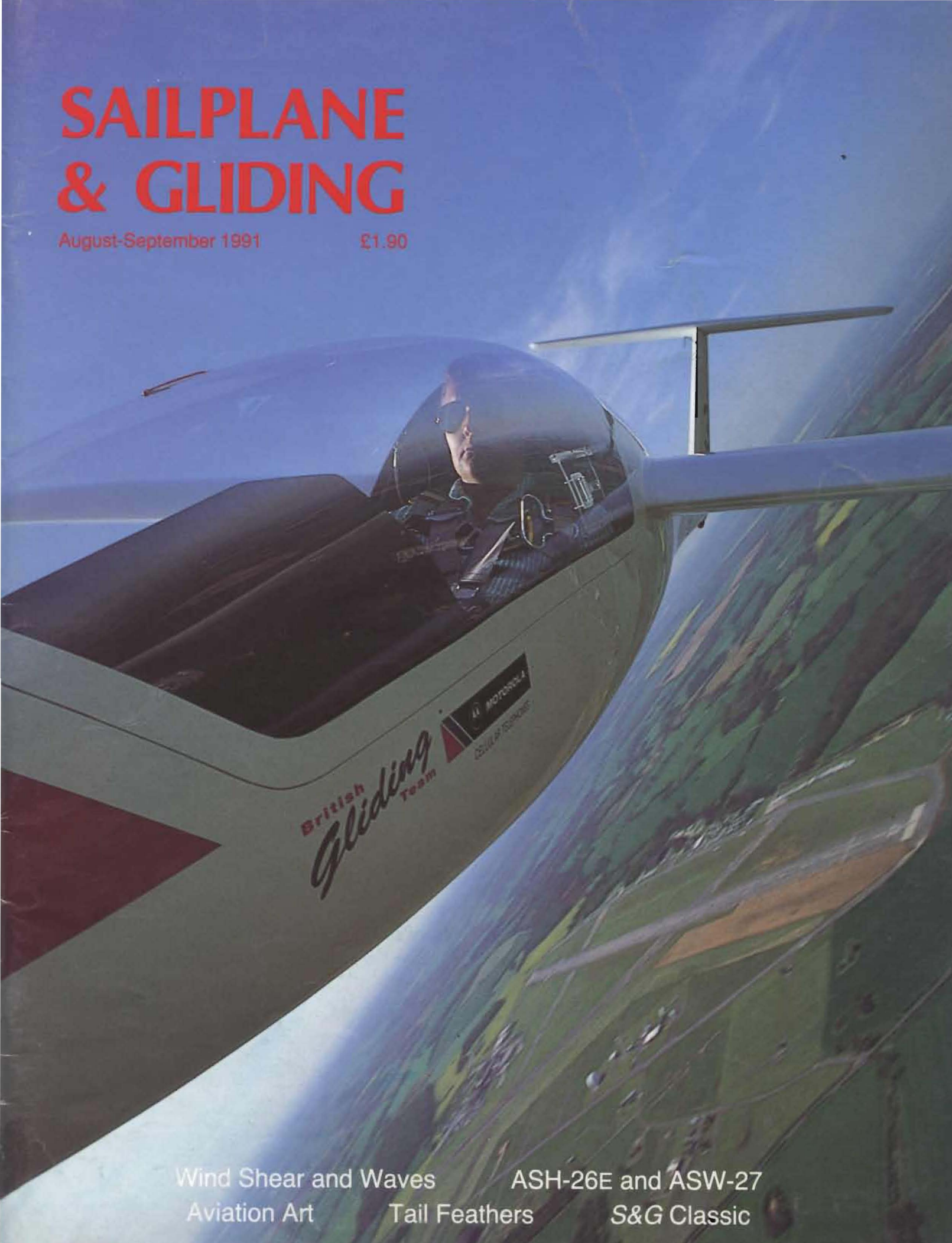
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Magazine of the
British Gliding Association
Kimberley House, Vaughan Way
Leicester, LE1 4SG
Tel Leicester 0533 531051

August-September 1991
Volume XLII No. 4

EDITOR
Gillian Bryce-Smith
281 Queen Edith's Way, Cambridge, CB1 4NH
Tel 0223 247725 Fax 0223 247725

CONSULTANT EDITOR
Rika Harwood
66 Maisemore Gardens, Emsworth, Hants, PO10 7JX
Tel 0243 374580

SUBSCRIPTIONS
Bev Russell, BGA Office

COMMITTEE
A. W. F. Edwards (Chairman), M. Bird, M. F. Cuming, B. Rolfe, B. F. R. Smyth

ADVERTISING MANAGER
Helen Ritchie
Cheiron Press Ltd
Hillview, Heathfield Road, High Wycombe
Bucks HP12 4DQ
Tel 0494 442423

ADVERTISING COPY DATES
To make it easier for our advertisers we are listing the advertising copy dates. Editorial material is needed considerably earlier.

Issue	Display	Classified
Oct/Nov	Aug 21	Sept 3
Dec/Jan	Oct 21	Nov 1

Please note: If advertising copy has not been received by the due date, any space booked will automatically be cancelled and a cancellation fee may be incurred.

S&G Annual Subscription: Send £13.50 to the BGA. (See advertisement in this issue.)

PUBLISHER
British Gliding Association
(Barry Rolfe, BGA Administrator)



Cover: Mick Willett flying a Discus over Lasham. Mick took the photograph with a Minolta 9000 camera with a 20mm lens mounted on the nose cone by Terry Joint and fired by infra-red remote control. Cameras and mounts are available for hire from Terry, who can be contacted on 0420 88664 or at Lasham where he is CFI.

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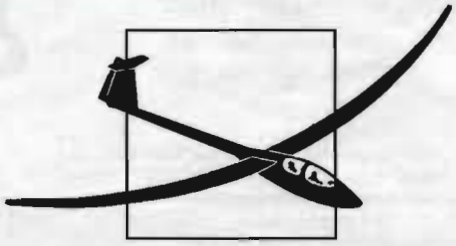
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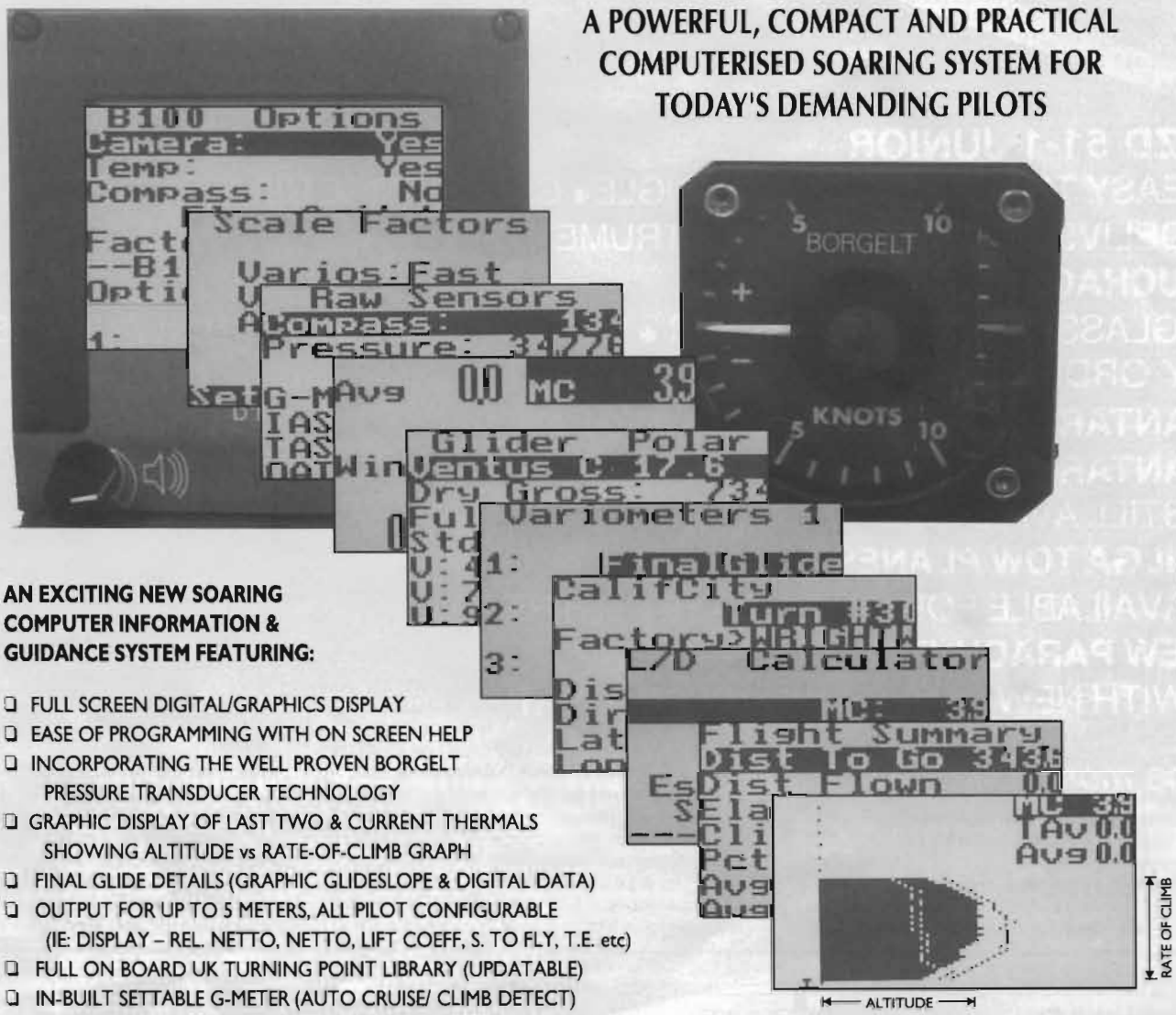
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YOUR LETTERS

SECRET LIFE OF A TRAILER

Dear Editor,

It is an absolute mystery to me that while a vast number of gliders spend over 99% of their life in a trailer I can find no reference to any work that has been done on what is actually happening to the temperature and humidity inside the trailer.

I have been cursed with an unnatural interest in rebuilding vintage gliders and have been appalled by the damage caused to them by unwise or unfortunate storage – now you glass glider owners don't stop reading because it affects you as well and you may be establishing the conditions for some very expensive repairs in the future.

I like to believe that manufacturers have carried out tests to ensure their trailers are correctly ventilated, although I have seen a very expensive glider pulled out in the spring covered in black mould. I'm sure they would like to comment on this.

With a vintage or wooden glider its life (accidents excepted) will to a considerable extent be dictated by the number of temperature and humidity cycles it is subjected to and their range. When you start talking to glider owners and looking inside their trailers it gets even more mysterious as some have the inner walls running wet and others are dry – and the trailers look identical.

It would be wonderful if somebody could take on a research project to find out just what are the benefits of metal, glass-fibre or wooden trailers and what is the best ventilation system.

Simple tests I have been carrying out suggest that even lowering one end of the trailer may be helpful to promote good circulation. It's about time we had a thorough investigation.

MIKE BEACH, *Twickenham*

TASK SETTING

Dear Editor,

I enjoyed Ian Strachan's articles on task setting enormously (see the February issue, p31 and the April issue, p70) and would recommend them to all task setters and competition directors. Task setting is indeed at least partly a science, rather than a process of subjective guesstimates and hunches.

I must, however, take issue with Ian's suggestion that there have only been two successful 500km contest tasks. July 31, 1990, saw 512km and 315km triangles set for the two Classes of the Northerns at Sutton Bank. Fourteen of the 24 gliders in Class A finished (including Standard Class gliders) and another two of the Class B gliders continued after finishing for Diamond distance, despite being the second Class launched. The competitors seemed to consider it a successful day, and 15 Diamond claims needed signing.

All Class B gliders finished although the Met man landed out on their task as a result of flying into the sea air in the Tees valley which he had warned competitors about at briefing.

My point is that thermal cross-countries can take place here in the frozen north and can be better sometimes than in the home counties. Thermals start earlier, and line crossings soon after 11am are possible with the limiting factor being the time required to brief and grid the competitors rather than waiting for reliable convection. Sea breeze fronts can provide good speeds towards the end of the day if the Met man and task setter have the local knowledge to take full advantage of them.

MIKE BROOK, *Sowerby Bridge, West Yorks*

SPINNING

Dear Editor,

Over the years one gets the impression that everything possible has been written and rewritten about spinning. However, many years of testing pilots for full ratings has shown up one glaring fault. In all the lectures and writings on spinning one point is not going home.

In a normal year (I checked with the safety office recently) two or three pilots are killed spinning in. In a bad year it is a few more and the position isn't improving.

Now if spinning is so dangerous, even a killer, how is it that good instructors spend a lot of time spinning yet don't kill themselves? There you have the omission. They leave enough height for a safe recovery.

In all my years of testing only about 25% of candidates stress that the dangerous thing about spinning is the sudden and rapid loss of great height. A few make casual reference to the altimeter, but most concentrate on getting into and out of a spin. This is a skill learnt quickly and in all honesty most pupils recover quite quickly, so this part of the instruction is going over reasonably well.

When spinning is taught as a sort of aerobatic manoeuvre – you know the sort, one to the left, one to the right, one more for luck, all done at 2000 or 3000ft with quick recoveries – this is no protection for the would-be solo pilot. When he does hurt himself spinning in off a slow low turn he will never associate his loss of control with those high level aerobatics.

Why not bring some reality into the lesson. Arrange a "ground level" at say 2000 or 2500ft, then start a slow turn at 2100 or 2600ft, *ie* 100ft above ground. Now show that 5 or 6sec later we are 200ft below ground after several turns of a spin. This shows the real danger of spinning.

The same sort of expectation of a spin below 500ft a few knots above the stall should be present in our pupil's mind, as is the expectation of a cable break on a winch launch.

Incidentally, if you do the spinning down through a datum level, the second or third time you can show the pupil that at the same time you would hit the ground you would be almost vertical and descending rapidly.

Those instructors of the plain talking variety could then paint a sorry picture of how you would both finish up. Should we not therefore give much greater emphasis to the massive rapid height loss in spins and let our motto be high and slow is safe, low and very fast is safe but low and slow is disaster?

In all the good books and articles, height loss and use of altimeter gets the same sort of casual mention as does Pontius Pilot in the Creed. Come on instructors, tell the whole story. I know some don't.

ERIC BOYLE, *Newark, Notts*

100KM AT COCKHILL

Dear Editor,

Readers will no doubt be anxious to know the outcome of John Mitchell's generous offer (see the October issue, p233) to sponsor an attempt at 100km at Cockhill. For information, Cockhill Farm (or Chipping Airfield) is the home of the Blackpool and Fylde Museum of Gliders and Agricultural Memorabilia, with many of the old aircraft and tractors being kept in working order by the members. I was there during their task week in June (a wet week all over the UK) and members generously allowed me to fly ➡

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several of the collection – seven new types in all, four of which I had never even *seen* before. A treat.

Despite the showery conditions, we had thermals much of the time, ridge soaring all of the time, wave a couple of times and in the evenings we had a very good time. I was able to accumulate 22hrs in single-seaters off 17 winch launches (including three cable breaks) plus 11 more hours in 18 further two-seater trips.

Not only that but- before my astonished eyes – we had numerous triangles at 100km plus and a couple of Silver distances despite my efforts to urge caution and stick close to base.

The imminent arrival of a Pawnee tug in addition to the other extensive facilities will surely result in tremendous flying from this site, and I can only conclude that John's letter was a characteristically modest attempt to play down his club's potential and thus keep the soft southerners away.

MIKE CUMING, *London*

WHICH SCUD?

Dear Editor,

That the illustration under headline The World's Oldest Airworthy Glider (last issue, p121) is that of the Scud is beyond question but whether it is that of a Scud 1 or Scud 2 can only be solved if you persuade Michael Beach to put the wings on. His speciman may perhaps have been repaired at Slingsby's in 1935, but such an innovative design, as all those conceived by Baynes, is unlikely to have originated there.

A green Scud 2 was being flown at Dunstable by J.D.Wood in 1936 and later passed into the hands of L.H.Barker who liked it so much he bought the first Scud 3 available. Barker disapproved of the non-existent upward view of his Scud 2 and had a transparent centre-section fitted. I am not aware of this modification being made to any other Scud 2.

CHARLES ELLIS, *Ilford, Essex*

Michael Beach replies: I know that Charles is gently teasing me as we have discussed the green Scud at Dunstable. He has a remarkable memory and told me the actual pre-war weight when he helped to weigh it in the mid 1930s. For the less informed the Scud 1 had no centre-section, was even smaller (25ft 3in span) and supposed to weigh 103lbs empty. The original price was £60 and under £20 for the trailer complete – I have the factory specification on the Scud 1 and 2.

Mine is, of course, the green Scud that Charles remembers and was first seen at the Nationals at Sutton Bank in 1934 (although built around 1931 or 1932). The design was a work of genius and very advanced for that time. This sole surviving example was owned or flown by some very important names in English gliding history. The story I like most is that during one of its derelict stages new members of the London GC were sometimes sold a share of the Scud for 12s 6p in the bar during the evenings' frivolities – when they saw it in the cold light of day they sobered up very quickly. I can assure new members that this is now uncommon.

THE GREEN APPROACH

Dear Editor,

Since confining all my out landings to organically grown crops I have felt much fitter and it has also increased my chances of bumping into Prince Charles.

U. P. SLACK, *Lower Midfieldbat*

AN OPEN LETTER TO THE CFI

Dear Mr CFI,

With the recent changes to the club fleet, a rethink of the check system was inevitable if not overdue, and I believe that all the members will join me in congratulating you on a fine re-organisation . . . **in all but one respect.**

That sheet of paper pinned to the notice board detailing the changes is indeed a historic document. *Control of our flying operations has finally passed into the hands of the power lobby.*

I refer, of course, to the *compulsion* to use the motor glider at various stages of the check system, with the attendant requirement for any glider pilot who aspires to reach the pinnacle as a gliding instructor to obtain a PPL. Those of us who have never felt any inclination to fly ➡

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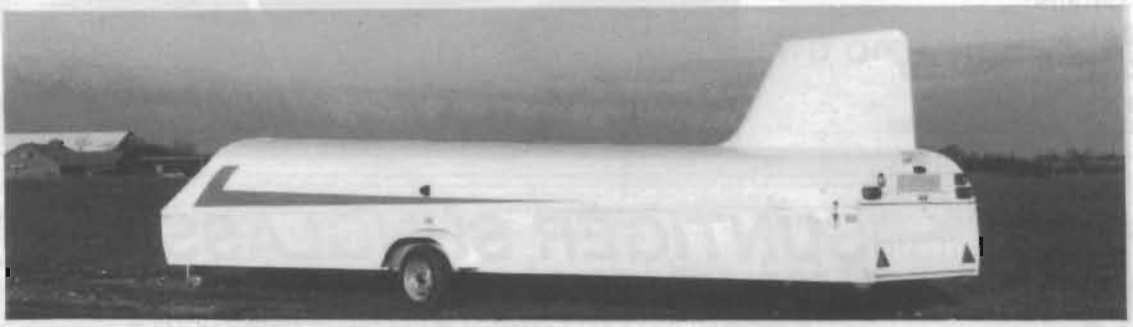
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power will now have the choice of either obtaining a PPL against our will, or of relinquishing ultimate control, as instructors, to those who possess one.

Can there be any doubt that this is the thin end of the wedge inserted by our own CFI and undoubtedly to be hammered home, in the fullness of time, by the CAA.

Once established, it is difficult to imagine any future CFI being able to reverse the trend, however much he may wish to do so. Existing and perfectly satisfactory techniques for teaching field landings or unusual circuits using two-seaters and ground instruction will fall into disuse and will be forgotten. The future consequences will be far-reaching. It doesn't take much imagination to see the road down which we are heading; the writing is on the wall. I can see it now . . .

1993 Full rated instructors must have MGPPL.
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1999 ALL glider pilots must have MGPPL.

Mr CFI, I hope that you will have noticed that I have not touched on the issue of the efficacy of the various training programs. My primary concern is the erosion – self inflicted, heaven help us – of the hard-won rights of glider pilots to run their own affairs. I am sorely grieved that you of all people should take this path simply for the sake of convenience.

I again beg you to reconsider this decision, and replace the compulsory use of the motor glider with a system which encourages, rather than compels, pilots to follow the course which you wish them to take. If you will not do so, I fear for the unity of our movement which may well be split asunder. You should not doubt the strength of opposition to your decision, nor the degree of resentment engendered in those of your instructors now apparently tossed aside for no valid reason.

Tailpiece: The Overseas News section of the April issue of *S&G*, p109, tells us that German manufacturers expect 60% of all gliders to have a little engine by the year 2000. *Real glider pilots, you have been warned!*

KEITH J. NURCOMBE

We welcome your letters but please keep them as concise as possible and include your full name and address. We reserve the right to edit and select.

BOOK REVIEW

British Gliding Clubs Directory compiled by Bob Riddle, published by the British Gliding Association and available from the BGA sales department at £4.25 including p&p.

Bob Riddle started gliding in Britian some ten years ago and when wanting to explore other sites in the UK he found there was no single source of information. Hence this long needed book.

He sent questionnaires to all the BGA clubs and lists a mass of information from a description of the sites and how to find them, to facilities, the fleets, contacts and fees. Because he realises that often a gliding trip may be combined with a family holiday, he suggests places of interest, mentions leisure activities and comments on accommodation available in the area.

Bob has worked diligently in gleaning all this information and must be congratulated on his staying power which has resulted in a very useful publication.

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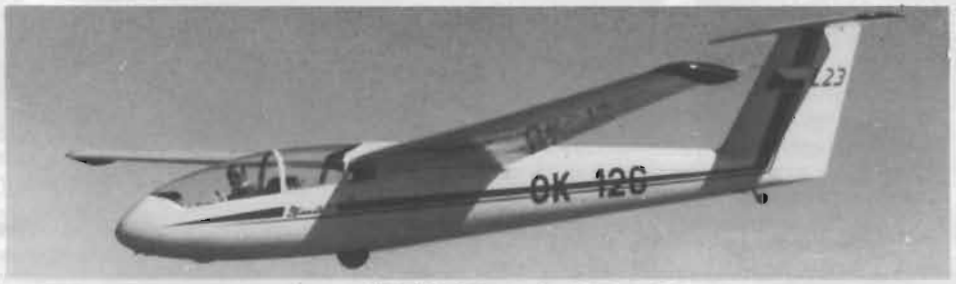
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SOLE UK AGENT – PETER CLIFFORD & Co.,
15 Home Farm, Crowmarsh Gifford, Wallingford, Oxon, OX10 8EL. Tel: 0491 39316/680420 Fax 0491 39316

WIND SHEAR AND WAVES

Part 1

The wind velocity nearly always changes with height; this change is called the vertical wind shear. Whenever the shear is strong enough some wave activity is possible. This is an account of some of the effects

Gravity waves

The waves which provide lift for soaring are a type of gravity wave. Their oscillations depend on the buoyancy of the air and the pull of gravity. Buoyancy is another way of describing stability.

Factors controlling the waves are:

(A) Stability: Much of the atmosphere is stable if we exclude the lower layers where thermals occur. Even when there are huge cu-nim clouds the clear air in between is usually stable. If a parcel of this air is displaced it tends to return to its original level. In doing so it usually overshoots and oscillates up and down. The time for one oscillation is called the Brunt-Vaisala period. (B-V for short). See Fig 1.

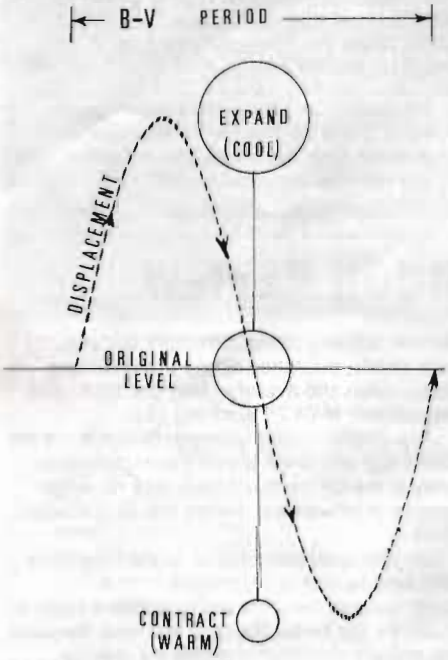


Fig 1. B-V period.

The more stable the air the stronger is the restoring (buoyancy) force and the shorter the B-V period. If the air becomes less stable the restoring force is reduced and the B-V period becomes longer. With a standard atmosphere the B-V period works out to be nearly 10min/cycle. If there is an isothermal atmosphere the period is reduced to about 340sec. Where there are lots of thermals rising from the surface the air has zero stability and no restoring force. The B-V period becomes infinite and there are no regular waves.

(B) Windspeed: The B-V period is used to find a "natural wavelength" for a standing wave in a particular layer of the atmosphere. In American technical papers this is often called the "Vertical wavelength."

If we take the B-V period for a standard atmosphere (594sec) and specify a wind speed of 10m sec (nearly 20kt) we find that the air will have been carried 5940m during one cycle. In other words the standing wavelength is nearly 6km. If we take the isothermal atmosphere where the period is about 340sec a 10m sec wind only gives a 3400m wavelength. This leads us to a simple generalisation:

(a) If the wind speed is constant: the more stable the air the shorter the wavelength.

(b) If the stability is constant (*ie* the B-V period stays the same), the stronger the wind and the longer the wavelength.

What happens when the wind speed increases with height

1. The longer the wave the faster it can travel through the air. When waves travel against the airflow they are slowed down. When the wind speed matches the wave speed they become stationary relative to the ground and are called standing waves or lee waves.

2. When the wind speed increases with height the rays of wave energy become bent over as they rise into the strong wind level. See Fig 2. Since the long waves travel faster they can extend higher than the short waves before the energy is turned back downwards.

3. The rays of short wave energy are bent over lower down. This reflects the energy back towards the surface and so traps the shorter waves below a level of strongest wind.

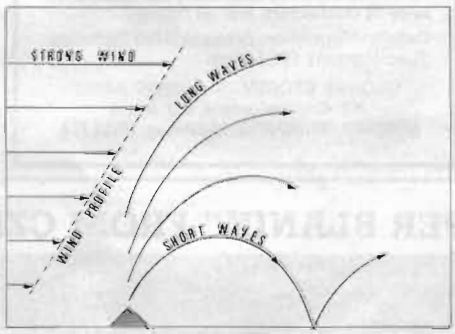


Fig 2. Wave energy bent over within a duct.

4. This situation is called a duct. It channels wave energy for long distances; some wave trains stretch hundreds of miles.

Trapped waves

In an atmospheric duct the wave energy is said to be "trapped". Where the reflected energy is out of phase the waves will be dissipated. Where it is in phase the waves will be amplified. This tunes the atmosphere to resonate at a certain wavelength.

Trapped waves are good for cross-country flying because the wave pattern is usually more stable and there is reliable lift a long way from the mountains.

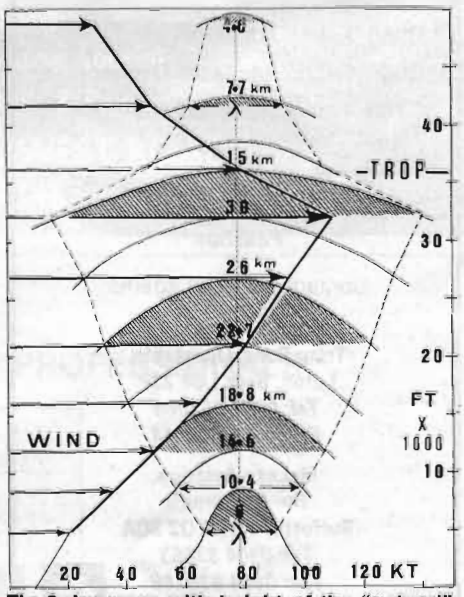


Fig 3. Increase with height of the "natural" wavelength.

The "leaky mode"

In most cases some of the long wave energy leaks out of the duct. This is called the "leaky mode" and these waves decay downstream as the energy gradually leaks away. The length of the wave train depends on how big the leak is. On some days the lee waves disappear within a couple of wavelengths of the mountains. Such days are not good for cross-countries but they may offer high climbs in the first wave of the system.

Fig 3 shows the "natural" wavelength increasing with height. The horizontal arrows represent the wind speed at different levels. The arrows grow longer up to the 32 000ft level where there is a max of 110kt through the layer. The tropopause (TROP) is marked at 36 000ft.





Looking crosswind along a common type of lee wave cloud with lenticulars above Sc.

In this example there is no inversion below the tropopause. The temperatures aloft are those of the standard atmosphere; whose lapse rate is 6.5°C/km up to the tropopause. The lenticular shading shows the natural wavelength for each layer. (Only alternate waves are shaded in.) It increases from 6km at the bottom to 30km at the level of maximum wind just below the tropopause. Above the tropopause the wavelength decreases rapidly because the air becomes much more stable and the wind speed declines.

With such a wind profile almost all the wave energy would be turned back as it approached the jet stream aloft and little would go through into the stratosphere.

What determines the lee wavelength?

We found a "natural wavelength" by multiplying the B-V period by the wind speed. Unfortunately this only applies to one particular layer of air. The lee wavelength depends on how all the different layers interact. Some very simple situations can be solved using a graphical method but on many days a PC is needed to handle the complex equations.

The lee wavelength is usually found to be between the longest and shortest of the "natural" wavelengths in the various layers. In Fig 3 the range is from 6 to 30km and a simplified graphical solution suggests the lee wavelength might be about 13km with the maximum amplitude around 7000ft. This implies that when the upward going wave energy is turned back by the strong winds aloft the system should resonate at 13km. However, with no stable layer the tuning would probably be very flat and many different waves would appear, each associated with a different mountain. The waves bars would tend to move erratically with complicated interference patterns. There might be two wavelengths, a short one low down and a much longer high up.

Looking into wind, a mixture of big and little cu, some of which moved across the apparent wave gap without shrinking.

The importance of inversions or stable layers

Although lee waves can develop without the presence of a mid-level inversion the good wave days almost always have a stable layer. These layers act to "bend" the rays of wave energy downward, much as a layer of strong winds does.

'A really strong inversion can trap all the short wave energy.'

Deep stable layers have a greater effect on lee wavelength than shallow layers. A really strong inversion can trap all the short wave energy. When this happens the waves have large amplitudes at the inversion level but dwindle rapidly above it. Although the lift is very strong in the stable layer it decreases rapidly when you climb higher.

Changing the level of the inversion can make a dramatic difference to the wave pattern; some of the effects will be described in a subsequent article.

Looking crosswind along the area of lift with disorganised cu low down not rigidly linked to lenticulars.

Strong inversions sometimes trap low level waves produced by the gust front of a thunderstorm outflow. Then a small number of waves will ripple along under the inversion and may travel far before being dissipated. They are not standing waves and there are usually too few to be much use for soaring. Sometimes they set off several undulations in a Sc layer like the waves of a tidal bore.

Deep stable layers favour a regular wave pattern

When there is both a big increase of wind with height and also a deep stable layer at mid-levels the airmass tends to resonate at a steady frequency and lee waves are very stable. They extend a long way downstream and are not greatly influenced by irregular mountains underneath. This is usually good for cross-country flights in wave, but not necessarily for great gains of height.

Examples of two exceptional wave days

In October 1990 two of the wave days provided exceptional soaring over the Highlands of Scotland. On October 7 a cat's cradle of 951km was flown in a Nimbus 3. On October 12 36500ft was ➡

Looking across the wind showing some big cu but also (just below the wing) some Sc aligned into wind.





reached in an ASH-25. Fig 4 shows the wind shear and the depth of stable layers on these two days.

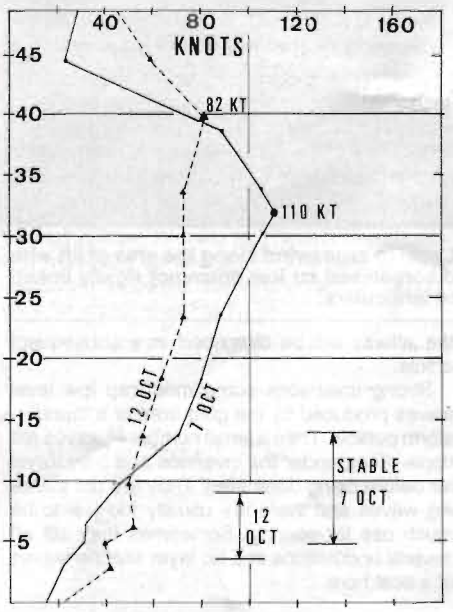


Fig 4. Wind profile on October 7 and 12, 1990.

On October 7 the stable layer was nearly 10 000ft deep with an unusually strong shear near the top of it. The speed increased at about 6kt/1000ft and eventually reached a maximum of about 110kt just above 31 000ft.

On October 12 the stable layer was only about 5600ft deep and there was much less shear above 6000ft. The maximum wind probably did not go much above 80kt at 40 000ft.

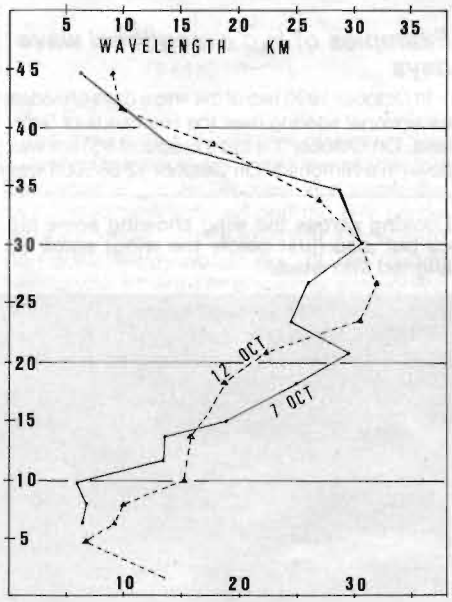


Fig 5. Wind and natural wavelength on October 7 and 12, 1990.

Fig 5 shows how the "natural wavelength", which depends on stability as well as wind speed, varied with height on these two days. Notice that on October 7 the wavelength decreased between 21 and 26 000ft. This kink often marks the top of soarable waves.

Numerical estimates

Researchers use a complex set of non-linear equations that need a powerful computer to solve. These sometimes show that the waves can change considerably with time even when the upstream airflow stays the same. By greatly simplifying the temperature and wind profiles, using linear equations and assuming the pattern is unchanging, one can get approximate results with a programmable pocket calculator. (The process is rather tedious.)

The profile for October 7 can be simplified to just three layers:
(1) A convective layer (dry adiabatic) up to 1.5km. This has no natural wavelength.
(2) A stable layer 3.0km deep with natural wavelength of 9.17km.
(3) An upper layer about 6km deep with a natural wavelength of 26.27km.
These values give a lee wavelength of 13.2km. This result is insensitive to small changes of wind speed or stability so the waves should be fairly stable. If one specifies a hill 2000ft high (0.61km) with a half width of 13 000ft (4km) the greatest wave amplitude works out to 1260ft (384m) with a max lift of 9kt. Unfortunately the amplitude and lift are much too dependent on the shape and size of ridge to be reliable.

For October 12 the profile was simplified to:
(1) Convective layer to 0.925km.
(2) Stable layer 1.715km deep with a natural wavelength of 8.3km.
(3) Top layer 7.85km deep with a natural wavelength of 24.6km.

These values give a lee wavelength of nearly 20km. This example gave a longer lee wavelength because the stable layer was not so deep and so had less effect. However, the answer was rather sensitive to changes in the depth of layers 1 and 2. The max wave amplitude works out at .954km (3100ft) with a max lift of 13.9kt.

Why calculated wave amplitudes are suspect

Although the lee wavelength depends on the character of the airstream, the amplitude of the wave depends on the height and shape of the ridge. For simple sums one assumes a smooth ridge with a bell-shaped cross-section. The lowest layer of air is supposed to follow the shape of the hill which is defined by its height and half-width.

The biggest wave occurs when the ridge and wavelength are the same size. Experiments in a water tunnel show that the flow breaks away on the lee side if the wavelength is greater than the width of the ridge. In practice one never knows how well the low level flow does follow the terrain so amplitude calculations are suspect. The lift depends on the slope of the streamlines; if these always had uniform undulations like a Sine wave the lift would depend only on wind speed, wave phase and amplitude. Unluckily real waves are not always so symmetrical; some become very steep indeed on the forward side.

What if the wind remains constant with height?

A ridge can trigger off waves even if there is no change in the "natural wavelength" aloft. However, there is nothing to reflect any energy back so there would be no wave train low down. This wave could in theory go up to vast altitudes because the amplitude grows larger as the air density decreases. If air density was the only factor the wave amplitude would become enormous at high levels. Fig 6 shows an example when there is a uniform lapse rate and no wind shear so that the "natural" wavelength is constant at all levels. The small bottom wave quickly dissipates but at the top a much bigger wave appears.

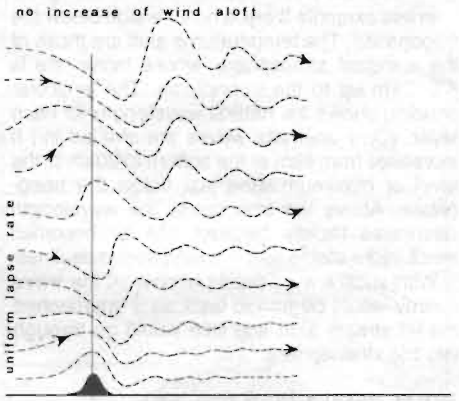


Fig 6. Waves if natural wavelength remains constant with height.

Winds which decrease above a certain level

It is quite common for the wind speed to increase up to a certain level and then drop off. This can be seen in Fig 4. A sudden decrease or reversal of wind aloft may make the wave break and cause turbulence. When the reversal happens low down where the wave is strong there can be severe turbulence. At high levels, where little wave energy remains, the turbulence may be only moderate. Do not rely on this, however, as waves of very large amplitude can make the stratosphere very rough.

The critical level and rough air

If the wind speed approaches zero the "natural wavelength" at that level also approaches zero. Linear theory predicts total absorption of the upwelling wave so that wave energy cannot get through this layer. If you fly through the critical level the air becomes extremely rough. Wave energy is being dissipated as turbulence here. However, some theorists, using nonlinear equations, say that after a time the critical layer starts to act as a reflector of wave energy.

Waves due entirely to wind shear

When the wind shear is very strong it tends to wrinkle a shallow layer into a series of very short waves called "billows". Billows are sometimes marked by a series of ripple like clouds. These, unlike lee waves, are not attached to any ground object. Billows are often seen in thin altocumulus

layers. They are usually at right angles to the shear vector.

Weak fronts and shear waves

A frontal surface nearly always has a wind shear across it. In Australia, where cloudless fronts are much more common than over the UK, pilots claim to have soared these waves to 20 000ft. I imagine such soaring needs an advanced technique. Shear waves are not fixed in space and their alignment is often uncertain. They may (perhaps) be set off by vigorous thermals bumping into the inversion much lower down. (See the section on cumulus waves.)

Curl up and break of shear waves

Very strong shear can make these waves curl over and break into confused turbulence. This is likely to happen when the wind shear is increased in a layer which is not very stable to start with. The process is illustrated in Fig 7.

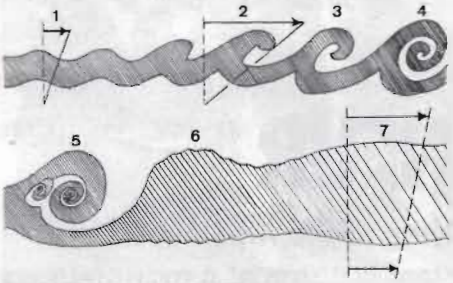


Fig 7. Shear waves breaking.

At (1) the shear is enough to cause billows, at (2) the shear is stronger and the billows start to curl over. (3), (4) and (5) show how they twist up and break. (6) shows just confused turbulence which spreads the shear out over a deeper layer. (7) shows the deep layer with much reduced shear.

This is how much of the CAT (Clear Air Turbulence) is generated up at jet stream levels. On rare occasions one can actually see a line of cloud behaving like this.

How lee waves can alter the shear

The growth of large amplitude waves makes a big difference to the wind shear. The ascending wave crest can lift slower moving air up to a level of much stronger winds. The wind shear, originally quite small in terms of kt/1000ft, is intensified over the wave crest. When this effect is weak all one sees is a series of tiny ripples on the top of a smooth wave cloud. Occasionally the ripples grow into billows which later break producing turbulence.

Reports from airliners flying at heights of around 35 000ft showed that CAT was much more common when flying high over wave producing mountains than it was over flat land. Gliders do not often reach these turbulent levels but one may occasionally find that where the smooth wave lift drops off there is a slight cobblestone effect.

Waves generated by cumulus

Waves are not produced exclusively by mountains. Anything which obstructs the airflow can set off a wave. The first suggestion that such waves could occur appeared in a book on Cumulus Dynamics in 1960. A slow moving Cb growing through the shear into a faster flow aloft was predicted to set off waves.

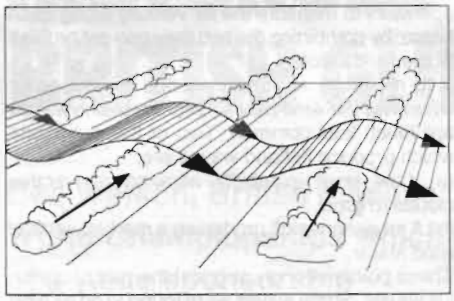


Fig 8. Parallel waves over cloud streets.

An early report of waves over cumulus appeared in the *Meteorological Magazine* in 1963. The *Swiss Aero Revue* in 1968 carried a report of waves over cu streets observed by a German pilot who turned aside to avoid being sucked into a cloud street. Instead of meeting sink he continued in lift which took him several thousand feet above the cloud tops. In this case the wind shear was directional with the low level wind blowing along the cloud street and the upper winds blowing at right angles. (Fig 8.) It seemed clear that the streets were acting like lines of hills producing waves where the upper winds blew across them. In this case the wave lift was parallel to the streets below.

Isolated cumulus waves

It was soon found that streets were not essential. Even isolated cumuli could set off a transient wave. All that was needed was a wind shear over the top. The shear could be as little as 3kt/1000ft though waves are more likely when the shear is stronger. Fig 9 (a) shows the wind profile on the left and the flow over the cloud on the right. Vcu indicates the difference in speed between cloud and the wind over it. 9(b) shows how the original cloud (A) collapses and topples while younger clouds (B) and (C) grow on the upshear side.

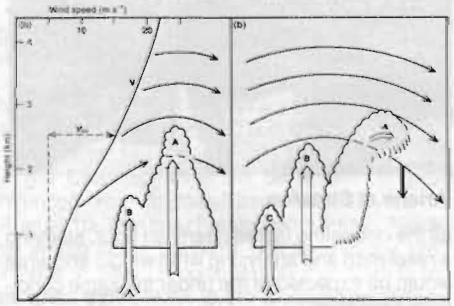


Fig 9. Waves over isolated cu.

Transverse waves

English pilots found waves would develop across the line of cloud streets rather than parallel to them. (Fig 10.) The first wave was often found at the upwind end of the cloud street. The air may be too dry for wave clouds to appear; the broken line shows where a lenticular might appear. Wave crests produced local thickening in the streets below. The essential features were:
(a) winds which increased with height while remaining constant in direction and
(b) a stable layer in middle levels to limit cu tops and enable streets to form.

Exploration by powered aircraft

NCAR (The National Center for Atmospheric Research) made a survey of waves above cumulus streets over Nebraska, USA in a region 250-450km east of the Rocky Mountains. They were surprised to find that these streets could give wave lift extended up to the ceiling of the research aircraft (about 30000ft). The wind shear on these occasions always exceeded 2kt/1000ft and the wave length ranged from 5 to 15km. The difference in speed between the cloud tops and the wind blowing over them was sometimes nearly 20kt. A mathematical model was run on a computer. This showed that the best organised waves should occur when the wind blew across cloud streets but waves would still appear when the wind was parallel to the streets, or even if the cu were scattered.

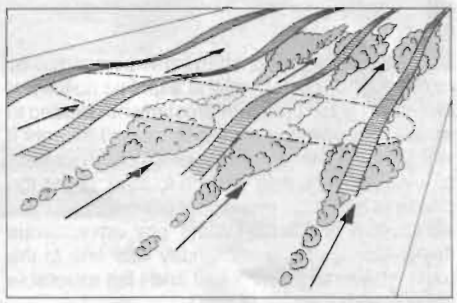


Fig 10. Transverse waves over cloud streets.

How thermals and waves interact

The ideal conditions are: first a fairly shallow unstable layer low down where thermals form when the sun's heating warms the ground; and second an inversion or stable layer in which there is sufficient vertical wind shear for waves to develop later on.

Fig 11 shows the sequence; time is represented along the base line.

At (A) surface heating sets off thermals which rise up to the inversion. At (B) a stronger thermal produces a hump on the inversion. Since the wind speed is stronger aloft the air flows over the thermal hump and develops waves.

At (C) the waves propagate upwards; they can rise at 8-10kt and reach the tropopause in less

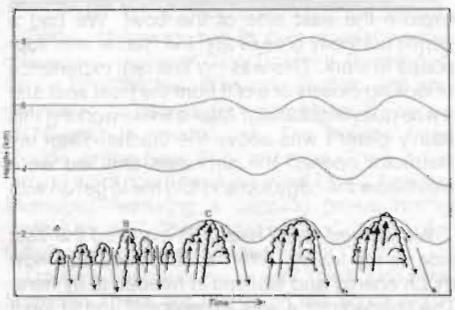


Fig 11. Wave/cu interaction.

than an hour. It may take several hours for a steady state to develop. Then a feed-back process starts: the internal waves, which had originally been set off by the cumulus, start to control the thermals below. On the rising side of each wave, thermals get a boost and grow more vigorously. On the sinking side of the wave, thermals are suppressed and clouds dissolve. Since the upper wavelength is usually longer than the original spacing of the cu the thermals become more widely separated. Whole groups of clouds that find themselves in sink disappear, other groups grow larger as the convection is rearranged to suit the waves above. The wave feedback can produce much bigger cu than would have grown if there was no wind shear aloft.

Observations by VHF radar

The Americans have recently developed a VHF radar which is able to detect air motions even in a cloudless atmosphere. The system uses two upward facing beams tilted at an angle to the vertical. The Doppler principle allows the operators to measure the air velocity along each beam; by combining the two they can get profiles of the winds aloft.

In mountain regions they find waves occur whenever the wind blows. Over the plains waves are much less common. Two of the conditions which produce flatland waves are:
(a) Low level instability allowing convective clouds to grow.
(b) A jet stream aloft producing a marked vertical wind shear.
These points strongly suggest thermal or cumulus waves. Some waves were found to go as high as 18km (59 000ft) which is well into the stratosphere. These must have been waves which were not completely trapped by the strong winds usually found around 35 000ft.

Summary

One of the essentials for gravity waves is an atmosphere with a vertical wind shear. This occurs when the wind speed increases with height, for example if a jet stream extends overhead. With enough shear some or all of the wave energy can be reflected back. Energy which returns in the right phase amplifies the wave. Waves can be set off in several ways.
(a) By the airflow over a ridge.
(b) By stronger winds rising over slower moving cumulus, or
(c) By particularly strong shear in a narrow layer of air, perhaps near a frontal surface. Sometimes all three may be combined.

ARIANE DECLOUX

UNE FEMME DANS UN PLANEUR

The experts have written about flying in the Alps but this is how a recent Silver C pilot faired last autumn at a mountain flying course at Sisteron, France

It all started in 1988 when I was persuaded by my husband John* to spend a gliding holiday at Sisteron. I wasn't really interested and decided to spend only one week there because I thought it would be another of those gliding holidays where all I would do is wait for him to land, or for the phone to ring to go on another retrieve. I was just about solo and hadn't done any adventurous flying. But the Sisteron holiday was one of the most wonderful I'd ever had and I felt miserable leaving after just two flights.

Last June we shared a Nimbus 3DT at Sisteron, having previously flown cross-country with John in England. It was wonderful to see how an experienced pilot could use all the day, make a 500km seem so short and keep going even when I would have thought it impossible.

At Sisteron I had some long flights in the high mountains. I don't cry very often but just looking at the splendour of those mountains was a sight I will never forget. Just before leaving I decided to go back on my own in September.

Remy was my instructor for the week. We practised flying the Janus very close to the mountain and when we got high, just above the summit, we opened the airbrakes and then started all over again. After two hours we landed and, feeling quite tired, I thought that no one would ever let me fly solo here.

The following day after the usual briefing we had two hours' theory in the clubhouse going through the basics, especially circuit techniques. We also marked the local landing fields on my map.

My second flight was in the Twin Astir to explore the east side of the bowl. We had a gentle northerly breeze and the Gache was supposed to work. This was my first real experience of looking closely at a cliff from the front seat and it was quite frightening. After a while working this heavy glider I was above the Gache. Then my instructor opened the airbrakes until we were well below the ridge top and told me to get on with it.

We worked really hard and explored the east side of the valley. After landing I realised how much energy and stamina is needed to fly here. The concentration was exceptional and to top it all the debriefing lasted nearly an hour, studying a relief map and analysing what we did and what would be expected of me under the same conditions next time.



Ariane at Sisteron.

The next day we had a high tow in the Acro to the west side of the bowl. Things became easier as I knew by then that as long as I used my map to give myself as much margin as possible, I could enjoy the first range of mountains. You had to be careful all the time, but I learned that if you follow the instructors and really understood the local conditions you could spend hours enjoying yourself without danger.

That afternoon I was launched in the Astir and the feeling of fear remained with me up to "all out". I took a very high tow and found a lovely strong thermal. It was wonderful. The visibility was excellent and it was my little miracle. I was actually flying solo in the mountains.

The next day I arranged to report back to Remy every 15min with my exact position and height, as well as trying a few exercises. Map reading was the most difficult but I had to get used to it. Later I flew the Pegasus which, despite my initial apprehension, behaved like a friend – not too demanding and more responsive than the Astir. I was on top of the world and I wanted to stay up there for ever.

It was one of my longest flights at 3hrs 15min and I landed feeling tired but elated. I couldn't believe it – it was one of the most wonderful things I had ever done.

Over the next few days I flew the Pegasus. My most difficult flight was over the Pic de Bure and I was continually working out where I was and how much height I needed to get to the next mountain range. I had to report to Remy every time I changed mountains giving my height and position and where I was intending to go. After 4½hrs I landed back and despite the exhaustion I felt I had achieved so much.

During the rest of the week I gained in confidence, clocking up another 20hrs. I am determined to go back again. While I still have a lot to learn I will be helped by going to the two week intensive mountain flying course at the French National Centre at St Auban this September. It isn't easy to get a space but being female actually helps as the French are determined to encourage women to glide.

*John Bridge.

MOTOROLA SUPPORTS BRITISH GLIDING TEAM

Ben Watson, British manager, gives the background to the World Championships which are just about to start and news of a value sponsorship

The six man British team competing in the World Gliding Championships will be better equipped than ever. We are thrilled that Motorola Cellular Telephones have decided to sponsor us. It will be the largest support package the British team has ever received.

In addition to finance and clothing, Motorola are taking a positive interest in the team's publicity. For example, they have arranged for Ian Wooldridge, the *Daily Mail's* chief sports writer, to attend the Championships and report back from the British camp. We are hopeful this will create a greater awareness of gliding through a major tabloid newspaper in addition to regular coverage in *The Times* and *Telegraph*.



The British team were given a good luck send off to the World Championships by HRH The Duke of Edinburgh, Patron of the BGA, and are photographed with him outside Buckingham Palace. From l to r: Martyn Wells, Justin Wills, Chris Garton, Robin May, Tom Quigley, general manager of Motorola UK, Andy Davis, Dave Watt and Ben Watson, the team manager.

Tom Quigley, general manager of Motorola UK, comments: "Although Motorola is the world's leading supplier of cellular telephones, the company is still relatively unknown outside the UK business fraternity. We are therefore investing in a range of promotions and sponsorships to build public awareness of the Motorola brand name.

"In addition to gliding, this summer Motorola Cellular Telephones is utilising a massive hot air balloon in the shape of a cellphone, is supporting a parachute team and has a new mobile exhibition unit with a full range of cellular equipment.

"Gliding therefore fits very well into our promotions' philosophy. The sport tends to attract people with the lifestyle to appreciate the benefits of our products."

Motorola supplies a range of cellular telephones to the UK market, including a highly popular Motorola personal "flip" telephone and a choice of car telephones. The company has just been awarded the Queen's Award for export achievement for supplying cellular telephones to 18 countries.

The Championships will be at Uvalde (pronounced You-vál-dee) Texas from July 28 to August 10. This is a change from Minden, Nevada where some 80 pilots practised in the pre-Worlds in 1990 (at considerable expense) to familiarise themselves to the dramatic conditions of the Sierra Nevada. They flew almost continuously on oxygen in a height band of 10 000 – 15 000ft asl with task speeds of 170km/h.

Now at Uvalde, 200 miles west of Houston and 75 miles from the Rio Grande and the Mexican border, conditions will be much like Europe, varying from weak, blue thermals of 2kt and 3000ft tops to 7kt and 10 000ft tops. There will be cumulus on most days with very similar conditions over the whole task area and streeting in the prevailing SE wind. Airfield height is 940ft asl.

Uvalde has successfully hosted several US Nationals. The organisers are enthusiastic and have complete control of the airfield for the Championships. This was the problem with Minden where the threat of the water-bomber aircraft dowsing forest fires could have forced the returning glider fleet to land miles away on a dry lake bed, scrubbing the day's task.

MOTOROLA

Texas, of course, has its own special frontier characters – home of Davy Crockett, Bonnie and Clyde, Billy the Kid, Bill Cody (Buffalo Bill) and the Alamo. Its population is 63/sq mile. It's sense of humour is special too. The bulletin titles Uvalde as the Soar Spot of Texas. Then in the turning point photo book we meet TP 10, Ecstasy Municipal, featuring a dazzling pin-up noting "rolling terrain", "good heat source", "heavy activity" and "caution: may induce PIO"

Daytime temperatures are 97-104°F with 60% humidity. There are thorns on the scrub which will puncture a pick-up tyre. And snakes, scorpions and black widow spiders which will puncture you.

➡

So much for the site; now the pilots. We still await a full list of competitors but know that the total is 115. The Open Class has 24 entries, the 15 Metre 45 and the Standard 46. As usual the French, Germans and Americans will be the pilots to beat.

Klaus Holighaus won the Open at Ameriglide but the best French were absent. Jean Claude Lopitaux won the Gold at Wiener Neustadt in 1989 and Gerard Lherm came 4th. Surely they can't repeat that success. Now their prime minister is no longer a glider pilot will their river of gold dry up?

Justin Wills won the Ameriglide 15 Metre as he won the Austrian pre-Worlds but Bruno Gantenbrink beat him in the real thing. Time for a reversal this time round.

Andy Davis just missed the Gold at Wiener Neustadt (Jacques Aboulin – France again) and also at Ameriglide, beaten on the last day by America's Chip Garner. This time a Gold for sure!

Chris Garton was 3rd in Austria so should score well again. Martyn Wells is having four weeks' practice on site so this time he is really determined to get a medal. With all our 15 Metre pilots flying LS-6s his business should thrive also.

Spot on calculations from Platypus

Robin May will have Platypus in the back seat of his ASH-25 so his calculations will be spot on. But what about those Mexican dishes and Montezuma's revenge.

Finally Dave Watt, our laid back joker, has already made an on site reconnaissance. Dave you will remember was 5th to Brian Spreckley's Gold in Benalla in 1987. He loves cumulus and hates mountains. This time he's flying Standard in his ASW-24. He and Andy (Discus of course) will be a strong pairing to turn the tables on the French.

Finally logistics and money. This is quite a problem greatly helped by Motorola. The budget is around £60 000 or £10 000 per pilot. In 1983 when the Worlds were last in the USA George Lee was reigning Champion and the RAF flew the complete outfit to New Mexico and return. No such luck this time.

We will ship Ro-Ro Southampton-Houston but the return has to be from Jacksonville in Florida involving 4000km of motoring for the luckless crews after the Championships. Hiring vehicles is another difficulty since all the major rental companies avoid towing because of insurance problems. Luckily we have located a Houston firm who are renting us air-conditioned pick-up trucks with tow bars – but bring your own balls!

WOMEN'S SEMINAR AND WORKSHOP

The first women's gliding seminar and workshop will be held at Sportavia, Tocumwal, Australia from December 15-20 with the aim of improving skills at all levels. As well as discussions and lectures, there will be gliding from dual training to advanced cross-country tuition.

For more details contact Janet Hider Smith, A. Baumgartnerstr, 44A1-031, 1232 Vienna, Austria. Entries close on September 15.

MERRI'S PROGRESS

Mornin' Sickness



Those of you who posses inquiring minds may have been wondering why I've been silent for so long. Those of you who know me will be probably be in shock at the length of time I've been quiet. There was a very good reason for my absence: Isobel Beatrice entered the world on February 28. Needless to say her first foray (apart from coming home from the hospital) was to the gliding club, where, as she spent most of her visit sleeping, she was quite well received.

What I'd like to describe is how the best laid plans of mice, men and female glider pilots can go awry. I'll be honest: I thought that I could have a baby in my lunch hour and be back to work in the afternoon. Pregnancy was a revelation – and the notion that these are supposed to be the best months of your life is just propaganda to assure the continuation of the species!

We planned Isobel so that her arrival wouldn't interfere with the soaring season, and that the pregnancy would also fit in. It might as well have been left to the stork to decide: I thought that morning sickness was just that – queasiness in the morning and all over by the time the Cus formed. Well, it can and does go on for 24 hours. I spent four months commuting to London with sick bags in my attache case and two months feeling so ill that I didn't even want to look at a glider. Naturally my syndicate partners were overjoyed.

Luckily, we own a two-seater, so I could take a safety pilot with me when I felt better. Because it is a high performance two-seater, I was fortunate to travel in style with pundits various – although Mick Boyden who greeted my husband and myself one day with the immortal line: "Mornin' Derek, mornin' sickness!), and Pete Stratten both deserve a special mention. The two of them were responsible for my finally flying the Janus as a Janus, and not like an Astir.

Mick in particular taught me that even in a big glider, a field looks small at 2000ft precisely because one is at 2000ft and becomes a lot more landable a bit lower down. I felt an absolute pratt for worrying about how to fit 20m into a field from too high up! Poor Mick had to put up with me making use of the sick bags in the back seat as he was competing in the Inter-Club League final. The sound effects must have been most encouraging – Stratts helped me to look a lot farther down track than I was used to looking, at last getting big wings into perspective as far as technique was concerned.

Mind you, pregnancy affects you apart from making you feel nauseated. I felt incredibly fatigued and an hour's steady flying in relatively unchallenging conditions made me quite grateful for the safety pilot.

I had never before had a problem with *g*. I found, however, that when I was pregnant, my sensitivity heightened; it made me prone to dizziness. Issy was OK because she was bobbing around in a *g* suit of her own, but all of this bobbing took its toll on her mother! I found this out when my husband, bless him, in a rare fit of boyish enthusiasm threw us into a series of tight turns in our Jodel to exclamations of "Isn't this fun!" Indeed!

I'm fortunate in that "Doc" Peter Saundby is a member of our syndicate. When we flew together, I felt secure in knowing that no matter what would happen, some one would be there for the delivery! And while I was pregnant, he reminded me that when working as I did, and commuting four hours a day, I couldn't do everything. He was right; I found that I needed the weekends to recover. Now, the question on the phone is when I'll get back into the cockpit. As I'm feeling better and more rested each week, the answer is very soon.

'There is a temptation to give it all up until one can approach it on a more regular basis . . .'

Trying to combine motherhood, a career and an all consuming passion like gliding is no easy matter – even when one's husband is as helpful as Derek. Hormones conspire to make us feel guilty at leaving our babies (I speak in the plural because I've done a bit of research into the matter, and I am not the only mother who feels this way). Guilt, added to the incredible frustration felt when the day is a cracker, twenty metres awaits, but feeds are two hourly, is an unpleasant combination. There is a temptation to give it all up until one can approach it on a more regular basis – which may be never. Perhaps we should be looking at the provision of child care facilities to ensure the return of women pilots after "maternity leave"? It's just a thought.

It must be noted: **no two pregnancies and births are the same!!** Some women can and do take very little time off. I could not. I hold my experience up not as a typical example, just as an example. I know the challenges of returning to gliding are myriad, and I'll organise myself to meet them. Hopefully 710 will be puttering around the sky again soon. Why are you all running away?

WAVE AND SPAGHETTI

Justin and Gillian Wills wanted me to paint a picture of their house in New Zealand; would we go and stay with them? What a scrumptious invitation! Maybe I'd get a chance to fly with Justin. There might be a roaring north-westerly. We might get a stupendous wave flight. We didn't get a roaring north-westerly, but here's the story of our Twin Astir flight

We took off in a Twin Astir from Omarama into a wave sky that could have been over Scotland or the Welsh Borders, seven eights cloud and the wave not very well defined, wind north-westerly, about 15kt; stronger when we got high. Justin pulled off at 2500ft, still quite a way from the ragged edge of our slot. He climbed in what had to be a thermal, (not rough enough for rotor) though I couldn't make out what could be feeding it under the cloud sheet. As we got near the cloud we were enveloped in wisps that quickly became solid; that was when Justin discovered that the T&S wasn't working, he opened the brakes and let down. Not even Justin can cloud fly without instruments . . .

We headed for the ragged edge of the slot and it worked exactly as it would have on a difficult day at home. Which surprised me; after all, we were upside down, on the other side of the world I mean. It was marginal to start with, then a scrappy ½ to 2kt. Once we got established it gave 6kt steady and the occasional kick of ten as we climbed along the edge. At 14 000ft Justin set off south-west.

The small ragged slots showed lion coloured mountains and some big lakes. You can identify the lakes in NZ by their amazing colours. They're fed by glacier water off the mountains and look opaque, like the rubbed bits of glass you find on the beach. Milky greens and blues and opals and aquamarines. We were heading for Wanaka which is a startling blue-green. We flew fast over a large cloud sheet, descending inexorably towards it and even Justin can't cloud fly without instruments . . . After a while an irritable voice from the back.

"We're not going to make that edge."

He took us through it with great cunning using the thinner bits that look like dirty footsteps on a snowfield. We came out at 7000ft over lion coloured mountains, Lake Wanaka ahead with farmland round it. There was very little sign of wave ahead, only a scrappy line of puffy jobs above the mountains a few miles to the south-west. We went for it, tried it, nothing. Continued, descending, south-west.

"Is that Queenstown? Are we going there?"

"Yes it is, and we are going there, if we can reach it."

Justin knows that area really well. He knows which ridges work in various wind directions, which valleys channel the wind on to useful faces. It's his playground. He tried all his favourite spots and they refused him. He flew right into gullies.

"Can you see if the tussock grass is moving?"

"It isn't."

"There's wind on the lake, that chap with the wind surfer just got tipped in."

"Sink from the wave?"

"Has to be."

It was the most unfriendly, dark blue, sunny sky, a steady six down whatever Justin did, and he did everything that a determined maestro could do.

Placing his wingtip among the upper branches of a tree that was clinging to the lion coloured mountain he asked.

"Is there any wind in that tree?"

"None."

In the end he accepted the inevitable and called Queenstown Airfield. Would we be local soaring? they asked. Huh! They gave permission to land. The Twin Astir looked brilliantly elegant, slim and sharp, among the tubby Cessnas and big passenger planes. I felt proud as Punch to arrive in such a delightful craft. We pooled our cash and found that we'd got enough money to pay for lunch and a taxi to and from Queenstown. Justin took me to a favourite haunt; a very European Italian restaurant where we ate excellent spaghetti and home-made bread to the strains of "O sole Mio." It was not as planned, but, oh my! I did enjoy myself!

At 3.30pm Malcolm came with the tug and towed us back over the lion coloured mountains and strange, brilliant coloured lakes. When Justin reckoned that we'd travel faster off tow, he pulled the bung and we rocketed back through the Lindis Pass. I'd never flown so far so fast. The Twin Astir feels nice at speed; very powerful and collected.

At the airfield they had been local soaring and there was a glider looking abandoned in a field. Now I'll tell you how I'd have flown the same aircraft on the same day.

If it had been Rhoda's flight

Better hang on 'till we reach the edge; if I pull off too early I'll probably come unstuck, and it'll be a wasted aerotow. Right. Through the bumps now and into the smooth bit. Off we go. Don't think much of the lift, but hand on, work hard, that's better. Curses, lost it. Damn, where's it got to? Ah, NOW we're in business!

I'd have flown up and down the edge, very happily, milking the wave of its last inch of height, then I'd have run out of ideas. I'd have floated about over the brilliant white clouds, keeping a beady eye on the gap I'd come up through and, when I decided that there was no way of getting any higher, I'd have cruised around a bit looking down through a few holes and marvelling at how different the landscape looked. (Wave slots over the Welsh Borders always seem to show a disused railway and a caravan site.) Then I'd have hunted for my own personal hole and, inevitably, there'd have been a few moments of panic while I failed to find it.

I'd have let down with great care, not allowing the smallest wisp of dangerous cloud to touch me. I would probably have local soared a bit and then, with great concentration, I'd have come in to land. I'd have been quite pleased with myself; I'd contacted the wave, I'd had the privilege of floating silently over that great gleaming snowfield. But there would not have been a lot of excitement and there'd certainly not have been spaghetti and home-made bread with a charming man to the strains of "O Sole Mio."

PS. The day we went home there was a roaring north-westerly and we drove the hundred and fifty or so miles to catch our plane from Christchurch under the longest, most solid, most spectacular, most magnificent lenticular that glider pilots could imagine in their wildest dreams. Doesn't it always happen? Never mind. We shall have to go back.

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STEVE VENESS

GETTING A GRIP ON GLIDING

Going solo is always an achievement but for Steve it meant even more than usual

A few weeks ago I went solo. So what? I hear you ask. Well, it means a lot to me. Yes, everybody's first solo means a lot to the individual concerned but they don't usually provoke articles in *S&G*. OK, fair point. My excuse for self-glorification in print is that the circumstances of my first solo were a bit unusual. Not unique, but unusual because I am a paraplegic and have no movement or sensation in my legs and use a wheelchair to get around.

My interest in gliding began one summer's evening last year when I turned up at Enstone Eagles GC with a group of friends for a trial instruction flight. As soon as we landed I knew I had to have another go and, in common with many others before and since, it soon dawned on me that I was hooked.

The number one question on my mind was: is this something that I can do properly, *ie* on an equal footing with everybody else? A few phone calls began to demonstrate the very positive "can do" attitude that exists within the gliding fraternity. The answer to my question was clearly going to be "yes". Soon *via* the BGA and RAF Bicester I was talking to a Silver badge pilot, Gary Bennett, who is also a paraplegic and should by rights be writing this article since he has done it all before (but he is probably too busy flying).

A meeting with Gary gave me the benefit of his experiences and some useful do's and don'ts. Then it was down to me to make things happen – which is the way it should be (the attitude is "can do" not "can it be done for me?"). So, back to Enstone (they started this after all).

It soon became clear that my carefully thought through logical arguments about why the club should accept me as a member, and allow me to adapt their Blanik, were a complete waste of time – the powers that be needed no persuasion. With the one obvious proviso that in fairness to the other *ab-initios* any adaption should be capable of being fitted and removed quickly, I was pointed in the direction of Tony Cox, the club's technical inspector, told to get on with it. "It" being, of course, something which would make that infernal rudder pedal move without the pilot (me) so much as twitching a toe.



Steve demonstrating his independence with his wheel-chair/high stool access process. Photos: Robin Pearce-Boby.

When you consider that the movement of an aircraft in pitch and roll is controlled by one hand on the stick, it seems strange that for the third plane the early aviators decided that two feet would be required to control yaw *via* the rudder pedals. The obvious answer to my particular need is to operate a simple lever with the left hand which is otherwise idle (well, apart from airbrakes, trim, cable-release etc – see below).

So, armed with some ideas of my own and some pointers from Gary I took my proposed design to Tony. Tony in turn came up with an alternative design which was different to mine in one small but significant respect – namely that his was going to work whereas mine, with the benefit of hindsight, would not have! The final design is shown in the diagram and is very straightforward.

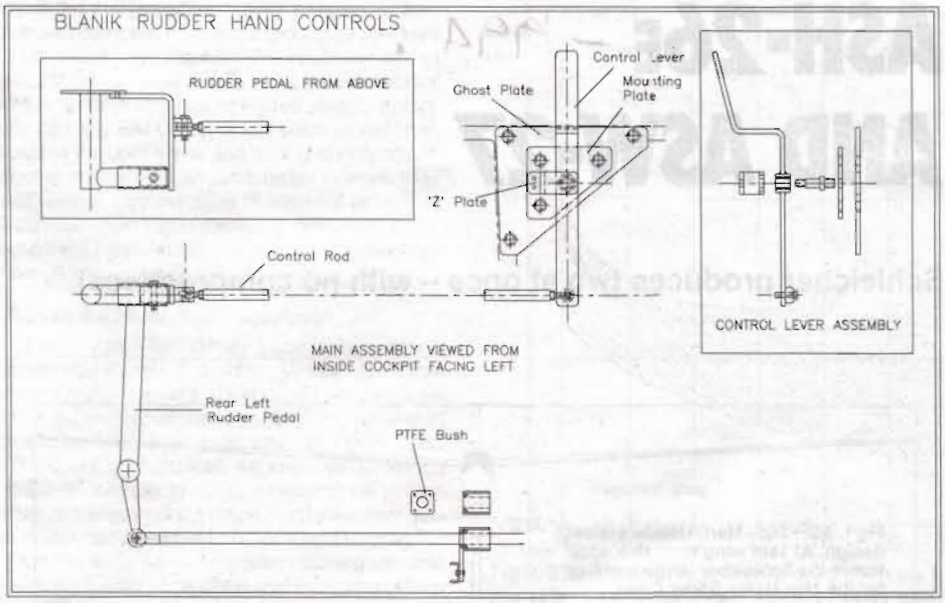
A lever operates a control rod which in turn connects through a rose-joint to a small bracket fixed to the left instructor rudder pedal. Pull back on the lever, the control rod moves forward and you have left rudder. Push forward on the lever, the rod moves back and, because the Blanik has a positive link between left and right rudder pedals, the left pedal moves back and the right pedal moves forward to give right rudder. (The only complication is that the rod which runs under the front seat to connect the left instructor pedal to the left front pedal is not designed to be operated in compression and needs a PTFE bush to prevent flexing under extreme loads.)

The "ghost" plate, the PTFE bush and the bracket fixed to the instructor rudder pedal all remain permanently fixed in the aircraft – and have no effect on any controls, all of which work normally. The hand control assembly is attached using three bolts to fix the mounting plate to the "ghost" plate, and a 6mm pin with "nappy" pin to connect the control rod to the rudder pedal bracket. The whole assembly takes about five minutes to fit or remove.

Thanks to the help of several club members with access to a lathe and a welder, and with a certain amount of sawing, drilling and filing on my part, the various pieces quickly came together to

Below: The left hand rudder control lever system fitted to the Blanik.





form the completed controls. These were then handed over to Tony to be fitted (and tested) in the Blanik. Tony also overcame the problem of the Blanik's airbrake, which as many of you will know is inclined to suck open fully once unlocked. This potential difficulty was solved by creating two notches in the slide in which the airbrake control runs. These provide the opportunity of setting the brake at its 1/2 and 3/4 positions.

Soon the day arrived when I was able to fly with the rudder control. Tom Miller, the duty instructor, took the launch and after clearing the runway invited me to try a turn. Having thought this through many times by now, I operated stick and rudder more or less together, stick to the right and rudder lever forward, and the Blanik managed a fair approximation to a co-ordinated turn – it seemed too good to be true. In fact it was, because over the succeeding weeks and months I proceeded to commit the same mistakes that every other *ab-initio* makes whilst learning to fly – including turns which ranged from more or less co-ordinated to completely unco-ordinated ("now, was it forward or backward for left rudder?").

However, after a time things began to come together in the way that all the experienced members keep telling you they will – the rudder movement becomes as instinctive as using the stick, co-ordination begins to grow on you. Landings were a bit tricky in the early days because of the need to let go of the rudder to operate the airbrake. With practice though the airbrakes can be opened and set in a fraction of a second and adjusted to a different setting similarly quickly. Once the final turn is completed the airbrakes can be operated and adjusted as required with no ill effects since the rudder, being centralised, isn't inclined to move much in the time taken to use the airbrakes.

Similarly, cable release, trim and flaps can all be operated quickly, with little disadvantage being caused by releasing the rudder momentarily. Spin recovery proved to be no more difficult than for any one else – full opposite rudder required a firm push (or pull) on the lever as would be expected but arms like Charles Atlas were not a prerequisite. Nick Murphy, CFI, did cause me one heart-stopping moment by holding the Blanik in a spin for 360°. (as he had said he would) whilst I, aware of the ground spiralling up to meet us, had forgotten that 360° meant a complete circle and was trying to apply full opposite rudder against the force of his left leg (no can do!).

Going solo was, I am sure, no different for me than for anyone else. Only after a second flight, and with the gliders put away and the beers bought, did the pleasure in the achievement sink in for me (causing PIOs as I tried to drink my beer).

On reflection, I believe that flying a glider solo is an achievement of which anybody can be proud. It is no more difficult for me than for anyone else but there is perhaps an additional pleasure to be gained in my case. That pleasure comes from the knowledge that I am able to tackle this particular challenging activity with some success without the challenge having to be made easier (*ie.* lessened) because of my disability.

Now having gone solo, my aims for the future are pretty much as you would expect – gaining experience, getting my Bronze badge and above all enjoying flying. The great thing about all this is that I know that I will be able to do it on an equal footing with others. In addition, the positive attitude shown by all at Enstone as well as by the wider gliding fraternity has demonstrated that everyone else sees things the same way.

Comment from Nick Murphy, CFI: Since Steve Veness has been with us he has shown a natural aptitude for flying. This has been borne out by his own endeavours and willingness to design and help fit a rudder conversion which enabled him to solo after only 36 flights, most of these being from cartow launches. Instruction was no different to any other *ab-initio*. A credit to himself and an incentive to other disabled persons.

OVERSEAS NEWS

Please send news and exchange copies of journals to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH, England

FRENCH STATISTICS – 1990

The French gliding movement is broadly comparable, in terms of its overall numbers of participants and aircraft, to our own. But there are major differences too. The following statistics on French activity in 1990 may be instructive:

Licence holders	15033
Most common type	Pegasus (233)
Aerotows	266 138
Average flights	1hr 22min
Silver badges	368
All three Diamonds	31
Gliders	1737
Hrs (less visitors)	332 217
Winch launches	30 485
First solos	1311
Gold badges	79
Cross-country km	3 982 910

ACROSS THE MED BY GLIDER?

The French Gliding Federation (FFVV) has laid detailed plans for an attempt to fly from Southern France, *via* Corsica and Sardinia, to Tunisia. Studies have shown that such a flight is theoretically possible in a NW wave regime. Starting from St Auban, the route (with intended departure altitudes) is as follows:- Fayence, 8000m; Cannes, 7500m; Corsican coast, 3000m; Bonifacio (South Corsica), 6-7000m and Cagliaris (South Sardinia), 6500m minimum.

The longest sea-crossing (190km) is from Sardinia to Tunisia, so that the intended departure height of 6599m (about 20 000ft) should leave a comfortable safety margin, given that Gerard Lherm and his fellow pilot will be flying an ASW-22 and an ASW-25 respectively.

The plans were inspired by Jean Vuillemot's epic 1974 flight from Vinon to Solenzara in Corsica, when he arrived over the Corsican coast at 17 000ft after a sea-crossing of almost 100 miles.

FRANCO-GERMAN MEET AT CHEMNITZ

Each year, the French and German Aero Clubs organise a gliding camp for the under 25 year-olds. This year they will meet in August at Chemnitz (formerly Karl-Marx Stadt).

The camp, which is non-competitive, aims to foster international friendships and to give the visitors a chance to get to know all aspects of the host country – as well as flying cross-country. This year's meet will be the first on former GDR territory.

(Translated from foreign magazines by Max Bishop.)

The 1991 S&G Yearbook, with 68 pages of fascinating articles and information, is now available from the BGA office at £3.50 with free postage for S&G subscribers

ASH-26E AND ASW-27

Schleicher produces two at once – with no compromises!

It is not Schleicher's style to produce cross-breds with extended tips. Martin Heide and Gerhard Waibel have created two completely new designs: the ASH-26E, an 18m self launching sailplane, and the ASH-27, a thoroughbred Racing Class design. Both have been designed in GRP/carbon fibre/aramid for a specific purpose and to avoid performance blunting compromises. They have been designed explicitly to meet clients' requirements. In addition to the conventional T tail arrangement and automatic control connections, both gliders use a state of the art wing section that guarantees even the 15m ASW-27 an L/D of 48:1 or better.

Gerhard Waibel is confident that this exciting wing section will ensure the ASW-27 is a best-seller even without facilities for extending the wing span. He looks at it like this: glider pilots were ready to accept the performance difference of 20% (with an L/D difference of 10%) between aircraft in the Standard Class and Racing Class such as the ASW-19 and the ASW-20. With such performance differentials the Racing Class was attractive, but with the latest generation of Standard Class gliders, this difference has almost disappeared and the Racing Class has lost its attraction somewhat. He believes pilots are ready for a new design which restores the older difference. The ASW-27 will offer approximately 20% better performance than the ASW-24.

Nowadays a performance increase of that magnitude is achievable only if drag is reduced wherever possible. Improvements in wing sections have to be matched by improvements in all other components. Consequently the ASW-20 was designed strictly as a 15m aircraft. If Gerhard Waibel had kept his options open for extending the wing span there would have been a performance loss in the planform of the wings and the design of the tail and too many performance blunting compromises would have been involved. Instead of plug-in wingtips for the ASW-27 there is a brand new 18m aircraft, the ASH-26E, which equally has been designed as such – with no compromises. For many Schleicher fans this is the aircraft of their dreams. Edgar Kremer summarised the requests received by Schleicher: "That's the glider people want". The fact that the 18m ASH-26E fits the 18m Motor Sailplane Class seems to be almost a coincidence.

Many pilots simply want a glider that is more than just a Standard Class or Racing Class glider

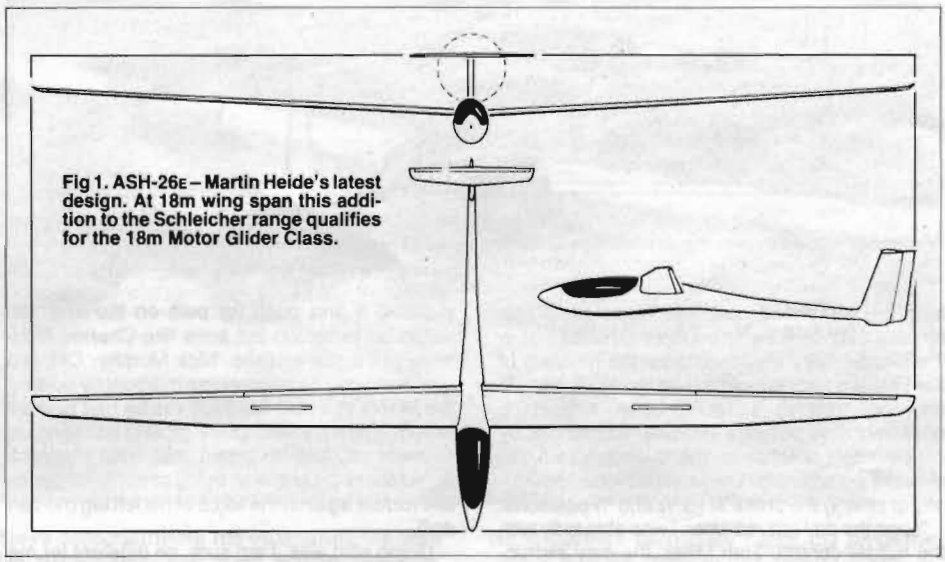


Fig 1. ASH-26E – Martin Heide's latest design. At 18m wing span this addition to the Schleicher range qualifies for the 18m Motor Glider Class.

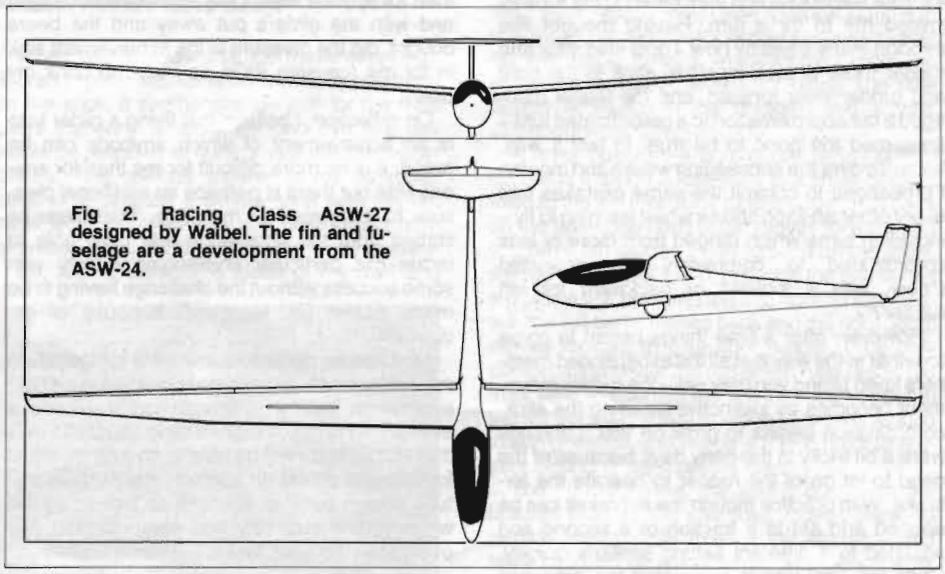


Fig 2. Racing Class ASW-27 designed by Waibel. The fin and fuselage are a development from the ASW-24.

Technical data

ASH-26E	
Wingspan (m)	18.00
Wing area (m^2)	11.70
Aspect ratio	27.69
Length (m)	7.55
Cockpit height (m)	0.82
Cockpit width (m)	0.64
Height at tailplane (m)	1.44
Wing section	DU 89-134/14
Empty weight min equipment (kg)	325.00
Max AUW (kg)	585.00
Weight of one wing (kg)	70.00
Wing loading, max (kg/m^2)	50.00
Wing loading, min (pilot + fuel 80kg) (kg/m^2)	34.62
Waterballast max (litres)	160.00
Max cockpit loading including parachute (kg)	115.00
VNE (kt)	151.10
Stalling speed at 405kg AUW (kt)	38.31
Min sink (m/s)	0.47
Best glide at 51.26kt	1:50
ASW-27	
Wingspan (m)	15.00
Wing area (m^2)	9.00
Aspect ratio	25.00
Length (m)	6.55
Cockpit height (m)	0.80
Cockpit width (m)	0.64
Height at tail (m)	1.30
Wing section	DU 89-134/14
Empty weight including min equipment (kg)	225.00
Max AUW (kg)	500.00
Weight of one wing (kg)	58.00
Max wing loading (kg/m^2)	55.56
Min wing loading (kg/m^2)	32.80
Waterballast max (litres)	180.00
Max load (kg)	130.00
Max cockpit load including parachute (kg)	115.00
VNE (kt)	151.10
Rough air speed (kt)	113.32
Stalling speed at 320kg AUW (kt)	37.77
Min sink (m/s)	0.52
Best glide at 53.96kt	1:48

in that it is self launching but not so large, expensive and cumbersome on the ground as an Open Class glider – so the ASH-26E is similar in that respect to a Kestrel. The Glasflügel Kestrel which, when it was first designed, didn't fit properly into any FAI Class, is still seen by many as suitable for both weak and strong conditions. A Kestrel style glider can climb better in weak thermals than a 15m machine, though not as well as a current Open Class design of 25m wing span, but it must be remembered that at high speed an 18m glider leaves all the FAI Classes behind.

Advantage at high speeds

The choice of an 18m wing span offers distinct advantages over the 15m gliders at higher speeds (above about 100kt) and over the latest generation of Open Class gliders from about 80kt upwards. The large wing span of Open Class gliders, which produces excellent performance at low to medium speeds, is detrimental at high speeds because of the disproportionate increase in profile drag relative to other forms of drag.

On the other hand, 18m wings allow a sensible low wing loading for a self launching glider (which is inevitably heavier than a pure glider) without unreasonable compromises having to be made in the overall design. By way of comparison, modern Standard Class self launching gliders have an excessively high minimum wing loading.

Designing the ASH-26E from the start as a self launching glider is a direct response to market demand. A motor glider offers tremendous advantages. These include independence from other labour intensive methods of launching and therefore the opportunity for easy midweek flying, virtual independence from a retrieve crew, virtually eliminating the risk of outlandings, reduced retrieve time and stress and last, but not least, considerably improved opportunities for gliding from sites which are badly situated with regard to thermal conditions or airspace.

Environmental considerations

Martin Heide is fully aware that a modern self launching glider with retractable engine needs to be quieter and more environmentally friendly. He is working on the design of the engine and retraction system to reduce the noise still further. It is Martin's view that glider and engine development are still widely divergent activities. A simple solution would have been to borrow the retractable engine from the ASW-22B-E.

The origins of the development of the wing section for both these new aircraft actually predate the ASW-24. The decisive technique in increasing performance over the previous generation Racing Class is similar to that used in designing modern Standard Class gliders. Just as the laminar bucket became narrower the ASW-27 was not optimised equally from stall speed to the high speed range, but optimised for medium speeds at the cost of small losses at both ends of the speed range.

Implications of competition tactics

Gerhard Waibel regards this as a natural consequence of the way that competition tactics and cross-country flying tactics have developed. Increasing the wing loading with waterballast in good conditions shifts the speed polar towards higher speeds in any case. In the view of the designer the fact that compared with the ASW-20 the ASW-27 has a lower minimum sink rate at higher airspeeds, a slightly larger thermalling diameter should not be detrimental. Gerhard Waibel argues that Open Class gliders climb well with low minimum sink when thermalling fairly wide, so the structure of thermals cannot be such that smaller gliders would do worse in similar thermal conditions. The fact that the airspeed for minimum sink and therefore the ideal thermalling speed is noticeably above stalling speed in the new wing sections is certainly a definite safety factor.

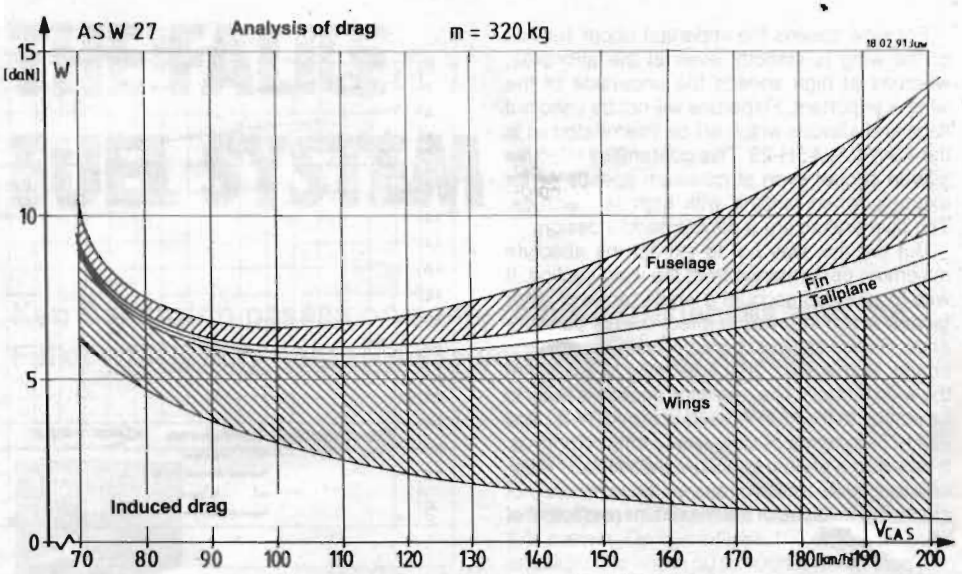


Fig 3. The diagram represents drag analysis for an ASW-27 at 320kg AUW. It shows clearly how the relationship between induced drag and profile drag is reversed at higher speeds. This increase in drag from the wing at higher speeds explains why a medium wing span glider such as the ASW-26 has considerable advantages over the Open Class over the super span exotics in the Open Class.

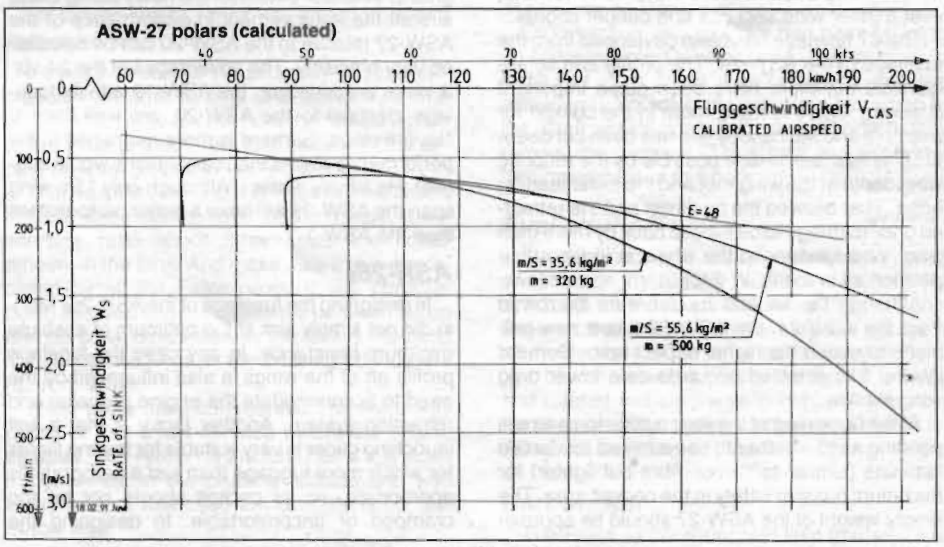


Fig 4. Calculated polars for the ASW-27. Gerhard Waibel has been very modest about the glide angle tangent but it produces an L/D of 1:48.

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The wing section has been improved as a result of close co-operation with the Delft Technical University and Luc de Boermans' team, who developed a wing section with an extremely extended laminar flow on the underside and subjected it to rigorous wind tunnel tests. This has been achieved by the consistent use of turbulators which reliably prevent the formation of drag-creating laminar breakaway bubbles, a factor which has been confirmed in wind tunnel tests. The result is a "two position" aerofoil. ➡

For slow speeds the important upper surface of the wing is smooth, even at the airbrakes, whereas at high speeds the underside of the wing is important. Flaperons will not be used but flaps and ailerons which will be interrelated as in the ASW-22B/ASH-25. This guarantees effective aileron control even at minimum speeds as for example when landing with high set ailerons. The dive brakes are a double paddle design.

But the aim was not to extract the absolute maximum performance from the wing section. It was to take into account a whole range of other factors which in practice affect overall performance. Gentle stalling characteristics are one example. Martin said "that was easy to identify in the wind tunnel". The new wing section is likely to be similar to the HQ17 (used in the ASW-22 and ASH-25) in terms of slow speed characteristics. It was also a priority to ensure that surface irregularities such as raindrops or bugs would not cause the collapse of the maximum coefficient of lift.

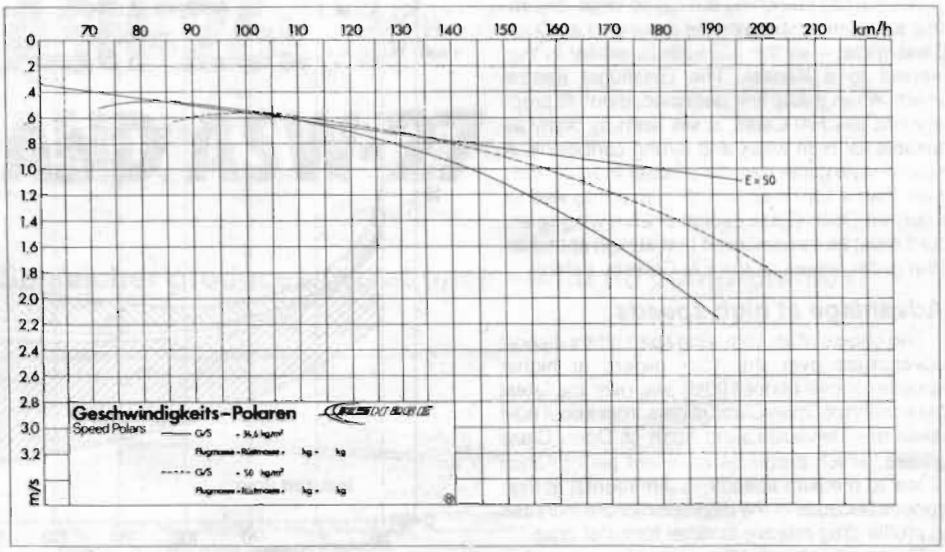


Fig 5. The ASH-26E L/D tangent cuts through the calculated polars so designer Martin Heide can confidently expect an L/D of over 1:50.

ASW-27

For good performance at slow speeds the ASW-27 has a relatively high aspect ratio wing (double trapezoid planform with 9m² wing area). Adequate storage for waterballast has been achieved by adopting a slightly thicker section. The 27 wing does not follow the trend towards ever thinner wing sections and deeper chords.

The 27 fuselage has been developed from the fuselage of the ASW-24. The profile and fin are identical but there have been some important changes. There is more room in the cockpit for example and the canopy line has been cut deeper. This has been made possible by the reduced wing depth at the wing root and the lower leading edge. That allowed the backrest and the retracted undercarriage to be moved back by more than 3cm. When extended the wheel is in the same position as in the ASW-24.

Although the fin and rudder were borrowed from the ASW-24, the ASW-27 has a new tailplane to match the higher aspect ratio. Gerhard Waibel has selected an up to date lower drag wing section.

At the beginning of the year a decision was still pending as to whether to use a mixed reinforced laminate (similar to carbon fibre but lighter) for maximum passive safety in the cockpit area. The empty weight of the ASW-27 should be approximately 225kg so the wing loading will be between 35 and 50kg/m².

As the ASW-24 fuselage has been used to a greater or lesser extent for the new Racing Class aircraft the improvement in performance of the ASW-27 relative to the ASW-20 can be calculated very precisely. The advantages of the 24 *vis-à-vis* its predecessor, the ASW-19 with its fuselage identical to the ASW-20, are well known. Nevertheless, Gerhard is more restrained in his performance claims than calculations would suggest. He simply states: "Although only 15m wing span the ASW-27 will have a better performance than the ASW-17".

ASH-26E

In designing the fuselage of the ASH-26E Martin did not simply aim at the optimum of absolute minimum resistance. In any case the fuselage profile aft of the wings is also influenced by the need to accommodate the engine propeller and retraction system. Another factor is that a self launching glider is very suitable for touring flights for which more luggage than just a barograph is appropriate, so its cockpit should not be too cramped or uncomfortable. In designing the fuselage Martin made a roomy cockpit a high priority.

On the other hand, because of the extended wing span, the fuselage had to be longer than a 15m sailplane fuselage to achieve well balanced controls. The cockpit has gained about 10cm over the ASW-24. The lines of the ASH-26E fuselage, especially in the cockpit area, resemble that of the ASW-24, although it was completely redesigned.

The overall design concept of the ASH-26E enables the pilot to manoeuvre single handed on airfields and also to taxi and take off without the need to develop special skills. Its moderate wingspan will not cause problems in terms of space.

The double trapeze planform wing is in two parts. Although that gives heavier unit weights for lifting when rigging or de-rigging it does save in overall weight and allows automatic connection of controls.

Assuming a 90kg pilot (including parachute) and 10kg of fuel Martin aims at a minimum wing loading of 35-36kg/m² for the 26E. This is based on the experience that aircraft with a higher aspect ratio can take somewhat higher wing loadings. Open Class gliders, for example, very

ASH 26E & ASW 27

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THE FALKE FUEL SYSTEM

Ken Ballington passes on some of his experiences with the Falke which may help to make your flight trouble free

As a pilot and an engineer I have been closely associated with the Falke motor glider for 15 years and its rugged design and simplicity continue to intrigue me. Yet it does have some well hidden little tricks that can catch you out.

While thumbing through Dick Stratton's Aggro sheets, issued to BGA inspectors, I fell upon the report of the Rufforth Falke whose engine had stopped on take-off. Many of us have had similar experiences which have been dismissed or forgotten and I thought that if I told readers of my observations others might add to the knowledge. Then perhaps those wanting a quick flight might not have their day spoilt by one of the Falke's little foibles.

The fuel system is remarkably simple. The tank sits behind the pilot and a has a fuel sight tube (later models had a gauge). The fuel flows by gravity through a turn-cock into a filter bowl, with a sight glass on the pilot's side of the firewall, to a mechanical pump and on to the carburettor.

The fuel tank

The metal tank holds about seven gallons and tapers, so there is a problem knowing how much fuel you have. And there is just one line in the flight manual about fuel:

The fuel quantity is accurately shown when the aircraft is sitting on level ground, or is being flown at 43mph.

'But who travels around at 43mph close to the stall?'

Now this is true. The tank is filled five litres at a time with each five litres marked off on the graduation next to the fuel sight gauge. Except for the last five, the graduations are reasonably linear and the flight attitude at 43mph is about the same as when standing on the ground. But who travels around at 43mph close to the stall?

It is more than likely you will be buzzing around at 70mph or faster. It's easy to squint over your shoulder to see how much is left, but rather a drag to slow down to 43mph and then look at the fuel. This is where a number of pilots have come unstuck and finished their day walking out of a field or worse!



Ken has been gliding for 15 years and flies and maintains Falkes in particular. He is a member of the Marchington Gliding Club.

It's worth checking the accuracy of your calibration from time to time and make sure that others who fly the aircraft note the results. I pour in five litres and note the first mark with the aircraft on level ground to verify the scale.

Then raise the tail until it is in the normal cruise attitude and note the level of the gauge. It will normally read about three times the actual amount in the tank. And make sure this is appreciated by all the Falke pilots. If you continue doing this, you find the difference between tail up and tail down diminishes as the tank is filled and the gauge markings in the cruising attitude are far from linear.

Many pilots have commented that there was plenty of fuel a few minutes before the engine stopped. The reason is the tank has a V shaped trough whilst in the cruising attitude and with every inch of fuel used the quantity is considerably less.

Gravity feed

Gravity can cause many problems to the glider pilot but one I didn't reckon with was on the Falke fuel system. On some flights the engine stopped on take-off at about 50 to 100ft. I would then fly it for long periods without any problem.

On stripping the engine I found the fuel pump simply wasn't working. I didn't realise the Falke would fly without the pump working but it seems that under normal conditions there is almost an adequate flow of fuel supplied by gravity, but on take-off, with full power and a very low tail, the engine can be starved of fuel.

On reflection, this problem had been building up and was hinted at with the occasional miss on climb out. The pump was fairly new and the actuating quadrant at the base had seized on to the shaft which goes through its body. I now remove the pump at C of A time and check the free movement of this part.

Fuel shut-off valve

The fuel cock is a rotary valve which can be switched on by turning in either direction. My syndicate partner once finished a flight with his finger stuffed into the valve to stop fuel escaping when the body of the valve came away in flight. You can unscrew the core of the tap if it is loose and rotated anti-clockwise continually. We now turn it on or off by rotating clockwise. (There is an AD about replacing this valve.)

Carburettor

The Falke carburettor gives little trouble if it is kept clean and warm but I have come across erratic slow running due to worn butterfly spindles. This usually happens on approach and landing when it is difficult to regulate the slow running.

But carburettor icing can be without cure in the Falke in certain conditions. Its carburettor is bolted on to the oil cooler and if you allow the engine oil to cool below 70°C recovery from icing is very difficult, even with full carburettor heat. In cold weather I keep the oil temperature about 70°C and if icing does occur it is generally possible to see it off with the heat control.

I hope these few notes will be helpful and I am always pleased to hear from others with motor glider experience. Along with the pilot's notes, which should always be in the aircraft, I am sure it must be possible to write a guide on how to screw-up without really trying.

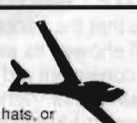
rarely fly at lower wing loadings. When asked to specify the best L/D the designer is very modest. He would prefer not to promise a specific L/D but it will certainly be in excess of 50:1. Using the ASW-27 as a starting point and working on the basis that each extra 1m of wing span offers at least one point improvement in L/D, the actual L/D must be better than 50:1.

The performance specifications (speed polars) of the ASH-26ε may change as a result of final design weights. The motor has not yet been finalised but it has already been decided that it will be 35-40 PS, drive a 1.60m propeller and ensure an average rate of climb of 3m/sec. (6kt).

Patience . . .

It is likely that both aircraft will go into production at the same time. Although the ASH-26ε is ahead at the moment as work on the prototype has already begun, it is usually the case that type approval takes longer for a motor glider, so the ASW-27 is likely to catch up.

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CHOSEN BY FRANK IRVING

EXPLORING THE CU-NIM FOR SPEED AND HEIGHT

Here is a delightful offering from 41 years ago – the tale of how Bill Bedford, then at the Empire Test Pilots' School, gained the British National and UK Local records for absolute height and gain of height, together with Gold distance and a Diamond height. There was one really high climb with 78 percent of the total flight time spent in cloud. The artificial horizon to which he refers was undoubtedly one of the large German devices, formerly the property of the Third Reich. Farnborough had rather a lot of them at that time, rather more than they needed, and several more seemed to find their way into gliders, including a certain Kite 2. They were very good instruments but required a rotary inverter which added quite a lot to the general cacophony and were clearly designed around the electrical resources of a Heinkel 111.

The account is written in Bill's characteristically modest fashion. Clearly, the whole flight was a major display of piloting skill by a very competent professional. Lest any vintage GHC member be tempted to re-create this flight, they should take note of the remarks about oxygen and remember that there can have been few more skilled exponents of instrument flying than the author. Also, he seems to be considerably over-stating the strength of the Olympia in his penultimate paragraph.

Bill recently celebrated his 70th birthday and almost simultaneously gave a lecture on test-flying the Harrier and its immediate ancestors. His humour and enthusiasm were undiminished.

The article is taken from* Gliding, *No. 3, autumn 1950, p138.



Bill Bedford, whose flight broke the British and UK records for absolute altitude and gain of height.

Visualising the possibilities of a suitably equipped sailplane I discussed a proposed plan with Commander Wilson, our CTFI, who, full of enthusiasm, persuaded the powers that be to agree to the installation of oxygen and an electric artificial horizon in one of our Olympias. However, on completion of the job it was found that the maximum permitted all-up weight was exceeded by 18lbs. It then became increasingly difficult to get anyone to give their signature to clear the sailplane for flight, although all agreed that the effect from a structural point of view would be negligible. That meant the removal of the oxygen bottle pending official clearance.

By now I was itching to make full use of the new equipment since, with the artificial horizon, the loss of the airspeed indicator through icing was no longer important. I would like to say now that, although a keen supporter of instrument flying on a limited panel, I feel, it's going a wee bit too far to have to be content with noise as the only indicator in pitch, should the ASI fail. This technique may be satisfactory to those versed in this art, but if one is going to get a maximum out of the sailplane without too much sweat and blood, then the artificial horizon appears to provide the best solution.

On Thursday, August 24, 1950, the weather forecast gave winds from SSW at all heights, varying in speed from 25kt at 2000ft to 45kt at 20 000ft; cloud 3/8 to 5/8, cumulus and cumulonimbus, building up to 30 000ft. One look at the sky confirmed the situation, and without delay I prepared for flight with sealed barographs, maps, chocolate, gloves, etc. Since conditions were ideal for a long, fast flight north, I named Wombleton (about 25 miles north of York) as my goal, a distance of approximately 230 statute miles.

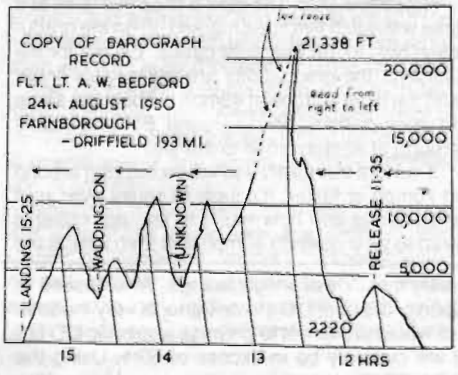
Flt Lt Blackett kindly towed me off in the Auster from Farnborough at 1110hrs. We climbed to 4000ft in disappointingly calm conditions, so much so that the variometer from the moment of take-off showed its extreme displeasure by recording a consistent red ball registering 10ft/sec down. I found this rather disconcerting because, although I knew our tug was rather teased out, I didn't think it was quite that bad.

Two miles SE of Odiham I released from the tug and spent several minutes in vain trying to remedy the variometer by "beating" the instrument panel and squeezing odd tubes behind the instrument, but all this was of no avail.

Now, at 3000ft, I set course for a large build-up cumulus cloud. At 1150hrs, arriving under this cloud at 2000ft, I immediately struck really powerful lift which so shook the green ball of the variometer that it jumped up to 10ft/sec, and from that moment on it never looked back. I switched on the artificial horizon and, with the inverter whining like a young jet engine, I entered cloud at 2500ft and settled down into a steady left hand turn at 45mph IAS.

The Olympia rode the gusts quite effortlessly and attitude was quite easy to maintain, regardless of airspeed fluctuations. The cloud became darker at 3000ft and torrential rain, sounding like hail on a corrugated iron roof, tumbled down. Water poured in a steady stream through the joint at the canopy and the fuselage, soaking my trousers and shoes to the skin.

At 3500ft I came out through the side of the cloud, but turning on a reciprocal course I headed for the most likely looking area in the middle. I was not disappointed and lift at 15ft/sec rocketed me up to 8000ft, at which height I first noticed a rapid ice build-up on the canopy. A peep through the clear vision panel revealed that the wings were plastered with ice roughly 1in thick, falling back and thinning out to a distance approximately 6in aft of the leading edge. At this stage I kept operating the spoilers and moving the controls to prevent their obstruction by ice. The handling characteristics appeared to be quite unaffected by ice, and as far as performance went the overall lift was so powerful that the effect on the rate of climb was negligible.

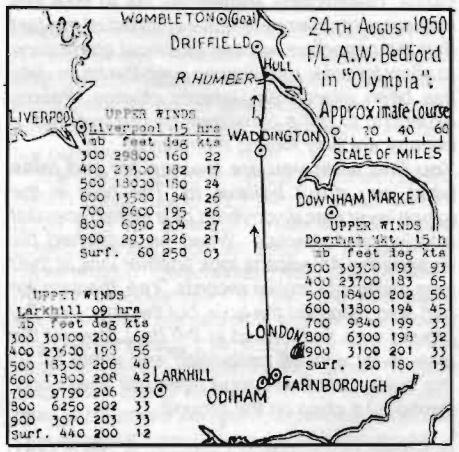


Oddly enough the ASI did not freeze up until 12 000ft, when the needle flickered and gave a last dying gasp and then remained motionless and useless.

From time to time it was necessary to make small corrections to the orbiting circle to remain in the maximum lift area. However, at 13 500ft I temporarily lost the lift, but it took only a minute or so to get back into the best area.

I was thoroughly enjoying this unique experience of absorbing so much useful energy from the elements, when a sharp bombardment of hail made me snap out of it and face the fact that the oxygen bottle was on the ground some 14 000ft below. With this well to the fore in my mind, and taking every precaution to check up on my reactions, I steadily left 15 000ft beneath me, praying that the barograph was still working.

Nestling down in the seat, I suddenly felt the pricking of static electricity jumping from the locking pin of the Sutton harness to my neck and from the inverter to my backside. Thus spurred on, I saw the British altitude record in sight and, making some rather haywire calculations, I decided to err on the right side and go straight up to 20 000ft. The green ball was now stuck hard at the top of the tube, and the altimeter was winding up at a remarkable rate, and what with a busy session of instrument flying in turbulent cloud, and no oxygen, the whole situation seemed to me like a sailplane pilot's nightmare.



At 20 000ft I realised that it would be foolish to carry on more, but being foolish I stuck it out to 21 500ft indicated on the altimeter.

Assuming by now that I had run off the barograph scale and also experiencing mild anoxia, I threw away this dynamic source of lift, reluctantly extended the dive brakes and let down on a northerly heading to 16 000ft. At this height I retracted the spoilers and flew at an estimated 60mph (IAS) still in cloud, heading, I hoped, roughly downwind.

On this course I progressively lost height down to 7000ft and feeling somewhat exuberant I celebrated the situation by consuming my chocolate ration.

Availing myself of more lift I nipped up to 10 000ft, and again flew north. After being continuously in cloud for 1hr 30min I broke clear at 4000ft and saw an aerodrome some ten miles ahead. I did not know my position but, feeling quite happy and confident that I was roughly on track, I overcamed the necessity of a navigational problem by entering a convenient large cu-nim on my port. The green ball was soon away at 15ft/sec and at 11 000ft I levelled out and flew on north at 60mph (IAS)

Reaching 4000ft in cloud, more lift took me to 6000ft and ten minutes later I saw Waddington aerodrome 4000ft beneath me.

Towering masses of cumulus and cu-nim were there to welcome me, and without further ado I headed on 330° for a promising source of lift. One could not go wrong, and with similar characteristics to the previous clouds I soon found excellent lift to 8500ft. At 1500hrs I broke cloud at 6000ft and was surprised to find that I had already crossed the Humber and was over Hull city.

The conditions ahead looked rather dead, with considerable amounts of alto-stratus covering the sky. At this stage I flew back south to mark time in the large mass of cloud I had just left, hoping that the formation would take me towards my goal, but unfortunately instability faded out north of the Humber.

Perusing my map, I noticed Driffield marked just outside Gold C distance. I cruised at an IAS of 40mph just waiting for lift. This, however, was not forthcoming and I arrived at Driffield with 3500ft to spare, and after waiting 15min before landing, in the hope that conditions would improve, I finally touched down at 1525hrs.

The distance covered was 193 miles, in 3hrs 50min, giving an average speed of 50½ miles/hr. Three hours of the journey were spent in cloud, thus reducing the necessity for serious map reading.

Comments

Cumulo-nimbus clouds are the glider pilot's friend, provided the latter is prepared to co-operate. To approach the cu-nim problem full of apprehension with visions of structural failures, lightning, hail, icing and so on, is just asking for trouble, as is, of course, the "couldn't care less" attitude. I feel that, provided one adopts a sensible approach to the subject, and uses a completely relaxed instrument flying technique, backed by some serious cloud flying practice, then the battle is half over. There are still one or two obvious requirements which deserve comment.

(a) Instruments: in addition to the normal sailplane instruments, one should have either an artificial horizon, or an efficient de-icer for the pitot system, to ensure operation of the ASI under all conditions.

(b) That the pilot is in reasonable IF practice and can recover from any unusual attitude. This latter precaution is useful more for a confidence boost than anything else.

(c) That the pilot appreciates the conditions likely to be encountered in such clouds, and accordingly flies maintaining attitude rather than a constant airspeed. This is where the artificial horizon is invaluable. A good pitot de-icer would, however, do as a substitute, provided the airspeed was allowed to fluctuate about a mean.

(d) Oxygen is essential for any serious flying above 15 000ft if one is to get the best distance out of the available altitude. The 7500ft I threw away, with spoilers out, might have just made my goal possible.

(e) The barograph charts should have been smoked. A spare barograph would have been well worth while.

Invaluable information with Met research

Having, experienced such a flight, one feels that, properly instrumentated, the sailplane (particularly the dual version) could undoubtedly provide invaluable information in connection with Met research. This machine, stressed as it is to a design ultimate factor of plus or minus 9½*g* at a pull-out from maximum diving speed of 130mph, would be ideal in many respects for cu-nim investigation, covering ice formation, gust acceleration and the behaviour of structures.

In addition, in these days of an All-Weather Air Force, the glider presents an excellent opportunity for pilots to obtain an interesting intimate contact with the weather, and so to supply one aspect of instrument flight attractively and economically.

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TAIL FEATHERS

Hope Springs Eternal

If my memory is not letting me down, this is – at the time of writing, May 28, as I sit next to a wind-buffeted north-east facing window, toiling at the word processor, wearing long johns under my denims – simply the *worst* spring I can remember. (On May 12, 1958, I began my first gliding course, so by September 12 I will have been in this game for a third of a century exactly. I'll ask Ratners to strike a commemorative medal; please suggest an appropriate material.) Not that it has been pouring with rain, which would at least do something for what I am pleased to call my garden without my having to get out of bed to water it; no, it's just been one flat, sunless, overcast day after another, with *haar*[1] and other stuff sweeping in off the North Sea. Last year, in the ten days ending in the Spring Bank Holiday, I had done 56hrs and some vast mileage. This year in the same period I've had one miserable crawl round 140km with too much of it spent under 1000ft for anyone's peace of mind.

"Trends are invisible unless you are very patient and treat 50 years as a short time'

I could never understand the half-witted claims by commentators in newspapers last year that the fine weather of 1989 and 1990 was due to global warming; what do such people use for brains? To what do they attribute this 1991 rubbish? For that matter, to what do they attribute the fine summers of 1940, 1959, and 1976? I'm not denying that a slow process of heating up may be taking place, but I don't see that causing colossal surges in the levels of sunshine from one year to another. What the information technologists call "noise" simply overwhelms any trend; trends are invisible unless you are very patient and treat 50 years as a short time.

That gave me to thinking about weather statistics generally. Naturally we talk about "good" seasons (1983, 1984, 1989, 1990) and "bad" ones (no, I don't want to list them, it's too depressing). That way of talking could suggest that the pattern for the season is somehow set at the beginning, so if it has been a dud by (say) May 31, then you can more or less abandon hope for June, July and August. However I well remember that in 1975 it was snowing in the first week of June, and suddenly it turned into a sensational year, with nearly everybody whistling round a 500km triangle in the Open Class Nationals, and the sky raining Diamonds week after week. On the other hand, people who believe there are meaningful patterns in the weather said that following the drought of 1975 the ground was so dry that this made for the amazing season of 1976, with its 9000ft cloudbases. What bothers me about that theory is, why was 1977 such a poor year? The ground was even drier after the heat of 1976, surely? I never heard an answer to that riposte.

'. . . they expect that next month will be like last month, and who can prove them wrong?

My own hypothesis, as a seasoned member of the Dunstable poker school, is that it is all as near as dammit random, and as devoid of meaning as a series of reds on a roulette wheel. However that, we know, will not prevent people suddenly making plans to go abroad to avoid a miserable British July. People believe there are patterns; they expect that next month will be like last month, and who can prove them wrong?

That remarkable man of Met, Tom Bradbury, received the above notes by fax at 8am on May 28 and by noon I had a return fax. Here it is:

The global warming theory has proved a blessing to money starved scientific establishments. By frightening governments they can now obtain funds previously denied them. Journalists are adept at twisting handouts to suit their market. In previous years bad summers have been attributed to (a) shelling in the first World War. (b) atomic bomb tests after the second WW.

***But**: I still think there is something in the global warming theory. The trouble is that journalists attribute good/bad weather in their readers' area to some outside influence. They rarely notice that one region's good summer is another's disaster year. Major weather patterns are associated with the long wave undulations in the high level flow. If you happen to live under a persistent upper ridge it is usually dry: downwind there must (inevitably) be a balancing trough which brings wet weather. The separation is often such that a good summer in Europe means a wet summer in western Russia and* vice-versa.

Statistics are a terrible trap into which lots of clever people fall. I recently read that the global temperature had risen by 0.1° in "n" years. My immediate thought was that this is below the noise level. Much of the data is only given in whole degrees so tenths of a degree are just arithmetical idiocy arrived at by dividing large totals by the number of days. I doubt if any data exists which can confirm this degree of accuracy.

During the period under consideration old observatories closed and new ones opened; some became surrounded by built up areas which warmed the whole region. For example, London Airport often has unusually high temperature. This is largely because the area is now covered with acres of concrete and surrounded by thousands of buildings all running central heating. Most of this was not there 50 years ago.

The design and accuracy of radiosondes varies. Statisticians sometimes fail to take this into account; many are quite ignorant of the fact that the observers applied empirical corrections to allow for solar radiation so even the basic data has been altered as fashions change. People expecting to get a consistent record over half a century are only fooling themselves.

***You find what you are looking for and miss what you don't believe in.** The hole in the ozone layer was discovered by a British scientist working in Antarctica. When he published his findings the Americans took another look at their long series of satellite records. Yes, the satellite had also recorded the hole, but the chaps on the ground who first looked at the data thought the instrument was off calibration and wrote off all this evidence of an ozone hole until it was confirmed by a chap on the ground.*

***Humidity** I have written a piece for the* S&G 1991 Yearbook *on using media Met to pick Diamond days. In April-May 1991 we had many occasions when the surface charts showed ideal conditions; only about one in ten of these days had decent soaring weather. What had changed? The most obvious feature was the humidity in the convective layer, (the layer in which we find thermals).*

On many days satellite pictures would show a decaying front over or near the UK. The highs developed, the fronts decayed and cloud dispersed as expected, but only over the adjacent seas. Over land the afternoon picture showed the cloud had just thickened as convection took more moisture up to the inversion and spread it out like a decorator filling in a panel shaped like the British Isles.

It is possible that some extra heating evaporated more moisture in the tropics or subtropical regions of the Atlantic. The winds carried this round the high and down across the UK. Never mind the ground being "dry"... there was a steady supply of moisture aloft which meant that cumulus tops did not evaporate but spread out into a continuous layer. Each little thermal added to the blanket of cloud. However, I would not attribute this to global warming; it has happened in previous years long before global warming existed.

***Dry Ground?** Yes, this certainly helped to give high cloud bases during the summer but a single winter can easily replace the moisture. In early autumn 1976, as soon as a Minister of Droughts was appointed (and at about the same time as some Indian Fakir had offered up suitable prayers) the heavens opened and heavy thundery rain fell, replenishing almost empty reservoirs astonishingly fast. I am not sure whether*

[1] *No, I didn't make that up. What sounds like a grizzled fisherman clearing his throat preparatory to ejaculating a large gob of phlegm, is an Old Norse word for sea mist.*





Left: Snowing in the first week of June. Right: Every night seems like a party night.

either the minister or the fakir were responsible for this success.

Chaos. *Forecasts of the effect of global warming depend almost entirely on computer models which predict future developments by integrating well-known equations far into the future. This is a most hazardous process. Long range forecasts are notoriously unsuccessful.*

The first person to introduce the idea of chaos (which plays havoc with all numerical predictions) was an American meteorologist called Lorenz. As long ago as 1963 he published a paper entitled "Deterministic Nonperiodic Flow". (Hardly anybody read it then, the title alone would have put me off.) This showed that even a tiny change of less than one part in 1000 in the data may set off an effect which grows to such magnitude that it overwhelms the original pattern. At the time it was generally thought that this was because Lorenz's model was too simple: if only we could make a better model with more items included then the monster number crunchers produced by Cray and IBM would give us the answer. However, it now seems accepted as fundamental that any system working with non-linear equations can "flip" from one apparently stable set of waves to another totally different system, sometimes very suddenly.

(This hasn't stopped people devising ever more elaborate models.)

Oh yes, you can program in a non-flip device so that your model will remain stable, but then you may hide some essential change you ought to be warned about.

Are there signs of summer to be seen in spring? *I would have to consult the experts on this and I suspect two experts would give me two different answers.*

(a) A frequent recurrence of cold pools over Europe during spring seemed to precede poor summer. There have been lots of cold pools over Europe this year. Masses of cloud, thunderstorms, floods and gales resulted. We missed all of this in the UK and should have had glorious weather, but for the excess of cloud cover.

(b) Frequent or persistent fogs in mid-Atlantic (reported by the weather ship "Charlie" at 52N 35 W) seems a bad sign. The Russians used to man "Charlie" but I have not seen it reporting recently. There do seem to have been a lot of sea fogs around this year. Sea fogs are usually caused by warm moist sub-tropical air being carried NE over mid-Atlantic. The flow then turns (near Iceland) and later SE or S to come across the UK bringing masses of low cloud. (a) and (b) may be part of a single system.

Go South Old Man!

My own plans, God Willing, are to fly in Texas during July and August, and then after coming back for a brief spell of work to spend the British winter in Australia. (Envious mutterings of "All right for some, innit?")

What is certainly not random is that it is warmer in Australia at Christmas than in Britain. (He's hoping to get a Nobel Prize for that discovery. Ed.) I remember struggling with an Aussie Yuletide thermal last year, and saying to the fellow Pom in the back seat "This isn't much better than England in July" and he very reasonably said "But it isn't July in England, Plat, it's bloody December in England!" Profoundly true. I gave a shudder at the thought of December in Blighty, and stopped griping about the lift.

It is getting cheaper and easier to fly to Oz, and living there is cheap too. Everyone tends to eat barbecues in the evenings – all clubhouses and motels have arrangements for outdoor cooking – and wine is incredible value. Every night seems like a party night, and the only constraint on how much food and drink you can consume for under £5 is the thought that tomorrow might be yet another 500km day.

Try Britannia for charter holiday flights as low as £600, or the regular scheduled airlines for Apex and other deals. Useful addresses in Australia:

Gliding Federation of Australia, Building 130, Wirraway Rd, Essendon, Vic 3041 (Chris Stephens).

Gliding Club of Victoria, PO Box 46, Benalla, Vic 3672 (John Williamson).

Sportavia Soaring Centre, Tocumwal, NSW (Ingo Renner).

Waikerie Gliding Club, PO Box 564, Waikerie 5330, S Australia (Maurie Bradney)

Incidentally, I have kept a log of all the flights done in the ASH-25 in Australia during the last trip. It did 180hrs in two months, with an average rate of climb of 4.0kt. That rate of climb does not sound a lot, but a similar tally of over a hundred British flights in the same glider came up with an average of exactly 2.0kt (the BGA handicapping system, incidentally, is based on a hypothetical thermal in which a Skylark 3 would climb at 2.4kt). So as a rule of thumb you could say Australia is twice as good as Pommie-land for rate of climb. "Only twice as good?" you ask, However, the consistency of weather and the hours of soarable conditions per week are better as well. And that visibility! A hundred miles is normal. If you can only see 50 miles they say "Have ya brought some of that *haar* with ya, mate? This is a pea-souper."

No, I'm not on a commission. It's an idea, though...





Left: Another's disaster year. Right: Even a tiny change may set off an effect which grows to such magnitude it overwhelms the original pattern.

GUILD OF AVIATION ARTISTS' EXHIBITION

We have featured some of the gliding paintings on show until July 25 at the Aviation Paintings of the Year Exhibition at the Carisbrooke Gallery, Seymour St, London. 1. The Last Tow by Mark Postlewaite; 2. Thermal Required by Joe Eddis; 3. Rare Species (a Kirby Kite and a red kite) by Stewart Hine; 4. Talgarth by Amanda Deadman; 5. Aerotow by Anthony Cowland; 6. Final Glide. Hugh Harwood; 7. Low, Fast and Wet by Amanda Deadman; 8. Early Start by Vincent O'Riley.



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GETTING THE BEST FROM OURSELVES

Is your flying in a rut? Do you end each year little better than you were at the start of the season? James Allen suggests ways of making more progress to become a better pilot

Improve your flying, advance rapidly and learn more effectively at no extra cost. Enjoy your flying much more. Does this sound like one of those gimmicky commercials? Having been involved in flying training in several forms, I am certain that many, if not most of us, do not progress as well as we could or should.

My experience with various pupils has shown me that the successful ones are not always the most gifted pilots. Naturally, our sport requires a certain skill level, but aside from that, what makes some pilots progress better than others, and what can we all do to be one of those faster learners?

Most of us have met the character who is "not too worried about flying today" or, "has a bit of a cold". He/she simply does not want to fly, despite having given up a large amount of spare time, or having travelled for over an hour to reach the airfield. The same character will have a ready list of reasons to hand as to the slow progress, "bad weather, slow launch rate" etc (this is not to say that some reasons are not genuine). Most importantly, the pupil misses out the one thing that is holding them back more than anything else – themselves.

"What me, me fly it . . . you must be joking!" is not an unfamiliar remark to hear from an early student at the first suggestion of them actually handling the glider themselves for the first time. Their lack of confidence does not stop there, it may continue for a long while. Some people never do settle down into flying and, if honest with themselves, dislike it.

During my Air Force career I noticed that a few of the highest ranking pilots of all would enjoy desk work, it being an ideal refuge from aeroplanes and flying them. This is not intended as a cynical remark, but illustrates that the feeling of underconfidence does not always confine itself to beginners.

'A positive attitude towards yourself and your potential is crucial'

I do not refer to apprehension or nerves that we all may have from time to time. These feelings are a natural part of our survival apparatus and can help us if channelled properly. A pupil's state of mind is by far the most important factor that will govern his/her progress. A positive attitude towards yourself and your potential is crucial if you are to accelerate your learning curve.

Ask yourself what these fears are and confront them." I don't like winch launches, cable-breaks frighten me" someone once confided. Despite being well beyond the solo stage, he had disliked his cable break training pre-solo and had lingering worries since. A good solid session of all types of cable break cured his problem; but the point is how long had this been holding him back?

We should all ask ourselves if there is any aspect of flying we fear. If there is, then we should take positive action by confronting the problem in a similar way. Problems with fears about landing out, or navigation can be helped by visiting a club that uses a motor glider and flying with them. Fear of turbulence or extreme attitudes is best addressed by gently progressing into aerobatics.



James started gliding in 1972 at Bicester, where he still flies, and went solo two years later on his 16th birthday. He joined the RAF in 1973 and was a Harrier pilot, later instructing on Strikemasters and Hunters with the Sultan of Omans' Air Force. He now flies a BA Airbus, has two Diamonds a full Cat and a total of 3800hrs (500+ on gliders).

Understanding maps is obviously essential before flying cross-country; having borrowed a chart for one of my first such flights in 1975, a senior instructor said to me "Don't use that, that's one in a million." I thought, well if it is that valuable why is it left lying around and not locked up in the safe instead!? I still got lost even when flying with the quarter mill that I eventually used. I had passed the Bronze badge some months before, but most of the knowledge had evaporated by then. I hadn't the maturity to understand that it was largely up to me to ensure my own preparation was complete.

This leads me to my next point that many people I fly with often suffer from the same problem in a less serious form. Many pupils fail to understand that their learning is more in their own hands than their instructors. By that, I mean our pupils should be encouraged to read-up on the basics of gliding and aerodynamics. They should ask questions more and have elementary points clear in their own minds, *ie* heights/position in the circuit.

We instructors sometimes don't help matters, often by being too helpful, which only reinforces the students false belief that their progress is totally up to us (the instructor). Instructors should not be afraid to be positive with pupils about what is expected of them; "By your next flight, please have the checks memorised "or," Before tomorrow, read up on spinning."

Often I see pupils struggling to reach the rudders because they have not brought their cushion with them. Beforehand, maybe a kind soul ran and got one for them; but the point is that if you need the cushion, make sure yourself that it is available. That goes for ballast weights, maps and anything else too. By arriving at the cockpit prepared, you will be surprised at how much quicker you will progress – you and your instructor will both enjoy the flying much more.

Many excellent club members fly rarely, if at all; my ideas are not to make gliding compulsory, or regimented, but rather to encourage the people who are learning to get more out of the sport.

Pupils, especially early pupils, need to be given every assistance possible in their first few days. I must mention at this stage that I thought Trevor Foxen's article "Good Beginnings" in the December issue, p295, is nothing short of excellent. His suggestions regarding the mentor/sponsor system, together with the one-sheet handouts to newcomers, should be adopted as normal policy by all BGA clubs with immediate effect.

So my summary for pupils to achieve better progress is:

1. Get airborne at every opportunity.
2. Have a positive attitude towards your own ability – you can fly if you believe in yourself.
3. Place the onus on yourself to be prepared – have elementary things such as CB SIFT CB memorised, have your cushions and ballast to hand, and have an idea of what you are trying to achieve on each flight.
4. Ask questions – there is no such thing as a silly question when learning to fly.
5. Appreciate that apprehension is normal and to be expected from time to time. Discuss any major worries with your instructor.

COLOUR PHOTOS

Now that we have more colour in the magazine, when possible we would appreciate colour photographs to back up articles. Also, we would welcome exceptional or unusual photographs.

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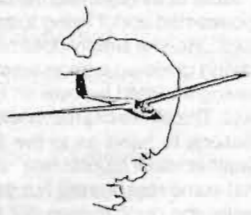
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MARY GOES TO NORFOLK

"Have you heard about the Norfolk wave?" Mary asks. "Did you know that Norfolk GC's Tibenham is a wave site? What's there to produce wave? Nothing sticks up in East Anglia!"

Wave was the last thing we expected for the Eastern Regionals from May 18-26. We thought we'd be lucky to get thermals. The fens are not noted for early morning lift. And yet, and yet. The farmer's forecast said it was going to be a good week in East Anglia. As we drove round the M25 spectacular castellanus boomed on every side. The further east we went the better it looked.

I'm going to design a T-shirt that says on the front "You Should Have Been Here Yesterday" and on the back "It Will Be Better Tomorrow!" They could have set a 500km the day before the Comp. They set a 300km the first day, but nobody launched. That was Ken Spark's influence; he was lurking around to give good advice to the Norfolk GC as this was their first Regionals. I came to spy as well as to fly. (We're running our first Regionals at Edgehill in August.)

We practised gridding that Saturday and Sunday, and by Monday we actually launched in incredible murk. It didn't look soarable to me so I craftily remained on the ground. A pall of smoke rolled over the airfield. Visibility went from bad to zero. Eventually, Alf Warminger, their president, radioed from his Ventus . . .

"Tibenham, 44. How many idiots are flying up here?" and from base came the response (anon). "Only one, Alf."

Later on it improved a bit, so other people got airborne but didn't get anywhere. I decided at 4pm it was a non-starter, so went home to Oxford for a bath. Gary McKirdy won the day with 75km, but only 78pts. Hardly worth the trouble.

Actually, I wasn't just being crafty. I was twitched. Looking at the choice of crop on the way from Booker everything looked exceedingly well grown. Tall corn. Tall wheat. Giant stalks of rape. Gary landed out in a sugarbeet field and came back with the good news. If it's brown, you can land in it!

I was out of practice, too. Done plenty of instructing, in the back of K-7s and K-13s. Even power flying. But I hadn't even strapped into the Pegasus until the week before the Comp. I took a launch at lunch time, while course instructor at Booker. And before the admiring eyes of my students *and* DCFI Dave Caunt, landed 987 wheels up. The humiliation! I didn't even realise at first why the landing felt bumpier than usual and a bit closer to the ground than usual. Thought the tyre must have blown. And then looked down at the undercarriage lever, firmly and reproachfully set in the wheel-up position.

Fortunately it was on the grass and the belly of the glider was hardly marked at all.

On Tuesday I did at last get my nerve up to set out on the task. Flew over Diss, following the railroad. Not much else to follow in East Anglia. Got as far as Stowmarket. Had to be lift over a nice big town like Stowmarket. There was, but not in the middle. A convenient hawk turning over the sewage plant east of the town centre saved me from a desperate scrabble. I made the mistake of calling up Wattisham and mentioned my whereabouts. "Keep clear of the ATZ" growled Wattisham, and sure enough, there was a tank-buster trundling down the stub. Well if that's Wattisham down there, Rattlesden must be over there, and it was, and nearly sucked me down – strange how a hospitable gliding site can attract a struggling glider. But somebody else in an Open Class ship turned up, and I set off when he did though he was much higher.

Ended up in a beet field. It was big enough – 180 acres the farmer said. And excellent tilth, smooth in any direction. A possé of old age pensioners helped me trundle the glider to the edge of the beet field – I had played it absolutely safe and landed in the middle.

Wednesday presented a strong northerly airflow, which soon swept the early morning cu about ten miles south of the airfield, bubbling just out of reach. The directors were persuaded to offer us – at no extra cost – 3000ft launches. That shook us out of our despond, and the first glider to go up called back in surprise "I've got 2kt in wave up here!"

'In places where the waves assisted thermals it was booming!'

Before long everyone was climbing in sweet wave directly over the airfield. I went up behind the Condor, which takes so long to get up you have the opportunity to sample conditions over a sizeable area. Climbed to 4000ft and set out on track, tiptoeing downwind, trickling along to conserve every inch of altitude, and over Diss met the wave again, topped up once more to 4000ft, another slide to Ashfield and wave again! The area of cumulus was now within reach! In places where the wave assisted thermals it was booming. And in other places it was incredible sink. I connected nicely with a boomer over Rattlesden, and thundered down to Lavenham church, losing 1000ft with wild gyrations over the TP which unfortunately was on the downside of the wave.

Never mind, got back on track to Bury St Edmunds, and was then confronted with heap big smoke from a brush fire. It wasn't going up, it just sat there on track. I slid on through it and came out the other side. Something came unstuck. My sense of direction. When I saw the railroad track across my line of travel, instead of parallel to it, I thought the map was mistaken. And carried on east and ended up in a beet field on the road to Great Yarmouth. I went further than anybody that day, but got no credit for it.

Mark Taylor went shopping in Diss that morning, convinced the day was a write-off. When he got back everybody was off on the task. Nobody told him we were entitled to 3000ft launches. Mark thought he was getting away with something when the tug didn't wave him off. He pulled off at 2200ft, went to 5000ft in the wave, got round the task in record time and won the day – but alas, the truth came out that night. He had turned 20ft *short* of the church, according to the photo assessor. Mark Taylor is, by the way, a professional photographer . . .

Thursday I took my crew, Derek Staff, to Diss to catch the London train. He promised faithfully to be back in time to retrieve me should need arise. Not having a crew on site does concentrate the mind. I took one launch and fell down. It looked as though the thermals would be wiped away once more by sea air. I took off again, floundered about, down to 900ft before discovering something useful downwind. I got an excellent climb to 4500ft, zoomed back for a start photo, returned to the same downwind corner for a top up and set off for the western end of Watton airfield. Going *great!*

Some bonehead in a Jantar tried to cut me up, but I was in the core and outclimbed everybody! Dolphined west, just steaming along. Lakenheath on the left. That must be Feltwell, down there. Now where's this TP – Littleport, Liverpool, or some such place. I had Downham Market identified, its got to be that village down there. Doesn't look quite right. Maybe it's that one over there. A10 river bridge. Hell! Stop dithering. Photograph *both* of them and let's go home. I took a picture of Brandon Creek and one of Southery, and went home, averaging 67km/h, joint 2nd for the day and 4th over all. I still have a copy of those provisional results, rescued from the dustbin of history. Short-lived glory. I knew in my heart I hadn't got it right, but it was really satisfying to get back to the airfield and hear those sweet words "Good finish, 987"!

Phil Jones of the well-known Jones tribe, flying a Ventus, called five minutes. They told him East Anglia TV was filming the finish line, by a little red car on the grass triangle. Phil knew what he had to do. (Phil is a fighter pilot by profession.) The cameraman never flinched. Possibly he didn't connect what he saw through his viewfinder with reality. The spectacular result was featured on Anglia TV next day. Local cameraman Tony Scheuregger realised what was happening and featured a shot of the grass as he prudently hit the deck.

That, as things turned out, was the last scoring day and the local lads won – Tony Walsh (Norfolk GC) the Open and Paul Rice (Essex & Suffolk) the Sports Class.

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ALISTAIR NUNN

UNUSUAL WAVE OVER LASHAM

The forecast for Sunday, April 14 wasn't that inspiring. The synoptic chart had shown a NNW airstream over the country with a very weak cold front going through on the Saturday night. Pressure was set to rise, but there would be a layer of thin cloud over the south-east with the slim chance of sunny intervals in the afternoon.

That afternoon I went to Lasham to give a friend a flight and found that most of the club had been towed to the South Downs for a romp along the ridge. We were launched in the K-21. It was quite breezy (15kt) but the sun was coming out and the clouds were forming into some very odd looking flat streets.

The pilot in front of me was towed to 3000ft for some aerobatics but it was too rough with some very broken thermals under the clouds. He thought it felt more like rotor lift, although he hadn't found any wave.

We also had a 3000ft tow and pulled off under a cloud where we not only found lift but a lot of sink. I wasn't going to try any tight thermalling with someone on his first flight, so we came down, encountering quite severe turbulence on the way. This isn't unusual in a stiff northerly at Lasham.

Then Terry Joint, CFI, pointed out that the clouds were sort of reminiscent of lenticulars (a good imagination was needed!), except they were lining up with the wind and not across it. He reckoned it might be shear wave and suggested I took a slightly higher tow into a gap.

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The clouds did appear to have slightly rounded tops, some with ragged bits underneath, rather like rotor I had seen at Aboyne. But as far as I could remember there aren't many large mountain ranges between Lasham and the North sea. (OK so there are a few hills.) I was slightly dubious but persuaded my friend, who had gone solo with the ATC, that it would be useful practice.

With instructions to the tug pilot to drop us at 3500ft in a hole, we set off. The tow was very exciting and bumpy with the odd excursion into cloud. All praise to the tug pilot as the visibility from cloudbase (about 3200ft) to where we released was abysmal.

Immediately after releasing it was apparent something was cooking as we were in an area of zero sink. The cloud formations looked decidedly different from this angle with a nice smooth slope on the east facing flank. So I moved across to what looked liked the leading edge of a very dilapidated lenticular.

With the wingtip almost in it, we started to climb at a steady 2kt. Perhaps Terry was on to something. We flew along the edge of the cloud, treating it as a ridge, and up we went. The lift peaked at 5kt and then died rapidly at 4600ft.

From our vantage point above the clouds the organisation was obvious. There were lots of what looked like mini lenticulars (at least from above) about five to seven miles long with clear gaps between, aligned with the lower wind. The view was quite stunning. It appeared that the whole country was covered with a quilt pattern.

Each line of cloud was relatively short lived with lift dying

We cautiously made our way up wind, jumping between streets. The lift was easy to predict – it was on the east side of the biggest and smoothest lumps. However one thing was apparent. Each line of cloud was relatively short lived with the lift dying and then reforming near another cloud. Interestingly, even when some of the gaps completely closed in the lift remained constant.

This wasn't a problem as we could jump westward to a street with a gap to navigate by, since holes were less obvious to the east. The visibility above was much better, although for a while the clouds below looked almost continuous, which was slightly worrying!

However, by about 1700hrs the lift became more difficult to find and the clouds were disappearing to leave a very hazy view of the ground. We turned back to Lasham, although there was still the occasional bump. Some of these bumps would then turn into a line of cloud, very similar to low down lenticular but very much more scraggy.

The sky looked just as it should at the end of a normal windy day

In the end we had difficulty in getting down. We passed through what seemed to be a very weak inversion with lots of mist from horizon to horizon. When we eventually landed the sky looked just as it should at the end of a normal windy soaring day, belying what was going on above, except to the experienced eye.

What had been happening? The day had been thermic and because of the wind, the lift was forming into streets. There also appeared to be a weak inversion at around 3500ft which was probably enough to prevent any really big cumulus forming, but did allow a small amount of upward growth. However, it was big enough to cause a small dome in the more stable layer above. This acted as a ridge which with a more easterly upper wind gave a line of lift.

In addition, the damp North Sea air probably helped to give the smooth appearance to the tops of the Cus. This would explain why the well organised streets appeared less obvious the further west and south one went as the air was drying out.

The lift didn't work terribly high, but was good in a narrow height band which was probably due to a more stable layer above. It might also explain why it would have been difficult to contact from below cloudbase: the lift was created by the streets acting as mini hills and therefore didn't extend below cloudbase.

I am sure I have missed many days when a cross-country was on for the sake of a high aerotow, although it must be possible to contact this kind of lift by thermalling and a small cloud climb. This was one of the most enjoyable flights I have had for ages. Conditions may not always be obvious, so listen to your CFI. He probably knows a thing or two!

Tom Bradbury comments: This seems an excellent example of waves generated by cumulus. I have not got the soundings to hand but the surface chart showed all the signs of an airstream with shallow convection and a good lid on top. The wind shear over the clouds could well provide just the right conditions for cumulus wave.

The fact that the lift disappeared towards evening when the convection would be dying out makes it pretty certain Alistair had been using cumulus waves. I have written a bit about this in my article "Wind shear and waves" on p178. See the paragraphs headed "Waves generated by cumulus" and "How thermals and waves interact."

AIR LINES

On a grey afternoon in late January when it seemed that winter would last forever he took a tow to 3000ft. He pulled off and swung the Bocian through a series of slow, curving turn reversals, looking down the lowered wing to check that he was above open country. In the enclosed space of the cockpit his breathing sounded odd and he recognised that he was afraid. It was practically a habitual state for him and he knew from experience that it did no good to try to analyse it – the fear remained.

He swallowed once to ease the dryness in his throat then made his right hand move the stick forward, pressing the nose of the aircraft down. It dropped quickly – down below the horizon, down further until it seemed to be plunging vertically towards the cold dead earth, down until the ASI registered 85kt. "Now," he said quietly to himself. He pulled back and the nose came up. Harder back until there was nothing but cloud the colour of wet concrete and the heavy, unaccustomed pressure of gravity – holding the stick back until suddenly the horizon was there again sliding smoothly down the canopy, and then the familiar landscape below. The Bocian zoomed up into the sky slowly dissipating its kinetic energy while he whooped for delight alone in the silence.

It was no great event – a middle-aged man performing his first solo loops on a dull afternoon in winter. It was nothing to boast about. Thousands of people can do much more. But the defeat of fear is nothing to be ashamed of – not for him nor for the instructor who had helped him to overcome an instinctive human reaction and to acquire another of the unique pleasures that can only be found in the sky.

TERRY HURLEY

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BGA & GENERAL NEWS

NATIONAL LADDERS

Open Ladder

Leading pilot	*Club*	*Flts*	*Pts*
1. A. J. Davis	Bristol & Glos	2	6645
2. J. Cardiff	London	4	5102
3. C. Pullen	London	3	4042
4. D. G. Roberts	Cotswold	2	2888

Weekend Ladder

Leading pilot	*Club*	*Flts*	*Pts*
1. R. Palmer	Avon	4	3053
2. A. Grimley	Avon	4	2403
3. C. Morris	Avon	2	1740
4. P. Crabb	Coventry	3	1273

Ed Johnston, the National Ladder steward, says the next submissions must be with him by the end of July and the finals by October 1.

FATAL ACCIDENTS

'Paddy' Hogg was killed on May 12 when flying an Inter-Club League task *hors concours* out of Bicester in the club's Ventus CT. He apparently spun in during the latter stages of an approach for a field landing near Silverstone.

The investigation was not complete on going to press, but it had been established that there were no medical causes and the aircraft was fully airworthy.

He was remembered by his many friends at a memorial service in Bicester on June 7. See the obituary by Peter Saundby.

Paul Rayner of the Yorkshire GC was killed on Saturday, May 25 when flying an Astir CS at Sutton Bank. He hit the ground from a steep dive after a 500-600ft winch launch, the glider being described variously as spinning or bunting. The accident is under investigation.

A BONUS FOR CLUBS

Our *1991 S&G Yearbook* is giving some enterprising clubs an unexpected bonus. They have put in a bulk order to the BGA, getting their special 25% discount, and find the content is appealing to visitors taking trial instruction lessons.

One club has already sold over 100 which is quite a considerable addition to their funds.

If you are interested in the same opportunity, contact the BGA for copies at £3.50 each.

Newcomers to gliding often like a memento of their trip and want to find out more about the sport. And the basic information is covered in the *Yearbook* as well as many features aimed at the converted.

AIRMET POSTPONED

The CAA has postponed the automated and expanded AIRMET telephone service, originally scheduled for late spring, for changes and refinements to be incorporated. Now all parts of the new service will be introduced on the same day after technical trials.

PLEASE SEND US FLOPPY DISCS

Now that our printers have the capacity to accept all word processor discs we would be grateful if contributors using a word processor would send us a printout of their article as well as the disc, which will be returned as soon as possible.

BGA AGM AND DINNER-DANCE

Next year the BGA AGM, dinner-dance and prizegiving will be at the Post House Hotel, Crick, Northants on Saturday, February 22.

It is just off the M1 and was the venue for the 1991 AGM with the dinner-dance a month later at Norwich, but next year both events will be combined with special rates at the hotel for overnight accommodation.

POOR WEATHER HITS REGIONALS

The disappointing start to the season left the first two Regionals with only four contest days.

Tony Walsh (DG-400) won the Open Class of the Eastern Regionals at Tibenham Airfield, home of Norfolk GC, from May 18-26, and Paul Rice (Libelle) the Sport Class.

Steve Parker (LS-4) led Class A and Ed Johnston (Kestrel 19) Class B of the Western Regionals, organised by the Bristol & Gloucestershire GC at Nympsfield, from June 1-9.

The full results will be in a later issue.

A WIN FOR JUSTIN

Justin Wills (LS-6) won the Swiss Nationals' 15 Metre Class, held at Schänis from May 22-31.

There were nine contest days and Justin won the longest task of 584km at 104.01km/h.

The Open Class, which included a 660km task, was won by Hans Binder (Nimbus 3T) and the Standard Class by Simon Leutenegger (DG-300), both Swiss.

GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	*Name*	*Club*	*1991*
355	Weston, J.S.	Ulster	1.4
356	Kalin, R.	Deeside	9.4
357	Spreckley, Gillian	Booker/ESC	18.4

DIAMOND GOAL

No.	*Name*	*Club*	*1991*
2/1939	Pascoe, S.M.	Cranwell	18.8.90
2/1940	Clempson, D.A.	SGU	22.4
2/1941	Huttlestone, R.I.	Avon	12.7.90
2/1942	Ferguson, M.	Two Rivers	9.4

DIAMOND HEIGHT

No.	*Name*	*Club*	*1991*
3/1018	Parker, R.G.	Trent Valley	1.4
3/1019	Weston, J.S.	Ulster	1.4
3/1020	Stirk, J.A.	Burn	9.4
3/1021	Holland, M.	Burn	9.4
3/1022	Kalin, R.	Deeside	9.4
3/1023	Minson, S.D.	Devon & Somerset	16.4
3/1024	Spreckley, Gillian	Booker/ESC (in Spain)	18.4
3/1025	Strange, R.N.H.	Lasham (in Spain)	18.4

GOLD BADGE

No.	*Name*	*Club*	*1991*
1539	Pascoe, S.M.	Cranwell	18.8.91
1540	Herrin, G.E.J.	Black Mountains	25.3
1541	Garnham, P.H.	Midland	4.4
1542	Clempson, D.A.	SGU	22.4
1543	Huttlestone, R.I.	Avon	12.7.90
1544	Strange, R.W.H.	Lasham	18.4

GOLD DISTANCE

Name	*Club*	*1991*
Huttlestone, R.I.	Avon	12.7.90
Pascoe, S.M.	Cranwell	18.8
Clempson, D.A.	SGU	22.4
Ferguson, M.	Two Rivers	9.4

GOLD HEIGHT

Name	*Club*	*1991*
Emck, A.J.	Lasham	20.8.90
Dent, F.M.	Bristol & Glos	29.3
Herrin, G.E.J.	Black Mountains	25.3
Todd, A.L.	Lasham	29.3
Davies, C.J.	Lasham	21.9.90
Wilson, Wilhelmina	Lasham	3.9.90
Mankelow, S.A.	Cotswold	29.3
Garnham, P.H,	Midland (in Spain)	4.9
Russell, A.W.	SGU	16.4
Inchley, C.J.	SGU	16.4
Oultram, N.G.	Staffordshire	11.4
Stuart, R.S.	Lasham	29.3
Spencer, J.A.	Lasham	29.3
Fietze, H.J.	Lasham	20.3
Holland, M.	Burn	9.4
Nethercot, P.	Devon & Somerset	9.4
Morris, P.G.	Burn	9.4
Bugbee, J.L.	Devon & Somerset	10.4
Mitchell, I.K.	Devon & Somerset	16.4
Bennett, G.	Fenland	11.10
Taunton, C.J.	London	21.9.90
Moore, D.J.	Cotswold	29.3
Morris, M.	London	17.9.90
Jepson, W.F.	Burn	9.4
Jones, Mary	SGU	16.4
Strange, R.W.H.	Lasham (in Spain)	18.4
Douglas, G.	Deeside	12.5

SILVER BADGE

No.	*Name*	*Club*	*1991*
8582	Berry, K.P.	Two Rivers	4.4
8583	Davies, C.J.	Lasham	21.9
8584	Economou, S.M.	Booker	17.4
8585	Horsman, N.	Lasham	22.4
8586	Smith, D.W.	Clevelands	28.4
8587	Fear, K.	P'boro & Spalding	27.4
8588	Pannage, C.M.(Jnr)	(in Germany)	17.6.90
8589	Sisson, W.R.	Southdown	17.4
8590	Pitchfork, P.R.G.	Clevelands	28.4
8591	Rae, D.A.	Bicester	1.8.90
8592	Grieve, R.	Four Counties	28.4
8593	Fairley, S.T.	Northumbria	28.4
8594	Mockford, K.	East Sussex	22.4
8595	Friend, M.D.	Essex & Suffolk	28.4
8596	Henderson, A.	Borders	24.2
8597	Lavery, J.	Ulster	6.5
8598	Wright, T.C.	Coventry	10.5
8599	Warner, P.	London	13.5
8600	Smith, A.E.	Coventry	9.5
8601	Stuart, R.	Lasham	10.5
8602	Huxford, I.	631 VGS	10.5
8603	Weston, H.	East Sussex	22.4
8604	Escher, A.J.J.	Bristol & Glos	9.5
8605	Thornhill, A.W.	Burn	9.5
8606	McWhirter, A.S.	Wolds	28.4
8607	Johnston, R.N.	Cranfield	14.5
8608	Penn-Smith, D.	Coventry	14.5
8609	Paddison, R.H.	London	9.5
8610	Clark, Geraldine	Deeside	8.5
8611	Warn, A.	London	27.4
8612	Quartermaine, J.A.	Yorkshire	19.5
8613	Weekes, E.D.	Oxford	20.5
8614	Greenwood, M.J.C.	Stratford on Avon	9.5
8615	Bilham, Deborah	London	9.5
8616	Ward, P.J.	Cotswold	9.5
8617	Hill, G.	Midland	9.5
8618	Hain, J.A.	Essex & Suffolk	12.5
8619	Dale, A.G.	Lasham	22.5

UK CROSS-COUNTRY DIPLOMA

Complete

Name	*Club*	*1990*
Cooper, T.W.	Norfolk	27.5

Part 1

Name	*Club*	*1990*
Ireland, C.J.	Kent	5.7
Tobin, R.J.	Humber	9.9
Wade, Bonnie	Norfolk	30.8
Tempest, B.	Welland	30.8
Timpany, J.A.B.	Bristol & Glos	4.9
Martin, S.H.	Burn	1.8
Bilham, Deborah	London	9.5.91

Please send all editorial contributions to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH, not to the BGA Office.

OBITUARY

ANDREW JOHN HOGG



A. J. Hogg – known to all as "Paddy" – tragically lost his life in a gliding accident on Sunday, May 12, at the age of 53 years.

Paddy Hogg was born in the Republic of Ireland, the son of a Church of Ireland Minister. He came to England as a young man to follow his life long love of aircraft. Enlisting in the Royal Air Force he trained as a technician, but soon joined the RAFGSA club at Duxford. There he was sent solo on a Tutor by Plt Off Delafield, under the eye of the CFI Flt Lt Spottiswood.

In those early years he served his soaring apprenticeship on the Olympia 419, developing an unmatched capability to exploit the smallest whiff of rising air. As a competition pilot. he was known for persistence rather than speed, but he held a respectable position at Nationals level for very many years. He was often a member of expeditions and became well known at wave sites. Without guile, the tone of his voice on the radio indicated his height like a transponder. He held the Gold badge, was a full category instructor and flew powered aircraft in support of gliding operations.

In his Service career he was a Crew Chief on Victor Tankers, flying all over the world. He became a full time instructor at the RAFGSA Centre, and in 1982 took over as manager. After leaving the Service he joined CSE at Oxford Airport as a maintenance inspector.

It was the fusion of his personal integrity, his technical skills and his airmanship that formed his great contribution to aviation. He always knew exactly what could be safely accepted, what would indicate future problems and that which was critical for airworthiness. His own time was always available to fellow aviators. Nothing was ever too much trouble. For years the answer to every engineering problem at Bicester has been, "Let's go and ask Paddy".

As a flying instructor he was very popular with the ladies, but despite several feminine plots, Paddy remained a bachelor, wedded to his first love of aircraft. He was known and liked in the local community where he especially encouraged his fellow Irish countrymen.

We mourn for a friend who was a skilled pilot, an expert technician, but above all, the most considerate, kindly, painstaking and honest of men.

R. P. SAUNDBY

POTENTIAL DANGER

The Norfolk GC have recently started winch launching and warn visiting pilots to beware of the potential danger of winch cables.

THE BGA SAFETY COMMITTEE

Bill Scull, director of operations, continues this series showing the work by the various BGA Committees

The BGA's Safety Committee is a loosely knit group with each member serving a particular function; it tends, for the most part to be reactive.

The present chairman is John Shipley, a member of the Derby and Lancs GC. He monitors all the reports, is ultimately responsible for the summaries you read in *S&G* and oversees the annual publication **Accidents to Gliders.** He decides the category of each accident, field landing, launch failure, etc, which is not as simple as it seems; for example a glider spinning into a field off a cable break!

Much of the detailed work is by David Wright of Southdown GC, who happens to work for the CAA and was at one time employed in data analysis.

He set up a data base and this computer facility is magic! It enables almost instant surveys of a particular club or problem or area, old pilots, women pilots, accidents by type of glider, etc. Such analyses give quick confirmation of a subjective impression or a trend, often the basis for an article on accident prevention in *S&G*. It also helps in the production of **Accidents to Gliders**.

There are three regional safety officers who monitor club accident reports and may help club managements learn from an accident where they may have failed to get the message themselves.

Perhaps the most important aspect of the Committee's work is helping a club after a serious or fatal accident. The trauma will often mean that a perfectly competent management team fails to cope and here the BGA steps in. There are other reasons for doing so, especially if the accident is fatal. In general the Aircraft Accident Investigation Branch (AAIB – based at Farnborough) will not investigate a gliding accident except in unusual circumstances, such as a mid-air structural failure. AAIB delegate the responsibility to the BGA because they believe we are competent to deal with it, although we can still ask for their help if we need it.

So a Committee member; usually me, goes as quickly as possible to the scene to investigate before the wreckage is disturbed. The police will guard the wreckage (at AIBB's behest) but not usually for more than 24hrs.

The detailed work includes writing a report, liaising with the coroner's officer and the pathologist and, possibly, counselling club officials, instructors or even the bereaved. Incidentally, there is a legal requirement to report all accidents to the Department of Transport (by telephone on 071-276-6000). The duty officer informs the duty AAIB inspector who contacts the BGA, usually me.

The pro-active side of the Committee's work is limited. Flight safety presentations to heighten awareness of risks are given to all instructors' courses and occasionally to clubs when requested.

Measures taken to improve standards

The Safety Committee also provides an essential link with the CAA. In 1987 the CAA established a General Aviation Department (GAD) to both monitor standards and promote safety. Their watching brief occasionally points out some shortcoming in our operations and, as a result, we take measures to improve standards. One example was the production of **A Guide to Tug Operating Procedures** after two accidents to tugs, albeit not towing at the time of the accidents.

Other accidents may raise possible recommendations, for example a mid-air collision might generate a recommendation of anti-collision strobes on gliders, but AAIB and CAA will usually be practical about such recommendations.

The BGA's status in accident investigation and prevention reflects much credit on all the volunteers who have helped maintain the freedom to run our own show over the years. It is interesting that standards are maintained not by increasing regulation by the CAA but by self-discipline and control within the club framework. It is up to every glider pilot to help keep this freedom. We are all the BGA!



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SLINGSBY WEEK

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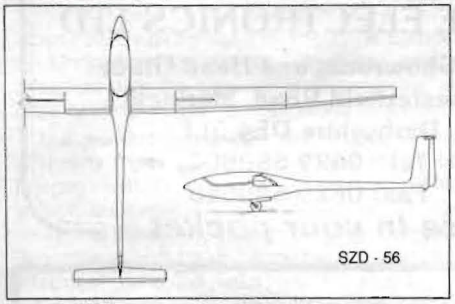
SAILPLANE NEWS



The Stemme S-10 two-seater motor glider now has its UK certification and was test flown by Derek Piggott who will be reporting on its for us in a future issue.

Twenty-three have been built and two will be flying in the UK this year. For further details contact Mike Jefferyes, Tanglewood, Fingrith Hall Road, Blackmore, Ingatestone, Essex CM4 0RU. Tel 0277 823066.

SZD-56



The first Polish 15 Metre Class design, the SZD-56, started flight trials last autumn. It has several unusual features, including an empty weight of only 160kg, a wing area of 8.16m^2 and an aspect ratio of 27.6, a figure never before seen in a 15 Metre Class glider. The relative thickness of the wing (13%) is also very low (the depth of the wing at the root is only about 10cm).

Despite its lightness, the SZD-56 has a V_{NE} of 285km/h at the max AUW of 410kg (including 160kg of waterballast). The glide angle claimed is in excess of 1:48.

Our photograph is of the new Swift Aerobatic glider produced in Poland by a Swiss Polish joint venture – 30% owned by the company president, Richard Greaves of Derbyshire, 30% by Roland Kueng and the rest by various Poles including Edward Marganki, the builder, and Jerzy Makula, the world aerobatic champion. This single-seater 13m glider is of a glass-fibre and composite construction with wingtip extensions to take it to 15m for cross-country flying. It is being built at Bielsko Biala, Poland where its maiden flight in January indicated a glide ratio of about 29:1 and a low rate of descent of approx 4m/sec. Two prototypes are being built, one for static and one for flight testing, and certification to JAR standards is expected by the end of the year with the first production aircraft ready in 1992. To shorten the time to certification, all data is continuously monitored on a solid state flight data recorder – up to 12 channels simultaneously. The Polish National team will be flying the Swift in the World Aerobatic Championships at Zelona Gora, Poland from August 18-31. To encourage aerobatic gliding, the company is working on a two-seater trainer version with a slightly extended fuselage and in co-operation with the Polish Training School at Zar the plan is to offer courses/holidays where pilots may learn aerobatic gliding, graduating up to the Swift. The Swift will sell for around £25 000 to £28 000, depending on options. For more information, contact Richard Greaves at Parsonage Cottage, Church Lane, Bakewell, Derbyshire DE4 1DE, tel 0629 815052.

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GLIDING CLUB DIRECTORY Subtitled "Everything you wanted to know about British gliding clubs but didn't know where to look". Details of each club, site, operation, facilities, prices and fleet lovingly compiled by Bob Riddle. £4.25 (inc. p&p).

S&G YEARBOOK 1991 No self-respecting glider pilot can afford to be without a copy. £3.75 (inc p&p).

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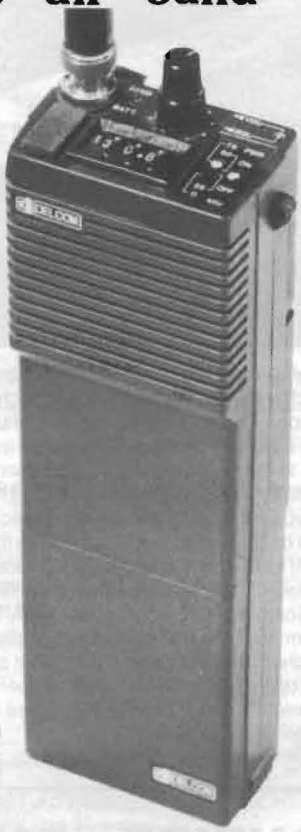
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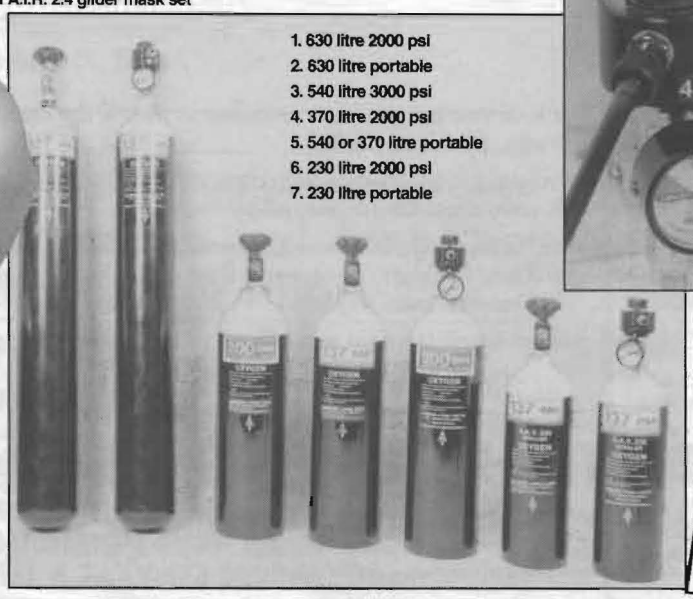
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INTERNATIONAL GLIDING COMMISSION

Queenstown, New Zealand

Extracts from the report by the BGA delegate, Tom Zealley. Justin Wills was a UK observer

With 21 countries represented attendance was a little below normal which wasn't surprising in view of the travel costs. The hosts worked hard to make the visit enjoyable and were very friendly, helpful and efficient.

Club Class. It was clear that while Sweden and Germany were keen on the Club Class concept, many countries, including the UK, were less enthusiastic. There was no rigid IGC definition of the Class and some uncertainty as to whether it was purely an aircraft definition or included some concept of pilot restriction. The next European Club Class Championships will be in 1994 and probably at Rieti, Italy.

Motor Gliders. Piero Morelli (Italy) has become the sub committee chairman for motor gliders. The next Motor Glider Championships will be in 1992 at Rieti. There was some discussion about it being classed as a World Championships, bearing in mind that most countries didn't have National Motor Glider Championships. On a close vote it was agreed they should be European Championships with non-European entries accepted with the opportunity of becoming an "international winner" but not World Champion.

The working group had recommended that ultimately motor glider competitions should be merged with pure glider competitions. This wasn't universally accepted and would run counter to the concept that motor glider competition rules should be developed to allow limited, intelligent use of the motor.

Currently self-sustaining motor gliders cannot qualify for either pure glider or motor glider records. The majority agreed that self-sustainers should merge with motor gliders for records.

European Gliding Championships. So far there have been no offers to host the 1994 Championships.

World Gliding Championships. Many delegates were unhappy about the change of site and date of the 1991 Worlds and the increase in entry fee compared with the original bid by the Americans with a formal protest registered by Australia.

Several delegates complained about the heavy scoring penalty for late pilots in POST tasks. The Americans seemed reluctant to yield on this point and it was left to the Bureau with the expectations that there would be a compromise.

Ake Petterson reported on the plans for the 1993 Championships at Borlange, Sweden. The only bid for 1995 came from New Zealand which was accepted by the meeting but Argentina and Poland were interested in 1997 and Australia in a later date.

World Class Glider Design Competition. Of the 42 entries, 11 have been accepted for the prototype-building stage. The designs were in the 11 to 14m range with empty weights averaging 160kg. Cost estimates varied widely from 10 000 to 40 000 DM.

Sporting Code Revision. It has been completely rewritten by Ross MacIntyre (New Zealand) and a final version should be ready for approval at the March 1992 meeting.

European Junior Championships. There were no proposals for the location of the next European Juniors in 1993. Like our own Nationals, this is a very important and worthwhile Championship and the BGA Competitions' Committee would be pleased if a BGA club were to volunteer to be the host. With the exception of the Club Class, Britain sends pilots to all the International Comps – they average three every year – and it is appropriate to our claimed status as an important gliding country that we should do our bit in offering to host international competitions from time to time.

The definition of an ultralight glider was confirmed (empty weight minus instruments to be less than 100kg) and provision made for it to establish records. Wording was proposed to allow a record to be established in a flight similar to the 2000km pseudo O/R recently achieved by Ray Lynskey in New Zealand. (See the April issue, p66.)

(Tom chaired the Airspace sub committee which is working on an airspace for gliding paper to be submitted to ICAO.)

World Air Games, 1995. It was agreed that the gliding contribution should be a serious competition with traditional tasks, possibly involving multiple laps and electronic monitoring to enhance public interest. There would be a single Class (World Class or Standard Class) and an entry of about 25 pilots. The appropriate area of Greece had been selected and September was the preferred month.

OSTIV. So far some 40 papers had been received for the OSTIV congress at Uvalde this summer.

Miscellaneous. Bernald Smith (USA) described a hand-held piece of military equipment widely used during the Gulf war which gave accurate position and altitude. Clearly developments of this type (GPS-Ground Position Satellite) would transform the way we monitor flights in the future.

Dave Sharples (Australia) had fitted a water-cooled Ford motor car engine to a Pawnee, an exercise which promised to be a substantial saving on tug operating costs.

The Lilienthal medal has been awarded to Fred Weinholtz (Germany).

Francois Ragot is heading a committee to look into gliding being registered for the Olympic Games.

Roger Woods reported on the recent foundation in Australia of a charitable trust to help the under 25 year-olds to glide.

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CLUB NEWS

Copy and photographs for the October-November 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 August 13 and for the December-January issue to arrive not later than October 8.

GILLIAN BRYCE-SMITH
June 12



Two Kirby Kites at the Upward Bound Trust's 30th anniversary. David and Peter Underwood's in the foreground with Ted Hull's behind. Photo: Vernon Jennings.

ANGLIA (RAF Wattisham)
Our K-13 is looking good after its respray and re-covered wings and a second-hand double decker bus is being drastically modified for use on the airfield.

Congratulations to Robbo Robinson (300km); Bob Riddle, Nikky Pickney and Jim Coughlan (Bronze badges) and Matt Jones, Barry Green, Stu Holand and Roy Eley (going solo).

We hosted our first Inter-Club League in June in poor weather with only three gliders completing tasks.
J.R.C.



Shenington GC celebrated their first anniversary with the Mayor of Banbury, David Cowan, having a flight with Don Birks, DCFI.

ANGUS (Arbroath)
We had a successful weekend expedition to Connel airfield in early June with good thermals and hill soaring and thank Connel GC for their hospitality.
D.A.P.

AQUILA (Hinton in the Hedges)
Our open day was a huge success with many local, and not so local, people attending, possibly due to excellent advanced coverage by TV Central South. This short presentation should do much to improve gliding's image in general.

Being our 25th anniversary year we would like to see some of our ex-members and we are having a party on November 8 at a local hostelry.
J.R.

BANNERDOWN (RAF Hullavington)
Kelvin Fawcett, Bob Thomas, Jim Dunne and Kelvin Cousins have gone solo; Alison Martin and Bill Streeter have Bronze badges and Richard Jessop Bronze legs. Brian Logan flew 500km in a Ventus from Bicester on May 9.

Congratulations to Clive Ducros on successfully flying his prototype Spitfire replica he built in our hangar.
D.C.F.

BATH & WILTS (Keevil Airfield)
We are over the first major hurdle to get our new site with planning approval for change of use of the new field. We now need permission to build hangars etc and if all goes well we should be there in the spring/summer of next year.

Bob Bromwich won both days of the Inter-Club League at Odiham. Our own meeting three weeks later was plagued with bad weather but we scraped one scoring day. Congratulations to Uwe Bitomski (going solo) and Ed Elliot and Gordon Goughan (Bronze badges).
B.H.

BLACKPOOL & FYLDE (Chipping)
Congratulations to Roger Alexander, Bill Edmondson, Mark Johnson, Stuart Parsons and Ian Smith (going solo); Ron Graham and Alan Roberts (Silver badges) and Ian Ashton and John Richardson (100km diplomas), John also achieving Gold height on a superb wave day as did Reg Wooller for his Gold badge.

The new home-built winch is giving good launches. Fantastic help from Bill Scull and a Sports Council grant have resulted in planning permission for aerotowing over a trial period and the imminent purchase of a Pawnee tug.

Our cross-country week started with the BGA Janus declaring Aboyne and this inspired members to achieve more kilometres in one week than the whole of last year. Our thanks to CFI Paul Myers and Mike Cuming, our visiting southern pundit, for their enthusiasm and excellent task setting.
V.H.

BOOKER (Wycombe Air Park)
Alister Kay (ASW-24) flew a 609.9km triangle, Lasham, Shobdon, at 88.1km/h on May 9 and we have had several more good cross-countries after a poor start to the year.

Our early expeditions to Cerdanya and St Auban were highly successful with several mountain flights.

As always we welcome visitors.
D.R.G.

BORDERS (Galewood)
At our AGM in March Andy Bardgett was elected chairman, taking over from Douglas Donald, and Brian Sword followed Alan Urwin as CFI. We are gratetful to Douglas and Alan for all their work.

Congratulations to Jim Bell on his 19 600ft for Diamond height and to Andy Henderson on Silver distance. Visitors from Morridge tried our wave in April, Geoff Oultram achieving Gold height on his first wave flight. Ted Hobby did his 5hrs. Congratulations also to Bob Borthwick (Gold height), Antonia Johnson (Bronze legs) and Richard Carr (going solo).

The Skylark was written off after a low launch failure during the flying week but luckily the pilot escaped without injury.

We have four wave weeks from October 5-20 and November 2-17 when we hope more visitors will join us.
A.B.

BRISTOL & GLOUCESTERSHIRE (Nympsfield)
Weather conditions have generally been poor with only four contest days for the Western Regionals, although a good time was had by all. Steve Parker won Class A and Ed Johnston Class B.

Our Supacat winch is being delivered this summer.
H.E.

BRITISH FORCES GERMANY (Achmer Airfield)
Members are safely back from the Gulf and Paul McCauley, Bob Brett and Guy Jarvis have come from the UK, Bob flying a 300km O/R for Diamond goal, completing his Gold badge, and Guy achieving Silver height on the same day. Neill Cockburn has his Bronze badge.

We have an expedition to Czechoslovakia in July.
A.H.

BUCKMINSTER (Saltby Airfield)
Nottingham Polytechnic GC had a successful course at Easter with plenty of flying but little soaring. Congratulations to Chris Sellers (going solo); Helen Cheetham, Graham Stanford and Mike Entwisle (AEI rating) and John Harwood (the first to complete the 100km milk run, wooden class, in 1991).

We welcome Dennis Gliddon, our course tug

pilot, and George Brown, our Aussie instructor.

Well done to our Inter-Club League contingent – we are in the lead! We are open seven days a week and visiting pilots are always welcome.
M.E.

BURN (Burn Airfield)
By buying a glider from Grenzland, Germany, we started a friendship between our two clubs which inspired a return visit in May.

We had success despite poor conditions when we hosted the Northern League meeting in May with Martin Holland (SF-27) winning the Intermediate Class with 20km and Chris Townsend (Kestrel) the Pundit Class with 22km.

Congratulations to Derek Wilson (assistant instructor rating) and Nigel Pamplin, Peter Jackson and Brian de la Selle (going solo).
D.G.K.



Stuart Jeffery, of the Norfolk GC, who gained a Bronze leg while soloing on his 16th birthday. He followed this up with a second Bronze leg and Silver height.

CAIRNGORM (Feshiebridge)
Our annual dinner-dance in April was a great success with the club ladder trophy awarded to Bill Longstaff. At the AGM, Ray Lambert was elected secretary, taking over from Nick Norman whom we thank for his hard work.

Below: A T-21 coming in to land at Crusaders GC, Cyprus, at sunset. Photo: D. Braine.





Above: Autumn sun and cloud over Loch Leven, Portmoak, photographed by Mike Richardson and, with another local scene, made into a postcard.

There are two new syndicates with a Dart 17 and a PIK 30, the latter having already enjoyed several long cross-countries in spring wave.
S.M.

CAMBRIDGE UNIVERSITY (Duxford)
Work continues quickly on our Gransden Lodge site with hangar, clubhouse, winch hut and workshop bases down. Our thanks to members who have so far cleared 130 tons of stones and rubble from the runways where the grass is now well established. Our target moving date is September 1.

At the AGM in May Andrew Hulme (chairman) and David Howse (treasurer) retired to be replaced by Richard Baker and John Birch respectively. Our thanks to Andrew and David for their time and energy over ten years which has put us in a strong position, making the move to Gransden Lodge possible.

Sandy Torrance has re-covered the K-6's wings; the Super Cub has been replaced with a Rallye (G-BTOW); we have the use of an ASW-20, courtesy of Mike Russell, and a seven day operation with summer tug pilots.

Geoff Brown, Terry Slipper, Steve Cook, David Levien, Nick Robinson and John Birch have AEI ratings – our thanks to Alan Dibdin for running the courses. Congratulations on re-soloing to Richard Hardy, Peter Tee and Julian Murphitt and to Jon Green on going solo.
J.L.B.

CLEVELANDS (RAF Dishforth)
We have done our best with uninspiring weather, increasing our evening flying and enjoying several social events – our thanks to those concerned.

Congratulations to Derek Smith on his 5hrs and to Jack Towse, Jeremy da Costa and Ed Edwards on going solo – Ed only started a few weeks ago but was in a hurry as he is off to the Falklands. We were pleased to see Dennis Renton flying again despite his serious illness.
J.P.

CORNISH (Perranporth)
Our task week (May 20-24), the first for many years, had a slow start with coastal fog covering the airfield for three of the five days. We loaned the Kittywake tug to take competitors into the centre of the county away from the sea breezes but unfortunately we only set one task. However, it gave some their first field landings and valuable aerotow experience.

Congratulations to John Shaw on becoming an assistant instructor and to Terry Edwards, Bernie Hatton and Derek Taylor on their Bronze badges.
G.A.H.

COTSWOLD (Aston Down)
Congratulations to Terry 'Reg' Gardner on breaking the British National multi-seater 500km triangle record with Michael Bird in Australia at 131km/h in an ASH-25. It was flown from Benalla on January 3 with Reg as P2. Peter Ward and Mike Rouse have their Silver badges; Oliver Ward and John Foster Silver distances and John 5hrs. Ed Johnston won the Western Regionals' B Class.
G.M.

Obituary – John Ferguson
John Ferguson died at the age of 52 in May after a long illness. John's original concept for the Cotswold GC pulley, which he designed and built, enormously improved our launching capacity and has been copied by many clubs. Our sympathies go to his wife Judith and sons.
Geralyn Macfadyen

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COVENTRY (Husbands Bosworth)
At our AGM Ron Bridges, Jerry Langrick, Steve Crabb and Phil Spencer joined the committee and Lou Glover was re-elected. Claude Woodhouse and Margaret Shropshire stood down and we thank them for many years' service.
Peter Burgoyne and Andy Smith are full Cats and Jeanette Burgoyne, Ken Marshall and Graham Thomas have AEI ratings. The first Silver distance of the year was by Ken Marshall in April. We had a very successful open day and our thanks to the helpers.

Only one day of our task week was soarable and everyone landed out. Our thanks to Doug Sadler and his team for their efforts. During the week our mascot, the pink panther, was kidnapped by visiting pilots and there have been many desparate attempts to rescue him by goal flying to Swindon.

Alison North and family are emigrating to Canada to join Mick. We wish them well.
T.C.W.

CRANWELL (RAFGSA)
Congratulations to Darren Smith and Jeff O'Brien (going solo); Ian Mountain (Bronze badge) and Paul Pitchfork (the first Silver distance of 1991 in April to complete his badge).

A Discus is replacing the Astir, written off last year, and our Ventus will spend a lot of the summer at competitions. We are now back in our hangar, though with less space, after the Biggin Hill move.
B.S.

DARTMOOR (Brentor)
The season began with brilliant flying weather. The first of the holiday visitors joined as temporary members and the club has acquired a K-7.

Alan Holland ran the first ever ladies course, when Karon Corley flew Silver height, and we entertained the 7th East Grinstead Air Scouts.

Visitors are always welcome and now that we are expanding (there were over 3000 launches last year) we would appreciate some more instructors.
F.G.M.

DEESIDE (Aboyne Airfield)
Congratulations to Bob Ross, Philip Bell and Dave Brand (going solo); Tim Letby and Alistair Stark (Bronze badges); Heather Clark (50km to complete her Silver badge); Paul Booth and Glen Douglas (Gold heights on May 12) and James Davidson (Diamond goal).

We have installed tie-down points for all Aboyne based trailers and start remedial work on the glider hangar shortly.

Iain Carmichael is the new safety officer.
G.D.

DEVON & SOMERSET (North Hill)
It is heartening to see so many members visiting other sites and having badge flights. Simon Minson (Mosquito) claimed Diamond height, John Bugbee (DG-101) and Ian Mitchell (Foka 4) Gold heights and Andy Davison (SF-26) 5hrs at Portmoak; Peter Nethercot (PIK 20) Gold height and Gordon Bonney (K-6) and Damian LeRoux (K-6) Silver height at Lleweni Parc with Peter Harding gaining 5hrs at Talgarth.

The Talgarth expedition had its darker side with a K-6 written off in a trailer towing incident on the way home. Thankfully no one was injured.

Congratulations to Stewart Procter on going solo and to John Jowett who completed his Bronze badge during the late May cross-country week.

We have regular catering in the clubhouse, which is a bonus for course weeks. Our task week is from August 12-17. If interested, contact us at the weekend or on Wednesday/Thursday evenings, after flying, on 040484 386.
I.D.K.

EAST SUSSEX (Ringmer)
The biannual expedition to Talgarth was enjoyable as usual with a crop of Silver heights, durations and distances, and the soaring back home has given many Bronze legs.

The club has seen a welcome return to competition flying, championed by Steve Barter. Congratulations to Ben Knight on going solo and Roger Warren on becoming an assistant instructor.

The club single-seater fleet has been expanded yet again with a Junior.
L.M.

ENSTONE EAGLES (Enstone Airfield)
Our April open weekend brought a flood of interest and 12 new members, six of whom are women. We now have a record membership with around 13% female. We are going to have a twin drum winch to cater for the demand.

Hearty congratulations on going solo to Steve Veness, a paraplegic who flies our Blanik with a special modification for rudder control. (See Steve's article in this issue.)
M.S.

FENLAND (RAFGSA)
Mid April produced wave over Norfolk and a lucky few made contact from winch launches with gains up to 4000ft, the wave working down to 500ft. (See also "Mary Goes to Norfolk" in this issue.)

At the AGM in April the chairman, Grp Cpt Stirrup, presented awards to Rhod Evans (longest flight, fastest triangle); Colin Elliott (hardest worker) and Al Thompson (Vache trophy) and flowers to Liz Peel, our soup dragon.

Phil Jones has flown considerably more cross-country kilometres than any other pilot and is setting a club record for retrieves. He was 2nd in the Eastern Regionals' Open Class. His wife Molly is the fourth female to go solo this year, another record. J. Fisher, P. Swail, J. Oakley (after a 20 year lay off) and R. Smith have also gone solo and P. Avery and A. Day have their 5hrs.
M.A.E.

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KENT (Challock)
We have had the worst gliding weather we can remember though there has been much activity in the hangar and the huge trailer is ready for the expedition to Avon GC. More members are helping with glider checking and maintenance due to the absence of an on site ground engineer.

Steve Outeridge gained his 5hrs on the ridge and later flew Silver distance.

We could do with more entries for our August task week.
D.J.C.

MARCHINGTON (Marchington Airfield)
We have an influx of new members with a growing number of *ab-initios.* Congratulations to Steve Hunt and Andy Chapman on gaining their Bronze badges.

Over 80% of members attended the AGM in April. The much travelled club bus has been put to rest after many years' service and we are using a portacabin as a temporary club room.

We had several days of successful winching when the tug went for its annual with pilots admitting they had forotten the exhilaration of winch launching. Its occasional use is planned.
A.R.

MIDLAND (Long Mynd)
N. Backes gained Gold distance on May 9, one of many cross-countries that day. G. Hill and P. Warwick achieved Silver distances and G. Band Silver height and duration. I. Huxford got his Silver height followed by distance the next day.

J. Ballard gained Silver height in April and D. Cummings, J. Catmur and R. Herbert have soloed. The weekday evening courses for members started in May. Some early solo pilots have been taken on dual cross-countries at weekends, all resulting in landing out.

Plans for acquiring a Pawnee are well advanced and we expect to be towing later in the season.
A.R.E.

NENE VALLEY (RAF Upwood)
During a busy spring we bought another K-8 and the old K-8 and second winch were refurbished, thanks to great efforts by some members. We had an enjoyable weekend at RAF Cranwell in March and thank to them for their hospitality.

Congratulations to Gary Johnson, Gary Graves, Brian Palmer, Nigel Perry, Mel Bain and Dave Hartley on their Bronze badges and our thanks to CFI Horace Bryant for his help, encouragement and patience. Also to Fabos Young on going solo and to his father John on becoming DCFI.

A one week trip to Swanton Morley is planned for the summer.
D.H.

NEWARK & NOTTS (Winthorpe)
While we had poor weather for our first flying week some members avoided it by going to Poland for two weeks. The verdict on the trip was "interesting".

Our congratulations to father and daughter Alan and Linda Fry on going solo on the same ➡

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day. Also to Gerry Hall and Tom Kerry on resoloing; to Dave Alvey on his Bronze badge and Bob Patrick on gaining his 5hrs in Poland. Dave Kassube joins the ranks of members who fly Silver heights without their barographs!
M.A.

NORTHUMBRIA (Currock Hill)
Our new winch is giving very a satisfactory launch rate. Steve Fairley completed his Silver badge with a distance leg; Brian Milburn and Alan Rowell have soloed and Martin Arrowsmith and Gary Oldfield are on a gliding holiday in Poland.

Organised parties for evening trial lessons are popular and have resulted in several new members. We are planning a RT licence course for members to make full use of their multi-channel radios.
R.D.

OXFORD (Weston on the Green)
We congratulate Neill Lawson-Smith and Andy Barnes on their Bronze badges. We are planning to replace our K-6CR with a Junior.

Frustrated by the poor season so far, many took advantage of a brief interlude on the Spring Bank Holiday to set off on cross-countries. The weather promptly collapsed, depositing six of them in fields.
F.B.

PHOENIX (Brüggen)
We had a good expedition to Sisteron, France, where Mark Dixon gained Diamond height, several flying days for visitors and considerable success at the Laarbruch Mini Comp – the Club Class was won by Al Farmer with Robin Willis-Fleming 2nd and Del Ley and Martin Pengelly joint 8th. Bob Brownlow was joint 2nd in the Open Class and Bill Gibson 6th after three launches – the first time he had forgotten to screw in his pitot tube (retrieved from the cockpit) and then returned for his TP camera.

Congratulations to Simon Campbell-Smith (solo and Bronze legs); Ian Harris (solo on his 16th birthday, Bronze legs and Silver height); "Pojo" Johnson (solo, Bronze legs and Silver height); Chris Day and Lyn Pengelly (5hrs); Bob Graves (Silver distance); Freija Guerts, Sam Heyes and Marielle Boerdijk (Silver heights) and Mick Ferguson (Diamond goal and Gold distance).

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Many members, led by "Pojo" Johnson, built an inspection pit to help the MT chaps.
H.T.

SCOTTISH GLIDING UNION (Portmoak)
Trevor Murphy took over from Colin Macalpine as secretary at the AGM and Allan Davie and Richard Allcoat joined the Board in place of Jim O'Donnell and Paul Copland. Our thanks for sterling service to those retiring.

We have had some cracking days – April 16 produced five Gold heights and a Diamond and June 1 three Silver distances. Congratulations to Colin Caughie and Ed Murphy on going solo and to Hugh Clark and David St Pierre for completing their Silver badges within a week or so of their Bronze badges.
M.J.R.

SHALBOURNE (Rivar Hill)
Despite a grey May day, a steady flow of visitors enjoyed gliding at our open day when we had a full fleet of pristine two-seaters, thanks to the team led by Alan Pettitt and Andy Brind. We also appreciated Dave Maleham's work to get his T-21 ready.

John Parsons gained Diamond goal and 5hrs on a flight during the BGA cross-country course at Bicester. Carol Pike has her full Cat rating; John Hewitt a Bronze badge and John Higgs, Jeff Goodenough and Peter Mortimer have gone solo. Several graduated from the Bronze lectures organised by Jonathan Mills.
S.C.O.

(Incidentally, Jonathan, who has all three Diamonds didn't go solo as stated in the last issue! All our fault. ED).

SHENINGTON (Edge Hill Airfield)
We celebrated our first year with the Mayor of Banbury, David Cowan, having a flight with DCFI Don Birks. The club has a second K-7 plus the T-21 and plans for courses and weekday flying by arrangement.

Our treasurer, Colin Edmunds, has his inspector's ticket. Our Regionals are from August 25 to September 1, directed by Ron Bridges. For more details contact Mary Meagher on 0865 61190 or write to Mary c/o Shenington Gliding Club, Edge Hill Airfield, Shenington, Banbury, Oxon.
C.E.

SOUTHDOWN (Parham Airfield)
Our annual task week in May had a different format, being billed as a "gliding safari". The weather made nonsense of the original plan but it was enormous fun. Our thanks to Mark Darby for the idea and organisation and to our hosts at Old Sarum, Nympsfield and Talgarth for their hospitality.

Congratulations to Richard Beecham and Les Blows on becoming assistant rated instructors, to Bill Sissons on his Silver badge and to Mike Endicott and Jerome Ennis on going solo.
C.M.R.

SOUTH WALES (Usk)
The year started slowly but Dave Jobbins flew to Ludlow in seemingly unsoarable conditions in the Inter-Club League at Usk. Then in early June he flew a 500km flight in under 6hrs in a Nimbus 2.

A few new gliders have appeared on site.
N.S.J.

STRATFORD ON AVON (Snitterfield Airfield)
We thank Bill Scull and the BGA Airspace Committee for their efforts with Tony Edlin resulting in improved arrangements for local soaring, particularly in strong SE/SW winds. New 1:500 000 charts are now available.

A Club Libelle has been added to the club fleet with the K-21 proving tremendously popular. Dart 17 and K-6E syndicates have been formed, trial lesson evenings are well booked, summer courses finalised and a pig roast/barn dance is planned for December.

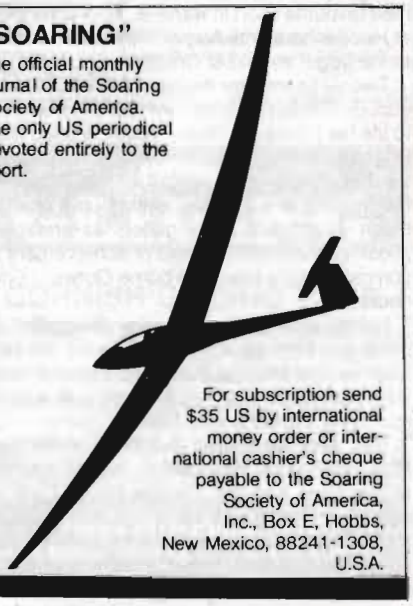
The Sutton Bank expedition, with over 20 members and two club gliders, had superb weather with several Gold heights plus Chris Robert's Diamond to 18 000ft in the PIK 20. Our thanks to many friends at Yorkshire GC.

Congratulations to Geoff Bridgewater, June Harris, Mark Parsons, David Johnson and Eric Lown (going solo plus several Bronze legs achieved) and Martin Greenwood and Peter Warwick (Silver badges).
H.G.W.

THRUXTON (Thruxton Airfield)
We are pleased to be back after a longer than planned winter break for glider/tug maintenance. Congratulations to Alistair Caie and Dave and Paul Mayle (assorted Bronze legs – and they now have a K-6CR) and Mike Thorne (5hrs). We have vacancies for our weekend summer courses.
J.B.L.

TWO RIVERS (RAF Laarbruch)
Our Mini Comp was a great success with two out of three flying days – our thanks to the helpers. The Open Class was won by Christian Kuppers and the Club Class by Al Farmer from Brüggen (see also the Phoenix report). As a result of this we were invited to fly in a German Mini Comp at Emmerich GC with our K-8 winning the Wooden Class. Well done Nige Hobbs, Kev Berry and Vince Mallon.

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Congratulations to Joe Carrigan and Gareth Hopkins (going solo); Lyn Ferguson (AEI rating); Alastair West, Andy Walters, Roddy MacRae, Joe Carrigan and Walter Dickson (Silver heights) and Alastair West, Simon Urry, Mike Burrows and Walter Dickson (Bronze badges).

We will miss Kev Berry on his return to the UK and wish him all the best.
L.F.

ULSTER (Bellarena)
Our open day stretched over the whole Bank Holiday weekend and produced a larger than usual crop of *ab-initios*.

There were better flying conditions recently with Silver distance for John Lavery and a duration for Jim Lamb. Tom Snoddy gained Silver height and his 5hrs on subsequent weekends just 24 years after gaining his Bronze.

On one of the best wave days for a long time Tom McFarland climbed to 9000ft – without a barograph – while William McNair (DG-300) reached 19 000ft in the same wave system.
B.T.

UPWARD BOUND TRUST (Haddenham Airfield)
On Saturday, April 27, we welcomed friends and visitors to a flying day celebration of 30 years in existence and 50 years of memories.

On New Year's day, 1941, five Tiger Moths arrived from what is now Manchester's International Airport, and settled down amongst the wrecks of cars set out to foil the arrival of the German hordes still expected any day. A few hours later five camouflage painted Kirby Kites came in trailers.

The small collection formed No.1 Glider Training Squadron to teach soldiers to fly troop carrying gliders into battle. As there were no troop carrying gliders around at the time, single-seater sailplanes would have to do – the first eight-seater Hotspur arrived on April 6.

Initial basic training was on the Tiger Moth with pupils later transferring to the gliders. The Squadron was run by Tim Hervey (CFI), Lawrence Wright and John Sproule, none of whom could believe their luck at being able to continue their favourite sport in wartime. No.1 GTS stayed at Haddenham until August 1942 when it moved to the larger airfield at Croughton.

Twenty years later the new Lord Mayor of London, Sir Frederick Hoare, wanted an idea to bring to life his theme of office – youth. A good friend, Brigadier George Chatterton, just happened to be the wartime commander of the Glider Pilot Regiment. He suggested setting up a charity to teach youngsters to fly gliders as cheaply as possible and instill a sense of achievement and comradeship, a kind of airborne Outward Bound course.

Using volunteers from the Regiment and donations from several organisations, he set up what we now know as the Upward Bound Trust. It was discovered that Haddenham was available and flying started a year later.

This April we invited members of the Glider Pilot Regimental Association, former members of the Trust and the Vintage Glider Club who came with four Kirby Kites. It was a very successful and enjoyable day with more than 75 visitors flown and 108 launches. For several of the Regimental Association visitors this was their first time in a glider since the war.
(Extracts from a report by Peter Chamberlain.)

VALE OF WHITE HORSE (Sandhill Farm)
Our treasurer Chris Borrill is delighted with demand for our evening mini courses and our steady increase in members. We are still searching for a tug and have two more private gliders, the CFI's LS-3 and the overhauled ex Philip Wills' Dart.
G.J.W.

VENTIS (Isle of Wight Airpoprt, Sandown)
Congratulations to Mike Chambers and Jim Britton (Bronze badges) and to Graham Griffiths and tug pilot Dave Gray (going solo).

The season started slowly but membership is looking good. Our first barbecue this year is to celebrate the launch of our clubhouse – thanks to Neil and Larry we've finally got a home of our own.
L.T.

YORK GLIDING CENTRE (Rufforth Airfield)
The recent good weather has brought a rash of Bronze legs and with several solos during our mid week courses. Congratulations to Chris Brayne, Paul Nacey, Rhett Harrison, Paul Scorer, Bob Plank, Andy Stocks and Don Leech (Bronze legs); Cliff Burnett, Peter Fallone, Bob MacDougal, Bob Murphy, John Parkinson, Ian Smith, Mark Johnson and Colin Bryan (going solo) and Dawn Hammond, Mike Cohler and Alan Kilbride (5hrs).

Course instructor Brian Pritchard contacted wave from a winch launch and took a pupil to 12 000ft with the variometer still showing 6kt up. Something of an expert on wave soaring, Brian then took his four remaining students into similar conditions, up and down like a yo-yo all day!
A.W.

YORKSHIRE (Sutton Bank)
Congratulations to Richard Scriven on his full rating; to Ian Cheetham and Llewellyn MacKenzie on going solo and to David Ashby on Silver distance.

Despite generally poor weather we have had Diamond and Gold heights and flights in excess of 400km. The wave was particularly enjoyed by our visitors from Snitterfield.

Our deepest sympathies are extended to the family of Paul Rayner tragically killed at Sutton Bank on May 25. (See BGA News).
C.L.

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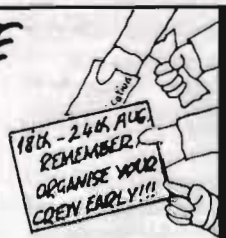
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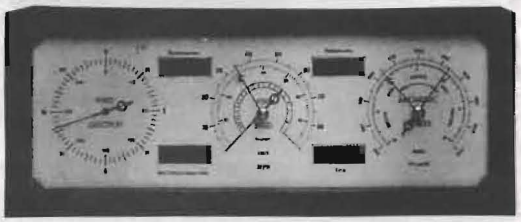


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A Bronze leg flight a few seasons ago in a K-13 from Marchington GC that went a little wrong

The wind had been gaining in strength as the day wore on, but at least it was straight down the slot. However, I had already been caught out twice on the approach.

"Don't go too far back in this wind" was the well meaning advice from the "senior" pilots after a particularly hairy landing. Well at least I was coping okay with the aerotow, according to the tug pilot, but it was a pity I was throwing it away on the approach.

It was my third solo of the day and I was determined to make a go of it. Although the wind had eased a fraction the aerotow was just as hairy low down and not too quiet at height. At 1800ft on tow the vario swung to 8kt up – was this my magic thermal? I immediately pulled off and headed back towards the lift only to find nothing but sink, and boy was it heavy.

Then a peculiar thing happened. Suddenly and inexplicably I became totally disorientated. In retrospect it was a classic case. While I was swanning around trying to locate that magic lift, the wind had carried me out to goodness know where. I couldn't recognise anything and was going down.

How could this happen? Why didn't I recognise anything? What was I going to do now? While these questions kept repeating themselves over and over again in my mind, I sank lower and lower.

I struggled and prayed for lift but it seemed my Maker was out for lunch. At 1500ft I was still descending. At last I found some reduced sink which would give me time to think, or so I hoped.

It became chillingly clear that a field landing was inevitable. The problem was I'd never even practised one with an instructor let alone done one solo. I began mentally leafing through the pages of Ann Welch's book, **The Complete Soaring Guide**. As luck would have it I had been reading the chapter on field landings the night before. My mind became a jumble of seemingly conflicting thoughts.

At 1200ft the only suitable field within reach was full of sheep, but I figured that my giant orange and white monster descending on them as well as the whistling airbrakes would soon send them scattering. That was the theory. Short of screaming mint sauce and Sunday lunch at them there wasn't much more I could do.

After a quick circuit I turned finals and crossed my fingers. It worked. The small balls of fur steadily increased in size and tore off, but as I rounded out I began catching up with the stragglers. Luck was on my side. The grass was about 6in high which mercifully aided the effect of the brakes and I came to a halt about ten yards from the perimeter hedge.

But after I returned from phoning and apologising to the landowner I found the glider had been eaten by several bullocks – crikey I hadn't noticed them – and there was a dirty great hoof hole in the trailing edge.

All in all it had been an eventful if not educational day. That night in the Crown Inn I got my own back on the bullock – I ordered a thicky juicy T-bone steak!

PENGUIN

WAY OFF TRACK

Twins astir

Have you ever landed out to such an odd sequence of events that you felt you were hallucinating or, at least, were slightly deranged?

It happened to Penguin on an April Sunday in 1981. For the second day in succession I had been downed in Ulster's Sperrin mountains while attempting the first-ever goal flight from Bellarena to the Dublin GC, 217km south at Gowran Grange. At stake was the first, perpetual, Guinness pot.

The DGC's Mark Wilkinson – brighter than me but not so handsome – left half an hour later, went further west and successfully skirted the rain belt that had brought me down.

I'd landed the Twin Astir safely in a very steep field at a hamlet called Park. The gradient was such that my horizon, the hill crest, was all of 80 yards ahead. Nobody came.

The aircraft at rest, I eased in the brakes. The Twin Astir started rolling back. I yanked back on the lever again and wondered how I would get out. Nobody came.

Cautiously, I unstrapped and – juggling one hand for the other – inelegantly disembarked. I stood by the aircraft, my right hand still inside the cockpit, holding on the brake. Nobody came.

I eyed a drystone wall about 40 yards to one side and wondered how far the TA would slide and what speed it might reach if I made a dash to grab a big stone to use as a wheel chock. I decided it wasn't feasible. Nobody came.

My right arm began to ache. I needed to pee. Then the tops of two heads broke the smooth grassy horizon directly ahead. Then two faces and two pairs of shoulders, as they advanced in unison.

Two dark-clad figures were gradually revealed as they slowly came over the crest and descended the slope towards me. Aged figures. Identical figures. Wearing cloth caps about stubbly chins and the same stiff, Sunday-best-looking serge suits, with weskits and all.

I thought I was seeing double. With my free hand I stroked my head. Could it be dehydration? Sunstroke, perhaps?

Identical twins. God help me, and all of 85 if they were a day! Batchelor brothers, I later learned, walking down from their small hill farm where they'd lived all their lives to see what was happening in one of their fields.

There followed a period of incomprehension on their part and mounting frustration and arm ache on mine as I explained that I wanted one of them to hold back the brake lever hard, while I ran to the wall for a stone to stop the aircraft rolling back.

They either couldn't understand my need or my London accent. And to me, rarely defeated by any rural Ulster accent after all these years, they could have been speaking Hindi or Tagalog.

Eventually, with *both* holding the lever back, the dash to the wall was made, a stone obtained, the aircraft safely chocked and then rotated through 90° to stand across the slope.

Only then did other people come. Among them was a freelance snapper who serviced the local rag and who, for the second day running, had turned out to photograph an aircraft which was reported to have "crashed."

When he found it was the same undamaged sailplane, with the same pilot wearing the same hat as he had photographed the previous day in another field nearly 20 miles away, he thought he was seeing double too.

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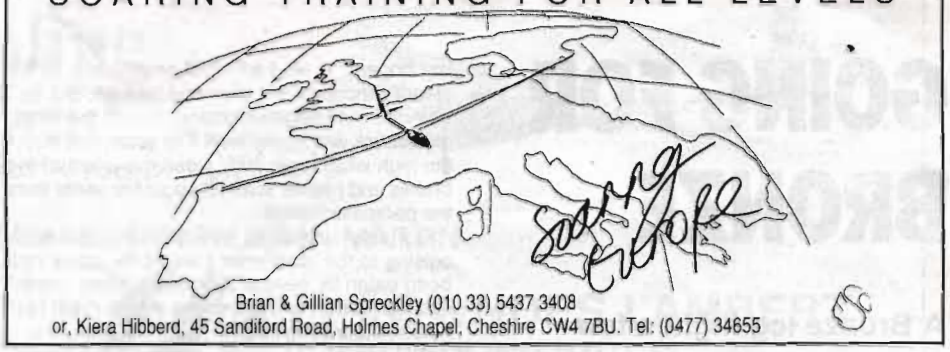
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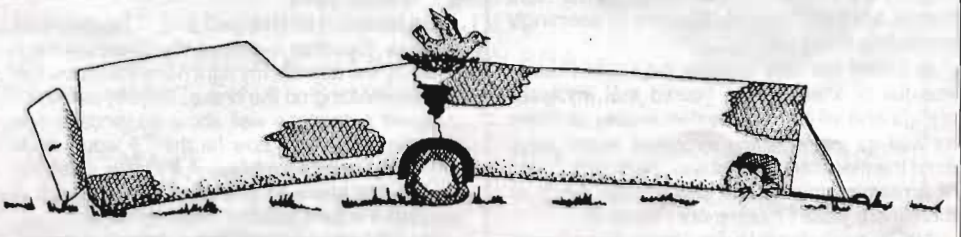
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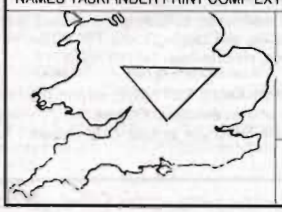
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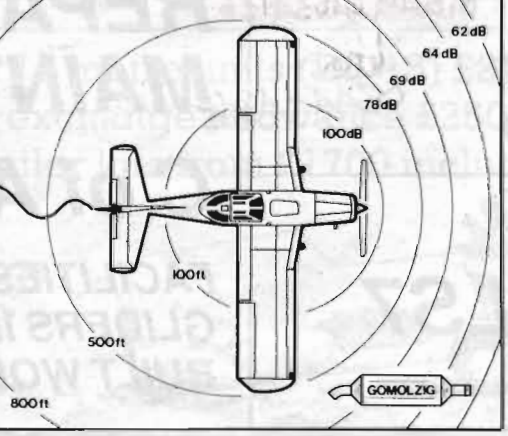
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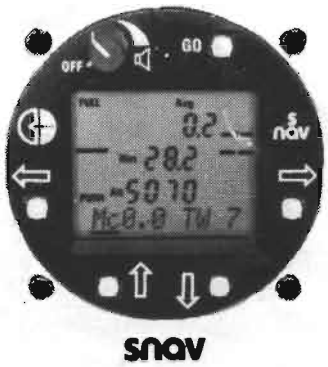
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