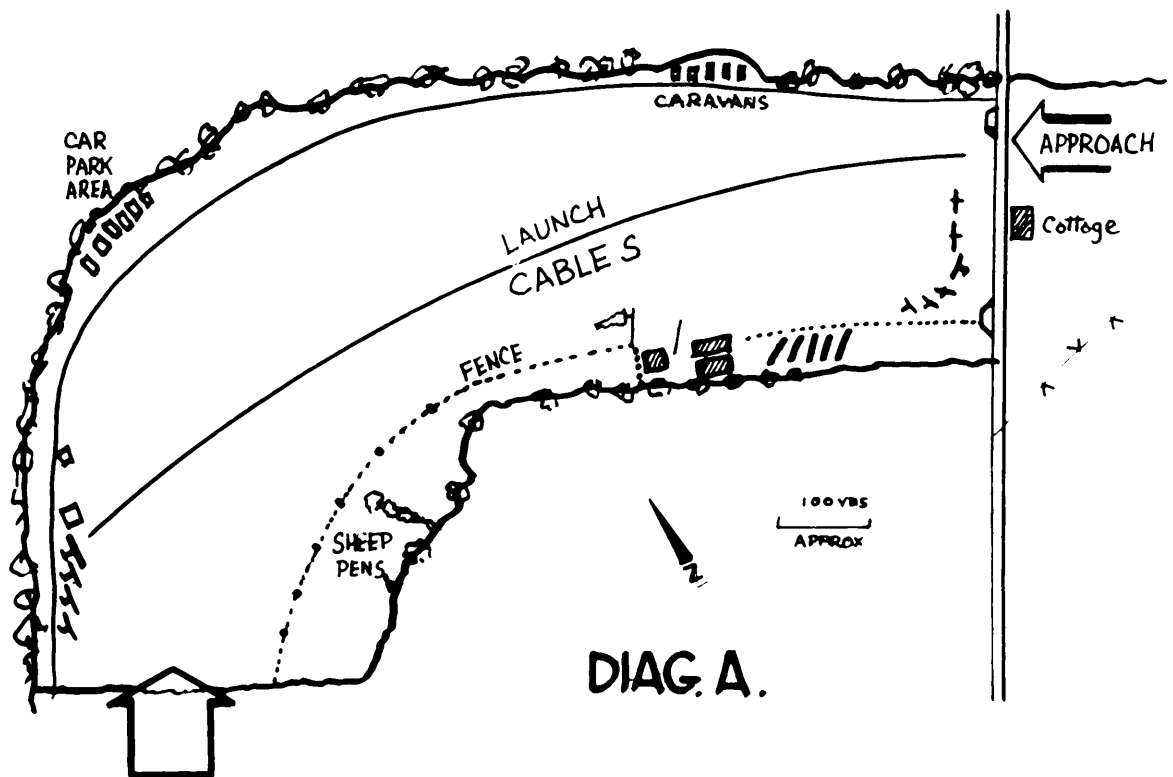
Apart from a Southerly wind, there are ridge soaring possibilities in all wind directions. Sometimes 10 kts. wind is sufficient. A Northerly wind opens up the Brecon Beacons – 3000' ASL, while a N.E. wind can give a triangular flight of over 50 km. Add a few thermals and a touch of wave, and 300 km. over beautiful mountainous country lies waiting to tempt the more experienced and adventurous. The don'ts are numerous too, but shouldn't inhibit the fun too much.

Let's move on and have a look at the site itself.

The Site. Diag. (a). Situated 2 miles N.E. of Usk in a flat river valley, it is aligned E.–W. with the longest run of 950 yds.

It is bounded by trees, giving rise to a fair amount of turbulence, but reducing the effect of crosswinds on landing and take-off.

As can be seen, the winch run is curved, so we use the more Southerly cable first. Few tangles result from this technique providing the tractor driver aims at the corner gate.



FIELD OPERATIONS

The circuits:— Diag. (A).

In a westerly we have both right hand and left hand circuits, from time to time favouring the downwind circuits.

With right hand circuits in operation, after the first right turn it is apparent that the field is somewhat banana shaped. This means that ones circuit is planned on the launch line, which is usually marked well on most grass sites. Travelling parallel to the line, we cross over the road at the downwind end of the field, and travel some hundred yards beyond to the hill. The penultimate turn to be effected so that the landing line is between the cottage and the stream, well down into the field. We do not turn at the end of the ground run.

not turn at the end of the ground run.

The left hand circuit should also be terminated at the same position for final turn and line-up.

In an Easterly wind we have an approach over a fence and a ditch, but with unrestricted width. We tend to do right handers more than left for two reasons. The first is that more soarable ground lies to the right of the launch line, and the second reason is that the glider can be seen during the whole of the circuit. All clear above and behind is only possible safely, if all gliders carry out right handers.

If a left hand circuit is carried out, the area directly behind the launch point is out of sight. It is anyway, of course, but the left hand glider is too.

An approach from the Abergavenny area therefore, is best carried out by overflying the field and completing with the right hand circuit. Radio contact helps if you are unable to come in other than direct, but is best avoided.

The tug operates from the North side of the field simultaneously; dropping the cable at the launch end in a westerly wind, and landing with it when flying from the other end.

All approaches are made between the cottage and the stream, this area being kept clear of aircraft, tractors, etc. as much as possible.

Crossing the field is frowned upon, although this can be done providing one is moving essential equipment, and great care is taken with regard to look-out, both in the air and on the ground.

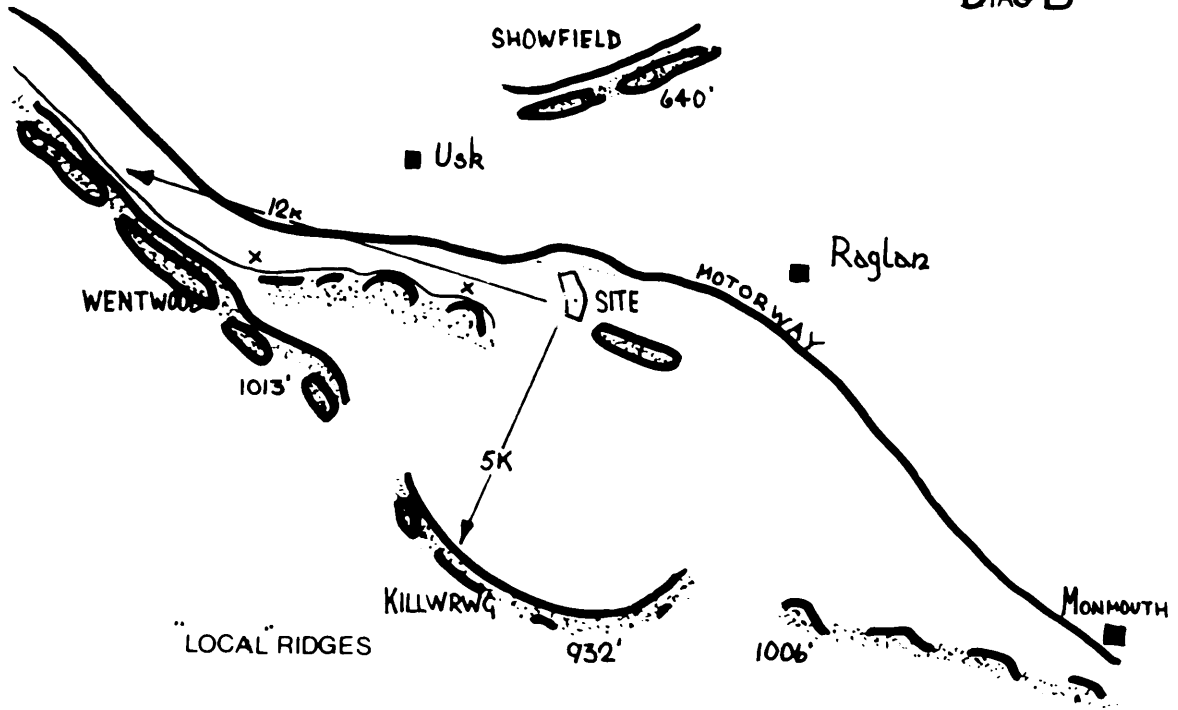
The tractor driver is briefed not to stop or deviate. If you are in the air you can change direction better than the slow tractor.

Apart from avoiding rough ruts on the left hand side of the field, you can land anywhere. Notes for the tug pilots to follow;—

Tug Pilots

We use a Rallye Commodore which is refuelled near the hanger from 40 gallon bowser. The take-off run is started at the extreme end of the field, enabling a slightly curved path to be followed to the boundary. Care should be taken to avoid overflying Cefn Tilla Court, the cottage, Usk, and any built up areas nearby, such as Raglan, Gwernesney, etc. Once a reasonable height has been attained, the flight path to the requested D.Z. can be taken. The rope is dropped across the field near the launch point, and landing along the North side of the field. This will enable the smoothest parts of the field to be used, and keep you clear of the tractor run. We do not "wave off" unless requested for the purpose of indicating to inexperienced wave pilots the location of a good wave edge.

Never tow into cloud.



RIDGE SOARING

Local Ridges.

There are four local ridges which can be soared in appropriate winds, apart from the more distant mountains which are covered later. Diag. (b).

The nearest ridge is on the approach and in the circuit. As it is only 300 ft. high and irregular, it can only delay one's descent, unless thermic conditions enhance the hill lift. Suitable for C's and Bronze C's, although considerable skill under favourable conditions is the order of the day.

The next hill is a large bowl to the East of the site, and is fairly easily soared up to 1600' under fair evening conditions. Soarable from N.E. round to South of West. 1200' gets one home from this hill, provided this is the top of the lift under light winds.

The most interesting ridge is Wentwood, which is up to 1013'. As it faces N.W. it often leads into wave. Most wave flights from below 2000' upwards start on this hill, 13½ thousand having been found straight off the hill at 'X'. As there is a pathway of hills along the motorway from Wentwood, one can leave this hill at 1200ft. and easily get home. Assuming a West wind component, that is.

The last hill is 'Showfield', just upwind of the site to the West. Barely soarable as it is affected by the wave, sometimes enhancing it. Flights into wave have been made from this hill, but it often is soarable only at a height from which one can't reach the site. There are good fields at the bottom.

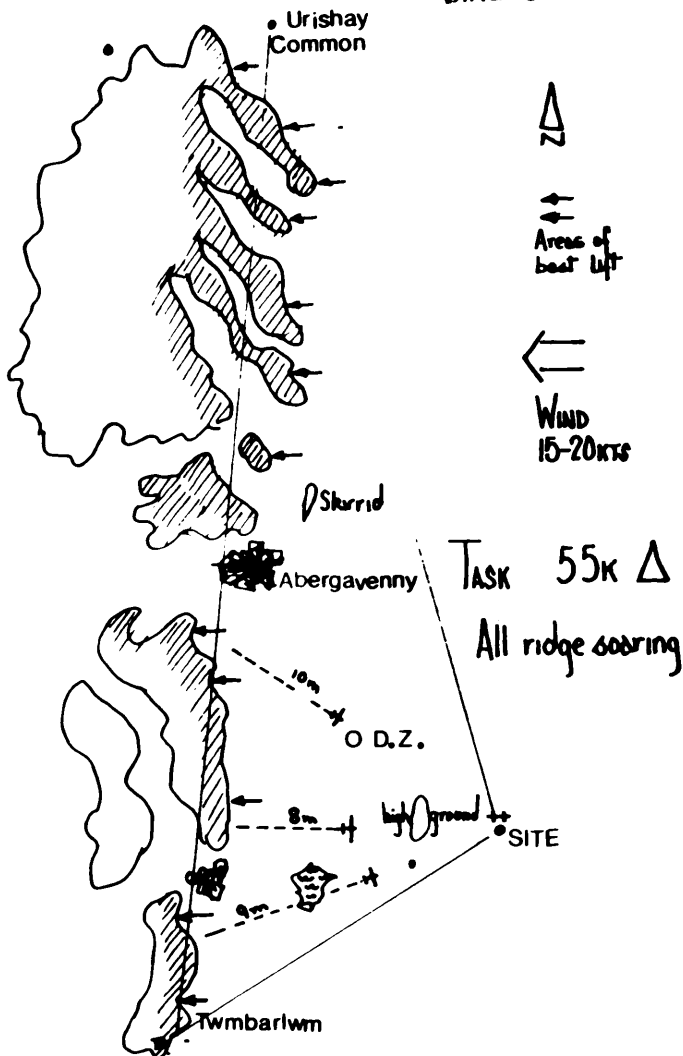
A final word. In a westerly wind it is possible from a winch launch to fly to the nearest hillock to the south, thence to Wentwood, then back along faces, more to the South West.

This leads one to Kilwrrwg along the bowl, and using bits of thermal and ridge, reach Monmouth. From Monmouth where there is a complicated bowl of hills fed by thermals from Monmouth itself (if the sun is out and its p.m.,) which offers a variety of alternatives as 'stepping stones' to the more regular hilly line to Ross on Wye. Here, wooded slopes form the end of ridge soaring as such and a return presents no problem provided we have a few knots of N.W. wind.

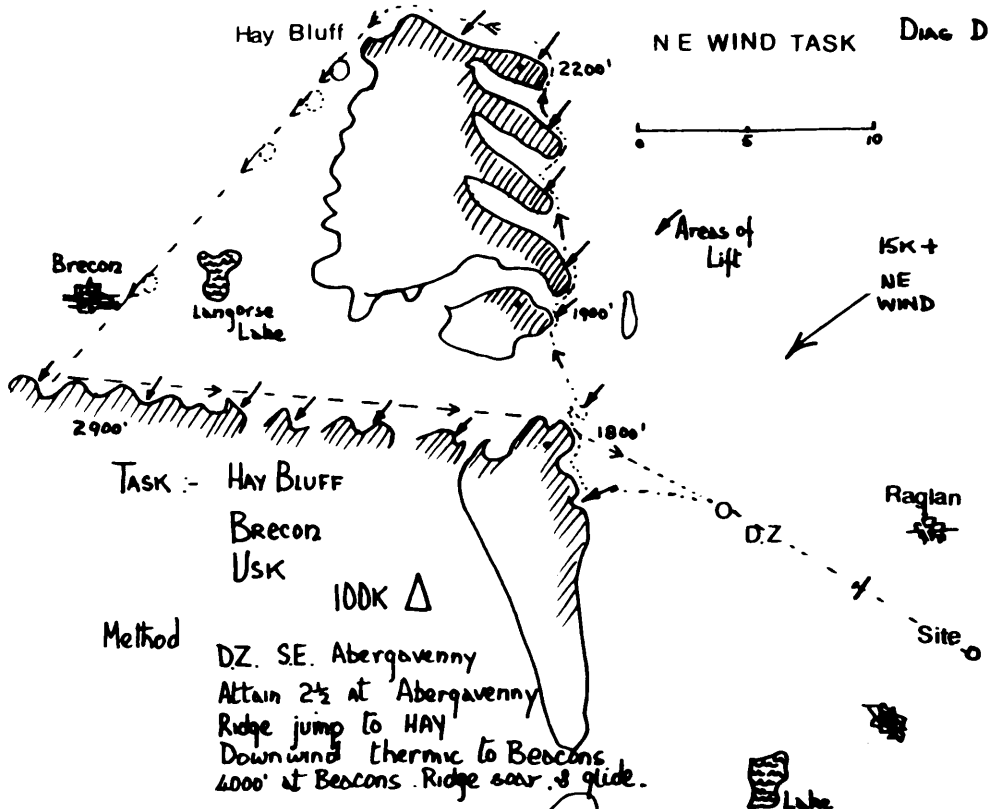
The wooded slopes are a safe sanctuary for 'good air' in the evening sun and a valley landing is a rare occurrence from this kind of expedition. 100K in all via Wentwood.

So the wind doesn't blow Westerly? Then we'll really have some fun. Choose your wind - I'll give you a route. Up to 100 km!

DIAG C



NE WIND TASK DIAG D



The Easterlies.

During the travelling days to the Mynd, we saw our Easterly ridges from Cwmbran to West of Hereford. Frustrating at the Mynd, — fun at Usk easterly winds that is. A hundred km. trip. Releasing West of Usk at 2000', and dropping on the hill near Pontypool. From here to Twmbarlwn Tumuli South, and then back over Pontypool until we reach the Bloreng at 1800', and we haven't dropped below 1500' ASL. in height. (over site level). Diag. (c).

The difficult and therefore interesting jump is over Abergavenny to fly North. Once this gap is cleared, the hill gets higher and steeper.

So far, this is the South-of-East wind. Should it be North of East, then one can start at the Bloreng Diag. (d), and jumping North in due time, find the ridges improving the further North one goes, until Hay Bluff appears. (2,200 ft.).

Leaving hang gliders soaring at the North end, the return trip can be made at high speed. At the Bloreng 2,500 ft. is required for the site.

So far we have covered from S.E & E. and to N.E. 10—15 kts. highly suitable. Now for the Northerlies!

The Northerlies. Diag. (e).

Only in 1975 did we discover the wonderful fun to be had soaring among the Brecon Beacons. As the tops are around 2900 ft. one can be quite excited at the ridge soaring to be had. With a mainly Northerly component in the wind, a start is usually made at the Bloreng, where confidence in the available ridge-thermal height is gained, and the first jump to Gilwern or the hill South of it is made.

Not a very big jump, not a very good hill, so don't waste too much time, just check there is some lift and off to the next jump across the Heads of the Valleys road to the sheer rock faces of South of Crickhowell.

It's beautiful countryside, but it gets better, so keep going. The lower one gets, the faster one can go, but for the first few tries, take it easy — high and slow. South of Llangynidr one can back off downwind to the 1600' higher part of the hills (the slope tails off a bit) — or try to get to the most upwind point. It all depends on the thermal and wind strength and direction.

Probably the most difficult and challenging bit is to a hill called Tor y foel, It's conical and triangular, (ever soared a pyramid?) As it's 1800' high, 2000' at least is the order of the day. Wind and sun work wonders here, so perhaps a pause for the sun to get going.

It's possible here to cross the Talybont reservoir onto Llanfigan. The slow high gliders usually do this, but I usually glide to Talybont village losing as little height as possible until I judge I can reach the 1500' north facing ridge South of Llanfrynach.

↑ BRECON

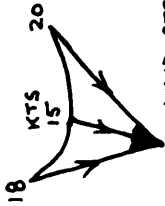
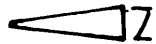
BEST POSN for WAVE

2047



DIAG E

- HIGH SPOTS.
- WATER
- ROUTE
- OVER 1500'



WIND STRENGTH & DIRECTION.

● LLANFRYNACH

● TALYBONT

● BWLCH

● LLANGYNIDR

1300

1700

1690

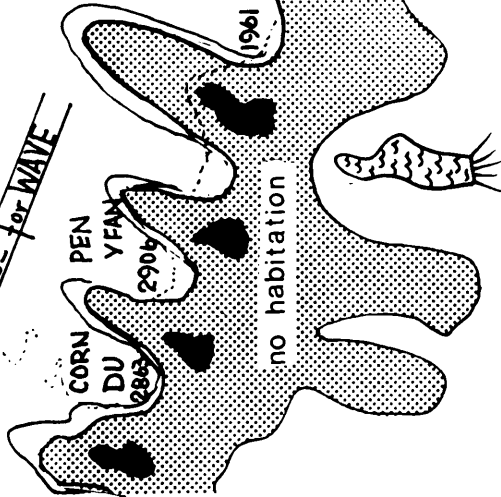
1700

1680

APPROX 2M

ABERGAVENNY
BLORENGE
1811

1600



1166

1806

1300

1700

1690

1700

1680

APPROX 2M

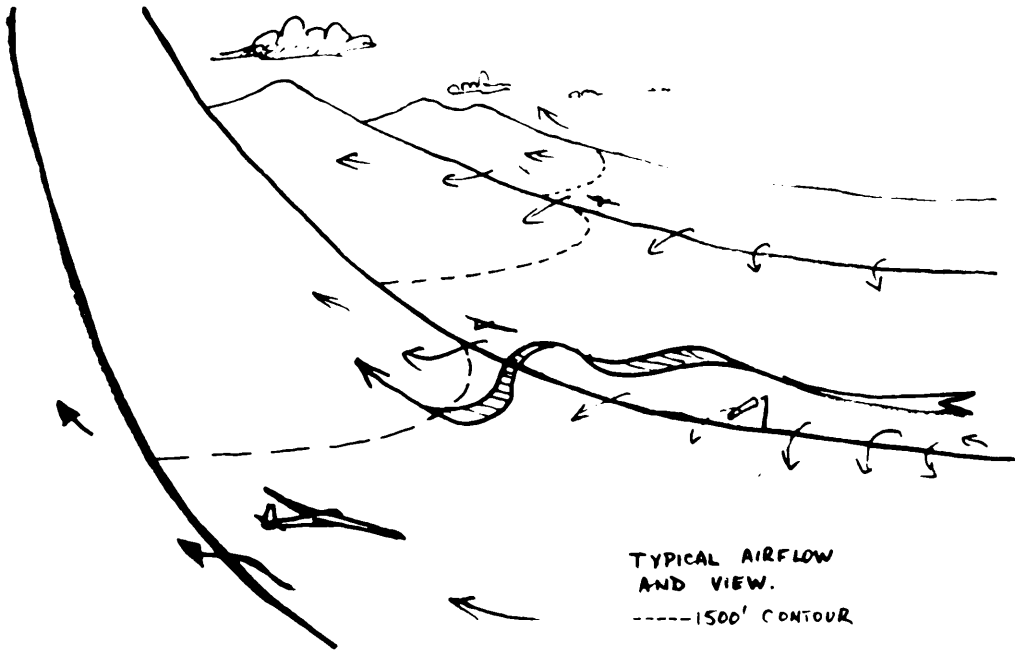
ABERGAVENNY
BLORENGE
1811

1600

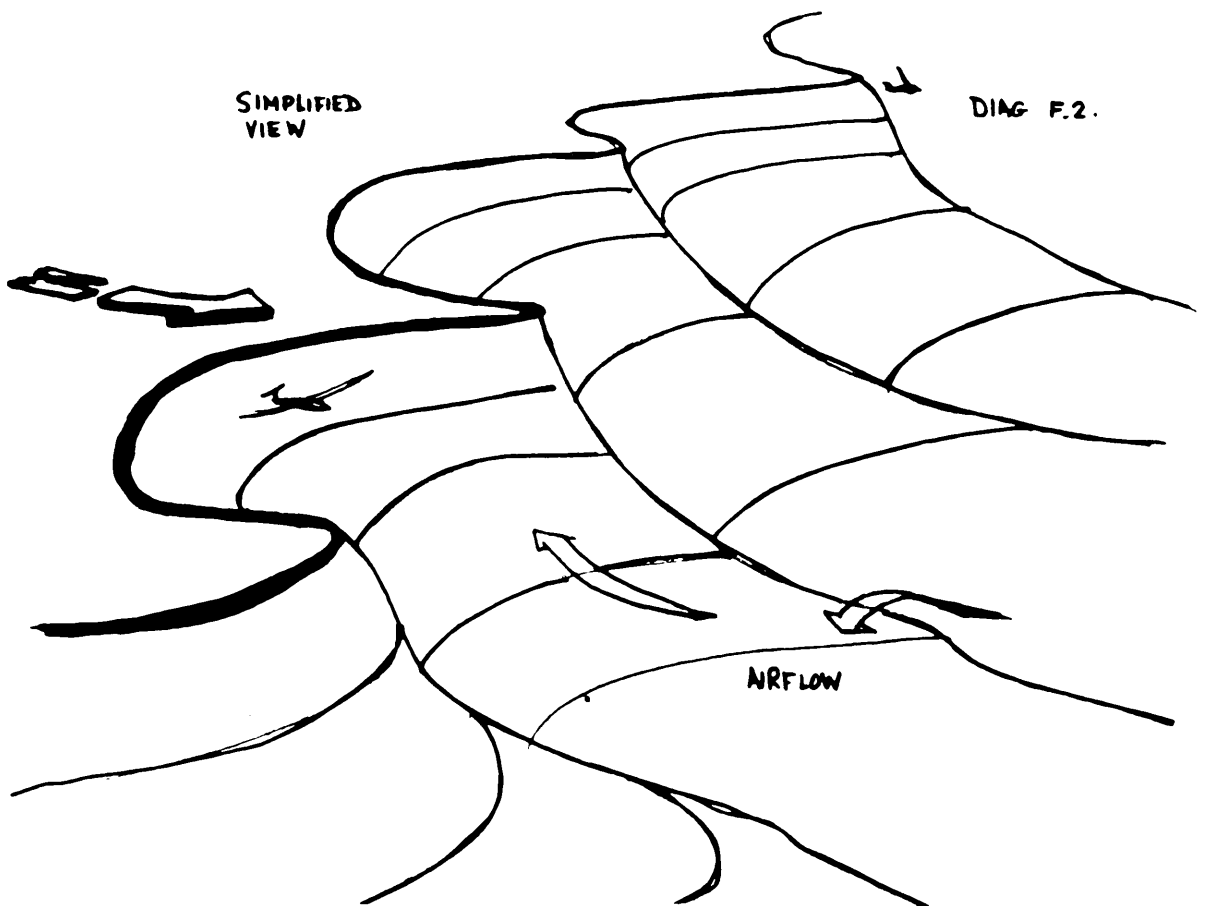
● CRICKHOWELL

Once I get here I feel I have made it. It's just a matter of going slowly west, as close to the hills as I dare, to get the very strong lift that's there. If in doubt when coming across a large North-South gully, 800 ft. deep, turn back and get more height. Alternatively, move into the gully while the lift is good, and if it improves use the back of the bowl that the gully terminates in. Diag. (f).

It requires nerve to do this, so large is the scenery and the faces so sheer, and there must be some awful down low-down on the downwind side of the gully. See diag. F,F2.



DIAG. F.

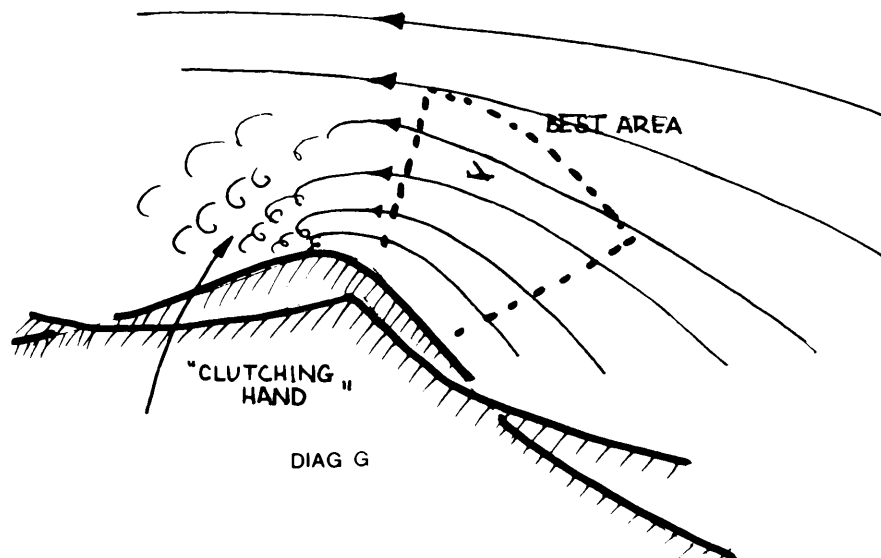


One does get petrified at times until the peaks are below one. This feeling of being very small and fragile is always there inside these bowls. Needless to say, never, ever, get over the top downwind. The air is very rough at the top: the diagram (2) shows this, and there is phenomenal down beyond.

Corn ddu is the most Westerly of the biggest peaks, so if you have 3½ thousand on the clock, don't expect to keep there if you continue west. I think a downhill slide down to Port Talbot is possible, but that's for another day.

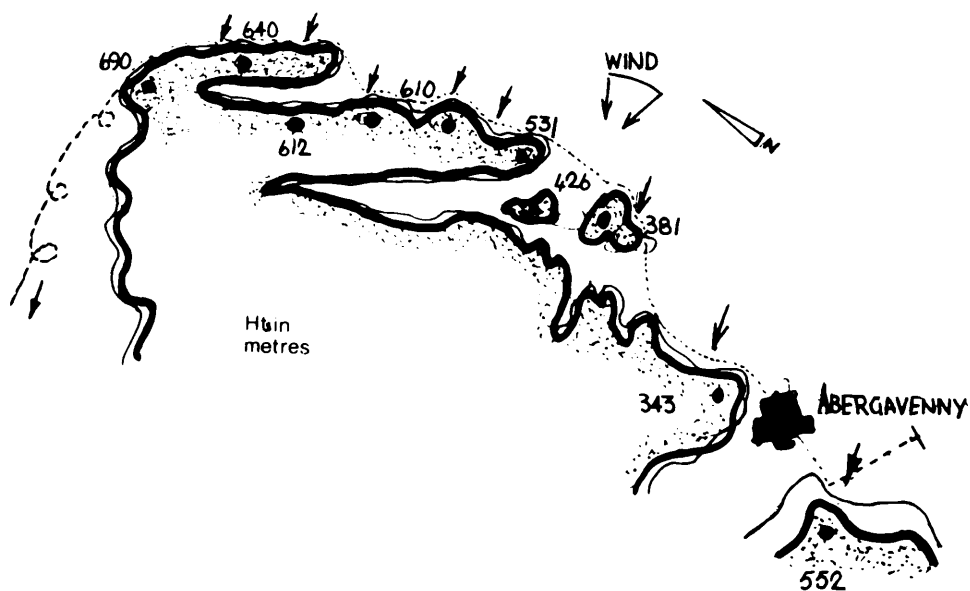
Sennybridge and Y Gelli can be reached, and an easy return made to the twin peaks of Pen y Fan and Corn ddu from where it's downhill all the way back to the Bloreng.

Two and a half thousand feet should get one home from there, Sixteen hundred even, with a tail wind component.



N.E. Winds.

If the wind has too much East in it to go comfortably to the Beacons, then the flight to Hay Bluff to watch the hang gliders can be fun. One interesting feature is that one is going almost directly upwind! Diag. (h). Go along a ridge, yes, but how upwind? Well it's because the Black Mountains have long spurs and valleys directed to the S.E. Each one is across the wind, but they are staggered upwind of each other. A glance at the map will reveal this. Diag. (h).



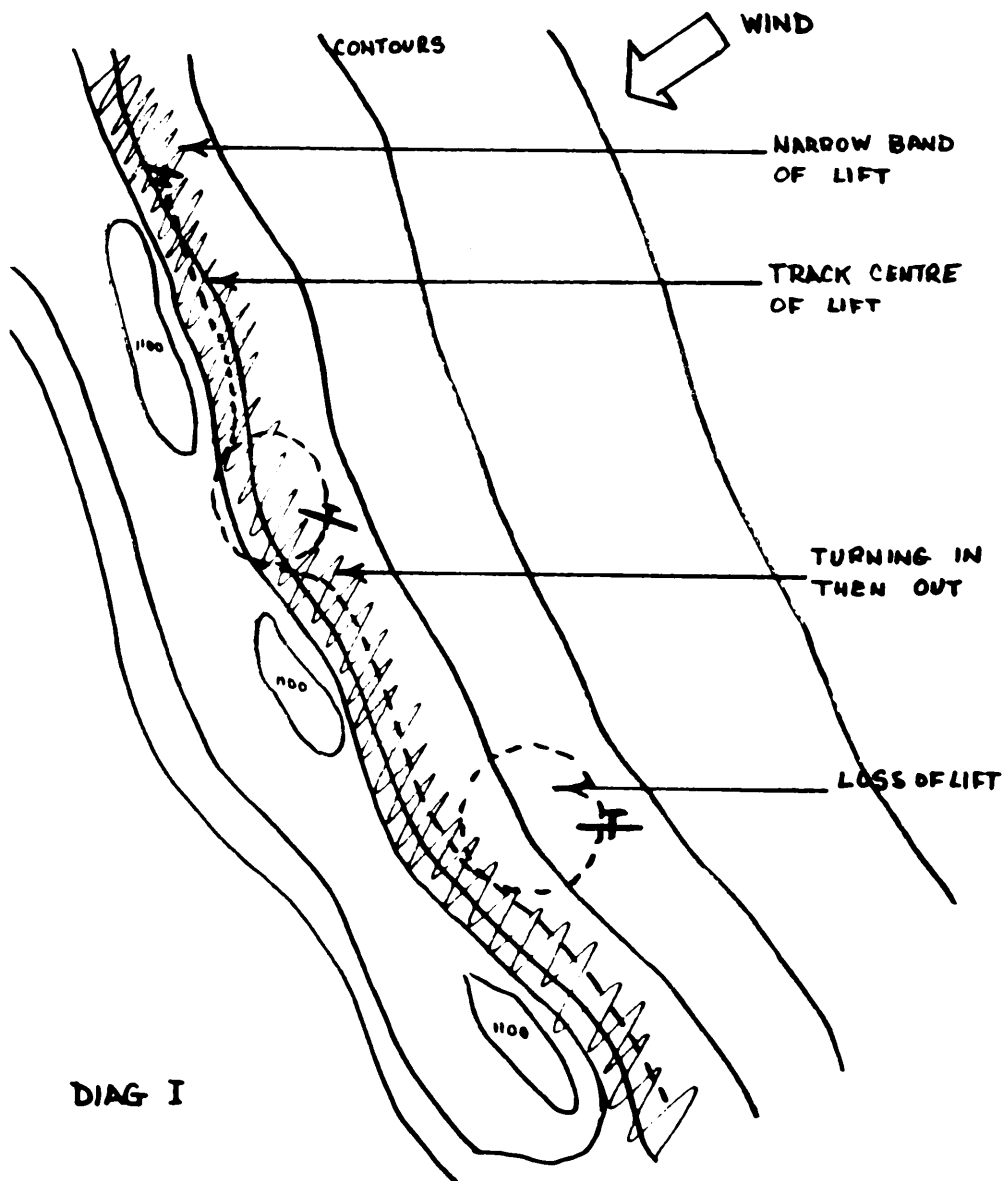
DIAG H

So, then, we aerotow to the Bloreng again, and if no wave appears we leave our perch at around 2½, and slide off for the first jump upwind to Deri. This glide is directly over Abergavenny, and is 5 km. In theory in a 20 kt wind and 1:35 glider, one loses 1100 ft., but we have good air at each end, so the trip is quite within the capabilities of the 1:30 glider. Arriving at 1200' from 2,500' onto the 1100' hill.

Sliding N.N.W. along this hill for some 2 km. one can gain height enough to jump the 2 km N.E. to the next face which is 1200' high.

The next face is at Pont Rhys Powell, and faces directly N.E. Although small it is almost 1400 ft. high — you see — it gets better!

The next jump — the 4th so far — is 2½ km. N.E. to a steep ridge 1500 ft high, but it faces East. However, the hill height can easily be maintained, in light winds with the odd thermic lump helping out. At this point I hasten to add two tips. The lift often does not extend any distance downwind of the top, and an "outward from the hill turn" often takes one out of the hill lift if the wind is light. The thing to do is hug the hill and turn outwards by first turning in. (You won't have a glider behind you here.). The diagram should make it clear. Diag. (i).



The further North one goes the higher and steeper it gets, so bear up if the hill seems too close for comfort. At Hatterall Hill or Crucorney Fawr the hill turns to face N.E. and is 1700'. You soon will be able to peer over the top of the ridge to see Llanthony Abbey, (282 ft.) in the valley behind you.

By following the ridge we are following Offa's Dyke Path for about 10 km. The ridge has now gone up to 2000 ft. so our working height is now about 2½.

A fascinating bit comes up with the valley ending to the N.W. and great scree falling 1,100ft to the valley below. The problem here is whether to jump early or late, i.e. with a spur ahead 2 km away N.E., or 1½ km ahead over the sink behind the hill.

Same problem as wave jumping, but with only hundreds of feet between you and the ground.

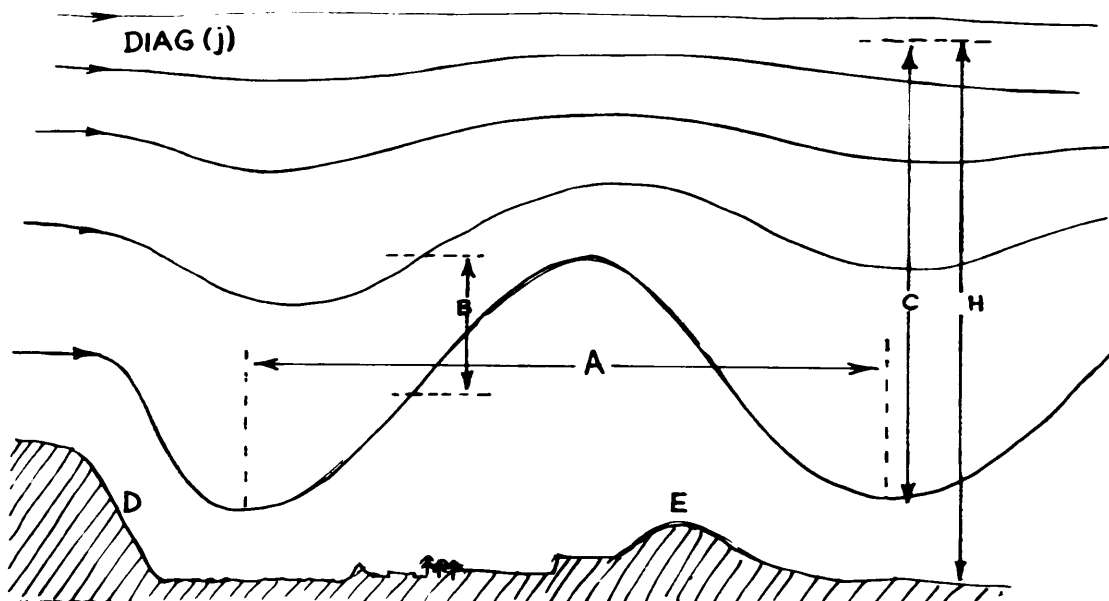
This last jump gets one to the Black Hill, and another veer to the North. The sense of excitement gives way to a feeling of achievement as one bowls along the hill to the far North West corner of Hay Bluff. 2031 ft. Hang gliders will usually be seen here under these conditions, so take care. You have a parachute to spare, — they are using theirs.

The run back should present no problems as it's downhill, downwind, but one should remember the last "stoking up" point at the Blorenge for the glide home. The N.E. wind doesn't help the glide. Strength and direction are important.

If thermals are in evidence at Hay Bluff one can take a ride up to cloudbase and drift rather than glide towards Llangorse Lake, and then onto the Beacons. Strong nerves here to point downwind into their black masses, hoping as well as knowing that there's lift in them there hills. The sun is usually ahead at this point, which means that the size of the Beacons and their proximity can be a little in question.

Depending on time of day available and conditions, wave can be reached from them. So we will have ridge soared, thermalled, and wave'd if luck is with us. The return journey can also be by one of these methods along the valley facing East of North.

And now the Waves.



Diag. (j)

A is wavelength 2–20 Miles

B is amplitude.

C is depth of wave.

D is the lee edge.

E is secondary hill.

H is height of wave.

THE WAVES

So far only 20,000 ft. has been reached at Usk, but the same wave system lies all along the whole of the Welsh Mountains, where over 23,000 has been reached.

Mainly they occur in Spring and Autumn, and in winds with a Westerly component. There are exceptions.

The East wave goes up to 8000 ft, and the Northerly over 15,000 ft. The Southerly has been soared to over 10,000 ft. Abergavenny seems to be the focal point if there is one.

Let's have a look at a wave. Diag. J

A good wave is one of short wave length, with large amplitude of great depth. Fifty per cent cloud cover is quite good.

These waves occur frequently (on Mondays) over the Usk area because of the well defined lee edge starting at Cwmbran along to Abergavenny of some 1500 ft. (off the winch i.e.), and usually up to 12000 ft. in one cycle. To go higher I have personally always found a slightly different system. Different in either wavelength or orientation. Lift is 4 kts. on average, but on occasions the PZL vario goes off the clock – even as low as 2,500 ft.

The diagram explains where the waves form in various wind directions

Cloud, although useful to judge the position of the wave, can often be embarrassing in that the slot closes in, leaving one many thousands of feet above 8/8 ths.

In this case a descent to a point somewhere in lift, but still above the trough of cloud, is indicated, and a pause to see if the slot opens up again. You may have company, so keep a good look out. When the slot begins to appear, it will look like a dark area at the bottom of the trough. This is the time to manoeuvre, so that the dark area can be examined for the more usual signs of mother earth. A road or river or any familiar feature will give an idea of the sky space available below cloud.

Treat with respect. It's best to know your whereabouts before you get in this situation.

To know ones whereabouts above a high proportion of cloud cover is possible with experience of the district. Under Westerly wind conditions there are features of the wave clouds which are always evident, and from slides taken over several years one can see where these occur, Diag. (J).

For instance, to the South (from over the site) the waves flatten out to almost nothing. The sea is underneath. To the West two very large waves form, Cwmbran and Pontypool with their sharp lee edges are the areas. To the North West we have a confusion of waves going at right angles. The Crickhowell valley area. Much further west, a series of large waves going upwind – formed by the Brecon Beacons. The Black Mountains also form waves which are large, but the best area with the biggest, most clearly defined 'hole', will be near Abergavenny – usually, that is.

To the North of Abergavenny, although the slots are more prevalent than in the moister air upwind, the lift is often not too good.

A look at the map reveals why. In a Westerly, the situation resembles a garden fork, with the wind blowing from the handle. Hardly conducive to wave formation. North of this area generally can be seen a series of large waves going in a downwind sequence. These are the Radnor Forest waves, and extend over Shobdon.

I fear that it sounds as though you could just go up above cloud in wave and find ones way about easily. So you can, but you must have two requisites. You must have been up there many times before, or have them pointed out in the two seater, and get thousands of feet above the highest local cloud top.

So far the System. How does one get into it?

Wave Entry Technique.

The obvious, is to be towed into the wave lift at the required height and get dropped off in it. There are, however, many times when this is not possible. You are at 1500 ft or in thermals or ridge soaring, etc. Let's examine them under four headings. The aerotow, from thermals low and high, and the ridge. Each are under different conditions of wavelength, thermal, cloud, etc.

The one question that always amuses me when I've flown for a fair time under difficult conditions is, 'Was it wave or thermal', or, 'Were you ridge flying?'. It's rare that one doesn't encounter at least two of these conditions. Very rare when it's one alone.

The easiest entry is with a knowledgeable tug pilot who drops you (or you him) in the slot just upwind of the cloud edge at or about cloudbase. All one has to do then is remain marginally upwind of the cloud, and after climbing a thousand feet or so, experiment quietly sideways and fore and aft, seeking the best lift.

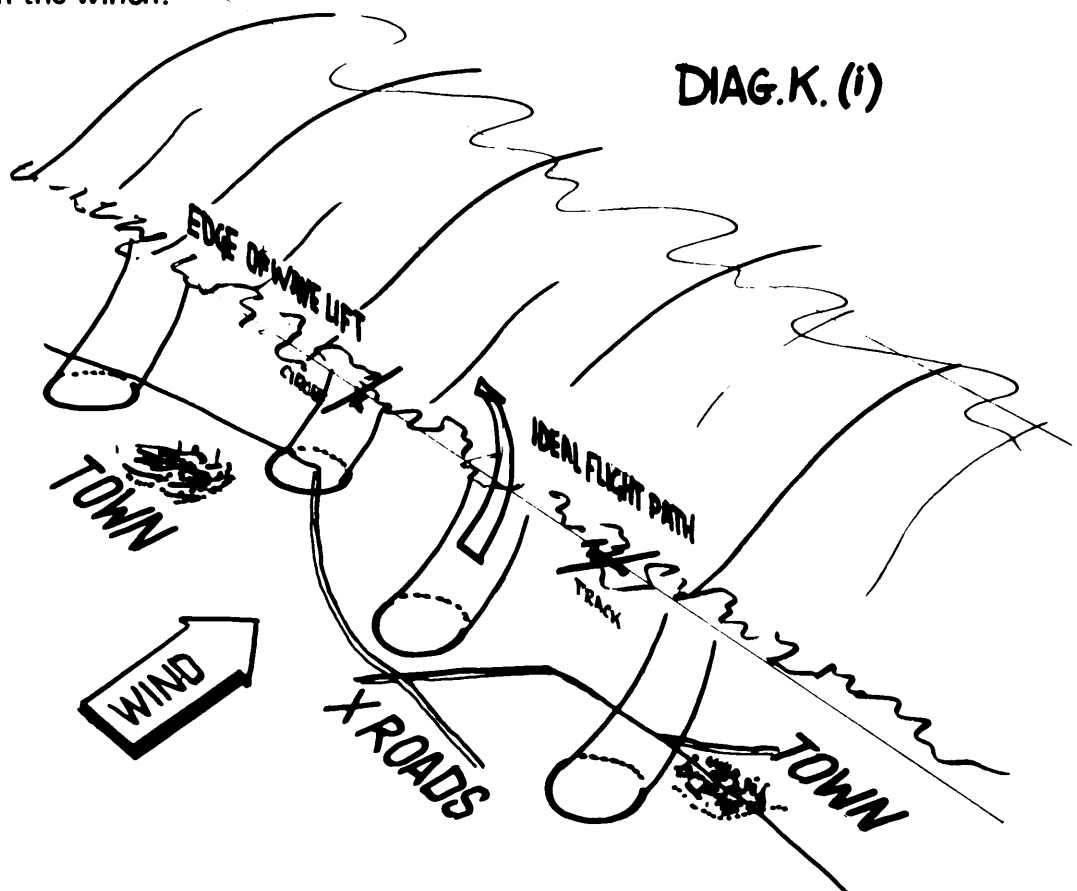
Remaining stationary – relative to the ground that is – is not so easy. Perhaps we should think of the cloud behind (downwind) as a ridge. This analogy is a pretty fair one so that tracking along it, turning out at the ends of the beat and keeping just upwind of it, is all very familiar to the average ridge soaring pilot 360° turns starting well upwind may also be executed. As with ridge soaring, the wind doesn't always move at right angles to the 'hump behind'. There is a slow beat and a fast beat very often.

To get into the wave from the hill is just as straightforward. It requires patience to soar as long as possible as high as possible until the ridge lift improves, giving better lift to greater height until it gets smooth and strong and you are in.

Very gentle manovres are called for, so that not even a foot of height is lost. This requires thinking ahead. Always organise it so that every turn is in lift, and track along the hill when it's not too good. Ever see a similar glider higher than you are, and wonder how he got up there? Oop's, I nearly forgot – it's a "she"!

The most exciting is to be low and in obviously unstable thermal air, and work very hard to get into the wave system above.

The lowest we have done this at Usk is from 700 ft. over the site. Several of us – and from the winch.



Provided one 'twiggs' that there is a wave about, the next job is to find the lay of it. Along the road as far as the wood and back to that big farm. This may be the sort of location, sometimes a little further, sometimes forward a bit or perhaps back.

We picture it as an area of wave just above (marked or unmarked by cloud) with thermic tubes leading up to it. Diag. K.

The key is to turn in the tubes and not fall out of the back of them or fly through them. We call them wave induced thermals.

One point, a glider flies very efficiently in wave, and one can fall out of the thermals and wave by flying just a few knots too fast!

The last case, that of flying higher in thermals, cloud, and then into wave, I have found rather more rare.

Probably because, conditions conducive to the formation of a deep layer of thermals are inhospitable to wave. On occasions, however, we have strong thermals in a fair wind being chopped off somewhat, and the depth of cloud not very great. If, on a flight over a small distance, we find suddenly the thermals are very strong, it may be due to the action of a wave inducing them. There will of course be areas of weaker thermals, but this is true of any flight. It is the sudden change from the average in a positive direction we are looking for.



So with the likelihood of wave, we screw up in our very strong thermal, and by edging forward **whenever the thermal weakens** (this is important) we get maximum height without drifting downwind. This allows us to get to cloudbase and inside of cloud, until we again find the core weakening. By edging forward once more, we may be able to contact the wave just upwind of the cloud.

As the cloud is continually drifting downwind, we may have to start the procedure all over again, but once the foremost upwind cloud has been traversed, we should be in wave.

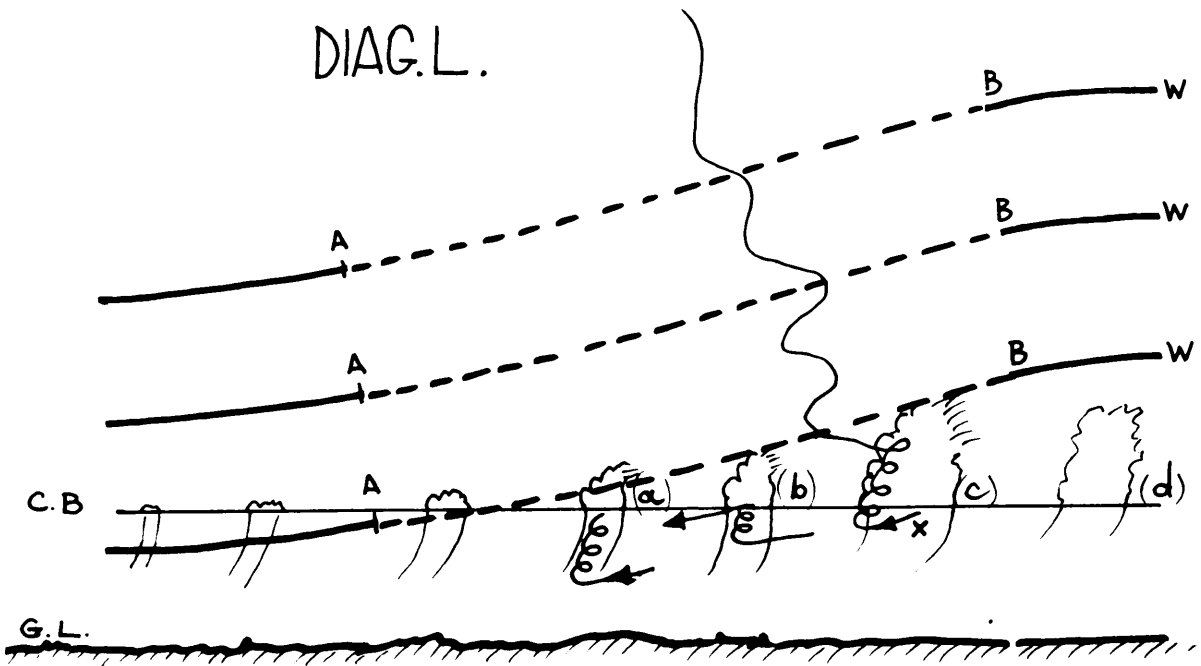
Normal wave methods will keep one in the right position from here on, as long as we remember that the most upwind clouds, large or small, form the edge of the rising air.

A look at diag. L will indicate possible flight paths. Starting at x one comes across a strong small thermal. Half way up the cloudbase and we have drifted and the cloud grown to x in cloud (b). Again we climb to cloudbase but not quite enough. We find ourself at x in cloud (c). Still strong lift into cloud but too far back. By working up and forward we arrive outside of cloud, upwind, and in the wave influence. Lumpy at first then oh so smooth!

Now to compute the following (1) Vary the cloudbase (ii) Cloud cover. (iii). Wave length. (iv). Wave height. (v). Wind strength, etc. etc. and you will see that every day is different – just like thermals.

By the way, A–B is the area where the wave will have an enhancing effect on the thermals.

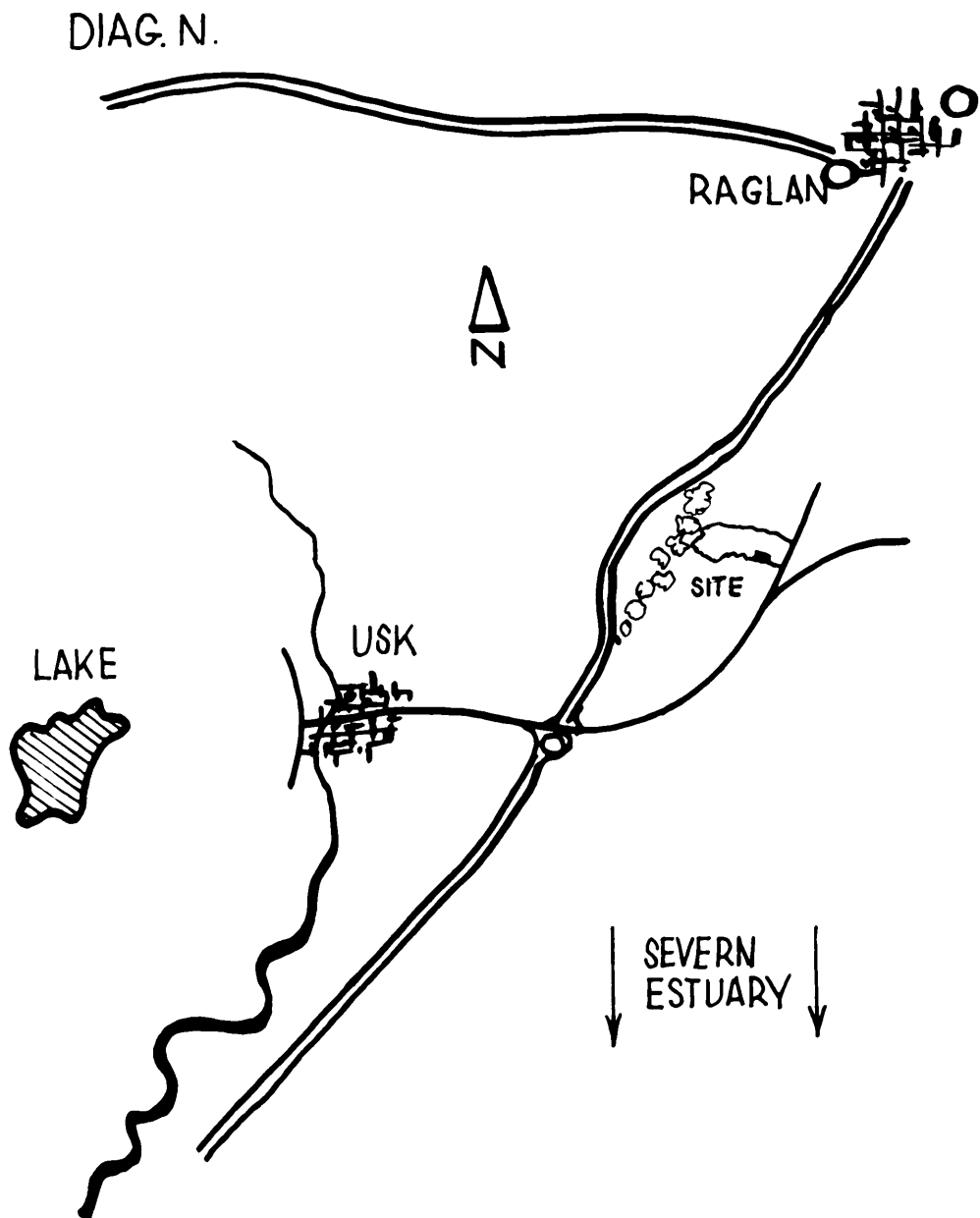
Notice the tops of the cumulus – torn off.



Finding the Site. Diag. (n)

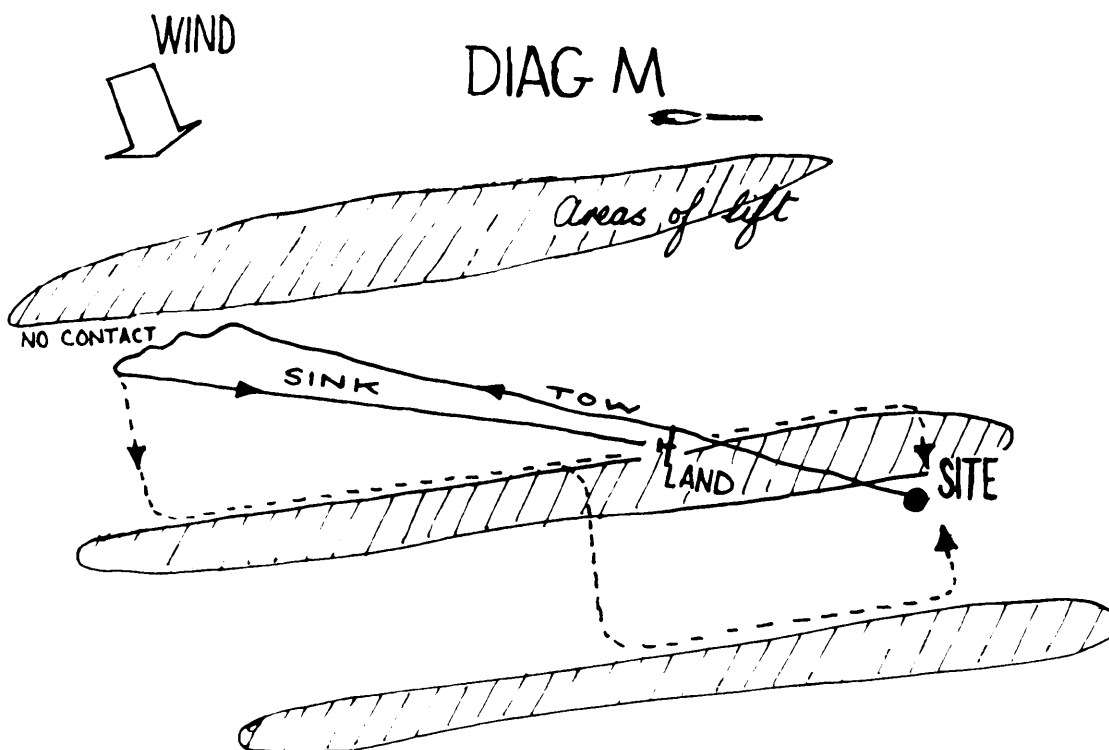
One of the early check flights should be used to show how to find the site. We have three main features to look for when scanning the horizon or the slots – depends on your height. The first is to find the water. That is, the Severn estuary and then the lake. Not far from the lake (wee loch in Scotland) is the town of Usk. This has the following features; a meandering river with most of the town to the East, and a bridge. The other nearest town is Raglan, which has a castle and no river. Both are close to the motorway, along which we go if we can see it, to a point where a straight line of trees causes a curve in the motorway.

The lake, Usk and the site are in line.



THE DANGERS OF WAVE SOARING

Without putting off the inexperienced pilot, I shall point out a few of the dangers of wave soaring. Five main points. The first being the inability to contact wave and the subsequent action. Frequently we find a pilot through inexperience on his or the tug pilot's part fails to get into wave. He decides to return to the site. Unless the aerotow was directly upwind he is going to travel at an angle to the wind, and before obtaining the correct heading for the correct track, he will have drifted downwind a little. The chances are his track is in the down of the wave he failed to contact. Under these circumstances it's unlikely he'll reach the field. A better course of action is to fly downwind on failing to contact the wave, until the downwind wave is felt by the improvement in sink rate. Then fly along this line of reduced sink to a point either directly upwind or downwind of the site. A high speed dash will probably then succeed.



The second is the much discussed rotor. In my experience it is rare in this country to fly in a very rough rotor except (a) on aerotow. (b) in very strong winds. (c) when flying very fast. Apart from the usual precautions involving security of pieces and people there is little to be concerned about. Aerotows are of course tricky. Beyond the rotor you will be reaching cloudbase on some days. At Usk often the slots are small, so that on release or even before, one often encounters a glider either descending deliberately or failing to climb. Keep out of cloud. It may have a glider in it. Even "edging" along (a deliberate pun) one has to keep an eye open for someone coming the other way.

Getting lost is the third hazard. On arrival at a high point there often is little in the way of prominent ground features to be seen. Careful "guesstimates" of location and direction have to be made, using compass, watch and map. The topography of the clouds from above is discussed later. One often has to go down into a slot to have a look around. The reverse of thermal X Country.

Slots closing at this point form the fourth hazard. This situation creeps up on one. Often seven eighths cloud cover becomes eight eighths in your locality. This situation is covered in the chapter on The Wave.

Oxygen or the lack of it is the last danger point, except a few afterthoughts, and is also one that creeps up on you. The thing to do is draw for yourself a few rules. "X thousand feet is my limit as I have no oxygen." and "If I go to Y thousand feet I will switch my oxygen on." The technicalities of systems, supplies and other arrangements are beyond the text of this booklet. Let's just say the first symptom of anoxia is that you appear to have no symptoms. As with drink you are a very poor judge of your own condition.

The Afterthoughts. Well it's tricky flying into bits of high wave cloud. The cold causes frozen condensation inside while the supercooled droplets outside form a second layer. Clearing both inside and out can be very embarrassing on the descent. The sun has less effect the lower you go, and the air even at ground level may be freezing. Ever landed via the C.V. panel?

You wonder why we go up there at all? Well it's fun, it's beautiful and a challenge to do a job properly, and get the best out of the sky.

The last time I couldn't get into the wave I was mad. I was mad because it was there, I knew it was and I couldn't quite make it. I'd ridge soared from 1100ft up to 2600 ft with obvious wave help and I still couldn't get in. A re-light cost me a good climb as the short winter hours had caught up with me and I had to be content with a mere 11,000ft. 24000 ft was obtained over Wales that day so I resolved to sort out where I went wrong. This is the re-think.

To begin with, each day is slightly different. Just consider the variables:— Wave, length, height & amplitude. Cloud base, thickness and proportion, wind strength, direction, and variation with height. Ground topography causing the waves and its variations. Its obvious to anyone flying in wave that one is constantly surprised. Let's try to be less surprised and more informed, instead.

For the time being we'll ignore the topography of the ground and study the wave and the cloud. Looking at diag. (a) we have the more or less horizontal flight path of a parcel of air some distance up in height in the wave flow. The central area A—A obviously gives fairly constant good lift with AB and BA zero. The rest is sink, from slight to off-the-clock.

Looking at diag (A) we have a situation where the cloud cover is almost 8/8ths. You'd only see lighter parts in the murk from below with the briefest of glimpses of blue and then only above. Once on-tow it would be necessary to be at cloud base and downwind of the thinnest cloud to find lift. In this case a climb partially in cloud is inevitable. A look at (A) will show the optimum position for lift as X and this is the same diagram proportion as in (B) also with X. The best climb position is the vertical line through X. Consider the pilots' viewpoint.

At X diag. (A) he is saying "I found the best lift close to the cloud today!". Pilot No. 2 on reading Y says "I am getting the best lift well forward of the cloud", while poor pilot at Z says "I had to go into cloud to get any lift at all and then I saw the same number of knots as No. 1 and No. 2.

Perhaps now we know why we all have different tales to tell.

The situation is a little less drastic than in (A) but with (C) (4/8ths cloud). The same variables of experience are in fact just a variation of viewing angle from the gliders. The lift could be the best just below the cloud, just at the upwind edge, close to cloud, or well above the cloud top where the viewing angle gives the impression that one is very far forward but in fact this is not necessarily so. One could be anywhere vertically above A—A diag. (L) and get lift without the wave leaning forward as they are supposed to do.

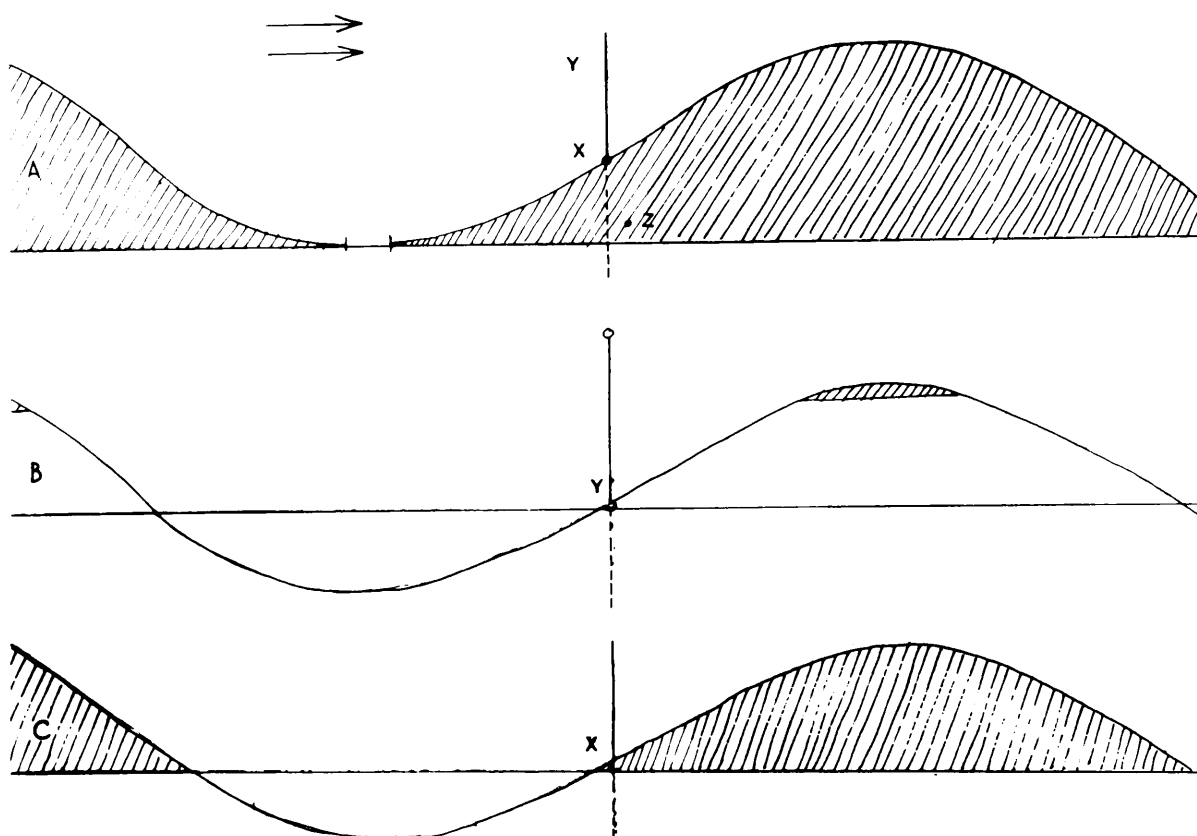
Let's now have a look at a 1/8ths cloud day. The usual remark heard here is "I didn't get anywhere near the clouds," and of course nor is there need to. One has to judge the midway position between clouds either from below or above and get just downwind of the middle position for best lift.

At the highest part of the flight we often have the position as at (B). Only a wisp of cloud to go by and with the flatness of it and wind veer with height it's a job to find the lift. Rather like navigating a saucer. The lift is of course still upwind of the cloud but considerably more forward of it — apparently.

Having found the eye of the wind, keep edging forward of the cloud and lift should be found providing the vertical component is sufficient.

Come to think of it, yesterday, Sunday 11th Jan, 1976 was a day for most of the above text to be re-tested. 8/8th cloud cover and climbs in cloud 4 KTS to off-the-clock. Slots appearing later with high climbs to over 14,000! Difficult flights to the site from below and above the cloud. One K13 came out over the coast, one went to 12,000! The only thing missing was freezing level! — and my Cirrus which was in Southport for C of A.

DIAG a



THERMAL

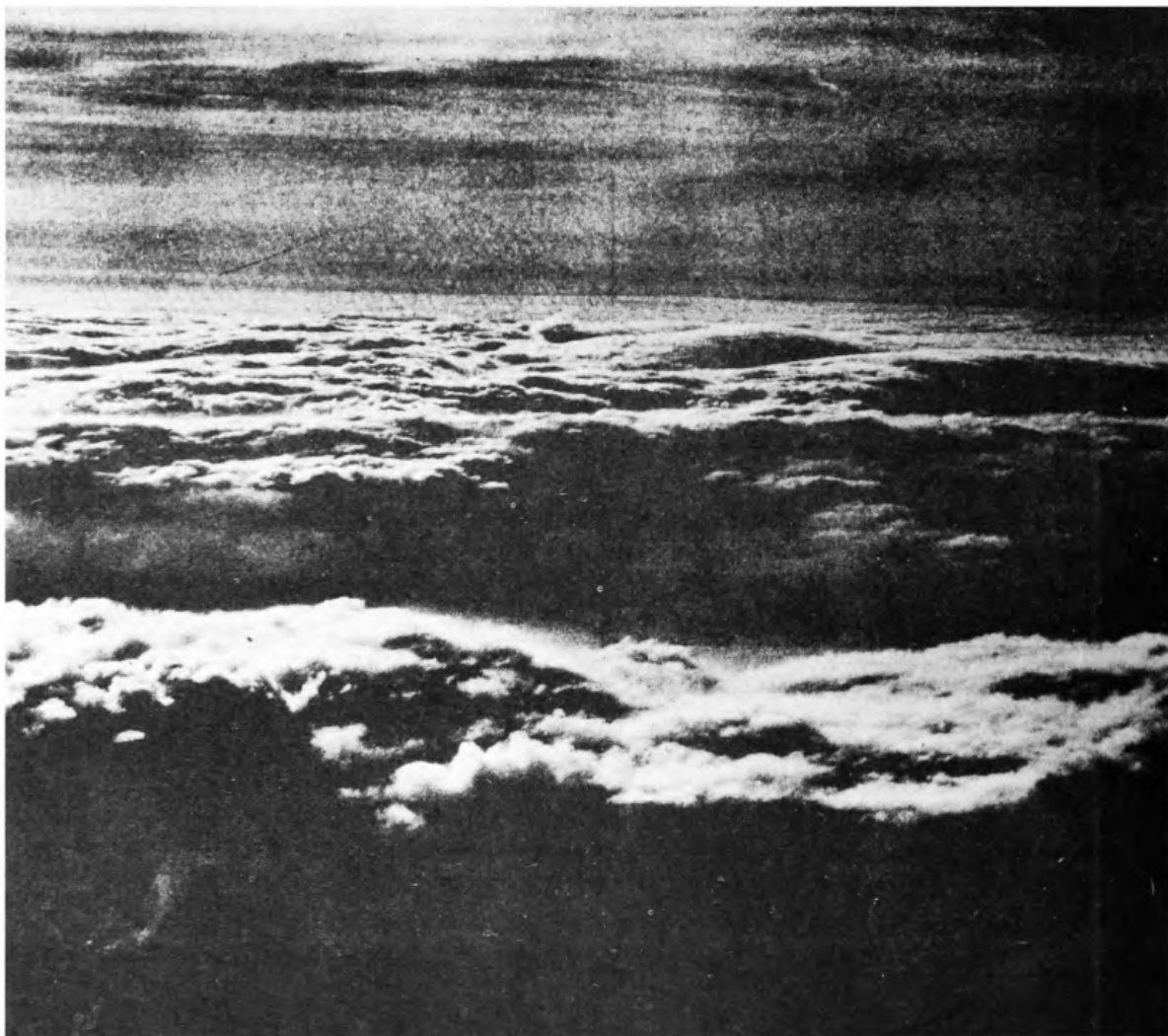
The effect of Hills and Sea on Thermals.

In a Westerly, Usk lies in the rain shadow area, so that the rainfall is about a third of that over the hills 8 miles to the West. This means we often have a blue hole to the west with the restart of thermal activity delayed, and sometimes prevented over a large area. It's not too often and too drastic an effect, and in the wetter days we often soar when everyone else is in cloudy or rainy conditions. On balance we benefit considerably, as often our site lies just on the downwind edge of the hole. As we are in a valley with Q.F.E. 82' ASL. the thermals are slow to start. As with most sites the thermals form around us before over us. Cloudbase goes down a thousand feet as you go west to the hills, and the thermals get smaller too, so most of our X Country flights go to the other points of the compass.

One problem getting away to the South is the Severn estuary. It's only a couple of miles across, but the dead area each side of it has to be considered. An offshore wind on one side is onshore on the other, and of course there is the sea breeze effect, not to mention lowering cloudbase in this area. Still, cross it we do – and back again – dozens of times in wood and glass.

The estuary itself is wide enough at Newport to form a sea breeze front, which extends eastwards to Gloucester and goodness knows how far to the west. Personally I have flown to Neath in it, going well inland at times, but it takes courage to fly any distance at around 3,000 ft. ASL. with the ground up to 2,000 ft. Any feeling of elation or safety I can assure you is purely temporary.

We have on occasions had the whole fleet airborne in the seabreeze front, but as it crosses the site and goes further inland, pilots tend to pack it in and return to the safety of the site and another launch.



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