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Cover: Anne Robinson took this stunning photograph at the end of a day's flying at Derby & Lancs GC.

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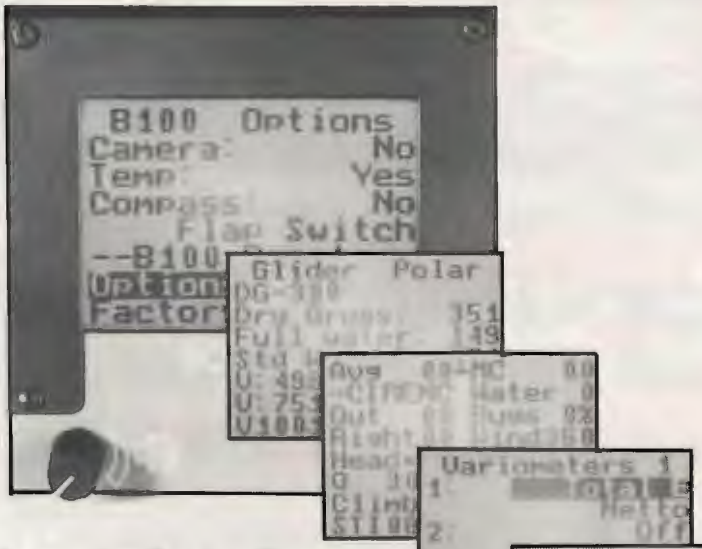

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YOUR LETTERS

RADIO DRIVEL AND COMP NUMBERS

Dear Editor,

Another soaring season, and yet more drivel on the radio, such that it makes virtually all the frequencies unusable at the weekend.

Despite pleas for discipline over the years, and the necessity for many pilots to possess RT licences, the transmission of rubbish continues. Why should this be so, particularly for pilots taught RT discipline for the licence? The answer lies in air to air transmission. When usual ATC procedures are used on non-gliding frequencies, normally pilots may only address the dedicated user of that frequency – *ie* a ground station. Air to air transmissions are prohibited.

Isn't it time we tried to make at least one frequency usable (I suggest 130.1) with air/ground and ground/air transmissions only (except for emergencies)? Competition start and finish lines and position reports to crews might at last be heard above the "Where are you?" or "How did you do in the Nationals?" trivia. There will still be three other frequencies for that. I suggest persistent offenders on 130.1 may be reported by call sign to the BGA, call signs to be published in *S&G* for public humiliation and the offenders invited to pay a small "fine" to a charity of the BGA's choice such as the Philip Wills fund.

On a slightly different note, competition grids are becoming interesting these days! Following the Comp No. 3-letter registration fiasco, we now seem to have a system where you can do your "own thing"! There is a plethora of personal initials, or letter/number combinations applied to gliders; even when Comp numbers are used, the rules for size, position (even style these days!) of letters/numbers are frequently ignored. There is even the case of having a Comp number to satisfy the law, and your own personal motif for registration and RT transmissions. Contest authorities usually ignore what rules there are.

Whilst not wishing to introduce the bureaucracy of the CAA, nor to remove the individuality which attracts a unique type of person to our sport (I use my own personal call sign for coded transmissions) surely it is time to sort out the two points above? If we are trying to present a professional organised image to first our aviation brethen (with RT) and secondly, the general public (who are attracted to the spectacle of a competition grid), we don't seem to be doing ourselves any favours.

MARTIN DURHAM, *Shawbury, Salop*

UNUSUAL INTRODUCTION TO GLIDING

Dear Editor,

I persuaded my friend Steve, whose total flying experience was in an airliner, to join me in the Wold GC's Two-Seater Competition at Pocklington. It is a wartime airfield, with a nice clubhouse and bar, a membership size similar to my home club at Dunstable and every time I've been there the welcome has been warm and friendly.

During the Comp we flew on five out of the seven days and came from behind to win on the last day. The start of Steve's logbook is perhaps a little different from most. He now has six flights, all aerotows in an ASH-25 with just under 30hrs and nearly 1500km.

Now he's mastered navigation, cloud and field selection, it's time to think about flying the machine. Steve has no idea what the performance of other gliders are like, nor does he know anything about circuit bashing. Gliding to him is just like you see it on TV, soaring peacefully over the countryside. I have a feeling Steve is in for a bit of a shock when he starts sitting in the front of a K-21.

CHRIS PULLEN, Eaton Bray, Beds

TASK SETTING

Dear Editor,

I must apologise to Mike Brook (letter in the August issue, p173) and the Yorkshire GC for omitting their 512km task flown in 1990 from the list of successful 500km competition tasks mentioned in my article on task setting in the April issue, p70. This increases the list of successful 500km UK competition tasks from two to three. Even if there are others, these numbers are very low when compared to the hundreds if not thousands of flights of 500km and over achieved in the UK outside organised competitions.

Undoubtedly as glider performance increases and if we have more good seasons like 1990, it will be possible to set other successful contest 500km tasks in the future. However, a task planning system similar to that recommended in the article should be discarded by the task setter "at his peril" since it is all too easy to be carried away by euphoria and overset on the basis that "it looks a 500km day today" (or 600/750km etc). It may well be such a day for pilots outside the constraints of organised competition, but in a contest you have to allow for time to launch all of the task group in conditions where they can safely stay up, allow for the time of opening of the start line and for pilots to start, get the first finishers back some time before the last thermal of the day, and give a chance for a well-flown glider of lower performance in the task group to finish the task.

Also, there are places that single pilots flying their own tasks can declare with impunity because if the weather turns awkward they can cut the leg short. In a contest it is fundamentally different. Once launched, the scoring is fixed to the task and pilots turning back or cutting a TP even for good safety reasons, are severely penalised. As examples, I would suggest that TPs such as Bala, Brenig, Cerrig, Rhayader, and Vrynwy are not safe to set in a competition, but appear in the BGA list for use in big tasks flown outside contests.

In addition, there are extra airspace factors that will modify your "ideal" route if setting for an organised task group; the BGA code of practice for Comps and club tasks does not allow the straight track between two TPs to pass through controlled airspace prohibited to gliders. Pilots flying their own tasks simply dog-leg round, but the task setter for an organised group has either to change the TPs or put in an extra one so that the direct tracks clear the particular airspace; a sensible rule to preserve our relations with the airspace authorities. In the same way that the first rule for flying an air display is "do not crash" (often forgotten!), I believe that a similar rule for task setting should be "do not have an airspace incident" (*ie* one which could be put down to less than sensible tasking). Pilots in competition are quite rightly concerned with pushing as hard as possible for speed, and should not be put in positions where airspace transgressions could give them a large advantage.

For all of these reasons "Comps is different!"

IAN STRACHAN, *Lasham*

A DIG AT MIKE AND BOOKER

Dear Editor,

In the August issue, p173, you featured a letter from Mike Cuming about his visit to Chipping Airfield in June. I am becoming weary of Mr Cuming's patronising attitude to clubs other than his own. In this instance he refers to the extensive facilities to be found at Cockhill Farm, leading to tremendous flying potential.

I would point out that almost every gliding club in England has better clubhouse, social and bar facilities than those to be found at his own club, Booker, which lacks every item essential for the correct conduct of a gliding club, that is the three Bs, bars, bogs, and bunks.

DAVID ISKE, *Usk, Gwent.*

Mike Cuming replies: How refreshing! People normally only fail to grasp part of a letter but this bloke has misunderstood the whole lot. Since Mr Iske evidently has trouble with his three Rs, let me recapitulate the main points in terms which I hope he will be able to understand.

The Blackpool GC members are impressively friendly, competent and well-informed. They invited me to their club and made me very welcome. I have yet to form an opinion of the South Wales GC but it seems improbable that I shall trouble them with my patronising presence at Usk and so it may be some time before an accurate report reaches the pages of *S&G*.

I am not in fact a member at Booker but if my memory serves me correctly they are famous not for the three Bs but for three Diamonds instead. Chipping is, of course, the place which is famous for its **double** Diamonds.

THE CFI REPLIES

(See the August issue, p175.)

Dear Keith,

Thank you for your letter and observations about my recent revision of the training programme and I am pleased that, in general, you believe it to be an improvement.

Your comments about the compulsory use of the motor glider in the training syllabus and check system are something of a puzzle to me. Perhaps I should explain again the thinking behind this move. ➡

I'm sure you will agree that the eventual confidence and capability of a pilot depends very much on the type of training he receives initially and the calibre of the instructors who pass on their knowledge and skills. Equally I believe that most pupils and instructors would be the first to acknowledge that the best way to master a difficult exercise is to practise the manoeuvre under the tuition of a capable instructor. If you accept this as the basis of training, then the question of field selection, circuit planning, and positioning must be best practised around "real" fields of the type the pupil is likely to come across when he goes away from his own airfield. The limitations in practising this exercise in a glider are:

- It is a one shot effort and must be right first time.
- An actual field landing and retrieve would place the glider out of commission for most of the day.
- The instructor cannot allow the pupil to get it wrong to demonstrate the limits of the exercise.
- The risk in a field landing is high.
- Many fields are unlandable for much of the year.
- Landing in a restricted area of the home airfield is too familiar to be realistic.
- There is no opportunity to do the exercise several times to develop the pupil's skill.

Need I go on?

Our new training syllabus requires the pupil to learn how, and to demonstrate his ability, to place the aircraft in a position on the final approach where it is clear that a field landing is likely to be successful. It is not part of the motor glider training to actually land in the field. Once it becomes obvious to the pupil that he is either on the correct glide path or not, then the approach is aborted and, if necessary, further attempts can be undertaken. This can be repeated several times in a 1/2 hour flight. If you doubt the benefit of this technique, I suggest you seek the opinion of those pupils who have been trained this way and the instructors who have carried out that training.

You will also be aware that this extension of the training programme is introduced at a very early stage and not left until the pupil has reached Bronze badge standard. The reason for this is twofold. I firmly believe that the earlier it is introduced the easier it is for the pupil to become accustomed to the fact that field landing is very much part of our sport and not something to do only in an emergency. Secondly, you will be aware that we regularly have a number of outlandings which were not anticipated on take-off. They were either weather induced, take-off with airbrakes open, as happened to an early solo pupil recently, or another emergency. Quite a number of these resulted in damage to either the aircraft or the occupants. Whilst the evidence is not conclusive, there is no doubt that those in current field landing practice got it right more times than those who were not.

Your second and I believe major complaint, that you, as a non motor glider pilot, can now no longer be the final arbiter as to when a pupil is allowed to go cross-country, is an intriguing one. I sense a high degree of self-interest here as you see your status as a senior instructor being eroded. You are quite right, you alone cannot now clear someone for cross-country flying. However, if you accept the benefit of prudent use of the motor glider in flying training, then by accepting your request that I change the training syllabus back to glider only operations, I would be depriving the pupil of some huge training benefits simply to satisfy your personal ego. I really cannot believe that you want me to do this.

So come on Keith, accept that the earth is not flat and either learn to use the technology of the motor glider in its context or at least concede the benefit, but do not ask me to deprive the pupil of the best we can offer.

BARNEY TOULSON, *CFI Coventry GC*

A FURTHER COMMENT

Dear Editor,

I would just like to say to Keith Nurcombe that as a recent Bronze pilot I benefited enormously from navigation and field landing checks in a Motor Falke. This is not to say that I do not agree with his views. In fact the reason for writing is just to say that it could be worse. Our CFI is also a jet/helicopter/motor glider/glider, and most recently hang glider, pilot. Think about it!

DAVE TOWNEND, *Bath, Somerset*

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REFINISHING WORK

Dear Editor,

May I take this opportunity of thanking Protech Sailplane Services for their kind comments on p284 of the last issue. If anyone is contemplating taking their sailplane to Protech for refinishing and would like to know exactly what I think of their standard of work, please call me anytime at home on 0420 88664.

T. A. JOINT, *Alton, Hants.*

MUST I HAVE A BRONZE BADGE?

Dear Editor,

Is it absolutely compulsory for a solo pilot to achieve the Bronze badge or can he/she continue local soaring after the usual check flights?

I have been solo now for some five years. Unfortunately, as my spare time is rather limited for various reasons, I have only managed to fly some four to five weeks in any one year. This usually takes the form of course weeks or clubs weeks so that in theory, and of course conditions permitting, one or two check flights are all I need to get me solo again.

I have recently joined a single-seater syndicate. Are there any reasons, legal or otherwise, why I can't continue local soaring after being cleared to fly it?

In short, is the Bronze badge a statement of competence and general good airmanship (like a motor vehicle licence) or simply a licence to fly cross-country? I believe it to be the former. If this is correct, it is purely speculative. I'm certain we have all witnessed cases of incompetent driving and the accident reports in *S&G* reflect a sorry tally of "experienced" pilots making very bad decisions. Do I make my point?

The prospect of flying cross-country scares me to death. I'm quite happy to fly within the confines of the local soaring envelope. Surely I am not alone. I know of people who have been flying *ab-initio* for years, probably without the slightest prospect of soloing, yet they are happy to keep on flying this way. Should they be told bluntly that in the instructor's opinion they will never solo?

Should a pilot be pushed towards attaining a Bronze badge or else be manacled to the club training aircraft for the rest of his/her flying days? I await with interest any correspondence on this matter.

JOHN GALLAGHER, *Gateshead, Tyne & Wear*

Chris Rollings, BGA senior national coach, replies: John's letter raises a general point that is worth a wider answer, but first I'll deal with the specific question, "Must I have a Bronze badge?" The answer is, of course, no. You may continue as an "early solo" pilot for as long as you wish. However, the Bronze badge is intended as a test of competence and general good airmanship as well as being a licence to fly cross-country. A pilot without this qualification therefore should expect more in the way of supervision, checks and restraints on his flying.

Having said all that, I suspect the true answer to John's question is in the following quote from Laws and Rules: "The CFI is responsible for all flying from his site and no flying may take place without his permission..." A CFI who withheld that permission from a pre-Bronze pilot wishing to fly regularly in a syndicate glider would be acting within the rules, and in my view probably prudently.

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 REVIEWS

Gerald Coulson – The Masterworks by John Blake. Published by David and Charles at £30.

If you feel like giving yourself a Christmas present, this exquisite book of paintings lying idly on the coffee table will soon steer party talk round to flying.

Gerald Coulson, a tug pilot with the Cambridge University GC, has been a member of the Guild of Aviation Artists for many years and a satisfying number of the 70 plus colour plates are of aircraft with his classic Lancaster painting on the cover.

John Blake traces Gerald's background with his love of aeroplanes since early childhood to life in the RAF and later as a civilian aircraft engineer and pilot. Sales of his fine art prints have put him among the top ten best selling UK artists fourteen times in twelve years, three times at number one.

Beautifully produced, this is a most pleasing book with an elegantly written text by John Blake.

Talgarth – Playground In The Sky by Ivor Shattock and available at £2 including p&p from Ivor at Whitegates, Mountain Road, Bedwas, Gwent NP1 8ES or from the Black Mountains GC clubhouse.

Ivor Shattock has been soaring the Welsh mountains longer than most people have been flying and it is no surprise that he has come up with this booklet about the do's and don'ts of soaring in South Wales. A regular flier at Talgarth, he clearly knows the area like the back of his hand (his left hand, in fact – see Chapter 2 on ridge soaring the Beacons).

His booklet is 24 pages long and contains a number of line drawings to reinforce the text. The introduction and first chapter cover the site location, field organisation and operational procedures. The next three chapters discuss ridge, wave and thermal opportunities and are accompanied by drawings showing the best places to go for lift. Some basic theory is also included for the benefit of those of us who consistently fail to get into the wave. In the next chapter Ivor describes the landing procedures at Talgarth, in order to dispel (or reinforce, depending on whether you have yet been converted) any fears about how "difficult" the site is alleged to be. Ivor concludes by describing some flights which he has found particularly interesting.

This booklet is written in Ivor's own inimitable style, more a collection of thoughts than a formal dissertation, although it would have benefited from a general tidy-up to remove minor spelling errors and also to include rather more detail in some of the diagrams (as is found in his other booklet **Soaring from Usk**). An earlier publication, **Mountain Flying Talgarth** by John Bally, holds more comprehensive information and may be more suitable for the would-be Talgarth veteran, although I am unable to say whether this book is still available. All nit-picking stuff really – Ivor's experience is to be respected by anyone planning a first visit to the Black Mountains and anyone who takes the time to absorb the contents of what he has put together here will be better equipped to get the most out of their stay.

JOHN BRIDGE

TAIL FEATHERS

Platypus muses on the Vintage Glider Club dinner where he was the guest speaker

I was given two pieces of advice before I came to the dinner of the Vintage Glider Club: one was, "It's going to be a bit of a bunfight as usual, so for heaven's sake don't come in your best clothes, and secondly you can talk about anything you like except what the definition of a vintage glider is."

On the first subject, I have to say that never since the Booker Boy Racers' annual dinner of 1987 have I spoken to such a, shall we say, informally dressed group. Now I've seen a picture only very recently (in the excellent feature about Dunstable past and present in *Aeroplane*) of Philip Wills, wearing a buttoned waistcoat, starched collar and a tie, about to get into a Scud. Now if vintage enthusiasts are going to go in for authenticity then I don't care how they dress for dinner but out on the field I want to see three-piece suits – and wing collars, too: they might get a bit of extra lift.

Three-piece suits.

As for the definition of a vintage glider – well, the temptation to venture on to forbidden territory was just too great. My only qualifications to talk about the subject at all are that I am old enough to have flown and owned gliders that are now considered vintage. So I let the VGC members present at the dinner dictate what belongs or doesn't belong, by a process of cheering or booing each type as I mentioned it. The biggest cheers, with no dissenters, were for the following (some of the notes have been added by me since the talk):

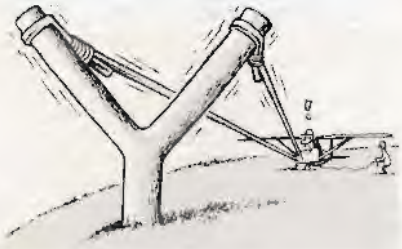
- Grunau Baby: the vilest controls of any glider I have flown with the exception of the Nimbus 3.
- Kite 1. Streamlined Grunau Baby. Plat owned 25% share 1958-59: did five hour leg of Silver badge in open cockpit in pouring rain in the Dunstable Bowl. Fondest memories of all.
- Cadet: Plat went solo in 1949; owned 20% of Peter Fletcher's Cadet (price £10) in 1960, in which John Jeffries flew Dunstable – Stratford-on-Avon – Cranwell. Plat couldn't even get it across the power wires.
- T-21: I have only just learned that this revered trainer used the same wingplan as the Grunau, scaled up. Greatly enjoyable, as all side-by-side two seaters are.
- Prefect: British postwar successor to Grunau Baby. Plat got Silver distance in 1959, with average achieved airspeed of 1.5 kt plus 12kt tailwind.
- Olympia 2B.
- Sky: British postwar version of Weihe
- Moswey: beautiful Swiss gull wing, early 1950s

Beautiful Swiss gull wing.

- Tutor: Punishment-battalion glider[1]. Needed 25kt wind to stay up; grounded by CFI in any wind over 20kt. Plat got C certificate by miracle in 1958 while CFI was in bar.

I won't divide the club by listing the gliders that got a mixed reception – or an unmixed barrage of raspberries – but it is clear that anything embodying laminar flow principles developed after World War II is considered by a sizeable group in the VGC to be not quite *comme il faut*. Exceptions might be made for gliders of extreme rarity and likely historic value in the next century. (Sigma, for instance?)

Twenty years ago I worked for the world's greatest advertising agency. Well, strictly, I worked for its market research subsidiary; a bit like playing the piano in a whorehouse. Anyway, the boss asked all his bright young executives to write essays about the social and marketing trends of the future. I did not win the prize, though



Before aerotows were allowed.

[1] *This was before aerotows were allowed for Tutors.*

I felt then that I should have done, modesty always having been one of my weak points. I cer-

Trends of the future.

tainly feel *now* that I should have won it. I wrote that since everyone believed that things were steadily getting worse, the greatest trend of all would be *nostalgia*. "The past has a tremendous future" I wrote. If only I'd had the courage of my convictions and filled a barn with 1960s cars, and stuff that people were paying the dustmen to cart away, like Victorian fireplaces; I'd be a millionaire now. Everyone is wild about classic bikes, old 78s – and who'd have predicted 20 years ago that in 1991 the citizens of Leningrad would rename it St Petersburg?

The trouble is that the nostalgia boom has encouraged pedants and authenticity bores; nit-pickers who are forever writing letters like this to the Daily Telegraph:

Sir,

Was I the only television viewer to be dismayed by scenes in last week's play, set in the year 1933, in which a naked couple make violent love on a train to Penzance? Does the BBC not realise that the Great Western Railway did not use locomotives of the 4-6-2 wheel layout on the Cornish peninsular? Moreover, the upholstery on which the two young men were exercising themselves bore the GWR monogram in black, though it is well known that it was woven in green until 1936, in which year it was changed to black as a mark of respect for the late King George V. It is this sort of sloppiness that has brought this once great country to the brink of decadence.

Yours Disgustedly,

Brig-Genl (retd) Q. Huffington-Bellows, OBE, Tunbridge Wells

This craze for authenticity is spreading everywhere. You can't perform Mozart on a Steinway nowadays; it has to be a 200 year old piano or a faithful copy, played in the original hall. I say they should go the whole hog: the performers ought to wear wigs infested with lice, mice and other vermin, while expiring of tuberculosis, and the audience should talk loudly, eat oranges, spit, ogle the bosoms of each other's mistresses, and duel with swords in the interval.

Across the water, enthusiasts of the American Revolution make exact copies of 18th century muskets, and take special pride in using the same tools and methods as the gunmakers of 200 years ago, as well as grinding their own powder and casting their own shot. If one of them, dressed in 1776 uniform, should grind too vigorously or shoot himself in the foot, I trust that the well-regulated militia will not send for a helicopter

full of paramedics, but will summon the local barber, with a saw and a pint of gin – to anaesthetise himself, not the patient – and a bucket of hot tar to dress the stump. Accuracy in these matters of fine historical detail is all part of the fun.

Some years ago the legendary Walter Neumark, one of the most creative minds in our sport, made a precise copy of the glider in which Percy Pilcher killed himself, and adhered as faithfully as possible to both the original location and means of winching himself up. The subsequent crash could have been a totally authentic replay of Pilcher's, except that such unauthentic modern aids as telephones and motor transport got Walter to the hospital quicker.

Grind too vigorously.

Some of the great cross-country flights done in vintage gliders today are achieved with the help of aerotows, and there is no doubt it makes all the difference. Is that authentic? Of course it is. There is a spectacular piece of film taken by Dudley Hiscox in the 1930s showing an Avro 504K towing a glider from the foot of the hill straight at the camera, which was fixed in the Dunstable clubhouse. What you can't see but can only imagine is the members, in their plus-fours and wing-collars, all diving under the tables as the two aircraft fill the screen and, in the last second, stagger over the dining room. Any attempt to replicate that today should take account of the 20ft or so of 1990s radio aerial on the 1936 roof.

The rat race

The modern competition pilot is a totally different creature. What a contrast! The last World Championships was an education to me, as a backseat observer. The French team in particular – who conducted themselves with great gravity in the air and great levity on the ground – flew identical pairs of gliders as if tied together with invisible string, and talked incessantly to each other and their manager, giving their respective positions accurate to ten metres:

"Ou etes-vous, Jean-Claude?"

"Pas de probleme, Pierre, mon nez is right up votre derriere"

and so on all day. The general rejoicing, when in spite of flying brilliantly for weeks they failed to win anything, was quite unseemly but understandable. De la Rochefoucauld would have had a maxim to describe it.

Competition pilots seem to suffer from the four least attractive of the seven deadly sins – envy, avarice, anger and pride. (I quite like the other three myself: sloth and gluttony in particular, and, if I have the energy, a spot of lust.) If you asked a racing pilot as he stumbles blearily out of the cockpit after twelve days of speed flying "Did you enjoy the flight?" he would say "How do I know if I've enjoyed it till I've seen the score-sheet?"

If I have the energy.

Do it *con amore*

Whatever their other virtues, such as courage and endurance, competition pilots don't display much love. They don't love the task setter or the Met man; they certainly don't love each other. They don't love their crew, they just tolerate them, even their wives and children, for the duration of the contest. They don't love their gliders: the aircraft are just tools, to be discarded when something better comes along.

What I had not noticed until a few minutes before speaking to the VGC was that it is called the Vintage Glid*er* Club, not Glid*ing* Club. They do love their aircraft. The most important instruction in music is not *allegro* or *appassionato* but *con amore* – with love. Only if you can play *con amore* are you an artist. If there are any artists left in gliding most of them will be found in the vintage movement. Long may they flourish!

Not another routine crash!?

One extrovert reader of *S&G* told me that he (no, I remember for various reasons that it was she) only found two things worth a good belly laugh in this magazine – the Platypus column and the BGA official accident reports. I think it is a back-handed compliment to be regarded as about as funny as a broken leg, but never mind, any kind of praise from the punters, even the sadists, is better than none. "In that case" I said "the best piece of reading would be an accident report involving Platypus – one, he selfishly hopes, that leaves him sufficiently whole to write it up afterwards?" "Oh yes" she chortled "that would be spiffing! Please oblige." She slapped me heartily on the back, dislocating my shoulder, and roared back to the bar. Well, I do get pretty desperate for ideas, but having a prang in order to generate copy is going too far.

(To give you a notion of how desperate I get with the old writer's block, which is not confined to paid-up union members but can happen to rank amateurs, this piece resulted from my using a random-number generator on my Mac II computer to decide which page of *S&G* I should open, the rigid rule of the game being *immediately to write something prompted by the very first item on the randomly-chosen page, regardless*. Page 205 *S&G* August issue 1990, accident reports, came out of the electronic hat. So now you know just how dried-up the well of literary inspiration has become. I can only thank heaven or the microchip that page 205 wasn't an ad glorifying some gizmo or gliding site: advertisers can be very touchy people. You can see their point of view: they don't pay good money in a recession just to be mocked.)

Peter Fuller is the one who can make a broken leg seem funny

I did once write up a prang that I had in 1970: I turned it into a major piece in *S&G* with illustrations by Peter Fuller, on whom I so often depend to save the day. *He's* the one who can make a broken leg seem funny. I had another crash in 1977 but I didn't write that one up. One reason for my reticence the second time around was that after the 1970 confession the editor was deluged under a shoal of letters, both of which deplored the poor taste of my washing my dirty underwear in public. (It wasn't dirty, just a bit damp, as you might expect under the circumstances.) The correspondents said that decent chaps hid themselves after such disgraceful episodes, and didn't boast about their lack of airmanship. And there I was imagining I was doing a public service.

A much better reason for not writing up the second crash was that it was *exactly* the same as the first one. Which indicates that if anyone had learnt anything from my public breast-beating over the first accident, it certainly wasn't me. There is a dreary, repetitive sameness about most crashery which must make people like Bill Scull despair. Truly original ways of wrecking gliders are so special, there ought to be some kind of medal, a Prang of the Year award, limited for reasons of good taste, to those that can get to the podium under their own power.

You're all agog to know what happened in 1970 and 1977, aren't you? . . . (No they're not, and I've run out of space Ed.)

TOM BRADBURY

LOOKING BACK AT 1991 COMPETITION MET

Making Met forecasts for gliding contests last summer seemed to cost more in time and money but produced less in the way of good flying days than ever before. The Europeans did not seem to have much better luck either. By the middle of the Dunstable week one pilot reckoned he had reached his 37th consecutive non-contest day (including weeks wasted in Europe). Below is a personal account written after fumbling with competition weather for seven fruitless weeks

Most competitions start on Saturday and run through to Sunday week. The Met side starts on Thursday when all the radio and satellite gear is dismantled and packed up. The first pack up of the year involves a search through box rooms, attics and garden sheds for all those cardboard boxes stowed away last year. Sundry indignant beetles and creepy crawlies are turfed out of their winter homes to make way for three radios, three printers, sundry black boxes, a couple of VDUs, satellite dish and receiver and numerous odds and ends.

On Friday this collection is transported and set up at the contest site. Setting up is no pleasure at all. There are some 14 mains plugs, six pairs of connections to 13.8V power packs and yards of aerial wire with lengths of co-axial cable to fit in somewhere. The scene looks like the web of some psychotic spider. Unless some kind hearted radio amateur or computer expert takes pity and tidies things up for me the awful spiders web stays under the table all the week.

There is a sense of relief at switching on and finding everything does still work (I am always pessimistic about electronics). The dismal thought then occurs . . . the whole business will have to be done in reverse in ten days time.

Operating

The object in collecting all this gear was to be totally independent. The first radio is tuned to the Bracknell RTTY (radio-teletype) channel which broadcasts an almost continuous flow of surface observations, ship and aircraft reports and upper air "TEMPS". These radio messages are processed by a Swiss made POCOM and appear (in code) on a VDU; a printer provides hard copy when needed.

The second receiver is for radio-fax weather charts. These are put through an ICS FAX-1 whose output goes to a second dot-matrix printer. The FAX-1 can also take RTTY messages.

The third receiver is a stand by for occasions of difficult radio reception; it is also used for the RAF Volmet broadcast which provides plain-language reports from a number of airfields.

There is also a hand held VHF set for taking the London Volmet, (where it can be heard).

Problems with radio reception

Unfortunately HF radio is not reliable because:

1. Changes in the level of the ionosphere produce fading or multiple path reception of signals. This makes much night reception erratic. Fax charts appear with lines doubled. RTTY is hopelessly garbled.
2. Solar storms associated with sunspots and flares also play havoc with the ionosphere. They were particularly troublesome early last summer.
3. Local interference. Few places are free from radio noise. Provided the signal strength is good, the noise from nearby electrical gear can be overcome by adequate aerials but some noise generators are a menace. One particularly ferocious monster seemed to be linked to the hot water system. As soon as people arrived for early morning showers the radio beastie woke up and produced a fearsome growl which killed all but the most powerful signals. The growl covered most of the radio spectrum from a few kilohertz up to the Meteosat frequency of 1691MHz. The meteosat picture often collapsed into chaos accompanied by howls of fury from the Met Office.

Telephone fax to the rescue

Some years ago one could ring up a friendly Met office and ask for data which had not got through the radio barrage. Now we live in a harder commercial world and such casual phone calls are not allowed. Instead we can have data sent by telephone fax. This does, of course, cost quite a lot of money but it is a great relief to the Met man. Not only does it make up for radio deficiencies but it also produces items which do not appear on the standard broadcasts.

Early starts

The day usually starts around 0430. At that hour two items are almost essential to life. First is a cup of tea or black coffee, the second is a hot shower; few things are so reviving in the early hours. It was a blow when I found no hot water at one contest. Well, yes there was hot water, but only in a block reserved for the ladies until 1200. Would there really be anyone else wanting a shower at 0430? Some people do get up awfully early and I could visualise the headline in *The Sun* . . . "Weatherman shares shower with Russian Red-Head . . . Protest in *Pravda*". Better not risk it.

Nowadays bad weather is easy to forecast

Now that Bracknell can fax us some of their high-tech computer products it has become fairly easy to predict the really hopeless days. Last summer the machine was most accurate in its series of six-hourly prediction charts. This splendid series shows the isobars and rainfall patterns for 06, 12, 18, 24, 30 and 36hrs ahead. For the first few Comps this year the machine's predictions of rain belts or shower lines sweeping across the British Isles were distressingly accurate.

In the old days we were content to take each day as it came and hoped tomorrow would be better. Now we can see the dismal pattern not only for today but tomorrow and the day after. This puts a damper on the most enthusiastic task setter.

Good soaring days are the real problem

The problem here is partly psychological. After weeks of disappointment the arrival of a ridge or high is most welcome, but one has become so conditioned by the gloom that the first instinct is to wonder what will spoil the soaring this time.

Since the good soaring is often only available in a small area it becomes vital to look at as much data as possible. To lose the only good day in the week by sending the competitors towards developing overcast is too awful to contemplate. It is almost as bad when the boundary of the good weather is just out of reach. It is particularly tantalising when nearby clubs are doing long cross-countries but the competition site stays under the clag.

DIY forecasting

There are now several clubs who manage very well without an official Met man. Booker and Dunstable have developed workable systems using satellite data, radio and telephone fax to supplement official information. At the Yorkshire GC Tony Kane has cultivated the Leeds Weather Centre who supplement his radio fax and Volmet data. His working notes make my own system look haphazard and, to my embarrassment, he does the job quicker too.

Remote forecasting

Such local experts are not always available, however, and last summer there was one major

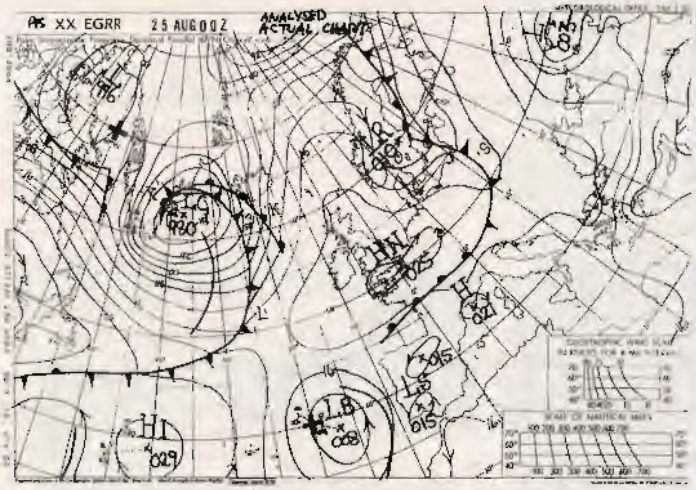


Fig 1

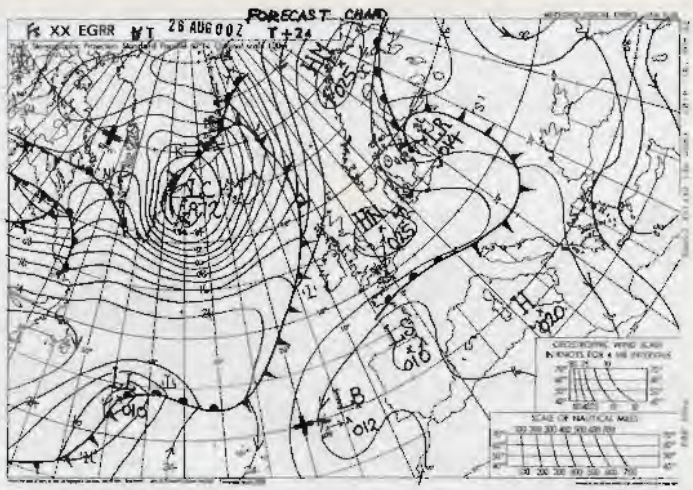


Fig 2

national contest and at least three others where the Met data came from a remote source. The Open Nationals at Enstone overlapped the European Women's Championships at Husbands Bosworth. The Met for the latter was jointly sponsored by the Met Office and the CAA and this left no one free to go to Enstone. Instead a series of charts and briefing forms was sent to Enstone by fax. The Inter-University week at Nympsfield and the Regionals at Edgehill were two contests where I tried remote forecasting because the thought of setting up yet another competition Met station was too depressing.

A routine for producing remote forecasts

The basic data needed is the same whether working from home or at the contest site. The HF radio broadcasts provide most of the data but the forecaster still needs to ask Bracknell for special items to be faxed down the telephone line. The essential items seem to be:

1. The analysed midnight chart and the forecast for 24hrs later. The forecaster needs these but they are also faxed to the competition director so he can build up his own picture and see what the forecast is based on. (Fig 1 and 2.)

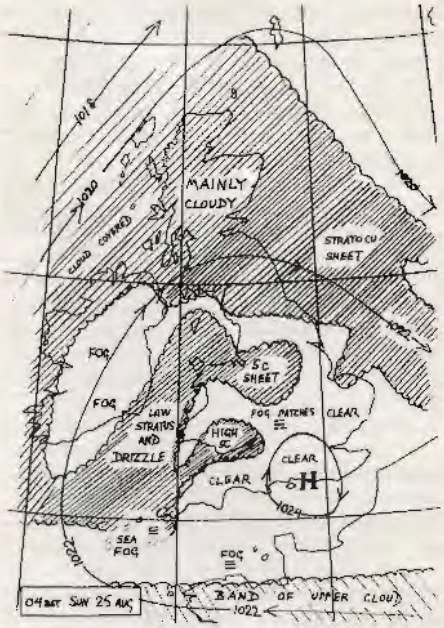


Fig 3

2. A selection of TEMPS (temperature and wind observations in the upper air) which are seldom readable on HF broadcasts because nocturnal reception is bad.

3. A plotted 03GMT chart. This is essential background for the forecaster who needs it to see what the cloud pattern is like and to choose which upper air soundings to use. This plotted chart with its microscopic symbols is not of much use to the director. Instead a much simplified version showing essential features such as the distribution of cloud layers and any regions of bad weather can be sent by fax. (Fig 3.) Notice that although the charts labelled ASXX and FSXX showed a high drifting across the country there was a surprising amount of cloud to spoil convection. Some highs were very disappointing last summer.

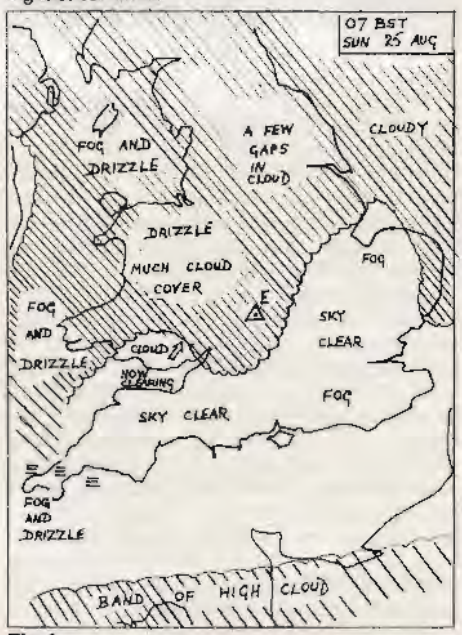


Fig 4

4. If radio reception is good I plot the 06GMT chart from coded data broadcast on HF. During sunspot maxima it was sometimes necessary to ask Bracknell to provide this chart too. Since each plotted chart costs about £4.60 I prefer to use the radio. Using the 06GMT chart and any satellite data one can draw a larger scale pattern of the cloud cover. (Fig 4.) This new chart shows how the cloud cover had become more extensive since 03GMT. It now looked likely to spoil the day over the Midlands.

5. Surface charts show only half the picture. A tephigram and a temperature/height graph is just as important. (Fig 5.) This tephigram shows a curve interpolated between reports from Liverpool to the NW and Crawley to the SE. (There were no nearer stations that day.) Underneath the tephi is a graph showing how the temperature should rise (given clear skies).

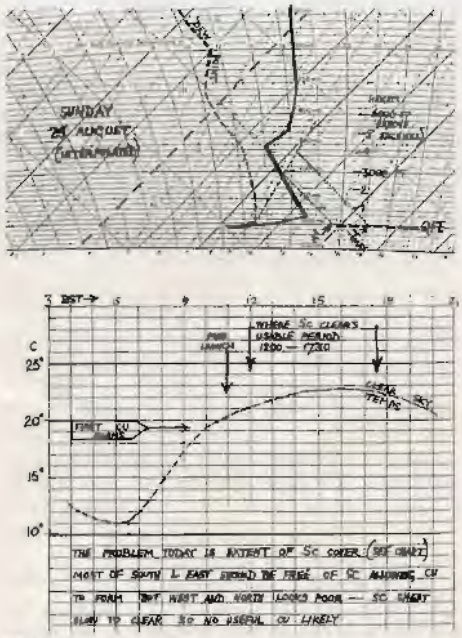


Fig 5

On this graph one can mark the temperature and height at which cu will form. Further along, where the temperature reaches its maximum, one can indicate the mid afternoon cloudbase. More little arrows indicate the period usable for soaring.

6. Then comes a briefing form (not illustrated) which can be duplicated and handed to the pilots or drawn on a briefing board. The top shows a time cross-section of the weather with winds in the margin. Below it is a space for notes. Bottom left is a small-scale forecast chart showing fronts and isobars. Bottom right is a larger scale chart on which one can indicate the main features of importance. This area map is to supplement the cross-section at the top.

Updating

If it is a good day the pilots should be up and away by midday. If the conditions are poor a chart for 09GMT may be needed. By this time the sun is high enough for visual satellite pictures to be usable. When working from home I can usually get the NOAA picture which gives more detail than the Meteosat. I am often surprised by the shape of the cloudy zones.

Did it work out?

Well it was not much good at Edgehill or anywhere north of Didcot because the cloud cover persisted there, but I had a grand day over southern England. It's an ill wind . . .

SUCCESSFUL AIR EXPERIENCE FLYING

We have been asked by the BGA Executive to publish this paper in its entirety. It is a guide to encouraging air experience flying and a reminder to clubs of the possible pitfalls as well as the benefits

Air experience flights are a vitally important means of introducing newcomers to the sport, and help to promote public awareness and interest. They offer a boost to club funds and they also provide useful flying experience for the pilots involved. And they are fun.

However, the Civil Aviation Authority has expressed doubt in recent years about the legality of this long established practice and so lengthy discussions have taken place between BGA officers and representatives of the CAA to clarify matters.

The CAA want to make sure that they control all commercial flying in the UK and are particularly keen to regulate any flying that is in their opinion "public transport". On the other hand, they are happy to allow genuine trial gliding lessons to continue in the traditional manner and this remains a thoroughly legal activity.

The grey area lies in the middle. So when is a trial lesson not a trial lesson? Unfortunately, only a legal precedent will define this, and there hasn't been one yet.

Because of this, the BGA Executive Committee has taken the unusual step of producing this paper. The purpose of this paper is to encourage trial lesson flying at those clubs which have perhaps felt intimidated, to remind all clubs of their potential liabilities and penalties if their activities extend to "public transport" flying, and nonetheless to encourage an organised and "professional" approach to the conduct of courses and trial lessons.

The Committee has deliberated at great length before producing this paper and is very conscious of the burden of trust that it carries in offering this, its own, interpretation of the law. It should be borne in mind that the CAA themselves have not issued a definitive statement on the subject.

Ultimately, however, the responsibility for the actions of each club rests with the officers of that club and – in the extreme – with the pilot carrying out each flight.

Both the ability to perform trial lesson flights and the freedom to manage this aspect of our own affairs are characteristic of the very satisfactory relations that exist between the BGA and other aviation authorities. Clubs are therefore urged to be reasonable in their application of this facility while at the same time taking every opportunity to introduce the sport to the general public.

Points in favour of air experience flying

Mass participation. One of the aims of the Sports Council (which gives the BGA an annual grant of around £50 000 plus extra contributions for the British gliding team) is to encourage mass participation in sport.

While it is plain that gliding will never be huge in this respect, the BGA nevertheless shares this aim – at the moment on the rather modest national scale of 10 000 active pilot members and 50 000 course or trial lesson members each year.

The actual retention rate (*ie* trial lesson participants who eventually go on to fly solo) is low – perhaps not surprisingly in view of the time and cost involved in training – but it is still important, both from the Sports Council viewpoint and from the point of view of a club wishing to recruit new members, that *anyone* should be able to visit a club and find out what the sport is about.

Public awareness. The public at large has comparatively little idea of what gliding involves and the best way to tackle this is to show them. We know that virtually everyone who has a trial lesson enjoys the experience and leaves with a positive impression of gliding. The robustness of the gliders and the safety of the sport come over very well and even the "what if the wind stops?" brigade go away satisfied.

Good neighbourliness. As the public opinion towards aviation planning approvals seems gradually to be worsening, it is important that existing clubs should maintain good relations with the communities in which they operate. Very often this aim can be met by "charitable" efforts – for example by giving trial lessons as prizes for school fetes, etc.

Recruitment. At the more highly organised clubs, around 2% of trial lesson members, go on to take further training, either via courses or by becoming full members : and between 5% and 15% of those who attend courses go on to become members. While these figures are not at first sight greatly impressive they do nonetheless remind us where many club members originally found out about the sport. For example, after many years of running courses, it transpires that over one-third of Booker G.C.'s current membership (450 in total) began by coming on a course.

Ultimately, the recruitment of new members is vital to the health and indeed the future development of gliding and this is probably the single best reason for trial lesson flying. In other words, if only 2% of trial lesson customers stick with the sport, and your club wishes to recruit, say, 10 more members – then do 500 trial lessons.

Income. The good news is that the 98% who don't come back again (even though they may think more wermly of gliding) still leave their launch fees in the club kitty. The club needs money to pay its bills and trial lesson flying – especially for groups – is a fun way of keeping the club solvent at the same time recruiting, doing good PR work, etc.

Pilot development. The experience of attending an Air Experience Instructor course (plus – for those who pass – the subsequent "free" flying with students) is of great benefit to those club members who undertake it. Such training forms a useful opportunity for "experiencad" solo pilots to submit, willingly, to further instruction. This is invariably beneficial but might not always be welcome except under the circumstances of an AEI course!

The course is effectively a watershed in the pilot's career and is a useful end in itself; although plainly the long term goal is the provision of an adequate supply of qualified AEI instructors and eventually to enable them to progress (following suitable additional experience and training) to become full instructors.

Fun. Gliding is a fun activity. That's why we do it. Air experience flying is fun too.

The pitfalls in air experience flying

Responsibility and insurance. It should go without saying that the club (and also the individual pilot) is responsible for the safe and sensible conduct of flying. This point is reinforced by the format BGA Laws and Rules requirement to have "adequate" insurance cover ("adequate" is currently defined as at least £250 000, with £500 000 "recommended"). The recommended approach is safe practices backed by plenty of insurance cover. Can any club afford the risk of bankruptcy if a trial lesson goes wrong?

Note that the possibility of substantial claims following an accident can arise irrespective of whether or not the club was acting legally, or illegally, although the extent of such claims might possibly be influenced by the acceptability of the operation in question. Technically, also, the insurers may wish to dispute a claim (leaving the club to pay) if they feel that flights were conducted illegally, or if the true nature of the club's flying was not properly disclosed to them.

The solution to both of these worries is to explain very clearly the nature and extent of trial lesson flying when the insurance policy is inaugurated.

Clubs generally cover themselves by obtaining insurance for each glider (£250 000/glider for passenger liability and 3rd parties is mandatory at BGA clubs) and also by arranging a so-called "aerodrome operators policy" to cover risks not directly associated with the aircraft themselves (*eg* winch cable accidents) including "member to member" cover.

The pitfall is that it always remains the pilot in command who is ultimately responsible for the conduct of each flight. Instructors ought there-

fore to understand and accept their club's insurance arrangements before participating in instructional flights.

The threat of prosecution. This is a danger only if you are in fact transgressing the Air Navigation Order ("the Law") and it comes to the attention of the authorities. The most likely scenario for this to occur would be following an accident – which is plainly not a good time to fight an argument, possibly against a background of emotional recriminations.

The specific point of illegality would probably be either the lack of an Air Operators' Certificate or operating for "valuable consideration" without the pilot, glider, etc being properly licensed. There is, in fact, no way at present of becoming properly licensed or indeed of obtaining an AOC and it is for this reason that the public transport of passengers in gliders and overt joy riding remain outside the approved sphere of activities.

Legal advice suggests that the outcome of any possible prosecution would be determined in court on the basis of the state of mind of the pupil/passenger at the time of the flight.

Thus it is important that – if asked – your trial lesson pupil would confirm that he was undergoing a trial lesson in order to find out about gliding, rather than a straight "joyride". The corollary of this is that if the student would not confirm the he was having a lesson then you shouldn't be doing the flight. Note that it is not essential for you to insist that the student had "hands-on" experience on his first flight although most students will prefer to try out the controls after having them demonstrated.

Group flying. Note that the line of logic given above applies also whether the student has come as an individual or as part of a group. In the case of a group it is particularly important that each member of the group accepts that he/she has come for a lesson, including at least some instructional content: the precise magnitude of that content is of course a matter for the individual instructor to decide.

How you attract customers matters. Individuals who approach the club inquiring about the sport are plainly bona fide air experience students. On the other hand many clubs wish to advertise the availability of AEI flying in case the local population doesn't realise just how accessible gliding actually is.

This often results in group AEI flying and such groups will commonly include a few who are really keen, a few who are curious and probably one or two who have "only come along for the ride". These latter few are the potential problem and instructors should be careful to ensure that the instructional element of the flight is emphasised and accepted.

The fact that the flights have been advertised has no relevance to the legality of the operation – so long as the advertisement offers trial lessons or courses and not "joy rides" or "sightseeing" trips.

Summary and advice

Trial flights and temporary membership, for anyone genuinely wanting to try gliding, are entirely legitimate. This applies even for those who are too young, too old or too disabled to fly solo – so long as they are capable of benefiting from a degree of instruction and can reasonably be thought to want to. It is not necessary that they should ever be capable of going solo. Group air experience flying is fun. Groups should be advised that trial lessons are available and joyrides with no instructional element are not. Subject to their acceptance of this advice, they can have trial lessons.

It is advisable to emphasise two things for everyone taking trial lessons.

1. A briefing (to individuals or groups) covering the appropriate elements of training (the controls, strapping in, placing of hands and feet, emergency exit and use of parachute, ground handling etc).
2. A goal for the flight which will be to experience the sensations of glider flight, have the controls demonstrated and try them if appropriate.

Advertisements or telephonic advice to inquirers should make these points clear.

Friends and families are "guest" flying so long as the flights are free or are paid for by the pilot in command. There must be no indirect "valuable consideration" of any kind. Pilots should still meet the minimum BGA and club requirements for passenger carrying but note particular that they do not necessarily require an AEI rating for this activity.

Flights which are paid for, or for which any "valuable consideration" applies, must be genuinely instructional, with an AEI or higher instructor.

Charity and publicity flights – for example lottery or school fete prizes, sponsored flights (with or without passengers) – are covered by the CAA rules set out in AIC 49/1991 (white 61).

Training courses are a logical extension of trial lesson flying. Such courses may range from, say, two flights on the same evening to a week or more of intensive residential training. The legality of courses is not in question and they are in fact the best possible way of training. Courses are therefore very good value for the student and one of the most immediate objectives after each trial lesson is to persuade the student to come on a course. Membership comes later!

In general, normal, routine, safe club practices should prevail. Aerobatics or other stunts should be regarded as exceptional. The smoother the flying operation, the better the chance of recruiting a new member. On the other hand, bad news travels fast and sick or frightened students are bad for PR.

Failing light, bad or deteriorating weather, fatigue or other factors should be given due consideration – especially if a higher-than-normal proportion of those on the field are visitors and not experienced pilots.

In a nutshell

Air experience flying is valuable for income, recruitment, public relations and flying experience for pilots in command. Properly run and with the right aims, known to and accepted by the participants, they should be an enjoyable, low risk and thoroughly legal activity for all concerned.

In view of the "business" implications of such flying it is, however, particularly important that clubs disclose full details to their insurers so that there is no misunderstanding in this area.

Further advice is available from the BGA if any doubt exists. ■

David Price took this photograph at Aquila GC, Hinton-in-the-Hedges at about 7pm on July 6 to prove that wave does form over cumulus. Tom Bradbury said it was a nice example of wave set off by the building cu penetrating the stronger flow aloft and setting off a wave. He writes: "I haven't much data on July 6 but I noticed that there was a slow moving depression south of Ireland producing a southerly flow over the Midlands at low levels. At high levels there was a 500mb low off SW England producing a stronger south-easterly flow at levels around 18 000ft (and probably over the cu top too). Thus there was almost certainly a wind shear above the cu top making cu waves possible. The evening lighting suggests the view was to the NE. If so the upper wind would have been blowing from right to left over the cumulus. This kind of wave isn't particularly unusual but since it often disappears in a few minutes it is not always noticed except by people looking out for it. The wave flow over cu tops probably occurs quite often, but is only visible when there is enough moisture for cloud to form."

ACCIDENTAL SPINS OFF WINCH LAUNCHES

Two recent fatal spinning accidents, the Club Libelle at Snitterfield and the Puchacz at Shalbourne (see the last issue, p262), have concentrated minds on the various factors which may have contributed. Here Bill Scull, BGA director of operations, reviews the work that has been done and the conclusions drawn

The first and fundamental point is that gliders can and do spin while still attached to the winch cable. Although such accidents are rare, perhaps one in a million winch launches, they are of very serious concern – as is any fatal accident.

Following the second accident (the Puchacz) the BGA issued a bulletin to all instructors stating that stalling speed is increased during a winch launch. The figure quoted was 41.4%, based on assumptions of weak link strength, the weight of the glider and wing lift being twice the normal (1*g*) value. However, it's not quite as simple as that.

The Puchacz had spun from the top of the launch and the Club Libelle at the beginning. As part of the investigation into the latter accident I sought the advice of Cedric Vernon of the BGA Technical Committee and a member of OSTIV. He produced a paper on the subject which identified the increase of stalling speed over a wider range of conditions, suggesting an increase in the order of 25 – 30% above the 1*g* value for the early part of the launch, assuming a climb angle of 45°.

Cedric involved Frank Irving who had devised a computer program on this very subject. Within three days Frank had drafted a paper based on the computer data for a typical Standard Class glider which forms the basis of this article. By dint of burning some midnight oil, another three days or so saw the paper and diagrams ready for circulation. But to whom? Technical papers inevitably contain at least some mathematics which may not aid the comprehension by the average glider pilot. Worse still it may confuse them and/or fail to get the message across.

Nevertheless, a proper understanding that the stalling speed increases during a winch launch is fundamental knowledge for every pilot and instructor. So the following represents what Frank describes as a "sanitised" version. Even so there is a basic explanation of the relevant factors.

The balance of the forces acting may help your understanding. The vertical component of the lift has to balance three things, the weight of the glider, the downward component of the cable load and the vertical (downward) component of the drag. To determine the lift requires the resolution of forces, conveniently with a computer program.

The main point is that the lift is increased by a significant amount and the stalling speed by the square root of this figure, due to the speed-squared function in the equations. The extra lift required is being demanded of the glider's wing by the pilot in order to balance the cable's pull and stabilise the launch. At any given speed this places the glider closer to the stall boundary, in just the same way as if a pullout or steep turn was being made. However, unlike the pullout or turn the extra wing load, normally felt by the pilot as g, is not present as it is reacted by the cable. Thus the pilot only has the climb angle and the control feel to judge the situation.

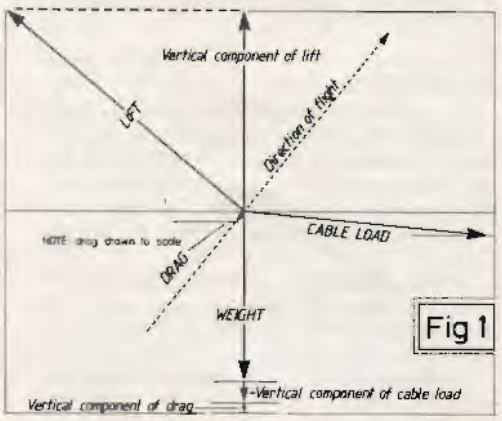


Fig 1

For example, Fig 1 shows the forces acting on a glider during the early part of the launch, with a cable angle of 5°. If the pilot demanded a flight path (climb) angle of 50° the lift would exceed that available at any speed up to 49kt. Thus 49kt is the stall speed in this condition. These figures may be typical of the Club Libelle accident.

Clearly, the speed at which the lift demanded exceeds that available is highly dependent on both the cable angle and the flight path angle. The full picture can be created from the computer program. From the information given in Fig 2 you can pick out various values. For example, the glider will come to the point of stall at 47kt and 47°, for the same cable angle of 5°. Flight path slope is the direction in which the glider is going at any instant and is not to be confused with the angle of attack or any other angles!

More importantly, above a speed of 49kt, if the climb is steepened beyond the critical 50° or so, the weak link will break (causing different problems). It seems evident that stalling/spinning on the winch launch is more dangerous than breaking a weak link which leads to the suggestion that there is a *minimum winch launch speed*.

It is important you understand this graphical presentation because there is more information to be gained from it. The first is the consequences of using too strong a weak link, say the next one up, 600kp rather than the correct 500kp. Although the glider would have to have a flight path slope of about 55C, which you might regard as inconceivable, the minimum safety speed would have to be increased to 53kt. Incidentally, for anyone who is interested there is a sample computer print-out at the end of this article, the figures are for a speed of 49kt (Table 1).

TABLE 1
LAUNCH
A program by Frank Irving to find the load factor, cable tension, wing root bending moment and drag for a glider during a launch. Steady-state conditions are assumed.

In the tables below, the load factor is the ratio of the lift to the weight. The cable tension is expressed in multiples of the glider weight, and the wing root bending moment is expressed in multiples of its value in 1*g* flight. The dimensionless speed is the ratio of the actual speed to the speed for max L/D in 1*g* flight.

Max Lift/Drag ratio = 39
Ratio of wing weight to total weight = 0.4
Spanwise location of wing C of G/semispan = 0.35
Dimensionless speed = 0.961
Slope of the cable to the horizontal = 5°

Flight path Slope (deg)	*Load Factor*	*Cable Tension*	*Wing Root BM*	*Lift/Drag Ratio*
10.000	1.039	0.208	1.065	38.733
15.000	1.070	0.305	1.122	38.580
20.000	1.113	0.409	1.198	38.332
25.000	1.168	0.524	1.297	37.948
30.000	1.239	0.651	1.423	37.372
35.000	1.331	0.796	1.583	36.533
40.000	1.450	0.967	1.787	35.344
45.000	1.607	1.174	2.050	33.701
50.000	1.819	1.436	2.399	31.482
50.200	1.829	1.448	2.416	31.379
50.300	1.834	1.454	2.424	31.327

Max Lift/Drag ratio = 39
Ratio of wing weight to total weight = 0.4
Spanwise location of wing C of G/semispan = 0.35
Dimensionless speed = 1.275
Slope of the cable to the horizontal = 5°

Flight path Slope (deg)	*Load Factor*	*Cable Tension*	*Wing Root BM*	*Lift/Drag Ratio*
10.000	1.039	0.210	1.066	35.397
15.000	1.071	0.307	1.123	35.834
20.000	1.113	0.411	1.199	36.365
25.000	1.169	0.524	1.298	36.967
30.000	1.239	0.651	1.423	37.606
35.000	1.330	0.794	1.581	38.225
40.000	1.446	0.962	1.781	38.735
45.000	1.599	1.164	2.038	38.995
50.000	1.803	1.417	2.375	38.791
50.800	1.842	1.463	2.439	38.696
50.900	1.847	1.469	2.447	38.683
51.000	1.853	1.475	2.455	38.670
55.000	2.088	1.749	2.835	37.809
55.100	2.095	1.757	2.846	37.779
55.200	2.102	1.764	2.856	37.748

Here I must digress to a practical point. During the initial acceleration phase of the launch (from

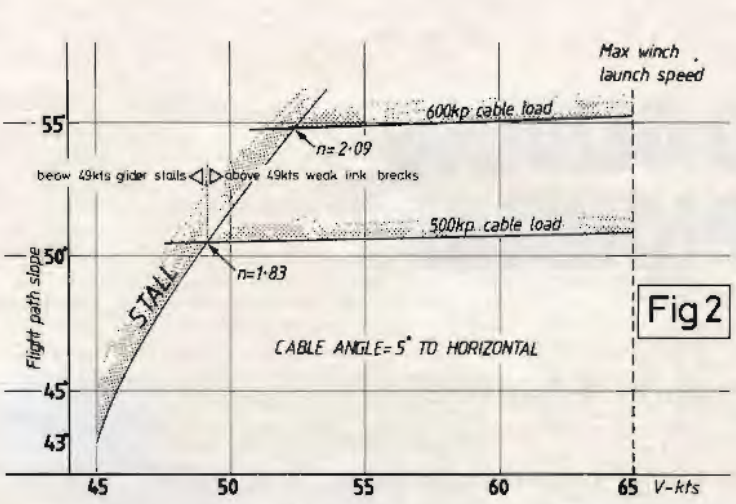


Fig 2

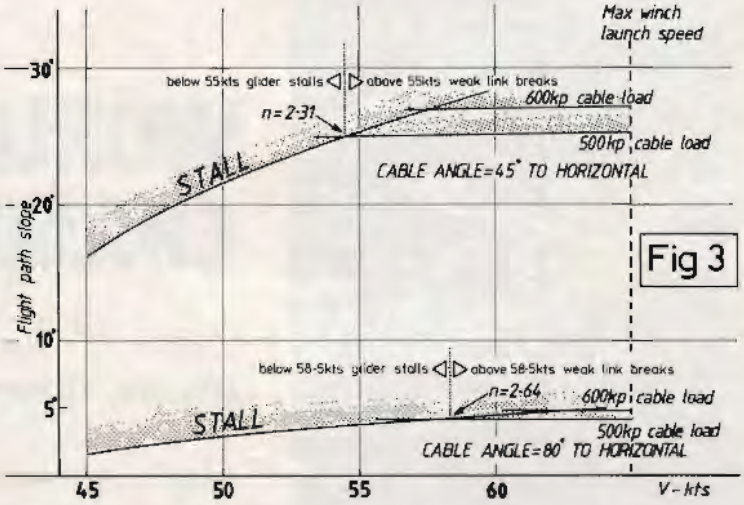


Fig 3

take-off until a steady speed is achieved) there is a marked nose-up pitching tendency from the pull of the cable. This is evident from the forward stick movement needed to counteract it. In some gliders the stick may be on the front stop and the nose is still rising! Even though the situation stabilises quite quickly accidents seem to confirm the critical figures.

It is equally interesting to note that a letter from Glasflugel, in 1975, recommended winch launch speeds for the Club Libelle of 54 to the maximum 65kt and abandoning the launch if the speed fell below 46kt. It is probable that these figures apply to many of the modern GRP gliders.

Returning to the theory it will be evident that there are other cases to examine, notably for different angles of the cable to the horizontal. Fig 3 gives two cases, 45 and 80°; it should be noted that the latter figures is 5° more than the value in the design requirements, JAR 22. Again a minimum safety speed can be established:

- For a cable angle of 45° to the horizontal the glider could be stalled at 50kt and a flight path slope of a little over 20°. The minimum safety speed is 55kt.
- Even at a cable angle of 80° to the horizontal, the very top of the launch, the glider could stall at a flight path slope of less than 5°.

The second of these cases seems to fit the circumstances of the Puchacz double fatality. Both the gliders involved have interesting spinning characteristics and so it is worth returning to the practical aspects again. This time the entry into the spin.

Most pilots will be used to entries from an under-banked, over-ruddered turn, with a near-normal nose attitude. You may have entered a spin from a well-banked turn, 45° or so; this is a standard training demonstration. But have you ever entered a spin from a near-vertical dive? Probably not. But this circumstance arises after a spin when pulling out of the subsequent dive too abruptly. The result? A spin in the opposite direction! This too happened to the Puchacz.

Now, let's stretch you imagination a bit further. Have you ever entered a spin from a steep nose-up attitude? No, of course not because you're reading this article.

The thing to appreciate is that the entry and the spin are potentially disorientating, and particularly so from an unusual attitude, say steeply nose down or nose up; either represents a 'flick' manoeuvre of the sort you see in aerobatic displays. In the glider winch launch case the stall is 'accelerated' due to the pull of the cable. Of course, equally fundamental is the height needed for recovery; on a winch launch there may not be enough.

In Summary

For the many pilots this detailed information is probably new and the implications are obvious.

1. Climbing too steeply at the start of launch incurs the risk of stalling then spinning, a flick manoeuvre from which recovery is impossible.
2. The stalling speed increases during the winch launch by as much as 25 – 30% above the normal (1*g*) value. At low level the best protection is a minimum safety speed, 50kt for a typical Standard Class glider and more for gliders with higher wing loadings..
3. The use of a stronger-than-specified weak link means the glider can stall at even higher speeds. The wing bending loads are also increased substantially, near to critical values in the worst case.

References:
1. "Stalling speed during a winch launch" By C.O.Vernon (unpublished); 2. "Variation of stalling speed on the winch launch" by F.G. Irving (to be published as an OSTIV paper) and 3. Letter from Glasflugel dated June 3 1975.

The grid photographed by Tony Segal.

ANGELA SHEARD

WORLD GLIDING CHAMPIONSHIPS

Uvalde, Texas - July 28-August 1

Angela, who gave a brief account in the last issue, p236, continues her description of the Championships she attended as part of the Polish team

The Polish team was finally on US soil. On the long minibus ride from Chicago to Uvalde I glanced around at the pilots, allowing myself the delicious thought that just maybe one would be going home with a Gold medal in his luggage. And how would the featherweight prototype SZD 56 perform in the hands of Mariusz Pozniak?

During practice we learned just how wild the West could be when storms battered the field with sand, torrential rain and violent winds.

"Team Uvalde", composed mainly of dedicated but non-gliding volunteers, worked miracles getting this contest at only eight months' notice with the demise of Minden, Nevada as the official site. With the proximity of both the Mexican border and Laughlin (USAF's busiest base where newly qualified jet jockeys practice formation flying!) they had their work cut out.

Day 1, Sunday, July 28, at last and a new excitement and tension – 114 gliders were hurled into the air in 57min, the Open Class to fly a 502.9km speed task, the 15 Metre 468.2km and the Standard Class their first POST task (one was set daily in rotation). Brad Edwards (LS-6B), Australia's eventual winner, only managed 32nd place and a photographic penalty, which only goes to show what can be done if you persevere!

Day 2, which began as another nearly 100° day with fine cu, turned awkward as the downdraft (or outflow) from thunderstorms which dumped 3in of rain on nearby communities, really whipped up the wind. Four of us spent an hour holding up our radio station tent. Competitors were forced to land in the "never happens here" direction, opposite to all previous briefings, with some very exciting arrivals.

Tom Knauff (Nimbus 3), first timer in the American team, was an unlucky outlander along with Eberhardt Laur (Nimbus 4T) from Germany. Ten were on the Open Class POST task which refutes the contention that these enhance thunderstorm dodging opportunities!

Yet another 100° day followed, won by Justin Wills (LS-6) at 142km/h. Times were fast so that even around 20th place scores were in the 900pt range.

Brilliant forecasting (or luck) had day 4's first cu popping on schedule as the first gliders took off and, once triggered, cu grows very fast in Uvalde. We Europeans couldn't believe the way it was so reliably good day after day ... almost no retrieves and hot! hot! hot!

At briefing a reminder about safe thermalling in gaggles was forcefully underlined in the afternoon when news came of the tragic midair collision near Medina between Japan's Atsushi Kodami and Anssi Passila of Finland, flying an SZD 55. Kodami successfully parachuted away from the tailless, inverted Discus, but the young Finn did not survive.

The national flags, raised so cheerfully only a few days before, were brought to half-mast during a dignified and moving candlelit act of remembrance later the same evening. The Finnish national anthem, which might have saluted a Champion, was played as the standard was lowered for presentation to the lost flier's sister. Later a fund collected enough to return his body for burial in his homeland.

Justin Wills won his second day with Chris Garton (LS-6c) 3rd. Dave Watt (ASW-24) was named Mr Hi-Style for his elegant finish!

Twenty-two finishers whizzed over the line in 120sec next day and not one missed. Tom Knauff clocked up 799.9km at 154.6km/h on the Open Class POST, fellow American Doug Jacobs (LS-6B) and Karl Striedieck (ASW-20B) snatched 1st and 3rd in the 15 Metre and three Swiss topped the Standard Class result. Pilots were getting blasé about Uvalde's fabulous con-

Baer Selen, the Standard Class Champion. Photo: Angela Sheard.

LEADING RESULTS

Open Class	**Country**	**Glider**	**Pts**
1 Centka, J.	Poland	ASW-22B	11 111
2 Back, H.	Germany	Nimbus 3	11 101
3 Lherm, G.	France	Nimbus 4	10 987
16 May, R.	GB	ASH-25	10 206

15 Metre	**Country**	**Glider**	**Pts**
1 Edwards, B.	Australia	LS-6B	11 041
2 Gerbaud, G.	France	LS-6C	11 001
3 Jacobs, D.	USA	LS-6B	10 950
8 Wills, J.	GB	LS-6	10 602
16 Garton, C.	GB	LS-6C	10 269
19 Wells, M.	GB	LS-6C	10 211

Standard	**Country**	**Glider**	**Pts**
1 Selen, B.	Holland	Discus	11 216
2 Trzeciak, J.	Poland	SZD 55-1	11 040
3 Mozer, E.	USA	Discus A	11 034
9 Davis, A.	GB	Discus	10 847
17 Watt, D.	GB	ASW-24	10 587

The full results were in the last issue, p238.

Below: The Open Class winners photographed by Angela.

ditions ... parallel cu laid on for them daily ... and then ... came ...

Sunday, August 4 when the entire Open Class was washed out of the sky. All but ten 15 Metre pilots got home but only three from the Standard Class.

Patrick Stouffs (LS-6A) of Belgium, blinded for the last few metres of his approach by the whirling sandstorm, made a rolling finish but with a fierce tail wind. The glider took control and all he could do was lift a wing over a threatening

Above: Martyn Wells. Photo: Tony Segal. Below: A TP map by Steve Longland, the insert showing the remote starting points.

TASKS

There were five starting points (see inset on map) which we give as A. B. C. D. E.

Open Class

Day 1:	502.9km, E, 29, 9, 13, 2.
Day 2:	POST 3.5hrs allowed, 200km Min.
Day 3:	476.4km, E, 11, 9, 1, 10.
Day 4:	634.3km, C, 21, 14, 4.
Day 5:	POST 5hrs.
Day 6:	679.1km, E, 29, 23, 1, 5.
Day 7:	632.8km, B, 23, 30, 19, 5.
Day 8:	POST 3hrs.
Day 9:	POST 5hrs 30min.
Day 10:	612.3km, B, 28, 22, 31, 9.
Day 11:	579.2km, E, 16, 25, 13, 7.
Day 12:	487.9km, D, 24, 29, 4.

15 Metre Class

Day 1:	468.2km, B, 26, 6, 7, 8.
Day 2:	POST 4.5hrs, 250km Min.
Day 3:	432.8km, C, 24, 30, 5.
Day 4:	POST 4hrs.
Day 5:	617.6km, B, 22, 30, 17, 9.
Day 6:	616.8km, B, 23, 3, 12.
Day 7:	POST 5.5hrs.
Day 8:	POST 3hrs.
Day 9:	531.1km, D, 21, 32, 13.
Day 10:	586.3km, E, 4, 18, 1, 5.
Day 11:	POST 5hrs.
Day 12:	428.8km, E, 6, 33, 9.

Standard Class

Day 1:	POST, 4hrs, 200km Min.
Day 2:	431km, E, 24, 30, 33.
Day 3:	POST 3.5hrs, 200km Min.
Day 4:	560.4km, E, 16, 26, 9.
Day 5:	601.3km, E, 34, 1, 23.
Day 6:	POST 5hrs, 250km Min.
Day 7:	580.9km, C, 16, 25, 9.
Day 8:	POST 3hrs.
Day 9:	499.6km, B, 27, 31, 15.
Day 10:	POST 5hrs.
Day 11:	570.9km, B, 34, 35, 4, 9.
Day 12:	422km, B, 30, 26, 13.

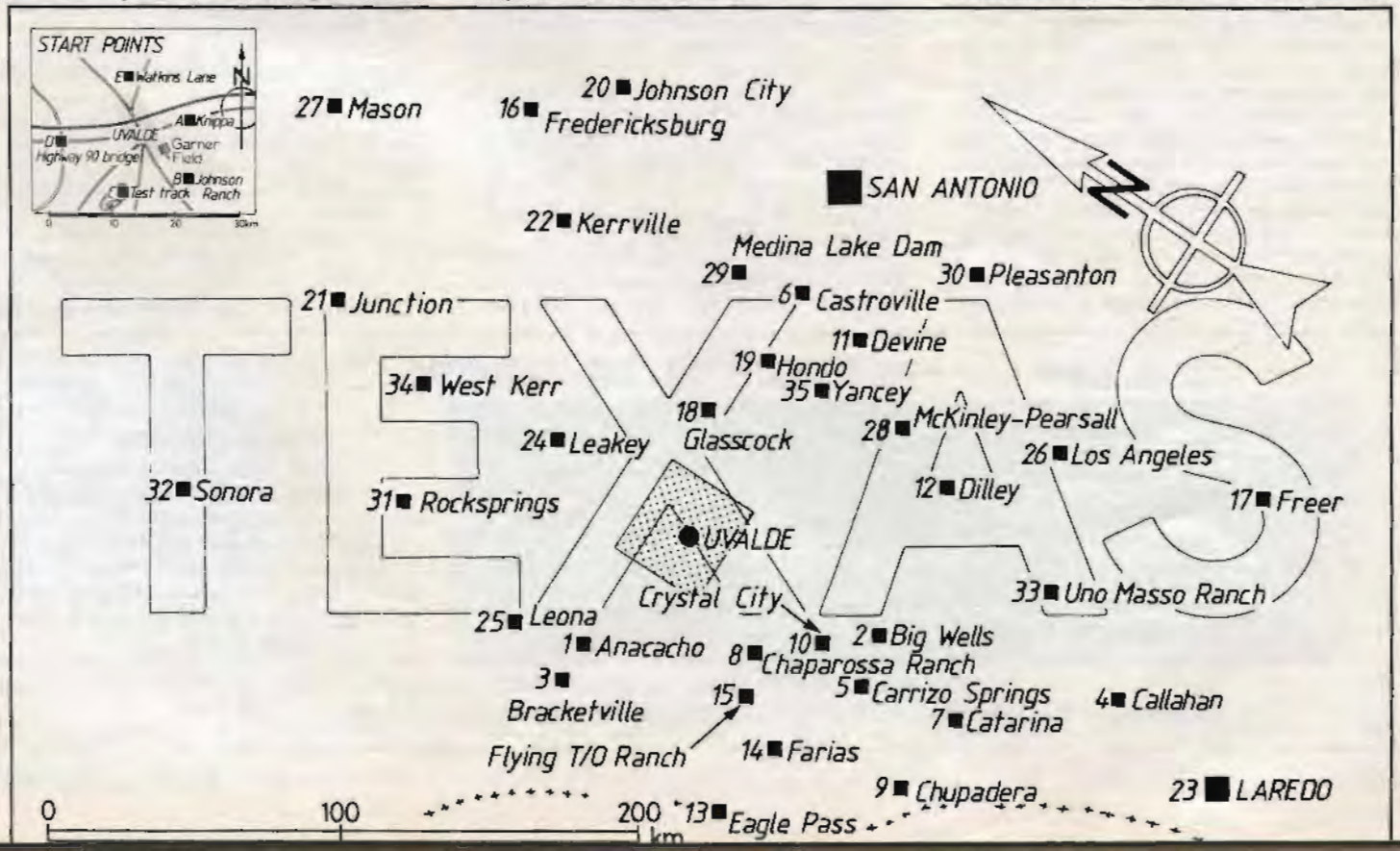
Tony's photograph of Dave Watt.

runway light. The opposite wing touched and was slightly damaged. Doug Jacob's crewman dashed for shelter to his van and reached for the radio. As he went to twiddle the squelch (the radio was connected to a roof antenna) a ¼in spark leapt the gap, raising the hair on his arms and convincing him that the particles were ironised.

Uvalde's Garner Field registered gusts of 40kt and a New Zealand pilot nearly undershot his field despite a 100kt indicated approach! This was the day Stig Øye had his adventure with the rancher's stock pond (see last issue, p236).

Eastern European pilots fared best – Tomasz Rubaj (Ventus) of Poland won the 15 Metre, Igor Gapanovitch (Soviet Union) the Standard and Laszlo Horvath (Hungary) the Open. Janusz Centka and Stan Wujczak shared their field and 3rd place.

Platypus, summoned home, withdrew from the back seat of the ASH-25 but Bernald Smith ➡



overrode the rules to permit Robin May to continue solo, though ballasted as though dual. (A despondent Platypus continued to send dispatches to Uvalde from a wet and miserable UK.)

The heavy rain of Day 7 left the air very soggy and although a short task was probably possible in the warm and pleasant afternoon, with spectacular cloud formations along the textbook sea breeze front, the organisers decided early on to cancel the day. Storms returned in the early evening and were threatened again in conjunction with the sea breeze for Tuesday close to the contest area, so 3hr POST tasks were given for all Classes.

This proved a good decision as only three landed out. Frenchmen Jean-Claud Lopitaux and Gerard Lherm, flying Nimbus 4s, performed their celebrated double act and came home only 2pts apart, while the Poles, Janusz Trzeciak (SZD 55-1) and Franciszek Kepka (SZD 55) were separated by 3pts.

Justin Wills was described as "Pizzazzing back" to "most stylish finisher" accolade and a three way shared 8th place, bringing him up to 4th overall.

One niggle plagued us – for some reason the scales seemed to have taken against us

The excitement was building but one niggle plagued our daily preparations – for some reason the scales seemed to have taken against us and the two Polish Open Class machines never recorded the same weight twice running. These were Janusz Centka's ASW-22B and Stan Wujczak's ASH-25 "LOT", this registration being in honour of the national airline of Poland which had managed to wheedle the glider out of the Boeing Corporation in a "Buy one, get one free" deal along with their purchase of a Boeing 767!

The super sensitive scales reacted to every passing breath, the needle flying giddily back and forth, so it seemed only guesswork and fast eye-reaction time decided the result. Team manager Waldemar Ratajczak insisted on stewards observing the phenomenon and daily weighing of both machines but the "random variable" – Billy Wind – kept on winning.

Weighing problems were not confined to our team. A British crewmman was annoyed to see one competitor (name/nation unknown) when called up for weighing go to the back of the queue, let out some of the water and line up again. Did he deliberately fly overweight on the other days? Shouldn't someone official have nabbed him?

Ten gliders had added winglets, including the Ventus C flown by former World Champion Bruno Gantenbrink of Germany. He felt that performance benefits in climb and penetration were marginal but was pleasantly surprised by a considerable improvement in lateral control, especially when full of water.

Wednesday, August 7 saw ideal conditions and fast times thanks to the sea breeze with its associated storms. Lherm and Lopitaux again led the Open Class home, places reversed with just 1pt between them. Baer Selen (Discus) from Holland, 2nd to Igor Gapanovitch, moved into the lead which he maintained and Klaus Holighaus (Germany) still led the Open Class where the huge, graceful Nimbus 4s were in the first three places. Rain showers on the edge of the contest area caught out a few but most were unaffected.

Conditions were now becoming less dramatically perfect and perhaps fatigue was a factor after so many hours and kilometres flown. Whatever the reason, the second Thursday made its impact on the scores. Holighaus got low and slithered to 18th for the day. Centka won, stepping up four places to challenge but Justin landed out. USA's Bruce Dyson (Discus B) must have considered the slings and arrows of outrageous fortune when he came 2nd after a landout and nil points on the previous day.

Two days left and Janusz Trzeciak won No.11, despite it being all blue from the final TP and getting down to 1500ft. His medal seemed assured but what colour? Centka stepped into the lead. Could he keep his nerve and fitness for one more day's effort?

And so to the final task. The Open Class were due for a POST but conditions and the organisers decided speed tasks of over 400km for all Classes. Dave Watt sportingly wished Janusz luck and I could hardly bear the suspense as the ASW-22B lifted her cherry nose into the sky for one more decisive task.

All gliders away and a swarm of tugs gathered north of Garner Field, circling in a motorised gaggle. Then they roared back, all shapes and sizes, in a farewell low pass, their task completed.

The clerks of the weather, Dan Gudgel and Walter Rogers, whose enthusiasm and expertise had been invaluable, shared the excitement and left their satellite pictures to sit calculating times on the grass outside the old control tower as the finishers swooped so spectacularly and magnificiently against the evening sky and the multicoloured semicircle of flags to one more "Good finish". Justin Wills won again.

"Fingers crossed as wings streamed back and then there he was, 7th for the day..."

But where was Trzeciak? Fingers crossed as wings streamed back and then there he was, 7th for the day but that was enough for Silver in the Standard Class. Young Tomasz Rubaj, 1991 Polish Nationals Standard Class and European Junior Champion, won a Lilienthal centenary plaque for the longest flight in the 15 Metre Class and Janusz Centka was the new Open Class Champion by 10pts.

The closeness of the final result, which a photo penalty could have altered dramatically, left us nailbiting until the final jury meeting at 6am the next day. For the new Standard Class Champion, Baer Selen, it was a second time on the top step of the winner's podium. He last won in 1978 aged only 23 and in a borrowed glider. Igor Gapanovitch won three days in the same Class but a possible Silver medal eluded him due to camera problems early on.

Placed 44th (last) was Mexican pilot Michel Kun (Ventus) on a three month gliding binge in the USA – a 60th birthday gift from his family and he got every ounce of fun out of it.

Stig Øye's seaplane impression didn't dampen his chances too much and he made 8th place ahead of Andy Davis.

LS-6s took the first four places in the 15 Metre Class where Doug Jacobs came 3rd, which was some achievement after an 11 month fight against leukaemia, including a bone marrow transplant.

Twelve amazing contest days, scores in the 11 000 plus range and three popular winners. The competitors and the Uvalde people alike declared they had never had such a summer.

OSTIV AT ULVALDE

The Sailplane Development Panel and the OSTIV Congress took place during the World Championships and the following are extracts from a report by Cedric Vernon, a member of the Panel

- OSTIV doesn't have any detailed standards for self-sustaining powered sailplanes that are different from those of self-launching types. An adaptation of those approved by JAR 22 was agreed with a few improvements: eg simpler indication of the fuel content is to be allowed on all motor gliders where the main tank is readily visible to the pilot.
- On the subject of flutter:- designing for, and proving, freedom from flutter if you don't want to fit mass balances to control surfaces is an exceedingly difficult and expensive business, even with the help of the excellent report by Stender and Kiessling, not translated into English. The final flight demonstration can involve 20 tows to 3000m plus, which is about the limit for tugs. Frank Irving presented two papers concerning the effect of altitude and what ought to be done about it – the practice and the standards do not completely coincide at present. Following remarks by Heiko Friess about procedure followed in Germany, Frank produced a third paper overnight making some modified proposals. It is evident that a good deal more work needs to be done before deciding on what to adopt as standards.
- How span should be measured and where the 15 Metre limit applies on gliders with winglets produced a number of suggestions. It was finally recommended that the measurement should be made in these cases with the wing in its static position on the ground with full water tanks.
- We considered up-rating the standards to make it easier to inspect glider interiors and noted the absence of standards for water-ballast systems.
- A big question is should motor gliders be allowed to participate in normal gliding competitions? The International Gliding Commission is considering long term integration. There are many problems such as the measurement of fuel consumption, reduction in engine and propeller noise and the recording of engine time.
- The consequences of ever-increasing water-ballast on both structure and flying qualities were outlined by Wieslaw Stofiej (Poland). The amount of water used nowadays weighs almost as much as the empty glider. This is fine for improving high speed performance but the structural penalties are quite severe, particularly in turbulent conditions.
- Phil Moore (UK) has been responsible for TP photo verification at Lasham for some years and has developed a system comprising a computer, a frame store, a camera and some auxiliary equipment costing around £2400. It produces an enhanced positive image, is easily storable and gives the three dimensional position of the glider.
- Bud Schurmeier (USA) described a system using an integrated data-back camera and recording barograph for use in competitions. It provides start time (to 1sec accuracy) and height, TP data and a barogram of the complete flight. It can also record motor glider engine time to 0.1min accuracy.
- A new approach to soaring techniques was introduced by Michael Stainberger (USA) by use of a simple pitch-to-fly indicator. He reckoned that the technique would enable performances within 10% of the theoretical maxima.
- In a talk on crashworthiness, Gerhard Waibel (Germany) felt there was a case for amending the standards by increasing the sinking speed on which the shock absorption is designed (this is the opposite way of doing what Ulrich Kopp proposes in the next paragraph). He also suggested that struts and wheel supports should be designed to collapse at only slightly greater loads to avoid the hard stop that occurs when the shock absorbers reach full stroke.
- Ulrich Kopp (Germany) reviewed his country's accident statistics for the last ten years which showed a slight decrease. However, those involving hard landings went up threefold and in the last three years 94% of injuries were spinal. Tests at the Technical University Braunschwig suggested that for training two-seaters the shock absorption should be improved to reduce the maximum vertical acceleration in a landing to 3*g*, rather than the 4*g* current standard.
- Alan Patching and Lincoln Wood (Australia) reported on fatigue tests started on a Janus wing in 1981. Results suggest that fatigue is no problem on glass-fibre wings so long as they are inspected and repaired every 1000hrs.
- David Marsden (Canada) described Mini Sigma, a new 15 metre design. A key feature is a 25% chord slotted flap, reckoned to be more effective than the Wortmann flap used on the original Sigma and mechanically much simpler. With no ballast, it has a claimed landing speed of 29kt.
- I described a simple method of determining trim drag, that is, the extra induced drag that results when the tail load is not zero. We don't hear much about it, but it can reach 5% of the minimum profile drag. The message is keep the camber moderate or use flaps.
- A historical review of sailplane performance was made by Fred Hermanspann (USA) from the glide ratio of 1:4 that Lilienthal achieved to the 1:60 or so of today. He concluded that further improvement is only possible by manipulating the boundary layer or increasing the span still more.
- David Ellis (UK) spoke of the possibilities of using Global Positioning Satellite Systems, now being developed, for soaring. It may be used for three-dimensional position and velocity with high accuracy, and so be helpful for both competitions and measuring polar curves.
- Hans Nietlispach (Switzerland) introduced the new term "icebreeze" for descending winds above névé and glaciers generally during both day and night. It has been observed particularly in the Valais part of the Alps where it becomes mixed with mountain and valley winds.

Cedric with the OSTIV plaque which, with the Klemperer award, was presented to him for an outstanding contribution to the technical development of sailplanes. See the last issue, p236. Photo: Bill Scull.

Cedric has written an excellent, comprehensive report which is available from S&G (Cambridge address). Please enclose a sae.

LASHAM SUCCESS IN FRANCE

George Metcalfe, Lasham Gliding Society's president, came 2nd in the Bailleau International Competition's Standard Class in August. Lasham's Christopher Mayhew flew in the 15 Metre Class with the first three places being won by the Dutch.

Lasham is twinned with Bailleau and there has been an exchange of pilots this summer.

Photos: Tony Hutchings.

TP BRIEFING SHEETS

Liz explains a London GC brainwave

We have produced a set of turning point briefing sheets using the new BGA TPs (see illustrations and the BGA News). We have started by using those near to our home club which we use most frequently in central southern England with about 150 sheets so far.

Each sheet shows a photograph of the TP taken from south looking north, an extract of the latest Ordnance Survey sheet and a description of the TP in relation to other features. It is identified by its name and the BGA three letter trigraph.

We can reproduce the sheets for anyone wanting a set or individual sheets for £2.50 each (including VAT) with a 10% discount for orders of 150 or more sheets.

Ours are mounted into plastic wallets which, fitted into lever arch files, make an easy to use cross-country aid with sheets easily removed for photocopying for individual pilots.

We are continually building up our system and still need around another 200 photographs. We would be happy to negotiate or do swops with clubs or individuals.

The photographs should be reasonable quality colour prints, 6x8in (or 5x7in would do), taken from south looking north showing the TP clearly, preferably without cloud shadow, and showing a useful amount of the surrounding area.

They are best in vertical format, like BIG (Biggleswade) in the illustration. We would be happy to do a swop of the complete system if you have a similar set of another area of the country.

With your help, and by our own efforts, we shall be able to maintain and add to the system and anyone buying the set will be given regular up-dates.

If interested in having a set or if you have any swops you'd like to barter, please contact me, Liz Veysey, at the London GC on 0582 663419.

A CHANGE OF STYLE

Robin May left his ASH-25 on the ground to soar Michael Beach's 1928 designed Hols der Teufel at Dunstable for 30min, which may be a record for this type. Photo: Richard Cooper.

HANGAR PACKING THE GERMAN WAY

Dick Stratton, BGA chief technical officer, found this ingenious hangar packing method at Oerlinghausen.

THE FEAST OF ST THOMAS

Many years ago when the world was a great deal younger, I used to spend a fair amount of my time at the French national centres of Montagne Noir and St Auban.

It was long before the days of plastic pollution in the Hautes Alpes, Sisteron did not even exist, Gap was the home of Fournier RF4s and only Fayence and St Auban held sway. One flew around in those wonderful Breguet 904 two-seaters of the same warm terracotta hue as a Breton Fisherman's trousers. Drifting down the valleys in the "restitution" at the end of the day one could really believe in 1959 that one could stay up forever and that the moderately claimed 1:36 was a ploy by "Les Français" to deceive the foreigner much the same way as they try to keep their best wines for themselves. Naturally!

And, of course, there was the monoplace 901 also with flaps, retractable wheel and optimised laminar section, to my mind the prototype of today's glider configurations, though not quite such a good performer as the two-seater, the Air-100, a French built Weihe which flew delightfully hands-off, the Javelot a sort of poor man's Skylark 2 (but sturdy) and the Nord-2000, a French built Olympia which was quite dreadful.

In those days, St Auban had not yet acquired its concrete palace of an HQ. The "eleves" had one barrack hut and the other was the canteen and lecture room. A third, I think, served as offices. The centre operated on a friendly para military basis with duty rosters for the student of the day, the student who swept out the passages, the students who got the "Met Flight" out of the hangar at dawn and so on. Many of the students were French Air Force NCOs, so it was little like being in the Foreign Legion without the blood!

Helping a gnarled French Engineer Warrant Officer to drag out a Storch from the hangar at 5.45am taught me more "French verbs" than anyone can use in polite society.

The Storch, incidentally, was a wonderful attair. On the left hand side of the cockpit were a series of chains which connected the trimmer wheel and flap wheel to the actual surfaces. When you knew better you ignored the trim control wheel and flew with a glove on your left hand hauling directly on the chains much as a church bell ringer pulls his ropes. Together with the gothic arch of a windscreen, it truly was like flying a cathedral from the pulpit.

The Storch, licence-built by Morane Saulnier, was an immensely strong and sturdy beast, ideal for towing through or around in the terrifying (at first) rotor systems that exist in that part of the world. Somehow the Rallye doesn't quite have the same sort of "bottom" that the Storch possessed. Rope breaks in rotor conditions were gradually eliminated by increasing the size and strength of the rope. (BGA please note.)

The only weakish points were the Salmson radial engines, built around 1925 to an immediate post-war design; World War 1 that is. Still on one occasion when the engine did die (oil pump drive sheared) the tug pilot put it down unharmed on the dry river bed of the Durance. Such was the strength and STOL capability. Derigging it wasn't much fun though and I learned even more French verbs.

To get to the point of the story, one day in the early sixties. I arrived at St Auban for a "stage" and found that my cupboard was totally empty of coat-hangers, an essential requisite for the small space available. Nor, I'm afraid, did I have a French dictionary or the slightest clue as to what was the French word for a coat-hanger.

Being Sunday morning, I made my way to the shopping centre of Chateau Arnoux, all of three shops in those days, and discovered one rather old and decrepit general store which was open. All my Franglais explanations of what I wanted, including my sketches, were met with incomprehension. Suddenly, somebody said, "Go and get Uncle Thomas." From the back of the shop there emerged a neatly dressed rather frail old man. It was obvious that he was somewhat put upon because he was immediately harangued by the chief female, something to the effect of, "Here is some bloody foreigner, I don't know what he wants but find out what it is so we can sell it to him. But mind he doesn't want Yvette, because it's Sunday and she doesn't start work till the evening. After all, we are a Christian country."

'I was bowled over by his charming smile and manner and his somewhat formal way of speaking'

With infinite charm the old man said in perfect but heavily accented English. "Good morning sir. In what way can we help you?" I was bowled over by his charming smile and manner and his somewhat formal way of speaking. I quickly explained my errand and four coat-hangers duly appeared for which I paid a modest sum.

As I was leaving, I congratulated him on his excellent English, to which he replied, "But of course sir, I was one of the assistant head waiters at the Savoy for several years before the 1914 War."

"My goodness", I said, "I never expected to find someone from the Savoy in a place (I nearly said dump) like this."

The old man suddenly became quite agitated. "You know the Savoy Sir?"

"Well of course I know of it, but I've only once been there to dine." I answered.

"Please sir, please will you tell all my family here that the Savoy in London truly is the best hotel in England."

"But of course I will, surely they don't doubt you, it's so well known?"

"Of course, it is, in England sir! But here in France living near the Savoie, there is a Hotel Savoie in every little village. When I say I was an assistant head waiter at the Savoy Hotel, my family truly believed that I was only a barman at some small commercial hotel. They don't understand the difference. Could you tell them sir? Please?" He regained his old world composure, "I would be most grateful, most grateful."

So standing in the middle of the shop and not quite putting my hand on his shoulder, I delivered a long speech in Franglais to the effect of:

How surprising it was to find such an important person from the most famous hotel in Angleterre in little old Chateau Arnoux. That the Savoy was the centre of British social life in London in the early 1900s, attended by lords, ladies, cabinet ministers and their wives and companions and, of course, royalty, both foreign and domestic." The latter point apparently clinched things because Uncle Thomas had apparently often talked about serving King Edward and talking to him about the *entente cordiale*. I concluded that an assistant head waiter at such a hotel was at the very least equal in rank to the Prefect of the Department or even the Minister of Cooking.

The effect was dramatic. After a moments silence, I was bombarded with questions, particularly about le Roi des Anglais. In two minutes they had realised that this poor old man, whom they ignored for most of his life with them, really had a most interesting past, a man of quality certainly possibly even a man of substance.

It was, I am sure, a little like the Road to Damascus, one moment indifference, the next enthusiasm, emotion and embracing all round. Within a minute, the only other customer was driven out of the shop, the door was locked and a rather good red vin d'honneur produced from the back room. Being Sunday, with no flying, I could not, of course, refuse.

That evening I was again in the town with some German *stagieurs*. In the only reasonable bar I saw Thomas surrounded by his friends playing dominoes. The news had obviously spread because as soon as he saw me he gave out a terrific shout and immersed me in a great bout of cognac drinking with his mates, who had previously been equally unbelieving, for the rest of the evening. The Germans I'm afraid, he studiously ignored. After all he was a 1914 man.

During the next three and a half weeks, I ran into Thomas from time to time in the town and each time there was a momentous binge, much to the detriment of my flying next day. By this time Mr Asquith, the PM, had entered into his reminiscences. Have you ever tried to pronounce or recognise the word "Asquith" in French?

Sadly, when I was next there two years later, he had left us, hopefully in the same euphoric frame of mind that had prevailed at my previous visit.

But I like to think that these days when I drift past St Auban in the evening, that last unexpected thermal I often meet is provided by courtesy of the previous management of the Savoy.

Oh yes! The French word for coat-hangar is *un cinture.*

JUMP OR BUMP *Part 1*

It is well known that glider pilots are interested in L/D ratio, alcohol and sex. To these worthwhile topics must now be added the subject of pilot safety

Tony started gliding at Lasham in 1956 and recently retired as a senior partner from general medical practice. He has completed a six month's training course at the RAF Institute of Aviation Medicine, Farnborough and carried out two experimental studies on pilot safety, one on spinal injury, and one a crashworthiness test on a Libelle, see the June 1989 issue, p130.

The first meeting of the OSTIV Crashworthiness Sub-committee, under the chairmanship of Alan Patching (Australia), was held in Uvalde, Texas, in July. A great deal of information was exchanged in the meetings, the restaurant, and in the beer tent late into the evening. This article, giving my own personal view, discusses some of the points raised. I have been told a gliding competition was taking place at the same time in Uvalde.

Types of injury

Injury may be classified as minor, including for example a crush fracture of a vertebra, such that the ability of the pilot to extricate himself from the crashed glider is not impaired. Then there is severe injury: followed lastly by fatal injuries. The object of crashworthiness studies is to reduce the severity of injury and reduce the fatality rate.

Mechanism of injury

Primary injury is caused by the deceleration of the pilot's body on impact, and the effect of the resulting inertia loads on the pilot.

Secondary injury is due to missiles, such as batteries, cameras, and barographs that have not been firmly fastened, striking the pilot.

Tertiary injury is caused by violent contact between some part of the pilot's body and the cockpit, or with objects that have penetrated the cockpit shell.

Human tolerance to abrupt impact deceleration

The figures that follow are only approximate. Specifically, they refer to young fit males, quite unlike most glider pilots! Also, different expert sources give different values. The following values are taken from a paper by Professor (Gp Capt) David Glaister, RAF Institute of Aviation Medicine, Farnborough.

A seated pilot, with the impact forces acting along the axis of the spine (+Gz) can withstand 20G for 0.18sec, with lap and shoulder restraint. (The accepted limit for ejection seats is 25G.)

A seated pilot, with the forces acting between his back and his chest (–Gx), can withstand an incredible 40G for 0.06sec, with full restraint of torso, head and limbs. This degree of restraint is impractical in most situations. With the more usual lap and shoulder restraint, 20G can be withstood for 0.04sec.

A seated pilot, with the impact forces acting in a direction across the shoulders (Gy), can withstand 8G for 0.06sec, with lap and shoulder restraint. The limiting factor is due to injurious loads on the neck. Full restraint of the neck would impair the mobility of the head, and hence adversely affect pilot look-out.

The direction of the applied forces in an actual accident will depend on the pilot's seating position, and on the attitude of the glider on impact.

Generally, impacts along the axis of the pilot's spine are less well tolerated than those from front to back, because of the greater mobility of the organs of the body in the direction of the spinal axis.

Types of accident

An analysis of glider accident statistics in Germany has been carried out at TüV Rheinland, Cologne, by Dipl.-Ing. Martin Sperber, under the guidance of Dipl.-Ing. Detlef Pusch. German accident statistics are especially comprehensive, because the unfortunate pilots involved have to complete a very full investigation form before they receive their insurance payment!

Two studies have been carried out, covering the periods 1982-1986 and 1987-1989. In the latter study, four types of accident caused 90% of the accidents.

Type 1. Caused by a high round-out in the late landing phase, or by premature release or a cable break in the initial phase of a winch launch. This caused 29% of the accidents.

Type 2. Due to the glider flying into the ground in the landing phase, by failure to round-out. This caused 33% of the accidents.

Type 3. A wing made contact with the ground, causing rotation of the glider around a vertical axis. This caused 7% of the accidents.

Type 4. This is a serious accident, due to stalling or spinning from a considerable height. This caused 21% of the accidents.

The study, covering the period from 1987-1989, analysed 558 accidents. No injury was incurred in 72.4% of these accidents. Slight injury was shown in 6.5%. Severe injury occurred in 16.1%. Sadly, 5% of the accidents were fatal.

Martin Sperber has analysed the forces acting on the glider, the seat harness, and a pilot manikin in these four types of accident. The experiments were carried out on the decelerator track at TüV Rheinland, Cologne – the same track is used for the crashworthiness tests on the Volvo car!

Cockpit strength

The Crashworthiness Sub-committee considered that the design load for head-on landings should be increased to 15G acting rearward and upward at an angle of 45° to the longitudinal axis of the glider. This brought the figure more into line with the impact tolerance of the pilot. Deformation and partial failure of the structure was considered acceptable, provided the pilot (securely strapped in place) did not receive fatal injuries.

However, mere strength is not sufficient. The cockpit structure must also help absorb some of the energy of the impact.

Fuselage crush length and depth

At the present time, spinning accidents are usually fatal. By providing a suitable crush length in front of the pilot, and a crush depth below the pilot, a spinning accident could be made survivable.

The acceleration, G, arising from an impact (in multiples of the acceleration due to gravity, *g*), is related to the initial velocity of impact of the glider (v), and to the stopping distance (s) by:

$$G = \frac{v^2}{2\,g\,s}$$

However, lengthening and deepening the fuselage would severely impair the performance of the glider to such a degree that it would not be acceptable to pilots.

Frank Irving (Imperial College), has kindly calculated the effect on the performance of a typical Standard Class glider of changing the fuselage dimensions. The following table gives his conclusions.

W I T H	Increase in nose length (m) Increase in fuselage depth (m)	1 1	1 0.5	0.5 0.5
	% decrease in (L/D) Max	13	8	5
	% decrease in in (L/D) at 80kt	21	14	10

SURVIVING A SPIN ACCIDENT

I should like to put forward for discussion a controversial proposal, giving the pilot a fair chance of survival in the event of a spinning accident.

At present, the toes of the pilot are a few inches from the nose cone of the glider. The nose of the glider is a relatively weak aerodynamic fairing. I suggest the nose structure, back as far as the plane of the control column, be designed to collapse progressively on severe impact, giving a metre length of crush distance. There would be no alteration to the external lines of the fuselage and no change in glider performance. The pilot's seat harness would have to hold him securely in place. The fuselage behind the plane of the control column would need to be sufficiently strong not to collapse into the pilot's space.

Assuming a crush distance of 1m, and an impact velocity of 50kt on to an unyielding surface, a rough calculation gives a loading of 34G. If the impact was not vertical, and on to soft earth, the impact should be survivable.

The legs and pelvis of the pilot would inevitably be severely injured, with the resulting medical complications. The pilot would be trapped in his cockpit, so a LOCAT beacon would be required, and precautions taken against fire in the case of motor gliders.

However, his head and trunk should be uninjured, giving him a chance of living.

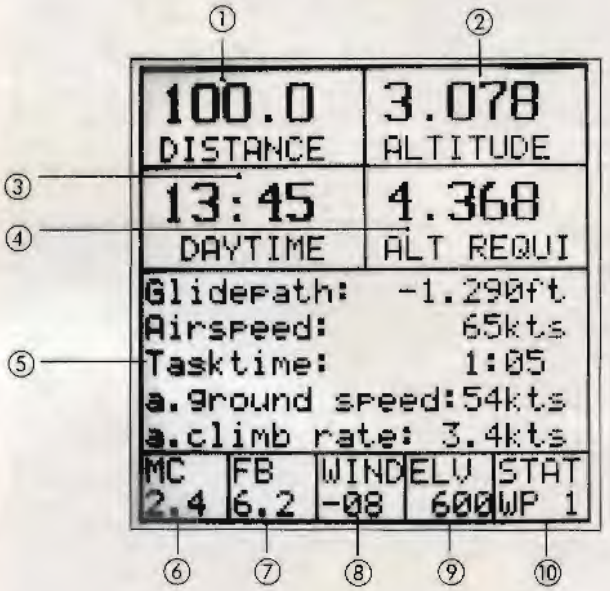
Canard configuration

Pilots often mention that a canard configuration would allow more of the fuselage length to be placed ahead of the pilot, where it would absorb the impact energy. Oliver Carl, and his fellow students of Akaflieg Aachen, Germany, have almost completed a canard glider. He told me at Uvalde that the nose region was a very light fairing that would absorb little impact. A heavier fairing would upset the C of G of the glider. Frank Irving has pointed out that a canard is fundamentally unsuitable for a glider. For efficient thermalling flight, the glider wing must fly very near the stall . This is not possible with a canard configuration, since the foreplane is designed to stall well before the main wing approaches the stall.

A cockpit pod has also been suggested, the pod passing intact, backwards into the rear fuselage on impact. I consider the presence of the main spar, just behind the pilot, makes this idea impractical.

In the next issue Tony will be writing on spinal injury, seat harness and undercarriages.

PESCHGES' VP6 ON-BOARD COMPUTER



The following flight data can be displayed continuously on four large display windows. 1 is a mileage counter; 2 an altimeter; 3 time; 4 required height; 5 gives five continuous readouts; 6 MacCready value; 7 wingloading; 8 wind component; 9 field elevation and 10 mileage counter, *eg* to TP 1.

The new VP6 series of variometer systems by Peschges is a quantum leap compared to their early systems which required operator training for their successful use. With the VP6 almost the entire capability of the system can be exploited without even having to read the handbook, which must surely make it attractive to glider pilots!

In addition, every conceivable function is priced significantly less than the previous VP3 series – all this and the availability of a Global Positioning System (GPS) module that quite literally plugs in to give unprecedented navigational accuracy. Just think of the implications.

But it is primarily a variometer the pilot can program as he needs it with a configurable audio and configurable vario response. With the VP6, Peschges Variometer GmbH claim to be setting the trend for future instrumentation. Certainly they have a reputation for innovation and excellence but it is the customers who finally decide.

With over 200 models already in use it seems that pilots have already placed their vote firmly in favour of tha VP6. So let us look at the system.

The large, square data display that dominates the system enables all the essential flight information to be shown clearly and unambiguously. It is flanked by a liquid crystal analogue variometer display and a 57mm diameter control unit. Compared to the VP3, the computer's performance has been significantly increased and more clearly displayed.

The user interface, which is used for the first time with a glider computer, offers new standards of operating efficiency and opens possibilities for new programme routines without needing additional controls or hardware. This is best exemplified by the easy addition of a GPS receiver for satellite navigation without needing any major modification or hardware change. It can, of course, be delivered with GPS at the outset.

It is a revolutionary system using the proven piezo resistive pressure sensors of the VP3 and VP4 and more than 15 years of experience with these sensors during which over 2000 systems have been supplied.

The VP6's performance is based entirely on customer requirements. Principal features are the electronic functions of variometer, altimeter, mileage recorder and airspeed indicator. These are used to calculate details for the required altitude and glide path information for both task navigation and final glide together with the averager, netto and relative netto variometers. All this and full statistics too!

The "glass cockpit" with its large data display is a logical development. Peschges have pioneered special displays of which the VP6 is surely the ultimate with its pilot/computer interface and data display similar to those in modern airliners.

The only controls, mounted on a 57mm round

control unit, are the on/off switch, a volume control, three push buttons and a rotary knob. The flight data display (FDD) shows the main menu and sub-menus. Flight data calculation parameters, statistics, configuration data, task data and logbook can all be called up by rotating the single rotary knob and selecting with a cursor. The FDD can show many sub-menus, thus permitting the selection of a wide range of parameters. Anyone who uses PCs with modern menu-driven programs such as word processors will manage the VP6 at once without consulting the manual as the program structures are similar.

An important feature is that it becomes active immediately on switching on so that you can take off a few seconds later. The basic function of the on-board computer is available without further action which isn't the case with every glider computer.

The variometer signal, which provides extensive information at a glance, is displayed in analogue format and *g* effects don't disturb the pointer. The analogue vario needle can also be set to display netto or relative netto, there is a digital averager, a symbol showing the averager tendency, another depicting whether the vario is in cruise or climb mode, the variometer range (5, 10 or 20kt) and the speed-to-fly director with its commands given by a distinctive broad arrow in graphic format.

Further data is presented during the flight but the configuration is not fixed, leaving the pilot freedom to choose information important to him. Four large windows can permanently display the distance to the next TP, the height required, the glide angle and the time, or be adjusted with a sub-menu to show height to fly, flying time, take-off time or indicated airspeed. Further data, such as MacCready speed, etc, outside air temperature etc, can be displayed below.

At the bottom of the FDD, five parameters from a choice of fifteen (such as the MacCready value, wing loading, head or tailwind component) are displayed and may be changed during flight.

Compared with the earlier VP3, the VP6's performance has been increased with an airspeed indicator ranging from 0 to 140kt IAS, a calendar and a logbook, which can store brief details of up to 99 flights, has been incorporated. Tasks of up to six legs can be preprogrammed for multiple courses around triangles and the electronic mileage recorder range counts up to 1999.9nm.

Another new feature is the electronic altimeter which extends from 0 to 36 000ft and can be referenced to the QNH in hPa. The averager time interval can be adjusted in flight between 8 and 64sec in steps of 1sec. Like the VP3 averager, the value displayed is a true integration of the rate of climb and not simply a variometer with a large time constant.

There are many other state of the art functions – speed dependent volume control, automatic speed switching between cruise and climb, selection of polar degradation and the ability to select the exact polar for your glider from over 60 different types.

The VP6 stores as statistical values the times of take-off and landing, the flight time, the time at the start, TP and finish line and how long the task has taken as well as the average ground speed, average air speed in cruise mode, the total average climb, the total rate of climb, the total gain in altitude during the task and the total distance flown.

There is already a GPS option with a satellite navigator that gives an accurate 2-D fix and a specially developed single channel receiver. It alternately interrogates four satellites for the 2-D fixing and determines the position every few seconds with an accuracy of approximately 25m. There are already enough satellites for it to operate at all heights, in mountain valleys and on the ground. The coverage is so good in most of Europe that 2-D position fixing is guaranteed for 24 hours a day. The ground speed is immediately available and therefore the wind velocity and the wind at different altitudes.

The system is easy to use and TPs which are difficult to find or flying final glides in the dawn or into sun with poor visibility are no longer a problem. Software updates in the near future are likely to give an even better result.

Despite the vast performance improvement, the VP6 is less expensive than the comparable VP3 version at around £2000 before VAT.

This is an extract from an article in* Aerokurier. *The demand on space has limited the amount of detail we can give about this very sophisticated device but brochures are available from RD Aviation Ltd (see the inside back page).

WOMEN'S EUROPEAN CHAMPION-SHIPS

Husbands Bosworth – August 4-17

This event is traditionally an Eastern Bloc affair with powerful teams from Russia, Bulgaria and Poland. Pam Hawkins and yours truly went to Russia in 1989, representing Great Britain. We had a wonderful time, but the Continental weather did not live up to expectation. Why not invite them to Britain? Coventry GC agreed to provide the venue; Claude Woodhouse agreed to be the director.

And meanwhile, the Wall came tumbling down! The Eastern Bloc disintegrated. Subsidies for gliding clubs went down the tubes. Would anybody come to the party?

They certainly wanted to come. The six German women, who were well practised in team flying, brought a superb fleet of modern gliders and a bevy of brand new camper vans. The enterprising Poles, Anna Chrzaszcz and Bozena Demczenko-Grzelak, came with a sleek pair of SZD 55s.

Valentina Toporova and Svetlana Timkova drove six days from the Soviet Union, both towing a Discus and with a fourteen day supply of bread and kasha. The Hungarian team traded Hungarian gliding for the use of three British gliders, rather a mixed bag of a LS-3, LS-4, Discus, and they brought an LS-6 from Germany.

Marie Kyzivatova and Lenka Kuthanova brought a Discus apiece from Czechoslovakia. Two Swiss girls turned up for the first time; grandmother JoJo Litt-Gabriel from Belgium appeared for the last time – she's flown in every Women's European and she *won* the last day of this one!

Pam Hawkins, Gill Spreckley, Jane Nash, Lynn Norman, Karina Hodgson and Jill Burry formed the British team. I gracefully gave way to the younger generation (they beat me, that's why), and only stepped in at the last minute as substitute team manager. I now truly appreciate that Ben Watson is doing an impossible job. I was ultimately given the sack, for insensitivity, and for leaving Scotland off the map on the commemorative T-shirts.

International rules are subtly different from British rules. A start once made and notified, 30min must pass before you start again. Woe betide the one who tips in a bit of water on the grid. And **all blind flying instruments must be removed!** Out went the T&S the AH and the Bohli.

Husbands Bosworth had hoped for 50 entries, ended up with 30, so queued up behind the women were 20 blokes bent on a task week, leeching on the weather provided by Tom Bradbury and Peter Bayliss, but *forbidden* to fly the same task, or to communicate in any way.

Not that our team needed any help from the HusBos Boy Racers. As Karina said "I think the men would have quite a shock if they had to fly against some of these women." Jane Nash told of joining the German team in following Gisela Weinreich, three times Women's Champion. "I flew as close and as tightly . . . sometimes between Gisela and her immediate follower to remain in the best lift."

Notable speeds were chalked up. On a day when Ralph Jones averaged 107km/h in his Nimbus, Czech Hanna Zejdova sped round a 270km task at 109.2km/h, flying a Ventus.

The weather for the practice week was uncharacteristically superb. The first week of the competition was more normal for these islands, with cloud and rain aplenty; the first day started late and everyone landed out. During the second week, fine weather returned. Eight days in all with 341 for the 15 Metre Class being the longest task, a wonderful atmosphere at Husbands Bosworth and first rate organisation by Claude and his team combined to send us all home with happy memories.

Leading results: 15 Metre Class, 1. G. Weinreich, 6255, 2 P. Zimmermann, 5969 (both from Germany and flying LS-6s), 3 Jana Veprekova (Czechoslovakia, Ventus) 5938pts. The British team were 6 G. Spreckley (LS-6C) 5611, 7 P. Hawkins (LS-6B) 5576, 8 J. Nash (Ventus) 5152 and 9. L. Norman (DG-200) 4778. Standard Class. 1 V. Toporova (Soviet Union, Discus) 6204, 2 A. Chrzaszcz (Poland, SZD 55) 6012, 3 M. Kyzivatova (Czechoslovakia, Discus) 5909pts. The British team were 15 K. Hodgson (Pegasus) 4680, 17 J. Burry (DG-300) 4154pts.

The British team photographed by Sid Gilmore. Front row, l to r, Pam Hawkins, Karina Hodgson, Jill Burry and Gill Spreckley with Jane Nash, front l, and Lyn Norman.

Above: Jane Nash and daughter Jenny discussing some of the finer points. Photo: by Steve Nash. Below: Naomi Christy presenting the trophy to the 15 Metre Class Champion, Gisela Weinrich. Photo: Sid Gilmore.

Below: Valentina Toporova, the Standard Class Champion. Photo: Sid Gilmore.

HANDICAPS FOR REALISED RATES OF CLIMB

1. The problem of handicapping

Handicaps, or speed indices, are calculated from the average speed a glider should be able to achieve in conditions of the British Standard Thermal (BST). The Std Cirrus is the datum glider and given a speed index of si = 100. Other gliders have speed indices for BST conditions given by

$$si = \frac{100\ (\text{average speed of glider})}{(\text{average speed of Std Cirrus})}$$

Thus the ASW-20 has a speed index of si = 108, meaning that in BST conditions it should be 8% faster than the Std Cirrus.

The BST was obtained by making a large number of observations of thermal profiles. A mathematical form for BST was then chosen (i) to conform approximately to the observations and (ii) to permit the rate of climb to be calculated from the performance of the glider without having to use elaborate simulation techniques. The parabolic equation

$$V_r = V_{to}\,[1 - (r/R)^2]$$

has these properties. In this expression, V_r is the thermal upcurrent at a radius r from the centre of the thermal, V_{to} is the maximum upcurrent in the centre and R is the diameter of the thermal. (At r = R, the upcurrent is zero.) The average profile is given by parameter values

$$V_{to} = 4.2\text{kt}$$
$$R = 1000\text{ft}$$

In good conditions, thermals will be much stronger than this. And here lies the problem. In BST conditions, a Nimbus 3 is 30% faster than a Standard Class glider: in 8kt thermals of 2000ft radius it is only 20% better. A pilot's best four flights count on the National Ladder. Presumably, these were flown on the better days when thermals were stronger than BST. So the higher performance gliders are being penalised by too high a handicap for the good days.

2. Thermal strengths corresponding to rates of climb realised in cross-country flight

The theory of the glider polar gives an equation for the rate of climb in thermals in relation to the speed flown between them. The average cross-country speed can then be derived in terms of the inter-thermal speed and the parameters of the glider polar. We know the average speed for a flight. We want to find the rate of climb in thermals corresponding to our achieved average speed. This can be done numerically by an iterative method. I call this rate of climb the "realised" rate of climb.

From the realised rate of climb, the parameters for the thermal profile can be calculated as follows. First, the optimum angles of bank and corresponding rates of climb are calculated iteratively for two thermal profiles. New thermal parameters are estimated by interpolating from the realised rate of climb. Successive interpolations in smaller and smaller intervals are used to improve these estimates. This iteration is continued until the thermal parameters produce a rate of climb equal to the realised rate of climb. Of course, it would be possible to alter both the maximum upcurrent V_{to} and the thermal radius R. Many different profiles might produce the same rate of climb. I have assumed that the thermal has the same shape as BST. Since BST has

$$V_{to} = 4.2,\ R = 1000$$

I have allowed only V_{to} to vary and put R = 1000 (V_{to}/4.2).

These calculations depend on the parameters of the polar which must be estimated from empirical data. Accurate values of the maximum L/D and speed at max (L/D), the minimum rate of sink and speed at min sink are required for calculations of average speeds in given thermals. Accurate polars are available for the ASW-20 and K-6E. I have therefore taken the best flights in these gliders on the Cambridge University GC Ladder in 1990 and then calculated the realised rates of climb and the corresponding maximum thermal strengths in the thermal centre (V_{to}).

The following table gives the results of these calculations.

Peter, a lecturer in genetics at Cambridge University, has 2600 gliding hours, a Gold Badge and goal and distance Diamonds. He flies an LS-7 from the Cambridge University GC's new site at Gransden Lodge.

Pilot, glider	Distance (km)	Time (hrs min)	Rate of climb (kt)	Max thermal strength (V_{to}, kt)
P. O'Donald, ASW-20FL	543	6.53	3.1314	4.8833
	503	7.30	2.0701	3.9102
	310	4.28	2.3377	4.1527
	165	1.52	4.1320	5.8223
S. N. Longland, K-6E	352	5.05	3.6255	5.4011
	306	5.13	2.5164	4.3517
	296	5.02	2.5230	4.3579
	212	3.15	3.1627	4.9609
P. E. Baker, ASW-20	610	8.32	2.5275	4.4993
	416	5.49	2.5301	4.5017
	378	4.06	4.5829	6.4242
	220	2.39	3.5504	5.4485
R. J. Baker, ASW-20	616	8.04	2.9260	4.8666
	264	2.59	4.1408	6.0047
	294	4.12	2.4154	4.3968
	307	3.32	3.9600	5.8339

For these 16 Ladder flights, we find the average maximum thermal strength to be

$$V_{to} = 4.9885$$

We may take V_{to} = 5.0 as a reasonable figure for the best flights scored on the Ladder. (The Cambridge Ladder winner may well have achieved significantly higher rates of climb, but I have not obtained an empirically fitted polar for the LS-7 he flies.)

3. Calculation of handicaps

The speed indices can now be calculated for the ASW-20 and K-6E based on the Standard Ladder Thermal (SLT). This thermal has

$$V_{to} = 5.0$$

$$R = 1000(5.0/4.2) = 1190$$

Relative to the K-6E (speed index, si = 90), we then find for the ASW-20FL, si = 110 for SLT, compared to the value si = 111 for BST. I have also calculated the speed index of the ASW-20FL relative to the Astir CS (speed index, si = 99). The Astir has a fairly well established polar with max (L/D) = 34 at 50kt and min sink of 1.2 at 41kt. These values give its current speed index of si = 99 in BST. Relative to this value, the ASW-20FL has a speed index of si = 110 in SLT. Consistent results are thus obtained when the speed index for the ASW-20FL is calculated relative to both the K-6E and Astir CS. The fol-

lowing table gives handicaps for BST and SLT.

Glider	Speed Index BST	SLT
ASH-25	128	126
Astir CS	99	99
ASW-15	100	100
ASW-17	118	117
ASW-19	102	101
ASW-20	108	107
ASW-20B, C	109	108
ASW-20L, FL	111	110
ASW-20BL	114	113
ASW-20CL	112	111
ASW-22 24m	130	128
ASW-24	104	103
Cirrus 17.7m	104	103
Std Cirrus	100	100
Dart 17	94	94
Discus	104	103
Hornet	100	100
Std Jantar	101	100
Jantar 1	114	113
Jantar 2	118	117
K-6E	90	90
Kestrel 19	114	113
Std Libelle	99	99
LS-4	103	102
LS-6	109	108
LS-7	104	103
Mosquito	108	107
Nimbus 2	118	117
Nimbus 3	128	126
Nimbus 3 24.5m	130	128
Pegasus	103	102
Vega	108	107
Vega 17m	111	110
Vega Sport	96	96
Ventus 15	109	108
Ventus 16.6	114	113
Ventus 17.6	115	114

The SLT values in this table have been obtained simply by making adjustments to BST values proportionate to the difference of the SLT values for the ASW-20FL and K-6E. Performance figures comparable for each glider would be required to produce a more accurate table. The differences are only small, reflecting the similarity of SLT and BST for the flights used in the calculations.

The method of calculating a thermal profile from the average cross-country speed could obviously be used to set a "handicap for the day" in competitions. Although it depends on complex mathematical and numerical analyses, computer programmes are available to carry out the calculations. These could be developed into a general package for handicapping. For practical implementation, performance figures would be required for the competing gliders. (Ideally, we should compile an agreed data set for competition gliders giving at least the following performance figures: max (L/D) and speed at max (L/D), min sink and speed at min sink).

4. Polars and the problem of handicapping a wide range of gliders

Accurate polars are not available for many gliders. Their speed indices are based to a considerable extent on crude observations of relative performance in competitions and subjective adjustments of manufacturers' figures if any are available. In the past, manufacturers were often wildly optimistic about the performance of their gliders, giving values for max (L/D) many points above the true values. For example, the Skylark 3 was quoted at 1:36. Its true performance has never been accurately measured but most owners use 1:30 for speed-to-fly calculations. Richard Johnson's polars are based on controlled observations over a wide speed range. His ASW-20 polar is perhaps the best and based on many points at each flap setting. To obtain such a polar is very expensive. For many vintage gliders, a guess at max (L/D) is all we have.

A particular problem for the National Ladder

I have not tried to adjust the polars of gliders with handicaps below that of the K-6E. This is a particular problem for the National Ladder. This would have been won last year in a Tutor, had the Tutor pilot photographed his declaration. The Tutor's performance is unknown and its handicap a pure guess. Unfortunately, at very low handicaps, small differences in handicap have a large effect on the score. The result can be determined largely by the value guessed at for the handicap. In downwind dashes, a greater advantage is gained by the more lowly handicapped glider: at its low speed, it gains more from the wind behind it. On the present scoring and handicapping system, a pilot who concentrates on downwind dashes in a Tutor is probably unbeatable. Either "windicapping" should be used to adjust the handicap for downwind dashes, or the Ladder should be divided into two or more Classes – for example, gliders with handicaps at 90 and above, and those with handicaps below 90.

Another problem has arisen with the new Standard Class gliders, the Discus, LS-7 and ASW-24. These have been given the speed index si = 104. Yet they appear to have a better performance than the ASW-20 (si = 108), particularly when carrying large quantities of water. Given their handicaps, the LS-7 and Discus appear to be unbeatable (except by Tutors dashing downwind!). Unless the speed index for these gliders can be calculated on the basis of an empirical polar, it would seem reasonable to make a subjective adjustment of the speed index to figure at least that of the ASW-20.

Ed Johnston, National Ladder Steward, replies: Peter has managed to do a job which, frankly, I gave up on. From the data available for the ASW-20, K-6E and Cirrus, he has developed a sound way of adjusting handicaps for conditions.

However, I have corresponded with an aggrieved Open Cirrus pilot whose machine is handicapped the same as a Discus. Clearly if you are comparing flights on good days, this is preposterous (and they remain the same under the new SLT). The problem is that without the quality of data which Peter used for the ASW and K-6, each other glider can only be slotted in where one feels it fits.

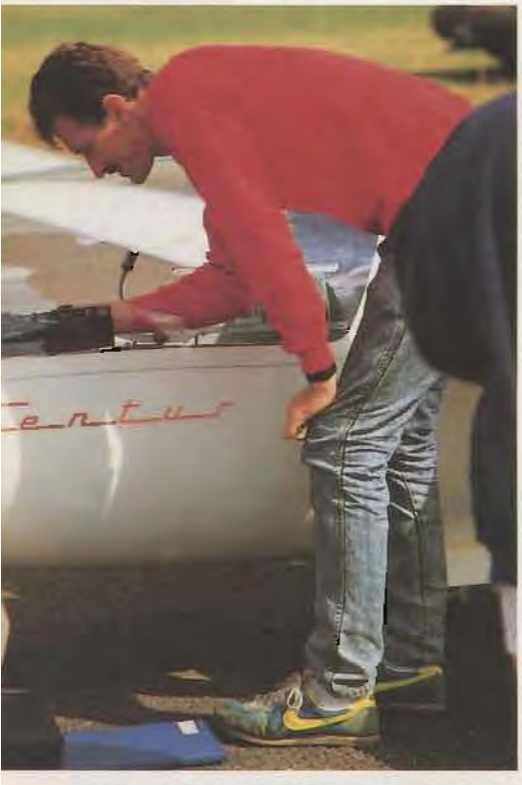
Many of our best pilots fly a Discus or a LS-7! When you start slotting gliders in are you judging the gliders' performance or that of the pilots who fly them?

When I got to this point I decided to stay with the devil we know! However, I have reduced the windicapping for closed circuit flights this year, which reduces the problem, especially of low performance gliders, and increased the handicap of the Tutor, which gives these enormous achievements (four achieved goals!) a more realistic and beatable number of points.

I will be recommending that the BGA Competitions' Committee increases the handicaps for modern Standard gliders (start writing in Discus owners!), but probably to 107 or 106. There is also a move to change the 100% basis from the Cirrus to, say, an ASW-20. This will not change the relative handicaps, but the published scores will more closely resemble those achieved by the higher performance gliders which we now fly.

Champion Allster Kay flying with his father Andrew on Day 5. Allster flew consistently. Photo: Jane Randle.

Tony Goodhart and Frank Pozerskis in reminscent mo



Above: Al Clarke who flew brilliantly to finish top small sailplane. Below: John Cardiff, winner of Day 4. Photos: Jane.

JANE AND ALISON RANDLE

OPEN CLASS NATIONALS

Enstone Airfield – August 10-18

This report was really a family affair. Jane, flying the Nimbus 2 she shares with husband Mike, was the thermal snifter on the first four days and attempted the tasks. Mike took over for the last days while daughter Alison helped with the reporting and took some of the photographs. Jane, an assistant instructor at the Cotswold GC, has been gliding for 30 years and Alison, who flies with the Oxford University GC at Bicester, was recently just 15km short of her 300km Gold distance.

Enstone Eagles have run successful Regionals for many years gaining a reputation for good contests and sensible use of late August soaring. It was often known as the stubble fire Comp. Yet, there seemed to be a certain atmosphere of doubt prevailing within the gliding movement that this small club, with its limited facilities, would be capable of running a National contest.

Despite clashing with the World Championships, there was a strong field including five past Champions and many other skilled soaring pilots. Aircraft performance ranged from ASH-25 two-seaters, Nimbus 3 and ASW-22 down through Ventus, ASW-20L, LS-6 Nimbus 2 and Kestrels to the 15 meter ASW-20, Mosquito and DG-400.

Last year had proved disappointing both for general soaring and contests. Nothing seemed

Above: The Cotswold GC was represented by six pilot Ed Johnston, "Reg" Gardner and Trevor Wilson. Below sample the catering facilities. Both photographs by Ja

od before the contest started. Photo: Jane.

ts: l to r, Geoff Cumner, Dave Roberts, Tim Macfadyen, w: David Innes, ASH-25 pilot, and Wally Kahn, tug pilot, ine.

John Jeffries and Mike Thick (ASH-25) photographed by Alison Randle.

different at Enstone on August 10. A stong wind flapped the marquee when John Delafield, now a veteran, opened the competition. He gave a witty speech and warned competitors who were unfamiliar with Ken Sparkes' determination to expect plenty of flying.

Some hope! Not even Ken, ably backed by Mick Webb, could make use of the wave that first Saturday; but much pent up emotion was dispelled by pilots flying high and far once the task was scrubbed. Sunday was grey and depressing. At 1pm, Ken announced with succinct logic: "The wind is increasing, the cloudbase is lowering and there are no thermals!" Pilots started to dig in for yet another lousy Comp.

On Monday it changed.

Day 1

Met: An advancing low to the west of Ireland with upper cloud forecast to reduce thermals in the afternoon. Until then, lift up to 2m/s with 15kt westerly wind was expected. **Task:** 358.8km ■, Norman Cross A1/A15 SW Peterborough, A303/A343 junction Andover,Headington roundabout, Oxford.

Task briefing was over quickly and pilots were in the air by 11am. Competitors were given block clearance through the Upper Heyford MRA. Steve Jones (Nimbus 3DT) ran just under the close-spaced clouds for 130km (round Norman Cross and back to Wellingborough) before he needed to circle. Then he worked a deep band. He said he was very lucky because every time he got down to 1500ft he found an 8kt climb. "I've never had to circle the big glider so steeply before, but it worked". I asked him if he went for ground sources or clouds. "Clouds" he said.

Meanwhile, Ralph Jones (Nimbus 3)seemed to be having all sorts of problems. I observed him below me as the competitors caught me up, by the Berkshire Downs, and he finished just after I had landed. All 36 competitors completed the task, Steve Jones at 121.32km/h, 70pts clear of Barrie Elliott (Nimbus 3DT) at 115.37km/h. The handicap speed was 95.89km/h ahead of Ted Richards in a Janus.

Later that evening, I discovered Ralph sitting in his Nimbus at 8pm, wearing his half-moon specs and reading a huge book – the manual for his variometer systems. Jane was sitting in a car nearby "I give up!" she said. It was too dark for a camera, but it will be an enduring memory.

Day 2

Met: Moderate to strong thermals forecast over central England with a 10kt westerly wind. A possibility of upper cloud spreading from the west later to weaken thermals. **Task:** 375.9km ■, Melton Mowbray railway station, Foxton SW ➡

Above: Ken Sparkes, director. Below: "If only it had bigger wings!" – the dreams of Simon Hutchinson. Both photographs by Alison.

Cambridge, Leicester Forest East M1; 25km longer than yesterday!

Gliders were all on the grid before briefing and no time was lost. Conditions were strong early up to Melton Mowbray and they got even stronger. At the second turn the big ships caught me up as I searched for the insignificant and unfamiliar railway junction. One moment I was alone then engulfed! Coming out of the turn, Ralph whizzed by closely followed by Alister Kay (ASH-25). A few moments later, Steve Jones raced after them. We shared a thermal briefly and they were gone. Ralph leading the pack. He appeared to be benefiting from his reading of the previous evening.

It is hard to describe the exhilaration of racing with big ships in strong conditions, as one by one they came past. The radio was tensely silent, all eyes on the pilot ahead, pulling up in the strong lift, nose down and speeding onwards. I fell off the end of the street near Market Harborough, the fast boys got the strong thermal and I saw them no more, joining a more sedate gaggle for the last leg. When the provisional results bracketed father and son with 1000pts, I knew it was father who had been leading the bunch, and that is how the final results stood. Ralph Jones fastest at 119.66km/h but Steve Jones held a slender overall lead in both Classes: from RAFGSA pilots Barrie Elliott in the Open Class and Ken Hartley (ASW 20BL) in the Handicap Cup. 35 finishers.

Day 3

Met: Not such good lift as yesterday (up to 1.5m/s) and expected to be killed by bands of cirro stratus advancing from the north-west towards evening. Highest temperatures to be over East Anglia. Light westerly wind. **Task:** 400.8km ■, Belvoir Castle, Ely Cathedral, Wantage, Headington roundabout; 25km longer!

The Central TV South cameras arrived early for briefing. Another hot sunny day. It was racing all the way to Milton Keynes on the third leg where the high cloud had advanced ahead of schedule. The thermals dwindled, they were lucky to get 1kt climbs, the very lucky found 2kt and the straggling field tiptoed and prayed down to Wantage. The TV camera crew, their deadline of 5pm advancing relentlessly, a dispatch rider poised to speed the film to Abingdon in time for 6.30, waited on the roof of the control tower.

Their patience was rewarded with tha arrival of John Jefferies (ASH-25), then Alister Kay. "Come closer to the tower if you can" Ken asked. By now it was grey and dull. Alister obliged and he had enough energy to circle the tower "What a poser!" as he swooped once more. One by one the leading pilots crept in, some merely brushing the finish line so little height did they have in hand. But "where was the youthful leader?". Eventually he arrived but his father had won the day and Alister Kay took the overall lead by 9pts. Eventually 30 pilots finished and they were weary as they handed in their films. Mick Webb, the task setter, said another 25km longer tomorrow! "You've got to be joking" said Alister Kay!

Ralph Jones donated his daily prize to Vic Tull, "For sheer guts and patience" Vic, who has flown his Kestrel in every Nationals since 1975, was the last to finish.

Day 4

Met: A weak frontal system forecast to move east across the British Isles. Ahead of the front, weak to moderate lift to an inversion of 4000ft. Wind WSW 20kt. Soaring period expected to be short. **Task:** Wild rumours of 750km, then 600km but eventually it was a 300.3km ■, Norman Cross, Newmarket, Edgehill

Conditions became difficult locally during launch and some pilots landed for relights. Then pilots ran under stratocu to Norman Cross, into the blue to Newmarket and then a slow, fascinating struggle into the teeth of a gale to Edgehill. It was gusting 30kt when I landed at Cranfield. The gaggles were fast and furious, at least twenty sailplanes were together at Cambridge. The sensible pilots stayed together. As they got back near Enstone, some had their patience rewarded because a wave system became established. John Cardiff (ASW-22) contacted it at Brackley where he climbed to 4000ft from which serene height he could observe his competitors struggling in the gale below.

Five completed the task including Al Clark in the RAFGSA Ventus. Many landed at Edgehill. Ralph Jones lost his lead, landing 10km short at Hook Norton; and would have been out of the contest when his undercarriage collapsed just before the aerotow retrieve; but, helped by people from Enstone and the RAFGSA, he worked through the night and his Nimbus was ready to fly the next day. Alister Kay increased his lead in both Classes; from John Cardiff 2nd and Chris Rollings 3rd in the Open Class. Al Clarke (Ventus B) won the Handicap Class, improving his overall position to 6th.

Day 5

Met: Moist unstable air under inversion at 4500ft expected to give moderate to strong thermals where sun reaches ground but weak under spread out stratocu. Wind WNW 20kt with some streeting. **Task:** 349.5km ■, Melton Mowbray, Thame Airfield, Kettering, Banbury

The conditions were quirky with wave affecting thermal activity. The first two legs went well for most pilots but the third leg caught many out. Graham McAndrew said: "It was **hell**!" John Gorringe (ASH-25) and Alister Kay flew that leg together for the benefit of both. John won the day at 93.34km/h, Alister held his lead in both Classes, 137pts ahead of John Cardiff in the Open and 60pts ahead of Al Clark in the Handicap Class; 29 finishers.

Day 6

Met: Strong NW airflow with 100kt jetstream over Scotland. Very unstable air below an inversion of 5000ft. Lee waves and streeting. Wind NW 30kt. **Task:** 210 km ■, Winslow , Swindon South, Chinnor

Despite the strong north-westerly wind, conditions on the first two and half legs were good. However, as the day went on, thermal strengths decreased, wind strength increased and the thermal spacing increased – creating large blue holes on the third and fourth legs. Half the field completed the task but many pilots landed between Oxford and Enstone. It was a day to get high and stay high. Alister Kay won the day, devaluing it in the Open but gaining 1000pts in the Handicap Cup. He increased his lead over John Cardiff to 226pts and by 12pts to 72 over Al Clarke in the Handicap Cup. Mick Boyden (Ventus cT) flew brilliantly, but sadly, without film in any of his cameras. 18 pilots finished.

Day 7

Met: Ridge with good soaring conditions, 4kt thermals to 6000ft in East Anglia, dry thermals later. **Task:** 374.6km ■, Belvoir, Six Mile Bottom, Oundle

A good day which most pilots enjoyed because they got their teeth into it and raced. Chris Rollings (ASH-25) said it was the best competition day he had ever flown on. Alister Kay knew he only had to be careful and he would win his second National Championship so he flew conservatively. John Cardiff slipped back which let Ralph who won the day take 2nd place by 189pts.

With 35 out of 36 completions, the most successful National contest of 1991 finished. Alister Kay said it was superbly directed and brilliantly task set. It is encouraging for one of the smaller clubs to host such a large contest and receive such a tribute. Somehow, it managed to maintain the easy Regionals atmosphere and yet not to lose sight of the importance of the event.

The secret might lie in the undiluted emphasis on time in the air. Without exception, the competitors were launched as soon as soaring started. Precious time was saved at briefing because all the information was given to pilots on task sheets which included all the Met faxed by Tom Bradbury from Husbands Bosworth, TP photographs and maps, as well as start and finish information.

After the task, pilots were amazed to find the provisional results waiting for them as they handed in their films. The scorer, Geoff Dixon must be congratulated for this. As a result, it was easy for Geoff Dixon to score the Handicap Cup, something about which there has been debate for many years. This year, it replaced the 19 metre cup.

Ken Sparkes was surprised by the lack of photographic penalties so he checked films at random and discovered the they were all perfect. Then he discovered that pilots were drawing the photographic sector on the TP photos provided in the task sheets.

Crews soon learnt that there was no difficulty putting aircraft on the grid before briefing. This was aided by a large glider park, near the caravans and trailers with easy access to the runway. Waterballast, stored in a temporary tank, was on tap at a rate of 800 gallons a minute!

After prizegiving, Ralph Jones who had, the previous winter, publically declared his opposition to Enstone running the Open Class Nationals, announced that after the event he would like to apologise publicly – it was excellently run and a very good Comp.

It seems that everyone was happy. Well done Enstone Eagles.

NB. Alister Kay (6529pts) won the Handicap Cup with Chris Rollings (6410pts) 2nd and Al Clarke (6386pts) 3rd.

FINAL RESULTS
Open Class

Pos	Pilot	Glider	Day 1,12,8 358.6km Norman Cross, Andover, Oxford			Day 2,13,8 375.9km Melton Mowbray, Foxton, Leicester			Day 3,14,8 400.8km Belvoir, Ely, Wantage, Oxford			Day 4,15,8 300.3km Norman Cross, Newmarket, Edgehill			Day 5,16,8 349.5km Melton Mowbray, Thame Airfield, Kettering, Banbury			Day 6,17,8 210.6km Winslow, Swindon South, Chinnor			Day 7,19,8 374.6km Belvoir, Six Mile Bottom, Oundle			Total Pts
			Speed (Dist)	Pos	Pts	Speed (Dist)	Pos	Pts	Speed (Dist)	Pos	Pts	Speed (Dist)	Pos	Pts	Speed (Dist)	Pos	Pts	Speed (Dist)	Pos	Pts	Speed (Dist)	Pos	Pts	
1	Kay, A. E.	ASH-25	112.1	4	892	114.9	4	942	104.0	2	960	69.6	4	976	93.1	2	998	123.0	1	934	106.4	4	942	6644
2	Jones, R.	Nimbus 3	102.7	12	783	119.6	1	1000	107.5	1	1000	(290.5)	6	867	88.0	7	933	112.1	5	872	110.8	1	1000	6455
3	Cardiff, J. D.	ASW-22	111.6	6	887	111.5	5	902	99.7	6	910	76.6	1	1000	87.9	8	932	107.3	8	845	106.8	3	946	6422
4	Rollings, C. C.	ASH-25	113.4	3	908	106.7	8	867	100.0	5	913	73.5	2	986	84.5	=10	887	112.5	4	875	106.4	2	968	6404
5	Jones, S. G.	Nimbus 3	121.3	1	1000	118.9	2	966	89.5	13	791	(283.3)	=7	848	87.2	9	923	110.2	6	862	101.9	6	893	6273
6	Elliott, B.	Nimbus 3DT	115.3	2	930	115.5	3	950	99.0	8	901	(283.3)	=7	848	84.5	=10	887	109.8	7	859	101.6	7	879	6253
7	Gorringe, J. P.	ASH-25	107.2	9	835	102.1	14	785	99.0	7	902	70.7	3	979	93.2	1	1000	101.4	12	811	103.1	5	890	6212
8	Glossop, J. D. J.	Nimbus 3DT	106.7	10	829	105.8	9	832	101.0	4	925	(283.3)	=7	848	91.4	5	977	116.9	3	898	96.5	15	812	6122
9	Jeffries, J. J.	ASH-25	108.5	8	850	104.8	11	819	102.1	3	937	(283.3)	=7	848	83.4	12	973	118.7	2	910	93.8	18	776	6013
10	Thompson, M. H.	Nimbus 3T	109.1	7	857	110.2	6	885	90.5	12	803	(283.3)	=7	848	88.8	6	944	(208.5)	23	525*	99.5	10	851	5713
11	Clarke, A. J.	Ventus B	93.2	20	672	97.1	19	725	86.4	18	755	68.5	5	973	92.3	3	989	103.1	10	821	89.2	22	715	5650
12	Gardner, T. R.	Nimbus 3	100.2	13	754	95.8	21	709	88.6	16	781	(265.8)	20	766	73.8	19	749	105.7	9	836	97.3	14	822	5417
13	Bailey, J. D.	Nimbus 3	111.9	5	891	105.0	10	822	82.9	=23	714	(248.5)	25	686	91.6	4	979	(198.2)	=24	515	96.2	16	807	5415
14	Davis, C. M.	Nimbus 2	98.9	14	738	92.2	25	686	78.3	27	661	(260.3)	23	741	75.7	18	773	102.2	11	816	99.8	9	855	5250
15	Hutchinson, S. N.	Ventus B	94.2	19	684	89.9	28	638	94.7	9	852	(277.8)	14	822	70.0	24	700	79.9	17	689	100.4	8	863	5248
16	Innes, D. S.	Nimbus 3DM	94.7	18	689	109.8	7	881	90.8	10	807	(283.3)	=7	848	(323.1)	34	361	94.5	15	772	99.3	11	849	5207
17	Hertley, K. J.	ASW-20BL	102.0	11	785	102.6	13	792	89.2	15	787	(266.8)	19	771	81.3	13	846	(198.2)	=24	516	88.2	24	702	5199
18	Johnston, E. W.	Kestrel 19	92.7	=21	666	100.9	15	772	84.5	20	733	(261.3)	22	745	76.3	17	781	(197.8)	29	514	93.4	19	771	4982
18	Camp, G. W. G.	Janter 2a	96.0	17	705	97.1	18	726	81.1	26	694	(230.1)	=28	642	72.2	22	728	92.5	16	761	88.6	23	708	4964
20	Richards, E. W.	Janus C	98.0	15	728	92.0	26	654	84.3	21	731	(245.1)	26	670	65.9	26	646	(198.2)	=24	516	98.0	10	831	4786
21	Torode, H. A.	Kestrel 20	90.8	24	644	90.2	27	642	84.0	22	727	(230.1)	=28	642	77.1	16	792	(208.5)	21	571	90.8	20	737	4755
22	Boydon, M. V.	Ventus CT	96.9	16	715	102.9	12	796	90.7	11	805	(269.3)	18	783	80.9	14	840	(0)	=36	0*	94.9	17	791	4730
23	Fox, R. L.	Ventus B	80.4	32	522	98.3	17	741	84.9	19	737	(269.8)	17	785	70.3	23	704	(208.5)	=21	571	85.5	28	667	4727
24	Williams, P. R.	Nimbus 3	82.1	31	542	99.3	16	753	89.3	14	789	(265.1)	21	763	(311.1)	35	343	100.7	13	807	89.4	21	719	4716
25	Burton, A. J.	LS-6c	88.9	26	622	95.6	22	708	73.6	29	606	(283.3)	=7	848	72.4	21	730	(198.2)	=24	516	81.9	29	620	4650
26	Smith, R. J.	Ventus B	89.3	25	626	94.3	24	691	81.5	25	698	(227.3)	30	587	63.2	29	611	98.4	14	784	81.6	30	616	4623
27	Gliddins, J. B.	DG-202/17c	78.7	34	503	93.5	31	560	82.9	=23	714	(277.1)	15	819	64.8	28	633	(198.2)	=24	516	86.4	26	678	4423
28	Macfadyan, T.	ASW-20L	88.5	27	617	96.4	20	718	87.1	17	764	(273.8)	16	803	(339.0)	31	382	(183.5)	31	438	80.8	31	605	4327
29	Cumner, G. M.	ASW-20	92.1	23	659	86.5	29	597	75.4	28	628	(240.8)	27	650	65.7	27	644	(182.0)	33	430	71.0	33	476	4084
30	Walsh, A. P.	DG-400	92.7	=21	666	85.4	30	583	(311.2)	34	295	(251.8)	24	701	72.5	20	732	(210.5)	19	582	72.3	32	494	4043
31	Lee, M. E.	Ventus CT	86.9	29	599	95.4	23	705	(328.4)	33	305	(204.1)	33	479	66.8	25	658	(209.8)	20	578	87.7	25	696	4020
32	Pozerskis, P.	ASW-22	83.0	30	553	80.0	32	517	(364.0)	=31	341	(221.3)	31	559	79.6	15	823	(182.2)	32	431	86.0	27	673	3897
33	Tull, V. F. G.	Kestrel 18	73.4	35	441	74.4	35	449	65.7	30	514	(206.8)	32	492	(294.1)	36	319	(179.5)	35	417	61.4	35	350	2982
34	Wright, D. T.	Kestrel 19	80.2	33	519	(369.0)	36	266	(233.4)	36	196	(185.8)	34	394	(330.6)	32	371	(180.0)	34	419	(384.5)	36	264	2429
35	Wilson, T. G.	Mosquito B	60.2	36	291	76.9	34	479*	(294.4)	35	266	(60.1)	35	67	327.6)	33	367	(189.0)	30	467	63.8	34	382	2319
36	Cuming, M. F.	Janus C	88.0	28	612	78.5	33	499*	(364.0)	=31	341	DNF	=36	0	DNF	37	0	79.6	18	687	DNF	37	0	2139
37	Roberts, D. G.	ASW-20BL	(186.9)	37	135	DNF	37	0	DNF	37	0	DNF	=36	0	(344.0)	30	389	DNF	=36	0	98.2	12	835	1359

HAWAII

Michael Haynes reports back from two gliding sites

About an hour's drive north of Honolulu, Dillingham Airfield lies parallel to the north shore of Oahu Island. The area is famous for its surfing with the added attraction of some unusual gliding. Situated at the bottom of a low mountain range, this site has a nearly all year round soaring potential.

Hawaii is always warm and with the airfield just a few hundred yards from the coast, a sea breeze blows up the mountain ridge nearly every day.

Two glider operations share the site – an air experience orientated group run by Bill Star, catering mainly for tourists, and a group run by Elmer Udd, a retired American air cargo pilot. He flies a two-seater Grob and rents a single-seater Grob.

A 1500ft aerotow sits you on the ridge from which thermals and sometimes wave can be contacted. During my stay southerly upper winds were blowing above the surface northerly sea breeze, creating a small wave system. This produced some wave enhanced thermals over the sea, about half a mile from the shore.

"At drier times of the year Diamond heights are possible."

At Christmas, which was when I visited the site last year, the Pacific winds are fairly humid and wave climbs are hampered by fast cloud build up. In fact the sky seems to cycle very quickly from blue to total cloud cover in fifteen or twenty minutes, and then back to blue again. At drier times of the year Diamond heights are possible.

At around 4000ft most of the island can be seen with Honolulu in the distance. It's a strange gliding experience to be soaring surrounded by so much water. And the landing circuit is normally made with the downwind leg over a coral reef in turquoise blue water.

Compared to mainland gliding, this site has short flying queues and with the easy availability for soaring there's a relaxed Pacific feel to the place.

If you have a chance to visit Hawaii, contact Bill Star, PO Box 626, Waialua, Hawaii 96791, tel (808) 677-3404 or Elmer Udd, 266 Poipu Drive, Honolulu, Hawaii 96825, tel (808) 395-9052 or 637-3147

Michael's photograph of Dillingham Airfield.

AMERICA

On a power flying holiday in the Los Angeles area, Michael decided to visit a gliding site in the desert

Hemet-Ryan Airfield lies about 80 miles inland as the plane flies, in the flat San Jacinto valley, 1500ft amsl with hills about five miles to the west at around 2500ft. Ten miles to the east are the San Jacinto mountains which start at about 5000ft, rising to 10 000ft amsl 20 miles from the site, which give year-round soaring from thermals, wave and convergence systems.

Doing a fast let down my little Cessna was bumped around by vigorous thermals. The airfield is run by California's Forestry Department and shared by fire-fighting aircraft, a parachute club and Sailplane Enterprises, a commercially run gliderport. Power planes operate from an asphalt runway with a parallel glider strip for aerotowing on the northern side.

A few days later I returned from LA by car, driving about 90min on excellent highways. With such a low level of rain and extremes of temperature in the desert, climate and erosion have produced slopes of dust and broken rocks which glint in the bright sunlight, giving a strange "other world" appearance.

Dual instruction, check flights and introductory lessons are booked for an hour at a time and for my first flight I was towed in a Twin Astir towards the hills to the west where the instructor advised me on the local phenomenon of converging airmass. The following day I flew in a Schweizer 2-32A.

Sailplane Enterprises is under new ownership and management and there's a policy of getting on with the flying with a minimum waste of time. There is also a great depth of character and experience in the senior instructors who have high totals of soaring hours.

If you'd like to visit, contact the manager, Galen Fisher, Sailplane Enterprises, PO Box 443, Hemet, CA 92343, tel (714) 658-6577

POLAND

John Kenny recalls his gliding holiday of last summer

They do things differently at Zar. I didn't see anyone do a DI there; to take off with the airbrakes open is normal. You fly in the tug's slipstream because it's smoother there and you do S turns on base leg till you are low enough to turn finals, then land in the opposite direction to take off, even if there is a 30km/h tailwind. You land as far as you can into the field and when you park the glider you won't find anything to put on the wingtip. Tyres are for wheels.

Jenny and I, from Vectis GC, had booked a package trip to the Zar Mountain Gliding School in the Beskid Maly mountains of southern Poland. The passengers applauded when the Tu 154 landed at Krakow – funny no one has ever applauded one of my landings. We met the other Brits on the course there, boys and girls from the Buckminster and RAE GCs and were taken in an assortment of vehicles the 100km to Zar, arriving at the hotel in the early hours.

Looking out of the bedroom window in the morning, the view was breathtaking. We were looking down a mountainside to a lake – obviously the airfield was behind us at the top of the hill on a plateau. When confronted with a panorama, I always look for landing fields and saw a little meadow and thought that, though the slope was rather steep, I could just scrape a well braked glider into it. A moment later I noticed a windsock at one corner and didn't eat a very hearty breakfast.

"Me next, the tug was enormous and the tow rope minute"

Documentation and briefing over, we had check flights in a Puchacz in descending order of experience, the calm and utterly competent Peter going first. No problem, he had flown at La Motte. Me next, the tug was enormous and the tow rope minute. You charge off down a 1 in 10 hill, hence the open brakes to prevent you over running the cable and you land back uphill, because it's too steep to land down.

Should you have a cable break, you retract the wheel, close brakes and air vents – and land in the lake. The Yak 12 and Wilga tugs are flown with spirit and close to the scenery, the mountain air is rough and flying on short ropes in the slipstream really does seem to help.

Andrzej is the sort of instructor I would like to be when I grow up; calm, skilled, only touches the controls in extremis and can instruct with humour in a foreign language. He says I can fly a Pirat, I say maybe tomorrow when the viz is better – and the adrenaline supply has been replenished.

The fleet is about a dozen Pirats, two Bocians, Puchacz, Jantar 2, Junior, Cobra 17, Muchas, etc. The more adventurous characters, Alex, Phil and Pete flew about nine types each. They normally like pilots going to Zar to have about 45hrs PI and lots of aerotow experience but the early solo pilots in our party, John, Jim and Alan, did wonders and soloed there.

The mountain soaring is wonderful, perhaps not quite Alpine – more like a cross between Talgarth and Aboyne. Jenny describes one of her flights below.

The first gliding took place at Zar in 1930 with bungy launching. In the 1950s a cable railway was built to haul the glider from the bottom landing field to the launch point 1500ft up the hill. The hotel half way up the hill was built for gliding folk and has eighty rooms and the hangars, workshops and stores are extensive. Now with state subsidies cut, activities are not so intense and overseas visitors are welcomed with warm hospitality.

On non-soaring days, CFI Toni, took us on expeditions to the PZL glider factory, to Krakow, Zacopane etc in his minibus. Being on holiday, I had to fall in love – she is a beautiful lady called Mucha Sto, elder sister of the well known Mucha Std. Sto is now middle aged, has the performance of an Oly 2 and the most devine handling qualities, riding the rough mountain air at incredibly low speeds.

Poland is a very friendly country. I like it.

Jenny's account

"It's no problem – it's normal!"

Well it may be normal to find 3m down near the slope of the bowl when thermals are popping in Poland but to a flat fielder it took all my courage plus lots of nagging "More left leg, more left leg!" from the back seat to nudge me over the foot hills and tuck into the main slope.

The flight in the Zar Puchacz was at my request to be shown how to soar locally. After a check flight and several highly exciting Pirat up and downs I felt I was ready for more than just flying streffa (I've probably missed out several czsz's in this spelling). Streffa is the modified circuit flown at Zar to allow for the fact that the 400m site with its 1 in 10 slope has no room between the mountains for a normal circuit. One S'es in front of the mountain (I call 1500ft hills mountains) on the opposite side of the valley until a suitable height is reached to land up the slope again.

"Please show me how you locals soar?"

So I flew the usual exciting aerotow. Which way would the tug flick at the facing mountain; how close to the slopes would we go in weaving in and out of the minor hills in front. I've seen more bows in a 60ft tow rope than I thought possible, even when following the advice for turbulent air and flying inside the slipstream.

After pulling off at 700m into a thermal, at 200m from a 700m peak I suggested that this time I would like a demo. The glider was pulled into a high *g* 75° of bank and up we went like a train. Now it's well known in my club that I'm a firm believer in the blue bits remaining on top of the green bits and that "g" is an American expression, so whilst greatly impressed – into the seat – I was beginning to feel uncomfortable.

"Could we ease off the bank please?"

"OK you fly."

So I did, we didn't zoom up at 4m/sec, mostly just 2-3, but I was able to focus on the scenery and the cheering that broke out when wa outclimbed a hang glider was multi-lingual and genuine. After 90min soaring above the beautiful Beskid Maly range where it's true about thermals from sunny slopes, we were recalled as the glider was needed to teach aerobatics, but that is someone else's story. ■

AIR LINES

We met by accident during rush hour in the Tube. The train was packed with home going commuters and I almost didn't recognise him in a suit. He grinned at me and we edged our way close enough to talk.

I hadn't seen him since the previous summer when he had been just another young pilot building up his flying time by the laborious means of towing gliders at the club where I flew – four minutes from take-off to release height and one minute to descent; hook on another glider and five more valuable minutes in the logbook. Now, he told me happily, he was studying for his ATPL licence. He'd even been offered a job, subject to his exam results. In a few months he could be flying commercial jets. It was impossible not to envy him his future and, silently, to wish him the luck that is so often better than talent.

Standing, swaying with the crowd, shouting above the heads bent over tightly folded newspapers while we rattled through tunnels deep beneath the city we remembered storms and great clouds, the glitter of ice on frozen wings, the death of a friend, space, freedom, and the constantly changing but always changelass sky.
TERRY HURLEY ■

Spruce Goose 2 is a T-21 fitted with a self sustaining engine (see October 1990 issue, p249) and Jack Elliott wrote to say the syndicate have had an interesting season including a trip from Strubby GC to Sutton Bank for the Slingsby Week in August. They took it in turns to fly the T-21, stopping at Kirton Lindsey and Pocklington for refueling, using winch and car launches.

Yearbook correction: *On p21 a photograph, an untrimmed proof print, was credited to William Malpas when in fact it had been taken by Tony Challans of his wife Margaret.*

BGA & GENERAL NEWS

S&G YEARBOOK

We are going to produce another *S&G Yearbook* early in the spring which will have a good mix of articles by our leading contributors and all the required information for the coming season. It will be £3.00 and have a generous injection of colour pages.

FREE ADVERTISEMENT

If the weather is foul, why not clear out your workshop, blitz your trailer or rummage through your garage and advertise that "glider junk" with a free advertisement in the *1992 S&G Yearbook* which comes out in the spring.

The only stipulation is that it must be described in a maximum of 20 words and not be priced above £150. If you are really clever you might be able to offer more than one item.

Send the advertisement to the *S&G* office (Cambridge address and not Cheiron Press) by February 1.

CLUB DIRECTORY

We are again printing a Club Directory in the next *Yearbook*, this time with a large colour map pinpointing all the sites, and would appreciate the help of club secretaries.
Please would you send *S&G* the following information by February 1:-
Clubhouse or a contact's telephone No.
How many days of the week do you fly?
Do you give trial instruction lessons?
Do you run courses?

THE BGA COACHING PROGRAMME 1992

In addition to providing a dozen instructors courses at venues from Portmoak to Parham, the coaching programme for 1992 includes the largest ever number of soaring and cross-country courses, with hopefully something for everyone.

We are providing three instructor's cross-country courses aimed primarily at instructors with little or no cross-country experience beyond Silver badge. These courses are also particularly suitable for AEIs who are hoping to get a Silver badge or 100km diploma prior to attending an instructor's course.

Provisional venues are May 4-8 at **Bicester;** June 1-7 at **Dunstable** and June 8-12 at **Aston Down.**

There will also be three courses at a rather more advanced level aimed at instructors with rather more cross-country experience who are looking to complete a 300km task or perhaps even 500km if the "day of days" comes along. These are planned for April 25-June 1 at **Booker;** June 29-July 5 at **Cambridge** and, in a desperate attempt to outwit the British summer, August 2-8 at **Le Blanc.** These courses will also introduce some element of teaching the instructors to teach cross-country flying.

Finally we have two advanced instructor's courses aimed at improving the speeds and skills of instructors who already have a fair bit of cross-country experience, and spending some time discussing and practising the teaching of cross-country flying. These two courses are planned for July 6-10 at **Booker** and July 26-August 1 at **Le Blanc.**

In addition to the above courses, soaring and cross-country courses open to instructors and non-instructors are planned at the following venues:- Pocklington (Wolds); Lyvedon (Welland); Chipping (Blackpool & Fylde); Camphill (Derby & Lancs) and Bidford (Avon). Dates will be May 10-16, May 17-23, May 25-31, June 13-19 and June 20-26. Probably in the club order as given; however, some of the dates and venues may have to be changed as at the time of writing not all the clubs have been contacted to ensure suitability of dates.

Finally, it is intended to run a pre competition training week for the Junior Nationals from August 15-21. Hopefully, but not necessarily, this will be at the competition site (as yet undecided). Training will be given in start and finish procedures, rules, TP photography and tactics, as well as straight forward cross-country flying.

1992 prices? Non instructors on 7 day courses: £80.00; instructors: £60.00. Instructors and AEIs on 5 day soaring and cross-country courses: £40.00. BGA gliders (Janus and Discus) £24.00/hr for the first two hours of each flight – no charge for subsequent hours on each flight.

For details of price, date and place of instructor's courses and completion courses, contact the BGA office on 0533 531051
Chris Rollings, *senior national coach*

BGA AGM/DINNER-DANCE

The BGA AGM/dinner-dance and prize-giving will be at the Post House, Crick, Northants on Saturday, February 22. For a booking form which includes details of a special package to stay overnight, contact the BGA office.

NATIONAL LADDER

Well, he's done it once again. Andy Davis tops the Open Ladder to claim the Enigma trophy with Phil Jeffery a well deserved 2nd place.

In the Weekend Ladder, increasingly popular with 137 entries, Dave Booth wins the L. du Garde Peach trophy with Jonathan Walker completing a Coventry 1st and 2nd. George Metcalfe, who didn't take photos, would otherwise have split the two from Coventry. Welcome back Lasham!

Despite a slow start to the season, the competition perked up towards the end and we have finished with a very healthy list of entries, ranging from world class pilots to those completing their first cross-country.

However, to keep pace with the times, and to try to make the competition fair and accessible to all, I will be doing some experiments with the scoring system over the winter, aiming to decrease the emphasis on speed and increase it on distance. More details will follow in due course.

In the mean time, on to the wave, fettling and next season's spring thermals!

Open Ladder:- 1 Andy Davis (Bristol & Glos) 11230pts; 2 Phil Jeffery (Cambridge Univ) 10581pts; 3 Nick Hackett (Coventry) 9174pts.
Weekend Ladder:- 1 Dave Booth (Coventry) 7406pts; 2 Jonathan Walker (Coventry) 5125pts; 3 George Metcalfe (Lasham) 5124pts.
Ed Johnson, *National Ladder steward*

GLIDING FOR THE YOUNG

Rattlesden GC have been encouraging young people to take up gliding by running a sponsorship scheme and talking to sixth formers about the sport.

They asked the local schools for their co-operation and by invitation an instructor has given talks and schools were asked to select 20 pupils to take trial lessons. They were each given two lessons and assessed by the instructors on natural ability. Five have been selected to be sponsored by the club to solo standard.

BGA TURNING POINT LIST

After the launch of the BGA list of turning points and club sites, clubs and individuals are invited to send proposals for changes or additions to the BGA. The latest list will be finalised in time for distribution to clubs at the AGM to be held at Crick on February 22.

The data will be available in three forms; the full list, a location index and TP briefing sheet headings. Copies on floppy disc (either 3.5 or 5.25in) will also be available for IBM-compatible PCs in Word Perfect 5.1 and DOS/ASCII formats; send formatted floppies to the BGA or direct to the TP Co-ordinator with return postage. Disc capacity needed will be about 500kb for the WP 5.1 version and 350kb for DOS/ASCII; for the briefing sheet headings the figures are a further 550kb (WP51) and 600kb (DOS).

Two amendment lists were issued in 1991; if changes for 1992 are relatively small, they will be issued as "Amendment List 3", if they are substantial then the document will be re-issued as the 1992 edition. Copies have been sent to NATS, where they were well received, and the TP codes have been proposed for our use in a forthcoming census of air activities which is due in 1992. Finally, the BGA will accept flight declarations using the TP codes as long as the edition used is quoted, with the number of its latest amendment list - a specimen declaration form was issued to all clubs earlier in the year.
Ian Strachan, *BGA Competitions and Badges Committee TP Co-ordinator*

NEW AIRSPACE CLASSIFICATIONS

A new system for identifying British airspace categories came into effect on November 14. It is in fact an international system, devised by the International Civil Aviation Organisation (ICAO) for the purpose of standardising airspace categories worldwide. The aim of standardisation is to enable a pilot visiting a foreign country to understand more readily the rules relating to the airspace he wishes to use, and the air traffic services available to him. In

practice, many countries have been unable to meet the implementation date of November 1991, and will not be ready to introduce the system until 1992 or even 1993. Among these are some European countries, including France and Germany.

The ICAO system uses a "menu" of seven airspace categories, from which each country can select as many types as it needs to meet its own requirements. Of these Classes A to E are Controlled Airspace, while F and G are Uncontrolled Airspace. Within the UK, the aim of NATS was to introduce the new classifications without changing the rights of access. This has largely been achieved, so that glider pilots have only to learn a new set of designations, not a new set of rules.

UK ALLOCATIONS

Class A All Airways, London TMA, Manchester TMA, Daventry CTA, Worthing CTA, London CTR (Heathrow).

Class B The Upper Airspace Control Area, encompassing the former Upper Airspace Special Rules Area and the Hebrides Upper Control Area.

Class C Not yet allocated, but may be used in future.

Class D All the present Special Rules Airspace (excluding the Upper Airspace SRA) plus the Scottish TMA above 6000ft amsl and the Manchester CTR.
The term Special Rules Airspace is to be discontinued. Special Rules Zones (SRZs) will become Control Zones (CTRs) and Special Rules Areas (SRAs) will become Control Areas (CTAs).

Class E The Scottish TMA at and below 6000ft amsl, Belfast TMA, and the Scottish CTR outside the Glasgow and Prestwick CTRs.

Class F Advisory Routes (but not Radar Advisory Service Areas).

Class G The "open" FIR (or free airspace, as we would call it).

GLIDER ACCESS TO CONTROLLED AIRSPACE

Class A Gliders may cross airways specified by the **UK Air Pilot** in VMC in the prescribed manner. The list of such airways is unchanged.

Class B Unrestricted access to gliders.

Class C Not applicable at present.

Class D Gliders may fly in specified Class D airspace without ATC clearance subject to maintaining VMC. No change to this list.
In other Class D airspace they may only enter subject to ATC clearance.

Class E Any aircraft may fly in this airspace in VMC without ATC clearance, and this includes gliders.

The **VMC criteria** for gliders using Class A or Class D airspace will now be 1500m horizontally and 1000ft vertically away from cloud and in a flight visibility of at least 8km. In Class E airspace these values apply above FL100, but below FL100 a minimum visibility of 5km applies.

Other airspace types have not been included in the ICAO classifications, and remain as before, viz ATZs, MATZs, UHMRA, Danger, Prohibited and Restricted Areas, Radar Advisory Service Areas, AIAAs.

The Air Navigation Order and the Rules of the Air Regulations have been significantly amended. Hence the Rule numbers referred to in the *1991 S&G Yearbook* Airspace Update are now obsolete, and also **BGA Laws and Rules for Glider Pilots.** Both will be updated as soon as is practicable.

Aeronautical Maps will introduce the new classifications progressively. The boundaries of different classes of airspace will be depicted by means of solid/pocked lines of different designs, accompanied by the appropriate classification letter enclosed in a box. Note that it is the letter that determines the status of the airspace, not its title, *eg* in some countries airways may be Class E.

The Manchester TMA is the only area in which glider access rights have been diminished concurrently with the reclassification exercise. Originally this was due to have become Class E, but now the Manchester airspace up to 3500ft is Class D (CTR) and above this the entire airspace becomes Class A TMA. Action is in hand to maintain some access rights for local gliding clubs by means of Letters of Agreement.

Aeronautical Information Circular 86/91 is essential reading for anyone wishing to study the changes in greater detail. However, this report is believed to summarise all the changes that will affect glider pilots.

Chris Garton, *BGA Airspace Committee chairman*

S&G PRICE INCREASE

From this issue, *S&G* is £2.10 with the annual subscription at £14.50 including p&p. By sending £17.50, *S&G* subscribers will be also be sent the *1992 Yearbook* free of p&p.

OBITUARY

JERRY ODELL

Any attempt to describe this likeable chap must surely revolve around the word "enthusiastic".

Jerry was terribly enthusiastic about his flying – both gliders and powered aircraft – and was enthusiastic, too, about all the possible modifications, improvements or adjustments that could be made to them. He was very enthusiastic about his career as an engineering officer in the RAF and behind the scenes he was an equally enthusiastic family man, taking particular pride and pleasure in the achievements of his son Julian.

Jerry had quite an eye for a bargain and this – coupled with his prodigious engineering skill – involved him inevitably in rebuild and repair projects. He was a BGA senior inspector and has served on the BGA Technical Committee as well as being technical officer at one time or another for most of the RAFGSA clubs in the country.

These repair projects were occasionally self-induced and one of the more spectacular was the well-known story of his journey to the Inter-Services Regionals at Roanne in France. A well-meaning but ill-advised attempt by Jerry to override the driver's choice of carriageway resulted in a four-point hesitation roll which wrote off car and trailer and damaged the glider more than a bit.

The unfortunate crew was dispatched back to England to get another car only to find on his return that Jerry had already found a workshop, rebuilt the trailer and done most of the glidar repairs. They worked on the remaining repairs on the practice day and between contest launches. The story has a happy ending because Jerry won the competition. This result got him back into the Nationals where he came a very creditable 16th last year in the Open Class. The glider on both occasions was of course his Vega, wearing the 17 metre tips which we worked on jointly and which became Jerry's trademark for the last three years (with 16 pairs being built and fitted by him).

Jerry constructed his own "John Willy" calculator for the Vega 17 and although we never ➡

dared publish a 48:1 glide angle this is what he used: it seemed to work since his marginal final glides always got him home – just.

Someone recently remarked to me that if you plied Jerry with beer then out would pop the latest invention. A case in point was the Rover winch which took just five weeks from plying to prototyping: it worked. Some of the more off-beat schemes didn't quite come off but this was never for want of inventiveness or energy. I suppose that is why he was widely known in gliding circles as "the Prof".

Jerry's inventiveness was not confined solely to engineering matters. He was a good pilot who enjoyed experimenting with long or difficult cross-country flights, speed and distance being his favourites. He didn't actually set any records but often came close (*eg* 375 out of a 400km downwind dash attempt from Norfolk to Lands End) and there was always a good story afterwards.

Naturally he had all three Diamonds and was a patient and thorough instructor on the rare days when he wasn't either building or flying something else.

Jerry leaves a wife, Tiz (who was the administrative and organisational brains behind the Odell household), a son Julian (who recently graduated, to his father's delight, from Cambridge University) and very many friends. His enthusiasm for everything will be sorely missed.

MIKE CUMING

GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	*Name*	*Club*	*1991*
359	Stephen, W.S.Y.	Deeside	18.2
360	Housden, A.L.	Cotswold	12.8
361	Roberts, M.	Southdown	27.7
362	Sampson, S.G.	Lasham	18.8

DIAMOND DISTANCE

No.	*Name*	*Club*	*1991*
1/526	Jobbins, D.L.	South Wales	4.6
1/527	Stephen, W.S.Y.	Deeside (in Australia)	18.2
1/528	Beatty, R.A.	London	18.7
1/529	Lewis, D.J.	USA	9.6
1/530	Housden, A.L.	Cotswold	12.8
1/531	Horsfield, Brenda	Lasham (in Spain)	3.8
1/532	Sampson, S.G.	Lasham	18.8

DIAMOND GOAL

No.	*Name*	*Club*	*1991*
2/1957	Robinson, A.	Anglia	28.8
2/1958	Wilson, R.C.	Deeside (in Australia)	15.2
2/1959	Jeans, H.B.D.	Devon & Somerset (in Australia)	7.2
2/1960	Thackray, S.	Vale of W Horse (in Australia)	8.11.90
2/1961	Cullum, A.S.	Yorkshire	8.8
2/1962	Wood, J.M.	Blackpool & Fylde	8.8
2/1963	Webb, C.V.	Shropshire Soaring	8.8
2/1964	Kerr, G.J.	Midland	8.8
2/1965	Phillips, J.T.	South Wales	8.8
2/1966	Mackintosh, A.	Black Mountains (in Australia)	29.1
2/1967	Barney, M.R.	Cotswold	8.8
2/1968	Bloom, D.G.	Norfolk	13.8
2/1969	Smith, A.D.	Booker	12.8
2/1970	Thomas, C.R.V.	Lasham	12.8
2/1971	Ward, R.	Devon & Somerset	18.8
2/1972	Allcoat, R.W.P.	SGU	18.8
2/1973	Moss, M.	Blackpol & Fylde	8.8
2/1974	Farrell, M.R.	Cambridge Univ (in France)	13.8
2/1975	Marks, P.G.	Coventry (in France)	13.8
2/1976	Morgan, J.T.	Coventry (in France)	13.8

DIAMOND HEIGHT

No.	*Name*	*Club*	*1991*
3/1030	Roberts, C.I.	Stratford on Avon	21.5
3/1031	Clarke, H.	Bicester (in USA)	6.4
3/1032	Craig, W.T.	London	9.4
3/1033	Surrey, M.J.	Deeside	27.7
3/1034	Roberts, M.	Southdown	27.7
3/1035	Rouse, M.W.	Cotswold	15.8

GOLD BADGE

No.	*Name*	*Club*	*1991*
1555	Cullum, A.S.	Yorkshire	8.8
1556	Wood, J.M.	Blackpool & Fylde	8.8
1557	Webb, C.V.	Shropshire	8.8
1558	Kerr, G.J.	Midland	8.8
1559	Phillips, J.T.	South Wales	8.8
1560	Ward, R.	Devon & Somerset	18.8
1561	Moss, M.	Blackpool & Fylde	8.8
1562	Farrell, M.R.	Cambridge Univ	13.8
1563	Marks, P.G.	Coventry	13.8
1564	Morgan, J.T.	Coventry	13.8

GOLD DISTANCE

Name	*Club*	*1991*
Robinson, A.	Anglia	28.4
Jeans, H.B.D.	Devon & Somerset (in Australia)	7.2
Thackray, S.	Vale of W Horse (in Australia)	8.11.90
Lea, R.T.	Cotswold (in Australia)	17.2
Cullum, A.S.	Yorkshire	8.8
Wood, J.M.	Blackpool & Fylde	8.8
Webb, C.V.	Shropshire Soaring	8.8
Kerr, G.J.	Midland	8.8
Phillips, J.T.	South Wales	8.8
Mackintosh, A.	Black Mountains (in Australia)	29.1
Barney, M.R.	Cotswold	8.8
Bloom, D.G.	Norfolk	13.8
Smith, A.D.	Booker	12.8
Ward, R.	Devon & Somerset	18.8
Moss, M.	Blackpool & Fylde	8.8
Farrell, M.R.	Cambridge Univ (in France)	13.8
Marks, P.G.	Coventry	13.8
Morgan, J.T.	Coventry	13.8

GOLD HEIGHT

Name	*Club*	*1991*
Smith, D.W.	Clevelands	30.6
Myers, Alison	Blackpool & Fylde	9.7
McLeman, A.D.	SGU	2.5
Surrey, M.J.	Deeside	27.7
Sinton, J.R.	Clevelands	11.8
Hart, R.J.	Norfolk	1.8
Thorpe, P.J.	Clevelands	11.8
Ward, P.J.	Cotswold	15.8
Bate, B.D.	Shropshire Soaring	10.8

SILVER BADGE

No.	*Name*	*Club*	*1991*
8650	Hockings, D.J.	Portsmouth Naval	15.7
8651	Hazlehurst, P.	London	14.7
8652	Burchett, S.	Bicester	14.7
8653	Higgs, C.E.	Portsmouth Naval	17.7
8654	Adams, R.C.	Culdrose	1.3
8655	Thomson, J.A.	Highland	14.7
8656	Griffin, R.J.	Midland	9.7
8657	Mountain, I.	Cranwell	14.7
8658	Coffey, S.	Bristol & Glos	6.5
8659	Hertzberg, D.	Essex	14.7
8660	Dean, J.P.	Chilterns	27.7
8661	Scothern, B.	Burn	1.8
8662	Gander, M.B.	London	7.7

In the air or on the ground the **SZD 55** looks like what it is – the best of the Standard Class.

Empty weight – 484lbs
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Ballast capacity – 450lbs

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8663	Johnson, Rosemary	Midland	4.8
8664	Abrahams, M.	Newark & Notts	4.8
8665	Salter, M.G.	Anglia	4.8
8666	Blake, A.	Coventry	2.8
8667	Phelps, J.	Anglia	4.8
8668	Coleman, P.W.	Blackpool & Fylde	28.7
8669	Rukin, D.	Blackpool & Fylde	22.6
8670	Archer, J.	Avon	2.8
8671	McLaughlin, N.M.	P'boro & Spalding	2.8
8672	Ferrier, G.	Bristol & Glos	8.8
8673	Freestone, I.	Coventry	2.8
8674	Pickett, P.H.	Stratford on Avon	8.8
8675	Abraham, R.	London	8.8
8676	Blackmore, S.	Aquila	8.8
8677	Steele, Dianne	Vale of W Horse	12.8
8678	Graves, R.A.	Phoenix	12.5
8679	Keay, J.R.	Buckminster	8.8
8680	Jarvis, E.A.	Avon	13.8
8681	McLachlan, A.	SGU	7.8
8682	Wells, Elizabeth	Lasham	8.8
8683	McLernan, A.D.	SGU	7.8
8684	Morecraft, W.J.	Buckminster	13.8
8685	Hayden, F.J.	Cambridge Univ	12.8
8686	Berry, N.S.	Cambridge Univ	12.8
8687	Acreman, R.	Mendip	8.8
8688	Ballard, J.	Midland	7.8
8689	Townend, D.M.	Mendip	8.8
8690	Wirdnam, G.	Vale of W Horse	16.8
8691	Mitchell, J.M.	Shropshire	18.8
8692	Davies, A.R.	Dorset	18.8
8693	Paskins, J.R.	Wolds	18.8
8694	Beesley, B.	Cambridge Univ	15.8
8695	Brooker, R.T.	Essex & Suffolk	18.8
8696	Applin, I.G.	Lasham	9.8
8697	Price, W.B.	Booker	20.8
8698	Bowen, A.J.	Lasham	18.8
8699	Jones, R.E.	Southdown	17.8
8700	Murray, R.M.	Aquila	18.8
8701	Nowicki, Janina	Imperial College	13.8
8702	Parkinson, F.J.	Midland	13.5
8703	Warburton, T.H.	Yorkshire	16.11.90
8704	Brewer, T.T.H.	Southdown	18.8
8705	Counsell, Maureen	South Wales	18.8
8706	Lea, R.T.	Cotswold	17.2
8707	Brewis, P.W.S.	Midland	24.7
8708	Perry, S.S.	SGU	24.8
8709	Davies, B.E.	Cambridge Univ	18.8
8710	West, A.J.	Two Rivers	4.8
8711	Gumbrell, I.	Dorset	18.8
8712	Goldsborough, Louise	Bannerdown	12.8
8713	Cooper, J.	Aquila	18.8
8714	Rowlands, R.M.	Welland	24.8
8715	Avery, P.C.	Fenland	24.8
8716	Jarvis, G.	Eagle	13.8
8717	Goodison, D.	Burn	8.8
8718	Causer, Andrea	Clevelands	21.8
8719	Hendra, R.K.	Lasham	18.8
8720	Fellows, G.D.	Cotswold	13.8
8721	Little, A.H.	Bristol & Glos	8.8
8722	Hart, C.J.	Wyvern	18.8
8723	Coughlan, J.R.	Anglia	26.8
8724	Cooper, M.D.	Oxford	18.8
8725	Hamilton, S.	Norfolk	26.8
8726	Goulthorpe, P.J.	Coventry	27.8
8727	Scott, R.	Southdown	25.8
8728	Britton, W.R.H.	Avon	27.8
8729	Clack, G.	Lasham	20.8
8730	Wildish, M.	Trent Valley	24.8
8731	Antcliffe, N.R.	Wolds	18.8
8732	Dahler, L.F.	Chilterns	26.8
8733	Spencer, J.A.	Lasham	18.8
8734	Clark, D.L.	Lasham	26.8
8735	Lewis, I.J.	Lasham	31.8
8736	Teasdel, D.	Blackpool & Fylde	16.8
8737	Vann, J.R.	Booker	26.8
8738	Dawes, S.P.	Surrey Hills	15.8
8739	Barnes, A.R	Oxford	26.8
8740	Minnis, J.	Essex	16.8
8741	Hogbin, J.M.	Shalbourne	26.8
8742	Rogers, J.F.	Black Mountains	26.8
8743	Tipper, R.F.	Crusaders	26.8
8744	Hall, A.G.W.	Lasham	16.8
8745	Bateman, Sylvia	Four Counties	18.8
8746	Pereira, J.	Lasham	26.8
8747	Martin, S.	Burn	21.7
8748	Bonny, G.R.	Devon & Somerset	12.8
8749	Rawlins, R.H.	Norfolk	26.8
8750	Butterfield, A.	Oxford	16.8
8751	Bennett, M.K.	Bicester	25.8
8752	McEvaddy, H.J.	Lyveden	18.8
8753	Goodchild, S.P.	Rattlesden	4.8
8754	Alison, G.C.	Booker	26.8
8755	Chesney, D.	Dumfries	11.8
8756	Tobin, M.F.K.	Humber	24.8
8757	McAnulty, K.F.	Bristol & Glos	8.3
8758	Crocker, M.J.	Fenland	8.8
8759	Birch, Janet	Cambridge Univ	9.8
8760	Outhwaite, Janice	Midland	12.8
8761	Allison, D.W.K.	Chilterns	28.7
8762	Davies, R.M.	Four Counties	8.9
8763	Bell, A.	Wolds	8.8
8764	Swinton, N.	Oxford	16.8
8765	Salter, I.	Lasham	2.8
8766	Kinley, J.R.	Norfolk	8.9
8767	Clayton, L.F.	Kent	18.8
8768	Weaver, E.F.	Chilterns	4.8
8769	Britton, J.C.	Vectis	21.8
8770	Berry, J.R.	Kent	7.9
8771	Mason, K.	Four Counties	7.9
8772	Outteridge, S.	Kent	26.8
8773	Crozier, S.	Strubby	24.8
8774	Gregory, K.H.	Dukeries	18.8
8775	Jones, P.W.	Coventry	16.8
8776	Clegg, J.L.	Clevelands	26.8
8777	Brown, T.H.	Bannerdown	15.9
8778	Earl, V.L.	Essex	12.9
8779	Smith, J.E.	Coventry	9.9
8780	Bloore, P.J.	Avon	16.8
8781	Jeffery, T.	Norfolk	9.9
8782	Waller, W.G.S.	Booker	7.5
8783	King, G.A.	Lasham	25.8
8784	Southerst, J.C.	Lasham	20.8
8785	Mooring, Susanna	London	17.9
8786	Kilbride, R.A.	York	21.7
8787	Head, A.R.	Cambridge Univ	15.8
8788	Bridge, S.	Wyvern	25.8
8789	Shakerchi, S.	Imperial College	19.9
8790	Bassett, K.J.	Lasham	28.8
8791	Ross, S.	Southdown	19.9
8792	Hutchinson, B.	Cranwell	15.9
8793	Marshall, K.E.	Coventry	9.9
8794	Morton, Jacqueline	Bicester	18.8
8795	Jones, D.W.	North Wales	4.8
8796	Williams, Jean	Lasham	19.9

UK CROSS-COUNTRY DIPLOMA

Complete

Name	*Club*	*1991*
Hill, J.A.	Two Rivers	20.4
Bishop, F.T.	East Sussex	14.8
Allison, D.W.K.	Chilterns	18.8
Harper, S.J.	Cranwell	18.8

Part 1

Name	*Club*	*1991*
Haigh, J.	Southdown	3.5
Morrisroe, R.S.	Nene Valley	28.4
Kilbride, R.A.	York	21.7
Le Roux, D	Devon & Somerset	14.5
Murfitt, R.	Lakes	25.7
Wilkinson, D.	Bristol & Glos	8.8
Gertz, H.J.	Booker	18.8

NEW WEATHER SERVICES

On going to press the Met Office and the CAA unveiled a new package of weather services for British pilots.

Anyone with a fax machine can dial a menu of forecasts on dedicated telephone lines. Larger users such as airfields may prefer the new fax service where specific charts are despatched automatically.

From the end of the year, an on-line PC-based service will give colour and graphical weather information with a dial-up PC version available in 1992.

For further information contact Jill Harmer, Barry Parker or Derek Hardy on 0344 856636.

Provisional Priority and Promotion Lists

The lists below were compiled using the method described in the 1991 Competition Handbook. All competing pilots in rated competitions are required to have a valid competition licence and sign a declaration to this effect. Cross checking has shown that a number of competitors in 1991 did not have current competition licences. The BGA Competitions and Awards Committee will be contacting these competitors to invite them to correct this position.
GUY CORBETT, BGA Competitions and Awards Committee

Entry forms are available from the BGA office and should be returned by January 31. Entries after this date will go on the reserve list.

NATIONALS

PRIORITY LIST 1991

1	Davis, A. J.	(BT)	25	Elliot, B.	(O)	50	Brice, P. F.	(15)	75	Camp, G. W. G.	(O)	100	Giddins, J. B.	(O)
2	Wills, T. J.	(BT)	26	Morris, G. D.	(15)	51	Davis, C. M.	(O)	76	Alldis, C. J.	(15)	101	Langrick, D. J.	(S)
3	Watt, D. S.	(BT)	27	Gorringe, J. P.	(O)	52	Smith, D. A.	(QL)	77	Torode, H.	(O)	102	Norman, L.	(WE)
4	Garton, C.	(BT)	28	Strathern, M.	(S)	53	Dobson, J. B.	(S)	78	Boydon, M. V.	(O)	103	Starkey, C.	(15)
5	Wells, M. D.	(BT)	29	Delafield, J.	(QL)	54	Spencer, J. D.	(QL)	79	Odell, J. H.	(QL)	104	Macfadyen, T. E.	(O)
6	May, R. C.	(BT)	30	Glossop, J. D. J.	(O)	55	Jeffereyes, M. B.	(15)	80	Cook, I.R.	(15)	105	Hill, D.	(QL)
7	Edyvean, J. R.	(S)	31	Cuming, M. F.	(15)	56	Harding, R. W.	(S)	81	Booth, D. A.	(S)	106	Hyett, C.	(S)
8	Spreckley, B. T.	(15)	32	Parker, S. J. C.	(S)	57	Stewart, D. R.	(QL)	82	Fox, R. L.	(O)	107	Cumner, G. M.	(O)
9	Kay, A. E.	(O)	33	Jeffries, J. R.	(O)	58	Hutchinson, S.	(O)	83	Docherty, T. P.	(QL)	108	Dall, R. N.	(QL)
10	Kay, W. M.	(S)	34	White, S.A.	(QL)	59	McAndrew, G.	(15)	84	Ashcroft, J. P.	(15)	109	Coward, P. J.	(S)
11	Smith, E. R.	(15)	35	Morris, B. C.	(15)	60	Roberts, D.	(QL)	85	Cox, A. W.	(S)	110	Davies, F. J.	(QL)
12	Jones, R.	(O)	36	Pozerskis, A.	(S)	61	Innes, D. S.	(Q)	86	Throssell, M. G.	(QL)	111	Walsh, A.	(O)
13	Sheard, P	(S)	37	Thompson, M. H.	(O)	62	King, P. A.	(S)	87	Williams, P. R.	(O)	112	Hodge, B.	(QL)
14	Lysakowski, E. R.	(15)	38	Clarke, A. J.	(QL)	63	Hartley, K. J.	(O)	88	MacFadyen, I. D.	(QL)	113	Corbett, C. G.	(15)
15	Cardiff, J.	(O)	39	Evans, A. D.	(15)	64	Olender, S.	(S)	89	Bird, M.	(QL)	114	Toon, R. J.	(JE)
16	Campbell, D. R.	(S)	40	Tribe, A.	(S)	65	Jeffery, P.	(15)	90	Atkinson, P.	(S)	115	Metcalfe, I. J.	(QL)
17	Wells, S. M.	(15)	41	Bally, J. D.	(QL)	66	Farmer, A.	(QL)	91	Durham, M. W.	(QL)	116	Hodgson, K.	(WE)
18	Jones, S. G.	(JE)	42	Baker, P. E.	(15)	67	Johnston, E. W.	(O)	92	Nash, J.	(WE)			
19	Rollings, C. C.	(O)	43	Hackett, N. G.	(S)	68	Arnall, R.	(S)	93	Burton, A. J.	(O)			
20	Scott, T. J.	(15)	44	Cooper, B. L.	(QL)	69	Spreckley, G. M.	(WE)	94	Moulang, A.	(15)			
21	Gaisford, P. A.	(S)	45	Gardner, T. R.	(O)	70	Hawkins, P. S.	(QL)	95	Payne, R. D.	(QL)			
22	Redman, S. J.	(15)	46	Webb, M. J.	(QL)	71	Somerville, A.	(15)	96	Nicholson, J. B.	(S)			
23	Richards, E. W.	(S)	47	Miller-Smith, M. J.	(JE)	72	Jones, P. R.	(QL)	97	Smith, R. J.	(O)			
24	Young, M. J.	(15)	48	Metcalfe, G.	(QL)	73	Lemin, R.	(S)	98	Cunningham, G. W.	(QL)			
			49	Hood, L. S.	(S)	74	Mitchell, T. M.	(QL)	99	Crabb, P. G.	(S)			

(O=Open; S=Standard; 15=15 Metre; WE=Women's Europeans; JE=Junior Europeans; QL=Qualifying List)

REGIONALS

PROMOTION LIST 1991

1	Lee, D. G.	(IA)	26	May, J. I.	(ES)	52	Ebbs, C. P.	(JN)	78	Jeldon, A.	(QL)	104	Davidson, R.	(E)
2	Miller-Smith, M. J.	(JN)	27	Foreman, M. C.	(IA)	53	Reed, J.	(QL)	79	Marsh, B. C.	(JN)	105	Hutley, C. K.	(QL)
3	Cheetham, R. A.	(NO)	28	Smith, M. J.	(OL)	54	Hurd, P. L.	(NO)	80	Wilson, K. M.	(BC)	106	Starling, R. T.	(QL)
4	Parker, S. J. C.	(WA)	29	Wells, P. M.	(BC)	55	Miller, A.	(QL)	81	MacDonald, G. E.	(QL)	107	Robson, D.	(NS)
5	Warren, J.	(BC)	30	Gildea, C.	(QL)	56	Stingemore, G.	(IA)	82	Watt, C. C.	(E)	108	Williamson, M.	(QL)
6	Gardner, D. H.	(E)	31	Parry, N.	(E)	57	Morris, B. C.	(QL)	83	Davis, P.	(QL)	109	Ashbourne, C. J.	(JN)
7	Johnston, E. W.	(WB)	32	Barker, K.	(QL)	58	Dixon, R. H.	(BO)	84	Marriott, R. J.	(NS)	110	Thomas, G.	(QL)
8	Langrick, D. J.	(NS)	33	Hodgson, K.	(JN)	59	Dobson, J. B.	(QL)	85	Gaunt, T. R.	(QL)	111	Ustianowski	(IB)
9	Weir, N. A.	(IB)	34	Brice, P. F.	(QL)	60	Heneghan, M. J.	(IC)	86	Sanderson, P. L.	(NO)	112	Warminger, A.	(EO)
10	Rice, P. E.	(ES)	35	Murphy, T. J.	(WB)	61	Nash, S. R.	(WB)	87	Bland, D. M.	(QL)	113	Eagles, T.	(QL)
11	Logan, M. W. B.	(IA)	36	Alldis, C. J.	(QL)	62	Ellis, J.	(QL)	88	Cleaver, A.	(IB)	114	Roberts, J. H.	(NO)
12	Croote, P. F. J.	(JN)	37	Pozerskis, A.	(NO)	63	Crabb, S. J.	(WA)	89	Kingerlee, J. C.	(WA)	115	Knight, R. J. S.	(E)
13	Fox, R. L.	(NQ)	38	Jones, P. R.	(QL)	64	Scougall, B. D.	(NS)	90	Dale, G. G.	(QL)	116	Burry, J.	(QL)
14	Coward, P. J.	(WA)	39	Booth, D. A.	(NS)	65	Payne, G.	(BC)	91	Critchlow, M.	(IA)			
15	Walsh, A.	(EO)	40	Judkins, M.	(QL)	66	Torode, H.	(QL)	92	Baldwin, A. J.	(QL)			
16	Aspland, W.	(BC)	41	Payne, R. D.	(WA)	67	Moulang, A.	(E)	93	Robinson, C. J.	(ES)			
17	McKirdy, G. V.	(E)	42	Bird, M.	(OL)	68	Adlard, S. A.	(JN)	94	Robson, T. J.	(QL)			
18	Sharman, R. C.	(IA)	43	Atkinson, P.	(IA)	69	McLean, P.	(IB)	95	Court, J. W. A.	(JN)			
19	Palmer, R.	(BO)	44	Milton, C.	(IB)	70	Jordy, M. J.	(NQ)	96	Merritt, K. R.	(BQ)			
20	Somerville, A.	(IC)	45	Spreckley, G. M.	(QL)	71	Garrity, A. J.	(QL)	97	Goulding, N.	(QL)			
21	Dawson, M. R.	(WB)	46	Angell, J.	(BC)	72	Kelly, N.	(ES)	98	Hutchinson, S.	(IC)			
22	Brook, M.	(NS)	47	Woodman, P. J.	(QL)	73	Evans, A. D.	(QL)	99	Hyett, C.	(QL)			
23	Housden, S. R.	(JN)	48	Smart, A.	(E)	74	Galloway, J. P.	(WA)	100	Cumner, G. M.	(WB)			
24	Wright, E.	(IB)	49	Toon, R. J.	(QL)	75	Metcalfe, I. J.	(WB)	101	Saundby, R. P.	(QL)			
25	Hunt, S. G.	(NO)	50	Duffin, P. D.	(ES)	76	Blackmore, R.	(QL)	102	Nicholson, J. B.	(BC)			
			51	Lemin, R.	(QL)	77	Wall, N. H.	(IA)	103	Ashcroft, J. P.	(QL)			

(BC=Booker Club; BQ=Booker Open; E=Edgehill; EO=Eastern Open; ES=Eastern Sport; IA=Inter-Services A; IB=Inter-Services B; IC=Inter-Services C; JN=Junior Nationals; NO=Northern Open; NS=Northern Sport; QL=Qualifying List; WA=Western A; WB=Western B)

CLUB NEWS

Copy and photographs for the February-March issue of *S&G* should be sent to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH, tel 0223 247725, to arrive not later than December 3 and for the April-May issue to arrive not later than February 11.

GILLIAN BRYCE-SMITH
October 9

ANGLIA (RAF Wattisham)
Although a poor season some of our more junior pilots have done well – congratulations to Frank McKeegan, Steve Darke and Mat Jones (Bronze badges with Silver height and 5hrs for Mat); Andy Cragg (going solo) and Jim Coughlan (100km triangle).

We came 2nd in our summer Inter-Club League – no mean feat with only three solo machines. Our thanks to all involved in our longest day flying when £421.34 was raised for the Children's Haven appeal.
J.R.C.

BANNERDOWN (RAF Hullavington)
With better weather in August first solos were flown by Phil Dawson, Jim Dunne, Keith Young, Ian McLeod, Debbie Morris and Dave Walton. A batch of Silver legs were gained and Louise Goldsborough completed her Silver in the K-6E within 12 months of her first flight.

Brian Logan came 2nd in the Inter-Services Regionals' Class A and our K-21 was flown to 3rd place in Class B by Simon Hutchinson and Mel Dawson. Simon was also in the Open Class Nationals and Andy Smart came 4th in the Edgehill Regionals.

We are sorry to lose Roger Davies on posting to Germany but his parting gift of a bell for the bar, made from a Gulf shell-case, will frequently bring him to mind.
D.C.F.

BICESTER (RAFGSA Centre)
Despite the poor season there have been some good flights. Gary Bennett, a paraplegic (see the last issue, p231) whose first competition was the Inter-Services Regionals, and John Garret have flown 300kms. Congratulations also to Roy Thompson (500km); Jackie Morton (50km for her Silver badge); Giles Austin (Bronze legs and Silver height); Ray Middleton (Silver height); Carl

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An end of season thank you to all the club news reporters who have kept our tight deadlines and sent us good quality photographs. And a gentle dig at those of you who still don't print names on handwritten reports and those who try and grab more lines with all kinds of details. We would love to have unlimited space, but these reports have to be written as tightly as possible and there just isn't room for a list of new members; those converting to various aircraft; the names of pilots visiting from other clubs; engagements, marriages and births. Also, please either give full names or just initials, not a mixture. After all that, a happy Christmas and good soaring in 1992.

The Prime Minister, John Major, visited Deeside GC after his stay at Balmoral Castle with the Queen. He is photographed signing the visitors' book with Glen Douglas, secretary, and hopes to return for a flight.

Above: Tiffany Rolfe, daughter of Barry, the BGA administrator, is photographed by Ray Lambourne after going solo in the Portsmouth Naval GC's Blanik. Below: Jackie and Martin Clegg of the Clevelands GC with the K-18 he flew to Burn and she flew back.

Katie Frost with her instructor, Peter Rushbrook, after going solo at Lasham on her 16th birthday. Photo: G. Dale.

Peters, Daniel Gilliians and Darren Carruthers (going solo, Darren also gaining both Bronze legs); Yvonne Clark (UK Cross-country diploma, part 1) and Davey Rae and Andy Roberts on becoming instructors.

Our last soaring week saw an abundance of Silver heights, durations and 100km diplomas. We are now preparing for the annual expedition to Aboyne.
C.A.D.

BLACK MOUNTAINS (Talgarth)
The expeditions have been coming thick and fast with many visitors gaining Silver and Gold legs. The club two-seater fleet has been expanded to four.
D.U.

BLACKPOOL & FYLDE (Chipping Airfield)
The June cross-country week triggered a bumper collection of successes;- congratulations to Jim Ashcroft, Jerry Busby, Ian Lamont, Simon Rishton and Jonathan Roskell (going solo); Peter Coleman, Bob Ingham, Arthur Jones, John Reece, Dave Rukin and Dave Teasdel (Silver badges); John Dent (100km diploma) and Martin Moss and John Wood (300km).
V.H.

Below left: Keith Nurcombe and Max Scott of Coventry GC on Caister beach (Gt Yarmouth) in August in that T-21 after flying 180km at 50.2km/h. Below right: Geoff Holland of Glyndwr GC after going solo, photographed with Dave Bullock, CFI.

BOOKER (Wycombe Air Park)
Our Regionals in July helped lift spirits with a dramatic improvement in the weather, seven contest days and excellent tasks set by our CFI, Alex Evans, and his capable team. Congratulations to the joint entry winners Bernie Morris and Jeff Warren in the Club Class, with Chris Rollings and Chris Pullen winning the Open.

August was even better with courses fully booked, the month's launch target exceeded, five Silver badges completed and many legs flown including six 300kms and at least one 500km. Congratulations to Alister Kay on becoming the Open Class Nationals Champion (see report in this issue).

Our chairman, George Cox, has retired after two successful and demanding years – our thanks to him for a job well done. Paul Brice has taken over.

We have a three week wave expedition to Aboyne, membership remains stable and Dave Richardson is getting our club fleet of 20 gliders ready for 1992.
D.R.G.

BORDERS (Galewood)
October saw the first of our visitors seeking wave – Roy Gaunt and colleagues from Upavon. Our thanks to Roy for running an AEI course while in the area.
R.C.

BUCKMINSTER (Saltby)
The good August and September weather brought many badge and cross-country flights. Well done to Alan Poole, Andrew Snell, Geoff Cotton and R. Mitchell (going solo); Jackie Morecraft (resoloing); Mike Calvert (5hrs after many near misses); Jill Woodman and Roger Hamilton (Bronze badges); Bill Morecraft and Dave Tolley (Silver badges); Helen Cheetham (club milk run in a DG-600 at 101km/h); Russell Cheetham (winning the Northern Regionals' Open Class) and Mike Jordy (winning the Lasham Regionals' Open Class).

Our first outing to the Wold's Two-Seater Comp in the Puchacz was very successful with 3rd place overall. Our thanks to Mike Jordy who was P1 for most of the week.
M.E.

CAIRNGORM (Feshiebridge)
Although it was a poor soaring season we had a massive increase in cross-countries, mainly due

Mark Taylor photographed Derek Piggott flying the Chevvron microlight at Rattlesden GC.

to the PIK 30 syndicate's several 300km trips. On a recent flight Alan Mossman amazed himself flying from Loch Muick almost to Skye on a more or less continuous wave bar.

Brian Gillies has his Bronze badge and new solo pilots Alistair Robertson and Steve Strothers have bought a Skylark 3.

Alan Mossman has retired as CFI after eight years and we thank him for all his hard work. Nick Norman has taken over.
S.M.

CAMBRIDGE UNIVERSITY (Gransden Lodge)
In August 12 members went to Le Blanc with a Gold distance/Diamond goal (Colin Smithers); three Silver badges (Barrie Beesley, Janet Birch and Alan Head) and numerous outlandings. Our thanks to the ESC crew for their help and encouragement.

We now roster *ab-initio* training on one of our K-13s to escape the curse of the list. Friday is a regular flying day with winch and aerotow launches for those wishing to avoid weekend queues. A new Supacat winch is on order.

End of season congratulations to John Chapman and Martin Whitehead (500km); Robin Payne and Fraser Hayden (AEI ratings) and Peter Topping, Ray Jenkins, Mark Robinson, Andy Walford, Jem Davies, Mark Rennison, Mike Langton and Jim Tee (going solo).
J.L.B.

CLEVELANDS (RAF Dishforth)
Lots of congratulations this time. Glen Stewart gained both Bronze legs the day after soloing, going to Silver height (without a barograph) in the process – clearly takes after his dad Dave. Cedric Selby has another Bronze leg and Benny Benedict has both and a Silver height. Martin and Jackie Clegg took the K-18 to and from Burn to gain Silver distances together, Jackie later completing her Silver with 5hrs. Andy Causer also has Silver distance and Phil Thorpe and Robin Sinton Gold heights.

On a sadder note, Dennis Renton has lost his battle with cancer (see below).
J.P.

Obituary – Dennis Renton
Since joining the club in spring 1989 Dennis had become one of our stalwarts. He led a full and busy life, working for the ambulance service and the ATC, but whenever he was able he would be at the club, working with equal enthusiasm on the airfield or in the hangar. He loved flying, and with his wife Pat and family took a lively part in our social events.

He flew for the last time six weeks before he died, and those present will not forget the occasion; however he will remain in our minds as he was in the happy days before, tirelessly driving the tractor up and down, always ready with a cheerful word of wit or wisdom.

Our sympathy goes out to Pat and the family.
Jill Povall

CORNISH (Perranporth)
Our airfield has been sold – we had discussed the possibility of buying it – and we are now finalising operating procedures with the new owners.

British Telecom sponsored a flying evening for the disabled which was very successful. We bought a modified K-7/K-13 to continue the courses after our K-13's tail unit was damaged by a gorse bush. The North Hill expedition wsa spoilt by bad weather.

Tony Turner celebrated his 80th birthday on September 6 – a presentation was made on the airfield as he was duty instructor at the time!

Congratulations to Berni Hatton on his 5hrs and Cliff Clark, a 1944 Halifax pilot, on going solo.
G.A.H.

COVENTRY (Husbands Bosworth)
The season ended with some long flights – Jonathan Walker (Kestrel) flew his first 500km and Max Scott and Keith Nurcombe (T-21) made an epic bid for our seaside trophy going to Yarmouth and landing on the beach while Richard Blackmore (LS-7) was attempting a Channel crossing but had to turn back and land at Dover. The pink panther was rescued from Swindon by Alan Foxton and Giselle (Puchacz).

Our thanks to Claude Woodhouse and his team for running the successful Women's European Championships. (See report in this issue.)

We have based two gliders at Dishforth in the hope of finding winter wave and have an expedition to Feshiebridge.

By renting the undershoot field we have considerably increased the airfield length and given us an excellent winch run. Congratulations to Peter Burgoyne on becoming DCFI.
T.W.

CRANWELL (RAFGSA)
The club is finally on the up. We have our hangar back and the contractors are causing far less trouble. A new Discus joins our club fleet of a K-21, Astir, Janus C, Ventus, a motor glider and Chipmunk. Mick Wood is now CFI and we thank Mick Lee for doing the job for so many years.

Neville Weir won his first competition – the Inter Services' B Class. Congratulations also to Steve Harper (UK Cross-country diploma); Bobby Stone (part 1); Brian Hutchinson (resoloing in July and then gaining Bronze and Silver badges, plus most of his SLMG PPL) and Ian Mountain (Silver badge in one flight).

Our thanks to Mick Smith for building the new winch as well as looking after all our MT.
I.M.

CULDROSE (RNAS Helston)
All 13 on the August course went solo. The mobile reverse pulley has run successfully; the Pirat is almost complete and the Puchacz trailer was completed in time for the expedition to Aboyne in September when Arnie Lamb and Graham Best gained Diamond heights and Kerry Egan his Gold height. Our thanks to the organiser, George Kosak, CFI.

Congratulations to Chris Makeman on going solo.

All past and present members are invited to our 25th anniversary dinner-dance on December 7 (see advertisement in the last issue, p275).
R.A.

DARTMOOR (Brentor)
We have exploited some good thermals and wave on the west side of Dartmoor. Gwillim Griffiths, Steve Welsh, John Clark and Fiona Smart have gone solo. Our thanks to the instructors, especially Alan Holland who has run three courses. John Shaw from Perranporth has enabled us to restart mid week flying.

We had an enjoyable day entertaining a party of handicapped children. Chris Rollings visited and left us a SZD 51.1 Junior which has been put to good use.
F.G.M.

DEESIDE (Aboyne Airfield)
We were visited by the Prime Minister, John Major, on September 10 after his stay at Balmoral Castle with the Queen, together with the Scottish Secretary, Ian Lang. After expressing an interest in trying gliding, the Prime Minister left by Wessex helicopter and has since been invited to fly in our Puchacz

We have built an all weather tarmac runway "27 left" to separate landing and launching traffic and the Pawnee's engine has been replaced after some 2600hrs.

In spite of the dull weather our launch figures are only some 50 down on 1989/90's record year with eight less flying days than last year.

Congratulations to Ron Browne (going solo) and John Douglas (Bronze badge and, with Bill Neill, 5hrs).

Our reduced membership charges and free air time for the under 18s has produced new junior members. Our wave season visitors are claiming Diamond heights daily and we are hoping to extend our clubhouse.

We have equipped all club gliders with survival packs including flares, survival bags, first aid kits and torches.
G.D.

DERBY & LANCS (Camphill)
After much planning and hard work, we have bought the site. Our celebrations coincided with the visit of our friends from Troyes and Darmstadt.

We had a very successful open weekend and a task week. Our thanks to Chris Rollings for the BGA cross-country course which was entertaining and gave useful experience. The August club week saw goals achieved and was great fun.

Congratulations to Steve Ell (Gold height in the club K-13); Peter Cowling (re-soloing); Tony Jeffs, Mike West, Maurice Bent and Ron Farnell (going solo); Ian Allan (Bronze badge); John Hogarth and Don McKenzie (Silver distance) and Darryl Athey and Steve Johnson on becoming instructors.

Winter flying is extended to five days a week and visiting pilots are most welcome. Neighbours' Night to thank the local community for their help and co-operation will be on January 18.
M.I.R.

DEVON & SOMERSET (North Hill)
After years of hard and first class work maintaining the club fleet, technical officer Dave Reilly has retired and we thank him for all his help and expertise. Ian Beckett has taken over.

Congratulations to Christine Langford, I. Anderson and G. Fudge (going solo); K.Lopez and P.Huggins (Bronze legs) and C.Oldfield and G.Bonney (Bronze badges).

There were some good flights during the August task week in spite of mediocre conditions. D.Le Roux won with R.Grayling 2nd and I.Snelling/J.Jowett 3rd, all flying K-6s.

P.Harding, J. Jowett, D.Le Roux, G. Bonney,

T.Barden and R.Hawley flew Silver distances with 5hrs by G.Bonney, T.Barden, M.Beecham, C.Oldfield and K.Daniel and Silver height by C. Oldfield. R.Ward completed his Gold badge with a Diamond goal from Dunstable.

Work on the trailer park by the hangar is progressing.
I.D.K.

DORSET (Old Sarum)
Recent achievements include Rob French going solo; a Bronze leg for James Pilborough; Silver legs for Liz Bertoya, Tim Cushion, John Holland and Jim Lowther and Silver badges for Tony Davies, Graham King and Ian Gumbril.

We entertained the Southdown safari and sent expeditions to Le Blanc, Talgarth and the Mynd task week where Dave Owen won a day. We have sold our K-7; probably have the best bowser in the world, thanks to Stuart Hughes, and even have a roof on the clubhouse.

If there are any landowners with suitable fields, potential members or instructors, come and talk to us!
E.B.

DUKERIES (Gamston Airfield)

Keith Hebden of Dukeries GC giving George Perry his first flight in a glider a few days before his 83rd birthday.

Our lease has been renegotiated with a secure tenure for another six years, albeit at an increased rent. Our gratitude is due to the negotiating skills and hard bargaining of Tim Bowles and Peter Turner.

An interest free loan from the Sports Council made it possible for us to buy a K-8. Congratulations to Keith Gregory on his Silver badge, achieving the height and distance in one flight, and to Peter Uden on both Bronze legs.
J.C.P.

EAST SUSSEX (Ringmer)
The club K-8 is back after a rebuild; thank you for some 250hrs' work to Colin Jacques and Jack Grayer. Jack is taking over as ground engineer with Colin as technical officer.

The club K-6 has been sold to a new club syndicate with another new group buying a Club Libelle.

There have been enjoyable expeditions to Husbands Bosworth and Talgarth.
L.M.

ENSTONE (Enstone Airfield)
Among many notable achievements this season was the very successful staging of the Open Class Nationals – a great team effort which brought many kind comments. (See the report in this issue.)

Congratulations to Rachel Carter, Lorna Bevan, Neil Edwards and Paul Murphy on going solo, Paul just after his 16th birthday (with Rachel he now has a Bronze leg) and Larry Griffiths, Steve Veness, Simon Woodley and Roger Cross on both Bronze legs, Roger completing his Bronze badge.

Inspired by Steve Veness (see the August issue, p186), we are seeking ways to introduce new facilities for disabled pilots and a number of bodies have shown an interest in helping.

We are hoping to extend the grass strip for the proposed winch operation and another Blanik is joining the club fleet.
M.S.

ESSEX & SUFFOLK (Wormingford)
Our first year at Wormingford was celebrated with chairman, Paul Rice (Libelle), completing the first 500km by a member from a home site.

Congratulations also to Steve Harris, Stuart Harvey, Brian Maclean (going solo); John Friend, Claire Harris and Paul Mansbridge (Bronze badges); Dick Brooker, Johnny Gilbert and Jerry Hain (Silver badges); John Bedford, Kevin Bye, Phil Duffin, Mike Friend, John Massey and Chris Robinson (AEI ratings) and Paul Robinson (assistant instructor).

Paul Rice won the Sport Class at the Eastern Regionals with Phil Duffin 3rd and Chris Robinson 4th.

We are grateful for all the help given by the BGA, members and friends with the public inquiry this December into the use of our excellent site which we hope we will be allowed to develop.
C.J.R.

FENLAND (RAFGSA)
August was excellent with many achievements, the most notable being Phil Jones' 521km Diamond distance – the first to start and finish from our site. Paul Maclean and Mick Owen flew 300kms for Gold distance/Diamond goal.

A September *ab-initio* course at Swanton Morley produced five out of six solo pilots. Our best course ever and our thanks to CFI Al Raffan, Rhod Evans and Al Thompson for their hard work.

Paul Maclean, Martin Pike, Kev Sharp and Mick Owen are now instructors.

A dark cloud hangs over us. Our clubhouse electrics have been declared dangerous and repairs seem to be a long drawn out affair. With winter approaching the committee is considering suspending flying as equipment becomes unserviceable.
M.A.E.

FOUR COUNTIES (RAF Syerston)
We had a good summer with some successes. Congratulations to Allison Cowley, Colin Skirving, Phil Green and Lee Gorley (going solo, Phil and Lee flying Silver heights soon after); Mark Davies and Tim Ward (50kms to complete Silver badges) and Eddie Wright and Chris Milton (2nd and 3rd respectively in the Inter-Services Regionals).

The task week was marred by poor weather, though we hope visiting pilots enjoyed their stay. We now have a new Ventus T.
S.D.

GLYNDWR (Denbigh)
Congratulations to Stuart Pearson, Brian Bonniface, Bill Waite, Jim Lynchman, Geoff Holland and Dave Townsend (going solo) and John Dean (5hrs and Gold height).

We have had several good wave days with many flights over 10 000ft and hope visiting clubs will find similar conditions.

Our first open day in August was very popular and resulted in some new members. Our thanks to Laura and Helen who organised several barbecues. Our Christmas dinner is on December 20.
G.H.

HEREFORDSHIRE (Shobdon Airfield)
Surprisingly for autumn we have had good thermals with long flights. Our Tibenham visitors had mixed weather but enjoyed their stay.

It is this time of year the real advantages of Shobdon are manifest, being a good wave site at the edge of an extensive flat area allowing a safe let down through cloud with good country for outlanding.
R.P.

HIGHLAND (Easterton)
We have moved. Our new site is at Easterton, four miles due south of Elgin and is on the latest half mil map. We have a winch only operation at weekends and public holidays.

Being eight miles from the coast we feel like an inland site and hope to be better placed to contact wave more frequently. We have no facilities yet and are living out of a small caravan and trailers, so are becoming expert at rigging and de-rigging Bocians etc. Visitors are welcome, but don't land if you are power.

Tony Kane has joined our instructors and Denis Shepherd has renewed his rating after a long time abroad. An expedition to Bidford resulted in lots of Bronze badges and a 5hrs. Thank you Bidford. Robert Tait took our Astir to Bidford to represent Scotland in the Junior Nationals and did well, despite having to leave early, getting his Gold distance and Diamond goal.

We had a very successful week in July when 29 boys and one girl plus helpers from the Free Church Youth Group experienced the joys of gliding.
A.G.V.

HUMBER (RAF Scampton)
Congratulations to Glyn Green, Paul Hughes, Andy Smith, Sean Hodges (going solo); Tom Lamb, Keith Whittaker, Nick Dean (Bronze badges, Nick also getting Silver height); Mike Tobin (distance and 5hrs for a Silver badge) and Dave Ruttle (300km for a Gold badge and Diamond goal). Commiserations to Joe Hutton on his 4hrs 50min.

We have a Beaver winch from Bicester which ➡

Eric Smith, supervised by his wife Penny, cuts his cake on handing over as CFI of the Wyvern GC.

relieves our ageing winches for refurbishment. The K-7 has been completely overhauled, thanks to Tony Smith and helpers. Dave Cockburn, CFI, is organising an expedition to Aosta in the spring.
D.M.R.

KENT (Challoock)
Our task week in August had one of the biggest entries with 33 pilots sharing 22 gliders and visitors from Booker and Surrey Hill GCs. J.Hodge (ASW-19) won Class A and R.Gardner Class B.

J.Northern, R.Bell and D.Cushway have flown Silver distances with Silver heights by S. Outeridge and M.Harris. Congratulations also to R.Burden on becoming an instructor and to N.Leaton on his AEI rating.
D.J.C.

MARCHINGTON (Marchington Airfield)
We have had some notable flights and a large growth in membership. The winch has new cable

Ted Crooks prepares to fly the Trent Valley GC's K-13 in the Wolds GC's Two-Seater Comp.

Officials and pilots outside the Kent GC's new flight briefing room at the end of their task week.

for the winter and we again have a winter ground school.

Congratulations to Andrew Walsh (going solo); Nigel Render (Bronze badge) and Grahame Taylor and Jeff Lowe (Silver distance).
A.R.

MENDIP (Halesland)
Congratulations to Barry Goodyer (Gold distance); Steve Collins amd George Whitcombe-Smith (Bronze badges) and Paul Croote (the first Diamond distance from Halesland and 3rd in the Junior Nationals).

In September our first open day was a great success with more than 80 trial lessons, several visitors joining on the day. Many thanks to our members for their help. We had a busy season of air experience evenings, the proceeds going to finance a second winch and retieve tractor.

For the first time we will be operating seven days a week from June to August and intend running holiday courses.
T.A.D.H.

MIDLAND (Lond Mynd)
Our annual task week in August, with over 20 gliders and crews competing, was enjoyable with good weather at either end. Almost all days were won by different competitors, the overall winners being Julian Flack and Alistair Self. Our thanks to Vic Carr for thoughtful task setting.

Recent achievements are:- Paul Shuttleworth (Gold distance); Jan Outhwaite, Steve Foster, Guy Hartland, Ann Edwards and John Hall (Silver distance); Joe Singleton, Mark Richardson, R. Coghlan, T.Coles, Steven Ashton, Steve Male, Ted Griffiths, R.George and Phil Newman (going solo).
A.R.E.

NENE Valley (RAF Upwood)
Jim Rignall has Silver distance and DCFI John Young and Gary Johnson flew 50km in 48min in a K-7.

Our annual dinner is on December 14.
D.H.

NEWARK & NOTTS (Winthorpe)
Towards the end of a very successful season some members had a great time at the Two-Seater Comp at Pocklington with our Bergfalke, and our second flying week was most enjoyable.

Congratulations to Jackie Noon and Andrew Hatton (going solo); Andy Summerfield (Bronze badge); Richard Keyse (Silver height); Andy Roe, Barry Patterson, Mike Evans, Bill Griffiths, Robert Moorhouse and Dan Goldsworthy (Silver distance, Dan getting a duration and flying a 100km, as did John Maddison) and Roger Starling and Dave Marshall (Gold distance and Diamond goal).
M.A.

NORFOLK (Tibenham Airfield)
Our harvest task week was organised by Peter Ryland. The Glass Class was won by John Ayers (DG-400) and the K-6, shared by Roy Woodhouse and Bonnie Wade, was Ist in the Wood Class.

Congratulations to Brian Kennard, Peter Bryant and Ian Everett (going solo); Terry Jeffery, Ray Rawlins, John Kinley (Silver badges) and Mike Watson, Derek Bloom and John Ayers (Gold distance/Diamond goal).

Members on expeditions to Sutton Bank and Shobdon were unlucky with the weather – East Anglia stayed soarable. We are about to collect our new Supacat winch and have an excellent new tractor to aid our winch operation.

Our thanks to Sonja for organising the ladies' bedroom (very posh for visitors), the garden and

the entertaining quiz night (aided by Peter Ryland and Neale Banks).
R.J.H.

OXFORD (Weston on the Green)
We had a crop of summer achievements – Chris Lee and Nigel Frith have gone solo; Peter Awcock has a Bronze badge; Andy Barnes his 5hrs; Howard Stone Silver distance despite having to return to switch on his barograph and Andy Butterfield and Neil Swinton have Silver badges.

Shortly after completing his Bronze badge, Martin Cooper flew to Lasham for Silver distance and collected his height and duration legs on the way.

Caroline Oakes (Std Cirrus) flew 473km; Alex Jenkins (DG-100) 422km; Chris Emson (K-6E) three 300kms and Graham Barrett a 30km O/R in the T-21 at a handicapped speed of 76km/h!

Congratulations to them all and to our Inter-Club League team who came 3rd in the final at Dunstable.
F.B.

PETERBOROUGH & SPALDING (Crowland Airfield)
We have celebrated our 21st anniversary and enjoyed a very good season. A summer barbecue coincided with our flying fortnight – congratulations to all those who completed various tasks.

We bought a new Puchacz earlier in the year and hope to have another soon. Our Bocian E is for sale.
D.P.

RATTLESDEN (Rattlesden Airfield)
Derek Piggott visited us in August in the Chevvron microlight he was testing and gave some lucky members flights.

Congratulations to Malcolm Whitehead, Jonathan Hayward and Clive Boxhall on going solo and to Simon Goodchild on his Silver distance. Our former CFI, Roger Davis, missed his 500 by 20km which wasn't a bad effort after two years away from gliding.
M.E.

SCOTTISH GLIDING UNION (Portmoak)
Our visitor season is about over but we launch seven days a week, so sample our winter wave – we now have oxygen on site.

We welcome Mike and Mieke Heppenstall who have taken over our catering and clubhouse facilities. We have a BGA Regional meeting on January 26.

Congratulations to our new AEIs. Joe Fisher, Mary Jones, Peter Hackett and Alex McLeman and to Jaki Wilson and Douglas MacPherson on going solo.
M.J.R.

SOUTHDOWN (Parham Airfield)
Our annual barn dance in August was the best ever with a welcome contribution to club funds adversely affected by the weather. Our special thanks to John Hawkins and Carol Groom. We are beginning to get the best from our new Tost winch.

Congratulations to Martin Roberts (completing all three Diamonds with his height at Aboyne); Ray Jones and Stuart Ross (Silver badges); Ian Hardy (Bronze badge); Chris Hancock (100km diploma) and Alex Aftandilian, Mike Bennett, Brian Clarke, Douglas Graham, Rory Payne and Douglas Tribe (going solo).
C.M.R.

SOUTH WALES (Usk)
August Bank Holiday weekend was one of the most successful for a long time with five 300kms. Dave Jeffries and Ian Evans gaining Gold distance/Diamond goals. Stan Armstrong and Maureen Counsell flew Silver distances, Maureen getting her 5hrs, and Mike Dunlop (L-Spatz) landed beyond Northampton for one of the longest retrieves.

Congratulations to Ian Evans on winning a day at the Junior Nationals and Harold Armitage on Silver distance. We have had some good wave recently with flights of over 16 000ft.

Our thanks to Liz Phillips for arranging the courses.
N.S.J.

STRUBBY (Strubby Airfield)
Our CFI Phil Becker has retired and we thank him for all his efforts over the years. Roy Partington has taken over temporarily.

Congratulations to Steve Crozier on his Silver badge with 5hrs and John Kitchen on his assistant instructor rating.
R.G.S.

SURREY & HANTS (Lasham Airfield)
Congratulations to Mike Miller-Smith (2nd in the Junior Nationals); David Masson (5th on one day in his first Junior Nationals); Ian Lewis and Nick Alderton (Silver distances); Peter Hamblin (Diamond distance in the club's new Ventus C) and Annabel Lucas (500km). We had three further flights over 400km and six over 300km.

It is planned to restructure the glass fleet, selling the three oldest gliders and, if finances permit, buying two new ones.
P.R.H.

SURREY HILLS (Kenley)
It has been a reasonable season with launches and hours 50% up on last year. Congratulations to James Lancaster, Simon Keats, Gareth Edwards, Denis Henley and Rob "the Doc" (going solo); Peter Wann (Bronze legs); the many who passed their Bronze papers and Steve Dawes who completed his Silver badge with a 5hrs flown under a 2000ft TMA limit.

Trial instruction lassons continue apace with our new twin drum winch but we are still short of instructors – if anyone can help please contact the CFI, Peter Poole, on 0883 743196.

Our thanks to Chris Ebbs for his continued efforts as course/full time instructor. Visiting pilots are welcome any weekday for training or solo flying.
S.E.A.

TRENT VALLEY (Kirton in Lindsey)
Norbert Stumm and Mike Morton ran static displays at various county events, attracting new members.

Congratulations to Matthew Tierney on becoming an instructor; Peter Rocks (AEI rating) and Andrew Cullum (Gold badge) and Peter Walker and Rex Flint (Silver distances). We entered the Northern Regionals and Wolds' Two-Seater Competition and had an expedition to Aboyne where Gold heights were flown by several including Peter Turner and Bob Baines.

Our thanks to Richard Jones for his stint as tug master – Steve Slater has now taken over.
M.P.G.

TWO RIVERS (RAF Laarbruch)
We had a good summer with many pilots competing in various competitions and 22 000 cross-country kilometres flown by the end of August.

Congratulations to Mick Ferguson (5th in the Dutch Junior Nationals); Mike Foreman (4th in the Inter-Services' A Class); Ski (6th in the B Class and a full Cat rating); John Hill (assistant Cat); Richard Lovegrove and Kev Morley (AEI rating); Mick Ferguson, Richard Lovegrove and Ski (Gold distance and Diamond goal); Roddy MacRae and Alastair West (Silver distance, Alastair to complete his Silver) and Colin Sullivan (Bronze badge). Sadly Chris Gilbert missed Diamond distance by 20km.

During August our CFI, Ian Smith, and the OIC, Jon Hill, flew the Motor Falke to Bicester and back, complete with life-jackets, taking 4hrs each way.
L.F.

WELLAND (Lyveden)
Our recent task week was very successful with many good flights and some decent weather.

Congratulations on flying 300kms to Andy Johnston (to complete his Gold badge) and Paul Warburton, who also becomes an assistant instructor; Ken Payne (AEI rating); Bob Rylands (Silver badge) and Bob Jackson (Silver distance).
R.H.S.

WOLDS (Pocklington)
After the season started with poor weather we later had many badge flights and cross-countries. Many thanks to Alec Petrie for the brilliant way he has prepared and levelled our additional land.

The Two-Seater Comp was well attended and won by an ASH-25. We have an Easter expedition to Portmoak organised by Bob Fox.
N.R.A.

WYVERN (RAF Upavon)
Eric Smith's successes in the Nationals (2nd in the 15 Metre and 9th in the Standard Class) mark the end of his term as CFI. At a party we presented him with a suitable adorned cake. Many thanks and good luck Eric and welcome to CFI John Hawkins.

We had a spate of Bronze and Silver legs late in an otherwise poor season. As winter sets in members head for wave at Aboyne and Galewood.
K.A.M.

Please send all contributions to the Cambridge address, not the BGA office.

SOMETHING SPECIAL

Doug served his apprenticeship in a Std Cirrus covering 17 000km in the eight years from Bronze badge. He now flies an ASW-17 and builds flight simulators in his spare time.

Photo: Geoff Brown.

The sky was as overcast as our spirits. There would be no soaring today. John and I sipped our expensive coffee and the taste of under roasted acorns coated the teeth like Didcot smoke and brought back sweet memories.

"I don't know but is that blue sky in the distance?" said John. Just as he spoke Mary burst in.

"Gee, the sun's shining from Oxford onward " she exclaimed exuberantly. Stepping carefully to avoid the broken glass we left with the intent to fly. John launched first and I followed to find him circling but not climbing under a darker patch of grey. In the distance the sky was indeed blue, but more importantly some scruffy cumulus were beginning to form. I gritted my teeth and set out for the nearest. As I approached, it became apparent that I would have the chance of one turn to find lift before having to glide back to the unwelcoming plains of Chalgrove.

Almost under the cloud the vario peeped into life showing first turbulence, then definite lift, and then the bubble from the core of a weak thermal. I turned hard and centred to find that it was ½ kt all the way round. The Std Cirrus is a lovely glider to climb. She may require all your attention as she bobs and curtsies in a turn, but once you have got it right the reward is inspiring.

Played its normal game of "Hide and Seek" in the cloud shadows

John came to join me and together we climbed to the giddy height of almost 2000ft with better conditions ahead. Moreton in the Marsh – Towcester was our intention and we went for it. Conditions improved rapidly and we turned Moreton after it had played its normal game of "Hide and Seek" in the cloud shadows.

The day seemed to age incredibly quickly with every climb better and further apart. At Towcester racecourse we were sucked upward by a blue/black cloud to 5500ft. In the distance we heard the only other glider that appeared to be airborne call final glide. He was congratulated by his crew. As John and I were crewing for each other we also called final glide and congratulated ourselves. We then set sail southward to pierce the grey wall that hid the airfield.

After landing it was as though nothing had changed. The K-13 was still on the course roundabout, there was not even a sailplane being fettled. However Sally was in the bar and we regaled her with our afternoon's experiences. She took it very well considering that she can fly rings around both of us, orbit the moon, and still finish ahead.

We quaffed two warm beers and went home replete. For two "stumblies" to win the day at Booker made it certainly a flight to be remembered.

If you have had a special flight and would like to tell us about it in not more than 750 words, please send it with a head and shoulders photograph and a few details about your gliding experience.

UNLOVED WOOD

Vintage aircraft and glider owners, who restore and rebuild with loving care, will be sad to know that spar lengths of flawless spruce, which are now even scarcer than a clean bathing beach, were used by British Aerospace for skirting boards and door frames in the new executive and VIP toilets!

From *Popular Flying*

A LOOK AT THE BIRDS

Inspires the following theory about wind shear and the tube nose

A windmill takes energy from the wind and turns it into mechanical power. A sailing boat uses the wind to give it movement. A kite held on a string flies because of lift gained from the wind. Yet a glider cannot use the power of the wind unless it is first diverted upwards by a hill. Gliders, like soaring birds, rely to a large extent on thermals to give them the height they need to fly cross-country. Yet there might be a way to use the power of the wind to fly.

The wandering albatross is said to use a method known as dynamic soaring. The method, as described by William Davis (**Flight** – published by Rupert Hart-Davis) depends upon a wind gradient. As the wind speed at sea level is lower than the wind speed higher up, the bird can use the kinetic energy in the wind to add to the potential energy of its height.

"...its airspeed would suddenly become 60kt due to inertia gained from the wind"

For example, suppose that the bird, gliding at an airspeed of 20kt, is flying downwind in air moving at 40kt its total speed will be 60kt. Should it now enter a lull where the air was not moving its airspeed would suddenly become 60kt due to inertia gained from the wind. It could then use the surplus speed to gain height as it reduced its airspeed to 20kt. See Fig 1.

THEORETICAL SEQUENCE OF EVENTS

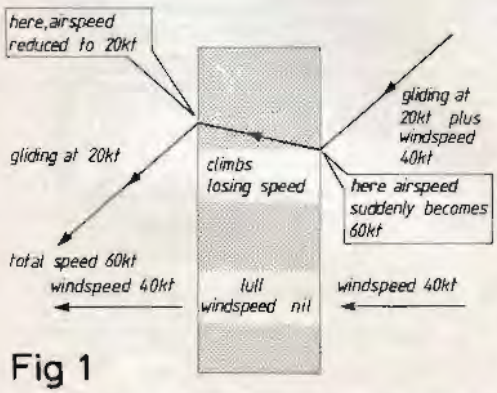
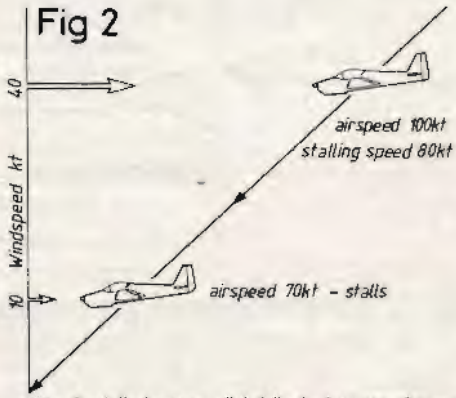


Fig 1

The same situation arises when the bird glides down from altitude to sea level. The wind speed at height may be 40kt and only 10kt just above the sea surface. The difficulty is in determining the speed-to-fly – the airspeed – to take advantage of this difference in wind speed. The albatross can do this.

In the same way the pilot of an aircraft flying into wind and approaching the ground to land may find that the wind gradient, or wind shear, is such that although he begins his approach with adequate airspeed, as he reaches the lower wind speed nearer the ground his airspeed will rapidly fall and the aircraft will stall. A number of aircraft accidents have happened in this way. In other words the pilot must use his judgment to increase his airspeed as he approaches to land through a wind gradient to maintain his airspaed above stalling speed until he is ready to land. See Fig 2.

Fig 2



Aircraft stalls because pilot fails to increase airspeed to compensate for fall in windspeed, and inertia of aircraft is insufficient to maintain airspeed without help from pilot

The soaring eagle has its own system for detecting rising air to enable it to soar. A glider pilot uses a variometer. This is an instrument designed like a barometer, or an altimeter, to show differences in pressure, which in the case of the altimeter are shown as changes of height. But the variometer has a built-in leak so that it only records changes of pressure *as they are happening*. When the pressure is steady, whether it is high pressure or low pressure, the variometer shows no change. By watching the variometer the glider pilot can discover whether he is in air which is rising or falling and take advantage of it.

I believe that the tube nose of the albatross may be used to detect wind shear in much the same way. The nostrils of the albatross have openings directed forwards along the top of the beak. Air entering the tube nose as it flies measures the pressure, and also the change of pressure and the rate of change of pressure which not only tells the albatross how fast it is flying but whether there is a wind gradient, and whether it is flying into air moving at a higher or lower speed. This has nothing to do with its speed over the surface of the sea, or, if you like, its "groundspeed". It is simply measuring the change of pressure brought about by flying from air travelling at one speed into air travelling at a different speed, and is due to the bird's brain automatically interpreting the rate of change of pressure. This enables it to use the wind as a source of energy.

I think that it should be possible to make an instrument, let's call it a shearometer, to do the same for an aircraft pilot. If a variometer was connected to the pitot tube it would show small changes of pressure – airspeed – as they occurred. The rate of change of airspeed shown in this way would tell the pilot two important things.

(1) When flying into wind, approaching to land, it would tell the pilot if there was a wind shear which might prove dangerous, and by adjusting his speed until the instrument read zero he would be saved from an accidental stall.

(2) A glider pilot flying over the sea could use the kinetic energy of the wind to remain in the air in the same way as an albatross, although it should be noted that the albatross may sometimes use its muscles to augment what energy it derives from the wind. A glider pilot would be wise to use a glider fitted with a motor for practice.

Whether it would ever be possible to use the kinetic energy of the wind to stay aloft as long as the wind was blowing I do not know, but if it could be done at all, and the albatross does it, why not? A glider with the same wing loading as an albatross should not be too difficult to make.

REGIONALS' RESULTS

EASTERN REGIONALS – Tibenham Airfield, May 18-26

Open Class

Pos	Pilot	Glider	Day 1.20.5 228km ▲	Day 2.21.5 206km ▲	Day 3.22.5 100km ▲	Day 4.23.5 176km ▲	Total Points
1	Walsh, A.	DG-400	DNF	889	707	1000	2596
2	Jones, P.	Ventus	178	643	661	972	2454
3	Nash, S.	Ventus	222	352	610*	826	2010
4	Warminger, A.	Ventus	DNF	480	253*	706	1419
5	Ryland, P.	PIK 20	DNF	DNF	553	752	1305
6	Ashcroft, J.	LS-7	21	406	18	775*	1220
7	Aknai, D.	Mini Nimbus	DNF	482	618*	75	1175
8	Kirschner, M	Vega	30	250	566	80	1159
9	Robinson, P.	Mosquito	DNF	122	333	390	845
10	Merren, C.	DG-400	DNF	37	355	369	761
11	Bland, D.	Jantar 2a	DNF	246	21	237	504
12	Benton, D.	Nimbus 2a	DNF	0	4	197	201

Sport Class

Pos	Pilot	Glider	Day 1.20.5 131km ▲	Day 2.21.5 155km ▲	Day 3.22.5 108km ▲	Day 4.23.5 118km ▲	Total Points
1	Rice, P.	Std Libelle	DNF	447*	730	1000	2177
2	May, J	LS-4	23	152	468	872	1515
3	Duffin, P.	Club Libelle	DNF	73	681	693*	1447
4	Robinson, C.	LS-4	DNF	0	344	947	1291
5	McKirdy, G. / Wright, J.	Pegasus	75	281	13	889	1258
6	Kelly, N.	ASW-15a	DNF	172	624	351*	1147
7	Sleigh Ives, K.	K-23	DNF	0	319*	718	1037
8	Massey, J.	Std Cirrus	DNF	40	355	562*	957
9	Wall, N.	Std Cirrus	13	296	31	606*	946
10	Veysey, L.	ASW-15a	DNF	56	0	862	918
11	Taylor, M.	Astir	17	70	159	663	909
12	Abrahams, R.	K-18	DNF	DNF	0	616*	616
13	Burry, J	DG-300	DNF	0	100	588	688
14	Hatwell, R.	Std Libelle	DNF	164	374	75	613
15	Meagher, M.	Pegasus	DNF	101	440	65	606
16	Wright, M.	Skylark 3	0	19	448*	73	540
17	Barter, S.	Std Jantar 2	0	DNF	0	504	504

ROLEX WESTERN REGIONALS – Nympsfield – June 1–9

Class A

Pos	Pilot	Glider	Day 1.1.6 136km ▲	Day 2.3.6 204.6km ▲	Day 3.4.6 182.8km ▲	Day 4.6.6 132.6km ▲	Total Points
1	Parker, S. J. C.	LS-4	879	698	703	427	2707
2	Coward, P. J.	LS-4	768	442	950*	472	2632
3	Strathern, M.	LS-7	606	586	1000	397	2589
4	Payne, R	Discus B	815	425	862	417	2519
5	Crabb, S. J.	LS-4a	632	543	789	289*	2253
6	Galloway, J. P.	LS-7	648	161	906	428	2143
7	Kingerlee, J. C.	LS-7	798	55	945	344	2142
8	Wall, N.	Discus	595	235	756	510	2096
9	Darby, M.	LS-4	667	147	841	437	2092
10	Beringer, J.	K-21	521	521	807	184	2033
11	Fritche, F.	Cirrus 17.7	570	442	770	201*	1983
12	Greenhill, D.	LS-4	663	182	651*	422	1918
13	Westwood, D.	LS-4a	319	543	871	152*	1885
14	Bromwich, R.	LS-4a	558	175	921	157*	1811
15	Galotti, D. R.	Discus B	311	111*	854*	411	1687
16	Furley, R.	Pegasus	458	288	637	160	1543
17	Lemin, R.	Discus	693	520	0*	193	1406
18	Perry, R.	PIK 20B	466	460	0*	411	1338
19	Bramwell, D.	Cirrus 17.7	475	114	706	37	1332
20	Woollard, S.	K-6E	–	182		93	
	Woollard, M.		321	–	672	–	1268
21	Cunningham, A. / Cunningham, R.	Std Libelle	162*	513	528	0	1203
22	Starling, G.	ASW-19	400	118	647	0	1165
23	MacFadyen, G.	Sport Vega	451	112	467	DNF	1030
24	Lane, I.	ASW-19	360	84	489*	0	933
25	Johns, H.	K-21	275	92	444*	182	993

Class B

Pos	Pilot	Glider	Day 1.1.6 136km ▲	Day 2.3.6 263.1km ▲	Day 3.4.6 182.8km ▲	Day 4.6.6 132.6km ▲	Total Points
1	Johnston, E.	Kestrel 19	752	985	882	411	3030
2	Dawson, M.	Ventus	780	926	742	347	2795
3	Murphy, T. J.	ASW-20	838	997	754	434	2763
4	Nash, J.	Ventus	620*	–	718	–	
	Nash, S.		–	1000	–	422	2758
5	Metcalfe, J.	Ventus	833	897	764	371	2865
6	Cumner, G.	ASW-20	380	976	646	318*	2320
7	Croote, P.	Kestrel 19	533	887	587	179	2186
8	Parker, A.	Mosquito B	379	758*	607	349	2093
9	Bishop, G.	ASW-20	571*	678	698	134	2082
10	Burton, A.	LS-8	383	760	666*	114*	1923
11	Wise, B.	ASW-20	490	647	610	161	1908
12	Jones, J.	Vega	504*	704	540*	121	1869
13	Smith, I.	Ventus	475	680	641	0	1796
14	Szabo-Toth, G.	LS-3	545	440*	697	0	1682
15	Pope, M.	Vega	275	575*	428	191	1469
16	Gardner, T.	Nimbus 24.5m	485	502	0*	438	1425
17	Hey, I.	Mini Nimbus	246	942	180	0	1368
18	Ferguson, S.	Mosquito	535	641	0*	130	1306
19	Clarke, C.	Vega	377*	232	560	119	1288
20	Nicholls, G.	LS-3	0	171	DNF	59	230

LASHAM REGIONALS – July 13–21

Class A

Pos	Pilot	Glider	Day 1.14.7 141.5km 4 legs	Day 2.16.7 121.7km ▲	Day 3.17.7 131.2km ▲	Day 4.19.7 101.3km O/R	Day 5.20.7 221.9km O/R	Day 6.21.7 178.7km 4 legs	Total Points
1	Jordy, M.	ASW-20L	944	412	505	174	1000	1000	4035
2	Grant, R. M.	Kestrel	677	511	517	200*	962	992*	3859
3	Pentecost, P. R.	LS-6	881	363	557	0	856	975	3632
4	Baker, A. A.	Discus	747*	340	422	81	923	708	3221
5	Murray, W. J.	Mosquito B	719	365	267	0	901	808	3060
6	Whitehead, P.	Discus	895	381	190	200	855	206	2727
7	Stretton, P. J.	Discus B	807	267	300	0	568	919	2861
8	Davis, P.	Discus B	960	514	85	0	416	836	2811
9	Smith, G. N. D.	LS-7	485	204	510	0	467	917*	2583
10	Mills, J. N.	LS-3/17	866	528	0	0	303	800	2497
11	Cousins, R.	ASW-20	616	305	48	0	556	907*	2429
12	Williams, P. R.	Discus	465	0	123	57	802*	923	2370
13	Brisbourne, R. P.	DG-200	656	350	200	0	363	782	2351
14	Hoolahan, J. B.	ASW-20	380	373	267	0	400	828	2248
15	McCarthy, D. K.	Mini Nimbus	5	482	382	0	943	316	2128
16	Joint, T.	Janus C	402*	681	472	0	353	161	2069
17	Bastin, J. C.	Ventus B	0	298	517	0	828	310	1953
18	Nash, J.	Ventus B	446	417	155	0	391	239	1648
19	Quigley, T.	LS-7	660*	347	65	0	377	0	1449

Class B

Pos	Pilot	Glider	Day 1.14.7 141.5km 4 legs	Day 2.16.5 104.9km ▲	Day 3.17.7 131.2km ▲	Day 4.20.7 200km O/R	Day 6.20.7 178.7km 4 legs	Total Points
1	Piggott, A. D.	Astir CS	987	640	629	787	1000	4043
2	Bradney, F. G.	Sport Vega	864	435	462	700	940	3397
3	Crabb, P. G.	LS-4a	500*	400*	560	983	938	3381
4	Bridges, R. C.	Pegasus	880	381	540	563	867	3231
5	Marsh, B. C.	ASW-24	895	380	482	561	870*	3160
6	Walker, P. B.	LS-7	860	445	188	567	882*	2942
7	Lyttelton, C. C.	ASW-24	980	281	405	1000	151	2817
8	Matyear, A. D.	DG-300	903	0	0	969	822	2694
9	Elmer, J. P.	Discus	902	161	490	304	831	2688
10	Nunn, A.	Std Cirrus	817*	351	121	687	648	2624
11	Meagher, M.	Pegasus	807	114	183	576	814	2574
12	Harwood, H. K.	Pegasus	375	0	416	763	990	2544
13	Rees, G. R.	Discus	878*	368	12	256	887	2401
14	Healy, P. T.	ASW-19	608	143	416	300	828	2295
15	Hodgson, K.	Pegasus	796	323	540	435	190	2284
16	Thomas, C.	Std Libelle	408	0	0	958	857	2223
17	Smithers, J.	DG-101	821	0	539	352	0	1712
18	Lipscombe, T. M.	DG-101c	899	134	0	831	0	1864
19	Hindmarsh, G. J.	DG-300	360	378	0	572	175	1485
20	Woods, G. / Pringle, N.	LS-4	33	0	0	502	110	645
21	Layton, A. K.	K-6E	145	75	0	156	96	472
Hors Concours	Surrey University GC	K-21	0	0	0	863	0	863

> ***We are grateful to the scorers who sent us results, particularly Tim Newport-Peace of Specialists Systems for all his excellent tables covering Nationals and many of the Regionals.***
>
> ***DNF=did not fly; *=penalty***

BOOKER REGIONALS – July 27 – August 4

Open Class

Pos	Pilot	Glider	Day 1.27.7 150.3km ▲	Day 2.28.7 231.0km ■	Day 3.29.7 271.5km ▲	Day 4.31.7 169.3km ▲	Day 5.1.8 190.2km ▲	Day 6.2.8 253km ■	Day 7.4.8 149.2km ▲	Total Points
1	Pullens, C. / Rollings, C. C.	ASH 25	703	950*	640	812*	1000	831	670	5606
2	Scott, T.	ASW-20c	733	111	893	997	871	1000	777	5382
3	Palmer, R.	Kestrel 19	576	956	799	343	842	987	790	5293
4	Dixon, R. E.	Nimbus 2cs	460	658	607	736	832	794	865	4952
5	Merritt, K. R.	Kestrel 19	558	671	225	1000	973	721	848	4996
6	Walsh, A.	DG-400	820	901	644	389	251	860	870	4645
7	Burton, A. J.	LS-6c	800	968	781	326	617*	713	474	4465
8	Sheppard, F. J.	Vega 17T	458	831	508	0	511	638	438	3384
9	Cousins, R.	ASW-20	559	584	673	370	665	638	0	3494
10	Ivey, G.	ASW-20	523	21	620	208*	860*	789*	222	3250
11	Ferguson, S. J.	Mosquito	158	556*	408	306	613	771	164	2972
12	Peirson, B.	Ventus CT	439	536	0	0	0	0	0	975
Hors concours	Kay, A. E./Kay, A.	ASH 25	877	1048	1001	982	860	822	801	
		ASH 25	0	0	0	0	904	849	0	

Club Class

Pos	Pilot	Glider	Day 1.27.7 130.1km ▲	Day 2.28.7 189.8km ▲	Day 3.29.7 253.4km ▲	Day 4.31.7 149.7km ▲	Day 5.1.8 144.3km ▲	Day 6.2.8 224.3km ▲	Day 7.4.8 149.2km ▲	Total Points
1	Morris, B. / Warren, J.	LS-7	763	930	880	358	964	920	933	5748
2	Aspland, W.	ASW-19B	760	972	1000	307	745	942	870	5596
3	Wells, P. M.	Discus B	730	513	880	182	822	887	1000	5232
4	Angell, J.	SZD 55	933	684	51*	701	887	887	883	4965
5	Payne, G. K.	Pegasus	510	1000	539	446	879	904	381	4775
6	Wilson, K. M. H.	ASW-24	876	608*	518*	258	694*	902	885	4577
7	Nicholson, B.	Discus	586	865	117	292	791	1000	864	4515
8	Jelden, A.	Libelle	829	0	812	329	1005	947*	974	4490
9	Craig, G. W.	Std Cirrus	646	562	882	316	665*	882	815*	4436
10	Williamson, M.	Pegasus	642	890	919	399	795	554	383	4308
11	Hargrove, I.	LS-7	505	549	956	240*	801	914	885	4929
12	Roberts, S.	Discus B	621	877	801	282	887	830	57	4105
13	Day, M.	LS-4	454	302	617*	290*	490	886	760	3801
14	Belbin, E. R.	Pegasus	430*	847	514	258	719*	882*	337	3769
15	Fritche, P. C.	Open Cirrus	818	527	0	0	687*	886	655*	3580
16	Eyles, S. J.	Pegasus club	582	0	482	309	935	847	381	3536
17	Brice, P. F. and others	K-21	489*	848	886	333	544	31	431	3306
18	Lyons, G. J.	Libelle	418	570	570	291	100	928	361	3238
19	Owen, B.	ASW-24	382*	401*	793*	292	721	265	347	3201
20	White, S. A. / Hilton, D.	LS-7	700	551	621	292	677	0	151	3192
21	Davies, E. F.	ASW-19	502*	822	0	275	8	702	343	2750
22	Mee, M. P. W. / Elgass, S.	LS-4A	686	0	336	292	867	4	59	2278
23	Bass, G. J.	PIK 20B	64*	239*	0	0	0	843	888*	2034

NORTHERN REGIONALS – Sutton Bank, July 27 – August 4

Open Class

Pos	Pilot	Glider	Day 1.27.7 158km ▲	Day 2.28.7 297km ▲	Day 3.29.7 107km ▲ double dog leg	Day 4.1.8 208km O/R	Day 5.2.8 324km ▲	Day 6.3.8 212km ■	Day 7.4.8 135km ▲	Total Points
1	Cheetham, R. A.	DG-600	826	1000	704	987	1000	975	670	6160
2	Fox, R. L.	Ventus	804	920	749	858	847	871	792	5840
3	Hunt, S. G.	LS-7	674	977	491	976	778	870	694	5452
4	Pozerskis, A.	LAK 12	611	897	847	879	833	824	853	5344
5	Hurd, P.	Vega	589	899	789	789	826	803	665	5336
6	Jordy, P.	ASW-20L	678	986	737	239	986	1000	679	5310
7	Sanderson, P. / Sharp, D.	Kestrel	397	883	680	881	812	958	565	5164
8	Blackmore, R.	LS-7	509	835	491	860	972	756	721	5148
9	Roberts, J. H.	Mosquito B	514	916	865	651	737	885	768	5127
10	Walker, P. B.	LS-7	635	978	17	1000	902	847	618	4997
11	Robson, T. J.	ASW-20L	537	940	438	734	786	861	727	4924
12	Ellis, J.	DG-400	848	565	460	800	816	787	630	4806
13	Davidson, J.	DG-200/17	612	270	724	631	711	437	768	4153
14	Hamilton, C. J.	Mosquito B	484	578	671	591	715	240	625	3904
15	Russell, F. K.	Glasflugel 604	435	791	0	693	721	715	475	3830
16	Kalin, R.	Open Cirrus	442	748	507	742	714	438	604	3893
17	Turner, P. H.	Kestrel	278	540	433	730	730	430	524	3665
18	Gatfield, J. E.	Vega	451	77	475	821	689	654	617	3584
19	Collingham, C.	ASW-20	303	135	432	577	761	606	649	3463
20	Moore, G.	ASW-24	488	600	507	730	794	181	0	3298
21	Rice, J. W.	Kestrel	448	100	433	744	715	334	505	3279
22	Roberts, P. L.	DG-202	0	255	68	790	714	873	589	3258
23	Green, G. R.	ASW-20L	452	863	121	665	708	478	0	3225
24	Ramsden, P.	Kestrel	357	540	433	792	770	0	0	2892
25	Mortimer, R.	Jantar 1	368	40	0	63	704	433	537	2145
26	Maynard, K	ASW-20L	278	453	0	0	0	0	0	731

Sport Class

Pos.	Pilot	Glider	Day 1.27.7 119km O/R	Day 2.28.7 207km ▲	Day 3.29.7 107km double dog leg	Day 4.1.8 211km O/R	Day 5.2.8 226km ▲	Day 6.3.8 152km ▲	Day 7.4.8 135km ▲	Total Points
1	Langrick, J.	LS-4	767	931	723	1000	988	1000	880	6271
2	Brook, M. F.	SHK	654	888	506	821	863	997	871	5598
3	Booth, D. A.	DG-300	868	93	484	795	1000	996	868	4881
4	Scougall, B.	Std Cirrus	529	889	711	603	86	947	852	4687
5	Marriott, R. J.	Std Cirrus	600	378	544	620	842	914	877	4675
6	Robson, D.	Std Jantar	320	583	116	862	867	934	900	4582
7	Stott, B.	K-6E	332	821	935	458	817	987	374	4424
8	Griffiths, P., Young, M.	Pegasus	862	432	517	735	800	362	703	4311
9	Pritchard, B. W.	Astir	545	63	554	547	916	943	728	4296
10	Beardsley, G., Davis, K.	LS-4a	529	774	707	863	494	0	942	4399
11	Brightman, P. P.	K-6E	407	794	0	507	798	573	737	4014
12	Edward, S., Hacell, F.	ASW-15	260	541	423	545	798	877	336	3279
13	Wright, A. C.	DG-300	533	367	0	523	813	290	733	3249
14	Watson, D.	Pegasus Club	301	98	8	519	361	468	825	2540
15	Noad, S.	ASW-19a	403	476	78	0	161	66	576	2211
16	Woodman-Smith, M. D.	ASW-15a	522	140	376	0	371	213	683	2208
17	Fairman, M., Marlow, T.	ASW-19a	0	775	0	483	0	294	608	2160
18	Tillett, R & N.	ASW-15a	590	0	570	358	0	277	105	1900
19	Middleton, R. J.	DG-300	0	34	0	198	258	264	0	773
20	Bilham, D.	Pilatus B-4	263	235	5	0	5	0	0	498

EDGEHILL REGIONALS – August 25 – September 1

Pos	Pilot	Glider	Day 1.25.8 150.6km ▲	Day 2.26.8 239.8km ■	Day 3.27.8 143.4km ▲	Day 4.29.8 248.9km ■	Day 5.30.8 134.1km ▲	Day 6.31.8 105.9km O/R	Total Points
1	Gardner, D.	LS-3	487	880	903	875	722	507	4383
2	McKirdy, G.	Pegasus	225	887	816*	844	590	686*	4060
3	Parry, N.	LS-4	638	873	830	848	382*	664	4035
4	Smart, A.	Discus	608	1000	822	742	550	308	4031
5	Moulang, A.	ASW-20	340	940	751	721	530	570*	3852
6	Watt, C.	Std Cirrus	540	805	683	710	572	447	3756
7	Davidson, R.	LS-4	187*	848	885	682	636*	391	3609
8	Knight, R.	LS-7	263*	880	740	618	387*	678	3579
9	Dawson, M.	Ventus	702	629	689	614	281*	588	3484
10	Rice, P.	Libelle	316	798	875	751	721	121	3382
11	Zealley, T.	ASW-24	480	796*	790	826	403	83	3378
12	O'Donald, P., C. Chapman	ASW-20	264	782	574	632	542	520	3314
13	Martin, G.	Cirrus	358	898	592	505	461*	566	3180
14	Reid, A.	Mosquito	259	751	572	779	329	439	3128
15	Williamson, M.	Pegasus	592	791	674*	517	427	DNF	3101
16	Sterling, R.	ASW-19	279	951	*	848	361	614	3053
17	Veysey, L.	ASW-15	297	255*	*	950*	385	586	2473
18	Cox, F.	Mosquito	288	694*	588	202	131	453	2356
19	Parsons, R.	Ventus	280	739	390*	0	397	418	2224
20	Wright, R.	Discus	324	DNF	836	451	DNF	452	2063
21	O'Regan, A.	ASW-20	241	279	462	484	314	25	1753
22	Jones, B., Young, M.	Junior	236	446*	158	211	DNF	248	[illegible]
23	Robinson, C.	LS-4	DNF	58	35	34	DNF	32	159

S & G CLASSIC

CHOSEN BY FRANK IRVING

IMPERIAL COLLEGE AT AOSTA

By Frank Irving

As our gentle reader may have inferred from an earlier "Classic", Imperial College Gliding Club has an occasional enthusiasm for foreign travel, particularly of the improving variety. So, when we set off for our first visit to Aosta in 1963 we were aware, in a theoretical fashion, that it wasn't quite the same as the gentle hills of the UK. We returned feeling – rather prematurely – that we knew about mountain flying and it was the most splendid form of aviation yet discovered. Also, like the aviator in the Falklands, we discovered that adrenalin is brown.

We have visited Aosta several times since 1963. Somehow, the weather doesn't seem quite as good as it was then, and the restaurant is no longer at the bottom of the tower, with Signor Franco welcoming us with a terrible Brooklyn accent and cries of "I guess you boys must be hungry. You wanta some spaghetti?" Thankfully, the horse-flies have gone but the surrounding valley is getting filled up with light industry. Also, Renato Vitelli is no longer with us.

We have used Peter Fuller's original drawings as Frank, making the last of his *S&G Classic* selections, says they contributed so much to the article which was in the October 1963 issue of *S&G*, p370.

When planning a club expedition to Foreign Parts (or The Abroad, as a certain eminent member of the Tiger Club would say), one looks for reliable interesting soaring conditions, warm sun, reasonable trailering distance, and *ambience*.

. . . spectacular soaring

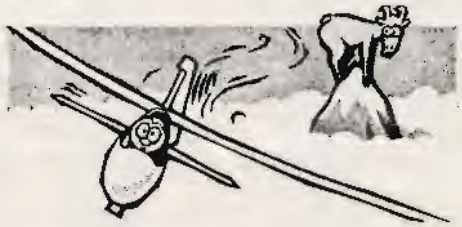
Aosta seemed likely to provide all these, so ICGC set forth in mid-July, with an Eagle, a Skylark 4 and a slightly floating population of about a dozen members, in the hope of getting a month of spectacular soaring – plus some *ambience*. Our expectations were amply fulfilled: 140hrs, sundry Silver C legs, veins well flushed-out with adrenalin by day (and, for some, alcohol by night), and ankles well-bitten by horse-flies. And the underwriters are awfully pleased with us.

Since a more coherent account of the flying is appearing elsewhere, this is really a collection of odd observations. Since *S&G* gets to Aosta, I hope Signor Vitelli will not take it amiss if I try to convey some features of the trip which we found somewhat quaint.

Aosta Valley runs roughly east-west, with another valley branching off toward the north and the St Bernard pass (the *Grande*, as opposed to the *Piccolo*). The town lies at the junction of these valleys. For the first fortnight of our stay, the weather had a standard routine: calm and hot in the morning, with an easterly valley wind starting between 1130 and 1230. This rapidly freshened and was blowing at about 25kt by mid-afternoon. Meanwhile, there was an inversion at 2000 or 2500ft above the bottom of the valley, itself about 1700ft asl. Before the wind got going, one could soar in thermals below the inversion, using the local steelworks as a source. You took your pick: white or brown thermals. The brown ones seemed better, until somebody shut the furnace door and switched off the lift.

. . . shut the furnace door

But once the wind starts, it becomes possible to slope-soar above the inversion, and eventually thermal lift reasserts itself on the sunlit slopes due, as Vitelli put it, to "the hair sleeding up the mountain". The best lift is fairly close to the scenery, although it did not seem really necessary to indulge in alarming amounts of proximity. Eventually, the "hair" breaks away in genuine but very rough thermals and it becomes possible to circle – still keeping a wary eye on the local hunks of rock – until you find yourself above the tops. This is the genuine mountain soaring, perhaps the most exhilarating form of aviation, and very good for the biceps if you happen to be flying an Eagle. The local mountains go up to about 9500ft asl, higher in the hinterland, and cloudbase may be between 9000 and 14000ft asl.



. . . most exhilarating

Put like this, it all sounds very simple, but the actual situation is often very complex. The valley wind tends to occupy a fairly shallow layer and the upper wind may be blowing in some entirely different direction. Superimpose on this the effects of varying angles of sunlight on the slopes,

. . . exercise in skill

and the search for lift, or the avoidance of down, becomes an exercise of some subtlety. Local lore is important, and needs more than a few weeks to absorb. The potentialities of the site are clearly quite staggering, particularly in wave conditions, and much exploration remains to be done.

The thermals really are rough and it is no place for solo flying by the semi-competent. We were getting readings of 3*g* on the Eagle's accelerometer when thermal soaring, and aerotowing near the mountains is a fairly major exercise in skill, faith in the tug pilot, and sometimes sheer strength. The tow rope has a breaking load of about two tons and the use of a weak link is

. . . a splendid clang

deemed imprudent: it might break. The requirement for visitors to fly solo in Italian gliders is 80hrs, and this seems very fair. Intending visitors must apply in very good time, since heaps of paper have to be sent to the Ministry in Rome.

The local gliders consist of a Canguro two-seater, in which the instructor is apparently intended to indulge in private meditation in a little cell under the wing, a Grunau Baby of great antiquity, and two M-100 Standard Class single-seaters stuffed full of oxygen and radio, and showing a refreshing lack of alarmist placards. There also exists a Blanik, but this was out of action due to an unfortunate encounter with the

airfield jeep, which must have caused a splendid clang. For much of our stay, the M-100s were largely at our disposal, as well as our own machines. Incidentally, if you do take your own machine, oxygen is useful and radio pretty essential. A channel on Aosta tower frequency helps.

Living was fairly cheap, with excellent meals at the airfield restaurant and specially arranged accommodation for us at the local College of Agriculture. Very comfortable, except for a minor earthquake and an exuberant midnight firework display by the local village. Aerotowing and soaring charges are comparable with those in the UK, but tows to about 4000ft were fairly common.

On the last Sunday, in July, a *Mainfestazione* was held, organised in a distinctly Latin manner. Parachutists thudded to earth whilst IC clutched the Skylark, ready to whisk it from under their big boots. An Italian gentleman in a Morane Rallye demonstrated its STOL capability across the bows of the parked gliders. Having been given the choice of performing "aerobatics" at 1400 or 1800, I found myself airborne at 1530 with a tummy-full of high-density polymerised pasta. At 1700, Ken Bignell and I did a repeat performance in the Eagle, including a good long spin. Vitelli, counting turns over the PA system roused the crowd to near hysteria when he got to *cinque*, albeit slightly prematurely.

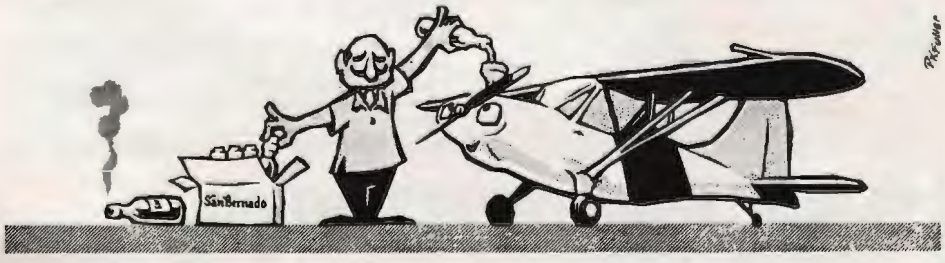
. . . near hysteria

It is only fair to say that Aosta is not entirely free from frustration, but what gliding site is? The airfield does not operate at all on Mondays (fair enough, it works all weekend and the chaps need a "relax") and the pace is fairly gentle at other times, due to a dearth of tug pilots other than Vitelli, and a tendency for all ranks to vanish for a lengthy lunch at the best part of the day. The moral is to have a launch before lunch and stay up until siesta-time is over. In the calm of the morning, the airfield supports a large population of vigorous horse-flies, quite capable of boring holes through clothing. It can get quite hot: flies landing on motor cars exposed to the sun die like flies. When we arrived, the whole outfit was operating on a shoestring, in the form of one serviceable Stinson L-5 tug, which started showing signs of distress after a week of

. . . signs of distress

Eagle-towing. Two quotes: "Why are they worried about the cylinder-head temperature? After all, steel only melts at 800°"; and "it is not the engine which is wrong – only the carburettor". But these are really minor snags when the weather shows a strong tendency to be good, living conditions are better than at most UK clubs, and the soaring comes in large superb chunks at great heights. The overall result was a thoroughly successful visit and we are most grateful to Signor Vitelli, Luigi, and the numerous other who help to make it so much fun.

Finally, beware of "San Bernado". This innocent-looking fluid must have been the compound carried in those aprocryphal kegs attached to the St Bernard dogs from the hospice. It is certainly capable of reviving a frozen corpse in a snowdrift, the probably dissolves polyester paint. Treat it with great respect.



FORGET YE NOT

"Hold my wing", the pupil said
"All clear above and behind?"
"All out", he said, with a nod of his head
As the cable began to unwind.

"Pull back on the stick", our pilot said,
"The ground I will leave far below".
The wing man dozed as he thought of his bed
And the cable got looped in a bow.

"Stop, stop", the batman said,
As he forgot to lift up his bat.
They all yelled "Stop", as the skid fouled the strop
And the wingman tripped and fell flat!

"I might still make it", the pilot said
As the stick hard to starboard he bent
"Too late", was the wail as it stood on its tail
And base over apex it went.

"I should have unhooked", the pilot said
As he crept from the wreck and his shame.
It's there in the law – release when not sure
Don't stay with a launch that's gone lame.

Doug Carter

SEASONS OF THE HEART – WINTER

And so comes winter
Cold wind sweeping in from the sea.
Mud, trucks complaining before they struggle
Into life;
Brave and devoted faces glowing in the wind
Peeping from beneath their fur hoods.
Misty canopies and fast downwind legs;
Grey dull skies, dead to our desires.
And yet a sunny morning, bright and lively;
Smiles after a chilly soaring flight.
Short days and thoughts of tomorrow;
Maybe next year I'll get my Gold, well, I might
Harvey Clarke

Contributors: When possible, please send a printout of your article with the floppy disc which will be returned.

S&G CLASSICS AND BACK NUMBERS

Our thanks to Frank for his very varied and interesting choice of articles. Michael Bird, who is also a seasoned contributor to the magazine, has agreed to take over and will be bringing you a selection of his favourite classics.

This slot is extremely popular and a lot of relative newcomers to gliding often say they wish they had a chance of dipping into back copies for themselves and seem surprised when you tell them they can.

The BGA hold a good stock of back numbers, if not complete sets, and for a reasonable outlay it is possible to buy quite a collection. In fact, you could put this on your Christmas list. You might not be much company over the holiday, but you will certainly enjoy yourself!

1992 COMPETITION DIARY

May 30-June 7: Eastern Regionals, Norfolk GC.
June 8-17: Swedeglide, Borlange (Sweden).
July 4-11: Competition Enterprise, Yorkshire GC.
July 6-20: World Motor Glider Championships, Rieti (Italy).
July 11-19: Standard Class Nationals, Booker GC.
July 17-30: European Championships, Bekescsaba (Hungary).
July 25-August 2: Northern Regionals, Yorkshire GC.
July 25-August 2: Lasham Regionals, Lasham Gliding Society.
July 25-August 2: 15 Metre Class Nationals, Bristol & Gloucester GC.
August 4-13: Inter-Services Regionals, RAFGSA.
August 8-16: Enstone Regionals, Enstone GC.
August 8-16: Open Class Nationals, RAFGSA.
August 16-22: Two-Seater Competition, Wolds GC.
August 22-30: Junior Nationals, RAFGSA Halton.
August 22-30: Dunstable Regionals, London GC.
August 22-30: Edgehill Regionals, Shenington GC.
Ken Sparkes, *BGA Competitions and Awards Committee*

HANDICAPPED NATIONALS

At the time of going to press it appears likely that the BGA will be organising a Handicapped National Championships next year at Le Blanc, France for eight days from May 30 and organised by Brian Spreckley. Entries will be according to the rating list in the normal way and application forms should be available from the BGA office in Leicester.
Barry Rolfe, *BGA Administrator*

CLASSIFIED SECTION

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STD LIBELLE 201. Full instruments, barograph, oxygen, tow out aids, metal trailer – all in very good condition £12 000ono. Tel Bill Craig 02406 4703 (home), 0923 50888 (work)

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PIRAT 1973 based at Rivar Hill. Recently overhauled, C of A, basic instruments, two man rigging aids, tow out gear, parachute, barograph, steel-aluminium trailer £7250ono. Tel 0635 62673 or 0734 402678 (eves)

YS-55 (BG-135) 1974. 362hrs, good condition. Radio, T/S, 2 vario, good very small trailer. C of A from sale. Super small syndicate aircraft. Sale £4500 or syndicate. Tel 0409 241265

PHOEBUS 17C 1:42. High performance – low maintenance. Comprehensive panel and rigging aids, distinctive Speedwell trailer. All in excellent condition. New C of A. Outstanding value at £9995. Tel Chris Gibson 0256 763535

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LS-7 available now. Only 280hrs. Superb condition. This hull would now cost over £28 000 in UK. £25 000 for hull. Options; basic instruments, Bohli compass, tow-out gear and two year old fitted metal trailer. Tel John Galloway 0592 620313.

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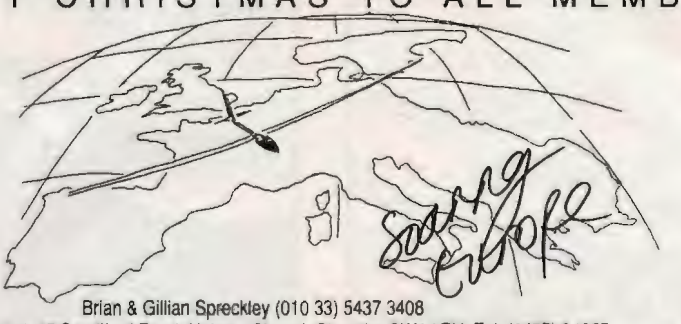

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Norfolk Gliding Club

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for Summer Season 1992

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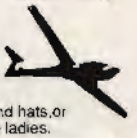

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