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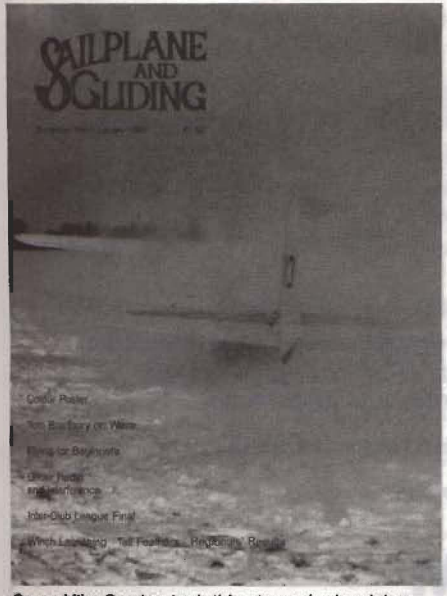
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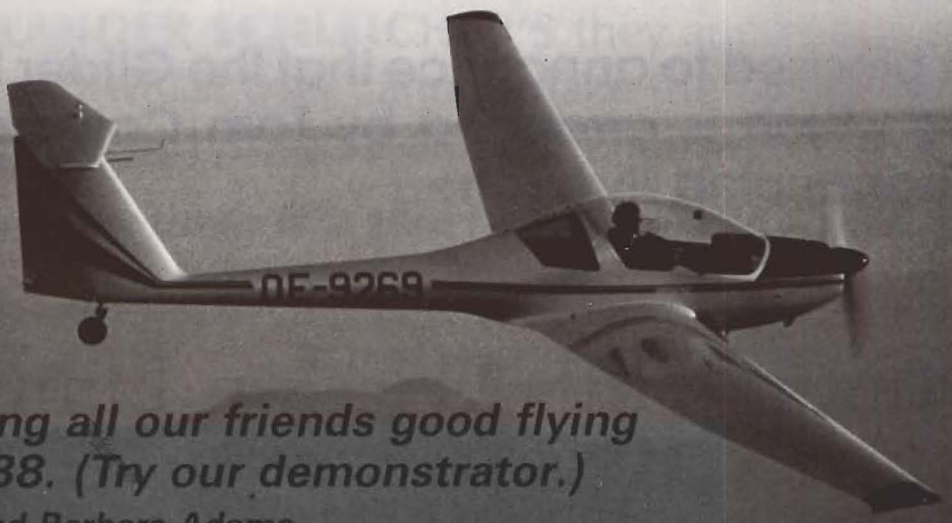
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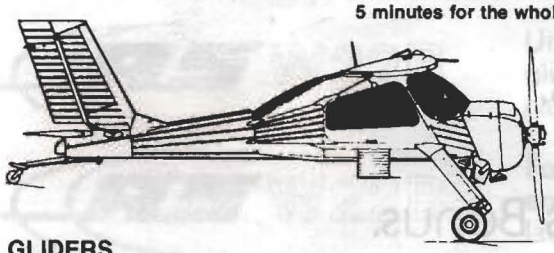
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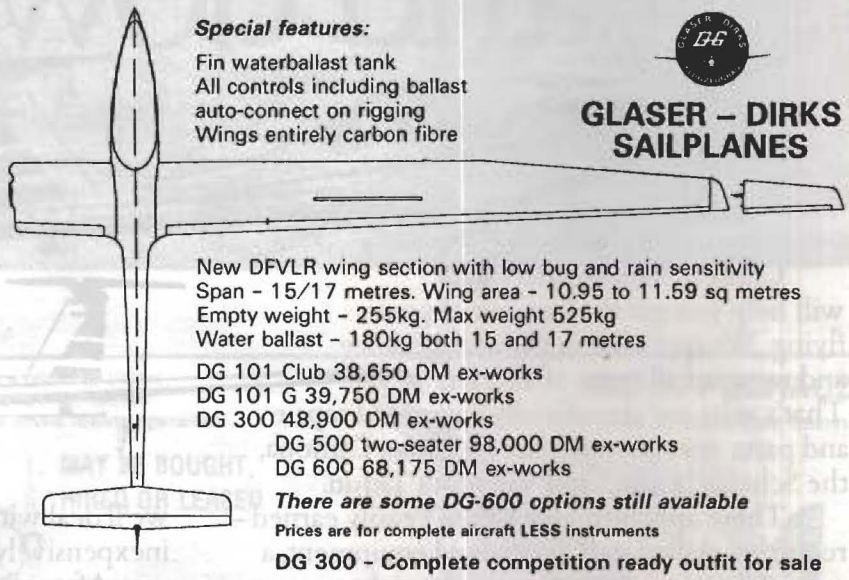
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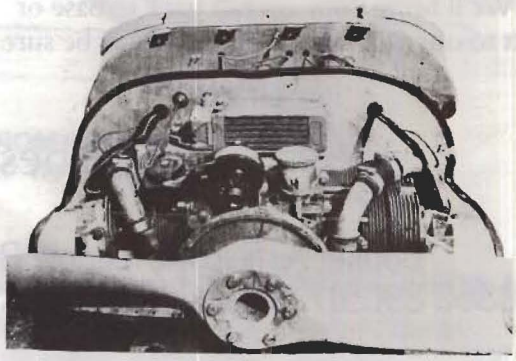
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TOM BRADBURY

WAVE FLYING FOR BEGINNERS

Tom's article in the August issue, p172, was so well received we have persuaded him to write a sequel

This is written for pilots who, so far, have had little or no opportunity to fly in wave. Wave soaring can be more demanding than flying in thermals. Cross-country flying in thermals rarely leads you into unavoidable weather problems; it is usually possible to turn back or land when thermal soaring becomes difficult. In contrast wave soaring can take you high above bad weather and present you with the problem of a blind descent through cloud afterwards.

Early wave flights, like early thermal flights, are apt to be frustrating, The skilled pilot seems to find lift, climb up high above the clouds, depart on long and successful cross-countries, and return with exasperating accounts of the magnificent conditions. On the same day the newcomer plods about in miserable lift which fades away before a decent climb is possible.

Ideal conditions for lee waves

(1) A wind of at least 15kt must blow across a ridge. The wind direction needs to be almost at right angles to the axis of the ridge. A difference of up to 30° may not matter, but if it is much more the air at low level is liable to flow round the end of the ridge rather than over the top.

(2) There should be an inversion or very stable layer not far above the mountain tops with a deep layer of less stable air aloft.

(3) The wind speed should increase with height but the direction should remain fairly constant. A survey of wave climbs exceeding 10 000ft over the UK showed that the wind speed increased by an average of 1.5kt/1000ft (sometimes much more) while the change of direction between the base and top of climb was seldom more than 25°.

If these three conditons are met there is a good chance that a long train of lee waves will extend downwind from the mountains. On such days waves have been found even over the low lying parts of East Anglia. Gliding sites in the mountains have waves even if requirements (2) and (3) are not met. On these days there may be just a single primary wave to the lee of a ridge but no further waves downwind. Local soaring is possible but cross-country attempts may be unsuccessful.

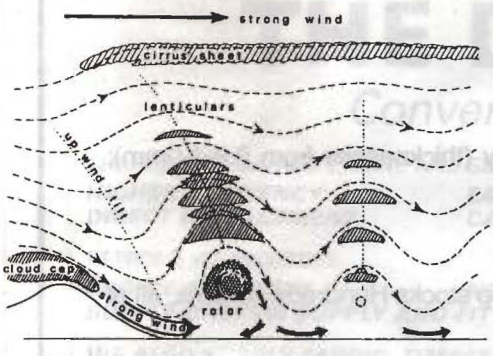


Fig 1

What the ideal wave should look like

Fig 1 shows a cross section of a wave system. In this two-dimensional picture the wind blows from left to right. Pecked lines show streamlines of airflow and fainter dotted lines are "phase lines". They are drawn through the troughs and crests of the wave pattern to show that some waves may tilt into wind.

A cloud cap has been drawn above the crest of the ridge. This forms when the air has been lifted above its condensation level. When you see a cloud sheet apparently pouring over the ridge like a waterfall but never reaching the bottom it is a reliable sign of lee waves. The cloud evaporates when descent warms the air but a strong wind may continue to rush down the slope.

Not far from the foot of the slope this strong flow turns upwards to form the primary wave.

Rotors. When the wave has a large amplitude the air often rises steeply and a rotor may form under the crest of the wave. Rotors are often (but not always) marked by a rather ragged bar of cloud looking like a churned up cumulus. The rotor is generally about the same level as the crest of the ridge. Even a weak rotor can give a very rough ride, severe rotors have been known to break up aircraft.

Most rotors are aligned parallel to the ridge line; if the ridge is not straight the cloud bar will not be straight either. The most severe rotors tend to ignore any bends in the ridge; they appear much straighter and stand further back from the foot of the ridge. Keep well clear.

Beneath the rotor the surface wind falls light and may be reversed in direction. Bands of very strong wind separated by almost calm areas are a feature of powerful lee waves. The wind may be strong enough to overturn a high sided lorry at one spot yet be almost calm a few hundred yards further on.

Above the very turbulent region of the rotor the air flow is usually extremely smooth. Aircraft can be flown "hands off". This smoothness is visible when the elegant lenticular (lens shaped) clouds form higher up. The distribution of moisture is seldom uniform and lenticulars often occur in several layers like "a pile of plates". The top of a lenticular is a guide to the shape of the wave crest. Very thin and flat lenticulars look pretty but the lift there is apt to be poor. A thick lenticular like an old fashioned aerofoil marks stronger lift. If the air beneath it is very dry the base of the lenticular may be concave.

Wave Cirrus. Very high up, at levels between 25 000 and 40 000ft, there may be a sheet of cirrostratus. The leading edge generally lies over the crest of the mountains while the trailing edge may be far out of sight downwind. This cirrus shows little or no sign of waves. The reason is partly because ice crystals do not evaporate as rapidly as water droplets when the air descends in a wave trough (so the cloud does not disperse in wave troughs), and partly because the high level flow can be very different from the undulating pattern below. At cirrus level the air can go up in a sudden bump and then stay up at that higher level.

Satellite pictures show that this wave cirrus develops first over the highest ground, (for example along the line of the Pennines) and then extends downwind, sometimes for hundreds of miles. The leading edge stays anchored above the mountains for many hours. At sites such as Aboyne, Portmoak, Sutton Bank and Shobdon which have mountains a long way to the west the leading edge of this cirrus can sometimes be seen far upwind looking rather like the rear edge of a departing cold front.

Starting the wave climb

You may be lucky enough to be launched straight into strong lift in front of an obvious wave cloud but on many days the initial stages of a wave climb are slow and taxing to the patience. The higher the launch the better is the chance of finding strong lift.

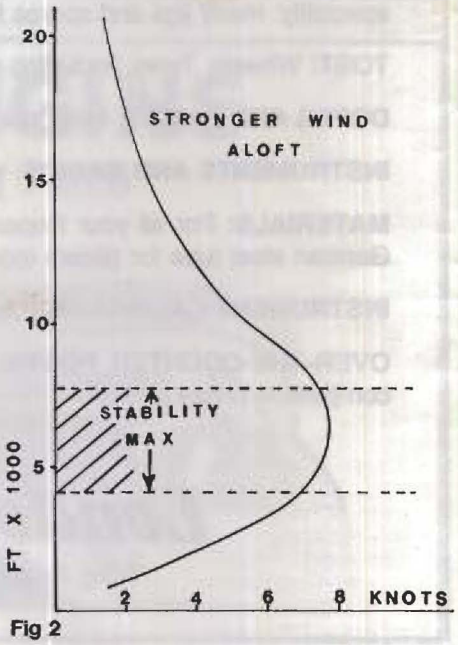


Fig 2

Fig 2 shows how wave lift can vary with height. Altitude in thousands of feet is marked up the side of the diagram and vertical velocity in knots at the bottom. Two pecked lines show the extent of a stable layer between 4000ft and 8000ft. The curving line showing how fast the air rises indicates that maximum lift is in the stable layer. It illustrates how poor the lift is low down, how it improves at middle levels, and the way it gradually fades away as you climb high. The actual value differs from wave to wave. To get the true rate of climb the sinking speed must be subtracted.

Although this is quite a common distribution of lift it is not found universally. There are exceptions. One pilot climbed away after a cable break at a few hundred feet. Others have found that, after patiently trying to get the last few feet at the top of a climb, the conditions suddenly improved and strong lift took them several thousand feet higher.

As a general rule the streamlines become flatter as the wind speed increases aloft. On such days the height attainable is limited both by the flattening out of the wave and the need to increase speed to stay in lift.

Visual signs of lift

Waves are not always marked by clouds but in the UK the air is nearly always moist enough for low clouds to form. Do not expect the clouds to look like textbook examples of "wave clouds". From below many wave clouds do not look at all promising. Often the only reliable feature is a persistent gap in the cloud cover. Waves may exist in and above an almost continuous sheet of stratocumulous; the only gaps are where there is a steep descent of air to the lee of a ridge.

With slightly drier air there will probably be a cloud cap over the ridge, a clear gap over the lee slope and a ragged band of low cloud a little further downwind. This cloud bar often looks like a mixture of scruffy cumulus and stratocu. Just upwind of the bar are little wispy bits of cloud. These wisps show where the air has just risen above the condensation level.

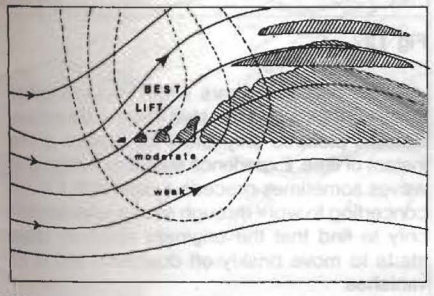


Fig 3

The best lift is usually very close to the wisps (see Fig 3). If you approach from below cloudbase the initial lift may be very poor. This is where patience and smooth flying is needed. Lift nearly always becomes much stronger when half way up the face of the cloud bar. One pilot may report 2-3kt lift while the pilot a few hundred feet directly below can barely detect any lift at all.

From higher up the picture looks much clearer. The scruffy looking cloud turns out to have a smooth domed top or perhaps a little lenticular cap and the irregular wave gaps turn out to have a systematic pattern after all.

Keeping in lift

Waves may have phase lines which are vertical but in mountain regions there is often an upwind tilt to the phase line. Fig 4 shows a set of

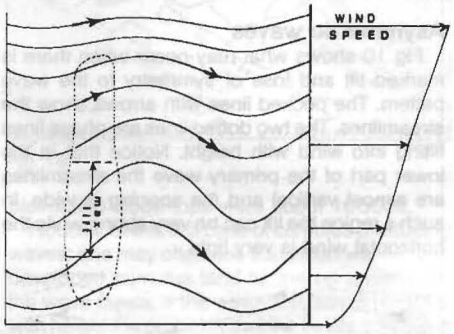


Fig 4

streamlines where the phase line is vertical. On each streamline the wave crests and troughs are directly above the one below. Notice that the streamlines become flatter high up where the wind is strong. Patterns like this are common well away from the mountains; they usually indicate a stable system which changes little over a period of hours.

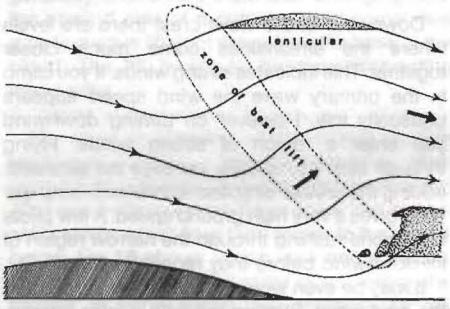


Fig 5

Waves with an upwind tilt. Fig 5 shows conditions when the phase lines are tilted upwind. This occurs most often when the waves pass over a series of ridges; the pattern seems less stable than in Fig 4. Sometimes there is a lenticular much higher up which shows that the wave is titled forward but it is often necessary to adopt a search system which will keep you in lift when there are no visual indicators.

Searching in clear air.

(a) If the lift decreases turn into wind first. Continue this heading if the lift improves. On strong wind days it may be necessary to increase speed too, especially if you are high up.

(b) When the lift starts to drop off turn diagonally out of wind and see if this results in being blown back into the better lift.

(c) Move along the line of the wave adjusting your heading to keep in the best lift.

(d) If the lift fades away and neither (a) nor (b) improves matters reverse the beat and go back along the wave. Good lift is often confined to short sections of wave. A number of short tacks in good lift often gives a better climb than a long beat along the weaker part of a wave.

(e) If there seems to be hardly any wind at your level it is sometimes worth trying a single circle as if thermalling off a ridge. Normally circling is a quick way of being blown back into sink and not worth trying unless you are fairly sure the wind speed is very low.

Alignment of waves. High resolution satellite pictures usually show that wave bars are aligned parallel to the major mountain ridges below. (Fig 6). This often means that the wave is not necessarily at right angles to the wind. For example with a north-westerly flow Portmoak pilots find wave bars lying parallel to the Ochils (aligned NE/SW). Following this system southwestwards there is often a change beyond Loch Lomond. The bars become almost N/S to the lee of Kintyre.

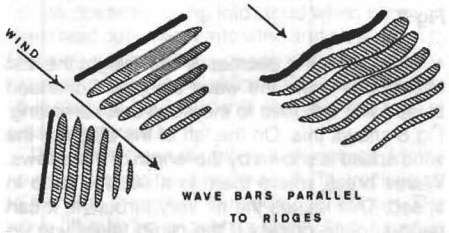


Fig 6

When there are no major ridge lines the wave pattern is complicated by short bars set off by minor ridges. These bars may appear almost at right angles forming a sort of herringbone pattern.

Wake waves

Isolated tall mountains can set up a wave pattern resembling the wake of a ship. (Fig 7). A series of V-shaped waves extend back and outwards. These show up clearly when there is a stratocu sheet whose top is not far above the peak. Wake waves can have a very marked sweep back; such waves can sometimes be traced for several hundred miles. The wake pattern from the Faeroes has been observed to intersect the crosswind waves set off by the Scottish Highlands.

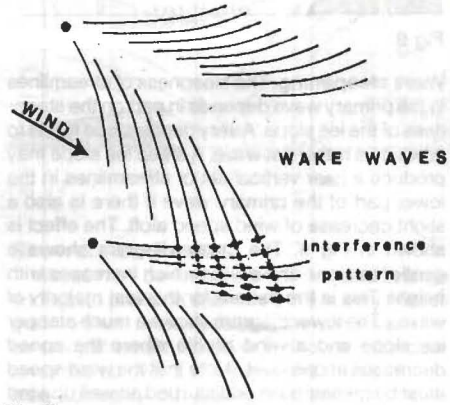


Fig 7

Individual peaks in Scotland and Ireland also produce small wake patterns. When two wakes cross the interference breaks the wave bars into very short sections.

Wind profile and wave shape

At the start of this article it was suggested that an increase of wind with height was one of the essentials for lee waves. There are times when the winds aloft do not increase, they may even reverse their direction.

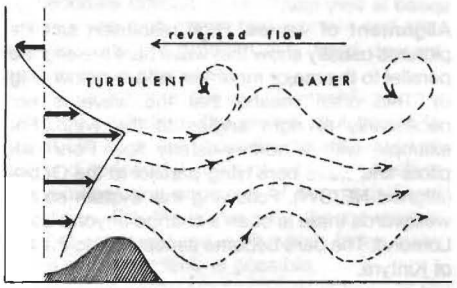


Fig 8

When the wind decreases with height the first effect is to make the wave steeper. Continued steepening can lead to the wave crest breaking. Fig 8 shows this. On the left of the diagram the wind speed is shown by the length of the arrows. Waves break where there is a sudden drop in speed. This makes the air very turbulent. It can happen quite quickly if the climb takes you up into the breaking zone. If the wind change is gradual there may only be a slight cobblestone effect as the lift decreases. Any roughness, however slight, shows you are leaving the useful part of the wave. A sharp change of wind produces very rough air.

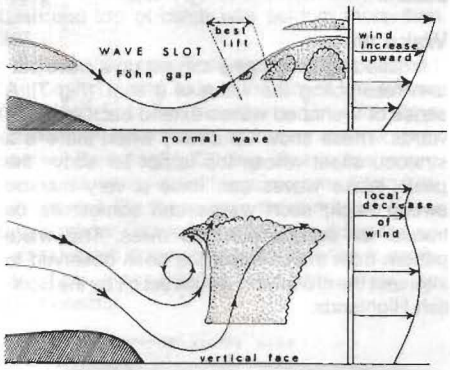


Fig 9

Wave steepening. The steepness of streamlines in the primary wave depends in part on the steepness of the lee slope. A very gentle slope tends to produce a rather flat wave. A steep lee slope may produce a near vertical set of streamlines in the lower part of the primary wave if there is also a slight decrease of wind speed aloft. The effect is shown in Fig 9. The upper diagram shows a gentle lee slope and a wind which increases with height. This is the pattern for the vast majority of waves. The lower diagram shows a much steeper lee slope and a wind profile where the speed decreases at one level. (Note that the wind speed must be measured in undisturbed air well upwind of the ridge because it changes as the air flows through the system.)

The steep slope and decrease of speed combine to produce almost vertical streamlines. With this pattern there is likely to be a small rotor between the cloud face and the hill. This rotor is usually cloudless but its circulation may just catch the cloud top and pull it forward into wind. The top of the cloud then develops a curl over like a breaking wave. Conditions may be rather rough in this rotor but higher up, or close to the cloud face, it may be possible to climb in almost calm conditions and circle in the clear air above.

Asymmetric waves

Fig 10 shows what may occur when there is marked tilt and loss of symmetry to the wave pattern. The pecked lines with arrows show the streamlines. The two dotted lines are phase lines tilting into wind with height. Notice that in the lower part of the primary wave the streamlines are almost vertical and the spacing is wide. In such a region the lift can be very strong while the horizontal wind is very light.

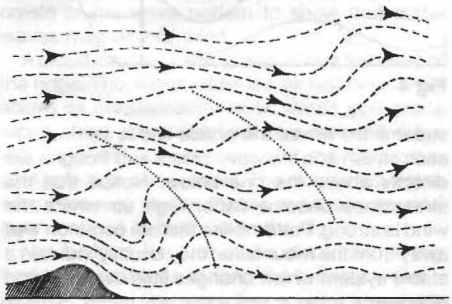


Fig 10

Downwind of the wave crest there are levels where the streamlines come much closer together. This indicates strong winds. If you climb in the primary wave the wind speed appears unusually low. However on turning downwind you enter a region of strong winds. Flying through sink you usually increase the airspeed; adding the greater airspeed to the much stronger wind gives a very high ground speed. A few pilots have gone rushing through the narrow region of lift downwind before they recognised it.

It may be even worse trying to push upwind to the next wave. Starting out with a false impression of little headwind you find that sink coincides with a painfully slow ground speed. The low level wave bar ahead takes ages to reach. When you do finally reach it there may still be some distance to run before you find lift. If you pick the wrong section it is easy to lose 10000ft without even reaching the next upwind lift.

Moving upwind

At the top of a high climb there is apt to be a sense of euphoria; from such a height surely one can set off anywhere. The next wave bar upwind seems close enough. Be patient a little while. If the lift was strong the sink will seem even stronger. It often pays to track along your present wave to an end where it is weak and make the move forward from there. Some wave patterns show marked bends where one cloud bar is angled into wind. This may offer a better route forward. In other cases wave bars may actually seem to merge at one end. This too can provide a bridge for the upwind move.

Occasionally one may find a band of cloud, lying almost parallel to the wind, which bridges the gap between the wave bars. These may perhaps be a form of streeting at low levels, (though the band may not look much like

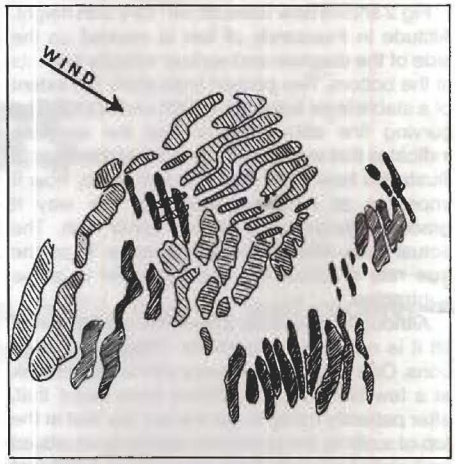


Fig 11

cumulus). Whatever the reason the sink is less if you cross *via* such a band. Fig 11 shows an enlarged sketch from part of a satellite picture over the Scottish Highlands. See how complex the wave pattern can be. There are bendy wave bars, major changes of wave alignment and even cloud lines across the waves.

Filling gaps and shifting waves. On days when there is extensive cloud cover one of the signs of a slot filling in is the growth of cloud fingers across the wave gap. (Fig 12.) Wave slots close up when the moister air arrives; it pays to keep an eye open for the growth of cloud fingers bridging the gaps.

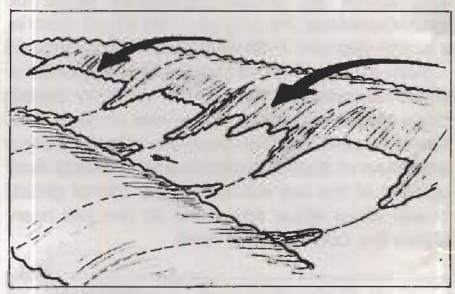


Fig 12

When two wave bars seem about to merge there may be a sudden shift in the wave system. Satellite pictures only show the position at one instant of time. Experience suggests that merging waves sometimes precede a rapid shift. It is disconcerting to work through such a wave junction only to find that the originally stationary cloud starts to move briskly off downwind and all lift vanishes.

Waves which jump upwind. If the wind speed over the ridge top is too strong the air may be unable to follow the contours of the lee slope, especially if the slope is steep or has cliffs. Where the airflow breaks away from the surface the space is filled by a small eddy. (Fig 13.) These eddies may break away themselves and roll off downwind. If they do there is a temporary change in the effective shape of the lee slope. The wave pattern tries to adapt to this and the wave crest drifts further away from the ridge. When the wandering eddy has moved too far the wave pattern jumps upwind to its original position. The

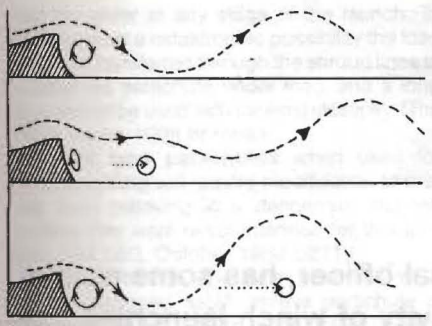


Fig 13

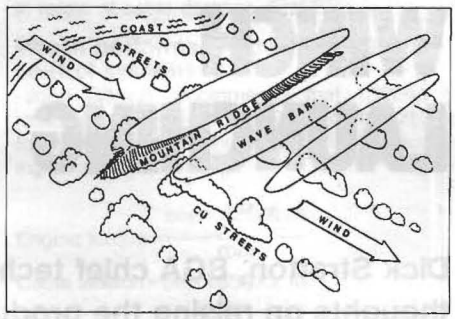


Fig 15

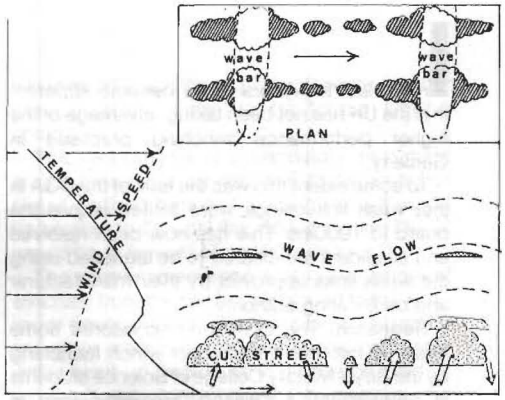


Fig 16

jump can be quite rapid. If you are flying just in front of the wave bar the cloud can form all round when the jump takes place.

A note on airframe icing. Wave clouds are notorious for their ability to produce a heavy deposit of ice. It is usually wise to get out of wave cloud as soon as possible if the air temperature is below freezing. Ordinary stratocu clouds have a limited amount of water droplets and ice seldom forms rapidly unless the layer is fed by cumulus building in from below. Wave clouds have a constant supply of moisture sweeping through them all the time.

Canopy icing. One of the problems of prolonged flight in sub zero temperatures is that the pilot's breath freezes on the inside of the canopy to produce an opaque layer of ice. Scraping it off only gives a brief improvement; as you clear one bit the last section freezes over again. A constant draft of dry air from outside seems the only remedy.

Waves over cumulus

Some forty years ago it was thought that the development of cumulus destroyed wave flow. It does not, but deep cu makes it very difficult to transfer between thermal and wave lift.

1. Waves where the wind direction changes greatly with height.

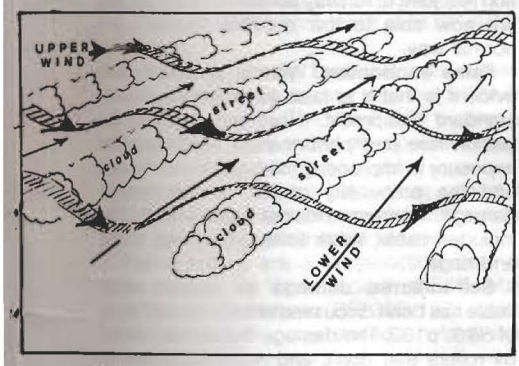


Fig 14

The first recorded observation of waves over cumulus were made over an area of cumulus streets. At low level the wind was parallel to the streets, above it was almost at right angles. (See Fig 14.) It was clear that the lines of cu were acting like a series of small ridges over which the upper winds developed waves.

Recent studies in the USA (using powered aircraft) showed that such wave lift could be traced to about 29000ft. The streets were over high plains and cloud tops were about 10000ft.

Notice that this is a case of cumulus producing waves; one may often see that when waves have developed cumulus tend to line up underneath the wave crests. If the wind direction is constant with height it is probable that the cu are controlled by the wave pattern aloft. If the lower winds blow along the lines of cu but the upper winds blow across them the waves are being influenced by the low clouds.

2. Waves over cu when the wind direction does not change with height.

An isolated cumulus may have wave flow over the top if the wind speed increases with height. Such cumulus waves are short lived. They collapse as soon as thermal stops working. One generally encounters them after emerging from the upwind side of a cumulus, and sometimes may find wave lift right down near the base of the cloud. The lift is apt to be more interesting than useful.

3. Waves at right angles to cumulus streets.

Fig 15 is an idealised sketch based on high resolution satellite pictures showing how cumulus streets may be found both upwind and downwind of a mountain ridge which has its own set of waves which lie at right angles to the streets below. Fig 16 shows a plan view and a vertical cross-section. On the left of the cross-section the profiles of wind speed and temperature are drawn. The wind speed (pecked line) shows the usual increase of speed with height. The temperature line shows unstable air where the cu form, then an inversion which limits the tops of cu, and finally the normal decrease of temperature with height above the inversion.

Cumulus streeting is common under an inversion when the low level wind speed is fairly strong, (25-30kt or more) and there is enough heat from the surface to set off thermals.

Soaring waves above cumulus. If there is no higher cloud to show the alignment of lee waves the only clue to wave flow aloft is the large variations in lift and sink below the cloud streets. If some clouds give remarkably strong lift (much stronger than the average for that time and day) it may be that the cloud lies under the leading edge of a wave. Alternatively if the sink seems much worse than usual, or the sink persists for some distance as you fly along under a cloud street, then it may be due to a wave trough above.

You may wonder why, if the air is sinking, the cloud does not dissolve. The cloud street does grow narrower and the tops lower, but if the wind is strong the cu blows across the wave trough too fast for the sink to dissolve the cloud completely.

Transition from thermal to wave is best attempted at the upwind end of a cloud street. Use the region of very strong lift to climb high as fast as possible, going into cloud when permissible. Head out directly into wind and slow down to Min sink speed. With luck you will come into the typically smooth flow which indicates wave. The lift is likely to be weak until you near the tops of adjacent cumulus.

The difficult part is getting high enough for the next cumulus to pass underneath. Try tracking off to the side if another cumulus bears down. The wave lift may be enough to keep climbing while the cloud blows past. Remember that the wave will probably stay in the same area for some time but the cumuli pass through the pattern.

Once above the cloud streets lift is usually much better and may well take you at least twice as high as the cu tops, perhaps more. Do not expect these waves to persist as long as the better known waves which are firmly anchored to a definite ridge.

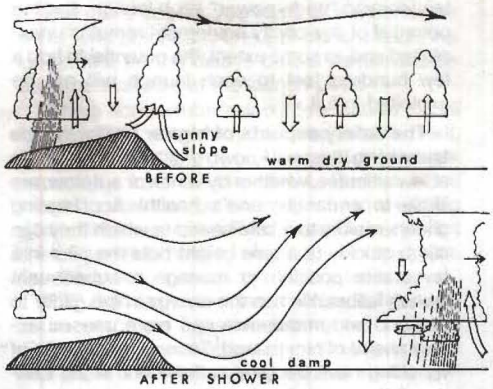


Fig 17

Showers and wave

Waves may be found even above clouds large enough to produce showers but it is very hard to get into them unless you start the climb while the cu are still small. However a shower may clear away the cu over a wide area and the wave may then suddenly dip down over the rain chilled ground before further thermals can form. The sequence is shown in Fig 17. In the top diagram the wave is far out of reach; in the lower picture the passing cu-nim has cleared away the clouds, put a halt to thermals, and brought the wave within reach.

R. B. STRATTON

WINCH LAUNCHING

Dick Stratton, BGA chief technical officer, has some random thoughts on raising the productivity of winch launching

In the last few years it has become apparent that the UK has not been taking advantage of the higher performance winching practised in Gemany.

To some extent this was the fault of the BGA in that weak link ratings were limited across the board to 1000lbs. This has now been resolved and all gliders are cleared to be launched using the weak links approved by their manufacturer and certificating authority.

Research. The BGA then sponsored some research into the dynamics of winch launching by the Royal Military College of Science students at Shrivenham. A Leyland "Beaver" winch at RAFGSA Centre Bicester was fitted with a torquemeter and recording equipment. The outcome of this unique and useful work was the concept of controlling the output torque of diesel engines, thereby controlling the load available in the cable at a constant preselected figure throughout the launch.

Theoretical explanations of all aspects of the dynamics of winch launching in excellent articles in *S&G* by John Gibson (August 1985, p170 and February 1987, p28) has put on record for the first time the knowledge required by instructors, winch drivers, winch builders, and all others concerned, to take advantage, safely, of the increased performance that can be made available when using higher rated weak links and more powerful winches.

The Supercat winch at the North Devon GC now incorporates torque control. Two settings are available for light gliders and heavy gliders.

The Van Gelder six-drum winch at the London GC is powered by a 220bhp turbo-supercharged diesel with a torque converter. It is necessary for the winch driver to moderate the launch using the tachometer to suit the glider and the conditions. There is likely to be an inherent tendency to "underpower" each launch, and the potential of this costly equipment remains unexploited and, to some extent, the potential to add a few hundred feet to each launch will not be exploited in full.

The safety aspects of higher performance launching. It is well known that "hung" launches at low altitudes, whether by winch or autotow, are likely to endanger one's health! Accelerating gliders rapidly to a safe speed at which they can climb quickly to a safe height puts the pilot in a favourable position to manage a subsequent launch failure. He has the energy in the glider to respond and manoeuvre and more unused airfield ahead of him to land. These safe aspects of winching have become self-evident at the London GC.

The productivity aspects of higher performance launching. There are some gliding sites where the available take-off run or the degrading effects of crosswind operations makes winch launching by traditional means a somewhat marginal operation. It would be a reasonable objective to state that launches below 1000ft in zero wind conditions, with current GRP two-seaters, should be no longer acceptable. They are not good value for money because they provide inadequate flying time for proper instruction in costly gliders.

Clearly, to remedy such deficiencies at any such site requires either a longer take-off run or higher performance launching equipment.

The cost of increased winch performance

Tost winches factory fitted with V8 automotive engines and matching (fluid) transmission have demonstrated high performance for many years. They probably burn a litre of motor spirit/launch.

The Midland GC have a high performance Jaguar powered winch operating on Liquid Petroleum Gas (LPG) and claim petrol engine performance at (untaxed) diesel prices. (See *S&G*, August 1987, p181.)

The Bassetlaw GC at Gamston have built themselves a twin-drum winch powered by a Rover V8 with automatic transmission, on a prime mover, for less than £2000! - and claim 14 launches/gallon.

Higher performance diesel winches are inevitably going to be more costly, because it is likely that a turbo-supercharged unit of some 180hp, with torque converter, will be required to provide the same rate of acceleration and the power required in the climb, and because the usable rpm range of diesels is more restricted than for petrol engines.

"Heavy" diesel winches converted from trucks, tanker-prime-movers (Beavers) or from buses etc, have achieved excellent results at affordable prices and are ideally suited for sites with a more than adequate take-off-run.

Many of these fixed-gear-units with fluid couplings provide adequate launching capability, even though when the cable load increases in the climb the engine speed falls dramatically and the power and torque likewise.

However, if you want to achieve the performance criteria outlined by John Gibson *ie* an acceleration rate of 0- to 48kt in 4sec, and a cable load of (say) 1100lbs at almost zero cable speed at the point of release, then a torque converter or similar type coupling will be required. (Ref *S&G* August 1985, p170.)

The height gained in a high performance launch should be of the order of half the cable length available according to Van Gelder. If the winch performance is less than the Van Gelder, then the height gained will be less than a half.

What should a winch launch cost?

It is counter productive not to invest in winch launching equipment, the "life-blood" on which gliding depends, as does also the cash-flow and the morale of the membership. Therefore the following cost-estimates should be compared with those derived from your own experience:

	p/launch
Fuel costs (say)	**20**
Cable replacement (stranded)	**10**
Cable parachute replacement	**10**
Weak links, rings etc	**5**
Provision for winch maintenance (say)	**5**
	50

It is assumed that interest is not payable on the acquisition of equipment. Prices for fuel will vary, untaxed diesel and LPG being comparable. There may be some savings if solid drawn wire is used. Either way, the figure of 50p/launch is about right for budgetary purposes.

Cable costs and cable management

An airfield length of good quality, stranded (typical 4.5mm 6×7) is likely to cost some £300. Hence, if you can achieve 3000 launches the cost will be 10p/launch.

Solid wire. Hopefully, some knowledgeable person will be able to provide similar sums for solid drawn wire? The Scottish Gliding Union, the Wolds GC and others have acquired a specification resistant to runway abrasion. As a result they are now able to tow out their cables in the normal way.

False economies. What is abundantly self-evident is that it is false economy to use sub-standard equipment. It not only degrades the launch rate and performance, it increases the exposure to improperly managed launch failures and the probability of loss of use through damage. It increases the risk to one's health! This includes cable, weak links, parachutes, strops and rings.

Self-inflicted damage to stranded winch cable has been discussed in the June 1987 issue of *S&G*, p132. The damage that can be inflicted by rollers that don't, and recommendations to rectify, are recorded in the February 1987 issue, p25.

The detailed design of winches should include the elimination of any source of recurring self-inflicted damage - typical being when a loop is thrown on the drum and beats the cable to destruction once or more per revolution.

Cable parachutes (when it is possible to use them) are critical items of equipment from both a safety and cost point of view. (Ref *S&G*, June 1987, p132.) Safetywise, they must not perform in such a way that they deploy uncontrollably

near the glider at any stage of the launch. To minimise such a catastrophic possibility the load should be transferred through the shroud lines to collapse the parachute under load, and a long strop should be used with minimal elasticity. (The Dutch require 100ft of rope.)

Drogue type parachutes when used for winch launching will require modification to prevent them behaving in a dangerous manner, because they were never intended for this purpose. (Ref *S&G*, October 1984 p211.)

Cable handling. The safe operation of a properly designed cable retrieve parachute is discussed by Ian Smith (June issue, p132). Prematurely "kinked" cable caused by it crashing uncontrollably to earth because of the failure of the parachute to deploy correctly, and/or by the winch-driver failing to "power it" into a straight line after release, is probably the major cause of self-inflicted cable damage. Every "kink" of maybe several hundred will become a focal point for fatigue damage on every subsequent launch.

To swivel or not to swivel? Cable parachutes are somewhat unpredictable in dynamic stability terms, before or after they have become damaged. Most will want to rotate, sometimes quite violently. As Ian Smith points out, unless a swivel is inserted between the cable and the parachute one or the other, or both, will become screwed-up! (Ref *S&G*, June issue, p132.)

Some thoughts on engineering

"Gearing". The power required, and the characteristics of the power train are discussed by John Gibson. He suggests that we should install not less than 186bhp, but without the appropriate power train, and above all the correct overall gearing, whether variable or fixed, optimised performance will not be achieved.

Drum design. The large diameter narrow drum has advantages constructionwise, but its mass should be carefully minimised by design if it is not to degrade the response (acceleration/deceleration) of an otherwise responsive power train. Yet its stiffness should be such that it does not distort under load.

The wide drums by Tost cast in aluminium have their advantages, but any such "wide" drum requires pay-on gear. The Van Gelder system is unique in that it pays-on but disengages to pay-off!

Drum width, (without pay-on), is critical if cable "stockpiling" is to be avoided, with subsequent deeply embedded cable failures.

Pay-on rollers are a super-critical item in terms of cable life. Chris Riddell in *S&G*, May 1987 draws attention to BS 329/157, which gives guidance on cable speed - wheel diameter relationship.

The self-aligning (Tost type) heads have much to offer in reducing cable damage by allowing some degree of self-alignment with the glider's track.

Rising arm devices (with swivelling heads) have some merits in reducing the load on the cable as the climb angle increases. However, there is some evidence they may fail to dampen out oscillations in the cable before they reach the drum.

Fixed pulleys of inadequate diameter (many of long standing) are a formula for economic ruin in terms of cable damage. (Ref BS.)

Winch performance parameters and control systems

John Gibson recommends that 186bhp is required to provide a cable pull of 1100lbs at 55kt! He gives the following formula for calculating winch parameters:

$$\text{Engine torque} = \frac{\text{bhp} \times 5250 \text{lb/ft}}{\text{rpm}}$$

$$\text{Cable tension} = \text{bhp} \times 550 \times k \text{ lb}$$

$$K = \frac{\text{rpm}}{\text{Cable speed (ft/sec)}}$$

$$\text{Drum ratio} = \frac{550 \times k}{5250}$$

$$\text{Drum diameter} = \frac{\text{Axle ratio} \times 2\text{ft}}{\text{Drum ratio}}$$

Control systems

The traditional method of controlling a diesel engine is by means of a speed demand governor. Some bus-winch conversions have been found to incorporate such governors suitable only for city traffic conditions. Certain types in line pumps have been replaced by rotary type pumps, and the winch launching performance improved thereby.

An ideal winch launch requires a constant load throughout the launch cycle from take-off to the point of release. This feature has been discussed under "research" earlier in this article and incorporated into Supercat. Such a system simplifies the function of the winch driver, leaves it to the glider pilot to manage the launch and, above all, optimises the climb profile and the use of launching equipment. In design terms, you require a cable pull of (say) 1100lbs at 55kt (lift off) and the same pull at zero speed at point of release.

Petrol (LPG) engines are controlled by traditional automotive means and, as yet a constant torque control system may not have been invented.

Performance improvements

Whereas the addition of turbo-supercharges can be used to improve the performance of both petrol and diesel engines, they may be costly to incorporate.

Adjusting the fuel flow. It is well known that certain adjustments to the maximum fuel flow of diesel engines to the point when they just begin to smoke under full load can be used discreetly to boost performance.

Likewise access to intake air at ambient temperatures, is preferable to pre-cooked air, from under the bonnet!

Low speed diesels. However, the older technology diesel engines may have free governing speeds below (say) 2000rpm, whereas today 3000rpm is not unusual. (DAF in Van Gelder). So you may be stuck with an immovable situation.

Power measurement - instrumentation. Whereas cable load measurement devices have proved to be practicable on autotow vehicles, the same cannot be said for their application to winches, although the technology exists. A better solution would seem to be torque limiting control.

The tachometer is a mandatory instrument on the power assessment and management of piston engined tugs and motor gliders. It would be unwise to fly with this device inoperable. (It would be in breach of certification.)

The power assurance and management of winches, from the correct idle speed to the maximum governing speed, cannot be assessed by any other means. So why not fit one, preferably with a head-up display, so that it can be used by an intelligent winch driver to manage the launch better.

Petrol (LPG) engines have no top speed governors so a "red lined" tachometer is essential to protect it from destruction.

How do you manage your airfield?

Most clubs will have developed their winching systems over many years (and by several CFIs), and may not have embarked upon any traumatic reviews and changes to such systems. It is obviously a matter of horses for courses.

It is my observation, over 30 years and some 100 gliding sites, that some critical analysis/works study would reduce the launch point queues and generate more launches for an expanding membership at most sites.

If you have both the length and width available it is always worth experimenting to see how many launches/hr you can generate with a single cable, rapidly retrieved from wherever it drops after the winch driver has removed all the slack.

Cable retrieve systems under difficult terrain conditions, using a retrieve winch and a single cable, are practised to good effect at the Midland GC.

The more cables you have to wait for at the winch end before any one can be sent back, the longer will be the delays before usable cables become available at the launch point.

Where some clubs tow out four cables (six at London GC), there may be considerable merit, provided it is safe to do so, to despatch one back separately from all the others. Such a "lone ranger" cable can be taken directly to a waiting glider, whereas with a fixed cable delivery point the gliders may have to be dragged to the cable. For those who instruct this is very tedious.

RAF Germany have demonstrated a Tost twin-drum winch on separate towing out vehicles. Safe lateral separation is achieved by towing out in a slight bow. This sets up a cable shuttle system and a high number of satisfied customers is the result.

Launch capability. Several clubs have been so successful in satisfying their customers, they are considering a limitation on membership and on the number of gliders on site, because they have reached the limit of their launching capacity. Unless each club has so managed its affairs that it always has a surplus capacity of launches available, it is not likely to provide satisfaction to newly recruited members! Clubs may wish to consider setting a realistic target of launches that have to be achieved, not only to pay the bills but above all to satisfy the membership? Likewise, they may wish to consider whether their launch capacity meets this requirement?

Gliding site selection. Unless aerotowing or autotowing are the only options, then future club site selection should be firmly based upon available take-off runs in all the usual wind directions which will achieve at least a 1000ft in nil wind conditions with whatever equipment is available. The winching capacity should also be realistically assessed. If there is no undershoot in which to land, additional to the take-off run, the overall rate of operation will be dramatically degraded by the effort and time in repositioning the gliders at the launch point.

Communication. Winch/launch point communication should be such that both ends know what is expected of them, what types of glider are being hooked-on and whether the winch driver is required to simulate a launch failure. Too many clubs have no such means of communication and in the event of an accident, incident, or injury to parties at either end they might be open to criticism accordingly. Part of the launching productivity package should include good communication.

Launch failure related accidents are discussed in the June 1987 issue of *S&G*, p131. It is the collective responsibility of all of us to avoid them by having a better understanding of the launch. Why not read John Gibson's articles in *S&G*, "A Look at Winch Launching" (August 1985, p170) and "Understanding the Winch Launch" (February 1987, p28).

Some conclusions

(a) Consider the longer term benefits of more launches to greater heights on the future prosperity of your club.

(b) Consider investing in better cable and equipment as an immediate method of raising productivity.

(c) Beware of re-inventing old problems. Take advice and above all go and learn from other people's mistakes and successes, and improve upon them.

(d) High performance winches do not have to cost high prices.

(e) Do understand the winch launch by acquiring a copy of the BGA booklet **Winching,** price £1.50 from the BGA Office.

(f) Do exchange your expertise with others, particularly in respect of choice of cable specifications, and cable costs. Write to the BGA or *S&G* with a short appraisal of your winch.

Where to look: a typical list, with apologies to those not mentioned.

Tost winches are operating at East Sussex, Derby & Lancs, Cosford.

Tost components can be seen at Oxford GC and the Bristol & Glos GC.

Van Gelder (six drum) - London GC.

Supercat - North Devon GC.

Leyland "Beavers" - Cosford, Bicester, Kinloss and Buckminster (two-drum).

"Big" diesels - Burn GC, Wolds GC, etc.

Petrol V8 (automatic twin-drum) - Bassetlaw GC and Gamston.

Diesels - twin drum/pay-on gear - Coventry GC.

Auto tow - Cotswold (round a pulley), RAE, RN, Yeovilton, RN Culdrose, Essex GC, Bath & Wilts GC and Connel GC.

LPG with cable retrieve winch - Midland GC.

MIKE JEFFERYES

INTER-CLUB LEAGUE FINAL 1987

Mike reports on the final of this popular competition, held over the August Bank Holiday weekend



Craig Lowrie (Kestrel 19), the Southdown Intermediate who won his Class three days running. Photo: Ken Webb.

The weather was kind to us for the 1987 Inter-League final. We were guests of the Avon Soaring Centre at Bidford-on-Avon, the first visit for many of us to the beautiful countryside of the Vale of Evesham. Our grateful thanks to all at Bidford who made it happen. In particular we must mention Peter Light (director) and his wife Pat (start/finish and control) who worked hard for us non-stop all weekend. Barry Meeks (club manager) assured us beforehand that 24 visiting gliders could all be fitted into the fairly small Bidford site, then when 27 competitors and a few *hors concours* arrived he proved it. The result was a highly successful event, professionally run, with a very happy atmosphere throughout. The club is in the final stages of purchasing a good deal of the surrounding land - we expect to see a lot more of Bidford-on-Avon as a competition site in the future.

Derby & Lancs had again travelled down to represent the Northern League, and it was particularly pleasing to see the Cleveland team from Dishforth making the long journey to join us for the Yorkshire League.

Oxford (Weston-on-the-Green) very obligingly beat Avon to represent the Midland League in the final, leaving Avon free to dedicate full attention to running the event.

We welcomed the all-new South Western League into the fray this year and were very pleased to see them energetically represented in the final by the Kestrel GC from RAF Odiham.

Early arrivals on Friday evening engaged in heated debate in response to rumours spread by Booker about the strength of their Pundit Class line-up. Close scrutiny of the rulebook indicated no re-definition of "Pundit" as "Anyone who by April 1 of League year has never won a World Championship". There seemed no escape.

Saturday's briefing was delayed by an 8/8 cover of low cloud. This gave time for all gliders to be rigged, fettled and gridded, while Pat Light got all pilots booked-in. Meanwhile Peter appeared to be dialling numbers at random in an effort to establish contact with anyone who could offer some ray of hope and sunshine. Having done his best as Met man he turned task setter, then briefed us on his plan for excursions over the Cotswolds.

The grid was launched from 1pm, and a great deal of soaring was had by all, despite the weak conditions. Twenty-two pilots even managed some distance, though none completed the task, and a contest was achieved in all three Classes. Our director/Metman/tasksetter had managed to get us the maximum flying out of the day, and his reward was to spend the evening as scorer! Winning pundit was Phil Jeffery of Cambridge University who flew 100km in an ASW-20. His secret, confided at Sunday's briefing, was to spend more time in zero lift and less time in zero sink! Craig Lowrie of Southdown flew 63km in his

The season's weather has once again given us as much challenge as did the opposing competitors. Speaking personally the most dramatic point of the season was our weekend at Husbands Bosworth. On May 2 the wind was ***very*** *strong with a forecast of reasonable lift, but storms. We therefore thought it prudent to declare the day unsuitable for Novices. Unfortunately muggins proved that it was also unsuitable for so-called Pundits. The result was a broken glider and a broken back, but thanks to everyone at Husbands Bosworth it did not result in a broken spirit. The support and encouragement from so many people and places has been overwhelming; may I take the liberty of using these pages to say again* ***thank you.***

Kestrel to win the Intermediate task, and Mike Dolphin won the Novice task for the Kestrel Club with 31km in a K-18.

At the end of Day 1 it was Southdown in the strongest position, despite their Novice Paul Hampshire abandoning his task as infeasible within reach of the TP and then flying home again - greatest distance flown, but zero points! London and South Wales were joint 2nd but the overall scores were sufficiently close to keep everyone in touch, and there was promise of improving weather to come - though that took imagination when we got up in the fog on Sunday morning. Well done whoever invented the braille telephone which got Peter through to someone who assured him that things would get better.

Tasks were again set over the higher ground of the Cotswolds, and we sat on the grid looking south-east for a gap in the cloud. Finally somebody spotted it - behind us! Re-think, re-brief, re-draw. Eventually we launched to head north-west for Kidderminster then Gloucester.

The cloud broke well - too well - it went blue, although there was still reasonable lift to be found. Unfortunately with the late clearance and launch, all those who were slow to get to Gloucester ended up on the ground in that area. We have the efficiency of the launch organisation and tug pilots to thank for getting the grid airborne so quickly to give everyone a sporting chance.

Six of the nine Pundits finished the task — the winner at 70.9km/h (15km/h ahead of 2nd place!) was Brian Spreckley in an ASW-17, No. 40. His lead would have been even more impressive if he'd crossed the correct finishing line! One Intermediate also completed the task and therefore won the day - Craig Lowrie of Southdown again.

The Novices flew an O/R to Worcester and Duncan Macpherson of London GC could hardly have had time to stop and circle his K-23 during the winning run at 72km/h. This brought Dunstable up into a narrow overall lead, with Booker 2nd and South Wales GC 3rd. Southdown's pole position had been taken from them thanks to another spectacular performance by their Novice Paul Hampshire! Overcome with triumph at having flown west to reach the TP at Worcester, he knew that he'd stand an even greater chance of success coming back east if he latched on to the tail of an expert. Unfortunately the expert he chose was an Intermediate who took him south towards Gloucester and into a field!

On Sunday evening Barry gave us all a valuable lesson in how to run a barbecue, (substantial proceeds from the event were donated to the World Wildlife Fund). A great party, and we were all relieved that the weather called for no early start next morning.

Only one pilot completed task

Monday was a better day but still a late clearance. Peter's tasks recognised that many of us had long journeys home - only one pilot failed to complete the relatively short tasks and landed out (no it wasn't Paul Hampshire!). Pundit winner was John Cardiff for Dunstable at 81.3km/h in an ASW-20. Craig Lowrie scored a hat-trick winning the Intermediate task for the 3rd day running for Southdown - with 65.8km/h. Novice winner was Mike Dolphin (Kestrel Club) at 71.6km/h.

Final results were as announced at the prizegiving that evening. Overall winners with a clear 4pt lead were the London GC from the Eastern League. Congratulations Dunstable whose six competing pilots displayed individual success and team consistency and spirit. They also took the overall lead in the Pundit Class, worthy winners of the Douglas trophy. Second equal were Booker (2nd in Pundit and Intermediate Classes) and South Wales GC. Our newcomers, Kestrel, came 6th, but distinguished themselves by taking the overall lead in the Novice Class.

A super weekend, and our thanks again to the Avon Soaring Centre - and good luck with your expanded future.

For 1988... We have now agreed to re-define the Intermediate pilot as one who: "by April 1 of the League year has never flown in a National level competition, and has not flown a 500km Diamond distance." This rule has been in general trial use successfully this season. As always each League is at liberty to agree to its own internal variation of the rules when considered necessary.

Some geographical changes are under current discussion and any revision to League membership agreed in time will be published in the next *S&G*.

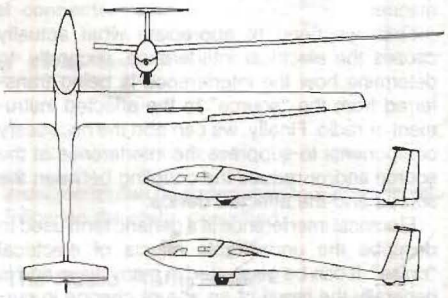
Comments, criticisms, cries for help etc can all be aimed at Mike Jefferyes, 15 Sycamore Way, Chelmsford, Essex CM2 9LZ. Tel 0245 261145.

Gliderwork
C of A OVERHAULS
and REPAIRS
By L. GLOVER senior inspector

Husbands Bosworth Airfield, Near Rugby
Tel. Market Harborough 880375
Lutterworth 57544

SAILPLANE NEWS

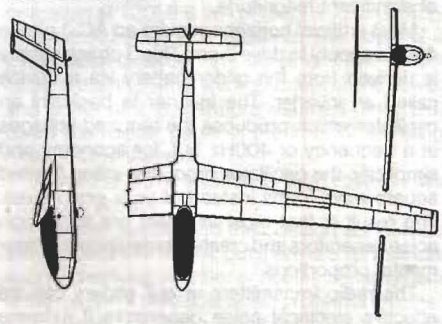
New DG Glider



After 14 years Glaser-Dirks have a successor to the DG-100, the DG-300 Club which is desinged. for club use and for first time private owners. It is claimed to be easy to fly and of a good performance with docile stalling characteristics.

Compared to the DG-100 the performance is said to be remarkably better up to a speed of 170km/h, which should make it excellent for cross-country flying. Delivery will start in January.

A New Blanik



A new version of the 1956 designed L-13 Blanik has been designed in Czechoslovakia and if there is enough interest it is thought it will be in production next year. The wings are virtually the same as the original except for turned down tips to act as skids.

The main changes are in the tail area and cockpit. A T-tail has been chosen to save damage in field landings in crops, and apparently the design is taken from the L-610 sailplane. The cockpit has been redesigned for easier access by deepening the canopy by 100mm at the front and 50mm at the rear.

Other modifications include a smaller instrument panel to give more room, adjustable seat backs and moving the u/c retraction lever to the opposite side of the cockpit.

It is to be known as the L-23 and meets the 1986 OSTIV regulations as well as JAR 22 rules. - This information was given to us by Neil Watts who discovered these details in Letectvi Kosmonautika during a trip to Czechoslovakia.

COLIN DEWS

GLIDER RADIO AND INTERFERENCE

Minimising the effects of electrical interference between the glider radio and the electrically powered instruments

Many glider folk have installed a radio and various electrically powered instruments in a glider, but there will be few who have not experienced problems caused by the electrical interference generated by the instruments on the radio or by the radio transmitter on the variometer.

Effecting a "cure" can become a frustrating task if the problem is not tackled in a logical manner.

First, we need to appreciate what actually causes the electrical interference, secondly, to determine how the interference is being transferred from the "source" to the affected instrument or radio. Finally, we can add the necessary components to suppress the interference at the source and/or reduce the coupling between the source and the affected device.

Electrical interference is a generic term used to describe the undesirable effects of electrical "noise". It can be generated in many ways and is generally the result of an abrupt change in current direction or amplitude in an electrical circuit. An example is when a DC circuit is made or broken by the action of a switch. The switch action produces steep fronted pulses and these can be analysed to show that a very large number of successive harmonics of the initiating pulse are produced. These harmonics extend into the radio frequency spectrum but with exponentionally decreasing amplitude.

The commutator of an electric motor, such as the one used in the T&S, has many segments and therefore there will be continual changes in current amplitude and direction in the motor circuit, creating a source of electrical noise which can be of significant magnitude.

Most artificial horizons require an AC 3 phase 400Hz supply to drive them. This 3 phase supply is derived from the glider battery *via* a device called an inverter. The inverter is basically an oscillator which produces the required voltages at a frequency of 400Hz but, for economy and simplicity, the oscillator produces steep fronted square wave forms instead of pure sine waves. The result is that most inverters are by design noise generators and create interference in monumental proportions.

The radio transmitters in our gliders can be effective electrical noise generators if extreme care is not taken to ensure that the aerial and feeder cables are correctly matched. What actually happens when two watts of radio frequency energy is generated by the transmitter, but is not radiated from the aerial, is that the outer of the coaxial feeder cable becomes the aerial. This energy manifests itself in standing wave voltages of considerable amplitude which radiate into all the unscreened cockpit instruments and wiring. Apart from causing some instruments to malfunction these voltages can cause damage to sensitive variometers.

The above are a few examples of electrical noise which can be generated within the glider. These noises can be **transferred** from the generating source to the affected Instrument by one or more of the following three methods:

1. By conduction

Electrical noise transferred by conduction is illustrated in Figs 1a and 1b. Fig 1a shows a fairly standard wiring system of a glider. The 12v battery is connected through a fuse to a distribution block by a pair of wires. In most gliders the battery is mounted behind the pilot and the distribution block is normally mounted either on, or close to, the instrument panel. In this configuration the battery supply wires could be six or more feet in length and if they are not of sufficient gauge to carry the full load current, a voltage drop will occur.

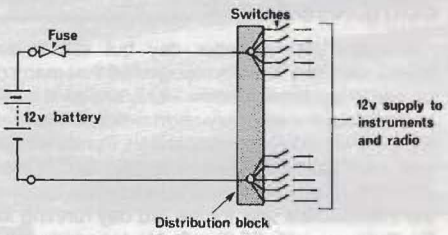


Fig 1a

This voltage drop will develop between the battery terminals and the distribution block. It indicates that the battery supply circuit has a significant DC **resistance** which may contain the resistances of the **supply wires,** the **contact resistance** of the **fuse** and the **internal resistance** of the **battery.**

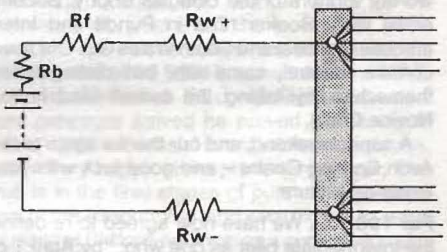


Fig 1b

Fig 1b shows the equivalent circuit of the battery supply circuit. The **resistive** elements are shown as:

Rb - **Internal resistance** of **battery.**
Rf - **Resistance** of **fuse.**
Rw+ - **Resistance** of positive **supply wire.**
Rw– — **Resistance** of negative **supply wire.**

These **resistances** are effectively in **series** with the **battery** and they will constitute a **"common"** load for electrical noise generated by any of instruments or the radio. The electrical noise will develop across the supply connections at the distribution block and modulate the 12v supply thus introducing the noise into all noise sensitive instruments on the same battery supply.

2. By induction

This will occur when the wiring connecting the battery to instruments, radio, switches, fuses etc is made up in a cable form with all the wires in close proximity as shown in fig 2. What happens is that the wires carrying high currents to energise say the radio, in the condition of transmit, will be passing currents which vary in sympathy with the speech modulation. Magnetic fields will be created around these wires which induce the speech modulation into the adjacent wiring. The effect could be that the variometer behaves like a modulation meter. Interference by induction can occur whenever significant changes in current take place in the wiring which is in close proximity to the supply cables of any sensitive instrument, or to the microphone or loudspeaker cables of the radio.

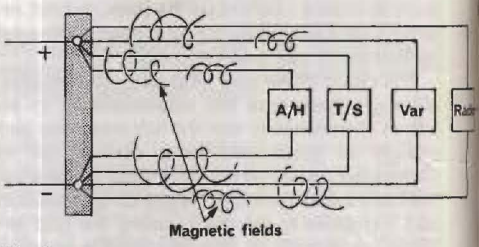


Fig 2

3. By direct radiation

This will occur when high voltages exist - radio frequency energy - pulses - square wave forms etc. The noise voltages can be radiated directly from the device generating the noise or from the wiring connecting the device to say, the battery supply or to a switch.

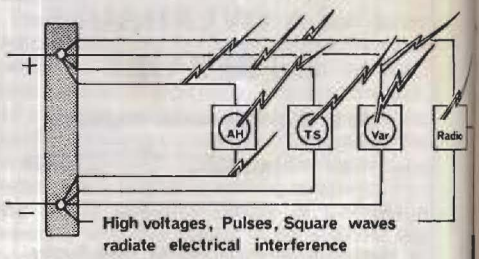


Fig 3

However complicated and severe the inter-

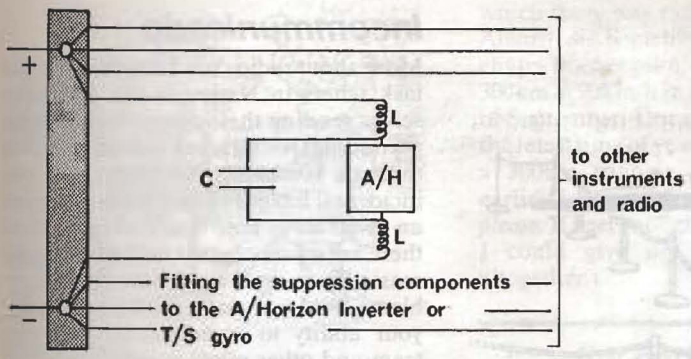


Fig 4

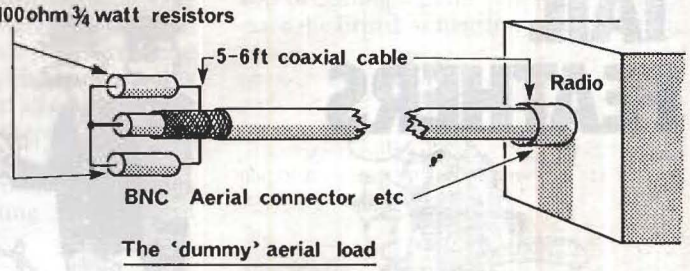


Fig 5

ference problem may present itself, the fact is that 90% of it can be eliminated or at least reduced to an insignificant level. The total effort required will amount to carrying out a few diagnostic checks and in the worst case making some wiring changes, but more probably, by simply introducing a few inexpensive suppression components.

Before starting to work on the glider the following items should be assembled:

1. A separate 12v battery with sufficient capacity to drive the artificial horizon and the radio without giving a significant volts drop when the full load current is being drawn.

The battery should have leads of sufficient length to comfortably reach the supply connectors of the radio and each of the instruments normally supplied with 12v.

2. A separate battery for any instrument requiring a power source different from 12v.

3. The following suppression components:

Chokes - Lucas LS639 or similar (5 to 10 micro Henry) - 8 off.

Capacitors - Tantalum 1.0 microfarad 35v working - 2 off.

Tantalum 0.1 microfarad 35v working - 4 off.

Ceramic disc 0.01 microfarad 63v working - 4 off.

4. Tools, soldering iron, 12in of copper braiding and a few 4BA self tapping screws ½ and ¼in.

The diagnosis

We can start the diagnosis by considering the electrical noise on the radio reception which is being generated by instruments which are supplied from the same 12v battery as the radio.

Our first check should be to determine how the noise is being transferred.

We should proceed as follows:

1. Ensure that all electrically driven instruments in the glider are switched off.
2. Switch on the radio and adjust the squelch control until the normal "mush" receiver noise is heard in the loudspeaker.
3. Switch on the artificial horizon and allow the gyro to attain normal speed.
4. Note the level of noise as distinct from the normal mush coming from the loudspeaker.
5. Disconnect the radio aerial (at the radio end of the coaxial feeder). If the noise remains at the same level as in 4 above it is being transferred by conduction and/or induction and we should proceed as follows:
6. Switch off the radio and artificial horizon.
7. Replace the normal battery supply to the artificial horizon with the separate 12v supply leaving the radio supplied from the original glider battery.
8. Repeat stages 2, 3 and 4. If the level of noise has decreased significantly it was being transferred by **conduction** and we can now introduce a few suppression components.
9. Reconnect the normal battery supply to the artificial horizon and with all power switched off, introduce the chokes and capacitors taking care to mount them as close as possible to the 12v supply points of the artificial horizon inverter. See Fig 4.

Start by fitting L1 and C1 (value 1 microfarad taking care to ensure that the polarity of the capacitor is observed) and carry out the checks as described in stages 2, 3 and 4. If necessary, repeat the process using different values of capacitor and introducing L2 in the negative supply lead.

It may also be necessary to repeat the whole process by fitting similar components to the input supply points of the radio. You will be surprised at the reduction in noise that can be achieved with so few components.

In step 5 we considered the case where the interference was not being transferred by **radiation** *ie* it was **not** being transferred into the radio *via* the aerial system. In cases where the interference is transferred *via* the aerial it will be necessary to implement the actions as described above, but additionally to bond the artificial horizon case to the radio case with a short length of copper braid. Care must be taken to ensure that a good electrical contact is made by securing the braid to the cases with self tapping screws.

". . . there is a very simple way of checking whether or not the aerial system is the cause of electrical noise problems on other instruments."

Note. Do not bond the outer case of the Pye Bantam to any instrument which has its case connected to the negative 12v supply. This is because the Pye Bantam has its case connected to the **positive** supply.

The suppression of noise from all the other instruments can be undertaken by systematically following the steps described.

The Radio Transmitter

The remaining noise source we need to consider is the radio transmitter and the aerial system. In the transmit condition, the power at radio frequencies is transferred from the transmitter to the radiating elements of the aerial *via* the coaxial cable. For the power to be completely transferred (accepting that there will be a small loss due to the resistance of the cable), the aerial, the cable and the transmitter aerial coupling circuit must have the same characteristic impedance. The majority of aerial systems are designed with a characteristic impedance of 50ohm, but aerials will only present their design characteristic impedance when they are resonant or nearly so. A simple aerial with a resonant length suitable for operation at 120MHz will present a considerably different impedance at 130MHz. The effect of a miss-match between the aerial and the feeder cable is that the aerial will not accept all the power and some of it is therefore returned (reflected) down the feeder cable in the form of standing high voltage waves.

There is only one solution for this problem - fit a resonant aerial.

However, aerials and their design are outside the scope of this article, but there is a very simple way of checking whether or not the aerial system is the cause of electrical noise problems on other instruments. Obtain a length of 50ohm coaxial cable (UR76 or similar), fit a connector to one end suitable for attachment to the radio. Solder 2×100ohm 0.75W carbon resistors in parallel between the inner conductor and outer braid at the other end. The coaxial cable should be approximately 2m in length. Fig 5 refers. This test device or dummy load, can be connected to replace the aerial with a pure resistive load of 50ohm and will therefore be a near match and not permit standing waves to develop along the test feeder cable.

The tests can be carried out with the cable placed close to the original aerial feeder run. The checks should be made for noise affecting the electrically powered variometer and any audio attachments. If noise was experienced with the "normal" aerial load, a thorough check should be made of the aerial, the feeder cable and the connections. Check the aerial element lengths and avoid making any loops (coils) in the coaxial feeder cable by removing any surplus and remaking the connections.

TAIL FEATHERS

The Emperor's New Clothes: 20th Century version

I've recently become involved with a company that publishes an aviation magazine. There were some fascinating items in the first set of minutes I received, such as:

"We have successfullly recruited a German agent with military experience..."

"... As a new boy I fell about at this brilliant piece of humour, and got a fair number of blank stares ..."

I imagined a bullet-headed spy with a couple of duelling scars, a monocle, cropped hair, a leather overcoat and an iron cross with oak leaves (difficult to do much useful espionage in so conspicuous a getup, but as usual my imagination was running riot) and was a bit sorry to find he was a perfectly ordinary chap who'd done his National Service and knew his port from his starboard, or his *links* from his *rechts* at any rate, and whose rather humdrum job was merely to sell advertising space in the Federal Republic.

Another item the editor solemnly read out was *"The feature on pilotless aircraft has had to be dropped due to shortage of staff."* As the new boy I fell about at this brilliant piece of humour, and got a fair number of blank stares from the rest of the committee.

Lastly, I am told they nearly persuaded the Americans to send over one of their Stealth bombers to Farnborough, but at the last minute the trip was cancelled for reasons of cost and secrecy. So in the exhibition area there was this notice proclaiming *"US Stealth Bomber"* and behind it large and embarrassingly empty space, carefully roped off and patrolled by security men. Far from being disappointed and demanding their money back, the public were thrilled to bits and took lots of photos to show their friends, saying "Ruddy fantastic what they can do these days!" and whistling through their teeth with admiration at modern technology. I have to admit some of this story may be apocryphal (you mean it's a pack of lies? ED) but Hans Andersen would have liked it.



Empty space.

Wanted: Entries for the Guinness Book of Records for the Most Pointless Gliding Radio Message of All Time

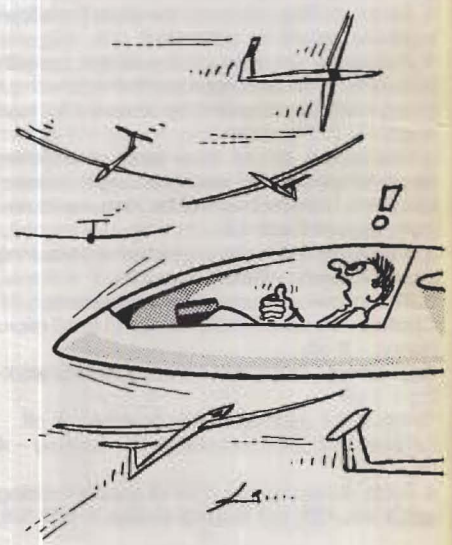
I enjoyed reading the list of daft transmissions, admittedly under stress, that pilots sent their crews in the last Open Class Nationals (the last issue, p244) but the absolute classic in this genre, and in this case from crew to pilot, must be the one from a Comp in the 1970's:

"Frank, switch on your radio!"

However, if you have any contenders for this title could you send them to me or the Editor? (Send them to me; he'll either lose them or embroider them out of all recognition. ED)

Incommunicado

More about radio. You know how it is that task setters in Nationals can find themselves sending their competitors (weather permitting) round seven triangles all going through Husbands Bosworth; well, one incidental hazard of that is you can spend an awful lot of time near Daventry, where there are scores of giant million-watt radio masts. If you are low you have obvious problems, but I was really thinking of the way your ability to communicate with your team and other pilots is suddenly blitzed into meaninglessness by such irrelevances – to the soaring pilot, anyway – as chefs telling their avid housewife listeners the 57 different things they can do with a sausage, or by deafening pop groups with such names as Sore Throat (that's not made up, I promise), or people addressing their friends behind the Iron Curtain in fluent Russian (I speak fluent Russian, but only with the aid of vodka, which I don't carry aboard my glider, contrary to any impressions I may have given) so that in order to stay sane you have to switch off.



Through Husbands Bosworth.

I discovered the same phenomenon near Chateauroux in the middle of France this year, only there was a smaller variety of irrelevant messages bursting through on the gliding frequencies: these were chiefly professorial-sounding lectures about French poetry and similar high-toned cultural stuff (I speak fluent French, but only with the aid of *vin du pays*, which I don't carry aboard my glider, contrary to



Fluent French.

any impressions I may have given) so again I switch off.

In either case your friends back at the site, who can't hear all this interference on their groundsets and don't know you have abandoned any attempt to get through on the airwaves, assume you have landed out, whereupon all sorts of chaos can ensure. It occurs to me, rather late in the day, that the fact that I can't receive under these circumstances doesn't mean I can't *transmit* perfectly well. So I could just try transmitting blind next season and find out later if my crew received anything.

They'll probably say "What, with 30 other pilots all transmitting blind? You must be joking." Not such a good idea. All the same, practical suggestions for dealing with this problem would be welcomed.

Season of mists and stubble fires

Most of you will be saying "Farewell, waterlogged 1987, and good riddance!" This year has been like a Polo Mint, with a great hole in the middle. Our local Easter Comp had four contest days in a row, after which there was rather a hiatus; then late August and September were splendid. One chap – Booker pilot, of course – went round 300km at 90km/h in a little glider at the end of September. Does anyone know what is the latest time of year that anyone has done a 300km triangle in thermals? Or the earliest? (Please write in. I really mean *please:* If I get enough written contributions I could give up writing this column altogether.)



I could give up writing this column.

"... the derigged Nimbus and pilot, crew and car eventually looked as if they had been down a coalmine."

What is nice about late season flying is all those beautiful cut fields. A burnt field especially has a lovely surface to land on, assuming you have given it a chance to cool down, and you can be sure it won't have the odd pile of straw lying around waiting to catch a wingtip. However the last time I landed in a burnt field it started to rain almost immediately, hard. Mud is bad enough, but a porridge made from ashes and hailstones is uniquely nasty; the derigged Nimbus and pilot, crew and car eventually looked as if they had been down a coalmine. Of course there was no question of my taking what looked like a slum on wheels, or its filthy inhabitants, to a decent restaurant, which on reflection was adding insult to injury. I could see the crew mentally noting this down as yet another Platypus retrieve horror-story to go into the club's Retrieve Book. (In fact no such book exists; there is, naturally, a massive Cross-Country volume in the bar which the pilots can write their howidunits in, but no equivalent for the crews. For this I am heartily grateful.)

But I digress. This awful year of 1987 has, like all clouds, a silver lining. (What a stupid, sentimental and plain inaccurate cliche that is, by the way. Most of 1987's clouds had lead linings, horizon to horizon.) It has had the effect of making us spoilt Southerners look to other places and other times of year and other modes of soaring. As motorways get better the prospect of year-round gliding at Talgarth or Aboyne appeals more and more. (See Tom Bradbury's article on wave in this issue.)

I could rhapsodise for pages about the joys of sub-zero wave flying over bleak, snowy mountainscapes. But it would be a little hypocritical for me to do so. My own way of dealing with the problem of what to do in the British wintertime will be to learn



What to do.

to speak fluent German (only with the aid of *Schnapps* etc etc) and head for the gliding fields of Australia. *Auf wiedersehen*, Britain, and a Merry Christmas, cobbers!

ALTITUDE RECORD

A strange story about altitude record breaking in America has come to us *via* a glider pilot in Manchester who sent us a cutting from the January 11 issue of the *Los Angeles Times*, and it wasn't exactly a current account then. But it is so extraordinary, we feel it is worth the telling, even after such a long gap

Bob Harris, a semi-retired hardware store keeper from California, came to gliding in middle-age and was soon obsessed with the idea of breaking Paul Bickle's altitude record of 46 267ft set in 1961. From November to March each year he made one or more daily visit to the weather service station, looking for the hard flow of air from the Pacific that hits the Sierra Nevada and, in effect, bounces up to seven times the height of the ridges, creating mountain wave.

Twice he flew above 38 000ft and in 1985 reached 40 000ft. Then on February 17, 1986 he caught the most beautiful mountain wave he had ever seen which took him to 49 009ft, having launched from California City in his Astir. He didn't wear a pressure suit, just five layers of clothing as protection against the −80°F temperature.

But although the flight was certified by the FAI, he is now in danger of losing his

pilot's licence because he didn't get permission from the Federal Aviation Administration's air traffic controllers who by federal law must maintain "positive control" over any pilot who flies higher than 18000ft in jetliner airspace.

Bob admits he broke the rules but contends that many other pilots do the same.

All this has made life difficult for the Soaring Society of America. They work closely with the FAA on safety issues and while they certified the record, the magazine has kept very quiet about the flight. Not so the national media. Bob's flight was claimed by the press as one of the top feats of 1986.

Paul Bickle takes the attitude that pilots frequently break this rule. "If you spent all the time getting clearances, most of the time you wouldn't get them until after the (optimum weather) conditions are gone."

". . . the tears turned into little cobwebs around his eyes."

As to that flight, Bob had an aerotow to 12500ft and he climbed between 1000 and 1500ft/min for two hours. At 30000ft the inside of the cockpit window started frosting. His eyes began to run and the tears turned into little cobwebs around his eyes.

His feet were cold as the battery-powered heaters in his ski boots didn't work. At 40000ft his climb rate was down to 200ft/min but increased to 300ft/min at 42000ft and within 15min his altimeter passed 46270ft and the record had been broken

The air pressure was so slim that his oxygen mask would not stay on tightly and he had to use one hand to press it against his face. His sinuses were "popping" and he felt something like a worm crawling on his leg, a sensation common in altitude flight without a pressurised suit.

And the reason Bob refused to take this precaution, despite others trying to make him change his mind, was because he wanted to keep the project simple. He didn't want to fuss with the training needed to use a pressure suit.

A group of pilots who played by the rules and telephoned the FAA's Air Route Traffic Control Centre on the same day were refused permission to fly because of potential conflict with jetliner traffic.

A FERTILE IMAGINATION

As it is the Christmas issue, we thought you would enjoy something a little more flippant than usual and who better to pull our legs than John from the North Wales GC

Right - who's for a bit of Victorian type melodrama? Every time I mention Owen I want you to hiss. Owen is a farmer, or to be more precise Owen controls the use of a gliding field. Now the trouble with Owen (I trust that you are all hissing, as requested) is that Owen has got his priorities wrong and insists on putting his livelihood and the welfare of his sheep before the consideration of our gliding activities.

I realise that it is difficult to imagine that anyone could be so misguided and unbalanced, for in all other respects Owen seems to be a perfectly sane and reasonable sort of fellow. Now, if you are hissing correctly the top right hand corner of the page should subtend an angle of 30° when the bottom right hand corner is raised some 2in. A drop of near 90° indicates that you are reading this in the bar and hissing whilst drinking; this is not recommended and I suggest you change to a low boo.

To continue: it's bad enough having to share the field with a flock of sheep, without having Owen scowling malevolently every time a patch of grass disappears under the skidding wheels of the retrieve car. I don't see that he can blame us if the tractors and winch plough up his pasture or the towcars tear up his field. After all, we didn't invent the laws of motion, friction and gravity, that was some chap called Newton, and I'm pretty sure he wasn't a member of this club, Dai Newton just hasn't got an authentic ring.

Anyway, if Owen had planted tougher grass with longer roots it wouldn't happen, and similarly if he drained the land better we wouldn't sink up to the axles every time it rains. It quite ruins any chance of a fast retrieve, and that way we lose income and what's more important, flying time. As if all this wasn't enough, we have to keep off the field for six weeks every year whilst the sheep are lambing. I tried to explain to Owen that it wouldn't be necessary if he didn't let the rams in during the autumn, but I'm not sure that he understood. A sort of blank look came over his face as I tried tactfully to tell him that it was because they - er - well - er - misbehave that it happens at all.

No, what we need is a new base of operations, a large flat, resilient, self-draining, synthetic surface 2000yds by 2000yds, with an 800ft escarpment face on all sides, a long, long way from any sheep. We then need to be able to raise and lower it, so that the flying doesn't ever get inhibited by this horrorgraphic cloud that people keep warning me about. If there are likely to be complaints from the environmentalists, I have no personal objection to it being painted green in order that it may blend into the landscape, just as long as we can paint a 200ft white cross in the middle of it. I have enough of a problem finding our present field in the middle of all the other little green fields.

". . . a development project with special funding for an underprivileged sport.'

Just contemplate the work it would develop for British industry and the number of jobs it would create. I could be doing the nation a service simply by mooting the idea. Cammell Laird's down the road have been a bit short of work recently, and it sounds the sort of thing they might turn their talents to. Perhaps we could prevail upon Maggie to make it a development project with special funding for an underprivileged sport.

Meanwhile I'm afraid we will just have to learn to live with Owen. Assassination is out of the question. It's too expensive, according to our chaps from Liverpool,

and it's academic anyway, for we would never get the money out of our very tight treasurer. So what do you do if you are turned off the field because it's too wet or the sheep have been at it again? You adjourn to the bar to console yourself, that's what you do, and to listen in awe as the stories get taller and taller and the level in the barrel gets lower and lower.

"I well remember when I began gliding," he started. "So you should," someone replied, "It was only three months ago." "No, it was before I came here," he mumbled, thus effectively preventing further discussion on the subject. "Not knowing the system," he continued, "I turned up late and found myself so far down the list that there wasn't a hope of getting airborne that day. That's when this pundit introduced himself. Casually scruffy, lightweight gabardine bomber jacket over carefully torn ex RAF green flying suit, spotted yellow cravat to throat, large peaked cap and mirror specs, with an impressive array of badges on his chest, he certainly looked the part. After I had explained my predicament he said jovially, 'Tell you what, old boy, you come up with me in my two-seater, you pay the launch fee and I'll give you a bit of instruction.' Well, he admitted he wasn't an instructor, but said he had got a bit of gliding time in and it was all common sense anyway. When he could fit the time in he might become an instructor just to help the club out, you know.

"Anyway, the upshot was that half an hour later it was 'up slack' and 'all out' and there we were rocketing up the wire at 70°. That's 70° to the horizontal, of course. I didn't mean to infer that we were going up so fast that the skin friction was 70°C. On the contrary, I say rocketing up, but actually we were doing 35kt, which seemed from all my research to date to be a bit slow, but then, as the chap said, he was pulling back a bit to get maximum height for teaching, and not to worry, because these weak links weren't all that weak. He also assured me that in any case his reactions if needed were like greased lightning. Looking back over my shoulder, I could see the CFI on the ground waving his arms in excitement and shouting encouragement, so it must have been all right.

"At the top of the launch he asked me to pull the release knob and immediately shouted 'Duck', as the canopy flew away. 'Good Lord,' I thought, 'that's going a bit far, we must be doing bale out drill.' He explained that he meant the yellow knob, and I explained that I was colour blind. Actually he was quite nice about it, and said that no harm had been done because the canopy had missed the tailplane due to that clever little manoeuvre he had carried out just at the crucial moment. I must admit that I thought he had lost control due to being crunched up in the bottom of the cockpit, but I was obviously doing him an injustice.

"We circled around for a couple of minutes, looking for the canopy, but could only see a gaping hole in the roof of a small white farmhouse, where we assumed it had come to rest. I doubt that the chap standing outside it waving his arms was shouting encouragement, or that his wife standing beside him was very happy. At least, I assume she was his wife, because she had no clothes on. Probably had to leap out of bed a bit quick. Looking back, I think at this stage my pilot just didn't fancy landing, but as he said, it was pleasant flying without a canopy and it was a pity to waste all this lovely height, so he determined that the lesson would continue. 'Stall,' he said firmly, 'pull the stick back, the airspeed drops, the nose falls away and over we go. Well, no,' he admitted, 'they don't always go into a spin like that, but it sometimes catches you unaware.'

". . . The fool must have forgotten in his excitement to release the cable."

"He hadn't realised that we had drifted back over the airfield either, but as he said, that was no reason for the K-8 to pull off the launch, because we must have been all of 50 or 60ft over the top of him when he had sorted the spin out. I told him that he hadn't pulled off, but that the winchman appeared to have chopped the cable and he said that that explained the flash we had seen from the power cables which ran down one side of the field. The fool must have forgotten in his excitement to release the cable. I thought that a bit harsh, and after some discussion he agreed that perhaps we ought to give him the benefit of the doubt, after all, it might have shaken him up a bit, sideslipping like that to get away. Probably thought he was being attacked, the Hun from the sun and all that sort of thing. Some of these gliding types have a very fertile imagination.

"Still got a bit of height,' he said, 'so I will teach you to trim the aircraft. Set the speed to 45kt with the stick and now trim out to match it. Now take your hands and feet off the controls and hold them up so I can see them.' I was still struggling to hold everything up when he said, 'I've now got mine off, too', and there we are travelling straight and level at 45kt. Now I thought that that was pretty impressive, and it wasn't until I remembered that little notice on the side of the aircraft which said no inverted flying that I began to get worried. 'Try to ignore it,' he said, 'that comes in a later lesson, concentrate on the trimming, it's just that it's a wee bit turbulent today. Next, I'm going to show you the quickest way to recover from the inverted position by completing the loop. Pull the stick hard back into the stomach like this, down we go, rounding out now, and ah!' That's how we came to land on the A55. He was very apologetic, explained that he thought we had more height than that, and asked me to give the altimeter a tap, to see if it was sticking.

"To give the chap his due, we landed on the right side of the dual carriageway, so that at least we were travelling in the same direction as the prevailing traffic. It certainly wasn't his fault that we overlapped the other carriageway and that our 17 metre wing-span was trimmed to 12½ metres by a passing lorry, that some old chap in an approaching car had a heart attack as he went under the wing, or that a rather large lady in a Mini instantly gave birth to a bouncing baby girl. Actually I went to visit her in hospital later, in the hope of persuading her to call the baby Bocian, but for some reason she went hysterical and I was asked to leave. I put it down to postnatal depression. I'm quite well up on these female medical conditions.

"The last thing my pilot said to me was, 'If I'm not mistaken that's the CFI approaching. I wasn't aware he could move that fast. Would you please give him my compliments and explain that I'm resigning and applying to join the Mynd.' With that he took to his heels. I hastily chalked *ab-initio* in large letters across my chest and sat and waited, but the CFI didn't spare me a glance as he raced past, head low to the ground in an attempt to streamline himself, occasionally tripping over his beard in his haste."

I think it was at this point that we as one man and a woman (equal opportunities club) poured our beer over him, but you can see what I mean. Fertile imaginations, some of these gliding types.

Disclaimer: The above-mentioned characters and events are fictitious and bear little resemblance to anyone living or dead, *ab-initio*, solo or back on the two-seater. Certainly not to my own club, whose professional standards under a superb CFI are probably the highest in the BGA. (If that doesn't finally get me cleared for cross-country, nothing will.)

REGIONALS' RESULTS

LASHAM REGIONALS - June 20-28
Class A - Open

Pos.	Pilot	Sailplane H'cap	Day 1.20.6 322.9km ■	Day 2.21.6 156.5km O/R	Day 3.24.6 271.6km ■	Day 4.26.6 109.8km O/R	Total Points
1	Richards, E. W.	114 Ventus	516	679	887	620	2702
2	Cook, I. R.	114 Ventus	941	594	931	139	2605
3	Lucas, A.	106 LS-3	p491	756	659	615	2521
4	Reading, P. T.	106 Mosquito	465	673	961	404	2503
5	Baker, P. E.	108 ASW-20	519	765	587	607	2478
6	Kay, W. M.	106 Mosquito	446	785	1000	201	2432
7	Light, P.	106 Glasflügel304	256	628	893	356	2133
8	Jeffery, P.	106 ASW-20L	567	713	585	119	2064
9	Partridge, R. W.	112 Ventus	460	580	879	55	1974
10	Johnson, G. F. Gorley, F.	106 Janus CM	54	p730	589	294	1967
11	Sargeant, B.	111 ASW-20L	p38	p543	p524	563	1668
12	Bastin, J. C.	108 Mosquito B	48	983	599	0	1630
13	Richie, P. J.	108 Mini Nimbus	69	723	588	55	1435
14	Nash, S. R.	106 PIK 20c	445	p505	261	182	1393
15	Sampson, D. L. H.	112 DG-202/17	p107	552	153	561	1373
16	Wright, D. T.	112 Kestrel 19	610	p584	140	22	1356
17	Cousins, R.	106 ASW-20L	0	624	266	0	890

Class B - Standard

Pos.	Pilot	Sailplane H'cap	Day 1.20.6 322.9km ■	Day 2.21.6 156.5km O/R	Day 3.24.6 199.6km ■	Day 4.26.6 109.8km O/R	Total Points
1	McAndrew, G. E.	103 Pegasus	577	p892	547	557	2553
2	Pentecost, P. R.	100 Std Cirrus	610	950	556	428	2544
3	Bradney, F. G.	104 Discus	611	813	421	543	2388
4	Marczynski, Z.	103 LS-4	562	935	0	537	2034
5	Gilkes, G. N.	98 Std Cirrus	505	828	11	484	1829
6	Piggott, A. D.	104 Discus	148	1000	157	405	1710
7	Welsh, S. J.	98 Cirrus 75	102	754	468	342	1666
8	Aldous, R. F.	102 Discus	517	812	0	292	1621
9	Eade, D. J.	101 LS-4	534	720	10	313	1577
10	Watson, Jane Watson, A. J.	101 DG-300	0	968	373	178	1519
11	Bridges, R. C.	100 ASW-19B	89	821	240	306	1456
12	Harwood, H. K.	103 Pegasus	p355	p642	233	185	1415
13	Bromwich, R. C.	98 Std Cirrus	574	701	51	0	1326
14	Smithers, J. W.	97 Astir CS	168	828	13	255	1264
15	Dale, G. G.	99 Std Libelle	58	768	7	369	1202
16	Dixon, G. R.	98 DG-100G	117	585	395	0	1097
17	Judkins, M. B.	100 ASW-19	12	521	8	458	999
18	MacDonald, G. D. E.	102 ASW-19	256	p588	0	10	856
19	Mummery, R. C.	100 Cirrus 75	289	230	109	0	828
20	Vaughan, R. C.	96 Sport Vega	93	680	13	21	807
21	Stewart, K.	96 Twin Astir	457	259	13	21	750
22	Meagher, Mary	101 Pegasus 101A	0	0	374	375	749
23	Medlock, M.	95 G103 Twin Acro	216	33	12	2	263
24	Day, M. T.	103 LS-4	28	p0	36	71	135

p = photographic penalty; a = administrative penalty

WESTERN REGIONALS - July 4-12
Open Class

Pos.	Pilot	Sailplane H'cap	Day 1.4.7 227km ▲	Day 2.5.7 182km ▲	Day 3.6.7 210km ▲	Day 4.7.7 305km ■	Day 5.8.7 360km ▲	Day 6.9.7 221km O/R	Day 7.11.7 164km ▲	Day 8.12.7 126km ▲	Total Points
1	Smith, D. A.	103 LS-4	981	979	977	899	1000	797	1000	553	7186
2	Jones, R.	131 Nimbus 25.6	1000	892	1000	922	655	908	956	604	6937
3	Johnson, E.	112 Kestrel 19	979	1000	935	925	816	745	982	408	6788
4	Lyttleton, C. C. Watt, D. S.	112 ASW-20BL	559 -	844 -	- 976	- 1000	- 391	- 1000	914 -	666 -	- 6350
5	Williamson, J. S. *et al*	105 Janus CM	533	932	806	664	860	778	268	598	5359
6	Johnson, P.	113 Kestrel 20	869	811	579	641	738	911	215	455	5219
7	Hogg, A.	114 Ventus 16.6	895	632	693	634	794	558	261	442	4909
8	Carr, S.	111 ASW-20L	594	714	627	728	833	732	270	293	4791
9	Cumner, G.	106 ASW-20	381	724	847	652	324	694	415	391	4428
10	Nicholls, G. Mills, J.	110 LS-3A 17	648	- -	583 -	370 557	- -	571 676	- 487	431 -	- 4423
11	Jones, S.	114 Ventus 16.6	622	773	793	584	245	532	218	491	4263
12	Bradley, L.	108 Nimbus 15c	866	140	697	484	826	597	249	261	4100
13	Lemin, R.	112 Ventus 16.6	336	0	713	662	809	574	530	343	3967
14	Harrington, T.	108 Vega	371	599	491	570	322	597	279	350	3579
15	Gardner, T.	106 Mosquito B	650	468	489	0	403	840	417	307	3572
16	Szabo-Toth, G.	108 LS-3A	636	129	47	570	336	592	498	351	3159
17	Smith, R.	112 Kestrel 19	166	797	558	648	347	848	178	435	3129

Sport Class

Pos.	Pilot	Sailplane H'cap	Day 1.4.7 173km ▲	Day 2.5.7 152km ▲	Day 3.6.7 169km ▲	Day 4.7.7 262km ▲	Day 5.8.7 305km ■	Day 6.9.7 161km ▲	Day 7.11.7 123km O/R	Day 8.12.7 92km O/R	Total Points
1	Parker, S.	101 LS-4	982	1000	917	893	949	798	1000	648	7187
2	Darby, M.	104 Cirrus 17.7	922	942	1000	1000	1000	673	973	510	7020
3	Duffin, E.	101 Std Jantar	894	890	667	875	780	588	879	562	6135
4	Bishop, G.	97 Std Libelle	892	791	510	658	890	618	833	498	5488
5	Dunthorne, P.	99 Std Jantar	897	227	552	820	301	717	802	596	4912
6	Spiller, R.	103 LS-4	869	864	705	531	651	573	270	437	4900
7	Furley, R. C. Carter	103 Pegasus	890 -	- 397	690 -	- 658	673 -	- 748	10 -	295 -	- 4389
8	Davidson, J.	97 Astir CS	272	783	526	707	853	504	13	378	4036
9	Chapman, J.	97 Astir CS	90	346	726	652	749	611	270	485	3929
10	Payne, R.	99 Std Jantar	127	723	709	477	851	490	264	DNF	3651
11	Hogarth, P.	98 Std Cirrus	347	347	DNF	DNF	515	554	297	303	2363
12	Keogh, B.	101 LS-4	1000	942	127	DNF	DNF	DNF	DNF	DNF	2069
13	Johns, H. *et al*	78 Bergfalke 4	594	258	237	401	6	0	0	212	1708

BOOKER REGIONALS - Wycombe Air Park, July 18-26

Pos.	Pilot	Sailplane	Day 1.25.7 174.5kmO/R	Day 2.26.7 147.2km ▲	Total Points
1	Evans, C. J.	LS-4	0	836	836
2	Spreckley, B. T.	Mananne	111	702	813
3	Clarke, A. J.	DG-300	24	757	781
4	Spreckley, Gillian	Pegasus Club	0	777	777
5	Jeffery, P.	ASW-20L	38	691	727
6	Warren, J. R.	ASW-20	78	620	698
7	Caunt, D.	Nimbus	0	677	677
8	Sheard, P.	Ventus A	0	669	669
9	Stafford-Allen, P. R.	PIK 20c	0	651	651
10	Emson, C.	Astir CS	0	579	579
11	Fairston, B. A.	Ventus BT	31	530	561
12	Giddins, J. B.	Cirrus	0	543	543
13	Baldwin, A. J.	Libelle	0	534	534
14	Craig, G. W.	Std Cirrus	0	526	526
15	Hilton, D.	ASW-17	29	448	477
16	White, J. A.	Pegasus	37	408	445
17	Jelden, A.	Std Cirrus	4	409	413
18	Jones, S. G.	Ventus	0	371	371
19	Lawson, P.	Discus	0	369	369
20	Nash, Jane	PIK 20c	8	318	326
21	Johnson, G. F.	Janus CM	0	303	303
22	Kingerlee, J. C.	Std Cirrus	15	6	21
23	Hayens, M. J.	Vega	0	3	3
24	Cousins, R.	ASW-20	0	0	0

INTER-SERVICES REGIONALS - RAF Bicester, August 4-13
Class A

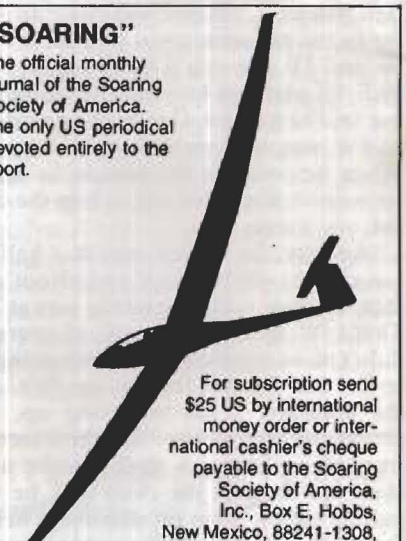
Pos.	Pilot	Sailplane H'cap	Day 1.5.8 223km polygon	Day 2.6.8 305km polygon	Day 3.7.8 237km ▲	Day 4.10.8 222km ▲	Day 5.12.8 129km ▲	Total Points
1	Norman, L.	100 ASW-19	819	911	860	1000	28	3618
2	Davey, G. R.	108 Mosquito	1000	311	790	936	21	3058
3	Dawson, M. R.	100 Std Cirrus	876	857	699	514	0	3046
4	Eagles, T. W.	103 DG-300	854	1000	656	317	25	2852
5	Boik, M.	103 LS-4	559	724	704	807	42	2836
6	Barnfather, B. J.	97 Astir 77	804	818	689	422	50	2783
7	Smart, A. M. B.	97 Astir 77	675	920	728	459	0	2782
8	Matyear, A. D.	97 Astir CS	781	801	716	357	3	2658
9	Stratten, P. J.	100 Std Cirrus	742	721	748	406	17	2634
10	Davis, C. M.	99 Astir 77	643	875	703	300	66	2587
11	Wright, J. G.	97 Libelle	513	716	273	958	30	2490
12	Smith, J. L. J.	101 Pegasus	622	853	53	844	0	2372
13	Arnall, R.	99 Astir 77	614	960	291	397	47	2309
14	Spottiswood, J. D.	104 Discus	755	848	0	669	0	2272
15	Reed, I. B.	97 Astir	553	821	711	262	86	2253
16	Truelove, O. J.	97 Astir CS	737	619	643	236	0	2235
17	Matthews, G.	97 Astir 77	436	669	646	422	3	2171
18	Dean, M. J.	100 DG-100	834	864	179	276	2	2155
19	Hancock, A. R.	104 Discus	975	50	700	386	24	2134
20	Stonebanks, P. J.	97 Astir CS	597	729	332	392	50	2100
21	Greensmith, A. R.	97 Astir 77	580	693	46	621	0	1940
22	Sleigh, K.	99 Astir 77	651	773	213	300	0	1937
23	Barnfather, C. L.	97 Astir CS	636	334	649	308	0	1927
24	Gildea, C. J.	100 SHK 1	559	699	0	406	46	1710
25	Campbell, D. M.	97 Astir 77	636	575	56	308	0	1575
26	Wright, E. C.	108 Diamant	420	605	0	0	0	1025
27	Goodwin, M. P.	97 Astir 77	19	544	2	422	0	987
28	Dambrook, E. J.	100 Std Cirrus	406	271	7	247	0	931
29	Batchelor, A. M.	97 Astir CS	27	288	8	956	30	809
30	Morgan, P.	97 Astir CS	506	0	0	0	0	506
31	Wheeler, D. J. C.	97 Astir CS	69	0	0	173	0	242

Class B

Pos.	Pilot	Sailplane H'cap	Day 1.5.8 146km polygon	Day 2.6.8 222km ▲	Day 3.7.8 158km ▲	Day 4.10.8 164km ▲	Total Points
1	Richards, E. W.	95 Twin Astir/Grob 103	968	1000	990	988	3946
2	Steiner, P.	95 Grob 103	991	847	923	991	3752
3	Fincham, P.	86 K-18	964	453	935	939	3291
4	Aldis, C. J.	95 Viking	953	852	1000	447	3252
5	Somerville, A.	95 K-21	1000	998	279	885	3162
6	Williams, P. R.	88 Dart 15	812	707	873	592	2984
7	Evans, R. M.	86 K-18	705	771	972	469	2917
8	Gaunt, T. R. F.	95 K-21	818	943	109	1000	2870
9	Tribe, A. D.	86 K-18	760	670	519	904	2853
10	Napier, S. M.	86 K-18	605	632	942	572	2751
11	Farrelly, P. E.	94 K-23	599	690	837	505	2631
12	Ellis, C. A. P.	94 Dart 17R	763	718	306	548	2335
13	Johnson, A.	95 Viking	593	643	389	475	2100
14	Kirschner, P. M.	90 K-6E	57	568	277	872	1772
15	Benzie, I.	94 K-23	53	240	643	565	1701
16	Andrews, P. W.	76 K-13	391	72	0	254	717
17	Gauntlett, D. W.	88 K-18	0	48	0	317	365
	Hors Concours Fox, J. P.	92 Pilatus B-4	35	160	787	77	1059

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ENSTONE REGIONALS - August 15-23
Open Class

Pos.	Pilot	Sailplane H'cap	Day 1.15.8 234km ▲	Day 2.16.8 250.4km ▲	Day 3.18.8 153.3km ▲	Day 4.19.8 203.2km ▲	Day 5.20.8 158.4km ▲	Day 6.21.8 206km ■	Total Points
1	Manwaring, A. J.	106 DG-200	979	423	374	809	800	789	4174
2	Corbett, C. G.	111 ASW-20L	1000	134	461	774	799	949	4117
3	Cumner, G. M.	106 ASW-20	808	519	374	601	733	997	4032
4	St Pierre, A. H. G.	106 DG-200	821	484	p377	622	867	767	3938
5	Macpherson, D. J.	106 ASW-20	262	667	275	632	891	809	3536
6	Wilson, T. G. Johnson, E.	112 Kestrel 19	*0 -	- 456	345 -	- 735	790 -	- 992	- 3318
7	Reed, J. R.	106 ASW-20	959	70	DNF	622	777	770	3198
8	Metcalfe, I. J.	112 Kestrel 19	175	635	DNF	732	1000	651	3193
9	Gardiner, D. K.	112 Kestrel 19	905	635	DNF	314	242	744	2840
10	Snow, A. R.	114 Ventus B	842	622	0	707	DNF	637	2808
11	Nash, J.	104 PIK 20c	858	57	324	542	149	735	2665
12	Bird, M.	130 ASW-22	251	385	361	810	841	DNF	2648
13	Costin, M. C.	108 DG-400	40	447	262	675	181	1000	2605
14	Gardner, T. R.	106 Mosquito B	173	*257	219	434	221	611	1915
15	Evans, A. D.	106 Vega	258	177	DNF	472	185	698	1790
16	Reid, A. G. Rollason, J. A.	106 Mosquito B	- 742	130 -	0 -	- 240	150 -	- 254	- 1516
17	Parsons, R.	106 ASW-20	99	117	DNF	393	132	369	1130
18	Woods, V. E. S.	106 LS-3	260	84	DNF	323	122	329	1118
19	Maynard, V. H.	106 ASW-20L	109	0	118	622	44	163	1056
20	Hutchings, A. R.	106 ASW-20L	44	0	DNF	354	27	97	522

Sport Class

Pos.	Pilot	Sailplane H'cap	Day 1.15.8 191.5km ▲	Day 2.16.8 206.5km ▲	Day 3.16.8 123.8km ▲	Day 4.19.8 174.7km ▲	Day 5.20.8 106.1km ▲	Day 6.21.8 158.4km ▲	Total Points
1	Hamill, E.	94 K-23	917	207	364	751	816	1000	4055
2	Camp, G. W. G.	98 DG-100	722	545	200	730	825	963	3985
3	Craig, G. W.	96 Std Cirrus	789	473	126	648	589	944	3569
4	Hawkins, G. P.	100 Std Cirrus	952	542	223	724	97	980	3518
5	Gardner, D. H.	97 Astir CS	790	223	153	665	578	870	3279
6	Blundell, S. G. P.	96 Sport Vega	814	-	DNF	-	103	-	
	Kendall, P. I.		-	524	-	595	-	917	2953
7	Steiner, P. H.	99 Astir CS	748	364	144	850	b437	513	2856
8	Copeland, D. D.	100 Std Cirrus	768	68	18	724	435	527	2540
9	Jordy, M. J.	94 IS-29b	629	0	170	676	52	930	2457
10	MacDonald, G. D. E.	94 Dart 17R	261	296	DNF	697	346	768	2368
11	Gentil, P.	100 SHK-1	748	94	96	841	54	630	2263
12	Lawson, P. J.	102 Discus	156	43	DNF	675	422	608	1907
13	Downham, E. H. C.	97 Std Libelle	0	106	DNF	729	204	670	1709
14	Giles, E. E. F.	98 DG-100G	238	133	DNF	789	212	315	1687
15	Millar, J. A. K.	94 K-23	124	0	DNF	584	122	682	1512
16	Byass, D. M.	101 Pegasus	101	95	0	738	p204	350	1486
17	Kangurs, A.	100 ASW-19B	140	52	0	697	p139	360	1408
18	Sevem, P. R.	90 SF-27	85	370	0	880	105	117	1357
19	Moore, W. J.	94 IS-29b	71	0	DNF	330	501	414	1316
20	Bogdukiewicz, S. M.	92 Pilatus B-4	80	150	0	171	356	350	1107
21	Day, P. A.	101 Pegasus	91	59	DNF	587	5	199	941
22	Newland-Smith, M.	97 Std Libelle	167	332	DNF	DNF	DNF	DNF	499

*p=photographic penalty; b=barograph penalty; * = no control; DNF = did not fly.*

NORTHERN REGIONALS - Sutton Bank, August 1-9
Open Class

Pos.	Pilot	Sailplane H'cap	Day 1.1.8 170km O/R	Day 2.2.8 250km ▲	Day 3.3.8 O/R Alt TPs	Day 4.4.8 139km or 151km	Day 5.5.8 329km O/R	Day 6.6.8 270km O/R	Day 7.8.8 154km O/R Alt TPs	Total Points
1	Ellis, J.	108 DG-400	230	398	322	1000	882	210	416	5958
2	Nash, S.	104 PIK 20b	54	132	740	856	949	711	406	3848
3	Dobson, J.	101 LS-4	96	489	833	848	665	227	159	3517
4	Knight, R.	108 ASW-20*	0	750	46	907	497	701	289	3190
5	Swannack, I.	112 Kestrel 19	-	164	-	890	-	-	32	
	Rice, J.		58	-	779	-	873	191	-	2987
6	Galloway, J.	118 Nimbus 2c*	250	-	751	-	916	-	98	
	MacAlpine, C.		-	280	-	350	-	188	-	2833
7	Brisbourne, R.	106 DG-200	0	378	38	966	1000	215	33	2630
8	Ramsden, P.	112 Kestrel 19	0	47	94	833	800	0	0	1774
9	Beardsley, G.	101 LS-4	0	77	528	40	705	0	77	
	Davies, K.									1427
10	Young, M.	103 LS-4*	-	-	42	-	-	222	0	
	Griffits, P.		0	283	-	899	0	-	-	1426
11	Mortimer, R.	112 Jantar 1	0	47	186	764	179	201	0	1377
12	Collingham, C.	106 ASW-20	67	242	206	202	511	0	0	1223
13	Lane, I. A.	106 LS-3a	0	140	46	250	705	52	0	1195
14	Luke, J.	112 Kestrel 19	0	168	336	141	179	0	0	824
15	Green, G.	111 ASW-20L*	0	120	0	395	88	203	0	
	Bolton, M.									806
16	Ashworth, N.	112 Kestrel 19	0	0	57	356	165	0	0	578

Sport Class

Pos.	Pilot	Sailplane H'cap	Day 1.1.8 116km O/R	Day 2.2.8 170km O/R	Day 3.3.8 110km or 114km O/R	Day 4.4.8 97km ▲	Day 5.5.8 230km O/R	Day 6.6.8 188km O/R	Day 7.7.8 108km or 114km O/R	Total Points
1	Langrick, J.	100 Std Cirrus*	0	1000	930	813	1000	**963**	578	5284
2	Bromich, R.	98 Std Cirrus	115	904	855	888	813	**971**	515	5061
3	Olender, S.	82 Pirat	442	413	957	519	857	**799**	527	4514
4	Sorting, A.	84 K-6cR	94	900	849	667	835	17	533	3895
5	Bond, M.	96 Cobra 15	444	397	971	0	813	**782**	212	3619
6	Brock, M. F.	100 SHK	0	517	311	697	769	**843**	290	3227
7	Morrison, P.	90 K-6e	0	-	98	-	714	-	822	3058
	Stott, B.		-	711	-	821	-	**92**	-	
8	Taylor, C.	98 ASW-15a	408	593	815	225	725	**206**	27	2999
9	Fairman, M.	100 ASW-19B	-	505	-	826		**748**	-	2573
	Harlow, T.		0	-	0	-	494	-	0	
10	Robson, O.	99 Std Jantar	15	934	0	0	450	**758**	0	2157
11	Roddis, D.	76 K-7/K-13	0	254	530	332	25	**970**	30	2147
12	Heptinstall, P.	100 SHK	9	374	299	176	670	**242**	89	1858
13	Griffin, B.	78 Skylark 2	0	442	855	0	120	**386**	0	1763
14	Svenson, B.	100 SHK	0	348	315	0	682	**0**	0	1345
15	Jones, B.	94 K-23	30	426	130	67	21	**0**	0	674
	Saw, D.									

** = waterballast*

INTER-SERVICES REGIONALS - Roanne, France, August 26-September 3
Open Class

Pos.	Pilot	Sailplane H'cap	Day 1.26.8 174.6km ▲	Day 2.27.8 168.5km ▲	Day 3.30.8 140.2km ▲	Day 4.1.9 157.6km ▲	Day 5.2.9 145km ▲	Day 6.3.9 133.3km ▲	Total Points
1	Delafield, J.	126 ASH-25	817	981	306	430	759	739	4032
2	Cook, P. G.	121 Nimbus 2cs	839	909	226	432	740	720	3866
† 3	Lherm, G.	114 Ventus B	844	*932	0	111	882	810	3579
4	Haines, C. V. J.	130 Nimbus 3	816	904	0	430	733	694	3577
5	Gaunt, T. R. F.	114 Kestrel 19	673	968	75	460	670	708	3554
6	Benoist, J. D.	114 Ventus	811	945	296	17	735	675	3479
7	Timms, S.	106 Mosquito B	*789	935	1	196	812	704	2237
8	Miller, A. S.	103 LS-4	690	963	308	108	600	266	2955
9	Stewart, D. R.	114 Ventus B	170	1000	75	99	812	789	2945
10	Batty, C. J.	106 ASW-20	203	898	12	23	*890	734	2560
11	Bishop, J. M.	114 Ventus BT	660	495	0*	0	702	851	2508
12	Mitchell, T. M.	102 ASW-19	734	500	59	85	602	449	2429
13	Cuming, M. F.	108 Vega	392	950	179	0	781	40	2342
14	Terry, G. J.	103 LS-4	814	677	93	128	183	426	2321
15	Macintyre, T. E.	106 ASW-20	30	534	*0	52	835	765	2216
16	Odell, J. H.	108 Vega	103	590	7	190	681	413	1984
17	Watson, B. C.	118 Nimbus 2b	171	*381	69	290	532	451	1894
18	Fekius, R.	114 Ventus B	732	316	1	0	324	293	1666
19	Boydon, M. V.	104 Janus	110	520	14	116	903	0	1663
20	Edyvean, J.	106 Janus CE	55	518	242	93	669	0	1577
21	Watson, A. J.	108 Mosquito	0	391	7	*328	719	0	1445
22	Griffiths, P. E.	104 Discus B	125	*528	213	0	352	*177	1395
23	Conyers, P. B.	103 DG-300	212	493	93	0	367	195	1360
24	Richardson, J. L.	114 Ventus B	15	400	244	DNF	657	0	1316
25	De Jong, M. B.	102 DG-100	644	299	267	DNF	DNF	DNF	1210
26	Pozanikis, P.	130 ASW-22	4	351	53	57	504	162	1131
27	Bertigner, J. F.	110 LS-3/17	32	0	123	99	486	303	1043
28	Lincoln, A. K.	104 PIK-20e	92	264	108	206	270	0	940
29	Kelly, K.	102 ASW-19	216	476	0	194	0	DNF	886
30	Sherlock, C. C.	108 Mini-Nimbus	0	162	1	33	319	181	896

**=photo penalty; †=French national; ‡=Dutch national; DNF=did not fly*

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CHRIS ELLIS

SWINGING TRAILERS

Chris works for a major international tyre company, flies an Oly 460 at the Long Mynd and instructs at Booker. His article adds expert advice to a recent article and letter

It must be true! I have seen it in *S&G* so many times over the past few years. In fact it has cropped up in every dissertation on trailer design or towing that I have read. The latest being Michael Bond's otherwise excellent article "Boxing Clever" in the August issue, p186. He states quite emphatically that trailers should be fitted with crossply tyres because radials have "floppy walls". This statement is akin to saying that wooden gliders will perform the function required of them better than glass or carbon fibre because the latter have "floppy wings". Taken to its logical conclusion his arguments would suggest that solid tyres are ideal.

Needless to say, the correct choice of tyres and pressures is vital to the safety of the combination and its crew. It is stupid to risk many thousands of pounds worth of equipment and the lives of those in it for the sake of a few pounds worth of tyres. Trailers, like parachutes, may not be used very often, but it helps if they work properly when they are. May I, therefore, make some suggestions which may be of help in selecting the right tyres and pressures.

Virtually every new vehicle sold in the UK is fitted with radials

Those of us who are old enough to remember the days when all new cars had crossply tyres will recall that when radials were subsequently fitted there was a considerable improvement in steering response. "Like driving on rails" was the usual comment. We have now progressed to a situation where virtually every new car or light commercial sold in the UK is fitted with radials.

George Coppen raised the point briefly in his letter in the last issue, p257, saying that radials grip better than crossply. On trailers this is only relevant when braking in a straight line. Good road grip does not necessarily mean good stability. In many instances partially deflated tyres will considerably increase traction but proportionally give you the directional stability of a raspberry jelly.

What trailers need are tyres that will cushion the loaded or unladen box whilst resisting snaking. Radial tyres are more flexible in the vertical plane and if correctly inflated will give a much smoother ride. This does not mean a decrease in stability. Even if they were very floppy indeed a few extra degrees of roll are not a problem – it is the yaw that wrecks you.

Where the radial really scores over the crossply is in its greatly reduced slip angle. This has nothing to do with skidding, but it is a measure of the tautness of a tyre in the yawing plane, *ie* when you turn the wheel how much twist is there in the walls before the tread changes direction. The radial, due to much shorter casing cords, has much better directional control and with the modern low profiles this is improved still further. Any tendency to snake is therefore resisted by the tyres.

Loads and Pressures. The actual weight of the trailer is supported by air so it is important that you use a tyre and wheel large enough and strong enough to contain sufficient air to do the job. It is highly likely, especially on older trailers, that both tyre and rim originated from a scrap yard with little thought given to their technical suitability. Many of these older rims will not be wide enough to take a larger tyre so a reinforced or six ply rating version as used on light commercials could possibly be used.

If the rim has badly rusted it should be wire brushed clean, if badly pitted it should be replaced. Old tube type tyres should be replaced with tubeless and new valves fitted at each tyre change because they do deteriorate with age.

So how do you choose what to fit? If you go to your local friendly tyre expert you may well be met with a blank stare as most are not equipped to deal with such questions. Should this be the case you would probably be best advised to contact the local branch or technical department of a tyre manufacturer. If not in Yellow Pages ask your expert for the number. The first question you will be asked is the weight the axle (or axles if you own an ASW-22 or Nimbus 3) is carrying. Having established this by a visit to a weigh bridge the rest is easy. The following table showing axle weights and pressures for the more common tyre sizes should act as a guide in most cases.

Recommended pressures by Axle Weight up to 60mph

	Tyre Size	Suitable Rim Width	Max Axle Weight/Pressure		
		in	cwt	kg	psi
RADIAL	145-13	3½, 4, 4½	16¼	(825)	@ 35
	155-13	4, 4½, 5	18½	(935)	@ 35
	155-13*	4, 4½, 5	20½	(1045)	@ 42
	165-13	4, 4½, 5	20½	(1045)	@ 36
	175-13	4½, 5, 5½	23	(1166)	@ 36
	185-14*	5, 5½, 6	29	(1474)	@ 46
		in	cwt	kg	psi
CROSSPLY	520-13	3, 3½, 4	13½	(693)	@ 30
	560-13	3½, 4, 4½	15	(770)	@ 30
	590/600-13	4, 4½	16	(820)	@ 30
	640-13	4½, 5	18	(914)	@ 30

*Reinforced

Where the laden axle weight is less than its maximum carrying capacity lower pressures may be used. You should consult the tyre manufacturer for a specific recommendation.

To follow on George's points on vehicle stability. It is generally accepted that we try to load glider trailers so that approximately 40lbs falls on the tow bar. More than this will cause pitching which is uncomfortable, less will cause snaking which is dangerous. Certainly it will try to lift the front wheels, using the rear axle as a fulcrum. The reason for the Citroen's stability is that the lever from the ball to the rear axle is very short. On the average car when this weight is transferred to the rear wheels, plus all the paraphernalia that often accompanies towing trips, you could end up with a rather unstable vehicle. Increasing the rear pressures by 3 to 5psi should help. Oversteer is fine on a race track in the hands of a professional driver who wants to hang the back end out to get round corners quickly. On a towcar it is not funny. (See also p315.)

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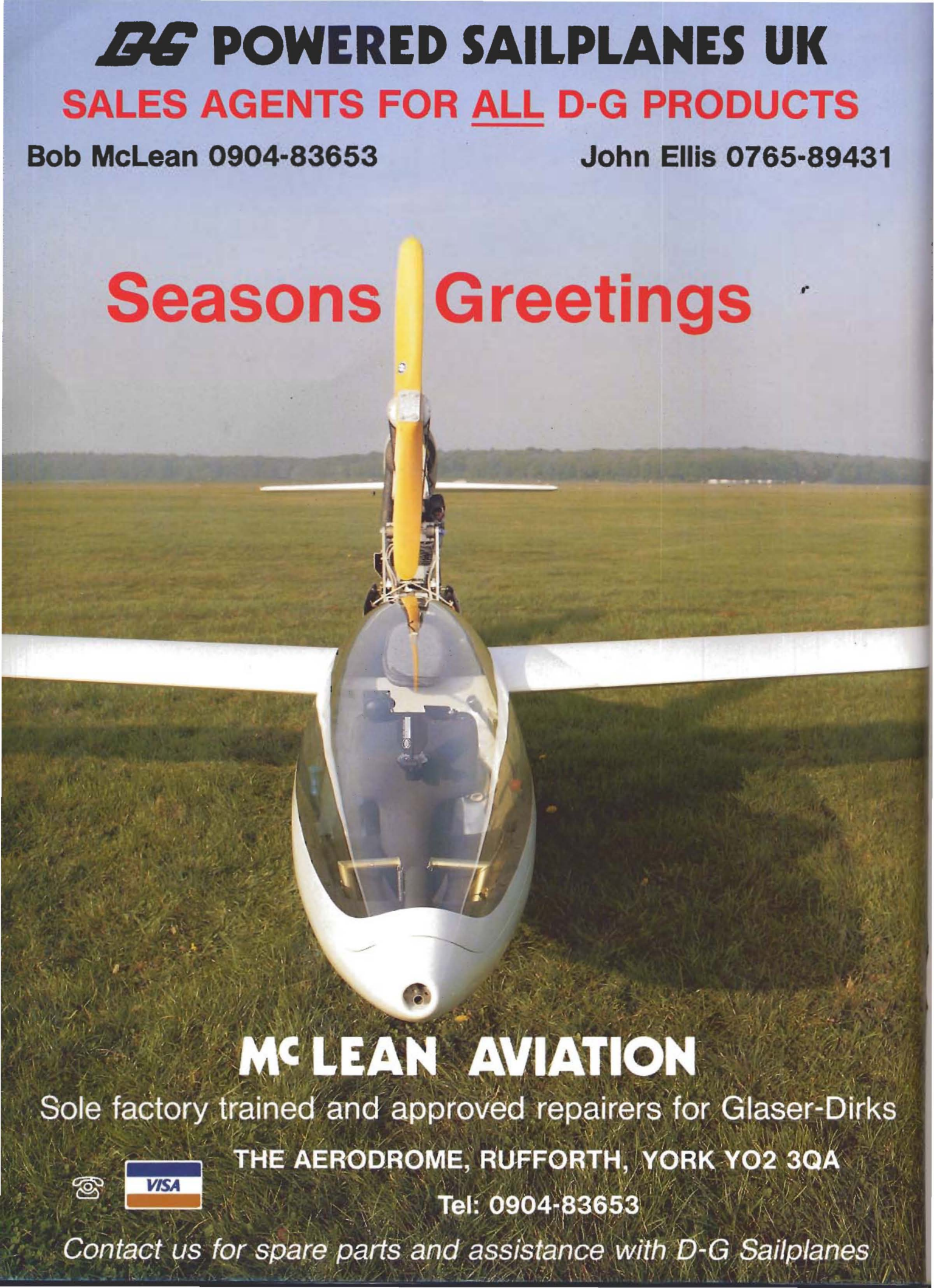
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1988 NATIONALS QUALIFYING LISTS

The following lists will be used to determine preference for entries to the 1988 Nationals and have been compiled as described in the 1987 Competition Handbook. Entry forms are available from the BGA office and the closing date for entries is January 31, 1988.

GUY CORBETT,
BGA Competitions and Awards Committee

PRIORITY LIST 1988

1	Spreckley, B. T.	(BT)	26	Alldis, C. J.	(S)	52	Elliot, B.	(QL)	78	Redman, S. J.	(15)	104	Cumner, G.	(15)
2	Watt, D. S.	(BT)	27	Jones, P. R.	(O)	53	McAndrew, G. E.	(15)	79	Smith, D. A.	(S)	105	Buckner, K.	(QL)
3	Wills, T. J.	BT)	28	Young, M. J.	(15)	54	Durham, M. W.	(QL)	80	Watson, A. J.	(QL)	106	Edwards, D.	(O)
4	Wells, M. D.	(BT)	29	Marczynski, Z.	(S)	55	Throssell, M. G.	(QL)	81	Ellis, J.	(O)	107	Brice, P. F.	(QL)
5	Davis, A. J.	(BT)	30	Norrie, A. J.	(O)	56	Gorringe, J. P.	(QL)	82	Buckner, G. G.	(S)	108	Fox, R. L.	(S)
6	Garton, C.	(BT)	31	Bastin, J. C.	(15)	57	Cuming, M. F.	(S)	83	King, P. A.	(15)	109	Hawkins, P.	(15)
7	Jones, R.	(S)	32	Bally, J. D.	(S)	58	Pozerskis, P.	(QL)	84	Russell, F. K.	(O)	110	Wise, B. R.	(O)
8	Rollings, C. C.	(S)	33	Hartley, K. J.	(QL)	59	Corbett, G.	(O)	85	Rowland, C. D.	(QL)	111	Hamill, E.	(QL)
9	May, R.	(O)	34	Ashdown, I.	(O)	60	Murdoch, M.	(QL)	86	Wells, P.	(S)	112	Webb, M. J.	(S)
10	Lysakowski, E. R.	(S)	35	Fitchett, B.	(QL)	61	Harding, R. W.	(S)	87	Morris, B. C.	(15)	113	Benoist, J. D.	(QL)
11	Kay, A. E.	(S)	36	Hood, L. S.	(15)	62	Boydon, M. V.	(O)	88	Williamson, J. S.	(QL)	114	Docherty, T. P.	(QL)
12	Innes, D. S.	(O)	37	Foot, R. A.	(QL)	63	Dall, R.	(QL)	89	Brown, M. F.	(QL)	115	Johnson, P. A.	(O)
13	White, S. A.	(S)	38	Gaisford, P.	(V)	64	Starkey, C. G.	(S)	90	Joint, T. A.	(O)			
14	Delafield, J.	(O)	39	Miller, A. S.	(S)	65	Spencer, J. D.	(15)	91	Aspland, W.	(QL)			
15	Cardiff, J. D.	(15)	40	Campbell, D. R.	(QL)	66	Roberts, D.	(QL)	92	Lyttelton, C. C.	(QL)			
16	Hutchinson, S.	(S)	41	Findon, D. E.	(O)	67	Cooper, B. L.	(O)	93	Murphy, T. J.	(15)			
17	Edyvean, J.	(O)	42	Metcalfe, G. C.	(QL)	68	Hayes, D. M.	(S)	94	Stingemore, G.	(QL)			
18	King, S.	(S)	43	Davies, J. F.	(O)	69	Baker, R. J.	(15)	95	MacFadyen, T. E.	(QL)			
19	Thompson, H.	(O)	44	Kay, W. M.	(15)	70	Knowles, J.	(O)	96	Camp, G. W. G.	(S)			
20	Sheard, P. G.	(15)	45	Morris, G.	(QL)	71	Cook, I.	(QL)	97	Fleming, A. M.	(QL)			
21	Smith, E. R.	(S)	46	Logan, M. W. B.	(O)	72	Smith, G. N. D.	(S)	98	Cox, A. N.	(S)			
22	Pozerskis, A.	(O)	47	Clarke, A. J.	(15)	73	Zeally, T. S.	(15)	99	Jones, S. G.	(15)			
23	Smith, M. J.	(S)	48	Stuart, T.	(S)	74	Lee, M. E.	(O)	100	Walsh, A. P.	(O)			
24	Moulang, A. P.	(O)	49	Szulc, B. J.	(O)	75	Stewart, K.	(QL)	101	Jefferyes, M. B.	(15)			
25	Glossop, J. D. J.	(15)	50	Smith, D. A.	(QL)	76	Chaplin, B. M.	(S)	102	Farmer, A. T.	(QL)			
			51	Taylor, J. R.	(QL)	77	Hill, D. J. M.	(QL)	103	Mitchell, K.	(S)			

(BT=British Team; O=Open Class Nationals; S=Standard Class Nationals; 15=15 Metre Class Nationals; V=Vinon; QL=Qualifying List)

PROMOTION LIST 1988

1	Norman, L.	(IA)	26	Johnston, E.	(WO)	52	St. Pierre, A. H. G.	(EO)	78	Rees, A. J.	(QL)	103	Davis, C. M.	(IA)
2	Cook, P.	(IO)	27	Spreckley, G.	(B)	53	Buckner, G. G.	(QL)	79	Johnson, P.	(WO)	104	Cuming, M. F.	(QL)
3	McAndrew, G. E.	(LB)	28	Miller, A.	(QL)	54	Olender, S.	(NS)	80	Cunningham, G. W.	(QL)	105	Aldous, R. F.	(LB)
4	Evans, C.	(B)	29	Craig, G. W.	(ES)	55	Mitchell, K.	(QL)				106	Hawkins, P.	(QL)
5	Hamill, E.	(ES)	30	Cumner, G. M.	(EO)	56	Williamson, J. S.	(WO)	81	Stewart, D.	(IO)	107	Bond, M.	(NS)
6	Manwaring, A. J.	(EO)	31	Campbell, D. R.	(QL)	57	Gilkes, G. N.	(LB)	82	Caunt, D.	(B)	108	Murphy, T.	(QL)
7	Richards, E.	(IB)	32	Benoist, J. D.	(IO)	58	Metcalfe, I. J.	(QL)	83	Wells, P.	(QL)	109	Hogg, A.	(WO)
8	Ellis, J.	(NO)	33	Smith, J. L. J.	(QL)	59	Smart, A. M. B.	(IA)	84	Kendall, P. L.	(ES)	110	Hardy, M. F.	(QL)
9	Davey, G.	(IA)	34	Darby, M.	(WS)	60	Warren, J. R.	(B)	85	Hancock, A. R.	(QL)	111	Bishop, J.	(IO)
10	Langrick, J.	(NS)	35	Boik, M.	(IA)	61	Payne, R. D.	(QL)	86	Stratten, P. J.	(IA)	112	Boyden, M.	(QL)
11	Smith, D. A.	(WO)	36	Chaplin, B. M.	(QL)	62	Gardner, D. H.	(ES)	87	Ashdown, I.	(QL)	113	Reed, J. R.	(EO)
12	Heames, C.	(IO)	37	Marczynsk, Z.	(LB)	63	Logan, M. W. B.	(QL)	88	Welsh, S. J.	(LB)	114	Sheffield, R. J.	(QL)
13	Parker, S.	(WS)	38	Aspland, W.	(QL)	64	Duffin, E.	(WS)	89	Wright, R. H.	(QL)	115	Williams, P. R.	(IB)
14	Pentecost, P. R.	(LB)	39	Fincham, P.	(IB)	65	Sommerville, A.	(QL)	90	Hunt, S.	(QL)			
15	Clarke, A.	(B)	40	Tanner, L. E. N.	(QL)	66	Alldis, C. J.	(IB)	91	Johnson, E.	(EO)			
16	Camp, G. W. G.	(ES)	41	Jeffery, P.	(B)	67	Cowderoy, R. I.	(QL)	92	Lincoln, A. K.	(QL)			
17	Dawson, M.	(IA)	42	Austin, D. C.	(QL)	68	Piggott, A. D.	(LB)	93	Batty, C.	(IO)			
18	Corbett, C. G.	(EO)	43	Hawkins, G. P.	(ES)	69	Spencer, J.	(QL)	94	Fox, R. L.	(QL)			
19	Gaunt, T.	(IO)	44	Atkin, P.	(QL)	70	Reading, P. T.	(LA)	95	Bishop, G.	(WS)			
20	Steiner, P.	(IB)	45	Lucas, A.	(LA)	71	Walsh, A.	(QL)	96	Knowles, J. A.	(QL)			
21	Bradney, F. G.	(LB)	46	Morris, B. C.	(QL)	72	MacPherson, D. J.	(EO)	97	Baker, P. E.	(LA)			
22	Cook, I.	(LA)	47	Dobson, J.	(NO)	73	Costin, M. C.	(QL)	98	Stuart, T.	(QL)			
23	Nash, S.	(NO)	48	Pobjoy, D. E.	(QL)	74	Knight, R.	(NO)	99	Rice, J.	(NO)			
24	Eagles, T.	(IA)	49	Hymers, S.	(IO)	75	Matyear, A. D.	(IA)	100	Gidding, J.	(QL)			
25	Bromich, R.	(NS)	50	Barnfather, B. J.	(IA)	76	Watson, A. J.	(QL)	101	Stafford-Allen, P.	(B)			
			51	Dale, G.	(QL)	77	Spirling, A.	(NS)	102	Spottiswood, J. D.	(QL)			

(B=Booker; EO=Enstone Open; ES=Enstone Sport; IA=Inter-Services A; IB=Inter-Services B; IO=Inter-Services Open; LA=Lasham A; LB=Lasham B; NO=Northern Open; NS=Northern Sport; WO=Western Open; WS=Western Sport; QL=Qualifying List.)

VIDEO REVIEW

A new gliding video "The Last of the Summer Thermals", a spoof made by Timebase Video Productions on the Yorkshire TV "Riding the Summer Sun" 500km flight, will entertain at clubhouse get togethers this winter.

At £12.95 it is well worth having for the club video library and has enough lively moments to justify its price. But it misses out on becoming a gliding classic, despite the excellent choice of Phil Willsher as the Swallow pilot hell bent on a 500 O/R from Sutton Bank with snow on the ground.

That said, gliding humour is difficult to can but the editor, Pete Burns, had made this a professional production. He is now starting work on a new film on the problems of making a safe escape from gliders which can be used for discussion in the hope of improving safety.

G.B-S.

Please send contributions to 281 Queen Edith's Way, Cambridge CGB1 4NH and not the BGA Office.

BGA & GENERAL NEWS

DOC SLATER

It is with great sadness that we learned on going to press that Doc Slater has died, a few weeks before his 93rd birthday. An appreciation will be in the next issue.

NATIONAL LADDER WINNERS

This year's results reflect the disappointing season with few really good flying days. Wednesday, August 5 was one with most of the high scoring pilots having their best flights. Nick Hackett, George Metcalfe and "Shep" Sheppard achieved fast 300kms but Andy Davies took the day with 314km in his Discus at 105.99km/h to claim the UK 15 Metre and Standard Class 300km triangle speed record. Another great effort was Ray Partridge's 514km on July 2 in a Ventus.

But Ed Johnston, National Ladder steward, said that the top scoring pilots in both ladders declined to take pictures which left Andy Davis to pick up the honours in the Open Ladder. All his flights were after July 9 with the last on September 25, which, Ed adds, "shows up those who think the season ends after the stubble fires have been put out by the rain."

This means Andy (Bristol & Gloucestershire GC) heads the Open Ladder to win the Enigma trophy with the L. du Garde Peach trophy for the Club Ladder going to Ray Partridge (Surrey & Hants GC).

This was the first year photographic evidence was asked for and Ed thanks all those pilots who co-operated.

OPEN LADDER

Leading pilot	*Club*	*Flts*	*Pts*
1. A. J. Davis	Bristol & Glos	4	7677
2. F. J. Shephard	Booker	4	6870
3. G. C. Metcalfe	Surrey & Hants	4	6003
4. N. G. Hackett	Coventry	4	6002
5. D. W. Evans	Cambridge Univ	4	6001
6. T. Stuart	London	4	5996

CLUB LADDER

Leading pilot	*Club*	*Flts*	*Pts*
1. R. Partridge	Surrey & Hants	2	3220
2. C. G. Starkey	Surrey & Hants	2	2865
3. E. Hamill	London	4	2864
4. N. Sanders	RAE	4	2750
5. J. Walker	Coventry	4	2558
6. P. Johnson	London	3	2029

JOHN'S LAST COURSE

John Williamson's last soaring course had the best week of the year at Lasham with Diamond goals for Mike Wollard, Julian Reeves, Peter Willes and Brian Marsh. Val Howells gained her height and distance for her Silver C and Ramsey Brown and Dave Ephram Silver distance.

Nearly 9000km were flown over seven days with ten outlandings. The group gave John a card to thank him for his hard work and wish him well in Australia.

Margaret Woller

WAVE HUNT

Bringing a glider trailer back from Aboyne on Saturday, October 3, we passed 15 others heading north.

"SANDY" GOES SOLO



Admiral Sir John Woodward, "Sandy" of Falklands fame, went solo this summer at Bicester in a Grob 103 having done a week's gliding a long time ago - in 1948!

He says he would like to continue gliding but adds "I will not find it easy to make time for it as I am a keen yachtsman and an enthusiastic, but incompetent, golfer."

SADLY MORE FATALITIES

On Sunday, September 13, Alan Hawkins, flying a Motor Falke out of the Channel GC's site, Waldershare Park, Kent, was killed when he attempted to complete a 180° turn to land back on the strip after a suspected engine failure at 100ft. The aircraft struck trees on the boundary killing the pilot. The passenger, John Salt, an instructor and co-owner of Channel, was slightly injured.

John Shipley,
BGA Safety Committee chairman

* * *

Jim Jesty and Neil Jones were killed when the Chipmunk they were flying crashed on approach to Husbands Bosworth. The accident, which occurred on September 22, is being investigated by AIB.

Bill Scull, *BGA director of operations*

BATTLE WITH THE CAA

Perhaps this should be subtitled "bureaucracy strikes again" because it seems lately that we are having to battle with the CAA at every turn in order to keep our present freedom to fly. In the last year we have even invented a new sub-committee - the Government Liaison Committee - in recognition of the fact that it is a full time job trying to negotiate with officialdom.

Sometimes BGA representatives are so busy dealing with the bureaucrats on your behalf that we are slow in telling you what is going on. Rest assured that we are continuing to resist the latest pressures which include permissions to wire launch and the proposed introduction of a basic form of commercial licence for remunerated tug pilots.

The "hire and reward" residual problems drag on and in particular affect the disabled and youth movements such as scouts and guides. We are shortly to meet with the newly appointed Minister for Sport to seek his assistance with our problems.

Barry Rolfe, *BGA administrator*

INTER-UNIVERSITY TASK WEEK

This year the Inter-University task week was on neutral ground at the Avon Soaring Centre's site at Bidford-on-Avon from August 9-16, though organised by the University of Surrey GC. There were entries from Edinburgh, Surrey, Bath, Oxford, Imperial College, Bristol and Kent, the last two being newcomers.

Flying was possible on most days with Oxford (Astir) winning the glass Class and Bristol (K-7) the wood.

Oxford University GC has put in a bid to hold the 1988 task week at Bicester (RAFGSA Centre). - *Details sent by Tony Gee.*

OSTIV COMPETITION

There is an OSTIV competition for developing a simple, inexpensive artificial stall warning device for sailplanes. There are three prizes of DM2500; DM1000 and DM500.

The closing date is December 1, 1988 and for full details apply to the OSTIV president, Dr M. E. Reinhardt, OSTIV, c/o DFVLR, D-8031 Wessling, W. Germany.

FIRST UK REGIONALS ABROAD

A hamlet somewhere in Wiltshire. August 1985. It is raining heavily, and has been for 24 hours. There is no prospect of a clearance for the next 24 hours at least. We are scrutinising a Victorian post-box for the answer to a treasure hunt clue, and getting very wet in the process. Oh, and it's cold too . . .

A succession of days like this (final tally two days out of a possible ten) set us wondering whether it might not be possible to hold the Inter-Services Regionals somewhere warmer and drier. Two years later, at Roanne in Central France, the idea became a reality, when the first UK-rated Regional competition to be held outside the United Kingdom took place, from August 26-September 3. Although by French standards the weather was not especially outstanding ("only" six contest days out of nine), the "no-contest" days were hot and sunny, allowing swimming trips to the Loire gorges, cool forest walks in the neighbouring hills and visits to local vineyards. Even if pilots might have appreciated somewhat stronger thermals and higher cloudbases, crews and families were unanimous in thinking that Roanne was the best ever Inter-Services.

Roanne has quite a long standing association with the RAF, the Red Arrows and other display aircraft having performed there at the biennial Roanne Air Show. We were therefore delighted to receive an invitation from *Les Ailes Roannaises,* the local aeroclub, whose members had heard that we were looking for a suitable site. We could not have been better

received. Quite apart from giving contest movements priority over all other operations, Georges Remy and his fellow club members laid on a full restaurant service (meals until midnight for late retrieves), handed over all the club's office accommodation to contest officials, and organised a superb series of social events, culminating in a *repas gastronomique* on the final night.

The contest received extensive media coverage locally, and all participants were invited to a reception given by the mayor (a former government minister) in the town hall.

Eric Smith, the director, and his team of assistants did an excellent job of organisation in an unfamiliar environment, their task greatly eased by the unstinting generosity of our French hosts. Thirty pilots (including the BGA chairman!) battled it out in unpredictable conditions over the hills and plains of Central France. John Delafield, flying an ASH-25 with various co-pilots, won the competition in convincing style.

Merci Roanne! You did us proud, and we shall be back soon. Any British pilot looking for a safe site in attractive, varied surroundings for a family gliding holiday need look no further than Roanne. You can be assured of a very warm welcome.

Max Bishop

GLIDING CERTIFICATES

Congratulations to Brennig James on gaining the FAI 1000km Diploma for a 1033km closed circuit flight from Fuentemilanos, Spain on August 19 in his Nimbus 3. Following disappointment at the rejection of an otherwise successful attempt last year through an indistinct TP photograph, Brennig made several unsuccessful attempts at the distance during a two month spell at the Oerlinghausen camp this year, until he was eventually rewarded by the right weather, achieving an average speed of 123km/h.

It was Brennig, flying his Diamant 18 from Booker in 1968, who completed the first ever 500km closed circuit in Britain, and nearly 20 years later he now becomes the first British pilot to exceed 1000km in Europe.

Meanwhile, on home territory only six Diamond distances were claimed in 1987, compared with a yearly average of 28 over the previous three seasons. If the weather doesn't improve next summer, let's hope the exchange rates do!

Generally OOs are doing a fine job in certifying badge claims, but in personally scrutinising all TP photographs I do find numerous instances of carelessness by OOs in assessing photographic evidence. In two recent examples, pictures certified as Leicester Forest East motorway service station were in fact of Toddington services 50 miles to the south near Luton! And on a Diamond goal claim flown as a competition task and accepted by the contest organisation, the photographs for one TP were of an adjacent town four miles away.

It is rarely possible to honestly certify photographic evidence without reference to the 1:50 000 scale map, and I do urge OOs to adopt this procedure before committing their signature.

Gordon Camp, *FAI certificates officer*

1000KM DIPLOMA

No.	*Name*	*Club*	*1987*
5	James, D. B.	Booker (in Spain)	19.8

ALL THREE DIAMONDS

No.	*Name*	*Club*	*1987*
230	Partridge, R. W.	Surrey & Hants	2.7

DIAMOND DISTANCE

No.	*Name*	*Club*	*1987*
1/351	Partridge, R. W.	Surrey & Hants	2.7
1/352	Dall, R. N.	Lasham (in France)	1.6
1/353	Hearne, P. A.	Lasham (in Spain)	5.8
1/354	Chambers, Cynthia	Lasham (in Australia)	6.1

DIAMOND GOAL

No.	*Name*	*Club*	*1987*
2/1538	Carr, S. L.	London	9.7
2/1539	Pick, K.	Cranwell	2.7
2/1540	Chapman, C.	Lasham	3.7
2/1541	Silver, M. J.	Yorkshire	5.8
2/1542	Galloway, J. P.	SGU	5.8
2/1543	Marsh, B. C.	Marchington	5.8
2/1544	Hine, J. N.	Devon & Somerset	5.8
2/1545	Watt, C. C.	Devon & Somerset	5.8
2/1546	Truelove, O. J.	Bicester	6.8
2/1547	Matyear, A. D.	Wyvern	6.8

WAS THIS AMY'S SOLO GLIDER FLIGHT?



I have great pleasure in submitting this non-sexist photo of a student pilot about to be sent solo in one of our sleek fleet of state-of-the-art sailplanes. Those who doubt my word are, I'm afraid, right. Actually the photo is one of a pair I found in a "dead file" box under a liberal sprinkling of dead spiders and bird droppings. It is captioned on the back: "Amy Johnson takes first gliding lesson, Dunstable, September 1937". Tim Hervey who is 91 years young and lives down the road and was our CFI at the time and taught Amy Johnson to glide, remarks that this was not, he thinks, her first flight – that would have been in an open primary Dagling. Neither he nor anyone else I've spoken to can identify the gentleman leaning over the cockpit.



This photo shows Amy Johnson at the top of the Downs, holding the ankles of someone else who is hanging on to the tail of a glider about to be bungyed. The visible bits of the glider suggest it may be a Scud, but no one is quite sure. Can anyone elucidate? We'd like to frame the photos for our bar, accurately *captioned. By the way, the original photos also have written on the back: "R (N?) Riley, Press Club, EC4."*

Tim Godfrey, *London Gliding Club*

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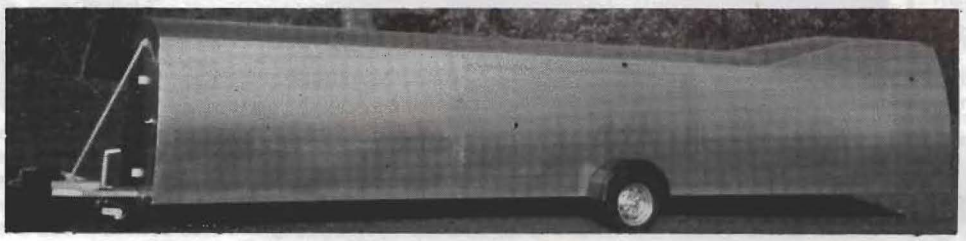


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2/1548	Arnall, R.	Wrekin	6.8
2/1549	Goodwin, M. P.	Bannerdown	6.8
2/1550	Reed, I. B.	Culdrose	6.8
2/1551	Campbell, D. M.	Clevelands	6.8
2/1552	Willes, P. T.	Marchington	6.8
2/1553	Mallinson, P. J.	Bristol & Glos	6.8
2/1554	Woollard, M. G.	Bristol & Glos	5.8
2/1555	Collingwood, D. L.	Lasham	5.8
2/1556	Jobbins, D. L.	South Wales	5.8
2/1557	Smith, J. L. J.	Culdrose	6.8
2/1558	Coppen, Alexandra	Lasham (in Spain)	23.6
2/1559	Wheeler, C. W. A.	Anglia (in Spain)	25.8

DIAMOND HEIGHT

No.	*Name*	*Club*	*1987*
3/803	Claughton, N. I.	Clevelands	16.8
3/804	Smallwood, A. W.	Yorkshire	30.6
3/805	Durham, M. W.	Clevelands	16.8

GOLD BADGE

No.	*Name*	*Club*	*1987*
1212	Perry, R. E.	Mendip	1.8
1213	Burlock, M. C.	Cotswold	1.8
1214	Lewis, W. T.	Cornish	5.8
1215	Silver, M. J.	Yorkshire	5.8
1216	Watt, C. C.	Devon & Somerset	5.8
1217	Truelove, O. J.	Bicester	6.8
1218	Matyear, A. D.	Wyvern	6.8
1219	Arnall, R.	Wrekin	6.8
1220	Campbell, D. M.	Clevelands	6.8
1221	Mallinson, P. J.	Bristol & Glos	6.8
1222	Woollard, M. G.	Bristol & Glos	5.8
1223	Jobbins, D. L.	South Wales	5.8
1224	Smith, J. L. J.	Culdrose	6.8
1225	Coppen, Alexandra	Lasham	23.6
1226	Smallwood, A. W.	Yorkshire	30.6
1227	Lemin, R.	Bristol & Glos	3.8
1228	Wells, M. J.	RAE	10.9

GOLD HEIGHT

Name	*Club*	*1987*
Buchan, N.	SGU	1.8
McPhillips, L. D.	SGU	1.8
Petrie, R. B.	Strathclyde	1.8
Allcoat, R. W.	SGU	1.8
Fisher, J.	SGU	1.8
Whitfield, J. W.	SGU	1.8
Walker, A. M.	SGU	1.8
Perry, R. E.	Mendip	1.8
Burlock, M. C.	Cotswold	1.8
Turner, P. M.	Midland	31.7
Smallwood, A. W.	Yorkshire	30.6
Adlard, S. A.	Midland	1.8
Lemin, R.	Bristol & Glos	3.8
Taverner, T. G.	Clevelands	16.8
Pentecost, Alexandra	Lasham	10.9
Clarke, Charlotte	Lasham	10.9
Wells, M. J.	RAE	10.9
Green, G. R.	London	13.9
Stembrowicz	Ouse	18.9

GOLD DISTANCE

Name	*Club*	*1987*
Carr, S. L.	London	9.7
Pick, K.	Cranwell	2.7
Chapman, C.	Lasham	3.7
Lewis, W. T.	Cornish	5.8
Silver, M. J.	Yorkshire	5.8
Marsh, B. C.	Marchington	5.8
Watt, C. C.	Devon & Somerset	5.8
Truelove, O. J.	Bicester	6.8
Matyear, A. D.	Wyvern	6.8
Arnall, R.	Wrekin	6.8
Goodwin, M. P.	Bannerdown	6.8
Campbell, D. M.	Clevelands	6.8
Willes, P. T.	Marchington	6.8
Mallinson, P. J.	Bristol & Glos	6.8
Woollard, M. G.	Bristol & Glos	5.8
Collingwood, D. L.	Lasham	5.8
Jobbins, D. L.	South Wales	5.8
Smith, J.	Devon & Somerset	5.8
Johns, R. S.	Devon & Somerset	6.8
Smith, J. L. J.	Culdrose	6.8
Coppen, Alexandra	Lasham	23.6
Wheeler, C. W. A.	Anglia	25.8

SILVER BADGE

No.	*Name*	*Club*	*1987*
7538	Titterton, D. G.	Midland	1.8
7539	Mann, Judy	Lasham	26.7
7540	Blows, L. G.	Southdown	26.7
7541	Paterson, I.	SGU	1.8
7542	Hall, D. G.	Avro	3.8
7543	Hahnefeld, M. E.	Southdown	1.8
7544	Petrie, R. B.	Strathclyde	1.8
7545	Allcoat, R. W.	SGU	1.8
7546	Hocking, M. C.	Cranwell	2.8
7547	Walker, A. M.	SGU	25.7
7548	Cresswell, P.	Lasham	3.8
7549	Atkinson, R. P.	Cotswold	5.8
7550	Davis, R.	Northumbria	5.8
7551	Graham, J. G.	Northumbria	5.8
7552	Jepson, W. F.	Burn	5.8
7553	O'Donnell, D.	SGU	10.8
7554	Ephriam, D. C.	Vale of Neath	5.8
7555	Wild, P. J.	Staffordshire	4.8
7556	Graves, A. T.	RAE	3.8
7557	Creagh, M. J.	Southdown	5.8
7558	Howells, V.	Blackpool & Fylde	5.8
7559	Hills, Sheila	RAE	15.8
7560	Fellender, G. S.	Cotswold	6.8
7561	Robson, S. B.	Devon & Somerset	5.8
7562	Moore, M. L.	Portsmouth Naval	25.7
7563	Brown, R. M.	Bicester	5.8
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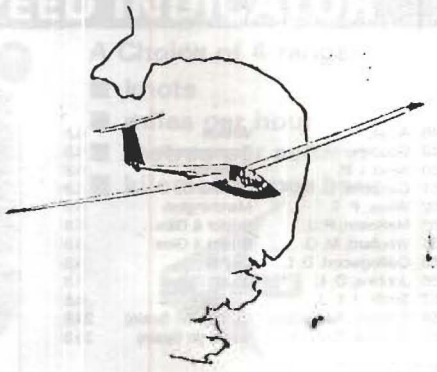
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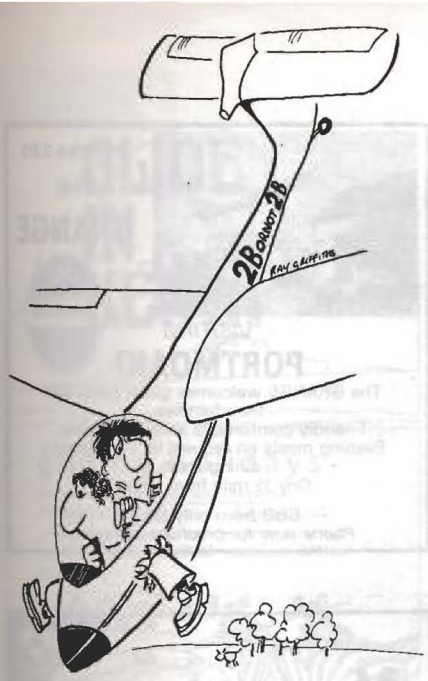


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BGA ACCIDENT SUMMARY –

Compiled by JOHN SHIPLEY, Chairman, BGA Safety Panel

Ref No.	Glider Type	BGA No.	Damage	Date Time	Place	Pilot/Crew Age	Injury	Pl/Hrs	Summary
89	Spatz 55	2419	M	10.6.87 1625	Harrington A/F	47	N	132	On a lead-and-follow cross-country exercise the leader landed on a disused airfield only to find the grass scattered with large concrete blocks. He advised the others to land elsewhere and this pilot selected a suitable ploughed field. Unfortunately this had 2ft deep furrows, which damaged the glider's tail skid.
91	Sport Vega	2713	M	1.7.87 1304	Nr Petersfield	19	N	80	On a cross-country flight the pilot decided on a field landing due to deteriorating weather ahead. A suitable field was selected and a normal circuit and landing carried out. At 15-20kt a wingtip caught in the grass and the glider groundlooped. The low wingtips on this type are thought to be a factor.
PHASE OF FLIGHT - ON CIRCUIT									
81	DG-100	2081	M	20.4.87 1600	Rattlesden	40	N	61	A visiting pilot flying a glider which he had only flown six times before, drifted downwind while thermalling, low down. On regaining the circuit he was distracted by a crowded landing area. The final turn was too low and the aircraft ground-looped damaging the wing and the tailplane.
82	Pirat	1848	W/O	21.6.87 1518	Arbroath	47	F	13	This was a **fatal** spinning accident. After two normal previous flights the pilot appeared to fly normally until, at 300ft on the base leg, he turned away from the airfield and entered into a full spin from which he did not recover.
PHASE OF FLIGHT - ON APPROACH									
57	K-4	—	M	23.4.87 1815	Dunstable P2	45 -	N N	138 -	**On a mutual flight** the aircraft was allowed to undershoot the normal landing area and the nose skid was broken in a rut. There appeared to have been some confusion between the pilots as to who was P1. **Club flying rules have been amended to prevent repetition.**
62	Skylark 4	1089	M	23.5.87 1530	Parham	46	N	33	After a site check the pilot flew solo. During approach he failed to notice the side boundary fence until too late and the wing struck a fence post. The glider slewed around damaging the main spar. The pilot aimed to land alongside the intruding section of fence but had not noticed how close it was.
67	Kestrel	1769	S	23.5.87 1325	Chipping	51	N	772	Abandoning an attempt to reach a ridge from a winch launch the pilot returned to the airfield. After a full flap final turn at 450ft an undershoot developed due to strong sink. In spite of reducing to half flap the glider landed short in a deep gully. The pilot was "rusty" after a lay-off and misjudged the conditions.
71	K-8	1715	M	31.5.87	Camphill	47	N	6	During his first one hour solo ridge soaring flight the pilot initially failed to see an approaching rain squall. After being caught by surprise he made a full brake descent back to the field. In concentrating on avoiding the squall he neglected his circuit planning and speed control, undershot and damaged the glider. **Further dual training is being given.**
84	K-13	2285	M	5.6.87 1951	Whatfield P2	54 -	N N	71 -	**Trial instruction flight.** On finals in light rain the glider was drifting and losing airspeed so the nose was lowered. The brakes were not closed and the glider groundlooped after undershooting into crops.
85	K-7	2187	M	7.6.87 1830	Pershore	38	N	1	After a 300ft final turn the pilot noticed that the airspeed had dropped and pushed the stick forward and closed the brakes. He landed in a nose high attitude on the edge of the concrete peri-track. The rudder and fin were damaged. Further training on circuit planning and approach control has been given.
PHASE OF FLIGHT - LANDING									
51	Bergfalke 4	2547	S	10.5.87 0935	Aston Down P2	57 56	N N	2500 7	P2 landed the glider normally but during the groundrun the left wing dropped, caught in the 9-15in grass which caused a groundloop that fractured the fuselage.
53	Pilatus B-4	2352	M	26.4.87 1800	Woodford	51	N	4	After a normal circuit the glider veered left on touchdown and ran into the boundary fence, 40yds from the runway. A slight cross/tail wind may have been a factor.
68	K-7	2851	M	29.5.87 1900	Winthorpe P2	59 18	N N	600 -	After a normal landing on the runway P1 turned the glider onto the grass alongside the runway to save turn-around time. As this was done the left wingtip **caught in the rape crop** and caused the glider to groundloop, damaging the wingtip, wheel and wing trailing edge.
72	K-8	2839	M	27.5.87 1645	Aston Down	69	N	5	After a 400ft cable break the glider made a normal circuit and landed on the grass. The glider then ran on to the runway, which had a slight downhill slope, and could not be stopped before hitting other parked gliders. A club member was seriously injured trying to stop it. Pilot had not landed on a runway before and did not know of the run-on effect.

90	Bocian	2904	M	3.6.6 1635	Husbands Bosworth P2	45 29	N N	319 -	P2 was instructed to land 50ft to the left of parked glider and did so. At the end of the groundrun the glider turned towards these and a gust of wind lifted the wing starting a groundloop. Taking control P1 found that P2 had braced himself on the controls and by the time he had relaxed his grip P1 could not avoid a collision with a glider. **I have control!?**
PHASE OF FLIGHT - OTHER (Including: Technical: Motor Gliders and Tugs)									
54	Robin DR400 Tug	G-EKOE	W	7.5.87 1815	Dunstable P2	35 -	N N	1600+ 1000 pwr -	After DI the tug was started and taxied to the launch point. Five minutes later a restart was attempted but failed. The cylinders were blown out and reprimed. The engine turned smoothly but did not fire. The crew became aware of smoke around the canopy, then flames. Both crew quickly left the aircraft. The aircraft caught fire quickly and burnt out completely. It is suspected that a fuel leak and electrical short circuit were the cause.
PHASE OF FLIGHT - LAUNCH - WINCH									
105	Olympia 401	2372	M	8.7.87 1600	Kitson's Field	46	N	7	The winch cable broke during initial rotation off the ground and the aircraft landed heavily with drift from 5ft. It bounced then landed again with a yaw. The wing support spar inside the fuselage was damaged.
106	K-4	2842	M	12.7.87 1447	Ridgewell P2	58 18	N N	2010+ 1900pwr -	After a longer than normal ground run the launch was normal until 200ft when the airspeed started to fall. At 300ft the pilot decided to pull off and started a circuit. He found he did not have enough height and went for a cross field landing. He undershot into a field of oil seed rape.
108	K-8	-	W/O	11.7.87 1940	Bryn Gwyn Bach	57	M	4	After a normal initial launch to 30ft the winch power died. The pilot was slow to react and the glider stalled, dropping a wing. The wing absorbed most of the impact before the nose hit the ground. The winch driver had seen a stop signal although apparently none had been given.
112	Kestrel 19	1944	S	1.8.87 1110	Winthorpe	24	N	98	At about 40ft into the winch launch ground run the rudder pedals slipped forward and the left wing contacted the ground. In spite of releasing, the mainwheel left the ground and the glider dropped from about 2-3ft. The fuselage broke in the ensuing groundloop. The pilot commented that the pedals had slipped once before.
114	Nimbus 2c	2641	M	20.6.87	Portmoak	35	N	456	The pilot elected to winch launch from a narrow strip with long grass each side. The cable broke at 30ft and as the glider touched down it caught the port wingtip in the grass and groundlooped. The area was considered to be unsuitable for launching large span gliders although safe for training gliders.
115	Astir CS	2180	M	1.8.87 1100	Weston-on-the-Green	46	N	125	At 400ft on a winch launch the pilot signalled too fast by yawing the glider. The canopy opened and smashed against the fuselage then jammed on the hinges. The pilot landed ahead with no further damage. He had been heard to go through his pre flight checks but could not have locked the canopy fully.
119	K-6CR	1281	N	31.5.87 1630	Aylesbury-Thame	45	N	16	On a wire launch the pilot heard an odd noise and decided to "gain height then abort the launch". At about 2-300ft the noise stopped so he continued launch, followed by a normal circuit and landing. The glider had **picked up another cable on the tail skid and the launch had continued in spite of a red stop signal to the winch.**
120	K-13	1481	S	16.8.87 1620	North Hill P2	23 45	N N	370 1	After aborting a winch launch at 75ft due to low power the cable chute ballooned over the aircraft; it landed safely ahead with the cable wrapped around the wing and tailplane. The winch driver then started to wind the cable in and this spun the glider around damaging the wing and tailplane. He should have waited for clearance to wind in.
124	Sport Vega	2671	M	9.8.87 1600	Winthorpe	40	N	1500	After a normal take off the pilot had reached 100ft when the winch "jumped" out of gear. He anticipated the power coming back on and left the recovery too late. When he lowered the nose he had insufficient height to regain full flying speed and struck the ground semi-stalled damaging the wheel fairing.
125	K-13	1611	S	23.8.87	Perranporth P2	57 33	N N	310 1.25	At about 300ft on the winch launch the pilot released due to low speed. He turned through 45° and landed downwind in a field adjacent to the runway. In the rollout, at about 40kt, the PI turned the glider to avoid a fence ahead and groundlooped, damaging the aircraft. He probably had sufficient height to land into wind on another runway.
134	K-7	1349	S	6.9.87 1230	Currock Hill	56	N	12.5	The pilot considered the launch too fast and had difficulty releasing (although no reason for this was found). No lift was found and heavy sink placed the glider too low in the circuit and a field landing was attempted. After a 60kt approach a heavy landing was made as he opened the airbrakes and pulled back on the stick at the same time.



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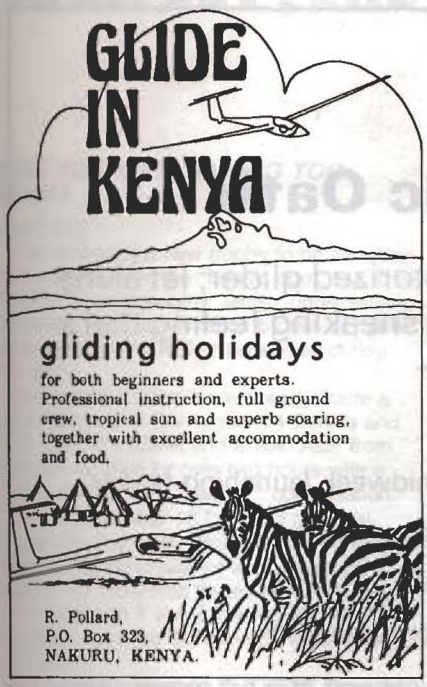
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PHASE OF FLIGHT - OFF CIRCUIT									
92	Skylark 2B	730	W/O	28.6.87 1515	Bellarena	46	M	68	In relaying R/T messages between a glider that had landed out on the beach and the site, for an aerotow retrieve, (the tug had no R/T), the glider pilot was so distracted that he allowed himself to get low behind a ridge and could not get upwind. The glider hit the ridge and was written off. The pilot escaped almost unhurt.
94	Astir	-	M	3.7.87 1550	Long Mynd	43	N	120	The pilot became lost in haze, so came down to 1800ft to establish his position. After doing this he had to make a field landing and chose a flat heather covered area. After a normal touchdown a wing caught in the heather and the aircraft groundlooped. The pilot commented that the area had looked similar to the overrun area at his airfield.
95	PIK 20B	2136	M	27.6.87 1530	Bredwardine	34	N	375	On a cross-country the pilot had to make a field landing, so chose a field from 1500ft then flew around it to check for slope. It was uphill into wind. After a normal circuit he realised he was undershooting so tried to dive and pull up over the hedge, but hit it. **Flap brakes,** a stronger wind than expected and the field's **uphill slope** were factors.
96	Dart 15	1296	M	2.7.87 1215	Clayhidon, Devon	56	N	112	The pilot was soaring 10 miles from his site when the lift stopped and a large field was selected. On finals, crossing the hedge, he found that his "grass" field was full of uncut barley. The glider stopped rapidly, damaging the tailplane. There was no wind movement from the crop, but tractor wheel lines should have been visible.
98	Astir Club	2741	M	15.5.87 1400	Nr Nympsfield	38	N	44	After drifting downwind from the airfield the pilot decided to make an out landing. A field was selected on track upwind. In crossing a valley to get to his field heavy sink was encountered. A 180° turn was made to a downwind, uphill landing, which damaged the glider.
99	Pirat	1819	M	4.5.87 1300	Chute Manor Farm	28	N	35	After selecting a field from 1200ft the pilot circled it prior to starting his circuit at **500ft.** He encountered sink on finals and had to land short of the downwind fence, which he hit. He had not noticed that the field short of the one selected sloped steeply downhill. This had probably caused the downdraft on finals.
100	K-6E	1495	S	4.7.87 1600	Potton, Beds	41	N	51	From 2000ft the pilot chose a playing field then flew away from it and, in spite of being within range of several small airstrips, turned back towards this first field. A poor approach resulted in an overshoot and he finally landed in a small (100yd square) field after first passing through the downwind fence.
103	SHK 1	2363	M	5.7.87 1700	Feshiebridge	31	N	950+ 2300pwr	The pilot made a normal approach and touchdown to his selected field but unexpectedly found it to contain knee-high grass and the glider groundlooped. The nose and rear fuselage were damaged.
109	K-13	1650	S	24.7.87 1810	Usk P2	46 47	N S	427 0.5	The K-13 was aerotowed to ridge 6 miles downwind from the site. The ridge was not soarable. P1 tried to return from 1200ft and found he could not make it. He passed over a landable field and pressed on over an unlandable area (towards the site) but ran into sink and landed in a hedge.
111	Kestrel 19	1515	M	4.7.87 1530	Nr Newbury	28	N	620	During a competition the pilot had to land out. The field chosen had a short crop and slight slope. Landing across slope he allowed the upslope wing to touch the crop and the glider groundlooped. Two fields away was a flat field that could have been used, but was rejected from the air due to its colour and some wires, although these were no problem.

F=fatal; S=serious; W/O=write off; M=minor; N=nil.

Correction: In the BGA Accident Summary in the last issue, p253, accident No. 70 gave the PI hours as 7 whereas it should have been 70.

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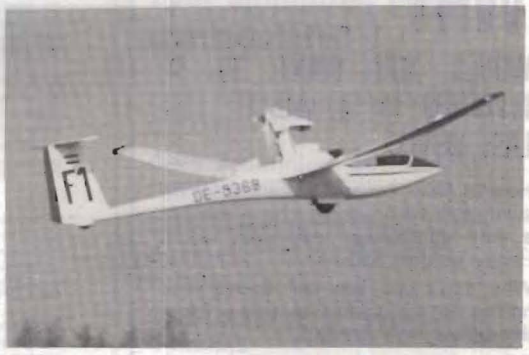
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YOUR LETTERS

HAVE YOU BEEN TALKING TOO MUCH?

Dear Editor,

I am proposing a new trophy to be awarded *via* the BGA. Called the "Emetic cup", it is to be given to the most lengthy, selfish, unnecessary, unthinking radio conversation by two or more pilots using gliding radio frequencies during the year.

Two groups of pilots have already made a bid for this trophy. On August 14 Dennis and A. N. Other in a Blanik and a Twin Astir from Shobdon excelled for over two hours with a "where are you" and "I am . . ." conversation.

But on September 13 Don and Malcolm, maybe from Dishforth, certainly from Yorkshire, added a new dimension of arrogance and puerility. For more than three hours they used 130.1 as though it was someone else's telephone. Not once did they use their formal call signs.

The trophy, incidentally, is a plinth mounted green plastic sick bowl with a stick on label.

VIC CARR, *Wrexham, Clwyd*

THE VIRTUES OF OLDER PILOTS

Dear Editor,

May I comment on Bill Scull's thought provoking article, "Old Pilots - Bold Pilots" in the last issue, p228. My club (Staffordshire GC) has ten members over 60 years of age - 12% of our pilots. Pilots of similar age were involved in 13 accidents - 8% of the total in 1985/6.

If our proportion is typical then 12% of (ancient) pilots have accidents, *ergo* 88% of (younger) pilots have 92% of the accidents. Perhaps we should look forward to 2020AD and an average pilot age of 65. And how about some insurance concessions - the ancient pilots should not be penalised just because they roll up in wheelchairs.

I like the categorisation of ancient pilots - "old pilots" being those of vast experience, "old students" being those needing to be lifted in and out of their gliders at *ab-initio* stage. And I agree that ancient pilots losing the necessary faculties should be gently persuaded to stop on the floor - or maybe they should be lovingly lifted into some unwanted equally ancient glider long since written down to zero value and be launched off into the great blue what's it . . .

However, I have some small reservations on the view that old pilots are generally OK by virtue of their experience, whereas old students would appear slightly suspect. My observations on SGC pilots generally, not to mention my totally unbiased point of view as an ex-old student, tend not to support this contention.

Of our ten grandads five are old pilots and five are old students. Or rather they were, since four of them now fly single-seaters. I am one of these four. It took me two years to achieve solo and another two years to get Bronze C. My age is my affair. The number of flights I suffered as an *ab-initio* is a closely guarded state secret, suffice it to say it was very substantial. This pattern is usually, though not always, the case for old students.

Our field is rather difficult - it is an unholy mixture of rough moorland, steep hillside, peat bog, stone walls and drainage ditches leaving a few small strips having a marginal degree of rough overshoot and zero undershoot.

Despite the difficulties the old students eventually succeed. Are they more at risk than other categories of pilot? I don't think so. Yes - ex-old students make mistakes - but so do the old pilots, possibly even more so. Perhaps this is because great experience can unwittingly lead to a slightly casual attitude at times, whereas the lesser mortals are more keyed up and concentrating harder.

Bill Scull makes a very valid point when he refers to "the steadily increasing instinct of self-preservation" of the old pilots. But this applies equally to the old students. By the time the rest of mankind labels us as geriatric we are getting weary of frightening ourselves to death; this is quite easy to do with your feet on the floor or your backside on the driving seat of a car.

My observations, on a difficult site, indicate that pilots over 60 years do not make more flying errors than younger specimens - and the latter's mistakes are often more fraught. No doubt this is partially due to their less developed instinct of self-preservation, but partly also to less experience. For example - if the old student did 200 flights *ab-initio*, and the younger man 50 flights, that at that stage the ancient one has four times the experience. As our CFI (regrettably an old pilot by definition, Bill Scull's not mine thank God) once said to me "Roy - the advantage you have over these youngsters with all the flair is that when you go solo, if ever you b***** well do, you can be sure that you've made every goddam mistake in the book. Meanwhile I enjoy flying with you . . . I like the challenge!" Very shrewd head on his shoulders our revered old CFI.

ROY GOODWIN, *Stoke-on-Trent, Staffs.*

WHY NO "MATURE PILOTS?"

Dear Editor,

I do not think it should be necessary to obtain further data from accident statistics as proposed by Bill Scull in his article to determine whether old pilots are a menace, since adequate data is already available from the motor insurance companies. This data has provided me with a substantial discount on my motor insurance for some years, since I am now identified as a "mature driver".

Despite this piece of incontrovertible evidence my glider insurance is loaded solely because of my age.

Does any reader know of an aviation insurance group that is amenable to statistics?

CHARLES ELLIS, *Ilford, Essex*

TRUTH WILL OUT!

Dear Editor,

Tell Dave Watt "Yes" and pass on my commiserations. (See the last issue, p257.)

PETER SHEARD, *Oxford*

COULD BE CONFUSING

Dear Editor,

After many years during which we turned the glider to the right when breaking away from aerotow, at the Burn GC we have now changed to turning left.

This is apparently to bring us into line with the usual practice. However, an article on aerotowing which was distributed with the last edition of **Accidents to Gliders** mentions the infrequently quoted briefing that in the event of an engine failure on the ground the tug will go left and the glider should go to the right.

Is it not illogical that in an emergency cast-off situation we are instructed to go *left* in the air but *right* on the ground? Confusion is more likely when near the ground, a time when an immediate decision is needed.

A. MURRAY WILSON, *Sheffield*

ENCOURAGE THE YOUNG

Dear Editor,

I find the attitude of the "poor glider pilot" disturbing. (See August issue, p203.) Leaving aside the sneer at the profligate spending habits of all young people, the writer's views are a reflection of the current gliding scene. Gliding is an expensive sport and it is unfair to force the more affluent pilots to subsidise the young pilots. However the reflection is a distorted one because of the facts omitted.

Any decision that denies helping new pilots has disastrous long term effects. New pilots give a continual injection of ideas and and enthusiasm and prevent gliding becoming a stagnant sport for an elitist minority. Glider pilots are regarded by the general public as eccentrics; the Government and its agencies can treat us as a sport on the level of croquet or go-karting.

The only way to combat this is to remove as much of the exclusivity surrounding the sport as possible by involving more people and to continue publicising gliding. This is not achieved by a self-centred attitude that permits only the financially endowed or those with lucrative earnings to enjoy gliding.

I understand the objection to subsidy in that it taxes some individuals' pleasure. However it should be recognised that each person in gliding contributes in different ways; the wealthier pilots give financial support and most seem willing to continue to subsidise club operations; in return the younger pilots give time and enthusiasm to run the club training and flying operations.

Any change in this effectively means switching to expensive aerotow-only operations for predominantly private pilots, with training being a minor issue. I would suggest that this is drifting to the gliding operations found in the United States and away from the West German style; and compare how much gliding is done in the USA and Germany (and how many World Class pilots they have).

If it is unfair to further subsidise young pilots then other means **must** be found to encourage them.

IAIN BAKER, *Hitchin, Herts.*

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CUT OUT THE HOSTILITY

Dear Editor,

I used to be a keen glider pilot and although I now fly a microlight I still manage a few glider launches a year and maintain contact with my old club. I look back on the cameraderie and general helpfulness of everyone in the gliding fraternity with pleasure and continually bore my microlighting friends telling them of the super people involved in gliding. I was therefore horrified at the following story, recounted at first hand:

A friend, who holds an instructor rating, was on a cross-country delivery flight in a microlight from Cornwall to the Midlands. He refuelled at Ottery but the combination of a freshening headwind and a new, tight, thirsty engine found him running short of fuel near a gliding site. He was non-radio but did a careful recce of the field and, seeing all was clear, completed a standard overhead join and landing pattern, taxied to the office, explained his problem and asked if he could buy some fuel. He then had enough for 20 minutes flying.

The answer was "If you have enough fuel to get over that hedge it's not an emergency. No we will not sell you any fuel. Go away!!" or words to that effect.

Is this really the standard glider field reply to a fellow aviator who has displayed good airmanship by carrying out a precautionary landing? Was it just because it was a micro? Would a Piper Cub, a Jodel or a Grob provoke the same response? I believe that Lasham do not like microlights and with their number of movements that is perhaps understandable, but a country club on a Wednesday afternoon?

Microlighting has had a bad press, a lot of it

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richly deserved, but the day of the cowboy with the hang glider and a lawnmower engine is long gone and the present micro pilot with a PPL(D) is certainly as qualified as any Silver C glider pilot, and his machine will have proper CAA approval. Of course, all pilots make errors. I did some damn silly things in my Jantar, but glider, micro or general aviator pilot, *ab-inito* or pundit, we all share the same airspace and a love of flying, so surely we can extend facilities and a helping hand to each other and cut out the unthinking hostility displayed in this sad episode.
P. J. LADD, Bradford on Avon, Wilts.

LIFE IN THE NORTH!

Dear Editor,

May I point out that there is life north of latitude 53N and the M1 does not finish at junction 21.

The Olympia 463 with a nose hook has been flying at the Wolds GC for at least five years, in fact unlike Bill Scull I am horrified to find that there are still aircraft flying aerotows on rear hooks. It is, in my opinion, high time a few ultimatums of the "see here by next C of A" type were issued.

Secondly, Platypus goes on about two-seaters. We had a two-seater competition but no sign of Platypus! If he couldn't come himself he might have sent Mike Bird.

We are running this competition again next year in the hope of more entries. As I am a Londoner I am prepared to volunteer my services as an interpreter to any south country crew venturing north.
MIKE USHERWOOD, *York*

UPDATE ON GLIDELINK

Dear Editor,

Since the article on Glidelink in the last issue, p236, was written, there has been a number of developments which will no doubt be of interest to readers, so here is an update.

We welcome to our team Steve Fry, our very own meteorologist. Steve is providing us with excellent forecasts containing exactly the information glider pilots require. Steve's impressive array of equipment means he can also supply weather information on demand, apart from the regular Glidelink forecasts. Users of Glidelink merely have to send Steve an electronic mail item to request a special forecast. There will be a small charge for "one-off" forecasts, though the regular forecasts continue to carry no extra charges. Because of the success of Steve's forecasts we consider it unnecessary to carry the CAA's General Aviation forecast, as we originally envisaged.

Among new subscribers are R.D. Aviation, who intend to provide a technical help and advice service. This will be free of charge and correspondence will in general be accessible to all subscribers who wish to benefit from Dickie Feakes' advice. Of course, confidential correspondence is still possible through E-mail.

A number of people have asked me if Telecom Gold is compatible with FAX. The straight answer is that it is not directly compatible. However, Telecom Gold is developing a FAX link which will enable you to receive text only FAX documents in your personal mailbox as easily as normal E-mail or telex.

The other main change is the alteration in the charging system announced recently by Telecom Gold and effective from October 1. This shifts the emphasis away from charging according to the time you spend using the system, and now relates the costs more to the *amount* of information you obtain from it. This unfortunately means that very large quantities of data such as are contained in satellite photos and weather maps have become prohibitively expensive so we have reluctantly dropped these from our future plans. A schedule of new charges is available from me at the address below.
DAVID STARER, *Glidelink System Manager, 39 Islington Park Street, London N1 1QB*

TRAILER UPSET

Dear Editor,

I started to read Michael Bond's article on trailer upset in the August issue, p186, with high hopes of learning something – only to find it long on exhortation and short on enlightenment, if charmingly written. I've spent many hours trying to rationalise car/trailer dynamics as I piloted a variety of rigs over the years. I haven't yet arrived at a model capable of definitive conclusions, but here are a few ideas:

A car/trailer combination behaves like a classic spring-mass-damper system whose damping reduces with rising speed, and eventually goes negative. Thus at low speeds the rig firmly resists a lateral disturbance. As speed rises it responds with a decaying oscillation; at a certain critical speed this neither decays nor increases – stability is neutral. Above this speed the amplitude increases. Once the snake amplitude is appreciable, I suspect non-linearity sets in to give direct, uncontrollable divergence. Once this occurs the occasion is over except for the crash – whether it is time for roly-poly, multiple-shunty or simply arsi-tarsy is a matter of luck. Minimising disturbances is worth doing, but less important than staying stable, or avoiding the precitation of instability, *eg* by braking. Choosing a car to minimise the consequences given by a jack-knife hardly competes!

My experience indicates that this critical speed is lower when the trailer is loaded and tyre pressures are low. It drops abruptly under braking and at least on my current car is sensitive to fuel state. I don't subscribe to the idea that car size or weight bears any relationship to snake behaviour. My Scimitar is big but not brilliant, while my old '56 Beetle was not at all bad. All combinations act differently; some are better than others, and some give more warning.

If we could actually understand the mechanisms involved with rigour similar to our treatment of, say, flight limitations, we might make trailing much safer than it is. Critical speeds might be amenable to placarding given car and trailer characteristics, important compliances identified might be amenable to simple modification, dangerous weight distributions might be avoided. We might even be able to cure the disease, rather than merely avoiding or suppressing the symptoms.

Has anyone out there followed this line through? Clearly energy is fed into the snaking motion at a rate which rises with speed. Compared with the kinetic energy in the system as a whole the rate of rise is not high, at least in "good warning" combinations, otherwise proprietary snake dampers would not work as well as they seem to. Loss of stability is probably a matter of small changes of relative amplitude or phase angle of large oscillating forces. This subject strikes me as a suitable project for some third-year degree student: how about it, university types?
JOHN STONE, *Farnborough, Hants*

POLES APART

Dear Editor,

I was most impressed by the article "Poles Apart" in the August issue, p192, dealing with the rift between BGA clubs and the Air Cadet Gliding Schools. I am a member of 661 UGS RAF Kirknewton; "the enemy" I believe the quote was. I also think the two sides should be brought closer together and suggest two possible ways.

I hold a grade one at 661 which basically means that apart from spending weekend after weekend driving winches and Land-Rovers, I occasionally fly cadets on air experience trips. Furthermore, some of my friends hold C category instructor ratings, teaching cadets to fly as well as giving air experience trips. Surely this type and span of experience can't be ignored by the BGA? But every time we venture to a club the standard reply after giving our ATC rating is "never mind about that, what BGA qualifications do you hold?"

We don't get much chance of gaining BGA certificates as in the eyes of HQ Air Cadets soaring and venturing away from the circuit is a crime.

I also feel that circuit bashing in a machine such as the Twin Astir is nothing short of a sin. Just as I try to sneak off into the horizon with Cadet Bloggs in the back loving every second, I receive a snapped recall or a reminder from Turnhouse radar that I should be below 1500ft.

Why can't young instructors in the Air Cadets such as myself be taught soaring and cross-country flying by BGA instructors on a summer course? I am sure there aren't too many instructors who would turn down a week or so of free flying in one of our machines at the expense of the RAF. Then once the conversion process had taken place, the cadets could be introduced to gliding properly as the article suggests and not have a mere five minute circuit.
CHARLES DOCHERTY, *Kirknewton*

CLUB NEWS

Copy and photographs for the February-March issue of S&G should be sent to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH, tel 0223 247725, to arrive not later than December 1 and for the April-May issue to arrive not later than February 9.

GILLIAN BRYCE-SMITH
October 7

ANGUS (Arbroath)

Les Joiner is retiring as CFI after more than 16 years and we are grateful for all he has done for the club.

Congratulations to Alec McInnes, Steve Hopkins, Rikki Stanton and Jane Watson on going solo; to Dave Porteous, Francis Webster and John Mitchell on their Bronze Cs, John also gaining Silver height; to Steve Barclay and Jim Forbes on their Bronze legs; to our chairman Mike Davidson for Diamond height at Aboyne and Les Horrobine on his 5hrs.

We ended the season with a barbecue and have the AGM in December.

H.McK.

Obituary - Doug Rodger

It is with great sadness that we report the death of Doug Rodger, tragiclally killed in a gliding accident on June 21 at Condor Airfield, Arbroath.

Doug joined us about four years ago and was quick to involve himself in many aspects of club activity. He demonstrated great technical ability in helping to maintain much of the club's radio and electronic equipment. He was involved in the committee work and was chairman of the Flying Committee.

He was an extremely popular and well liked man who always showed great enthusiasm and a love of flying. Everyone will remember Doug as one of those "nothing is too much trouble" people, whose quiet and gentle nature will be sorely missed by his many friends. Our deepest, heartfelt sympathy goes to his wife and family.

Bryan J. Morris

AQUILA (Hinton-in-the-Hedges)

I write this on the weekend we set off on our expedition to Portmoak and two weeks later a smaller expedition with some vintage gliders will have a week's wave hunting at the Long Mynd. We will be taking the Pawnee to help with the towing, giving its beefy pulls to great heights.

J.R.

BANNERDOWN (RAF Hullavington)

The season continued to be a poor one for weekend cross-countries but we had a steady flow of first solos, several pilots completed Bronze Cs and there were succeses in competitions.

Brian Logan (Ventus) came 15th in the Open Class Nationals; Simon Hutchinson (Discus) 13th in the 15 Metre Class Nationals; Mel Dawson (Cirrus) 3rd and Tom Eagles (DG-300) 4th in the Inter-Services Regionals (Class A), the latter flying 304km in a possible record time. Martin Goodwin achieved Diamond goal on the same day.

In the Inter-Club League Odiham beat us into 2nd place on the second visit to Sandhill Farm. Congratulations to Ralph Stobbart and John Arnold on completing their instructors' course.

D.C.F.

BICESTER (RAFGSA Centre)

The Inter-Services Regionals went extremely well although there were only five flying days. However, a 300km task for the A Class resulted in eight Diamond goals. Congratulations to Owen Truelove from Bicester and everyone else.

Yet again we have to congratulate Ted Richards. He won the B Class flying the Oxford University Twin Astir, closely followed by Paul Steiner in the club Acro. The A Class was won by Lynne Norman with a lead of 500pts, the first time a woman has won and a popular one at that. Graham Davey just beat Mel Dawson into 2nd place on the last day by 12pts. Best overall flight and novice competition went to Graham as well. Our thanks to the Centre staff for their excellent organisation and Val and Janice (bus dragons to you lot) thank everyone who used the bus facilities.

Congratulations to Merri Head on her Bronze C and Silver height; Bob and Anne on their Bronze legs; Ade, Bob and Stuart on going solo and FCA on completing his Silver C and good luck on his return to Turkey.

Congratulations also to John Delafield on winning the Open Class Inter-Services Regionals in Roanne, France.

C. & G.

BLACK MOUNTAINS (Talgarth)

So far this autumn we have had visiting expeditions from East Sussex, Bedford, Oxford and Southdown clubs.

Bill Dean is now our full-time tug pilot, replacing Norman Smith to whom we extend our thanks.

W.D.M.

BLACKPOOL & FYLDE (Chipping)

Ron Graham, John Reece, Mark Taylor, George Wearing and John Wood have gone solo; Dave Brown, Darren Evans and Val Howells have completed their Silver Cs and Mike Brooks, Jeff Johnson and Brian Lomas have successfully survived their instructors' course. Congratulations to all.

In September 1937 Stefan Komosa, a much respected member, first flew with the Polish RAF. This September we celebrated his 50 action-packed years of flying with a very enjoyable dinner and presentation.

Finally, our recent silly: Confusion now reigns as all four of the new Skylark owners are called John. Is this a syndicate or a Johndicate?

V.H.

BORDERS (Galewood)

Our chairman, Colin Sword, has resigned and his place taken by vice-chairman, Douglas Donald.

We had a difficult time recently when both our two-seaters were out of action. The Blanik's undercarriage collapsed and the T-53 had cracks around the wing fixings. Thankfully the Blanik is back and the T-53 should soon follow.

The omens looked good for a wave expedition from North Weald at the start of October. On the Saturday they travelled north we had a sample of autumn wave, 8kt up.

A.B.

BURN (Burn Airfield)

Congratulations to Andy Wright on his Bronze C and Silver height; to Austin Crew in his Silver C; to Lesley Naylor on her 5hrs and to Beryl Clark, Colin Ratcliffe and Neil Morris on going solo, Neil on his 16th birthday. We have two new instructors - Sue Webster and Steve Naylor.

The Mayoress of Selby had a trial instruction flight. The second Sky trailer will have its ritual burning on November 5

We had a very successful 1950s/60s evening with most dressed for the occasion, some digging out their old Teddy boy or flower power outfits.

S.W. & M.P.E.

CAIRNGORM (Feshiebridge)

The local Sports Council has awarded us a £500 grant to help in our recruitment of members.

The wave season started in October with three Gold heights and a duration from the Avon Soaring Centre.

We are looking forward to our 21st birthday party on October 17. Congratulations to John Longstaff on his AEI ratings.

S.M.

CAMBRIDGE UNIVERSITY (Duxford)

Our holiday courses were fully booked and brought several new members. The annual exodus to the Long Mynd gave Terry Slipper his 5hrs while Peter Baker and Martin Whitehead gained Diamond heights at Portmoak later in September, Martin to 21 000ft.

Congratulations to all the new solo pilots including Lorna Webb, Simon Lewis, Gordon Coupe and Chris Hawkins. One new solo pilot - Asoma - who arrived from Japan in April also learnt to speak English while learning to fly. This made training very interesting at times!

Congratulations also to Peter Whitmore on becoming a full category instructor.

G.K.F.

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CHANNEL (Waldershare Park, Nr Dover)



Emma Austin who went solo on her 16th birthday.

The open day was a sucess and the proceeds acquired an ex ATC winch from RAF Manston. With our new winch built by club member Dick Lukehurst, this has eliminated breakdown problems and long waits at the launch point.

Our first Silver distance from the site gave Liz Salt her Silver C. Congratulations also to Stuart Thompson (Bronze C); Dave Jones (MG PPL); Ardan Waters and Alan Hawkins (Silver heights) and John Tebutt, Robin Hart-Jones, Colin Stone, John Huggins, Jeremy Griggs, Ken Bowman, Derek Failes and George Gallagher (on going solo).

Emma Austin went solo on her 16th birthday and her birthday present was a share in a Swallow given to her by her mother Liz and stepfather John Salt, CFI.

G.G.

CLEVELANDS (RAF Dishforth)



Gary Mennell also soloed on his 16th birthday.

Not a brilliant season but we have had some achievements. Dave Campbell has Gold distance; Neil Claughton and Martin Durham Diamond heights, Martin achieving a new site record with a 28 000ft climb, and John Goss and Gary Mennell have gone solo, Gary on his 16th birthday.

While many members enjoyed the Inter-Services in France, our faithful canteen bus had its moment of glory at home, being admired and photographed by a party of London bus enthusiasts.

The return of the K-7 gives us five two-seaters.

Visiting pilots and gliders are welcome to our usual Christmas/New Year wave session –please write for details

J.P.

CONNEL (Connel Airfield)

We have completed our hangar and are enjoying the luxury of not having to rig and derig. Our thanks to the members who worked so hard to achieve this.

Congratulations to John Anderson and Alex Fleming on passing their assistant instructors' rating; to Rob Foster, Mike Waddell and June MacLean on going solo and to Ian McArthur and Dave Whitelaw on their Bronze Cs.

We have been very busy again this summer with trial instruction flights.

W.MacL.

CORNISH (Perranporth)

A static display of the club K-6E by Mike Soggett and his crew at the RAF St Mawgan air day resulted in several visitors coming for trial instruction flights.

Our barbecue on August 8 was such a resounding success despite the indifferent weather we had a repeat performance on August 30. Many thanks to Dorothy, Kathy and Sean.

The club K-13 suffered a bad landing recently but was quickly repaired and back in the air within the week.

Congratulations to Ivan Foster on going solo and to Bill Lewis for Gold distance while at Lasham.

G.A.H.

COTSWOLD (Aston Down)

Congratulations to Stephen Cook on his Bronze C and to Terry Gardner on his assistant instructors' rating. Our pilots turned out in force for the Enstone Regionals and a good time was had by all, several being well placed. Bar takings must have been astronomic!

The installation of a wood-burning stove in our new bar has made the tower a far more hospitable place on winter days and the hard work of Chris and Sandy Clark, Terry Gardner and many others in the refurbishment is greatly appreciated.

G.M.

(In the last issue we implied that Terry Gardner flew his 5hrs whereas he was congratulated on his duration flights during the Western Regionals. Also Howard Jones should have been Howard Johns. Our apologies. ED.)

COVENTRY (Husbands Bosworth)

Cross-country kilometres are down on last year due to the weather but the courses have gone very well and brought a lot of new members.

Congratulations to Anne Frank on her Silver distance to Saltby. Over the winter flying will continue on seven days a week, by demand.

The Vintage Glider Rally was held here in September and over 80 attended the annual dinner with guests from Switzerland and Holland. Some members are making an annual trip to Feshiebridge.

D.L.S.

Obituaries

We are deeply saddened to report the death of two of our members in one of the Chipmunks on the airfield on September 22.

Jim Jesty

The most vivid and affectionate memory I have of Jim goes back many years when we became friends during the course of business. He was driving a fork lift truck giving a regal wave to myself and his staff. Jim had a happy knack of seeing the amusing side of any situation. A highly ingenious and resourceful character, he built his engineering company into a thriving concern.

As our friendship deepened, I got him interested in gliding and he had his first trial instruction flight. He was at once consumed with his customary enthusiasm and went on to progress at the most remarkable rate, becoming a superb cross-country pilot and achieving two Diamonds in his Kestrel 19. Through his friendship with Bob Bowles he became an equally successful power pilot, adding an IMC rating to his impressive list of credits.

At his untimely death, Jim was one of our assistant CFIs and assistant tugmaster. His energy and enthusiasm was an example to us all. Universally loved and respected he is the saddest imaginable loss.

Andy Smith

Neil Jones

I first met Neil four years ago when he came to us from Pershore and his boyish enthusiasm for all aviation matters impressed itself upon me instantly. During this time he worked hard to perfect his flying, gaining his Silver C and becoming a competent cross-country pilot. He regularly took part in the Inter-Club League and last year flew 300km in his first cross-country in his SB-5E. This year he gained an AEI rating and recently began to fly the tugs.

Neil was perhaps the most honest man I ever met. He was perfectly direct and said just what he felt, sometimes to the point of being abrasive. This side of his character concealed a man of feeling who would help anyone, anytime, anywhere. I have many memories of Neil, of how we shared the winch driving on Wednesday evenings in the summer, and when he got his PPL, we flew to Old Warden in his power plane, taking turns to fly and navigate. When we landed he turned to me, smiled and said in his Welsh way "Well that's my first cross-country in this thing, thanks for your help, boyo." To this day I still don't know if he was joking!

In Neil, the sport has lost one of those characters which makes it so very rich.

Martin Chamberlain

CRANWELL (RAFGSA)

We congratulate Graham Pitchfork on his Silver C and assistant Cat rating. Also new solo pilots Andy Flynn, Andy Williamson, Martin Rogers, Paul Pitchfork (plus two Bronze legs) and Laurie Whitaker; Phil Parsons on his Bronze C; Mark

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— Did you see the article in *S & G* (Aug '86 p. 184) —
— Did you see Derek Piggott's letter in *Pilot* (Nov '86 p. 14) —

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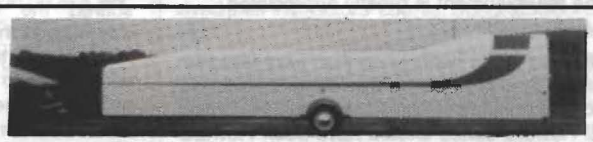
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Paul Pitchfork is congratulated on going solo.

Dickson and Mick Smith on Silver distances and Peter Retzer and Matt Hocking on Silver heights.

Mick Lee, Paul Pitchfork, Dave Montgomery and John Lawson won the Wold GC's Two-seater Comp in our Janus. Barry Briggs won a trophy for the most meritorious overall performance in his Weihe at the Vintage Glider Rally at HusBos.

S.J.H.

CRUSADERS (Cyprus)

The soaring season is back. Congratulations to Pete Marshall on the first Silver height of the season without a barograph and to the many who have gained Bronze legs.

Peter Ralph takes over as chairman from Derek Smith who continues to help with secretarial duties. The Grob 109B is getting a lot more club use whilst we still keep the Falke.

Thanks to a grant the clubroom furniture is being replaced. Visitors to Cyprus will get a very friendly reception at the club.

T.J.D.

DARTMOOR (Brentor)

It has been a very successful season with 44 keen members as the backbone of the club but being in a tourist area we attract large numbers of temporary members. It has been great seeing seven gliders in line.

To liven up non soaring days pilots have improved their skills spot landing on our shorter cross runway. Tjel Ellefsen has assisted with publicity by displaying a glider at two big local horse shows.

Negotiations for our long lease are still dragging on and a lively club meeting selected its priorities for winter work. A new hangar was first but the merits of another winch, different retrieve vehicles and two more club gliders were hotly debated. Practical considerations such as availability of second-hand materials will influence our choice. Syndicates seem to be ensuring the arrival of more gliders.

F.G.M.

DEESIDE (Aboyne)

After Enterprise, July and August reverted to the 1987 norm by being cool and miserable. The smell around the chairman's glider turned out to be due to the drains and not a rotting glider, so further works were carried out by our local moles, Alistair Stark and Jim Rixton.

As the elusive wave became more evident in September there was increased activity over 20000ft. Cross-country flying got a boost too with several Silver distance flights. September 26 was the best day of the year so far with several Diamond heights and Terry Slater flew the first declared 500km in wave from Aboyne, although the claim may fail on technicalities.

Safe trailering to those still to come.

L.E.N.T.

DEVON & SOMERSET (North Hill)

Our second task week from August 3-8 was very successful with over 5000km flown. First was Dave Reilly (Libelle) with Colin Watts and Ian Stone 2nd in the club K-18 and Julien Hine (DG-100) 3rd. Julien flew Diamond goal, Colin completed his Gold badge and Johnathon Smith flew Gold distance. Our thanks to Tim Gardner and his assistants for making it so successful.

Silver height was claimed by Rex Grayling, Ron Smith and Bill Hatch; Steve Robson Silver distance and 5hrs to complete his Silver C with 5hrs for Rex Grayling, Bob Chant, Bill Hatch and Peter Hill. Our congratulations to them all.

D.A.R.

DORSET (Old Sarum)

As the summer (?) draws to a close, our membership is increasing at a steady rate and has again topped the 100 mark. Thanks to the winch modifying team, Alan Coatsworth, Tony Pattimore, Nick Antcliffe and Terry White, we have a more reliable launch rate.

Congratulations to Chrissie Perritt, Paul Netton and Ray Choules (going solo); to Nick Antcliffe (Bronze leg); Hugh Stewart (Silver C) and Colin Weyman (AEI rating). Also to Julian Rees who flew his Libelle from Lasham to North Hill and back for Diamond goal.

J.R.B.

ESSEX & SUFFOLK (Hadleigh)

Congratulations to Sue Alchin and Chris Nunn (on going solo); to Mervyn Gooch and Mike Farr (Silver Cs); to Marion Doran and Wally King (Silver heights) and Peter Nicholls (Silver distance). Also to Peter Codd, Vivien Haley and Paul Rice for completing the club 100km triangle, Paul completing the 200km triangle as well.

Our appreciation to Ken Steward, national coach, who held a cross-country course during August, but although the lectures and opportunity to fly the ASW-19 and the Janus made it worthwhile, the weather was poor with little cross-country flying.

V.H.

FENLAND (RAF Marham)

Since we last wrote we have had numerous Bronze Cs, Silver legs and completed Silver Cs. In particular we congratulate Gary Bennett who despite being wheelchair bound, found success by going solo and gaining a Bronze C.

We have had an almost record breaking year with many kilometres flown and many launches. Congratulations to Lynn Norman on winning the Inter-Services A Class (see also Bicester report). We were also represented at the Open Class at Roanne, France, by Terry Mitchell and Jerry O'Dell.

We sadly say goodbye to George Baber who goes to Cranwell after organising yet another successful Swanton Morley soaring week.

N.J.T.

HEREFORDSHIRE (Shobdon)

We have had a successful course season with lessons learnt to improve things next year. We are now preparing for the AGM and a major fettling session is due on our Grob 109B.

Congratulations to Brian Sedgwick on passing his instructors' course.

D.J.

HUMBER (RAF Scampton)

Our K-13 is back after extensive repairs and Sally Edwards is now fully serviceable. She has flown again, which is a particularly good effort on her part under the circumstances.

Though the weather and the Red Arrows' movements have severely restricted our operations, we have had a very successful year and continue to go from strength to strength. Congratulations to Dave Maggs and Sarah Wilson on going solo and to Julian Smith on completing his Bronze C.

We held a successful open weekend in September and thank Cranwell GC for their support and the loan of their Janus.

R.G.H.

KESTREL (Odiham)

Although at times the weather has been extremely poor we have a fair number of achievements. Congratulations to Paul Sloane on going solo; to Bob Davis for his 5hrs and distance to complete his Silver C; Bobbie Stone for her 5hrs and numerous 50km attempts and to Steve Nash for declaring 618km and obtaining 500km to complete all three Diamonds.

We formed a new league for the Inter-Club League and promptly won it after a close fight with Hullavington.

We have a small wave expedition to Dishforth

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over the Christmas/New Year holiday. The Christmas dinner-dance is on December 5 - previous Kestrel pilots are welcome.

J.N.

LAKES (Walney)

Our courses have been a great success. We ran 14 with over 90% of places filled. Nicky Rowan, tug pilot for all the courses, did a wonderful job as did Pauline Reeve our course cook.

Reg Curwen, a great friend of the club for many years, had his 10000 launch whilst instructing during a course. Our congratulations to him and to David Hannah for his Bronze C. Peter Craven and Peter Redshaw have bought a Nimbus 3.

M.S.

NENE VALLEY (RAF Upwood)

Congratulations to Alan Haiek, Roger Emms, Alan Smith and a special mention to Neil Cannon on going solo.

Our open house (longest day) was the best and our thanks to all who helped to make it such a success including the Air Cadets, 511 Ramsey Sq, for their contribution.

We would like to say thanks for the time and effort members put in to building our winch. It runs like a champ.

T.S.

NEWARK & NOTTS (Winthorpe)

While Helen Hepworth and Pete Sanderson were being married on August 15 at the church near our site, Mick Ward (SHK) was performing loops over the congregation. Not many weddings can boast their own airshow!

The combined course and flying week was a great success with the weather kind for a change.

Congratulations to Clive Breedon on going solo and to Mike Medland and Dave Redfurn on their Bronze Cs.

The Northern Inter-Club League was a great success with Camphill going to the finals. Marchington came 2nd, we were 3rd and Kirton-in-Lindsey 4th - our thanks to all who took part.

N.A.C.

NORFOLK (Tibenham)

There were several interesting flights during a most successful expedition to Aboyne with Roy Woodhouse, our CFI, getting Gold height. John Ayers is planning a third trip to Aosta for next spring - it's only a bit further than Aboyne.

Our thanks to Stuart Napthen who has cleared our runways of rubbish with his mechanical shovel. Our new Condor climbs well, even towing the IS-30, but we might not have to rely on aerotows indefinitely - a certain amount of winch building has been going on.

M.J.R.I.

NORTHUMBRIA (Currock Hill)

Our new winch is now operating due to many months of work by Bill Fuller and his helpers.

A good thermal day on August 5 gave three Silver claims - Keith Bell (Oly 2B) gained distance and height with a flight to Wolds GC and claimed the crate of beer on wager for the first flight between the two clubs; John Graham (Pirat) achieved his 5hrs and Ron Davis (Vasama) flew Silver distance to Sutton Bank. Several others landed on cross-country attempts.

September 13 was an excellent wave day with Norman Crawford achieving 13000ft for Gold height as well as his 5hrs and Graham Addison flew to Sutton Bank, claiming Silver distance and height.

We hired the BGA ASW-19 for a week in September and most of the post Bronze C pilots enjoyed exploring its capabilities in thermals and wave flying.

R.D.

OUSE & HAMBLETONS (Rufforth Airfield)

Despite the poor summer our mid-week courses have been popular and successful. Since the Hambletons' merger our fleet consists of four two-seaters and five single-seaters including an Astir. Next year we expect to be operating seven days a week in addiiton to the courses, offering soaring weeks and launching facilities to all comers.

Our Condor tug went in September after 14 years' faithful service - we plan to upgrade our Super Cub. Congratulations to Howard McDermutt-Roe on his Silver C.

N.J.H.

PETERBOROUGH & SPALDING (Crowland)

The end of a very busy season draws near with a much increased number of trial instruction flights. Congratulations to Richard Kilham on his Silver leg to Duxford and to our merry band of soloists. The Pirat is up for sale while we decide on its replacement.

P.N.W.

PHOENIX (RAF Brüggen)

Obituary - Sue Cavener



Sue in the front of the K-21 giving trial instruction flights during RAF Brüggen's open day.

It is with regret that we announce the death of Sue who was tragically killed in a gliding accident near RAF Laarbruch. (See the last issue, p250.)

Sue had been gliding for four years and was a meticulous pilot, brilliant organiser and had developed into a good instructor. Her patience, understanding and consideration will long be remembered by many students. She had time for everyone and always gave her best. No fair weather pilot, Sue would help on the airfield in all weathers and her well remembered smile brightened many a day.

The shock of her death is difficult to accept and the club extends its sympathy to her parents and to her colleagues at the Services Sound and Vision Corporation at Rheindahlen.

I. R. Tench

RAE (Farnborough)

Despite indifferent weather it has been a successful year for the club. We have several new PIs - congratulations to Dave Pearson, Hugh White, Jenny Kelleher and Duncan Pride. We have three new Bronze Cs and 14 Silver Cs, with one of each for Tim Graves.

An expedition to Aboyne in September resulted in an number of Gold climbs in the club Vega and a syndicate K-2, with our CFI Mick Wells completing his Gold badge.

Kestrel GC visited us while their field was taken over by hundreds of model aircraft. We also have a new Chevrolet Blazer towcar, lovingly converted and nurtured by Fergus and Eric.

M.T.D.

RATTLESDEN (Rattlesden Airfield)

Weatherwise our September flying week left an awful lot to be desired like the season. However, Martin Aldridge (Vega) flew Silver distance; Peter Neeves (Pirat) Silver distance and height and Dave Dowling (K-6) 5hrs. Special congratulations to Roger Devonshire who, after several years of interrupted attendance, has at last soloed and to Brian Griffiths who finally completed his Silver C with a duration after many aborted attempts - two very popular results.

We have accepted the opportunity to buy our runway with sufficient extra land to operate a cross-strip and considerably improve facilities. We are under no illusions as to the amount of time, hard work and, above all, money the project will take, but the chance of future security and expansion is too good to miss. Our special thanks to Roger Watts, our landlord and chairman, for making it possible.

R.W.

SCOTTISH GLIDING UNION (Portmoak)

September brought a few thermals and some fine wave. At least two Diamond heights were obtained by early visitors on September 26, one up to 21000ft. (See Cambridge University.) On the same day two aircraft flew from Aboyne to Portmoak for very generous Silver distances.

Congratulations to Alan Walker on completing Silver C; to Colin McAlpine on his Diamond goal (again on September 26) and to John Galloway, who had a good Comp at Sutton Bank, coming 6th and gaining his Diamond goal in the process.

Portmoak will be the poorer without Roddy McLean, a mainstay of Saturday instructing and

Tuesday club flying for many years - we wish him happiness in his marriage and move to Norfolk. We have missed George Lees, who has recovered well from his, fortunately mild, stroke to be flying in the two-seater six weeks later. Our thanks to Kenny George for his long stint as safety officer. He handed over to Stuart Mitchell.

M.J.R.

SHALBOURNE (Rivar Hill)

One or other of our club gilders have been off line most of the season but were all back for our successful open day in September which resulted in an influx of new members. The Bergfalke 2 syndicate made its debut that day.

Thanks to the negotiating skills of Geoff Nicholls we now have a separate landing area to the side of our main runway and the cross runway is being extended for launching. We are also smartening up the clubhouse.

Congratulations to Duncan Adams (Silver C); Stan Oram (Silver height) and to Paul Nickson, Dennis Maynard and Gillian Shepherd on going solo.

S.C.O.

SOUTHDOWN (Parham)

Congratulations to David Eckford, Steve Way, Peter Williamson and David Livesley (going solo); Graham Brett and Dave Wright (Bronze Cs); Eddie Hahnefeld (Silver C) and to Les Blows for his Gold height at Aboyne.

The Eagle did our Harry-Harting ridge run and got to 10000ft at Talgarth on consecutive weekends.

P.C.F.

SOUTH WALES (Usk)

Congratulations to our team who came 2nd in the Inter-Club League final.

Our new Pawnee should be delivered in October. A trail-dragger conversion course has prepared our tug pilots for the change from the Rallye and we look forward to a faster launch rate in a wider variety of weather conditions.

Continuing work on the club buildings includes reconcreting the hangar floor and new roofing and central heating for the clubhouse. We have smoother take-offs after filling in some of the holes in the field.

Well done to our new solos including another husband and wife team, Rod and Maureen. Congratulations to Ralph and Aileen Stevens on their Bronze Cs and Greg Scott and John Milsom for Silver Cs. We welcome John Phillips back on the instructor team.

L.R.B. & J.M.B.

STAFFORDSHIRE (Morridge)

Congratulations to Phil Wild on Silver distance in the Olympia 419 at Sleap and commiserations to Eddie Willis for achieving the distance without switching on the barograph.

Andy Tate, Jadge Singh and Chris Harris converted to the K-18 before it went to Portmoak for a month's annual expedition. Peter Gill passed his instructors' course at HusBos.

We have a new mower and a much newer tractor, presented by Bob Crinean at a truly bargain price.

M.J.P.

STRATFORD ON AVON (Snitterfield)

After many years of frustration with conflicting activities at Long Marston the club has a superb new site at Snitterfield with 65 acres of beautiful grass on the old airfield. A tremendous amount of hard work and dedication by the committee and enthusiastic members eventually proved successful giving us a 25 year lease, planning permission for a hangar, clubhouse and workshops with flying every weekend. The decision to move was followed by tremendous support from working parties over the August Bank Holiday and effected with great efficiency worthy of a military operation.

We were flying within two weeks, have proved what a great soaring locality we have with numerous thermal sources surrounding our site and look forward to the spring. Our winch has proved its capability with 1400-1600ft launches experienced.

It is vitally important that visitors are aware that Birmingham SRA is only half a mile NE of our wooded eastern boundary and must not be intruded at any time by gliders. In addition, our planning permission excludes powered aircraft so aerotow retrieves are out. Access by road is ideal with the new Stratford northern link A46/ Warwick by-pass open or from the A34 Stratford on Avon/Birmingham road *via* Bearley.

H.G.W.

TRENT VALLEY (Kirton-in-Lindsey)



Malcolm Carpenter doing his checks before going solo.

Many thanks to Wolds GC for their warm welcome and hospitality during the Two-seater Comp in August. We had a good time despite the lack of thermals. Our K-13 came 3rd whilst our singing act was voted top turn on party night!

We have a new assistant instructor, Mark Innes, who completed 4½hrs instruction on his first afternoon as PI.

Congratulations to Roy Lingard (Silver distance); Sandra Williams (Silver distance and duration) and to Mick Wildish, Paul Gardner and Malcolm Carpenter on going solo. Malcolm went solo on August Bank Holiday after flying with the club for nine years - an extra special achievement for him as he has no legs. A K-13 was adapted for him by John Cook who designed the hand-controlled rudder apparatus. On his second solo launch he soared for over 30mins. We wish him many more good flights.

L.W.

ULSTER (Bellarena)

Our national TV debut will be seen about the time these notes appear, with a visit by Harry Secombe for his *Highway* series (ITV, Sunday evenings) for which we mounted a beach session from Benone on September 23, filmed by a battalion-sized crew.

Ten days later we held a farewell barbecue for Jackie and Bep O'Donnell who are making their second emigration to Western Australia. Several members were on the annual expedition with the Dublin GC to the Kerry beaches, one of the best ever with excellent ridge and wave soaring, and some thermal, from both Fermoyle and Inch strands, and the syndicate K-14 ranging afar. Cecily Begley worked particularly hard adding to her customary distinction as safari chef and caterer her new responsibilities as Dublin CFI.

Harry Boyle, our chairman, has just returned from Fuentemilanos in Spain enthusing about a 500km O/R with World Champion Ingo Renner voicing encouragement and instruction from the back.

A big hit at the Aldergrove airshow was not only the aerobatics by Jeremy Bryson and Gordon Mackie in the Twin Astir and PIK 20E but the Blair/ Farrell homebuilt Moneral on static display, variously poked, prodded, kicked and thumped by most of the 50000 crowd. Vigorous leafletting has resulted in some new faces on the field.

Our newest solo pilots are QUB students Brian Farrell and Moore Allison, while DG-400 operator William McNair is now tugging in our re-liveried Super Cub 180.

R.R.R.

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VECTIS (Sandown Airport, Isle of Wight)

Congratulations to Andy Taylor on going solo; to John Pragnell and Andy Noctor on their second Bronze legs, and Roy Tiley on his first, and to Ken Taylor for his AEI rating.

Our apperance at the gourmet festival and an open day resulted in many temporary members, some who have now joined as full members. August saw some good soaring and a rare SE wind gave everyone a go at cliff soaring. We also had a beach barbecue that month.

We now have a caravan to act as a focal point at the airfield.

J.E.P.

VINTAGE

The Vintage GC now has over 650 members which should make it one of the largest gliding clubs in the world.

Bad weather curtailed flying in Europe this season. Keith Bell flew his EoN Olympia 132km during early August gaining all three Silver legs, although he had one already. On reaching his goal at Pocklington, he flew a 100km triangle making a total of 232km. Barry Briggs flew 200km in his 1943 JS Weihe from RAF Cranwell. These were the two best flights of the season.

Our National Rally with 21 gliders was from May 17-24 at Camphill with 1½ days' soaring. The Rodi Morgan plate was awarded to John Smoker who climbed his self restored 1936 Grunau Baby 2A to over 5500ft above site. The north-east wind was never on any of the slopes (except briefly). The Derbyshire & Lancashire GC made us as usual very welcome.

Other rallies were held at the London GC from July 26-28 and at Wycombe Air Park at the end of August. The first only gave local soaring along the slope in a southerly wind but the second produced two fine afternoons with some brilliant local soaring over a large area of the Chilterns.

C.W.

WREKIN (RAF Cosford)



Steve Judd is yet another to solo on his 16th birthday. Photo: *Birmingham Post & Mail.*

The club Discus has at last arrived and did 50hrs and eight field landings in its first month. We are very impressed with its performance and handling.

Congratulations to Richie Arnall on his 300km at what seemed like his 300th attempt. Commiserations to Geoff Matthews who photographed a railway station 5km short of the correct one on the same task. Also well done to Steve Judd who went solo on his 16th birthday, the thunderstorms staying away just long enough. Keith Harsant has passed his 1000 gliding hours with "some very close shaves but no accidents."

The AGM is on December 5 in the clubroom - if you want to come please do.

M.B.

WYVERN (RAF Upavon)

Several members did well in the Inter-Services Regionals. Adrian Matyear came 8th in the club Astir and completed his Gold badge with a 300km flight. Pat Farrelly won the Kestrel trophy for the best placed pilot in his first competition (11th in Class B flying a K-23). At Roanne Pete Cook (Nimbus 2c) came 2nd and Roy Gaunt 5th in the Kestrel 19. Congratulations to them all. The Cirrus has gone to Odiham and we await the arrival of the Discus.

A very successful *ab-initio* course was run by John Bradley, Alan Brown and Adrian Matyear at the end of September when six out of nine went solo. Well done to Charlie Barker, Danny Flynn, Dave Bromham, Nigel Davis, Paul Cawkwell and John Webber; also to Terry Jackson on his Bronze C.

We were pleased to see Denzil Connick in the K-23 on TV along with a few regular faces in "Once a Soldier" screened in September.

D.B.

YORKSHIRE (Sutton Bank)

Obituary - Dick Stoddart

Dick, who was one of the most enterprising and best liked glider pilots in the country, was killed in a mid-air collision on August 16 at Sutton Bank. With 2500hrs of almost entirely cross-country flying the accident was both tragic and inexplicable.

Dick started flying in Germany in 1948 and obtained his Gold C in an epic downwind dash from Carlton Bank in his Dart 15 in 1968 (it was also Sybil, his wife's, first solo with a trailer) and he completed all three Diamonds in 1982. Each year he was near the top of the National Ladder. His logbook shows over 20 flights of wave climbs over 10000ft and 25 cross-countries over 100km per year over the past seven years.

As competition director and task setter at this year's Northerns he set the longest O/R ever for this Regionals. Half the field completed the task while he flew a complete circuit of the Lake District "because he'd always wanted to do it." Apart from his milk run to inspect the Derwent reservoir which he had planned and built as chief engineer for the North East Water Authority, his aim was to cover ground that he had never flown before. One of his many 750km triangles planned included Snowdon as a TP with a track home to the west of the Manchester control zone.

Always humerous and contentious, Dick was a pillar of the Durham Civil Society, a brilliant water engineer, had a religious belief in the efficacious properties of masking tape and had the happiest possible of marriages to Sybil. We shall always miss him and not hearing Zebedee call Dougal will be like a summer without swallows.

Nick Gaunt

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OVERSEAS NEWS

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PLAIMONT COMPETITION

This French competition, divided into two with the first half at L'Aave (Buno-Bonnevaux) GC, near Paris, for the flat part with the mountainous section at St Auban, held from July 28-August, was won by Jean-Renaud Faliu (LS-4), the president of Buno-Bonnevaux.

During the five "flat" days they flew tasks averaging 350km, including a 505km triangle, and during the four days in the mountains tasks averaged 230km. William Malpas (GB) came 5th flying a Ventus 17.

Anyone wanting to compete next year, contact Jean-Renaud Faliu, 92 Rue Raynouard, 75016 Paris, France.

ITALIAN COMPETITIONS

To get Italian pilots used to flying over flat land often experienced in international competitions, for the first time the 15 Metre Class Nationals was not in the mountainous area. Held at Reggio Emilia in the Po valley from June 20-28 in poor weather conditions, the 23 pilots had six contest days with average tasks of 225km and maximum speeds of 75km/h. Luca Urbani (ASW-20) won the last three days and the competition with Giorgio Galetto (LS-6) 2nd and Luigi Bertoncini (Ventus) 3rd.

The Club Class at Rieti at the beginning of July was won by 18 year-old Riccardo Brigliadori (Leonardo's son) flying a Std Cirrus with Stefano Meriziola (Astir) 2nd

In August the International Mediterranean Cup and Standard Class Nationals were also at Rieti with 70 pilots, 20 from abroad. There were eight contest days with Marco Gavazzi (Discus) winning the Standard Clas, though challenged by Riccardo Brigliadori who beat his father into 2nd place, both in a Discus. Brigliadori finally came 4th behind S. Leutenegger (DG-300) of Switzerland.

The 15 Metre Class was won by Ernst Peter of W Germany (Ventus) and the Open Class by Dane Andersen of Denmark (Nimbus 3).

The Standard Class tasks averaged 285km with 330km for the Open and speeds in excess of 100km/h with peaks of over 130km/h – Condensed from information sent by Smilian Cibic.

VINTAGE RALLY

The 15th International Vintage Rally at Aalen-Elchingen, near Stuttgart from July 25-31, had 90 entries making it the largest ever, but many of the gliders were never seen because of the bad weather. In spite of this the morale was extremely high.

There is always special impetus to restore and build vintage gliders in the country which is hosting our International rally. This year the Wasserkuppe Oldtimer Club finished their Habicht after five years' work. It is a work of art, cleared to 146 VNE and for full aerobatics and may be soared at 32kt. Retired mechanic, Peter Grau, finished a 1935 Göppingen 1 "Wolf" to 1944 anti spin standards and Klaus Meyn brought his Rhönadler out of the attic after seven years' work.

Toon Frishert brought the ESG *(Erster Schulgleiter)* Grunau 9 in a wonderful glass trailer. Restored by Toon and built by Fokker in 1946, this is Holland's oldest glider and flew in the Rally. – *Chris Wills*

OTHER VINTAGE NEWS

The new Wasserkuppe museum was opened at the end of August with a tremendous celebration and attended by the great designer Hans Jacobs, who is 80 years-old. – *Chris Wills*

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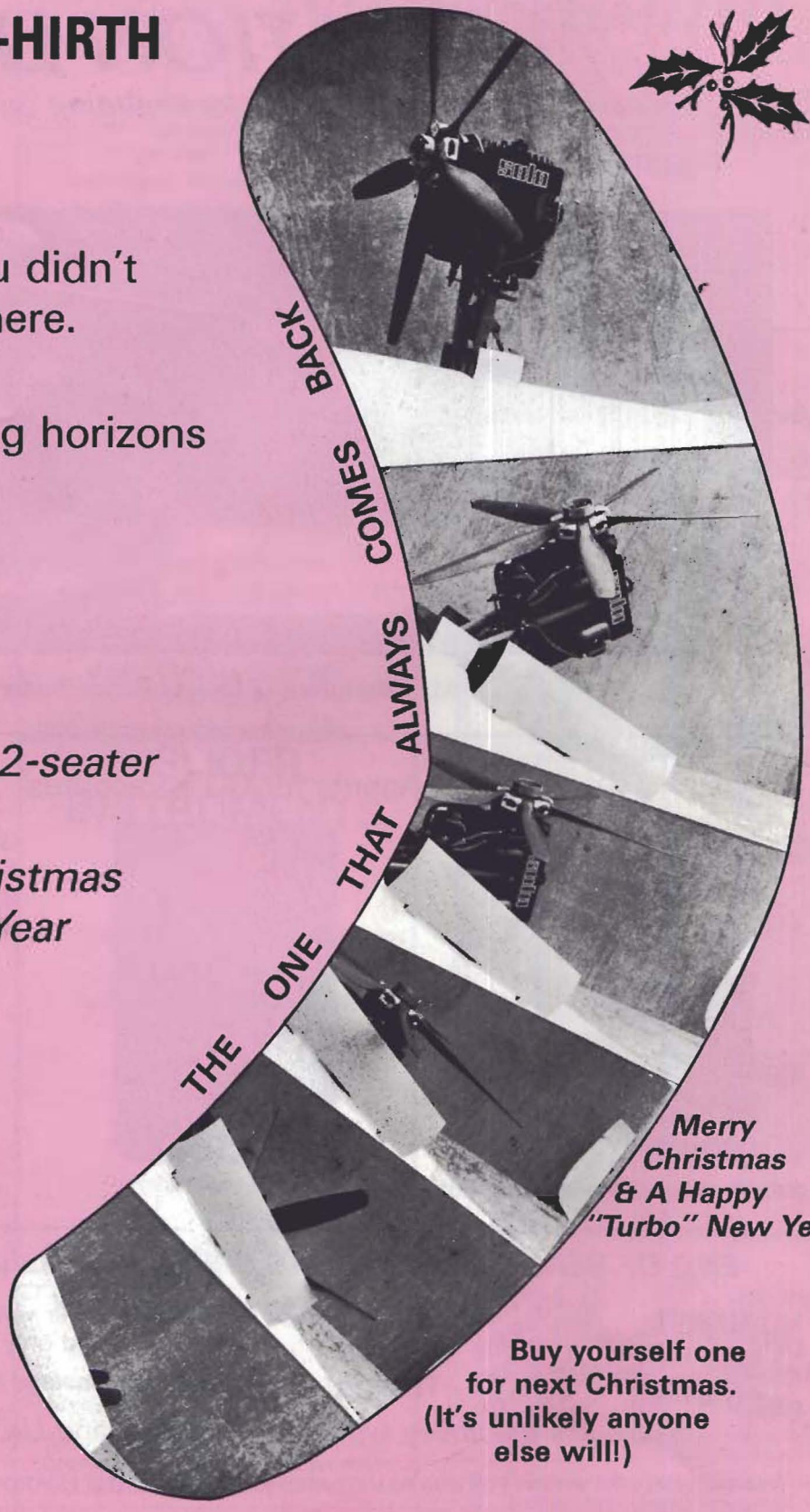
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