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Magazine of the
British Gliding Association

June-July 1995
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Cover: Tony Moulang sent us this shot of Les Connolly and John Hoye flying the ASH-25 he shares with his brother Mike and Les. It was photographed by Jack Stephen, flying the Scottish Gliding Association's ASH-25, over the Deeside area in wave last autumn.

SAILPLANE & GLIDING

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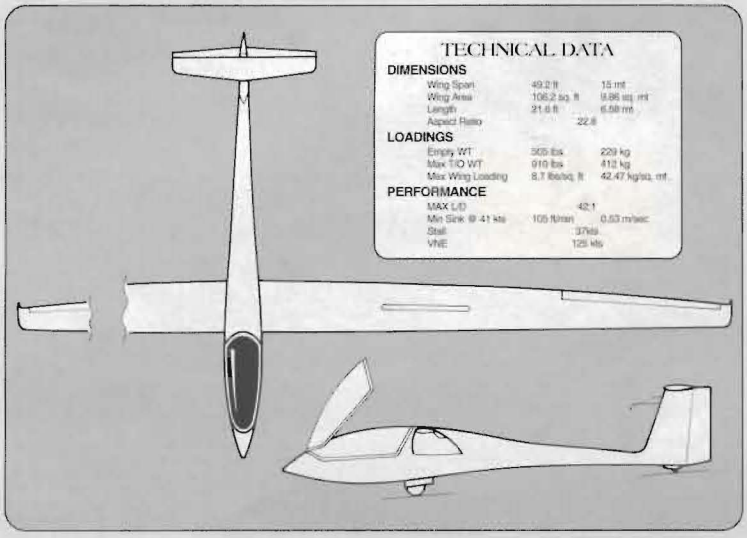
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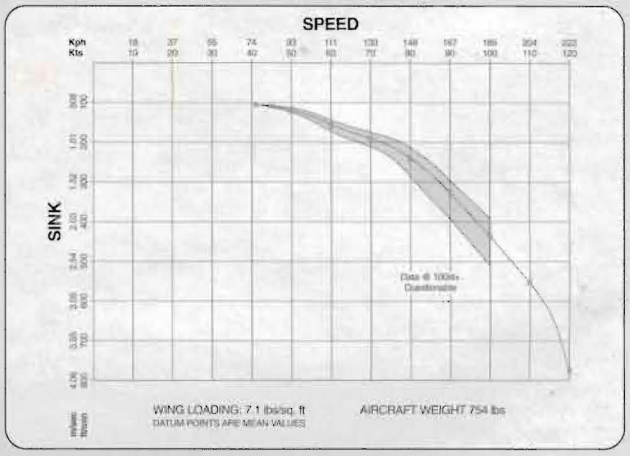
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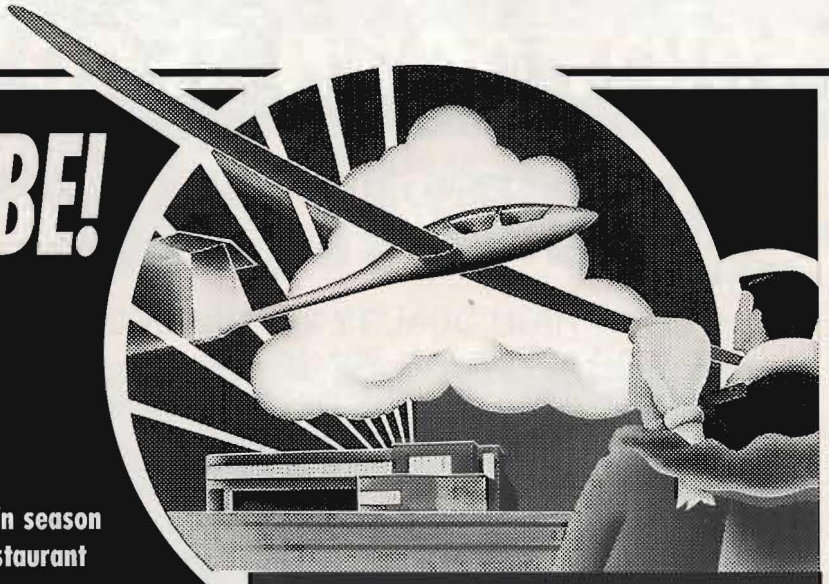
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YOUR LETTERS

ACT NOW AND BE SAFE

Dear Editor,

Last summer I was lucky to escape personal injury or damage to my glider when the lid of my Cobra trailer collapsed as I was closing it.

The lid is very heavy and supported about the half way point by two very strong gas struts. The bolt on which one of them pivots had broken, and even with one strut working it is not possible for one person to take the weight.

It turns out that early Cobras, mine is a 1989 model, used 8mm bolts for the lower attachment of the struts; late ones use 10mm. If yours has still got the 8mm ones, please change them as soon as possible.

The upper bolts are 8mm, but are no problem as they are supported both sides. It is the lower, cantilevered ones which break. You can easily check which ones you have by measuring the diameter of the exposed round head of the bolt, which can readily be seen on the outside of the trailer, just below the split line and behind the wheels.

The 8mm bolt has a head diameter of 19mm and the 10mm a head diameter of 24mm. The head is usually painted white to match the side of the trailer and your dealer can supply a little kit including the correct bolts.

Do it now before you or your glider gets hurt!

JULIAN FACK, *Wolverhampton*

A WORD TO AEI INSTRUCTORS

Dear Editor,

May I respectfully remind air experience instructors that they must fly the launch and leave the teaching of the effects of the controls until after the release. This will hopefully remove the need for the pupil to experience stall turns etc in their first flight.

After all an air experience flight is supposed to be an enjoyable introduction to gliding, not a day out at Alton Towers.

My thanks go to Paul Baldwin (February issue, p12) for helping to make this point very clear.

CHRIS PULLEN, *AEI senior regional examiner*

GPS AND VARIOMETERS

Dear Editor,

There are many "GPS-capable" vario/flight computer systems appearing on the market, most stated as compatible with the National and Maritime Electronics Association (NMEA) 183 interface standard. Beware!

The NMEA 183 standard specifies not only an electrical interface standard (voltage levels and so forth), but also a set of messages (the standard calls them "sentences") that should be transmitted by compatible device. Each message type carries different data - one for location, another for distance to waypoint etc. Now, the standard has some flavours - 183A, B and C that I'm aware of - that specify *different* sets of sentences. Additionally, some GPS suppliers don't actually implement all the sentences in their GPS system's version of NMEA 183. The upshot of all this is that you may connect your (expensive) GPS to your (even more expensive) flight computer, and find that nothing happens!

I would strongly recommend that anyone thinking of buying either GPS or a flight computer ensures they see their particular combination really working before buying. Apologies to those who *really* know how these setups work, for whom this letter is a gross oversimplification!

CHRIS FOX, *Mold, Clwyd*

Dickie Feakes of RD Aviation replies: Chris's letter is interesting in that it outlines one of the problems involved in interfacing GPS receivers with peripheral devices. The NMEA 183 standard is published in a 72 page booklet. The booklet defines everything from "Recommended Minimum Navigation Information" (RMB sentence) to "Tracked Target Message" (TTM sentence), together with a similar rapidly increasing number of proprietary sentences, For instance Garmin use a proprietary RMM sentence to output the map datum that is being used.

GPS manufacturers programme into their GPS those strings of output sentences they think will be most useful. Some manufacturers even define two or three sentence combinations which they then describe as NMEA 183A, NMEA 183B etc.

In turn, the designers of peripheral equipment such as GPS coupled flight computers and loggers, select which NMEA 183 sentences their equipment needs to function correctly. If the appropriate sentence is transmitted by the GPS, then the peripheral device will work as advertised. If the sentence is absent from the GPS data stream, then the device will not work. A further complication exists between the Trimble Flightmate Pro and the EW barograph. When initially coupled together this combination works well. However, when the Trimble is navigating hard, it is short of computing power and shuts down its NMEA port for a few seconds. Ordinarily this would cause no problem but the EW barograph recognises the temporary loss of data as someone tampering with the data output stream and, for security reasons, the software shuts it down.

As Chris correctly says, the potential buyer should beware of buying GPS and peripherals from dubious sources. The outlets who specialise in GPS receivers and gliding peripherals will always offer informed unbiased advice, advise on likely conflicts and provide an after sales service to correct any incompatibilities.

BETTER USE OF DAYLIGHT

Dear Editor,

Those of us who have flown sailplanes in France know how terribly civilised it is over there. On a typical day one can get up, have a leisurely breakfast, carefully rig the glider and plan the flight. Then sunbathe for an hour or so before taking an early lunch. Only then does one take to the air to fly a quick 300 or 500km. Not for the French the desperate rush to get launched by 10.30am as in the UK.

Of course France enjoys a more favourable, continental airmass, but what it also enjoys is Central European Time (CET) which is effectively double summer time.

The current UK time zone arrangements make very poor use of daylight for most normal nine to five type working individuals. For much of the year it gets light hours before we need to get up, but gets dark soon after we get home from work. For those of us who run weekday evening instructional courses, or trial flights, the short evenings are a major problem, particularly early and late in the season.

I understand the Government would quite like to change to CET in order to improve communications with our European trading partners, but has received considerable opposition to this proposed change from farmers and the inhabitants of Scotland.

However, as farmers' working days are more tied to daylight hours than most of us, all they would have to do is get up an hour later, relative to the clock, and then work normally. After all, French farmers seem to cope! I'm sure that local arrangements, such as a later start to the working day, could be adopted to help the Scots cope with their very short winter days.

May I ask readers in favour of a change to CET to write to their MPs putting these points and to exert whatever pressure they can to achieve this aim. Collectively we might just be able to sway the Government's decision.

DEREK COPELAND, *Rickmansworth, Herts*

ACCIDENT REPORTS

Dear Editor,

I would like to comment on an item mentioned in Tail Feathers in the February issue, p24, concerning the BGA Accident Summary.

When a potential member or visitor is being shown round the site the conversation eventually comes round to suggested reading matter and as well as instructional books they are shown *S&G*. A quick glance shows a well balanced range of subjects but I feel the accident reports, or rather the quantity, should be toned down. We already have the annual review published by the BGA for £1.75 for those interested.

Perhaps a member of the BGA Safety Committee could be persuaded to choose a couple of incidents per issue and comment on them in further detail, as is done in *Pilot*. This way certain safety subjects are still being addressed and people not directly involved in gliding will see us in a better light. Then when a planning officer, local parish councillor etc reads *S&G* they won't be faced with 38 minor, 16 substantial, 13 write offs and five incidents from May 15 to August 28 1994 in one issue.

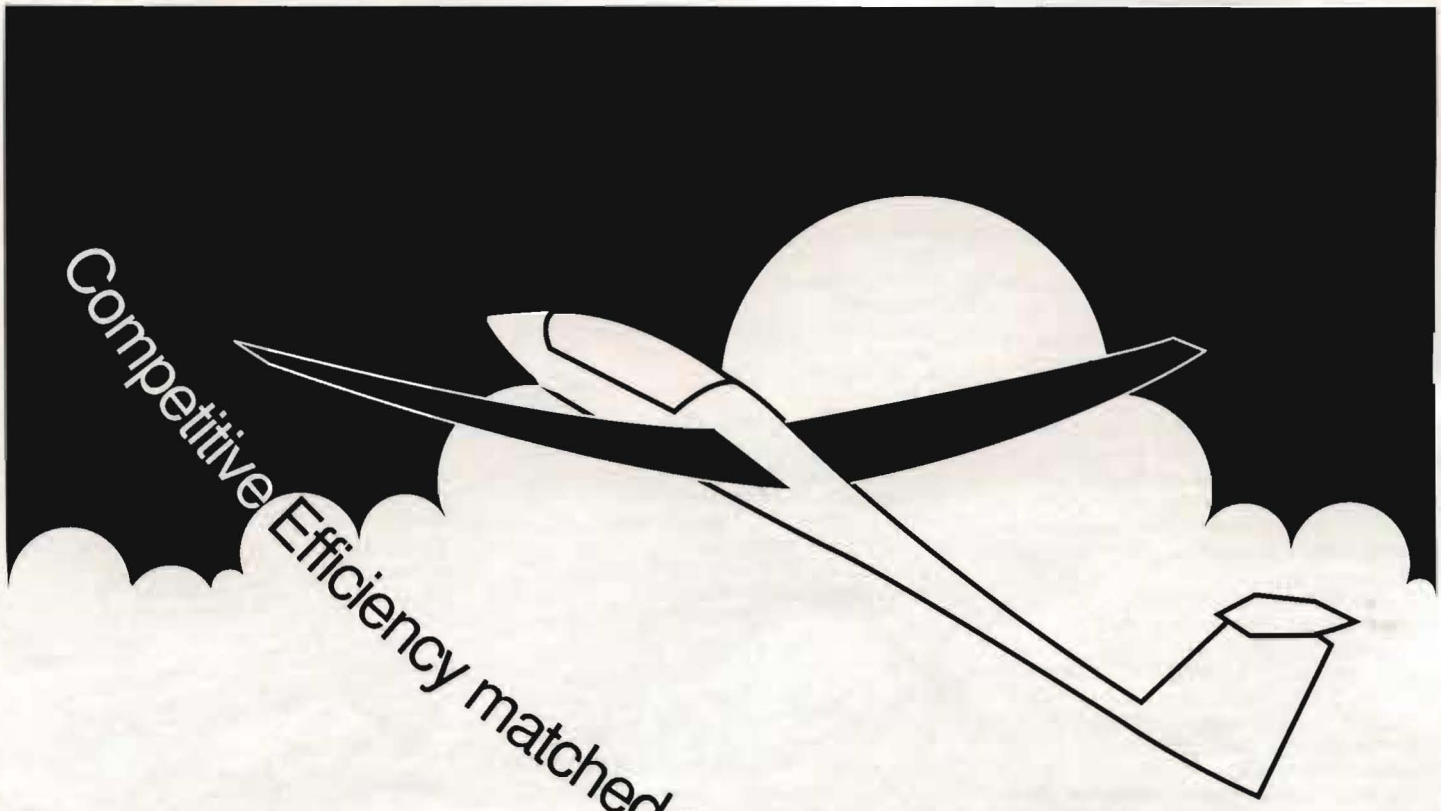
DAVID WILLIAMS, safety officer, Surrey Hills GC

(When we dropped this section for one year we had a heap of requests for it to be reinstated. And to back up this fascination, whenever we do a random readers' survey on S&G content, the summaries come near the top of required reading. Ed)

MEMORIES OF PHILIP WILLS

Dear Editor,

Unlike Natasha Spreckley (see the last issue, p76) I had the great privilege of knowing Philip Wills. I met him first when I was a Cambridge undergraduate and then when he was chairman of the BGA. We were members of the Executive Committee in the very creative ➡



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times for soaring in the 1950s and 60s.

He was always very supportive of our efforts to develop the Yorkshire GC at Sutton Bank. He had, with Fred Slingsby of Scarborough and Norman Sharp of Bradford, negotiated the site's lease in 1936 from the Church Commissioners. Being London based, he was well placed to argue the case with the Commissioners' head office.

He was one of the founders of the ATA and, thus, continued to fly during the war. Afterwards he was briefly a director of British European Airways and with the ATA, this gave him contact with the higher levels of management in the RAF and the aircraft industry. He seemed to know everyone that mattered and understood the bureaucracy. This experience was of immense benefit to the soaring movement in the formative years. As chairman of the BGA he was the right man in the right place at the right time.

As a Nationals pilot I was able to observe his soaring technique at close quarters. It could be called minimum energy loss and this he excelled in the low sinking speed Weihe and the Skylark 3 and 4. He usually flew on his MacCready ring speed but he was essentially a thermal pilot not a speed man. He sought out the energy path in the sky and clearly enjoyed his long cross-countries over England.

He used clouds well - his negotiation of Mt Ventoux during the St Yan World Championships in France was a case in point. He was not averse to hill soaring when the need arose. He would sweat it out on some minor ridge until the thermals came again, and in doing so he often won the day.

His capacity to fly long distances in often mediocre conditions was staggering. Once in late March I was presiding over the Yorkshire GC's annual dinner when in walked Philip and Kitty Wills. He had flown up to Topcliffe in very poor conditions to be with us.

Philip knew the essence of soaring was timing. He understood the weather very well. One day at Tebay, then the home of the Lakes GC, he set off at the unlikely time of 9.30am in the early convection and flew the 50 miles to land at Sutton Bank. I was next and got half way down Wensleydale before the conditions packed up. Needless to say he won the day hands down.

Philip was a great inspiration to me as a young pilot. He had a delightful, laconic sense of humour. I remember going up to him full of importance as a winch driver and asking what sort of launch he would like. "A good one dear boy" he replied. He was a star.

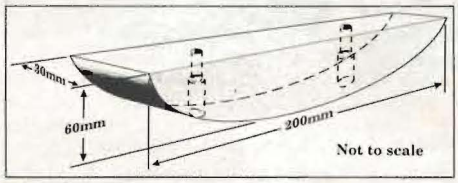
CHRIS RIDDELL, *Copgrove, N Yorks*

WATCH THOSE RINGS

Dear Editor,

When will the needless damage and self-mutilation cease? I refer, of course, to the most recent report of a wingtip runner's wedding ring being caught in a tip skid plate. (See the February issue, p43.) I know it is always easy to be wise after the event but in the few years I have been gliding there have been several of these reports with varying degrees of severity - lost digits, groundloops etc. **And these accidents are avoidable!**

1. At the DI check that the glider is safe to launch as well as to fly.
2. Don't wear rings - there are more potential hazards that loose plates on tip skid plates - just image what a projecting cable end could do.
3. Remove metal reinforcements.
4. Hold the wing is such a way that it can "fly" out of the hand.



Traditional wooden tip skid plates wear rapidly on paved runways and a splintered block of wood is both an eye-sore and a hazard in its own right. However, here at Wolds GC we have developed an alternative which is cheap, simple, effective and shows little sign of wear, even on a paved surface. We use plastic!

A look through the *Yellow Pages* should reveal a stock of suitable material. We have used nylon and, more recently, polypropylene, both of which can be shaped quite easily, if rather slowly, with a small band saw. Nylon will sand to a smooth profile with a belt sander. Polypropylene is difficult to grind down but does carve well with a sharp chisel or spoke-shave.

To fit your new skid plate incorporate a suitable hard point in the wingtip (the next time you rebuild it after a few tyres have mashed the tip ribs) such as a piece of 12mm ply glued inside the skinning and screw the skid in place with large self-tapping pan head screws. The holes in the skid should be deeply counter bored so that the screw heads are well out of reach and will not be exposed by wear.

PS. If you feel unable to do this yourself, Parker Sailplanes, who operate at our site, will be pleased to help.

DAVID COWBURN, *Hull*

ONE UPMANSHIP!

Dear Editor,

I read with interest the correspondence in the last issue, p69, on Ray Payne's climb away from 100ft I've got away from 75ft - beat that - yah boo!

(The lurid details can be obtained from me at Southern Sailplanes for a large fee!)

RALPH JONES, *Lambourn, Berks*

WORLD CHAMPIONSHIPS' REPORT

Dear Editor,

I read with interest the report on the World Championships in the last issue, p88. There were two glaring omissions from that otherwise comprehensive report. There was not one mention of our team manager Bob Bickers who stepped in at a late hour and very ably sorted out the administrative and domestic arrangements enabling us to go about the business of flying the competition. On behalf of the pilots here is an official **Thank you Bob.**

There was also no mention of the sponsors, as few as they were, which is no wonder if they can't even get a mention in *S&G* for their efforts - Southern Sailplanes, who charged considerably less than cost for packing and dispatching the container; The European Soaring Club and their insurance brokers Milsom Howard Associates, for providing travel and accident insurance for all the team and crews free of charge for the second Championships running and British Airways for their help and special deal on the air fares.

It is such a shame that the BGA can't see how to use its competition results and team resources for the greater benefit of the movement at large.

BRIAN SPRECKLEY, *Le Blanc, France*

Michael Russell, who covered the Worlds for *S&G*, replies: I read with interest Brian's comment on my report and if I omitted anything of import, I apologise unreservedly. That apart, I respectfully suggest "official" thanks are not necessarily part of **reporting** a contest. Perhaps a timely statement from the national gliding authority would be more appropriate.

But Brian may have a point in respect of sponsorship of which there appeared to be all too little. Could that be because potential sponsors do not see enough in it for themselves? In this accountant led age no one is going to **give** the movement money simply for the fun of it. Sure, a public thank you **would** help - from the top and while there's time.

The Omarama results speak for themselves. We have damned good pilots willing to fly their hearts out to get selected and then go on to win. To do this they need financial support. We are still two years from the next Worlds so **now** is the time to be out there looking for sponsors.

The target for St Auban is clear - no less than wins in all three Classes and the World soaring cup with it. I will be delighted to report such an achievement and will happily beg of the editor space for public credits to a long list of sponsors. But we should be out there working to win their support **right now** so we can give them value for money in 1997.

LET'S KEEP OUR FREEDOM

Dear Editor,

I drove to Harrogate for the BGA AGM with much excitement and pride to be attending such a prestigious event. After 30min of asking I found the venue but on entering the hotel I still couldn't see where the action was. I eventually discovered the exhibitors' area which was supported by just six firms and I was amazed at the number of delegates - probably about 60.

I was ashamed at how few people are concerned about their hobby. There were some very informed speakers with a lot of useful points to put over.

The subject I was most concerned about was the motion put forward by Chris Nicholas asking for a levy to support and defend the gliding movement. It has been plainly demonstrated in the last few years that the NIMBY crowd have most definitely got their house in order and are succeeding more often to get restrictions and closures of gliding and power clubs.

The delegates felt that in the past it was difficult to pass a £2 competition levy, which is not surprising when you consider how few compete, and so turned down a £5 levy. The fact is we all fly and even well established clubs ➡

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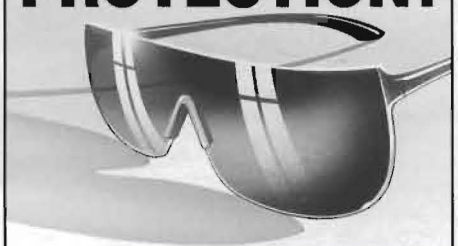
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are coming under threat.

So if you are not going to support the AGM then please do the easy thing and put your hand in your pocket and send £5 to the BGA fighting fund and hope you don't need the help of very expensive professionals to defend your club against the planners. We desperately need to win the next planners' battle as there are too many precedents against us already.
TIM WILKINSON, *Riseley, Beds*

A *LIFE MIRRORING ART? - AND SPINNING*

Dear Editor,

I trust I will find myself in good company when I say I am surprised at *S&G* giving such prominent space to a scene, allegedly based on a photograph, which is pregnant with hazard, as in its front cover of the last issue. I am ashamed to recall how many times over my short but action packed gliding career I have been shouted at by instructors and other well meaning persons on the launch point for even walking in the direction of an idle cable when its companion is busy with the launch, let alone handling it, as is implied in the painting.

It may be said in defence of the decision to print the view that it is art and not to be taken literally. However, given the heavy, and in my view proper, emphasis on safety in the sport, one would have thought the BGA might have decided that a literal interpretation was an unwelcome possibility.

Spinning training

Having got that off my chest, I echo the sentiments expressed by Charles Ellis in his letter in the same issue, p71, and add that my own experience of advanced driver training from the 1970s shows a parallel with the issue of spinning training.

The police used to demonstrate skidding on a skid pan so that drivers were aware of the symptoms of the skid and the effects on the vehicle and occupants. That done, no more skidding was permitted in the syllabus, the remaining time being devoted to driving on the skid pan using techniques which obviated the skid.

The resultant skill level was determined in the coverage of a greasy course on the skid pan within a standard time. In the same way that gliding instructors are pessimistic about low height spin recovery, police instructors took the view that very few road conditions allowed for the recovery from a fully blown skid and that only a theoretical solution was possible, so skids were to be avoided at all costs.

The standard method of dealing with a road hazard removes the inherent danger and takes account of the state of the road surface in doing so. Pretty much like dealing with one's flying training, hammer home the symptoms, hammer home the effects but develop the flying to deal with the onset of the spin, "never low and slow" summarising the main criteria.

On reflection I note that both my points are concerned with safety and I detect the growing concern amongst some correspondents about the extent to which an obsession with safety might detract from enjoyment of the sport. I do not know how enjoyment is to be attained when the pursuit of gliding is attended by so much anxiety about important matters; when safety is second nature, enjoyment will be a true reward.
ERIC LOWN, *Leamington Spar*

Robert Bryce-Smith, CFI of the Cambridge University GC, replies: I am grateful to Mr Lown for writing as it gives me the opportunity to state our defence. I am sure all could imagine my embarrassment when it appeared that one of our major operating rules on the airfield - "no touching the second cable, let alone hook it on, whilst the first is being launched" - had been broken and captured on the front cover of *S&G*.

I would like to say that we had both winches in operation that day and the cable being attached to the second glider had nothing to do with the first being launched. In fact the artist, a non glider pilot, interpreted this painting from several photographs taken during a day's flying. I guess it could have been worse. His interpretation could have included aerobatics over the winch, the Mosquito's canopy open and even the tug rolling, towing a glider with its brakes open.

Mr Lown is right. This doesn't set a good example and presumably will not appear on the front cover of the **BGA Instructors' Manual**, but it does look nice.

Dear Editor,

That's a very nice cover on the last issue. I wish I could paint like that! I think I even recognise the lass on the wingtip as being the one who proudly said to me last summer "Did you know I got two Bronze legs last week?" I replied something along the lines: "I'm not surprised, knowing last week's weather and the shorts I saw you wearing!"
MICHAEL RUSSSELL, *Henham, Herts*

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

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BRITISH WORLD CHAMPIONS

In the second of the series on British World Champions, Natasha Spreckley writes about George Lee and discovers the three times World Champion's approach to competition flying

For George Lee, World Gliding Championships "represent the ultimate challenge for the competitively minded pilot." For most competitively minded pilots, George Lee represents the ultimate Gliding Champion. Winner of the World Open Class Championships three times running (1976 Räyskäla,1978 Chateauroux, 1981 Paderborn) George is Britain's, and indeed one of the worlds, most accomplished competition pilots. In fact, there were not many competitions that George did not win, and if he didn't finish in first place, he certainly wasn't far behind. Just look at the results table on the opposite page.

Ironically, George's primary interest in aviation was powered flying. As an aircraft apprentice at RAF Halton, he only took up gliding to assist in the realisation of his ultimate goal of becoming a professional pilot (paradoxically reinforcing the BGA's attitude towards gliding in the early days of motorless flight). However, George remembers that "the bug bit on my first flight." From that moment on, he was hooked on gliding.

George began his gliding training in March 1963, age 17, at the RAFGSA Centre at Bicester, winching in T-21s until his first solo in a Grunau. It was not until seven years and 350hrs later that he flew in his first competition.

George had been posted to the RAFGSA Centre during his (powered) flying training. The RAFGSA system was to allocate gliders to individuals for various competitions. Within this system George was allocated a K-6CR to fly in the Inter-Services Regionals at Bicester in 1970. It was at this time that George discovered he liked competition flying, admitting that "of course the result helped as I won my Class."

This win was to set a precedent. George enjoyed continued success which can only be attributed to his ability and skill. However, he recognises two significant influences on his flying. These are George Moffatt's book **Winning on the Wind**, where the author inspired George with his sense of purpose, determination and analytical skills; and Bernie Fitchett, an immensely talented and gifted pilot, who influenced many of his contemporaries, including George Lee, with his technique and style.

Combining theory with practice, George developed a successful formula for flying competitions. It is a formula which emphasises the preparation of a pilot's mental and physical state before and during a competition. This tactic is essential as George believes that "maintaining the right degree of confidence from the first start to the final finish" is the hardest thing to achieve in a competition.

He contends that to establish the right degree of self-confidence, pilots have to believe they have the ability to win the competition. However, they must also not be under any illusion as to the capabilities of the other pilots.

But confidence doesn't just happen. It comes from the organisation of yourself, your crew and your equipment. In this respect George takes seriously what many other pilots might take for granted.

For instance, he maintained his fitness so that he was confident his physical condition would allow him to meet the demands of a long, hard competition and that, subsequently, he would be mentally alert at all times. Furthermore, during the practice period and the competition itself, he would establish a standard daily routine to ensure his food, exercise and sleep requirements were fulfilled.



George, three times World Champion.

Before each competition, George would set out to be as consistent as possible on each day. This approach he hoped would lead to an overall victory - and the bigger the competition the more important this became. In order to achieve this, he was first and foremost highly motivated towards winning.

Being highly motivated enabled him to focus his mind on the psychological battle of a competition. This, George would be the first to admit, is not an easy part of competition flying. He had to work really hard "at the discipline of taking one day at a time and forgetting about the previous days' result, be it outstandingly good or outstandingly bad." One way George prepared for this was to think about how he might react to certain situations, such as winning the first three days, doing badly on day one, or entering the last day in the overall lead by the slimmest of margins. In thinking these potential situations through, George had a tactical game plan to work from, while also realising that it would almost certainly have to be modified depending on his position in the results table as the competition progressed.

To realise the hypothetical result, the pilot has the added pressure of concentrating on a day's flying. Once the day's task is over, George believes that the pilot has to find time to relax and unwind. In particular, he always found it a good exercise to share the main (good or bad) points of his flight with his crew. Indeed, George believes a pilot's relationship with the crew should not be under-estimated. If you are going to fly competitions long term, then you should choose someone you trust with a similar outlook as yourself to crew regularly.

All good advice, as organisation, daily routine, a good crew and a tactical game plan must have been the determining factors in securing George the results he needed to be selected for the British team. In 1976, only six years after his first competition, he flew his first World Gliding Championships at Räyskäla, Finland.

After doing so well so quickly in British competitions, George's final result at Räyskäla might indicate that he was untouchable and winning competitions - National or International - just came naturally. Not so. In fact, his result could quite easily have been very different if it wasn't for the foresight of then British team manager, Roger Barratt.

George was finding the practice period difficult, mainly because he did not feel at ease psychologically. It was his first international competition abroad and although he knew there would be a difference between the standard of the average Nationals pilot to pilots competing at world level, the difference was greater than he had expected. He therefore developed a mental block about his own flying ability.

"I started trying too hard and my flying deteriorated until Roger Barratt took me to one side and gave me some of the best advice I have ever received. He advised me against changing my style and rather fly as I had always done - those few words relieved the psychological block and I got on with the job in a much more relaxed frame of mind."

Winning the Open Class in 1976 cemented George's relationship with the Open Class. Again, it was his association with the RAFGSA that gave him the opportunity to fly Open Class gliders, beginning with the Kestrel 19 in 1973.

"I have always enjoyed flying big winged gliders that offer the ultimate in performance. I appreciate the flexibility that Open Class gliders offer, particularly in the variable conditions of Northern Europe. I have also appreciated its individualism as demonstrated by less gaggling *en route* compared to the other Classes. In spite

YEAR	COMPETITION	GLIDER	POS
1970	Inter-Services Regionals, RAF Bicester	K-6CR	1
1972	Club Class Nationals, Dunstable	K-6E	2
1973	*Daily Telegraph* Euroglide Championships, Lasham	Kestrel 19	3
	Open Class Nationals, Lasham	Kestrel 19	2
1974	Open Class Nationals, Dunstable	Kestrel 19	1
1975	Open Class Nationals, Husbands Bosworth	Kestrel 19	5
	Euroglide, Open Class, Dunstable	Kestrel 19	2
1976	Open Class Nationals, Lasham	ASW-17	2
	World Championships, Räyskäla, Finland	ASW-17	1
1977	Euroglide, Open Class, Husbands Bosworth	ASW-17	2
	Smirnoff Derby, USA	PIK 20B	2
1978	Open Class Nationals, Lasham	ASW-17	2
	World Championships, Chateauroux, France	ASW-17	1
1979	Euroglide, Open Class, Husbands Bosworth	ASW-17	1
	Open Class Nationals	ASW-17	6
1981	World Championships, Paderborn, Germany	Nimbus 3	1
1982	Open Class Nationals, Lasham	Nimbus 3	1
1983	World Championships, Hobbs, USA	Nimbus 3	10
1987	World Championships, Benalla, Australia	ASW-22BE	9

George flew for Hong Kong in the 1983 and 1987 World Championships

The above results do not include all the competitions George Lee competed in. They do, however, indicate his success as a competition pilot over the 17 year period he was competing. All results taken from *Sailplane and Gliding*.

of the expense, the reduced rate of roll and the ground handling challenges, there is something special about big wings!"

But don't special wings require special weather? Like all pilots, George would prefer high based cu days with regular, reliable lift and streeting. However, he recalls that he flew best on days that required tactical thought. For instance "Cu days that offered irregular conditions with a mix of streeting and the occasional shower/area of overdevelopment.

"Conversely, I feel that I was least effective on weak blue days that required a different style of tactical gliding - the intelligent use of gaggles." Indeed, gaggle flying is one aspect of competition flying that George dislikes most.

Outside of competition flying, George prefers to fly long tasks, where most of the soaring day is utilised, not just the peak 3hrs. However, he is against the use of distance tasks in modern competition gliding as he believes they are not relevant. "I have not flown a POST task in a major competition, but it would seem to have the potential for the introduction of a significant element of luck and on that basis I would be against its use - certainly as far as World Gliding Championships are concerned."

Other changes to the World Gliding Championships that George is cautious about is the use of GPS and sponsorship. With regard to the former, George believes that "the potential effects of advanced technology on our sport need to be considered very carefully and regulations should be formulated in good time to ensure that the aims of competition flying will continue to be fulfilled."

Sponsorship, however, is more of a moral issue for George. Yes, there are many benefits attached to sponsorship. The competition organisation would enjoy a reduction in gliding costs, possibly resulting in lower entrance fees, and gliding as a sport would enjoy publicity and increased awareness. Despite this, he is concerned that sponsorship in its extreme form could lead to pilots entering competitions for the wrong reasons. "I wouldn't like to see large financial prizes as in the major sports - the thrill and satisfaction of victory should be more than enough!"

Prize money or no prize money, what all competition pilots want is to win. And if you're going to win, the first thing you have to remember is that "you must have the strongest desire to do so."

George's advice to pilots competing and who want to compete, is to not only practise your flying but to analyse it.

Once you have access to a competitive glider, fly cross-country regularly. Ideally, fly a task with a pilot or a group who are a bit better than you, but who are flying a glider of similar performance. After the flight, insist on a detailed and comprehensive debrief and analysis of the day. This is where the real learning process begins.

Begin to analyse things yourself. "Read the reports covering major competitions at home and abroad that you didn't compete in. Analyse the competition results and work out how and why the winner won. Analyse your own competition flights - what went well and what went badly? Analyse your own performance after each competition - did you finish up where you did because your daily placings were consistently around that position, or was there a considerable daily variation? Be honest with yourself and analyse both your strong and your weak points - then work on your weak points!"

GEORGE'S TIPS ON SUCCESSFUL COMPETITION FLYING

- Access to a competitive glider is essential. Once you have secured a fully competitive aircraft to fly, make sure you feel comfortable with the instrumentation and that it works "as advertised".
- Make sure you have a reliable, efficient crew and that there are no personality conflicts.
- Always be properly hydrated in good time before launch.
- Try to fly two competitions a year, preferably one abroad.
- Make every effort to attain a high standard of physical fitness before the competition.
- Consistency counts, not winning individual days.
- If in doubt, start early.
- Don't panic. Time lost in a sticky patch during a task doesn't necessarily mean the day is lost.
- Do recognise signs that a "change of gear" may be required soon.
- Control your competitive impatience and use the correct tactics (including using other aircraft) on weak blue days.
- Do as much flying as possible in the competition area before Day 1.
- Don't change your style of flying because it's the first big competition.
- Don't put all your eggs in one basket unless you are extremely confident of the outcome.

Peers should help each other by getting together as a group and discussing competition flying

But don't be too introspective. If you are flying competitions already, ask other competition pilots you know well if they agree with your analysis. Or, if you're constantly in the bottom five, go and ask the pilots who usually finish in the top five about their flights. Indeed, George believes that pilots and their peers should help each other to achieve their potential by getting together as a group and discussing all aspects of competition flying. He feels that "a greater interaction between pilots after tasks, during competitions, would be mutually beneficial."

This collective team spirit has been demonstrated to the full by the introduction of team flying which is now a commonly used tactic at international competitions. Team flying is a relatively new phenomenon, and was not really practised at the time George was flying international competitions. However, he recognises that this new strategy has had a significant impact on the results table. He believes that British pilots should learn from this and look at competition flying as a collective experience where, again, pilot interaction can be mutually beneficial. The 1995 British team did practise team flying at Omarama as can be seen in the overall results. Nevertheless, it is an approach that must be developed significantly, to reach a level of expertise. This George acknowledges will be time consuming, but if we are to be effective in this tactic, then time will have to be found.

Further advice for the individual pilot is try to fly two competitions during the season, one of which should be abroad. Flying overseas will give you the experience of different types of terrain and weather patterns. In this respect, it forms an essential part of a pilot's training and learning process.

Pilots keen to develop their flying skills can ➡

also benefit immensely from two-seater flying. This is another advantage of the Open Class glider, which George is the first to appreciate. Big wings provide the facility to train cross-country flying technique in a glider that gives nothing away in performance. Furthermore, an Open Class glider "affords the opportunity for less experienced pilots to benefit from flying with more experienced competition pilots in one of the highest performance aircraft in the world."

A ten year absence from the UK has prompted George to take up other interests. I know some of you are going to find this hard to believe, but there are other things in life than gliding! George has strengthened his Christian faith, he and his wife Maren enjoy hill walking and he has rekindled his childhood interest of bird watching - Hong Kong offers some of the best bird watching in the world. He has kept in touch with gliding through holidays to the UK and Australia, but he has to admit "the lack of gliding is becoming increasingly frustrating as the years go by." George and Maren hope to be able to live in Australia when they leave Hong Kong and George plans on being heavily involved in two-seater performance coaching.

TERRY HURLEY

AIR LINES

All through the winter the wind rocked the trailers on their suspensions. In the chill darkness inside the trailers nothing moved except on the instrument panels where, all together, the hands of the altimeters swung in silent metronomic response to the changing of the season.

One Sunday in late February we woke to find the bushes trimmed with frost but the sky blue and limitless, swept clear by a north-west wind. We lowered the hood on the car and drove to the airfield.

People we hadn't seen since last autumn were manhandling their trailers into alignment with the wind and opening the doors to the air. A noisy crowd in bright anoraks was pulling the club two-seaters around at the launch point. The gliding rites of spring - check flights.

A pundit was bolting another high-tec device on to his motorised ASW-24E - the last man in the world, this one, to have need of electronic assistance with his flying. Facetiously, we wished one another a happy New Year. In the clubhouse an Astir syndicate was solemnly drawing very long lines on to a crisp new map and checking dates in a diary. There was that happy feeling of things about to happen.

That night the wind strengthened to a gale which ripped down big branches from the firs in our garden, and when we came out the next morning snow lay over all the high ground between Northampton and Derby. It seemed that Sunday had been nothing more than a false spring. Standing up to our ankles in the fresh snow it was reassuring to think that two thousand miles south the swallows of Senegal, unknowing but instinctive, were getting ready for a flight longer than any Astir pilot could dream of.

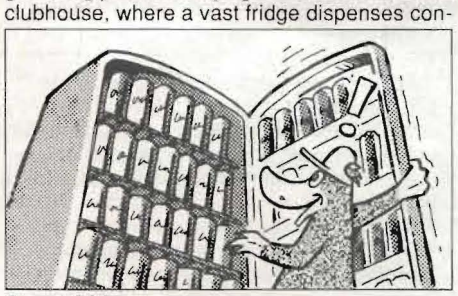
TAIL FEATHERS

Plat's travels in America

A very relaxed occasion

The best way for a mature pilot, which loosely describes me, to get into the swing of the US contest season is to enter the Seniors Championship in Florida in March. Florida is inexpensive to fly to and living there is cheap. Life is cheap too, if you believe the media, but the fact that 40 million tourists visit Florida every year puts the occasional murder in some perspective, assuming you aren't the murderee. I did indeed become the victim of a vicious crime in Orlando, playground of the world, but more of that later.

The Seniors is strictly for pilots over 55. Every year now for six years, around February or March, veteran competition fliers have trundled to Florida from the snows of Canada, the Midwest and wherever thermals are still hibernating, in their vast motor homes. These monsters whip along at a lithe five miles per gallon, with a glider trailer behind making an insignificant difference to the already dire handling or fuel consumption. Once at Seminole Lake gliderport, these mobile mansions become gin palaces and social centres. Another popular gathering point after flying is the veranda of the clubhouse, where a vast fridge dispenses continuous free beer, iced. At that time of year (the Ides of March) in Britain, beer served outdoors would also be iced, but it wouldn't need a fridge.

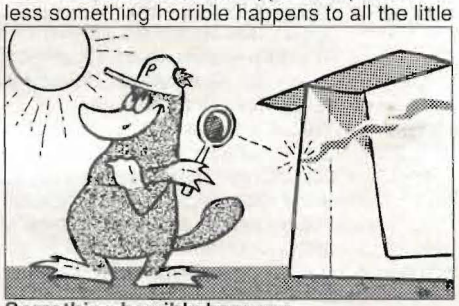


A vast fridge.

Plat arrives in Florida - umbrella sales boom

Last year I very publicly abandoned Europe from Spain to Poland as a soggy, windy dead loss. But *again*, on arrival at Seminole Lake in a monsoon, I got a load of "You should have been here last year..." from people who have not read what that does to my blood pressure. I think I am towing areas of damp behind me everywhere, and might make a modest living by entering contests all around the world and then being paid to stay away. Show me a silver lining and I will provide the cloud.

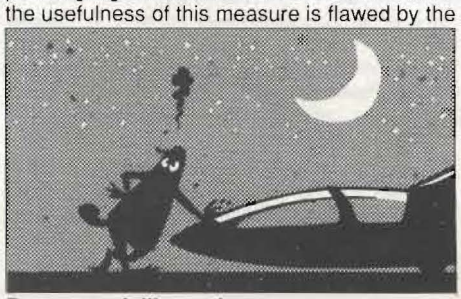
Florida skies in March 1995 seemed rather like English skies in June almost any year, offering much the same mix of bright sun quickly followed by good thermals, then followed by sudden spread out. This - the spread out, of course - was good news for the ASH-25, which has no chance in a handicapped competition unless something horrible happens to all the little gliders. It may seem ungentlemanly of me to pray for my rivals to land out, but every season I ask the good Lord to consider my handicap and arrange for the opposition to land safely at a convenient airfield, or at a charming ducal estate where butlers pour the tea and pretty girls divert the dashing flier until the crew (his not very diverted wife, probably) arrives. There aren't many ducal estates in Florida, but the little ships made masses of safe landouts in pastures and small airports on the first two contest days, which cheered up this spiteful old geezer no end. Whatever happened, you ask, to the fine traditions of British sportsmanship - losing with a gracious smile and all that tosh? Search me, guv, I've never been there, honest.



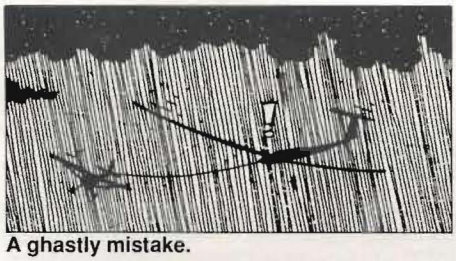
Something horrible happens.

Old contest pilots never die, their tasks just get shorter and shorter

Senior pilots do not much like retrieves (and senior pilots' wives even less), so Charlie Spratt, perhaps the world's most famous contest director, set the tasks with a determination to get everybody back, making allowances for the mix of Standard and Open gliders in one Class of 26 machines. I can give you an idea of how unusually poor the weather was when I say the tasks were too short to merit even one pee-bag in my ASH-25, No. 13. (Just as primitive tribes - and pilots with large motor homes and little trailers - measure all journeys in days rather than miles, so I measure flight distance in pee-bags. A zero-pee-bag flight is not much over 100km. I admit the usefulness of this measure is flawed by the



Do not much like retrieves.



A ghastly mistake.

fact that it varies from pilot to pilot, as well as shortening steadily as one gets older, and finally the number of bags per 100km must obviously vary with thermal strength, but what the heck, this is my column and like Humpty Dumpty, I can make these terms mean whatever I want them to mean.) Anyway the tasks were so brief, it seemed that barely had everyone taken off that the smug so-and-sos with big wings were back on the verandah drinking the free iced beer and listening to the outlanding reports. Heh-heh. Handicap, schmandicap, who cares if the weather is truly British?

A very good idea on marginal days was to wait till everybody was airborne before deciding to send them off on course. In Britain the die is cast once the first pilot is launched, which leaves a good hour for the weather to prove to the organisers and the hapless contestants that the whole idea was a ghastly mistake.

You can't be too careful

A stroll around the startline produced some startling insights into what the older pilot can do with a catheter and loads of plastic tubing, which I won't go into. (Gee, thanks. Ed.) Certainly people were ready for any contingency. One pilot sat waiting for take-off with a whacking great hunting knife, not quite as broad as a Crocodile Dundee special, but about as long, strapped to his chest. This, he said, was for such emergencies as finding oneself hung up in a tree in one's parachute, though I thought it might be just right



A few holes.

for fighting alligators and cutting rattlesnake poison out of one's leg. Another citizen who knows Florida well always flew with a .45 hand gun in the cockpit. I didn't ask him what he had in mind, but I think he did not much like the big shadow that an ASH-25 kept throwing over his canopy. A few holes in the intruder's structure would let more light through, and would also diminish its performance significantly, as if the 25's handicap was not severe enough already.

Talking about rattlesnakes, a live one was found making itself a home in a trailer. The snake's captor came with it to briefing the next day, looking either stone dead or just remarkably relaxed (the snake, I mean) and did a howidunit on his exploit. Florida is full of wildlife, and you are well advised not to make it any more wild by, for instance, treading on it.

I am determined **not** to make this a contest report, but the retired director of astronaut recovery systems for NASA at nearby Cape Canaveral, Stan Nelson, who was so helpful with adminstration involved in getting the ASH-25 into Florida, might not forgive me if I omitted to mention his win in the Ventus CM.

Gentlemen, hang on to your, er, tow-hitches

After the competition I returned to London to do a bit of work (abject apologies for that four letter word) and my partner flew his airliner full of tourists into Orlando and took over the ASH-25 for a few days. Suddenly he rang me from Orlando to announce "bad news". Since he is the sanest and safest pilot around, I could not imagine what he was going to say next. Outside his hotel our entire tow-hitch plus ball had been nicked, stolen, purloined, half-inched and made off with; that is, removed without the owner's permission. The bit that attached directly to the Jeep was easily replaced, but there are no 50mm balls generally available in the USA, and the ones normally on sale in the UK do not have vertical pins for fitting into US tow-hitches. Frantic telephoning located the only 50mm ball with a US fitting pin remaining in captivity in Britain. Watling Engineers delivered it within 24 hours. The only problem then was taking this odd-shaped hunk of metal through airport X-ray machines when I returned to the USA in April. The Heathrow security people said nothing (doubtless they are so sophisticated they said "Obviously not a bomb, just a 50mm steel European standard tow-ball on a 7/8in US standard pin" and gave it not a second's further thought) but US airport security pounced every time.



Delivered it within hours.

Now I have to take the hitch off and lock it in the car whenever it is not in use. All the same, if that is the worst loss I or the glider encounter during this season in the USA, I shall not complain one bit.

Stop press

Just after we were all launched on Day 1, Charlie Spratt was suddenly whisked away to a hospital 500 miles away in a plane belonging to Chicho Estrada, one of the contestants. Up till that day his amazingly active life since he developed kidney trouble had been organised around the demands of a mobile dialysis unit. It now looked as if he would today be liberated from that constraint. He left with the good wishes every pilot transmitted, one by one. It was a very emotional moment. Then the anti-climax. Three people were lined up for two kidneys from a young man killed in a car accident. Charlie lost. He flew back and was very matter of fact about it, but it was a blow, and we all felt it.

The pilots bought the fuel for the 1000 mile round trip. However on the day he got back from the competition, March 22, another kidney, scoring six, near perfectly matched as can be expected from a donor who is not a close relation, turned up, and he was lucky this time. He is recovering well.

NB. Seminole Lake Gliderport has soarable conditions all year round, though July and August are rather tropical and unstable. Knut and Ingrid Kjenslie will give you a warm welcome to one of the most attractive soaring sites that I have seen. It's only 20 minutes' drive to Disneyworld etc so the family don't have to sit around waiting for you to land.

For details of gliders to rent, write PO Box 120458, Claremont, FLA 34712 0458 or tel 001 904 394 5450.

GOLDEN OLDIES



We are featuring pilots who have been gliding for 50 or more years and start with Doug Jones, who is a member of the Bristol & Gloucester GC and went solo with the ATC in 1945 at Christchurch. Doug, an aeronatical engineer, has been CFI twice, a senior inspector, tug pilot and a member of the BGA Technical Committee since 1959 and chairman for six years. He has led the rebuilding of an Olympia and Nimbus and the construction of a Skylark 3 and Kestrel 19 from kits.

If you have a member who has been in gliding for this length of time, please send us a photograph and details.
Photo: Bernard Smyth.

AT LAST THE "THINKING VARIO"?

Julian checks out the Cambridge L-NAV, a GPS linked vario and the Magellan Meridian GPS

Chris Rollings teaches us that if you talk on the radio whilst thermalling and the climb rate does not fall off, then you are not climbing at the optimum rate.

Platypus assures us in the October issue, p259, that he can make a complicated series of keypresses on his GPS, and then do a little mental arithmetic to calculate the windspeed, at the same time as remaining centred. Obviously he has been hiding his light under a bushel over the years!

Perhaps the answer to this conundrum lies in his suggestion in the October 1988 issue, p222, that the main benefit of high performance two-seaters is in allowing a technically inclined P2 to be taken along in order to operate all the electronics, whilst the P1 gets on with the flying.

Now, at last, instruments are available which will provide almost all the information needed on a cross-country flight, without increasing the pilot's workload in any way. The major vario manufacturers have all announced systems which use GPS as well as the normal airmass data. Cambridge was one of the first and I have been using their L-NAV version 3 during the last season. I have found it both very easy to use and a great confidence booster at the same time.

Its combination of proven electronic variometry with accurate speed, distance and heading information from a GPS does enable the L-NAV to display a wealth of information, not only about a final glide but also about speed-to-fly, distance to the next TP, head or tailwind component and your track error in degrees.

The installation, see photo, consists of the main 80mm unit with a square liquid crystal screen in the centre, and the operating buttons arranged around it, as well as a conventional small 57mm analogue vario readout, shown to the right and slightly below the main unit.

Fig 1 shows a typical flying screen, the graphic on the right indicates the glideslope and that on the left provides a series of bars above or below the centreline, giving speed to fly information. Note that if the track error is positive, as in the diagram, you should turn right, and if it is negative you turn left the number of degrees shown.

Setting up the instrument for a cross-country flight is almost all done before take-off, reducing the pilot workload in the air. The sub-scale for the electronic altimeter must be set, and an arrival altitude entered, which is the height of your goal plus an allowance for circuit height. The Long Mynd is 1400ft amsl, so I set 2000ft. Heights are best expressed in QNH, since the wind calculations will then be more accurate. This is due to the need for a conversion from indicated to true airspeed within the computer, since GPS groundspeed is true.

Other settings will include percentage ballast and a MacCready value. You feed the most important information into your GPS, which is the route you intend to fly.

In the case of the Garmin 55 I used, it makes more sense to make sure that all the TPs you will need during the flight are stored in the Garmin, so that you can easily use its "goto" feature.

The advantage of a "goto" rather than a "route", which will direct you right round the task, is that when following a "route" the Garmin will change to the next turn immediately you overfly

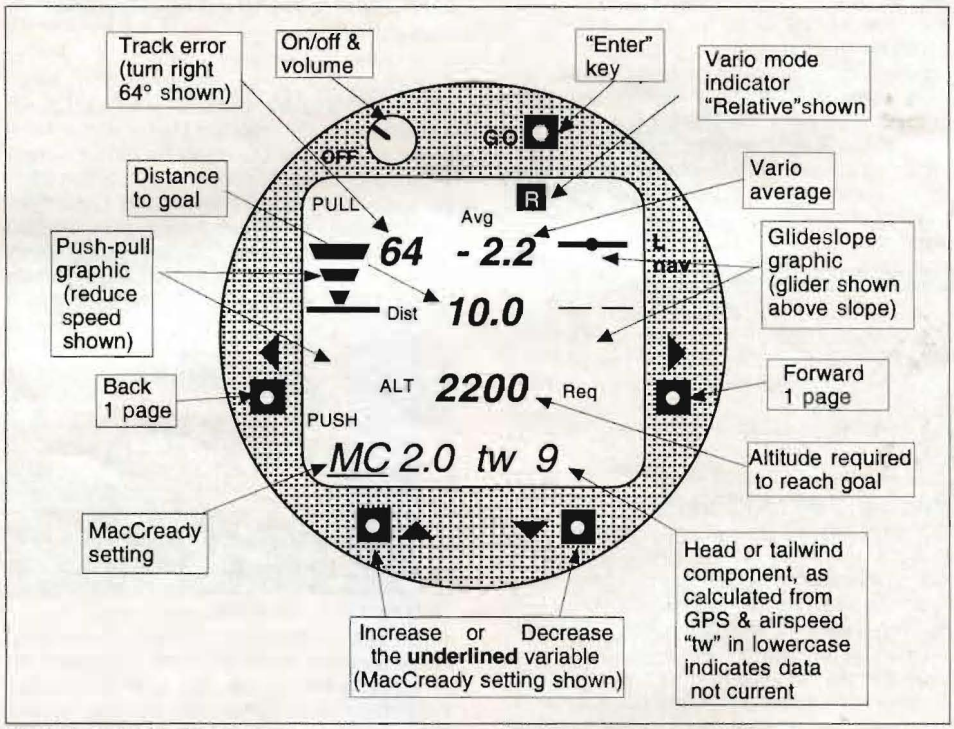


Fig 1. A typical flying screen.

the first. A "goto" will keep reminding you of the position of the TP, even if you have flown past it, until you manually select the next "goto". This makes finding and photographing TPs easier, even though it requires a few extra keypresses after each turn. A second advantage is that the Garmin "goto" command is much easier to use than the "route" function!

During the flight the vario practically thinks for itself, providing such information as wind component towards your next turn, speed-to-fly, distance to run, track error and altitude required to reach goal, as well as average climb rate. In the cruise, it displays the relative (sometimes known as super netto) vario on the analogue display meter, which changes to actual during the climb. At all times the digital averager shows the actual value, not the relative one. Relative mode is indicated by a black square on the display, see Fig 1.

An example to explain relative versus actual: during a cruise at 100kt you fly through some rising air and the dial starts showing 3kt up, but the averager shows 2 down, as does your mechanical vario. This means that at 100kt you are actually sinking at 2kt, but slowing down to 50 would give you a 3kt climb rate.

The audio is configurable, within limits, and I found the standard setting of silence during sink rather confusing compared to the Pesges VP4 that I used previously, so I changed it to beeping for climb and a low tone for sink. The audio is also "intelligent" in that it gives a different tone pattern depending on whether your climb rate is higher or lower than your current MacCready setting. It also differentiates between climb and cruise modes.

A small but rather nice gizmo is the automatic flight timer, which starts when 25kt is reached and stops on landing. It can easily be reset in flight if needed.

There are so many other features available that a full description would fill this issue, but what separates this new breed of instruments from what went before is the accurate automatic computation of wind component, by comparing airspeed from the pitot with groundspeed from the GPS. Combined with true distances from the GPS, this allows for accurate calculation of final glides, speed-to-fly and so on. Until GPS linked varios came along, final glides could only be calculated by reference to a guessed windspeed and distance as entered by the pilot.

There are many more screens available on the L-NAV, mostly used to configure the instrument to your liking, but the operation is always consistent. The left and right buttons move to

new screens and the up and down ones change values within a screen. The "Go" button makes your changes happen and returns you to the main flying screen.

Whilst flying it is not necessary to change screens at all, since the main flying screen shows so much information in an easily digestible form, but the "GPS Wind" screen, just one keypress to the left, can be very useful at times. Unlike the main screen, which shows the wind component towards your goal, the "GPS Wind" screen shows the wind component in the direction you are flying, as well as your track in degrees magnetic. This information can be very comforting when considering whether a ridge may be working, or whilst contemplating a field landing. It is also a boon when wave flying.

If you really want to know the actual wind strength and direction, you need to use the latest version of the Cambridge Secure Flight Recorder. The previous version without this feature was reviewed by Ian Strachan in the December issue, p318. The new version plots the drift during circling and logs it in memory at various height bands. This is an automatic version of Platypus' manual system, mentioned earlier. The pilot can then review the wind data for different heights to help him decide his strategy.

Plat often complains about the difficulties of operating what he calls "user hostile gadgets", and I must agree that just the sight of the excellent Pesges VP3 vario for instance, with its multitude of knobs and buttons, is enough to put off most pilots. In contrast, this new breed of instruments, like the L-NAV, is almost self operating.

If you can manage to programme your GPS to take you to a TP, then the L-NAV will give you everything else you need to know with hardly an input from the pilot.

The less ambitious pilot can set the GPS before take-off to direct him to the home airfield during local soaring. The altitude required and glidepath graphic will then give a constant reminder of his situation, and the track error display will guide him back home.

With modern cockpits becoming ever tighter for space, it is difficult to find a good location for a GPS but, provided that the GPS aerial can "see" the sky, the unit itself can now be put away out of sight, for instance in a side pocket. It should be reachable in flight so that you can change TPs or ask it for directions to another airfield, but it is not necessary to be able to actually see it apart from that.



Magellan Trailblazer GPS.



The installation of the L-NAV.

GPS data must be supplied to the L-NAV in the supposedly standard National and Maritime Electronics Association (NMEA) format and, as I've mentioned, I tested the L-NAV using a Garmin 55. I also tried it connected to a Magellan Meridian, which is now available for under £300 including VAT, although a power/data lead would also be required, which is not included in the price.

I found the Magellan very easy to use. Its menus are entirely logical, unlike those of the Garmin, and its NMEA output proved perfectly compatible with the L-NAV. Most people who tried it were able to manage without even looking at the manual.

However, the Magellan does have a few snags. Its case has rather a cheap feel to it, and in the Meridian version it is white, which can cause unpleasant canopy reflections. There are two more versions, the Skyblazer, which is grey, has a PC updatable aviation database, but is more expensive, and the Trailblazer which has OS co-ordinates as well as Lat and Long. It is dark green, presumably so that it can easily be lost by the walkers it is designed for. The Trailblazer should be available for around the same price as the Meridian, but from different outlets. Being able to phone in OS co-ordinates after a field landing might make life easier for your crew.

The Magellan removable aerial has no means of locking on to the extension lead provided, and I found it necessary to use an elastic band for this purpose, which does not seem very professional. One solution is to mount the GPS flat against the cockpit side, like a TP camera, and leave the antenna attached. The data/power lead is very neat and the plug embeds itself into the unit which allows the whole thing to be mounted on a flat surface, a feat which neither the Garmin or the Trimble can manage.

In tests I found the Garmin a more sensitive receiver than the Magellan, although the latter performed quite satisfactorily in the air. I also briefly tested a Trimble Flightmate Pro, but was unable to get it to "talk" to the L-NAV. This might be because I did not have time to try out all the available communication options on the Trimble. Naturally the Cambridge Secure Flight Recorder, which uses a Garmin engine, also provided a suitable GPS signal to the L-NAV, as you would expect.

I was very impressed by the L-NAV, and I may well buy the test unit from RD Aviation who kindly loaned it for this article. I can also recommend the Magellan at its current low price, with the reservations listed earlier. It is certainly the easiest and most logical to use of the GPS units I have tried.

Sailplane & Gliding

You can buy the magazine from most Gliding Clubs in Gt. Britain, alternatively send **£15.50**, postage included, for an annual subscription to the British Gliding Association, Kimberley House, Vaughan Way, Leicester.

Red leather-cloth binders specially designed to take copies of the magazine and gold-blocked with the title on the spine are only available from the BGA.

Price £5.50 including post and packing.

USA and all other Countries
Payable in either Sterling £15.00 (or US$30.00) (or US $40.00 by Air Mail) direct to the British Gliding Association.

AEROBATIC CORNER

In the first of two articles, Mike, a member of the BGA Aerobatic Instructors' Committee, gives his view of the benefit and value of aerobatic training to glider pilots in general. In the next issue he writes about flight envelopes, an important subject for aerobatic pilots which he has researched for the aerobatic manual he is writing with Peter Mallinson



Mike started gliding in 1980 and has 1800 launches, 1000hrs and two Diamonds. He went on two courses at Lasham given by Joseph Solski, the Polish World Aerobatic Champion, and won the UK Aerobatic Nationals, Intermediate Class, in 1993 and 1994. He is Irvin GB's engineering director and shares a Std Cirrus with his wife Susan, which is based at the the Cambridge University GC where they are both instructors. Mike also has shares in an aerobatic RF-4D and an L0100 at Nympsfield. Photo: Martin Boycott-Brown.

The initial reason glider pilots start aerobatic training appears to fall into some or all of the following four areas :-

1. To enjoy the thrill of aerobatics (fairground ride syndrome!).
2. To improve confidence and co-ordination (overcome fear).
3. To become more resistant to airsickness!!
4. To become involved in aerobatics.

Whatever the initial motivation the end result is usually the same - a pilot with a much better understanding of the handling characteristics of a glider across the whole of the flight envelope. Confidence and co-ordination are both improved as is their attitude towards spinning and stalling. The implications to flight safety are therefore self- evident.

Improved handling co-ordination

Aerobatics give an excellent yardstick by which a pilot can monitor his handling competence. With a series of well defined standards to be achieved, he will become aware of changes in his flying performance which can be a strong confidence builder.

The standards which bring about this improvement in co-ordination and confidence are simple indicators to be observed and controlled within defined limits. Airspeed and *g* loads are obvious indicators as are level wings and a central yaw string. Less obvious indicators include fuselage orientation in relation to horizontal, vertical and 45° lines, to be held to better than 5° by watching the wingtip (or wingtip triangle) relative to the horizon.

Maintaining a display axis, keeping wings horizontal when vertical, keeping loops circular, exiting a spin on a heading are other key attributes to challenge the aerobatic pilot. By becoming aware of and monitoring these various indicators, pilots achieve a means to practise, self-improvement and self-criticism etc.

Spin training reinforcement

Spin training - its virtues, relevance and conduct - is a subject of regular and avid discussion in *S&G*, so it is with some trepidation I raise it again. I would be the first to concede that it is difficult to predict how even the most spin conversant pilot will behave when faced with a low and unexpected spin entry. However, the ability to cope can only be improved by confidence and familiarity with the spin manoeuvre if not the complete flight. It is in this area of confidence and familiarity that aerobatic training can really help.

Many really quite experienced pilots appear to retain a deep seated fear of spinning. This may have its roots in pre-solo days when spinning was discussed in anxious tones - often the result of an over-zealous imagination. Equally it may reflect a pilot's sensitivity to the fact that spinning accidents do occur and usually kill. Whatever the reason, the outward manifestation can be a disinclination to undertake check flight spins and a positive avoidance of solo spinning, often to the extent of never having explored the spin condition of their latest glass ship.

It is perhaps significant that there appears to be no particular pattern to the number of hours held by pilots involved in spinning accidents. The relevant experience in the few fatal cases each year is more likely to be the extent of actual spin training rather than gliding hours.

Part of the problem must surely be the variability in the spinning characteristics of different training glider designs, which can often lead to false misconceptions about how easily a glider will or will not enter and recover from a spin. In an ideal world where gliders could be made totally spin resistant we could certainly dispense with spin training. Sadly even the most spin resistant glider can be provoked under certain circumstances (such as severe turbulence, aft C of G position, reduced *g* etc) into a spin, so that spin training remains essential.

Ideally training gliders should be imbued with spinning characteristics representative of solo machines to be flown when the pilot achieves a more advanced level of competence, so there are no surprises and no misconceptions created during training. This is certainly the policy in Poland where Polish designed gliders have well defined and generally well behaved spinning characteristics. Perhaps it is the spin resistant German gliders which create the confusion within the minds of our pilots during training.

The good news is that aerobatic training can really help pilots to overcome their misgivings about spinning, and enable them to regard the manoeuvre as one to be enjoyed and studied with interest rather than with anxiety.

One way this can be achieved is to introduce a new element to the spinning exercise - that of achieving a recovery on to a preselected heading. It appears that a new objective (which can actually be achieved very easily) acts as a distraction to the visually disturbing aspect of the spin and helps the pilot achieve a sense of control over this manoeuvre hitherto regarded as the glider being "out of control".

Additional measures include exposure to the "controlled and stable" nature of a sustained spin, to give the pilot time to relax and appreciate exactly what is happening. Also spin training is often undertaken before the pupil pilot has had much, if any, experience of flying the glider at higher speeds, so that the exit dive can be an alarming finale to the spin itself. For this reason there is merit in exposing pilots to the much less frightening and usually much enjoyed loop before undertaking any spinning exercises, with pupils being taught to control the dive in the loop exit.

It is probable there will be pilots who will never be wholly comfortable about spinning and to expect otherwise is both unrealistic and indeed unfair. However, as spinning remains an essential part of training we need to consider the use of some or all of the techniques discussed to make the individual as happy and as familiar with this flight condition as is realistically possible, and to be avoided only when it needs to be!

How can aerobatic training be organised?

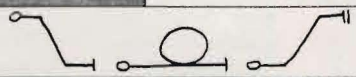
In Poland, a basic aerobatic course is a training syllabus prerequisite to cross-country flying to ensure the pilot has an adequate level of handling skills at all corners of the flight envelope. Many think it would be an excellent idea to introduce this into UK training and, as I have said, a short aerobatic course certainly gives more confidence, particularly in serious flight extremes such as spinning. The course need not be too intensive but could usefully aim to teach some or all of the following basic manoeuvres to be flown as a pre-planned solo sequence:-

a. Lines, 45° up/down, horizontal and vertical.
b. Loop.
c. Humpty Bump - canopy up/down.
d. Stall turn.
e. Spin with exit on a heading.
f. Climbing turn.
g. Chandelle (½ Lazy Eight).

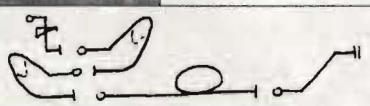
Club instructors with an interest in teaching simple aerobatics generally appear to do so with an adequate degree of competence as far as safety is concerned enabling trained pilots to go

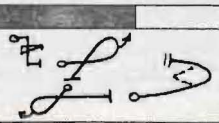
A TYPICAL GLIDING CLUB "BASIC" AEROBATIC SYLLABUS

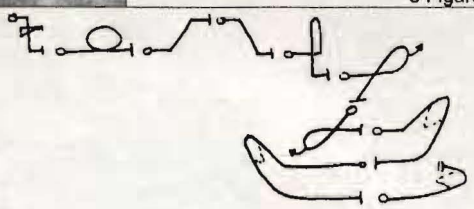
PILOT NAME:		INSTRUCTOR NAME	
BRIEFING ON AEROBATICS		DATE COMPLETED	
READ AEROBATIC MANUAL		SIGNED AS COMPLETED	

Sequence 1	3 Figures	3 manoeuvres.....
		1 45 deg.down line 2 Loop 3 45 deg up line
Briefing Given	No.of Demos	Cleared Solo
	No.of Attempts	Solo Flight

Sequence 2	3 Figures	3 manoeuvres.....
		1 45 deg.down line 2 Humpty Bump 3 Climbing Turn
Briefing Given	No.of Demos	Cleared Solo
	No.of Attempts	Solo Flight

Sequence 3	4 Figures	5 manoeuvres.....
		1 One turn spin 2 1/2 Lazy Eight 3 1/2 Lazy Eight 4 Loop 5 45 deg up line
Briefing Given	No.of Demos	Cleared Solo
	No.of Attempts	Solo Flight

Sequence 4	3 Figures	4 manoeuvres.....
		1 One turn spin 2 1/4 Clover leaf 3 1/4 Clover leaf 4 Climbing Turn
Briefing Given	No.of Demos	Cleared Solo
	No.of Attempts	Solo Flight

Sequence 5	8 Figures	10 manoeuvres.....
		1 One turn spin 2 loop 3 45 deg up line 4 45 deg.down line 5 Humpty Bump 6 1/4 Clover leaf 7 1/4 Clover leaf 8 1/2 Lazy Eight 9 1/2 Lazy Eight 10 Climbing Turn
Briefing Given	No.of Demos	Cleared Solo
	No.of Attempts	Solo Flight

away and safely enjoy simple aerobatics. Usually they are instructing simple single manoeuvres such as loops or chandelles, rather than an Aresti sequence, and this can lead to an inconsistency about how manoeuvres are taught and the definition of what needs to be looked for, emphasised and achieved.

Examples of such inconsistencies include entering a loop from the dive rather than from horizontal flight with all the problems this poses for entry speed accuracy. Similarly, maintaining horizontal, vertical or 45° lines as the speed of the glider changes may be overlooked. If manoeuvres are performed in the same way each time the pupil can more quickly learn a consistent "feel" to each manoeuvre which greatly assists the training process. Instructors need to agree a common approach to glider aerobatic training which is the reason for the training manual on the subject currently being compiled.

A committee of gliding aerobatic instructors meets regularly to discuss and review training procedures, problem areas, instructor checks, etc. It arranges training workshops around the country and the National Aerobatic Competition which provides an invaluable goal for aerobatic pilots of all standards through three Classes - Sportsman, Intermediate and Unlimited. For guidance and help with competitions, judging etc it has arranged for gliding to become a recognised branch of the activities of the British Aerobatic Association, with a special membership for glider pilots.

Gliding clubs vary both in their ability and willingness to train pilots in aerobatics, often being limited by their training aircraft and/or the availability of suitable instructors. In this context we have been trying to help by holding training weeks/weekends at various clubs having willing CFIs and suitable two-seaters. Generally such clubs readily help by reducing the high cost of aerobatic training through reduced charges for aerotows to 4000ft and limited soaring charges. This is essential to encourage student aerobatic pilots to complete their training, rather than doing what they consider to be just enough to get going on their own - a common approach which is definitely to be discouraged.

A training syllabus is an excellent way of ensuring a thorough approach is taken towards aerobatic training. A typical basic aerobatic syllabus is given in the diagram on this page showing four relatively simple sequences which are demonstrated and attempted until a satisfactory standard is achieved for a solo flight. After each of the four sequences has been mastered a fifth sequence is taught comprising ten manoeuvres made up from those already taught. As each of the five sequences is likely to require at least three flights to 4000ft (including the solo flight) it is clear that typically 15 flights will be needed to complete the syllabus.

Aircraft and equipment

The following equipment is vital for aerobatic training:-

G meters

Don't attempt any aerobatics without a *g* meter to record maximum load factors on the airframe during each sortie, and to monitor airframe loads during manoeuvres. Indeed for certain manoeuvres such as looping figures, a *g* meter is vital for achieving the correct figure shape. Obviously for the *g* meter to be used effectively the pilot must have a comprehensive understanding of the glider's flight envelope.

Wingtip triangles

Aerobatics should be performed in gliders fitted with at least one off aerobatic reference triangle fitted to the wingtip in order to focus attention on accurate lines. Ideally the clubs should have at least two per glider - one for each wingtip - and they are priced at about £15 each.

Gliders

In recent years we have seen the emergence of a new generation of strong glass-fibre two-seaters ideally suited to aerobatic training, including the Puchacz, K-21, DG-500 and the Grob Acro. They are quite adequate to train pilots up to intermediate standard of Aresti aerobatics.

It is more difficult to find suitable single-seater aerobatic gliders as they tend to be designed first and foremost for cross-country soaring and in consequence are not ideal for flying aerobatics to any significant level. However, gliders such as the Pilatus B-4, the DG-300 and various Polish built gliders such as the Junior, Cobra and Jantar offer some interesting possibilities.

International interest in gliding aerobatics has prompted the development of a number of exciting, special to task aerobatic gliders such as the Swift and the Fox from Poland and Celstar from South Africa, although sadly none of these designs are currently available in the UK due to lack of necessary finance.

It would give a wonderful boost to the sport if the BGA bought a two-seater Fox (perhaps financed by a Sports Council grant) to enable Britain to both train and compete internationally in Unlimited Aerobatics.

AN ASH-25 IN OUR STOCKINGS

Phil King describes a Christmas holiday soaring cross-country in South Africa, with interruptions (in italics) from his wife Diana in the back seat



Diana and Phil photographed back home by Bryan Smith with the LS-7 they share. They fly from Shobdon in the winter and Snitterfield in the summer, being full members of Herefordshire and Stratford on Avon GCs.

Until now it has been difficult for visitors to South Africa to exploit the superb soaring conditions. Last October Gillian and Brian Spreckley shipped two Pegasus, their LS-6 and syndicate ASH-25 south. The Soaring Society of South Africa helped them establish a soaring operation from Mmabatho Airport for three months during the southern summer.

Roaring along at 100kt at 12 000ft, looking for the next thermal, spurning 2kt, 3kt or even 5kt, and stopping only for 7kt or better, it was hard to believe it was Christmas Day. With temperatures on the ground reaching 35°C or 40°C it needed a major effort to imagine the scene at home - cold grey skies and our families gathered round the fire with turkey and Christmas pud.

But this was South Africa and there everything is larger than life. The thermals go higher and stronger, the days are hotter, the airfield, with its 4.5km runway, is bigger than we are used to. Even the glider - the ASH-25 - was larger than life to our eyes more familiar with 15m gliders.

Mmabatho is an international airport with all the usual facilities but it has very few commercial flights. The local air traffic controllers handle all the take-offs and landings including the tugs and gliders. All pilots must ask permission before landing, although it is not clear what a glider pilot would do if denied permission! In practice the controllers are very helpful. For example when Bruce Nicholson had difficulty identifying the airfield on a long final glide the controller switched on the runway lights to help him.

The controllers are not familiar with gliding terms, so instead of asking to do a beat up or *racing finish* you must request a *low approach and go around.*

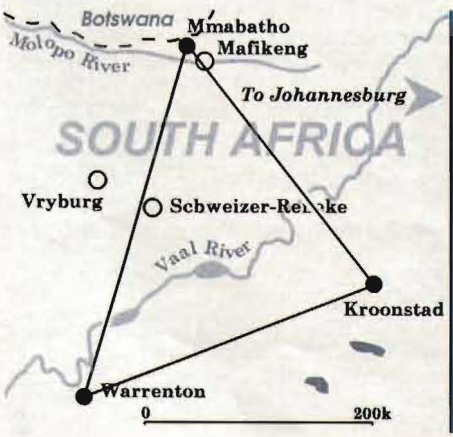
Filling waterballast containers one evening, I was approached by a member of the airport police, whose job it was to guard the great runway, the massive hangars and vast, echoing, empty terminal building. The others had told him that water provided the fuel for gliders; perhaps the sight of me filling the containers added strength to this fiction.

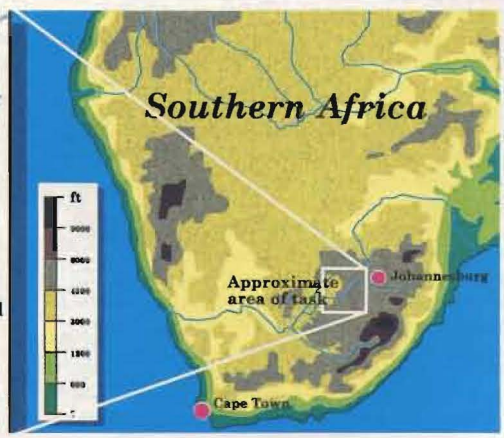
He told me his name in Swani, but said that I could call him John, being easier for me to pronounce. He told me about his two children and his wife, his "third child", as he called her. I teased him, "So your family is four children, including you?" "No", he said, with grave pride and responsibility, "I am the father. I provide for them all, so they are my children."

He spoke of the hope the black African people have in the future of their country, but "only if people discuss their problems. If we understand each other, then we will solve the problems." Listening to him, I too felt hope and confidence in the future of this great country, and also humbled at his dignity and patience.

Mmabatho is almost in the centre of southern Africa and more than 600km from the sea. It is near Mafikeng on the south-eastern corner of Botswana and the Kalahari desert. We did not have permission to cross the border into Botswana, so the task area was to the south and to the east. The area comprises rough semi-desert with some cattle and sheep grazing and cultivated land which was mostly in plough. It is a plateau between 4000 and 5000ft amsl cut by three great rivers - the Molopo, the Vaal and the Orange.

Steve Longland's map of the task area.





Brian briefed us to avoid field landings. The fields are large and flat, but may be very difficult to reach by road and a very long way from a telephone. The organisation had only one trailer and retrieve vehicle, so the preferred retrieve method was by aerotow from an airfield or farm strip.

Mmabatho is just south of the Tropic of Capricorn, so in December the sun is almost directly overhead at noon. Most days started hot and completely blue and the temperature rose steadily all day. On good soaring days the first small cumulus would appear by noon and this was generally the signal to start launching. On many days these small cumulus would grow steadily so that by mid-afternoon they would be producing rain showers. Sometimes the rain showers would be accompanied by lightning and when this happened the showers would merge into large storms which might stretch for 200km or more. At the same time there might be an area nearby of good blue thermals to 14 000ft or more.

On Boxing Day we stayed at the clubhouse and watched a storm growing until it burst in demonic fury upon the airfield. After that experience we did not want to fly through or even near



Crossing the Vaal river.

such a storm and whenever we saw lightning we diverted to avoid it. We wondered if we were being over cautious, but on the flight home the 747 diverted 200km SW from Johannesburg to avoid such a storm.

A large storm was the cause of our only outlanding, an adventure in itself. Heading for home on the second leg of a 500km O/R record attempt, we became aware of something large and rather unpleasant lurking behind an apparently innocuous and attractive looking cumulus. It grew towards us as we flew towards it, then the lightning started. Flashes quite close on our right, then on our left, accompanied by a large and heavy shower between us and one of the safety options at Vryburg.

Me in the back, increasingly scared with memories of two days before when we had kept going towards and through a similar looking storm until all our options had been used up and we had ***to***

A typical small village.



get back to Mmabatho: "Please let's do something awfully sensible, like land at a suitable airstrip".

Phil in the front (from where he could see better): "I don't think it's that bad, perhaps we can go round it". Lots of uncertainty, mixed with an ever increasing amount of lightning, skies darkening ahead and on either side.

Eventually Phil gave in to this pathetic frightened wimp in the back and down we went towards the strip at Schweizer-Reneke, a small town in the middle of nowhere with the ubiquitous railway and row of enormous grain silos.

We rolled to a halt at the end of the dirt strip, surrounded by yellow flowering thorn bushes, brilliant against the black storm clouds. As we got out of the glider, wondering a little what to do next, we looked back south to see a perfect soaring sky still defying the oncoming storm.

Then an hour sitting in the glider riding out the storm and the 6km walk into town in the dark, the air hot and humid, the lightning still flashing, silently and eerily lighting up the sky from hundreds of miles away. It was a wild west sort of town full of fish and chip shops, with one hotel where we booked a room in case the retrieve couldn't get to us. Sitting on the kerb eating our fish and chips we suddenly saw the unmistakable sight of a Cobra trailer approaching, Bruce and David coming nobly to our rescue.

During our first week we did a couple of 500km tasks. Our best day came during the second week when we felt ready to tackle a longer task. Although the forecast was for almost completely blue conditions we could see cumulus forming at 0915. We filled the waterballast, declared a 750km triangle and got launched just after 1100. The lift was about 3kt to 8000ft - but with ground level at 4200ft this seemed rather low. Conditions improved steadily along the first leg and we made good time to the first TP at Kroonstad. By then our climbs were averaging 7kt to 14 000ft.

The second leg was more of a challenge. It was totally blue without even haze caps to mark the thermals. The lift was weaker and only going to 11 000ft. This slowed us down so that we calculated that our chances of completing the task before nightfall were poor. Regretfully we turned back towards Mmabatho, 100km short of our second TP at Warrenton. The conditions remained blue, but gradually improved as we returned north, culminating in a 9kt climb to 14 000ft which gave us an easy 44 mile final glide at 100kt with an hour in hand. In retrospect we might have completed the 750km if we had stuck to it.

This was one of the few days when there were no cu-nims in the task area. Even so we could see them 100 miles to the north. Three times during the fortnight we could not complete our declared task because of storms. Anyone flying from Mmabatho wanting their Diamond distance would do well to declare two or three TPs so that a completed O/R to any one of them would give a free distance flight of over 500km. This would improve their chances of getting the Diamond despite the storms. Few people seem to take advantage of the possibility although the rules were changed to allow it many years ago.

We had agreed to share the cross-country flying equally. We devised a novel way of deciding when to hand over. One of us - the *active* pilot - would start by flying the task whilst the other would relax, read the map, eat, drink or relieve themselves (particularly whilst over Mafikeng!). If the inactive pilot announced during a climb that we could press on and reach stronger lift, we would immediately swap roles and he/she would take over and press on.

This provided a real sense of competition - the active pilot was strongly motivated to reject weak lift and achieve a high rate of climb to dissuade the inactive pilot from taking over. Meanwhile the inactive pilot could concentrate on scanning ahead for signs of better lift such as circling birds, dust devils, another glider (very rare), or most typically a good cloud. After each change of roles the newly active pilot was under significant moral pressure to press on.

This technique worked well and gave us roughly equal shares of the flying. It allowed us to make instant decisions without argument or discussion. Meanwhile we could also discuss longer term issues such as how to deal with the storms ahead.

Some occasional frustration arose as, in our competition for more handling time, we resorted to gamesmanship, calling out "I can do better than this!" (the agreed handover signal) while we were already flying the glider. The inactive partner, in spite of calling out a split second later, was forced to sit watching as the active pilot pressed on to the cloud we had invariably both independently selected.

So, what about South Africa, is it a soaring paradise? In our limited experience it was certainly very good (although the first week was no better than a good week in a French summer). It is so good that we deliberately took a rest day (missing 500km) and still flew 3835km and 55hrs in 11 flights. However, it wasn't as easy as we had expected. We found the terrain intimidating so we always kept within gliding range of an airfield or airstrip. The cumulus were never easy - often so small that they evaporated before we reached them or so large that we avoided them altogether. Navigation was easy because of excellent visibility, good maps and, above all, GPS.

The last evening. Pole squatting to spin out the magic, watching the sun setting over the Kalahari desert. For the last time we beat the bounds of the forbidden territory of Botswana, running one tip of those amazing ASH-25 wings along the line of the border. Just over the border, as though in a British TMA, perfectly formed cumulus were hung out to tantalise us, while the sky over South Africa remained blue and now nearly stable.

For the last time we climbed in the weakening evening thermals over the unlandable bush, pondering the unlikely wealth of flying such a glider over the primitive, poor shacks of the small farmers. As the sun slid below the vast horizon we called Mmabatho tower to announce our return and received the usual confirmation from the Swani controller "Roger glider 162, join left hand downwind, runway 04, no delay expected, call finals."

We turned finals, touched down a mile along the runway and cleared left on to the patch made available for gliders. "Mmabatho, glider 162 is clear of the runway." "Thank you, Ma'am and goodnight."

GAY RIP GRAND

We follow on with a great performance from a veteran pilot, Michael Hunt, in SA

As the architect of apartheid, the late Dr Verwoerd could well expect to fall into disfavour after last year's fully democratic elections and it was with little surprise that we learned shortly before the last camp of 1994 at Hendrik Verwoerd Dam on the edge of the Karoo that it sported a new name. It was our Scottish tug pilot, Ian Clark, complete with a kilt and an endless stock of irreverent jokes, who parodied the new name "Gariep" into "Gay Rip". Perhaps it was the change of name that made the difference for the weather was a definite improvement on the previous year, to the satisfaction of a large number of visiting pilots from all over the world, especially, as usual, from Germany, but this time sadly minus the late Klaus Holighaus.

It was Tim Biggs who was really responsible for my being there. As the doyen of South African gliding he had already earned most of the laurels going, except the big grand, the 1000km. Then at the ripe old age of 72 he joined the December 1992 camp and became only the third local boy to do it in a pure sailplane. For me, fast approaching my three score years and ten, it seemed as though a challenge I had quietly ignored had suddenly intruded itself into my horizon. Have a crack at being the second oldest.

The three week camp started in indifferent weather on December 17. The 21st turned out to be better than forecasted, provided one was lucky enough to pick the right task or, as in my case, happened to have that route already loaded into the GPS - a strong motive for its selection. There was no hurry at the launch point and I tucked my ageing ASW-20 on to the line behind Frenchman



Michael photographed with the declaration of his 1000km task.

Michel Debreuil's LS-6 who, as usual, was first on the line.

Then came the message at around 10am that the temperature was 32° and rising. There was a flurry of action, including stuffing two litre bottles of iced drinking water into the cockpit, and then zap, a highland fling into the air.

In general terms my flight seemed to turn into one disaster after another. First it was the compass dripping oil on to my legs during the climbs and becoming completely unreadable when I most needed it. Then my failure to blow hard enough into the drinking tube after use and having a pint or so of flavoured water siphon on to my lap before I could manage to stop the flow. Then at a critical moment the maps slipped down the side of the seat and disappeared. Who cares! You don't need maps with a GPS - except when like any other computer it gives you an error message to the effect that it is lost. And so are you.

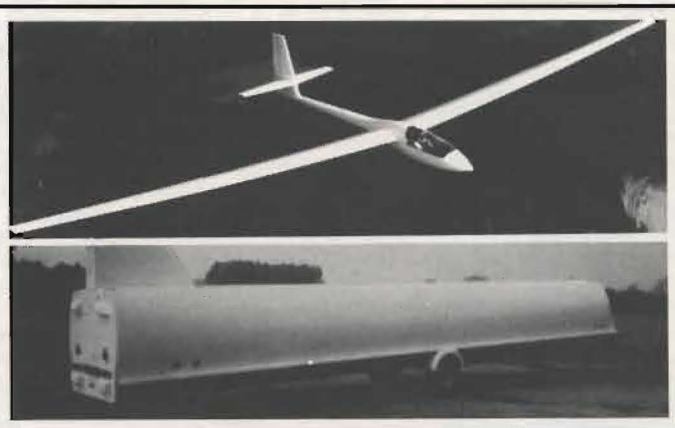
It really all boiled down to one main issue, the wind. The first TP, Rouxville, was only 128km away to the east and was an easy run in just one hour after crossing the startline. It was the blood chilling knowledge that the next TP was nearly 500km away at the northern extremity of the Karoo which really hurt, followed by the information from the GPS that the groundspeed was barely as much as the indicated airspeed, in spite of the average height of around 14 000ft. "Four o'clock is the latest for turning at Olifantshoek" Tim had told me. I didn't plan to cut it so late but in view of the evident headwind maybe it wasn't on at all.

I seemed to be barely creeping over the ground. Abandonment of the task was an option never far from the surface on that long trek. An out landing was a very strong option over a miserable little crossroad and farmhouse whose ploughed fields I scanned from about 500m above them. (In the UK I have set off across country at less than that but you can land nearly anywhere in the UK.) However, my guardian angel heard me and the second TP was finally reached at a low altitude after a last determined effort to get that far at least.

It was 3.55pm as I photographed Rocklands T junction just outside Olifantshoek, which was totally in the blue and seemed as quiet as a Sunday evening. Furthermore the GPS was telling me that I still had about 400km to go in the direction of a cloudless sky. I had averaged only a little over 100km/h through the heat of the day, so how on earth was I going to cover that last leg in the cool of the evening with sunset at around 7.30pm? I muttered to myself about biting off more than I could chew.

When all else fails, at least try to stay up; who knows what may happen? I therefore ignored the GPS and headed back the way I had come, where there were still some clouds to be seen in the distance. Since it was a long thin triangle it wouldn't be too far off the required track. Surprise, surprise! There was still strong lift about, and even some quite good cloud streets. More to the point the groundspeed was now very much higher. In the end my big deviation east of track paid off and kept me with the line of clouds until some 100km from home, when I could give the course control back to the enraged GPS and work on my final glide using the few remaining weak thermals. Scraping in over the formidable moonscape terrain of the Karoo was a nail biting experience, Could one really trust the GPS to that extent?

The airstrip only came into view some 20km out, but what a wonderful sight! I landed just before 7pm and was greeted with a welcome kiss from a beautiful blonde carrying a cool beer. Could any king in history have felt so overjoyed? Helmut and Debbie Fischer, the incomparable organisers of the whole show, were next on the scene, their faces wreathed in smiles. Six 1000kms in one day, five by overseas visitors including a jubilant Michel Debreuil. I was especially welcomed as the only local boy to make it, and in a 15 Metre machine to boot! It was indeed a gay rip to be remembered!



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JOIN OSTIV AND SEE THE WORLD

Tony reports on the OSTIV Congress held at Omarama, New Zealand, at the same time as the World Championships

While the brave lads of the British team were doing deeds of daring in the skies high above the mountains, lakes and ringing plains of New Zealand, a sedate scientific and technical Congress was being held in the Omarama Motor Lodge.

During the six days of the Congress there were 38 papers on technical and meteorological subjects. An outstanding paper was presented by Richard Eppler of Germany, the famous designer of aerofoil sections, who discussed induced drag and wing shape. He appeared to be sceptical about the value of winglets. He had designed a simple balsa wood model glider, with a starboard winglet pointing vertically upwards and a port winglet pointing vertically downwards. This contraption was launched above the admiring audience, whence it promptly disintegrated in midflight. We never did learn what this was meant to show.

Richard Eppler related the story of a poverty stricken young glider pilot asking whether he should buy winglets for his new glider. He recommended buying one winglet only, attaching it to the glider and then attempting to fly it straight and level to demonstrate whether or not the winglet was effective.

Bob Henderson of New Zealand took time off from being competition director to present details of a proposed experiment to show the decline in performance of pilots when exposed to low levels of hypoxia from 5000 to 13 000ft. Experienced pilots would remain in an altitude chamber for several hours and carry out aviation related tasks, such as a difficult ILS approach, and the effect on mental and physical performance measured. This could be a classic study.

Several very interesting papers were presented on behalf of Gerard Gillot of France. When landing a glider, an expert only directs 3% of his attention inside the cockpit compared with 75% in a novice pilot. By training pilots in the winter using video and slides to recognise suitable fields for landing, when spring comes they show excellent performance in carrying out practice field landings in a motor glider. This is of importance in view of the high incidence of field landing accidents.

He also discussed psychological problems of prolonged soaring flight. These are very similar to those experienced in lengthy military missions and some types of sailing and space missions. An acceptable level of performance in carrying out complex tasks has to be maintained despite fatigue. His training methods gave a high level of task performance over a period of 30-40hrs. However, I consider this level was obtained by "coning" of attention, and there would be insufficient mental processing resource remaining available to deal with a secondary task, such as a sudden emergency.

Bill Scull discussed the evaluation of risk, pointing out that the actual level of risk is often less than the perceived risk. For example, there were only ten medically related accidents, four to PPL holders, in the UK in the last 30 years, so compulsory medical examinations would make little difference. A problem should be quantified before a solution is proposed.

A paper by Howard Torode was presented on flight limitations. Designers have optimised the strength of structures more closely to regulatory limits which can be easily exceeded in some situations, such as in a spin recovery dive.

I have carried out impact tests on the effect of using highly damped seating foam on spinal load in full size pilot manikins. An impact at 17*g* at a velocity of 9.4m/sec was used. Load cells in the lumbar spine showed significant reduction in load. These tests were done on the track at the Defence Research Agency Centre for Human Studies, Farnborough - the new name for the RAF Institute of Aviation Medicine.

Loek Boermans of Holland discussed the use of suction to control the boundary layer. Current aerofoils are so efficient that using a suction producing system, the losses would outweigh the gains. However, if a solar powered suction system were designed, a lift to drag ratio of 86:1 could be achieved.

Christoph Kensche of Germany discussed the fatigue life of composite structures. A GRP spar cap had a lifetime of more than a million hours. Glass-epoxy has a better fatigue behaviour than glass-polyester. James Ritchie of Australia had conducted a study on the fatigue life of metal IS-28B2 gliders, as a result of which the Australian CAA have been asked to authorise an extension of the safe fatigue life from 10 000hrs to 15 000hrs.

Carsten Lindemann from Berlin is developing a geographical thermal convection map, using information on the type of soil, land use and forest areas, and comparing this with well known gliding "hot spots".

Wolf Röger from Germany presented the fundamental points of a glider parachute recovery system. One experiment involved dropping a large model glider from the third story of his college building on to the car-park. The video showed the model glider striking the ground very close indeed to the adjacent parked cars. In another test, Wolf had bought a small barrage balloon from a firm in Leigh-on-Sea, Essex. He used it to drop a model glider with various vital parts removed, such as a wing or the tailplane. A radio signal then released a parachute and the effect was studied on a video recording.

As there was only one model available, it had to be caught by a ring of students. I gathered the impression that Wolf gets through quite a few students in a year during the course of his experiments. If anyone would like a copy of the draft OSTIV Technical Requirements for glider parachute recovery systems, please send a large sae to me at Lasham.

During the OSTIV final dinner, 80 year-old Herman Stiglmeier related the story of how the Douglas Aircraft Company constructed a 15 seater military glider in 1943. The prototype had an 85ft wingspan, a pod and boom fuselage, and was towed by a DC-3. The designer was William Bowlus and the pilot Wolfgang Klemperer, the famous soaring pilot. In the dry desert air, pieces of wood began shrinking and falling off the interior structure of the wing. It was agreed these pieces were not structurally necessary and the smallest person in the group was sent in through the wing root to recover these "superfluous" pieces. The Douglas glider was towed to 2000ft. Instead of following the towplane earthward it lazily banked into a strong Mojave thermal and before long was a distant speck in the blue desert sky. The contract was eventually won by the WACO CG4A glider.

The papers are published in full in the journal Technical Soaring, sent free four times a year to OSTIV members. For membership details, write to the OSTIV Secretariate, DLR, D-82234, Wessling, Germany.



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A ROCKY MOUNTAIN HOLIDAY

Alan said that when invited on a trip to the Rockies last summer, to fly and drive turn about with a self launching 17.6m Ventus, it only took a few minutes to decide

The invitation came from David Noyes, a fellow pilgrim to the Appalachian ridges for many years and one of a select few pilots who have completed all three Diamonds east of the Mississippi in the 20:1 L/D Schweizer 1-26. (I happened to be present as he rolled to a halt after the last of these flights and asked what he planned to do next: "Sell this damned 1-26" was the response.) David flew his 1000km diploma in his next glider, an ASW-19, and last spring flew 650 miles from central Ohio to Cape Cod in the Ventus.

We both felt the trip would be more fun without the tedious organisation and paperwork involved in record claims and did not bother to take a barograph.

The first mountain flight started at Cañon City in the Colorado foothills of the eastern Rocky mountains. David launched here and after a difficult ten mile scrape got established on the north end of the Sangre de Cristo ("Blood of Christ") range.

There is a commercial glider site a few miles south of Cañon City near Westcliffe which could well be worth a visit in the wave season. There is a "wave window" here to allow flights over 18 000ft, in which I climbed without difficulty to 32 000ft a few years back in a Kestrel (given the Kestrel's airbrakes, coming down was more of a problem!).

After crossing the high desert valley to the west, David flew over the San Juan mountains and arrived at Durango, the goal, after a 160 mile flight. Overhead the municipal airport he considered the dubious pleasure of pushing the Ventus along an extensive taxiway system and, getting directions from a local glider pilot on the radio, was able to extend the motor and divert to the Val Air glider field.

In the mountains radio communication tended to become impossible soon after take-off as the car often had to take a more tortuous route, so we used an answering machine back in Ohio to pass messages when we lost contact.

Durango turned out to be a well-preserved 1890s town, complete with a narrow guage steam railroad which runs past the gliding strip on its way to Silverton, 40 miles to the north.

The next day the crosswind was too strong to allow launching until mid-afternoon. The strip at Val Air is at 6550ft asl and much too short to self launch, so I took an aerotow in considerable turbulence which was as exciting as the locals said it would be. They also said that they would not go too far away unless some cumulus became apparent: once above the mountains there were a few visible, but they receded to the north-east as I approached Silverton at only 13 000ft among some of the highest peaks in the Rockies. The mountains and the canyon that led back to Durango were truly spectacular, as was the mountain ridge a few miles to the west which I had to cross to get to Telluride, the next airport on our route. In contact with David in the car below and sinking, I decided to try the motor rather than have to retreat down a canyon towards Durango - and it worked, giving a respectable climb rate even at this altitude.

Having crossed the mountain by motor (a bit of a cop-out I agree), it was again gently soarable at lower altitude on the other side and I could have glided out to the next airfield 40 miles to the west. But it was by now late in the afternoon and David already had a long drive to get to Telluride. Besides, this looked like one of the most interesting airfields you could wish to land on. At 9085ft asl, it is on the shoulder of the mountain with a dizzy precipice at each end and on one side, and a runway that dips 100ft in the middle. The last feature provides a good deal of entertainment in the form of power pilots who have never landed down a slope before - they tend to arrive at the lowest point still airborne and at high speed.



Steve Longland's map showing the route.

The next day was not good enough to fly cross-country, so we drove into Utah, arriving at Moab (described in the brochure as having an ideal year-round climate) in a temperature of 45°C. In these kind of temperatures it is more comfortable to delay launching so as to climb high straight away, so the morning after we drove to the small town of Green River on the Green river about 70 miles north of Lake Powell.

Between the Green river and the Wasatch plateau there is 70 miles of desert, the track taking me westwards over the Capitol Reef national park. The map notes that there are "numerous pinnacles": if anything an understatement. Once over the easternmost hills of the Wasatch front I got stuck for a while (at 9500ft) beside an airfield which rejoices in the unlikely name of Wayne Wonderland. I did not want to land there as it was many miles drive from the road David would be taking, but finally, late in the evening, it became possible to climb high enough to cross the 9900ft plateau to the west. This thermal became the best of the day, reaching 17 000ft, which was more than enough to cross the plateau, the next valley and the next mountain range to arrive at Junction, 35 miles away.

Indeed, I had enough height to glide to Bryce Canyon airport 40 miles south of Junction, had I known that David was there. We had a starlit derig that evening. Next morning, judging the runway at Junction to be a bit short, David took off from Panguitch, the next airfield to the south, overflying the Bryce Canyon national park (an extravagant landscape of pink and orange) and arriving at Kanab, the last airfield to the north of the Grand Canyon.

At Kanab, one of my fondly held beliefs was crumbling - that it does not rain in the desert. This trip repeatedly proved that it does, at glider



Grand Teton, Wyoming, looking east.



The mile deep Grand Canyon, Arizona, looking south.

level; but that most of the water evaporates again before reaching the ground, except over the higher mountains.

Although he did get a look at the Grand Canyon, visibility was increasingly poor as the storm approached the airfield with a 40kt cross-wind. David went north-west to look at the Zion national park, coming back later to land.

For a small desert town, Kanab proved to be very civilised with two good restaurants and a pleasant atmosphere. The next morning I thermalled towards the canyon 40 miles to the south at the nearest point. The Kanab plateau rises to about 9200ft and receives enough precipitation to be covered by pine forest; beyond it is the canyon. The south rim, about 20 miles away, is desert.

Airspace restrictions mean keeping between 14 500ft and 18 000ft over the canyon, but this was no problem with increasingly strong thermals and a cloudbase of around 20 000ft.

Years before I had stood on the south rim and was impressed by the sheer size of he canyon. I had harboured ever since a secret desire to glide over it, a wish which seemed unlikely ever to be fulfiled as there is no gliding operation anywhere near. And now here I was, marvelling at the intricacy of this landscape, because it is not just one canyon but dozens.

As the plateau has risen over the millennia each stream has carved its own canyon, sometimes through harder rock and sometimes through softer, which changes the slope of the walls from layer to layer. You have to fly right over the side canyons to see down into the bottom of them. In the middle winds the green ribbon of the Colorado river, its white rapids glinting in the sunlight as it imperceptibly washes its way deeper into its own unique work of art.

It took me 3hrs to tear myself away. By the time I did most of the oxygen had gone and the thermals were stronger than ever. We had wondered if the averager (giving a true average derived from GPS altitude readings) knew how to read over 10kt - now it read 13 for a couple of minutes at a time. Taking a quick look at the Zion national park with the last of the oxygen I glided regretfully back to Kanab after a memorable flight.

This was to be our most southerly point. Next day David flew north, *via* Zion and Parowan and on up the valley we had already travelled to Mount Pleasant, about 185 miles. The averager made it to 14kt, the best for the trip.

Driving up through the hills, one comes upon the headwaters of the Sevier river, which starts life as a water meadow before becoming a substantial river, only to turn west and be lost in the desert. North of Richfield, the valley becomes irrigated farmland and the buildings begin to show the influence of the Mormon settlers. There is a particularly fine temple at Manti in a style not unlike German baroque, and several attractive buildings in Ephraim more or less in Georgian style - something of a surprise in the far west.

At Mount Pleasant David had encountered one of the hazards of gliding in America. The Federal Aviation Administration (unlike most equivalent organisations) actually encourages general aviation and spends a good deal of federal money in the building and improvement of airfields throughout the US. However they seem to have a slight suspicion of gliders (a tiny minority of the aircraft flying in America), and may never have seen one - most airfields now have runway lights and most are a good two feet high and uncomfortably close together, even for a 60ft span glider. As it is not easy to judge the available width from above you have to assume the tips will overlap the lights, as they had here.

I took off from Manti-Ephraim airfield the next morning, destination Vernal in the north-east corner or Utah. The conditions were not nearly as strong as they had been for the previous two days and half the 125 mile flight was on final glide. Having glided straight to Vernal, rather than to the Uinta mountains to the north, I could not climb away again and eventually landed. Here we had the first day lost to rain.

Huge storms over the mountains north of Vernal made us abandon the next flight and drive up to Rock Springs in Wyoming, but the remains of this weather made flying over the highly unlandable country to the north-west seem unwise, and we continued by road to Pinedale (a summer resort with another excellent restaurant) beside the 60 mile long Wind River mountain range.

David had a great day's flying here, but rain again made us move on by road, driving up to Driggs in Idaho beside the Grand Teton and Yellowstone national parks. And what should be parked on the airfield but a Dart 17, to me the most elegant Slingsby design and one I had never flown. Since it was for rent, I decided not to pass up the opportunity as I had in the past and had an agreeable 2hrs flying around Grand Teton itself at 13 750ft.

Going north from Driggs, the intention was to fly over the Yellowstone park and land at Livingstone, Montana. The sky was largely blue and the lift far from strong, so I stayed to the west of Yellowstone lake, passing over Old Faithful (hard to spot the geyser, but you could hardly miss the buildings around it) and nearly having to land at West Yellowstone airport. After a while I could climb again and go north over the 11 500ft Electric Peak towards Livingstone, but here a gathering storm blocked the Yellowstone river valley and I could not get high enough to comfortably cross the 45 miles of mountain to the east. As the storm cut off the way across the mountains I climbed gradually to 17 000ft, high enough if conditions had been clear to get half way to the Canadian border.

Being over the airstrip at Gardiner, just north of the park, I decided to land there as soon as ➡



Grand Teton with Jackson lake, Wyoming, taken from a Dart 17.



Bear Lake river. Photos by Alan.

David arrived to verify its state. He reported broken tarmac with more of the usual runway lights and advised landing downhill to be into wind. The end of the runway drops away into the fast flowing Yellowstone river and I briefly wished for a third hand to hold the camera on finals!

We drove the rest of the way to Livingstone, where the US Standard Class Nationals were held two weeks later. David flew back south from there, taking in the more mountainous eastern side of the park before landing at West Yellowstone. I drove through the park, one of the few places in America where the constitutional right to bear arms has been suspended. In consequence the wildlife ham it up disgracefully. You can watch moose wading nonchalantly around the wetlands pretending not to notice the tourists while elk pose for "Monarch of the Glen" photos and bison stand about moodily (probably wondering what happened to all their relatives). Only the bears remain reticent.

From Yellowstone we drove to the east of Grand Teton, through Jackson (a top ski resort) and down the Snake River canyon towards Afton.

After a quick visit the next morning to the Aviat factory to see the Pitts Special being built, I flew north to see the Snake river, and then south along the Wyoming range before landing at Bear Lake airport, situated amid the pastures at the lake's outflow.

Curiously, not an animal was to be seen. The reason? At this time of year they can't stand the horseflies which could bite through a flak jacket. Although the natives were friendly, we crossed this field off the list.

After a night spent in nearby Montpelier, where Butch Cassidy carried out his first bank robbery, David flew from Bear Lake down to Morgan County airfield, just a few miles north of Salt Lake City. This was the last port of call for me before flying back to Europe, and more nearly resembled the average UK gliding field than any other we had seen. No numbers on the end of the runway, no lights, a few trailers scattered about, a Blanik named "Lucky" and a tug called "Ugly" - I'll bet it tows just fine.

All in all this was a fascinating trip with excellent gliding in a wide variety of different terrain. David felt from previous trips that the Rockies offer some of the best gliding in the United States and this trip gave me no cause to disagree. My thanks to him for giving me the opportunity.

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PSYCHOLOGY

This is an extract from a book - Beyond the Silver Badge (crossing the Great Divide) - written by Ray



Ray, an art teacher at a school for the disabled, flies with the Norfork GC where he is a full Cat instructor. He ownes half a Kestrel 19 in which he completed his Gold Badge last year with a Diamond goal. He says "The struggle to get up to speed is, therefore, still fresh in my mind."

Cross-country soaring does present significant physical demands, but it is very much a cerebral sport and as such demands much of our brain. The decision making, perceiving, calculating and responding needs to be continuous and so puts huge demands on our intellect and emotions. The emotional side must not be undervalued as we are **directed** by how we feel at any given moment. You will not be able to avoid the roller coaster of emotions engendered by a cross-country and so will need strategies for coping with them. Strategy number one is **be positive.** We simply **have** to be positive in everything we do. If we are not positive then we become unable to make any decisions quickly enough to be of any use. Your positive approach will occasionally force you to make a poor decision, but your next positive decision will over-ride, or compensate for, the previous one, which is a far better scenario than wafting about aimlessly unable to work out what to do next!

"Easier said than done", is your fully justified comment, so how do we go about becoming this positive ace?

1. Confidence in your kit. If you have prepared correctly then you'll know that the machinery is on your side and you won't be worrying about the basic tools for the job in hand.

2. Social psychology. Have nothing to do with the club whingers before you fly. Every gliding club has a sad band of "no men" who will be delighted to give you chapter and verse on how your intended flight is not possible. Once identified these people are best avoided unless you are the type of person who actually needs to be **angry** to do well. They are not to be confused with experienced types who may give you good advice.

3. "Psyching up". Watch any sportsman prior to competing and you will see a process of psyching up. We need to undergo a similar process, but it is much more subtle. Preparing our equipment, marking maps, making declarations and the like become a kind of familiar pre-flight ritual. Such things should be done calmly and efficiently, keeping in mind the task we have set ourselves. You may find that you develop preferred ways of doing things - your own little eccentricities. This is fine as long as its aids your mental preparation and doesn't become obsessive behaviour which prevents you from getting airborne. My own ritual includes a double check of maps, barograph and electrics, taking a last minute "nervous pee" at the edge of the runway and the removal and stowing of my shoes. (I fly better without them and when the shoes are off I'm psychologically ready to go.)

4. The air waves. The radio has several practical functions, but the psychological effects should not be ignored. If you are doing badly, low and grovelling, the last thing you need to hear is..."How are you doing Eric? I've got 6kt over Norwich and I'm at 5000ft." Conversely the buzz produced from being where Eric is while others are heard to be grovelling is a highly motivating experience and guaranteed to inspire you onwards. Complicate this with the suspicion that not everyone tells the truth over the radio and you really do have a complex emotional mix to cope with.

My way of dealing with this is to use the radio selectively. Turn it on for start, finish, air traffic control and if you need to find out what conditions are alike ahead. Otherwise you will be doing much better without the distractions offered by a continual stream of confounded chatter. Use of the gliding frequencies does not require a radio telephony qualification, so go and get your RT licence. This will ensure that you will be so offended by the awful RT procedure of the average glider pilot that you will not be able to stand leaving it on for longer than is absolutely necessary.

5. Self appraisal. Reassess yourself once airborne. If you feel comfortable and ready to embark on your great adventure then get going. If you do not, for any reason, feel up to it, then local soar and practise thermal entry, climbing ability and thermal exit. Get something out of every flight. Be safe. You only live once, but make sure you continue to do so.

6. The crew. Don't go without having arranged a **crew**. Without the confidence-building knowledge that someone will rescue you from that distant field you will be very hard pressed to keep going when things look a little difficult ahead. The chances are that if you turn back and run for home you won't make it anyway. You **must** be sure that you will be willingly retrieved. All you need to worry about then will be the possibility of forking out for a steak dinner, or two, if you get it wrong.

7. "Go for it", the Yuppie battle cry, is as good an attitude as any once you have made a positive decision to turn your back on the airfield. From then on it is up to you.

8. Do not allow yourself to be distracted. You will fly over beautiful countryside. If you take a cloud climb you may find yourself in an incredible fantasy world. Do not loiter. You will remember it all just as well whether you keep going or stay to admire the view. The difference is in **where** you find the leisure to remember - in a field or back at the clubhouse with a pint in your hand.

GLIDING FOR SCOUTS

In November I presented the first aeronautics badges ever awarded to scouts in the Winchester district. Four boys and a girl earned them through theoretical and practical experience of gliding

It has been a rewarding experience and I will describe some of the things I have learned about teaching gliding to scouts and deal with planning a suitable programme, as well as covering the scout rules on air activities.

In 1993 I took small groups to a mid week evening winch launch course. Bookings were weak and it was useful to have some extra bodies to help with the ground work as well as being interesting for the scouts. Last year the course was full but, even so, the scouts were fairly well accepted by the course members.

The launch point controllers were a great help and I am grateful to them for spending time with the scouts and getting them involved in the ground duties.

Anxiety

Originally I had wondered about the wisdom of using the winch. For a 12 to 15 year-old there is certainly a very real fear factor about the first flight. We tried to overcome this by frankly admitting that they would find the launch exciting. The briefing emphasised in a positive way that the acceleration was much more than in a sports car. Cable breaks were never mentioned and the scouts always watched at least half a dozen launches before getting into the glider.

Giving them the idea of an exciting launch followed by a gentle descent seemed to work. Even so, several made their feelings known.

Who relaxes during a winch launch? Not me. But having someone screaming all the way up is certainly an interesting experience! But don't be put off by the screaming. All the loudest screamers came back for more. It is much better to encourage loud excitement than have quiet terror.

Girls

About a quarter of our scouts are girls which is fairly typical of mixed troops. No concessions should be given to the girls who are quite tough, partly because they mature more rapidly than boys and partly because only the tough join what is still seen as a boys' organisation. The only scout to ask for aerobatics was a girl!



Charles, a full Cat for six years, flies at Lasham and Talgarth. He is a regular helper in his son's scout troop where he has introduced about 15 scouts to gliding and both his daughter and son are keen.

If you plan to take 14 or 15 year-old girls on an evening course, returning home perhaps about 11 o'clock, some sensitive forethought about supervision and the feelings of the parents is essential. In our case it was reasonably easy to arrange for the girls to come in pairs with one of their parents providing transport or as brother-sister combinations.

Teaching

Scouts are undergoing the transition from childhood and one of the fascinating aspects was to see the widely different levels of mental maturity in physically similar people.

I always find it worthwhile to take the time to chat and weigh up a new pupil. Even more so with the scouts because even amongst the older ones the range of reactions was much wider than on adult introductory lessons. Some could work through the normal introductory lessons. Others were very reluctant even to touch the controls.

Twelve seems to be a critical age. Below that I always felt a sense of emptiness whatever the scout said about the flight. Another reason for a good chat beforehand is to find out whether the scout wants a particular demonstration signed off for one of his awards. A natural consequence of nervousness is for the scout to forget to ask. The bold and brash are particularly prone to that as their loud mouth is often a cover for fear.

The other difference from normal is that the instructor usually has to sit in the front. I was surprised to find that many tall teenagers are remarkably light. It was also salutary to be reminded just how uncomfortable it can be to sit in the front of a K-13.

How to begin

The first step is a discussion with the scout leader. He, in turn, will refer to a dauntingly thick book called **Policy Organisation and Rules**. Fortunately the section on access to airfields is reasonably straightforward and covers the need for permission from the airfield operator, safety briefings and supervision.

Type of visit

One possibility is to arrange a day's visit with a talk, tour of the club facilities and then flying. Some years ago my own club had regular scout visit days with a motor glider set aside for the flying. Whilst simple in principle, the visit day has a number of serious problems. Even at a large club, a party of 20 or even ten visitors would cause a significant disruption to normal day time operations. Giving them two or three winch launches each is a sure way for the committee to avoid re-election!

Bored scouts become troublesome and so it is essential to keep them active. This is quite difficult with a large party which is why I recommend small groups. Groups of two seem ideal, preferably integrated into a regular course where the scouts can be seen to be pulling their weight.

Scout training programme

The scouts have a well developed training programme and so it seemed sensible to try and meet some of their objectives. The training programme is in four successive awards and in addition there are two activity badges, the aeronautics and the airman badge, which have a gliding content. There are no specific gliding activities in the scout award section. For the pathfinder award, one of the activities is "take part in an air experience flight...and point out on a map the features overflown". The lawyers will notice that it does not say "point out on a map during flight", which is just as well as most of the pathfinders were in the back of the K-13. A Capstan would have been useful!

Proficiency badges

The airman badge involves a large number of air related activities in several stages and is designed for specialist air scout troops. For a general troop, the aeronautics badge is a simpler option as well offering the opportunity to complete the badge solely with gliding related activities. It has three main requirements:

1. Understand the purpose and basic principles of the main controls and instruments.
2. Undertake normal ground handling.
3. Have the main controls, including the trimmer, demonstrated in flight.

The theory can be discussed beforehand and two visits to the club with three flights should be sufficient to complete the second and third parts.

Costs

Costs are a delicate issue because within one troop you can have some scouts who think nothing of a fortnight's skiing holiday whilst others are from families on income support. In the first season the scout paid £5 which covered the launch, I paid the flying time and the club waived the temporary membership fee. Last year the charge was £7 per flight which is just as well because I was too busy to do much of the flying and often had to borrow an AEI to fly with them.

As far as I know, nobody was put off by the cost but the scout leader will know of likely problems. If individuals have difficulty it is worth remembering that most scout districts have a hardship fund for adventure activities.

Summary

The short term objective of co-operation with a scout troop should simply be to offer support to a worthwhile organisation for young people. As it happened, fitting them into a course not fully booked made a financial contribution to the club.

Encouraging scouts to complete the aeronautics badge is practical at a sensible cost if the launching is by winch. It also has the benefit that learning some theory and taking three or four flights (together with participation in the ground-handling) gives the scouts a more enduring memory than the traditional air experience flight. With such a thorough introduction you can be confident that in the long term some will be tempted to take up the sport.

TOM BRADBURY

CU-NIM AND LIGHTNING

Tom's explanation of the forces involved should be enough to put you off going anywhere near big storms this summer

Most heavy thunderstorms occur during the late summer months when both land and sea have warmed up and the air has become moist. However, the winter months of 1994-1995 produced a surprising number of thunderstorms. Some even appeared close to the Arctic Circle near Iceland and Norway. These winter storms are usually short-lived and seldom dump vast quantities of water. This is because winter clouds do not extend so high and contain less moisture than the hot summer storms.

Locating thunderstorms

It has been estimated that up to one thousand thunderstorms can be in progress at any one time over the entire globe. Most of these are in tropical or sub-tropical regions where the air is very warm, moist and unstable. There are too few observing stations for all the storms to be seen but they can be located by picking up the radio noise produced.

In the 1920s Robert Watson Watt (better known for his work on radar) built the earliest set for thunderstorm location. It consisted of a pair of huge frame aerials set at right angles feeding two matched receivers tuned to the extremely low frequency of 10kHz. The two signals were fed to the east-west and north-south deflector coils of a very early "cathode ray tube". When a flash was received it drew a line on the tube representing the bearing of the storm. Intersecting bearings from other stations allowed the operators to get a fix by triangulation. This old system was remarkably successful and a modified version was used until a few years ago when it was replaced by a computerised system. This uses the difference in arrival times at different stations to calculate a fix.

Some thunderstorm sizes

Cu-nim come in a wide range of sizes. The smallest cloud from which lightning has been seen was only about 10 000ft high but practically all cu-nim go far above that height and the largest have been measured to reach nearly 66 000ft (20km).

The diameters of cu-nim range from as little as 3km to more than 50km. Cold fronts can produce a chain of thunderstorms well over 100km long and some extend for 500km.

Duration

Some small thunderstorms do little more than produce a single bang and the cloud expires within half an hour. These brief storms are often the winter ones with little energy to spare. Bigger thunderstorms are likely to last a couple of hours but storms associated with active cold fronts may keep going for 48hrs and travel with the front as much as 2000km or more.

Updrafts

The width of the updraft within a cu-nim can range from a mere 300m to some 2000m. The mass of air sucked into a cu-nim can be about 500 tonnes/sec. In extreme cases the lift inside may exceed 100kt with sink of 60kt nearby. Most cumuli stop rising and spread out when they meet an inversion. The very strong upcurrents in a cu-nim can push the summit a long way through an inversion, even penetrating the inversion at the tropopause. Powerful cu-nim can push several 1000ft up into the stratosphere to form a dome where the temperature may be 10°C colder than the environment. These domes are transient features, though they may rebuild several times. In most cu-nim the tops spread out to form a wide flat topped anvil which is extended by the wind. Strong upper winds may pull an anvil out for 50km or more and jet streams can pull some tropical anvils 1000km out from the originating cu-nim.



Photo A shows a well developed anvil above an isolated and rather distant cu-nim. There was no strong wind over the summit so although the cloud was moving slowly from left to right the anvil spread out on both sides. Clearly there was no heavy precipitation below this cloud and it did not, at this stage, produce any lightning.

Electrical fields

Even when there are no clouds the upper atmosphere is usually plus 300kV relative to earth. At low levels the gradient may be 130 volts/m but the strength decreases with altitude. Before lightning occurs the field strength at cloudbase (around 3000ft) may be more than 100kV/m. In one set of trials some 90 rocket probes were sent into cu-nim; two of the 90 measured more than 400kV/m. These exceptionally strong fields were confined to small volumes of the cloud.

The development of lightning

In the last 40 years there have been numerous transits of cu-nim by instrumented aircraft; doppler radar has probed the vertical motions in big storm clouds and balloons and rockets have been sent in to collect more data. Despite all this effort there is still no complete description of how lightning is produced, but there is good agreement on the most favourable conditions.

Lightning is nearly always associated with big cu-nim which extend far above the level at which the temperature is -15°C. There are a few exceptions. Very rarely a flash may be produced by a cloud whose top barely exceeds 3km (about 10 000ft) but normally both water droplets and ice crystals are needed before large electrical charges can form in a cloud.

Charge separation

Ice crystals form when the cloud moisture is carried up well beyond the freezing level. These ice crystals first appear in a region where there are still a lot of unfrozen droplets. The crystals



Photo B shows a bank of cu-nim which had not reached the anvil stage. The darkness beneath suggests heavy rain had already begun and subsequently the thunderstorm location unit picked up a number of flashes.



Above: Photo C shows a trough line approaching. Ahead of it are building cumuli and behind these is the main storm with a bank of anvil cirrus hiding the more distant cu-nim. The very black area below cloudbase marks the zone of heavy rain and thunderstorms. Below: Photo D shows the early stages of anvil formation. The cu-nim top has bumped into the inversion at the base of the stratosphere and the outward flow has begun to curl over as it spreads out.



grow when they collide with water droplets because the water freezes on contact to form a layer of rime. These frozen cloud particles are often termed "graupel" (the German word for soft hail). Graupel forms where there is a strong updraft. When the graupel is very cold collisions with smaller particles give it a small negative charge. The smaller ice particles, which fall very much slower, are carried up with a positive charge. The faster falling graupel carry their negative charge down to the lower part of the cloud. The situation is complicated by the fact that the process is temperature sensitive. The graupel starts becoming positively charged when it gets warmer than -15°C.

Fall speeds of particles

The little ice crystals drift down at 0.6 to 3.0kt, accelerating as they pick up more rime. Graupel with a size of 1-3mm has a fall speed of 2-6kt while fully developed hailstones fall ten times as fast. Some very large hailstones may even exceed 100kt. This difference in fall speeds acts to separate the negatively charged graupel from the positively charged ice crystals.

Penetrations of numerous cu-nim usually show that the main negative charge occurs at a

Below: Photo E is an example of mammatus cloud where the originally overshooting updraft is turned back and starts to sink forming a kind of upside down cumulus under the anvil. Mammatus is a very short lived formation. One generally only sees it when the storm cloud is moving away. There may be a large area of invisible sink extending much lower down. In this picture the sink does not seem to have got far because a much younger and smaller cumulus was still growing in the foreground. However the lesser cloud seems to be cringing away from the parent suggesting its growth was being stunted by the sink aloft. ➡





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level where the temperature is about -15°C. This negative charge is probably less than 1km deep but extends horizontally for several km. A positive charge develops near the top of growing cloud turrets. When the upcurrent fails the turret usually slumps back and as it does so the charge disappears.

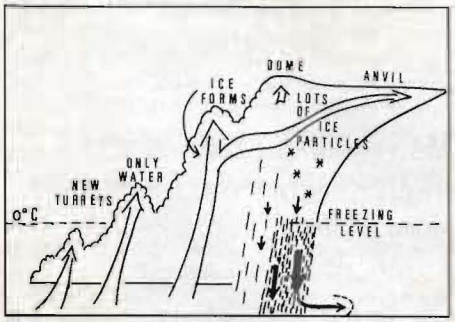


Fig 1

Fig 1 shows a growing cu-nim. The youngest cells are rising on the left while the older mature cells are downwind on the right. The new turrets on the left consist only of water droplets. Ice appears in the cloud when the powerful updraft reaches well above the freezing level. An overshooting dome often appears where the cloud penetrates the upper inversion (often the tropopause). Beyond this the cloud flattens out to form the anvil.

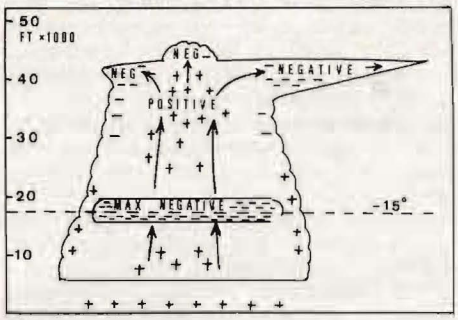


Fig 2

Fig 2 shows where the main electrical charges may be found in an active cu-nim. It marks the negative layer sandwiched between two positive charges above and below. Another negative charge may develop in the cu-nim anvil and sometimes the extreme top of the overshooting dome.

Association of electrical field with precipitation

The increase of an electrical field is almost always associated with precipitation of some sort but this does not work both ways. Precipitation, even when it is intense, can occur without a corresponding electrical field. Precipitation can be easily traced by the strong radar echo it produces. The first radar echoes appear near the top of active cu-nim turrets and airborne instruments detect the first cloud electrification at this time.

After the first flash of lightning the radar echo becomes more intense and there may be a gush of rain or hail. A slender shaft of snow pellets and/or hail almost always follows a nearby flash. If the hail consists of small particles it usually means that each particle has only made one up and down trip. However, hail may be carried up again if it falls into a powerful updraft. Some stones make several ascents in cloud. On each ascent it picks up yet another layer of ice and in exceptional cases the hailstone may grow to a weight of 3-4kg. This is enough to do serious damage when it finally arrives.

The lightning flash

The first flashes are usually internal or from cloud to cloud and the cu-nim is generally growing vigorously at this time. Cloud to ground flashes tend to appear some 5-10min later. A flash transfers a charge from one place to another and in the process a narrow channel of air is heated up to around 30 000°C before it has time to expand. In this heated channel the pressure is raised momentarily to about 100 times normal. It then expands producing a shock wave followed by a slower moving sound wave which is the thunder.

Fig 3 below shows (a) internal flashes; (b) a cloud to ground strike and (c) a series of strikes from different parts of the cu-nim. Strikes in the rain shaft are normally negative; others may be negative or positive. The surprising item is a strike well away from the main cloud mass coming from the anvil on the right. This is generally positive.

The very long flash coming down from the anvil is a warning that lightning may strike some distance from the main cu-nim. This is one reason why winch launching can get dangerous if there is a thunderstorm in the vicinity, even if it appears to be several miles away.

Upward flashes have been seen to come from the summit of a cu-nim, apparently carrying a charge up into the stratosphere. This is not commonly seen, perhaps because relatively few aircraft regularly operate above the 50 000ft level needed to get a good view over the storm tops.

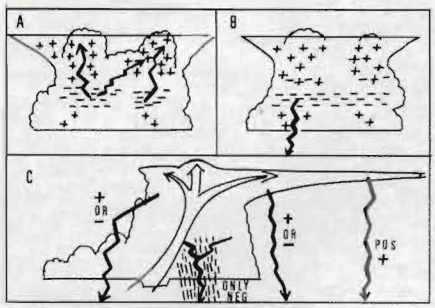


Fig 3

A FREE GLIDER

A new range of self-build gliders is about to be introduced by a British manufacturer and given away free.

But don't raise your hopes too much - they only have a 20cm wingspan. In fact it is a giveaway on a new food product for children called Small Fry launched by Kibun Foods.

The gliding connection? We understand the firm's commercial director Godfrey Pratt is occasionally seen airborne at Welland GC having taken up the sport in 1992.

JUSTIN WILLS

A DAY AT OMARAMA

Justin, who came 2nd in the 15 Metre Class of the World Championships, recalls Day 5 which he won to put himself in close contention for the title

Friday, January 13, marked the fifth day of the Omarama World Championships and proved to be the most crucial of the competition.

Hitherto all tasks had been set within the Mackenzie basin or to the south to take advantage of the favourable topography of these regions. The South Island of New Zealand consists of the Southern Alps which run close to the western coastline; branching eastwards from this main divided are a series of parallel ranges, divided by valleys containing braided rivers emptying into the Pacific Ocean. North of the Two Thumbs range the silt from these rivers created the Canterbury plains which continue eastwards to the coast. But south of the Two Thumbs a further series of ranges run parallel to the Main Divide, creating the enclosed Mackenzie basin and its special micro climate of hot, dry summers and cold, crisp winters. Further south this eastern barrier continues to provide protection from invasive easterly marine air, although conditions become increasingly prone to cold air intrusions from the southern coast of the island.

So far the contest had enjoyed anticyclonic conditions with light winds and reasonable thermals along the mountain ranges. My strategy from the onset had been to fly fairly conservatively whilst looking for an opportunity to excel. However, although I had avoided any disastrous mistakes, I seemed to have developed the unfortunate knack of catching conditions off cycle and regularly losing ten minutes on the day leaders. I was now lying 6th overall and needed something different to jolt me into better form.

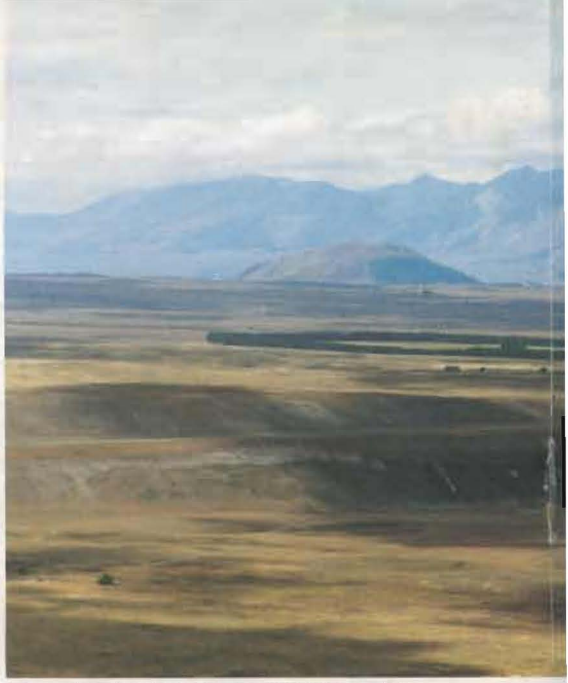
The day's forecast showed the high moving slowly eastwards and a light westerly airflow developing over the area. This could give weak wave, but should also encourage good thermal soaring over the windward mountain faces and provide the possibility of a sea breeze convergence north of the Two Thumbs range later in the day. The task for the 15 Metre Class was a 561.2km triangle, with the initial short leg to the south, then westwards into higher mountains at Matukituki, followed by a long leg north to Lake Coleridge, and return to Omarama.

I was launched in my LS-6 at 1250hrs and was encouraged by a climb over Mt Benmore to 9000ft before starting at 1345, a couple of minutes behind Chris Garton and Alister Kay. At the northern end of the Lindis pass a small cumulus marked a reasonable climb, but thereafter conditions became weaker with practically no clouds to mark the lift. My efforts to catch up Chris and Alister resulted in me reaching the first TP both lower and well behind. A long glide then took me across the Cromwell valley on to the northern end of the Pisa range, where I lost further time climbing in weak lift low down in a sunny bowl. This gave me the chance to reflect on the special quality of mountain flying, as at 300ft agl I watched other gliders joining below me, failing to connect and having to push on into lower country.

Now flying more cautiously, I elected to divert westwards around the foot of Lake Wanaka to higher peaks which eventually took me to 7500ft. From here I overflew Matukituki and scraped through a pass in the range on its eastern side, thereby avoiding a further diversion and bring-

Map by Steve Longland.



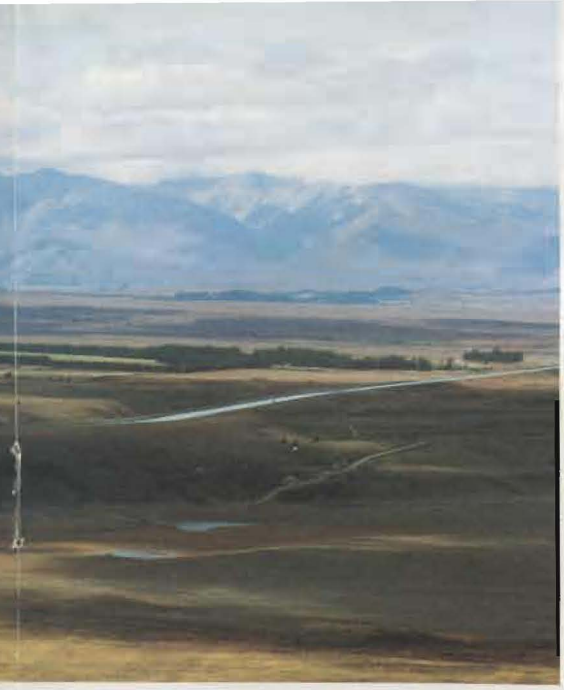


The Two Thumbs range from the west.



Above: Final glide looking back up Lake Pukaki. Below:







ow: Upper Ben Ohau range.



ing me back to within 5km of Chris and Alister. Crossing Lake Hawea we followed the Hunter range and then flew northwards over the Barrier range to the Ben Ohau mountains. Here we met several of the Standard Class whose remaining course now coincided with ours.

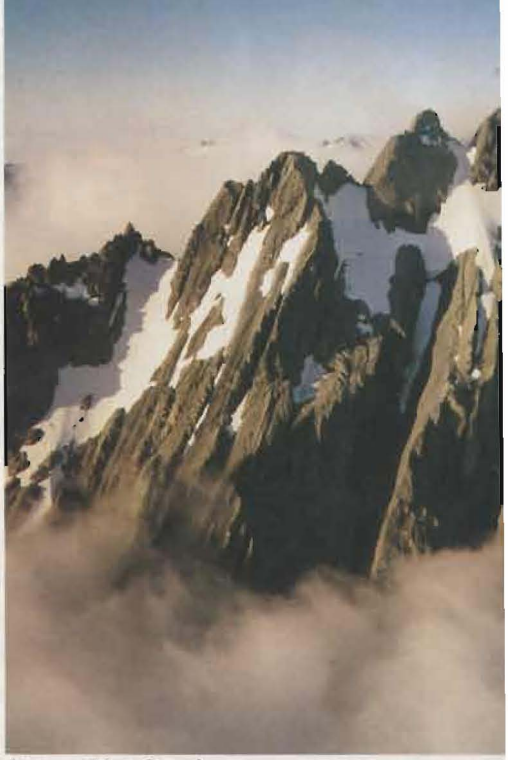
Crossing the head of Lake Pukaki I observed a patch of high cloud above the Leibig range ahead. This quite often occurs near the centre of anticyclones in this region, and is of no great significance in itself, but coupled with the absence of wind on the lake below I become concerned that beyond the Two Thumbs range we could face major problems with sea air. In the meantime I slowed up to conserve height whilst approaching the Jolly valley to ensure I arrived above the initial ridge line. This was the correct decision as Martyn Wells arrived a few hundred feet lower and lost critical time here.

Above the Leibig range strong blue thermals were marked by other gliders and took us up to 10 000ft. From this height I could see my fears were fully justified; from the Rangitata northwards lay a jumble of cloud reaching down into the valleys well below the surrounding peaks. In the absence of the forecast westerly the cold moist marine air had been drawn in from the Pacific Ocean right up to the heads of the valleys and the Main Divide itself.

From a final high climb over the Godley valley I set off northwards over the Two Thumbs and across the upper Rangitata river, weaving between shapeless masses of cloud. I kept to the higher mountains, reasoning that the air would be drier to the west. As I let down below the ragged cloudbase into the murky easterly airflow I met Chris Garton and we continued together, skirting Mt Arrowsmith, whose upper slopes were enveloped in cloud. We were now due west of our TP with no option but to fly directly upwind along the southern side of the Rakaia valley. Although we were flying into lower country, cloudbase progressively descended so that the surrounding mountains remained buried in cloud.

Fifteen kilometres short of Lake Coleridge we encountered Alister Kay who had taken a more direct route. Cloud cover was now almost complete and with a lot of gliders compressed into a narrow operating band it was a rather nervous trio that groped its way around the turn. We had just climbed back to cloudbase on a north-easterly mountain face when Steve Jones radioed that a glider had crashed into the slope nearby. Fortunately the Pole Thomas Rabaj was unhurt, although the glider looked destroyed.

Circumstances were hardly conducive to constructive thought, but I was convinced that the only way of escape lay in retracing our steps to the west in search of necessary altitude to cross the Two Thumbs back into the Mackenzie basin. As we felt our way around the lower eastern faces of Mt Arrowsmith, dodging tendrils of cloud that hung down from the general layer shrouding the slopes above, I noticed that the cloud level behind each ridge looked somewhat higher. I experimented by ridge soaring the windward side to cloudbase and then flying around the end of the ridge and back into its lee side. Here I found a weak windshadow thermal beside a step in the cloud level which took me several hundred feet higher. I repeated this process



Approaching Growler pass.

round a succession of ridges until I reached the aptly named Cloudy Peak on the northern side of the Upper Rangitata. The valley itself was in sunshine, and I had a good view across to the Two Thumbs whose lowest passes were well above the cloud layer lining its flanks. Somehow I had to get over the top.

The windward face of Cloudy Peak worked as expected and as I flew around to its lee side I saw with delight sunshine on its western flank, thanks to the lowering angle of the late afternoon sun. This produced both a reasonable thermal and a much greater step in the cloudbase so that I was able to climb beside a sweeping chimney of cloud to the higher level at 7400ft.

Below: The second TP, Matukituki. Photos by Justin. ➡



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At maximum glide I tiptoed across the valley and weaved my way amongst the cloud tops to the Growler pass, which I skimmed over with 50ft to spare.

My relief at escaping from the misty Rangitata into the cloudless Mackenzie basin was now tempered by the difficulty of finding lift on slopes which were clearly under the influence of cold air cataracting over from the north-east. Fortunately a mountain spur near the head of Lake Tekapo produced a broken convergence thermal, where I climbed with Karl Striedieck (USA) and Jacques Aboulin (France).

At this point Andy Davis reported himself further north: somehow he had managed to scrape over the Terra Nova pass at the head of the Godley glacier, and found himself sandwiched in a narrow tunnel between the gently sloping ice of the glacier below, the similarly inclined cloud layer above and enclosed by the surrounding mountain walls. Apparently this had continued for 10km, and Andy sounded suitably impressed.

I now faced another critical decision - whether to fly southwards along the Two Thumbs, or continue further westwards towards the high Leibig range. Again it was fear of the cold easterly, which by this hour would be pouring through Burk pass and across the lower Mackenzie basin, that made me choose the latter as I watched Karl and Jacques leave to the south. Both were eventually defeated by the marine air.

Flying slowly I crossed the Godley river, looking up at the range ahead. My one hope lay in a gully running north-westwards into the ridgeline; in the bowl at its head I found a smooth 1kt climb and as I cleared the top this increased to 2kt and then to 4kt. A minute later I rejected this for a scrap of cloud forming over a peak ahead where I found 7kt to 9900ft.

A radio call to Andy confirmed that he too was on the Leibigs and we exchanged climb rates to get as high as we could at the southern end of the range for the long glide back to Omarama.

I was slightly more successful ending up 500ft higher than Andy at 9000ft (7600ft QFE) with 85km to run. Our track led us over the length of Lake Pukaki whose surface indicated a brisk headwind. However, at our height the GPS indicated a light tailwind, a phenomenon which I had encountered before in this area late in the day. I began to speed up and passed Andy at the southern end of the lake where, still somewhat lower, he turned west along the southern edge of the Ben Ohaus seeking lift in the easterly wind reported from Omarama.

I continued on track, watching my GPS as I was convinced there would be usable convergence between the upper and lower airflows. Sure enough, 20km out I ran into a line of 6kt lift which I reported to Andy whilst racing to the finish line, crossing it at 1928hrs, first back and 1st for the day. Andy, having lost height on the Ohaus, reached the convergence almost at ground level to finish 10min later, also 1st for the day in the Standard Class.

Eleven finished in the 15 Metre Class, including Alister Kay, with Chris Garton 12th, landing just short. Apart from Andy, the only other finisher in the Standard Class was Markku Kuittinen.

Andy's performance enabled him to reach 1st place two days later, a position he held until Day 9. My flight raised me to 2nd overall, 151pts behind the leader.

Over the remainder of the contest I whittled this down to 29pts, evading both major disasters and opportunities. Such is competition.

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SAILPLANE NEWS

We have news of two maiden flights by German gliders within a week



Jochen's photograph of Gerhard Waibel taking off in his ASW-27.



Schempp-Hirth's photograph of the Ventus 2c.

The 18 metre Ventus 2CT was test flown on March 30 at Hahnweide Airfield on a cold day with excellent thermals. Schempp-Hirth reported that right from the start the new model showed outstanding flight characteristics, exceeding even the design team's high expectation. Particularly conspicious was the stable and extremely docile behaviour in all attitudes.

This is the last design by the late Klaus Holighaus and the maiden flight was by his son, Tilo.This was followed by test flights by all the engineers and several members of the German national team. The perfect control, crisp manoeuvrability and harmony of controls was praised by all the pilots that day.

This 18m version combines the wing planform, swept back leading edge, "bent up" outer wing section and the successful combination of aerofoil sections (of Boerman, Horstmann, Althaus and Holighaus) evolved from the Discus, Duo Discus, Nimbus 4 and the Ventus 2 to give optimum performance.

The c completes the Ventus family. While the Ventus 2A, looking splendid in the photograph on the opposite page, and Ventus 2B were designed for competing in the 15 Metre Class, the c variants are to give optimum performance for the 18m span. However, the 3.3m outboard panels can be replaced with 1.8m panels with winglets to put it in the 15 Metre Class. And a self launch model will soon follow with all three 18m sailplanes expected to be in full production by early summer.

Apart from the new wing which took a great many hours to develop, the fuselage is new and features a larger, more comfortable cockpit as well as improved wing fillets and redesigned vertical and horizontal tail surfaces.

We have heard from Jochen Ewald that at Schleicher's the designers went another way. They firmly separated the 15 and 18m sailplanes to achieve optimal handling qualities and performance in each Class. Martin Heide's ASH-26E, an 18m self launching motor glider with the Mid-West AE50R rotary engine, has been in production since last year. This engine drives the retractable prop *via* a folding belt. The whole unit can be removed by undoing three screws and some plugs.

Jochen says: "Gerhard Waibel's new ASW-27 is a pure 15 Metre Class design. With an aspect ratio of 1:25, the small winglets and Loek M. Boerman's wing section it is believed to have the performance of a 20m ASW-17. The aileron and flaps system work in a similar way to the ASW-20.

"When the flaps are lowered to landing position, the ailerons go up to give good control on the ground. The cockpit orginates from the ASW-24, but is also optimised for safety, space and visibility. The smaller wings allow more space for the pilot and a larger canopy, while a combination of polyethylene and carbon fibre is able to absorb a high amount of crash energy.

"During the maiden flights on April 3 under turbulent conditions at the small Poppenhausen Airfield (below the famous Wasserkuppe) the ASW-27 proved to be a very handy glider with delightfully light controls," Jochen reports.

The Schempp-Hirth agent is Southern Sailplanes and the Schleicher agent is J. J. Jeffries.

Below are a few of the items we don't C of A or repair!



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A view from the Ventus 2A's winglet. Photo by Jochen.

TRAVELLER'S TALE - Japan

Michael Haynes gives an update on the professionally run Japanese Gliderport at Takikawa which he first wrote about in the June 1990 issue

It is interesting to see how each gliding organisation goes about achieving its objectives according to its human and financial resources. Every country has its own gliding culture and this Japanese gliding centre shows the methodical and disciplined way they achieved their aims, integrated into a local government sports department.

Since I last wrote they have built an 800 metre asphalt runway complete with drainage, a museum with primary to modern gliders, an office with satellite weather decoding equipment, a library, bookshop, dormitory and a restaurant.

A steady stream of private owners is expected to build up over the next couple of years as Japanese pilots from crowded southern parts of the country develop a taste for the uncrowded skies of Hokkaido. Ingo Renner was invited by the city government of Takikawa to fly there last May when his longest flight was 658km and the fastest a 337km at 122km/h.

Ingo assessed the potential of this large island as similar to Spain during May and June with conventional thermals to 6-9000ft, stable and long lasting convergence lines, slope lift, mountain and shear wave. Being the same latitude as Rome, he added, there is 9 to 10hrs of active soaring on the best days when 750km multiple TP flights are feasible with the possibility of 900km plus.

After such encouraging advice, last June the CFI, Mitsuru Marui, flew a multiple leg flight of 755km in a DG-400 in just under 8hrs. Cloudbase was 6-9000ft along convergence lines and the whole flight was above 5000ft.

The club has regular weekend flying for members from mid April to October and intensive summer courses for *ab-initio* and cross-country pilots. If visiting the Far East and wanting to glide, contact Takikawa Skypark on tel 0125 22 2976, fax 0125 23 3777 and ask to speak to Mr Ikeda or Mr Marui.

AN INGENIOUS WAY TO GET NOTICED

Below: David Munday of the Wolds GC has sent us this photograph and details of a novel way his club have found to advertise themselves. They have sponsored another sporting organisation - the local football team. The Hessle Amateurs now have the strip they wear for every Saturday match emblazoned with the gliding club's logo. David says that they are advertised over a much wider area than with previous methods they have tried and for a small outlay the potential is enormous. The photo shows David presenting Danny Geering, the football team manager, with a cheque to cover the cost of the outfits.



BGA & GENERAL NEWS

BGA AGM & WEEKEND

The BGA Weekend from March 4 reverted to the old formula of a variety of speakers spaced over two days interspersed with the AGM and returned to Harrogate for the fourth time and the third visit to The Old Swan. Organised by Mike Beech with the Yorkshire GC as hosts, it went smoothly but still didn't attract the numbers hoped for by aficionados of this annual get together.

At the AGM, taken by Don Spottiswood, BGA chairman, Dick Dixon became vice-chairman with Mike Beech, Terry Holloway, Ted Lysakowski, Chris Nicholas (who resigned as vice-chairman after valuable service) and Lenny Tanner elected to the committee.

Don presented three awards. Cedric Vernon was the first non American to be given the exceptional service award by the American Soaring Society for nearly 30 years as voluntary editor of OSTIV's Congress papers, which amounts to more that 1000. Rather than go to Reno for the presentation (by coincidence on the same day) it was decided to do it by proxy and save a long journey.

In the citation Cedric was praised for a publication which receives world-wide recognition and for his marvellous command of the language, masterly editing of highly technical documents, a wonderful understanding of the intent of the authors and an ability to meet seemingly impossible deadlines.

A BGA diploma went to Graham Ben Beniston, a senior regional examiner in our geographically largest region, who started gliding with 644 VGS at Spitalgate in 1970 before joining Four Counties GC where he had three periods as CFI, the first in 1978. He has contributed valuable practical experience to BGA Instructors' Committee meetings and his sound teaching practices have made him a superb instructors' instructor. With a foot in both camps Ben has been an excellent link between the BGA and the RAFGSA to the benefit of both organisations.

The second winner was Bryce Bryce-Smith who started gliding in 1946 with 105 ATC Gliding School and joined the Cambridge University GC in 1953. He has been a fully rated instructor since 1957, served on the committee continuously since 1953 in various posts from secretary to chairman and for the last 35 years has been chief tug pilot. Bryce was one of the prime movers in negotiating the successful move to Gransden Lodge and as a recently retired civil engineer used his expertise to help with the design and planning of the airfield and facilities.

At the dinner-dance Michael Bird gave an hilarious speech after awards had been presented by Moyra Johnson, the Yorkshire GC's oldest Silver badge holder, No. 462.

Though few pilots were there to collect their trophies, the winners were:- **Enigma** (Open Ladder) and **Furlong** (longest triangle), 659km in an LS-6c on August 14, John Bridge (Cambridge University GC); **Firth Vickers** (Open Ladder runner-up) and **Wakefield** (longest distance), 660km in an ASW-20 on June 30, Tim Macfadyen (Bristol & Gloucester GC); **L Du Garde Peach** (Weekend Ladder), Richard Palmer (Bidford GC); **Slingsby** (Weekend Ladder runner-up), Ed Johnston (London GC); **Goldsborough** (highest placed British pilot in World Championships), Justin Wills; **John Hands** (services to competition gliding), Robin Pearce-Boby (Enstone Eagles GC); **Seager** (longest two-seater flight), 755km in an ASH-25E on June 30, Chris Pullen (London GC); **Volk** (longest O/R, 620km in an LS-7 on June 30, Ed Downham (London GC); **De Havilland** (maximum height) 25 500ft gain from Talgarth on March 14, Tony Burton (Black Mountains GC); **Rex Pilcher** (earliest Diamond distance), May 1, John Wilton (Four Counties GC); **Manio** (fastest 300km), 108.6km/h in an LS-6 on August 14, Simon Redman (Cambridge University GC); **California in England** (longest flight by a female), 405km in a Sport Vega on May 30, Geralyn Macfadyen and the **Frank Foster** (fastest 500km), 107km/h in a Discus on August 14, Steve Jones (Lasham GS).

Was the change of venue the success everyone hoped? While all very elegant, the price was considerably more than the Crick Weekends and most of the stalwarts felt the Post House gave better value for money, was in a good central position and many felt that instead of set speakers they would prefer to have more time for general discussion. But, as one old timer commented, it seems almost impossible to get back the enthusiasm for these weekends when they were regarded as an important social part of the BGA calendar.

FATAL ACCIDENT

There was a fatal accident on Saturday, April 15, near Camphill. The glider, an Olympia 463, was flown by Steven Abraham of the Derby & Lancs GC on a local soaring flight. A change in the weather conditions, possibly a convergent zone, brought strong lift and a lower cloudbase.

The 463 was last seen at 2500ft or so above Camphill. The glider crashed into trees having broken up in flight, almost certainly after inadvertently entering cloud. The structural failures are consistent with high speed flight. Medical causes have been ruled out. The accident is being investigated by the BGA.
W.G.Scull

BGA 1000 CLUB LOTTERY

The results of the **March** draw are:- First prize - M.G.Pleasance (£63.50) with the runners up - J.R.Edyvean, J.Gorringe, S. Robinson, R.J.Carter and A.J.Curtis - each winning £12.70.
April. First prize - M.Cater (£63.50) with the runners up - R.C.Tatlow, T.Moyes, T.R.Garland, A.Cluskey and M.Darby - each winning £12.70.

STRUCTURE OF THE BGA

The membership structure of the BGA is now made up of 86 full members with affiliated clubs as follows:- Army Gliding Association - two clubs; RAF Gliding and Soaring Association - 14 clubs and the Royal Naval Gliding and Soaring Association - three clubs.
Operations. During the year ending 1994 (1993 figures in brackets) member clubs (civilian and combined services) flew 149 740 (155 816) hours and 1545 614 (1594 403) kilometres cross-country from 410 631 (443 387) launches from club sites. Club owned gliders total 536 (528) and privately owned gliders 1577 (1730).
Certificates were issued as follows:- A endorsements 819 (909), B endorsements 172 (163), Bronze badges (414 (441), Silver badges 318 (284), Gold badges 73 (80), Diamond goal 137 (92), Diamond height 34 (32) and Diamond distance 58 (35).

A certificates were applied for by 183 (184) holders of the ATC proficiency certificate.

DEVELOPMENT NEWS

This is the first of a series by Roger Coote, BGA development officer

What about a brainstormer?

Humfrey Chamberlain developed the idea of brainstorming sessions when he was chairman of the Development Committee in response to a need for advice on business management topics by member clubs.

A BGA team will spend a day at your club to meet committee members and discuss current issues and problems. If the committee so requires, the team will produce a report, identifying key strengths and weaknesses of the organisation and making recommendations for improvements. The team will help in compiling a business plan for the club, with budgets and cash flow forecasts and also give direct assistance, if requested, on a wide range of issues, *eg* grant aid, planning problems, site security, etc.

Brainstorming sessions, or indeed any such advice and assistance, are free of charge to any BGA club. Why not give it a go? We work on the principle that two heads are always better than one and all information will be treated in strict confidence.

Highland Club buy Easterton

Highland GC have finally succeeded in buying their site at Easterton near Elgin. The opportunity arose in 1994 when the 19 000 acre Rothes Estate was sold to a developer who was prepared to consider an offer for the land on which the club held a tenancy.

As a result of lengthy negotiations and some assistance from the BGA, the club now owns 48 acres and is going ahead with long term development plans, including building a hangar and clubhouse.

MOTOR GLIDER RALLY

The York Gliding Centre is holding another international motor glider rally this June from 24-25 at Rufforth Airfield. As it is the 50th anniversary of the end of the war it will have a 1940's theme with some coming to the hangar bash in uniforms and dress of the period.

For more information contact David Allan, tel 01904 738694.

FUN FLYING

Some French enthusiasts have an attractive formula to combine a love of vintage gliders with a relaxed family holiday. It is the Balade des Planeurs Anciens which starts on July 29 at Courtrai, Belgium, before wandering over Valenciennes, Arras, Amiens to Abbeville. A day's flying is alternated with a family day for

ADVERTISERS PLEASE NOTE

Debbie Carr, who handles our advertising, is on maternity leave until November. Tiffany Rolfe has taken over and is working to the same deadlines, so please make sure your advertisement or amendments are with her in good time.

outings. Formalities and costs are kept to a minimum with the emphasis on flying and having a good time.

For more details contact Achilles Servranckx, Marums Duchestraat 18, B-1800 Vilvoorde, Belgium, tel 010 32 2251 4

SLMG FLYING TRAINING

The CAA has issued an exemption running until January 31, 1996 (unless previously revoked, varied or suspended), for self launching motor gliders registered in the private category. This means it is now legal to give flying instruction and flying tests in aircraft operated by a gliding or flying club associated with the BGA, but those involved must be members of the club.

A CHANCE FOR YOUNG PILOTS

The Air League is again offering scholarships to give 15hrs flying during 1996 for British citizens who will be over 17 and under 21 on June 30. Write to The Secretary, The Air League Educational Trust, 4 Hamilton Place, London W1V OBQ for an application form which must be returned by June 30.

GPS SPORTING CODE RULES

At the March IGC meeting (see also p167), rules were agreed for the use of GPS logger evidence for badges and records. These will appear as part of Amendment 3 to the **Sporting Code** Section 3 (SC3) which will be distributed shortly and take effect internationally on October 1.

In the **Sporting Code**, the term GPS is now replaced by GNSS (Global Navigation Satellite System); GPS is the USA system and there is also a Russian one called GLONASS. The term "logger" is difficult to translate and is replaced by "Flight Recorder" (FR). IGC-approved FRs must have an integral pressure-altitude sensor built in, and have specified levels of data security to help prevent corrupt data being put forward for flight analysis.

Technical details needed by FR manufacturers, software designers, officials, etc, will be in a new document called Annex B to the **Sporting Code** (SC3B); Annex A (SC3A) exists already and contains World Championships' matters. Annex B includes a compulsory IGC ASCII data file format, so that flight analysis world-wide can be conducted on the same basis. The main **Sporting Code**, issued by the BGA to all Official Observers, should contain the basic information needed by pilots and OOs for the control of flights.

You will be glad to hear that it is not the intention to distribute Annex B to all pilots and OOs! It may, however, be bought from the BGA, and has a useful appendix on data analysis.

OOs will, as now, be asked to record the time and place of take-off and landing, but for GNSS evidence they will also be asked to record the local barometric pressure (QNH/QFE). These OO records will then be checked against the times, positions and pressures on the FR data output, and the pressure-altitude trace checked against the GNSS-calculated altitude trace to ensure that they correspond. The maximum setting of sampling rate for GNSS fixes is 1min plus a 10sec margin (*ie* 70sec, to prove flight continuity). Sampling rates may be varied in flight, and for validation of Observation Zones (OZ), settings between 6 and 12sec are recommended for between 5 and 10 fixes on both sides of the fix or fixes which show presence in the OZ. Starting and finishing using GNSS may use conventional start and finish lines, or the OZ already laid down for a "Remote Start/Finish Point", using the GNSS times in the OZ or over the line for speed calculations.

IGC has formed a GNSS Flight Recorder Approval Committee (GFAC) which will evaluate individual FR systems (*ie* the GNSS/FR combination) to criteria laid down in SC3B. Systems approved by GFAC will be notified to the FAI office in Paris who will send the information to the BGA and equivalent bodies worldwide.

Approvals will include the detailed operating procedures required with the equipment, such as any special sealing, stowage out of reach, insertion of OO codes, and so forth. Depending on the design of the GNSS FR system, some, all, or none of these, may be required.

The GFAC members elected by IGC until March 1996 are: Akaflieg Stuttgart (Germany, member to be nominated), Senor Angel Casado (Spain), Arnie Hartley (Australia), Don Hurd (USA), and Ian Strachan (UK). In the UK, Ian will co-ordinate testing and evaluation of FRs sent for approval and has approached experts in the field (but not those with a commercial interest such as FR manufacturers) to run tests on design standards, convenience of use, integrity of data, security aspects, etc Anyone who feels they could help, please contact Ian either directly or through the BGA.

GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	*Name*	*Club*	*1994*
441	Wells, M.D.	Enstone Eagles	8.12
442	Nicholls, R.J.	Soaring Centre	2.9
443	Davidson, R.I.	Soaring Centre (in New Zealand)	16.1.95
444	Marsh, B.C.	Stratford on Avon	12.2.95

DIAMOND DISTANCE

No.	*Name*	*Club*	*1994*
1/675	Roberts, P.L.	Derby & Lancs	20.7
1/676	Tyler, R.M.	Norfolk (in South Africa)	2.12
1/677	Owen, B.H.	Booker (in South Africa)	10.11
1/678	Hardwick, M.H.	Booker (in Australia)	25.1.95

DIAMOND GOAL

No.	*Name*	*Club*	*1994*
2/2313	Nicholls, P.	Essex & Suffolk	21.8
2/2314	Roberts, P.L.	Derby & Lancs	20.7
2/2315	Wilkins, R.	Booker (in France)	15.7

DIAMOND HEIGHT

No.	*Name*	*Club*	*1994*
3/1202	Short, C.J.	Lasham (in Spain)	25.4
3/1203	Ketelaar, J.P.J.	Yorkshire	19.10
3/1204	Wells, M.D.	Enstone Eagles	8.12
3/1205	Gray, T.J.	Booker	28.9
3/1206	Smallbone, E.J.	Lasham	18.10
3/1207	Nicholls, R.J.	Soaring Centre	2.9
3/1208	Davidson, R.I.	Soaring Centre (in New Zealand)	16.1.95
3/1209	Payne, K.	Welland	12.2.95
3/1210	Marsh, B.C.	Stratford on Avon	12.2.95
3/1211	Le Roux, D.	Lasham	2.11
3/1212	Walford, A.C.	Cambridge Univ (in USA)	17.2.95

GOLD BADGE

No.	*Name*	*Club*	*1994*
1797	Fujimoto, S.	European SC	14.4
1798	Nicholls, P.	Essex & Suffolk	21.4
1799	Mellor, P.G.	Booker	26.9
1800	Watson, M.J.	Norfolk	27.9
1801	Wilkins, R.	Booker	15.7
1802	Payne, K.	Welland	12.2.95
1803	Walford, A.C.	Cambridge Univ	17.2.95

GOLD HEIGHT

No.	*Name*	*Club*	*1994*
Short, C.J.		Lasham	25.4
Nicholls, P.		Essex & Suffolk	25.4
Gray, T.J.		Booker	28.9
Mellor, P.G.		Booker	26.9
Watson, M.J.		Norfolk	27.9
Payne, K.		Welland	12.2.95
Potter, B.S.		London (in New Zealand)	16.1.95
Walford, A.C.		Cambridge Univ (in USA)	17.2.95
Morrison, G.M.		Deeside	26.9

GOLD DISTANCE

Name	*Club*	*1994*
Nicholls, P.	Essex & Suffolk	21.8
Mellor, P.G.	Booker	25.7
Roberts, P.L.	Derby & Lancs	20.7
Wilkins, R.	Booker (in France)	15.7

SILVER BADGE

No.	*Name*	*Club*	*1994*
9667	Livingstone, C.D.	Bicester	8.5
9668	Stone, R.J.	London	12.11
9669	Pirie, D.S.	Deeside	19.11
9670	Woodman, G.	London	29.8
9671	Bevan, L.	Enstone Eagles	15.8
9672	Hills, R.	London	24.7

Correction: We are sorry that Martyn Wells (15 Metre Class) didn't get credit for winning Day 1 of the World Championships, although his achievement was recorded in the results table. Martyn, who also won Day 7, was in the lead for four days and finished in 4th place.

An incorrect price was given for wing tape in the Nevynn International advertisement on p71 in the last issue. See the advertisement on p181 for the correct price.

AERIAL SITE PHOTOS

Tom Zealley has made the excellent suggestion that we should feature aerial shots of club sites. We intend to print them in colour during a winter issue and if you would like your club to be included, please send a colour print. We would like them in by October 1.

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BOB CASSIDY

CLUB FOCUS

Bob writes about the Borders GC where the gliding is good and the countryside interesting enough to entertain non flying members of the family



The Bijave flying over Milfield plain.

The Borders GC was founded in 1969 on the site of a World War 11 fighter training station and more recently operates at a nearby large grass field, Galewood, North Northumberland, which we now own outright. This is thanks to the help of members, past and present, who assisted with hard work and loans.

The decision to buy the site followed the need to move from the old airfield when it was dug up for gravel extraction. We are almost mid way between Newcastle upon Tyne, and Edinburgh, just off the A697, near the small village of Milfield.

The site is adjacent to the Cheviot hills and the picturesque College valley, offering good hill soaring in north, north-west and westerly winds, quite often transforming into wave, with our height record at 28 000ft. The narrowness of the country in our area does restrict long cross-countries in the summer to northerly or southerly tasks, but local soaring can be superb all year round.

Low hills to the east help to hold back the sea breeze effects in summer. A long ridge gives some good soaring in easterly winds, if the cloudbase is not too low. There are splendid views of the countryside and plenty of options for landing out.

South and south-westerly winds give us our best wave soaring conditions, with Gold heights easily achievable and Diamonds for those who are prepared to persevere. The close proximity of the North Sea has given one or two pilots a nasty scare, having descended through cloud, when wave gaps have filled to be faced by an expanse of open and very cold water!

There are no airspace restrictions, the closest airports with SRZs being Newcastle and Edinburgh. There is a danger zone to the west where the army have an artillery range at Otterburn.

The club is an all aerotow operation. It has two tugs, a Super Cub 180 and a re-engined Pawnee 160 (previously a 150), which performs very well. The soaring fleet consists of two Bocians, a Bijave, and a Pirat. Now that we have paid off our debts and own our own site, we will be concentrating on upgrading the club fleet and improving the site, subject to satisfactory negotiations with the Gas Board over siting of a compressor station in the area.

We have a fairly active membership averaging 70 to 80, and most are private owners of a wide range of glass and wood sailplanes.

Northumberland is one of the least densely populated counties in England, so we have a relatively small catchment area for attracting *ab-initios*. The majority of our pilots have trained elsewhere and migrated to us to take advantage of the good, all year round soaring.

Like any club, we cannot guarantee the weather, but for visitors and bored families there is much to see and do, as Northumberland relies heavily on tourism. No other region can boast as many castles, peel towers or fortified houses, a reminder of its stormy historical past. The beaches are superb, with mile upon mile of unspoilt white sands.

Site facilities are fairly basic, but visitors can choose from a good selection of accommodation in local guest houses, hotels, pubs and holiday cottages.

Visiting pilots are always welcome. Some have taken advantage of our country membership scheme and fly with us on our club weeks.

Aerotow launch costs are still comparatively low - £13.50p to 2000ft and all our tug pilots are soaring pilots.

We are more than willing to provide tug pilots and an Instructor for club expeditions, if we get sufficient notice, and can provide a list of local accommodation.

Our CFI is Robin Johnson with Ian Simm DCFI. Our secretary, George Brown, will be pleased to answer any queries if you contact him at "Bilsdale", Ulgham, Morpeth NE61 3AR tel 01670 790465 or ring the club any weekend on 01668 21 6284, providing there is any one left on the ground to answer!

It's not often you can take off in England, soar in Scotland and land back in England again!

The photo on the left shows the rigging area with the hangar in the background. On the right is the main take-off/landing area showing the trailer compound with the hangar screened by trees.







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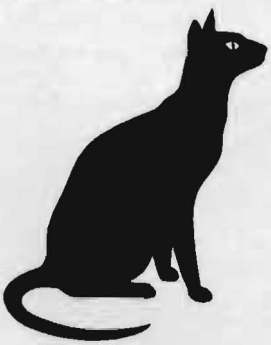
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BGA ACCIDENT SUMMARY Compiled by DAVID WRIGHT

Ref No.	Glider Type	BGA No.	Damage	Date Time	Place	Pilot/Crew Age	Injury	Hrs
128	Tiger Moth	Tug	W/O	.9.94 1448	Incident Report	59	None	390

During the early part of the aerotow take-off run the Tiger's right wing dropped on to the ground and began to turn the aircraft. The pilot tried to pick up the wing but kept the power on. The glider released and without the weight keeping the tug straight it turned sharply as the pilot still tried to take off and continued until he hit trees.

129	T-21B	None		.7.94 1400	Incident Report P2	0 0	None None	400 0

P1 carefully briefed P2 on the stall exercises before the flight. The first gentle stall was started at 1500ft with the nose high. P2 suddenly said "there it is" and pushed the stick hard forward. In extreme negative *g* P1 recovered from the over vertical dive while P2 was "waiting for something to happen". Pupil showed marked negative *g* sensitivity

130	LS-4	2959	Minor	21.8.94 1600	Gransden Lodge	35	None	1130

After a cross-country flight during the Cambridge University GC Regionals the pilot chose to land straight ahead off a low and fast, 80 to 90kt, approach. He mistakenly pulled open the airbrakes instead of lowering the undercarriage. He just managed to lower the wheel before the glider impacted its fuselage and wingtip in a ploughed field just outside the airfield.

131	Grob Twin Astir	None		.9.94 1711	Incident Report	37 P2 48	None None	700 35

After a period of negative *g*, the ailerons were found to be very stiff. P2 continued the flight, finding that the ailerons were practically jammed when the airbrakes were deployed. After a safe landing the ailerons freed themselves. The loose battery leads had dropped through an open inspection hatch behind the rear seat and jammed the controls.

132	K-13	-	Minor	27.6.94 2054	Gransden Lodge	40 P2 0	None None	191 0

On his ninth winch launch of the evening the wind dropped and after giving the same trial lesson the pilot found he was too low to fly the same circuit. He landed on the cross runway towards the launch point then decided to turn to get close to the parked gliders. He made two turns on the ground towards them, misjudged it and clipped the fin of one with a wingtip.

133	Astir CS	2185	Minor	7.9.94 1700	Lleweni Parc	70	None	295

The pilot was making a hangar flight and landing just across a perimeter track. He tried to land too close to this and misjudged the touchdown point. The glider landed just before the raised lip of the track and broke the undercarriage structure on the 9 to 12in step.

134	Std Astir 2	2630	Minor	25.8.94 1600	Nr Enstone	42	None	400

On a marginal final glide the pilot decided he would not make the airfield so started to make a circuit around his first choice field. He then saw that there was crop in the field and diverted to his second choice. In making a hurried circuit he forgot his downwind checks and landed with the wheel up.

135	SZD Puchacz	3735	Minor	31.8.94 1230	Husbands Bosworth	28	None	0

On his second solo winch launch the pilot found the speed was too fast and, after initially lowering the nose (but not signalling too fast), released. Rather fast and far down the airfield he decided to land ahead with full airbrake. The glider landed heavily, bounced back into the air and touched down with one wing low which caused a groundloop.

136	Std Libelle 201B	3969	Minor	6.8.94 1631	Husbands Bosworth	28	None	56

After a normal approach to the airfield the pilot failed to roundout properly. The undercarriage collapsed during the heavy landing.

137	K-6CR	3876	Minor	18.8.94	North Hill	74	None	188

After rigging the glider and checking the pins the pilot took a winch launch. During the rough ground run the centre fairing came off as the wing nut fasteners had not been fitted.

138	K-13	3550	Minor	17.7.94 1100	North Hill	60 P2 53	None None	484 11

During a check flight with an early solo pilot the circuit and half airbrake approach were flown well until, in the flare at about 2ft, P2 fully opened the airbrakes. P1 did not have his left hand directly behind the airbrake lever and was unable to prevent a heavy landing that damaged the glider.

139	K-10 & L-S4	2983	Minor	26.8.94 1325	Lasham	24	None	133

The pilot was flying in a thermal with a large number of other competition pilots. Near to cloudbase the thermal was drifting towards the startline when the glider was hit from behind on the left wing by an L-S4. The pilot recovered from the steep/spiral dive and landed safely. The aileron was destroyed and wing damage extended to the spar.

140	Discus	-	W/O	24.08.94 1400	Nr Marlborough	17	Serious	201

On a competition task the pilot hit strong sink and chose a suitable field. However, at only 500ft he decided to go upwind to a patch of sunlight. Finding only sink, he was now 700 yards from the field and only 100ft but he still tried to reach it rather than landing closer. He just made it but, instead of landing downwind, turned and cartwheeled in.

141	K-21	2928	W/O	13.08.94	Nr Wormingford	58 P2 35	None None	256 0

P1 allowed the glider to drift downwind and had to make a field landing. The field chosen was across wind, but in line with the airfield runway with a final approach over trees, power cables and buildings. He did not fly a steep approach to clear the trees but allowed the glider to hit the tree tops which lost all flying speed and brought it down.

142	Astir CS	3753	Minor	2.9.94	Seighford	70	None	232

The winch launch started slowly and the pilot hung on expecting it to improve. At 150ft about 200 yards from the end of the airfield the pilot released. He turned back and decided he had to land on a fenced off newly seeded grass area. The glider touched down then ran through the wire fence. The canopy stayed intact and prevented injury to the pilot

S=Serious; W/O=Write-off; M=Minor; N=Nil

INTERNATIONAL GLIDING COMMISSION

Extracts from Tom's report of the meeting held this March in Paris

The meeting, which was well attended with 25 countries represented, broke up into a series of working groups after the opening.

Cost of World Championships. The working party agreed that there was no case to limit the number of entries. There seemed no alternative for cutting prices than competitive bidding, although it was accepted that preparing a bid costs money. A planning committee should examine bids and generally help bidders. Climatic conditions should influence Championships locations.

Championships Class Structure. A well attended working group agreed to maintain the existing three Class Championships for the immediate future, though this wouldn't exclude another World Championships occasion, *eg* for the World Class. And to restrict the present three Class occasion to a maximum of three Classes and preserve the right of each of the Standard, 15 Metre and Open Classes to have a World Championships for ten years. But no decision was taken to introduce an 18 Metre Class.

A representative of the World Glass glider announced that 12 had been delivered with a total of 60 expected to be made in 1995. There had been 20 inquiries from potential builders for licences.

The representative of Italy (makers of the SILENT glider) and of Russia (who manufacture the Russia glider) called for a review of the definition of the "ultralight" glider. Both these gliders were about 20% above the 100kg empty weight limit for ultralight gliders. It was also proposed that new types of competitive gliding Championships should be associated with particular types of gliders.

IGC Budget. Unlike other FAI Airport Commissions, IGC hadn't any money at its disposal. It was agreed to raise "sanction fees" for World and European Championships. The organisers would be charged a fixed sum for a Championships which would be in the order of 50 Swiss francs per entry. The money would be spent on travelling expenses for IGC officers.

Future Championships. Poland withdrew its bid for the 1999 World Championships leaving the German bid (Bayreuth) to be approved unanimously.

The 1997 World Championships at St Auban, France will be from June 22 to July 6 with a pre-Worlds (called Lavendar flights) held at the same time in 1996.

CLUB NEWS

Copy and photographs for the August-September issue of S&G should be sent to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH, tel 01223 247725, fax 01223 413793 to arrive not later than June 13 and for the October-November issue to arrive not later than August 15.

GILLIAN BRYCE-SMITH
April 12

AQUILA (Hinton in the Hedges Airfield)
Tony Limb now has a full Cat and has taken over from Duncan McKay as CFI. At the well attended annual dinner organised by David Price, awards went to Duncan McKay (best height); Mel Eastburn (earliest start); Malcolm French (best progress); Len Wray (clubman of the year) and Steve Blackmore (best flight - fastest 300km). Special awards for their hard work went to Nick Chapman, who has retired as chairman, and Duncan McKay.

At the AGM Bernard Bateman became chairman and Steve Blackmore, Doug Edwards, Jim Hughes and Tim Wheeler joined the committee.

Doug Edwards' evening lectures were so well attended we hope to run them annually. We have a large influx of members from some surrounding clubs and had an enjoyable visit to Talgarth.
S.K.

BANNERDOWN (RAF Keevil)
RAF Lyneham contributes much to our success but members have greatly improved the ground equipment with winch launches up to 2000ft. We maintain the grass strips with refurbished equipment. Students have boosted membership and the Friday evening experience flying has increased club funds.

The Kittiwake 2, overhauled by a syndicate, is tugging alongside the Rallye and the motor glider is giving an excellent service for training.

At the AGM awards went to Steve Ayres (most progress); Robert Brain (best flight); Simon Foster (best *ab-initio*); Paul Griffiths (hog of the year) and Derek Seager (member of the year).
D.C.F.

BATH, WILTS & NORTH DORSET (The Park)
Alastair MacGregor, winner of the club ladder trophy, is now an assistant instructor. On February 26 several members took advantage of a cloud street stretching from Bath to Blandford without a break enabling them to convert lift into speed for over 80km.

Dave Cary and Bill Niblett have gone solo, Bill converting from 20 years' hang gliding. Richard Yerburgh and his wife Paddy are collecting an old Bocian from Poland which has been given a facelift by the manufacturers. Mark Smith has followed his dad by completing his Bronze and Nick Machin flew the first Bronze leg this year. A syndicate Motor Falke will be borrowed by the club for Bronze badge field landing practice.
J.L.

BIDFORD (Bidford Airfield)
Our new Pawnee is improving the launch rate and we plan to buy a second tug. Mike Towler flew Gold height in his new Astir and Pete Freeman completed his Silver badge on the ridge at Sutton Bank.

The field has been rolled and seeded and is in fine condition despite the wettest winter for many years. We will again be having the famous Bidford barbecue throughout the summer. Work has been completed on our clubhouse roof which returns our briefing room to full use.
J.W.

BLACK MOUNTAINS (Talgarth)
Spring is here - our tuggie is back from his annual migration to Southern California. Tony Burton won the BGA De Havilland cup for the second time and already made another strong claim on the trophy with a climb to 28 000ft.

March and April saw fine wave with climbs to above 10 000ft on five days. John Clarke has a Silver badge and Gold height and Don Gosden Silver height. Our mountain flying courses are as popular as ever so please book early.
D.U.

BOOKER (WYCOMBE Air Park)
We have outline planning consent for a hangar to be built on the blister hangar site, big enough for the club fleet and tugs as well as some workshop accommodation. The VAT negotiations drag on although real progress is being made.

Despite the rain the launch rate is the best for years with some good cross-country days. Best flights include 300kms for Chris Lyttleton and Al Kay and a 460km for Dave Caunt.

Richard Garner, a cadet, soloed the day after his 16th birthday after only 26 flights.
R.N

BORDERS (Galewood)
At our AGM in March Andy Bardget, chairman, brought us up to date with the proposed Gas Board pumping station which should result in some significant developments this year. We are well in the black and plan to update the club fleet.

Ken Fairness won the distance and club ladder trophy; Malcolm Parkes the height trophy with a local climb of 16 500ft and Leon Adamson the trophy for overall contribution to the club.
B.C.

BUCKMINSTER (Saltby Airfield)
Sean Johnson has gone solo and Dave Ormerod has completed his Silver badge. Roger Hamilton and Alan Middleton have AEI ratings.

The spring ball was again a great success. Chairman Jim Airey and CFI Frank Cox presented the trophies to Roger Shephard (most improved pilot); Neil Scully (clubman of the year); Cathy Lawrance (milk run); Lynn Cawte

Aquila GC's outgoing CFI Duncan McKay (l) being presented with an award for his contribution to the club by the incoming CFI Tony Limb.



Andrew Perkins being congratulated on going solo on his 16th birthday at the Upward Bound Trust by instructor Steve Bonser.



CLUB REPORTERS : As this section is increasing dramatically with entries from more clubs, we just have to be heavy on the editing if it isn't going to swallow an unacceptable amount of the magazine. So please co-operate and include news of interest to the gliding community and not just to your own members. Please stop thanking clubs for their hospitality, listing the names of new members, changes on the committee other than the major positions, engagements, marriages and births and nebulous hopes for future achievements.

We hope you understand the problem and will try and use the limited space to the best advantage in getting over the interesting and useful aspects of your club operation. And please bear with us when we have cut you back. Everyone is treated fairly and the length of the reports depend entirely on the value of their content.

Sadly we have dropped the idea of listing a club contact number after your initials. It just got too complicated with day and evening numbers plus mobile 'phones and faxes.

(first 100km of year by non 100km pilot) and Russell Cheetham (750km). The guest speaker was Mike Woollard who entertained us with his aerobatic anecdotes.

We now have a club office (a double glazed large portacabin) which was obtained very competitively by Roy Henderson.

There are still a few places on the courses.
N.R.C.

BURN (Burn Airfield)
Bill Thorpe is now a motor glider pilot examiner. Our tea bus has a mobile phone (01585 448647), which will be much appreciated by anyone landing out, as our clubhouse phone is rarely attended on a good flying day.

The latest addition to the fleet is a Jantar 1, owned by David and Martin White, Jerry Mills and Steve Martin.



The Buckminster GC spring ball presentation. L to r:- Russell Cheetham, Frank Cox, Lynn Cawte, Jim Airey, Roger Shephard and Cathy Lawrance.

We had an enjoyable expedition to Lleweni Parc in March with four gliders. Immediately Les Rayment and Mark Griffiths brought their Austria back from wintering at Sutton Bank in early April they were wave soaring. Our best height this year was Bob Baine's 12 000ft on April 2. Nigel Pamplin completed his Silver badge with 5hrs.
P.N.

Obituary - John Thompson
It was a very sad day indeed when we learned of the death of our oldest flying member, John Thompson, who died recently aged 81. John only started flying at 65 despite it being a life long ambition. He was always the first to arrive at Burn for a Saturday morning and was a very keen and conscientious winch driver, always ready with advice to our youngest members.

He was a useful and popular member who will be sorely missed by all.
Tony Flannery

CAIRNGORM (Feshiebridge)
After a successful flying day we selected two from a local high school for free training to solo.

Roger Greg has handed over to Sinclair Bruce as chairman.

Dave Hart has flown 300km in Australia.

Book early for our Ocktoberfest from September 23 to October 22.
T.C.



Brian Tansley of Kent GC with his instructor Bob Lloyd after going solo.

Norman May photographed Bruce Millar with DCFI Alex Fleming after going solo at Connel GC.



Below: 95 year-old Walter Jenkins at Hereford GC after his first flight in a glider. Roy Palmer is in the back seat. ➡



CAMBRIDGE UNIVERSITY (Gransden Lodge)
The clubhouse has new furniture and the water supply is being improved. Our new Discus and the use of a Janus has improved cross-country training. Claire Thorne is our full time administrator and is co-ordinating mid-week flying.

The cadet intake is starting. Keitha Bryce-Smith and Jem Davies have AEI ratings.
M.H.L.

CHILTERNS (RAF Halton)
A warm welcome back for Mike Beach after his illness. Kev Morley is a full Cat; Serena Brunning, Luke Hornsey and Steve Wilford have become assistant Cats and Dave Kelly requalified after a few years' absence. Dave Densham flew Diamond height at Sisteron, Peter Mann the first cross-country of the season (1km), Ed Weaver (K-6CR) a 150km O/R in early February and Don Knight gained his 5hrs.
I.P.

CLEVELANDS (RAF Dishforth)
We have had a good batch of Leeds University students this year, including several solo pilots.

At the AGM awards went to Zoe, Glen and Dave Stewart, Debbie Reynolds, Jim McLean, Derek Smith and Dick Cole. Kevin Curtis has gone solo and Keith Wallis has Diamond height. The Clegg family have returned from Germany.
J.P.

CONNEL (North Connel Airfield)
Rain and gales have restricted flying but we enjoyed the season's first session with CFI Malcolm Shaw in the SGA's ASH-25.

Bruce Millar has gone solo. Some members had a helicopter flight and our enjoyable annual dinner was again organised by Helen Anderson. Bill Miller has been reappointed chairman and we plan to update our wire launch facilities, finish the clubhouse and plan an expedition.
R.W.

DARTMOOR (Brentor)
At the AGM in the hut, which was demolished, re-erected and furnished by members, Ray Boundy was elected chairman, Richard Crocker treasurer and Pat Brady secretary.

The awards for the longest distance flight and for the fastest O/R to North Hill were won by Richard Roberts who joined us as a schoolboy.

We are buying another K-7 and selling the Swallow. The club fleet remains at six with around ten privately owned gliders.
F.G.M.

DEESIDE (Aboyne)
We have been offered £9800 by the Scottish Sports Council Lottery Sports Fund towards a new glider hangar, 24m x 24m, which we hope to start building later in the year.

The April wave has given Diamond heights to Kevin Adam and John Tanner with visitors getting Gold heights.

We have launched the new Scottish Inter-Club League with the first weekend at Aboyne and later visits to Easterton and Portmoak

February saw us at 17 700ft and March at 22 000ft.
G.D.

DRA (RAF Odiham)
After flying at Farnborough for almost 40 years, the Defence Research Agency (formally the Royal Aerospace Establishment) GC has moved its flying operations down the road to RAF Odiham because of the increased use of Farnborough for commercial flying.

Kestrel GC have made us welcome on their airfield and we are confident both clubs will benefit from sharing facilities while remaining as separate organisations.

We can now offer membership to any crown servant who would like to take advantage of our attractive fees. If interested contact Daphne Knowles on 01252 512952 ('phone or fax).
A.R.N.

DERBY & LANCS (Camphill)
Dave Stanger and Bert Broadhurst have gone solo and Andrew Fern has both Bronze legs. Mid-week flying is very popular. We have had a lot of wave and good height gains enjoyed by several visiting clubs.

The refurbished winch is giving splendid launches. The courses have started well and we are having our usual open weekend.

Our annual Farmers' dinner-dance (for all these whose fields we land in) was a great success as well as the monthly dinner parties - thanks to Sylvia.
W.T.

DEVON & SOMERSET (North Hill)
We are replacing our Husky with a new Pawnee this April; visitors' accommodation has improved with the new club caravan and we are decorating the clubroom.

We have an air experience weekend in June and a task week in August. Richard Petheram, Les Hill, Mike Sansom and team have given the workshop a new floor and Mike Robinson has worked on the club trailers.
S.C.L.

DUKERIES (Gamston Airport)
An almost new 5.7 litre Chevrolet engine with auto gearbox has replaced the old 3 litre Rover unit in the winch.

Several members spent some 180hrs changing them over during Christmas without any loss of flying time. There has been a marked improvement in the launch heights.

Ian Jackson and Lance Swannack have gone solo, Lance, our CFI John's son, on his 16th birthday. Our chairman, Tim Bowles, has bought a Vega.
J.C.P.

ENSTONE EAGLES (Enstone Airfield)
The season started well with cross-country flights in February. Turan Turan claimed the first outlanding of the year, albeit only one field away from the airstrip! Eric Giles and Mike Weston on hangar flights at the end of the day on April 2, got to 4000ft in wave over the site. Luke Brennan has his Bronze, only 25 years after claiming his A and B badge.

The 15 Metre Class Nationals in July is already fully booked. The task week will be from August 14-18 and visitors are welcome to enter.
L.J.B.

FENLANDS (RAF Marham)
We have had a successful start with some good early season soaring. An expedition to Lleweni Parc gave a lot of good flying up to 12 000ft and a 5hrs for Colin McInnes, a newly qualified Bronze badge pilot.

A Grob Acro has replaced one of our K-13s; this is a welcome addition and useful for cross-country training and glass conversions.

Paul McLean and Martyn Pike are full Cats. Adrian Frost, after a loyal and fruitful period as officer in charge, has handed over to Pete Harris.
A.R.M.

FULMAR (RAF Kinloss)
The winter/spring wave has worked well with good local climbs. We now have a club Falke which has just returned from a tour to Leuchars where Garry Binnie completed his MGPPL.

We have a large influx of new members (mostly students) and our K-13 is airborne again after a lengthy rebuild. We have an expedition to Connel in May.
J.H.

GLYNDWR (Lleweni Park)
We had a successful annual dinner in February with trophies going to Jess Pennant (most improved pilot); Ray Cronin (a young member's contribution to club development); Jim Lynchehaun (best height) and Ben Long (best cross-country).

Ian Hurle flew both Bronze legs on the same day and wave has given a spate of Gold heights including Arnie Pennant, Neil Kyte and Ben Long as well as for many visitors. Tony Dickinson gained Diamond height in March and John Williams Silver height on his first wave flight.

Note that lower rates and group reductions are now available for visiting pilots. The National Students' GC are to be based here. For further details contact Henry Morris at our office, tel 01745 813774.
B.L.

HEREFORDSHIRE (Shobdon Airfield)
We have a dashing new member who came for a trial flight to fulfil a long standing ambition and was bowled over. Walter Jenkinson, a spry and active 95 year-old, comes every weekend just to enjoy the delights of gliding. He first flew as an engine fitter and air gunner in World World 1.

One of our new cadets, Ian Baldwin, soared without help for 1hr on his sixth flight. The rest of us have enjoyed wave flights to 10 000ft, at times with every available aircraft airborne.
R.P.

HIGHLAND (Easterton Airfield)
Our hangar is almost complete and we have the luxury of minimal derigging for club aircraft - bliss! Robert Tait and Neil Anderson have become full Cat instructors and Helen Chalmers has gone solo. We have a new LS-7 complete with tips on site.
A.G.V.

KENT (Challock)
At our AGM in March, out long standing ex treasurer and chairman Tim Gardiner retired with Cyril Whitbread taking over as chairman and

Julie Garside as treasurer.

Our new caterers produced a very good curry night.
A.R.V.

LASHAM (Lasham Airfield)
The canteen kitchen and serving area has been rebuilt and modernised, thanks to the efforts of Andrew Fordyce, John Elner, Mike Evans and Graham Ross.

The award for non-flying contribution to Lasham was given to Lynne Ballard for her work as chair of the social committee. Flying awards were won by Afandi Darlington, Steve Jones, Martin Judkins, Chris Mansfield, Peter Masson and Martin Smith.

Ginny Pringle and Sam Mummery have retired from the management committee. Paul Davis is the new vice-chairman and Jill Burry has joined the committee.

Graham Gilkes, chair of Surrey and Hants GC, reported membership had kept at 200, with a rise in income over the year. The 11 glider solo fleet, including a Ventus C and two Discus, has been well used. The trophy for the fastest time for a first 300km flight went to Geoffrey Lee .

Two cadets have gone solo, Milan Bharadia on his 16th birthday. Eva Sampson was foiled by the weather and exams and went solo at 16 years and three weeks. A considerable number of 15-18 year olds will be offered cadetships for 1995-96 and an affordable start to gliding.
A.M.S.

LINCOLNSHIRE (Strubby Airfield)
Jonathon Woodforth has gone solo. At the AGM Angie Hearny replaced Jim Evans as publicity officer and John Kitchen became DCFI.

The new winch is performing well and has been joined by a venerable Nuffield tractor for cable retrieving. This replaces our cable laying operation in an effort to improve the launch rate.
R.G.S.

LONDON (Dunstable)
We have had two aerobatics courses this year and had a successful expedition to Shobdon and a reconnaissance of Lleweni Park. Still to come are trips to Sisteron and Aboyne before the season ends at Talgarth.

We are celebrating our 65th anniversary in June with a number of events, including a luncheon for our veteran members.

Our club forum went off unusually quietly and the committee escaped with only light flesh wounds.

The Regionals are filling nicely but some places may be available.
R.C.

MARCHINGTON (Tatenhill)
Winter flying has been maintained thanks to having tarmac runways - an advantage to sharing with powered aircraft.

John Wood has a Bronze badge and Ian Robson has gone solo. We plan to enter the Two-Seater Comp at Wolds GC to give a number of pilots experience and as part of a determined effort to train more members to fly cross-country.
P.M.P.

MENDIP (Halesland Airfield)
Our annual dinner-dance was a great success with trophies awarded to Mick Longhurst (best gain of height); Gill Haggerty (best *ab-initio* progress): Chris Crabb (most meritorious flight); Daryll Mansbridge (furthest outlanding); Bob Merritt (CFI's red ball) and Joe Acreman (MACS trophy).

Peter Turner retired as CFI after four years and Ron Perry has taken over for his second spell in office.

Bad weather limited winter flying. Our refurbished diesel winch is giving much improved launches and we have brought our club fleet back up to strength with a K-18 replacing the Skylark 4.
P.J.R.H.

MIDLAND (Long Mynd)
We have enjoyed plentiful wave flying with good heights and cross-countries, including a 300km wave flight. The course season has started well, with John Stuart being assisted by Rowan Griffin as second resident instructor. We have bought a turbo Janus for cross-country training.

Peter Hackman has soloed, Richard Hinley and Marcus Rowson have their durations, Peter Cope and Nick Crawshaw have Silver heights and Alex Hartland Silver distance. Paul Fowler and Alistair Self have become full Cats and Steve Allsop a regional examiner.
A.R.P.

NENE VALLEY (RAF Upwood)
The season started early with Steve Codd flying Silver distance on February 26 (the earliest anyone can remember from this site) and Silver height in April. Roger Henderson and Les Walsh went solo and "Taff" Turner flew 5hrs three weeks after taking delivery of his syndicate ASW-15. Martin Reynold, chairman, has an assistant Cat rating.

We are still searching for a new site.
R.T.

NORFOLK (Tibenham Airfield)
At our excellent annual dinner in February awards were presented to Jacqueline Bradford (spring task week); Alfred Warminger (harvest goblet); Eric Arthur (club ladder); Ronald Page (president's cup and Eagle cup); Ray Hart (best closed circuit); Roy Woodhouse (Freddie Wiseman cup); Philip Jones (president's trophy and chairman's cup); John Ayers and Russell Pointer (two-seater cup and trophy); Adrian Bennett (youngest first solo); William Butcher (oldest first solo); Jackie and Steve Bradford (longest retrieve) and Neale Banks (work cup).

March saw major clubhouse improvement, the tiny kitchen being enlarged and a loo for wheelchair users installed.

We have had plenty of soaring flights already and Phil Jones surprised us in March by appearing overhead as a tiny speck at 12 500ft.
B.W.

NORTH WALES (Bryn Gwyn Bach Farm)
There was an especially positive attitude to the future at our well attended AGM in March. We have more AEI instructors, a programme of advertising and expect to greatly increase trial lesson flying. Despite the ravages of winter our field is in the best condition for early spring for many years thanks to a few dedicated members. As with last year, spring arrived the day after winter ended and flying activity has progressed with excellent attendance.

We are in the North West Inter-Club League and courses are filling, but places are still available (see our advertisement in this issue) and visitors are welcome.
P.C.

RAE BEDFORD (Thurleigh)
Despite rumours to the contrary, our club is still thriving at Bedford Airfield (Thurleigh). In 1994 the club Blanik had some 500 launches and four members went solo. Three privately owned gliders are based on the airfield.
J.H.

RATTLESDEN (Rattlesden Airfield)
The annual dinner and prizegiving was well attended and a great success with Grenville Croll receiving the president's cup for the outstanding contribution he made to club finances. David Simpson won the new award presented in memory of Jean Towse and our CFI collected four trophies.

We are preparing for what could be the last visit from our American friends of the 447th Group in May.
M.E.

SCOTTISH GLIDING UNION (Portmoak)
Bruce Duncan has taken over from Pete "the winch" Moore who worked hard over the past few years. Tony Spirling from the Wolds GC will be running courses etc.

Spring soaring has been good with plentiful thermals and wave. Derek Aspey and Neil Goudie took our newest K-21 to 16 000ft and even 300kms seem weekly events. Allan Bauld and Graham Fraser flew our other K-21 on a 120km O/R on April 7, taking off around 7pm.

Task weekends have started and we have a team for the new Scottish Inter-Club League.

Gerry Marshall has Silver height; Alistair Mochar a Bronze badge and regular visitor Richard Penman a Diamond height.

A second Junior complete with oxygen gives us an all glass club fleet well ahead of our predicted time scale and a customised Land Rover is improving the launch turnaround time.

Book now for wave visits later in 1995.
G.S.G.

SHALBOURNE (Rivar Hill)
We have had an active winter programme in spite of bad flying weather. The Bronze badge lectures in CFI Carol Pike's house enabled seven to pass their papers first time. Bill Scull gave a lecture, John Sharpe presented a CAA safety evening and we had a skittles evening.

The storm battered clubhouse roof was repaired by Alan Brind and helpers who are now making good the damaged when the rain got in.

Martin Hoskins, Clive Harder and Gareth Naples have Bronze badges and Dave Owen is a full Cat. At the moment there is an expedition to Sutton Bank.
J.R.



Three's a crowd! L to r: Steve Veness, chairman, Dave Wardell and Eric Giles in the Enstone Eagles GC's T-21.



Jess Pennant after her 16th birthday solo at Glyndwr GC, photographed with CFI Dave Bullock.



Alan Moulang, aged 16, who was sent solo by his uncle, Tony Moulang, CFI of the Kent GC, watched by his father Michael. He'll be wanting a share in Mike and Tony's ASH-25 next.

SHENINGTON (Shenington Airfield)
Our season had a good start with the first 50km flown by David Weitzel in February to complete his Silver badge. Janet Mare, Graham Hudson and Chris Delahunt have gone solo and Bob Playle has a Bronze badge. Mark Stevens and Tessa Wilson have assistant Cat ratings.

The committee were re-elected at the AGM in March and joined by Jacqui Miles. Our Inter-Club team will be led by "Red" Staley.

We have had lots of ridge and wave flights during March and the launch rate has increased to almost 100/day. The Vintage GC are visiting on May 20-21 and visitors will be very welcome.
T.G.W.

SOUTHDOWN (Parham)
The spring northerlies brought welcome hill soaring. Trevor Miller gained his 5hrs; Peter Clowes both Bronze legs and Mervyn Warren went solo. Ron King is now a senior inspector. We sold our Puchacz to the BGA and bought a K-13 to bring our two-seater fleet to four.

On April 8 every glider capable of flying took advantage of the hill soaring coupled with thermals to 5000ft. As part of our spring lecture programme, Chris Garton gave a talk on the World Championships which was followed by a splendid dinner prepared by Francis Backwell.
P.J.H.

SOUTH WALES (Usk)
Cotswold GC welcomed our members on a number of expeditions over the winter. Work has started on an underground fuel tank masterminded by Harold Armitage. The winter was put to good use by Keith Smart and colleagues building an excellent, fully-fitted launch point vehicle.

Bill Mills has taken over from Peter France as CFI. Peter has worked hard over so many years. Greg Scott has been appointed safety officer and DCFI.
M.P.W.

STAFFORDSHIRE (Seighford)
Barry Stich and Frank Barker have gone solo; Stuart Jeffries and Jon Richards have Bronze badges; Simon Watson is an assistant instructor and Peter Wills has reactivated his instructor's rating.

At the AGM Pauline Goodwin took over from Geoff Oultram as chairman. Geoff gave five years' service including leading the move to Seighford. George Askew replaced Peter Gill who has been our secretary for eight years. Two of the committee members are under 30 which augers well for the future.

The aerotow strip is ready for use and we are buying a tug. Mick Kirkland has finished the flying equipment room with air-conditioned storage for 24 parachutes plus assorted barographs and batteries.

Two task weeks are planned for May 30 - June 2 and August 21-25. There will be an *ab-initio* training week from July 10-14. These weeks are open to members of other clubs and we have bunk room accommodation.
I.G.P.M.

STRATFORD ON AVON (Snitterfield Airfield)
We are celebrating our 21st anniversary with a dawn to dusk flying day on Saturday June 17. All members, past and present, will be most wel-

Right: Norfolk GC's "Tibenham midweeker" team that won the Rattlesden bird brain shield. Left: A photo of a tribute to Shenington GC's CFI and landlord, Paul Gibbs, presented to him at the annual dinner and the work of Jim Needle. Paul is flying his Twin Astir with his three dogs while it's time for milking and the cows are galloping madly down the main runway heading for the diary.





come having flown with us at Long Marston, Bidford or Snitterfield Airfields. For further information call us on 01789 731095 during flying hours daily.

Brian Marsh has all three Diamonds after achieving 21 500ft at Shobdon and Frank Jenyes gained Diamond height at Aboyne in September.

Our pre-season meeting in March was very well attended as usual and memorable for the first 90min in total darkness due to a violent storm blacking out the whole village with a lightning strike.
H.G.W.

STRATHCLYDE (Strathaven Airfield)
Despite Dick Stratton being unable to find us on his Scottish trip (see the last issue, p84) we are still going strong.

The club Skylark 3F has been returned to flying condition after two years' hard work by Tim Barnard and David Johnstone, who are now working on the K-8.

With a Blanik, Swallow, T-21, Dart 15, Mini Nimbus, Nimbus 2 and IS-29D2, the airfield is starting to look busy. At the recent AGM David Coats was awarded the club ladder trophy with Nigel Jennings winning the cross-country clock.

Our open weekend is on June 24-25 and all visitors by road or air are welcome.
M.R.

SURREY HILLS (Kenley Airfield)
Our season started well. Steve Mowle and Alistair Macleod have soloed; our CFI Peter Poole has arranged a safari to Le Blanc, taking our SF-27 and a K-8.

We have our regular stand at the Biggin Hill airshow. Steve Dawes is our first home grown full Cat from first solo; Alan Frost and Mick Hughes have assistant ratings and Steve Dawes is DCFI. Tim Barr-Smith, Ian Catt, Dennis Henley and Peter Wann received awards at our annual social evening.

We had a good response to our first open day of the year (March 31) with over 80 flights.
D.W.

THE SOARING CENTRE (Husbands Bosworth)
We welcome our new course tug pilot Zoltan, from Hungary. We finally have a third Junior having sold the Sport Vega. The Motor Falke has been refurbished and given a multi coloured paint scheme. The bunkrooms have been totally refurbished.

Continuing our plan of being at the leading edge of technology, our course brochure is now available in floppy disc format from the office.
T.W.

ULSTER (Bellarena)
Wave took CFI Harry Hanna to 13 800ft for Gold height on April 1 and several other members spent hours at five-figure altitudes.

We have our traditional Easter week and are hosting the Vintage GC rally. Two further weeks of continuous 7 day operation are to follow from June 4 to 18 so if you want to visit, do so.

Our chairman, Peter Richardson, and secretary, Jim Lamb, are our latest AEIs. And though we've had no trouble so far, nocturnal intruders may be startled to find themselves bathed by sensor-triggered floodlighting which would do justice to Wembley.
R.R.R.

UPWARD BOUND TRUST (Aylesbury/Thame)
Andrew Perkins became our first pilot to go solo on his 16th birthday and was presented with his lapel badge by Chris Rollings, senior national coach. We are fund raising to upgrade the two-seater fleet led by Peter Concannon, and the T-21 damaged last year is now flying again thanks to the efforts of Vernon Jennings and crew. Dave Bramwell says the Bergfalke restoration is almost complete.
S.B.

VALE OF WHITE HORSE (Sandhill Farm)
David Foster and Bernard Marett have assistant instructor ratings; Pete Hogan a Bronze badge and Cliff Beveridge has gone solo.

A recently restrored Dart 17 has flown. We are selling our K-7, having replaced it with a M200 two-seater. The club aircraft have their Cs of A and both retrieve vehicles are on line and giving a much improved launch rate.
A.J.W.

VECTIS (Isle of Wight, Bembridge)
After a good flying start to the year we were then hit by heavy rain and high winds, just like last year. This gave us the opportunity to carry out much needed maintenance work to the tug and Blanik.

The tug had nearly every moving joint re-bushed and the undercarriage re-painted, while the Blanik had most of its rivets renewed along with a new colour scheme and upholstery.

Neil Watts CFI gave a safety lecture at one of our winter meetings.

The AGM went well and treasurer Alasdair McClean said that some of the money loaned by members to buy the tug would be paid back.
M.J.H.

VINTAGE NEWS
We are expecting a number of newly restored vintage gliders to be flying in Britain and abroad this season and our future is very exciting.

We have a rally at Booker from July 8-9 (contact Graham Saw, 01628 776173) and the Slingsby rally at Sutton Bank from August 26-September 3 (contact Margaret Gomershall, 01845 597237).

The International Rendez Vous rally is at the Wasserkuppe Rhön from July 30 to August 6.

For the latest VGC news join the club and receive their magazine. More details from Geoff More, "Arewa", Shootersway Lane, Berkhamsted, Herts HP4 3NP, 01442 873258.
C.W.

WREKIN (RAF Cosford)
We had expeditions to the Long Mynd and Lleweni Parc with Chris Goult gaining Gold height and Dennis Maddocks Gold height and 5hrs. Chris was near to a Diamond at 16 700ft. Dave Hayward and Norman Potts achieved Bronze legs.

Club flying is going well with Steve Fulcher and Dave Coupland soloing. The "first hour off the winch" for 1995 went to Les Simpson. More are taking advantage of our motor glider and training for a SLMG PPL with Dave Hayward and Dennis Maddocks going solo.
I.C.

WELLAND (Lyveden)
Ken Payne flew Diamond height at Shobdon.

At our dinner-dance prizes went to Peter Willock (*ab-initio* of the year); Mark Pritchett (Ray Clarke trophy); Ken Payne (267km trophy); Alec Strachan (clubman of the year); Ken Wells (best in wood trophy) and Dick Short (CFI's shield).

Dave Strachan retired from the committee at the AGM. Our second K-8 looks splendid in cream and red, after being re-covered by Alan Bushnell and helpers.
R.H.S.

WOLDS (Pocklington)
Again the season started early with several cross-countries towards the end of February. A PIK 20, owned by Bob Holroyd, and a Libelle, owned by Paul Elvidge and John Norman, gives us seven new privately owned gliders this year.

We invite all pilots to our task week from May 28 and the Two-Seater Comp, August 20-26.

On April 1 we had excellent wave above the site taking Mike Fox and Jon Smith to 15 000ft for Gold height and Alan Grinter and Dave Bowes to 21 000ft on April 2 for Diamond height, though Dave missed out as his barograph was not switched on. Ed Baldock flew Gold height and the club altitude record was broken by Alan Hunter, climbing to 27 000ft. He then ran low on oxygen so had to descend. Derek Piggott joined in the fun on Sunday, giving rides in the club K-21. On Sunday alone ten were above 12 000ft - a really magnificent weekend.
M.F.

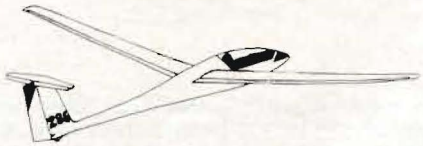
YORK (Rufforth Airfield)
Richard Boddy has been made our first president which is a well deserved honour. Richard was an instructor and chairman for many years, steering us through our homeless period to a successful land purchase and security.

John Ellis went to 15 000ft on March 23 and flew 286km. Martin Goult and Len Newnham have soloed and Eileen Wilson and Wendy Linley are our first females to solo in the Falke. Jay Smith and Steve Lee have AEI ratings.
S.R.L.

YORKSHIRE (Sutton Bank)
Diary of a good weekend's soaring - **Friday March 31**, the club's two-seaters climbed to 12 000ft in wave. **Saturday** brought 5hrs for Peter Freeman, Gold height for Don Smith and Diamond height for Steve Ell. **Sunday** was another good wave day with Silver heights for Gail Watson and Alan Wood and 5hrs and Gold height for David Omerod. David Ashby climbed to 22 000ft for Diamond height and Mike Brook topped the stack with his climb to 26 500ft. **Monday April 3**, 5hrs for Malcolm Winter and cross-country flights in wave of up to 500km.

Tom Goodall and Don Smith have AEI ratings and Rob Bailey has gone solo. Our club two-seaters are now regularly exploring ridge lift as far as Teesside, 20 miles from Sutton Bank.
C.L.

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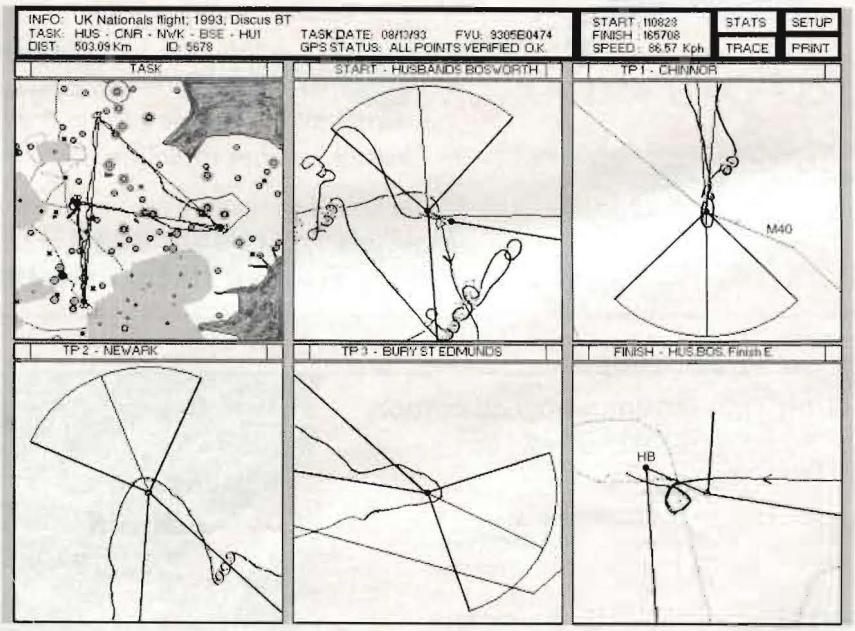
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SPEED-TO-FLY IN UPWIND WAVE JUMPS



Ian, recently redundant after 30 years as a system analyst, flies a Pilatus B-4 with the Scottish Gliding Union. He started gliding in 1989 after 750hrs in hang gliders, which he still flies occasionally, and has 370hrs, a Silver badge and Gold and Diamond heights.

The late Andy Penswick is said to have reckoned that the time was ripe for a new speed-to-fly theory applying to wave.

In fact "theory" is not the problem: the problem has been understood for at least 17 years. **New Soaring Pilot** (Third edition, 1977, p264, Fig 17.2) shows a "Construction to find the optimum gliding speed to give the maximum cross-country speed when using wave lift".

The problem lies in the practicalities of providing the pilot with accurate and timely guidance on speed-to-fly in the varying circumstances of headwind and sink.

Standard polar theory - offset the origin up for sink or anticipated climb, down for lift, right for headwind and left for tailwind - applies just as well to lift sources fixed with respect to the ground, *ie* wave, as it does to thermal. The concept at least of the MacCready ring, if not the practicality, applies too.



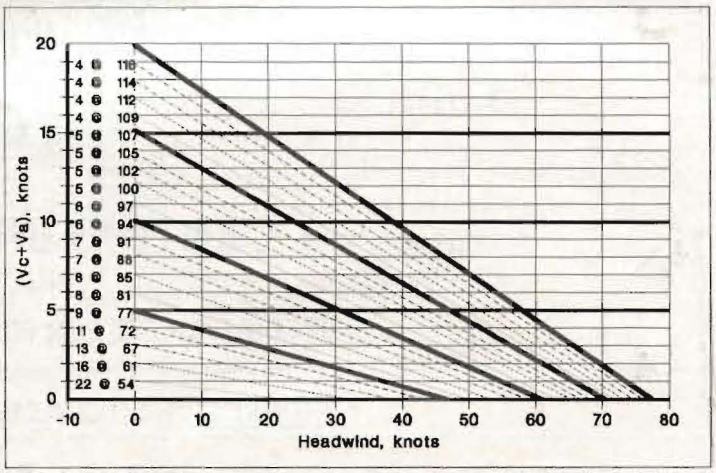


Fig 1 (left). A single tangent, a single speed-to-fly, represents speed-to-fly in sink or headwind. Fly at 68kt for 3kt sink or 38kt headwind. Fly at 81kt for 6kt sink or 50kt headwind. Fig 2 (right). Speed-to-fly in headwind and sink for max glide over ground.

All the glider-specific information in this article applies to the Std Cirrus, which is taken as 38:1 at 46kt with a VNE of 119kt.

Fig I shows that, for a given headwind with no vertical airmass movement, there is an equivalent sink in a nil wind situation.

Table 1 shows a limited set of equivalences between Ho (headwind in nil lift/sink) and Mo (sink, or anticipated climb, in nil wind). This table is simply a different presentation of Fig 1 and can, with the aid of a little computing, be extended to all speeds-to-fly (Stf) from speed to max L/D to VNE.

TABLE 1

Stf	Mo	Ho
46	0	0
68	3	38
81	6	50

Trying to be practical, we can see that given such a table, provided we confine ourselves to headwind with no lift or sink, we can offset the ring or its electronic equivalent to 3 up for a headwind of 38kt, or 6 up for a headwind of 50kt.

The trouble with this is that real life combines headwind with sink.

Recall the standard "offset origin" technique. Headwind and sink in combination require the origin to be offset right for headwind **and** up for sink (or anticipated climb). This double offset implies that the effects of headwind and sink combine, at times almost catastrophically.

You can't simply offset the ring for a headwind and follow the speed command as sink varies. To put it another way, 50kt headwind **bad**, 10kt sink **bad**, but both at the same time, b..... **horrible**.

The practical problem can be addressed by on board computing devices or by charts carried in the cockpit, or by the long known trick of providing a different MacCready ring for different headwinds.

Fig 2 could be more practical but at least it is accurate for the particular glider under consideration.

In use:-

Estimate headwind and find the point on the X-axis;

Go vertically to (Vc+Va);

Find the nearest tangent and go left and up to find the ring position, glide ratio and speed-to-fly.

For example, with a 20kt headwind, 4kt of airmass sink, 6kt anticipated climb, giving Vc+Va=10; fly at 105kt, giving 5:1 over the ground.

Alternatively, Figs 3 and 4 provide MacCready rings for various headwinds.

If the worst comes to the worst, as can be observed from the last three Figs, the advice "fly at VNE in headwind and sink" has the merit of simplicity and is likely to be close to optimum.

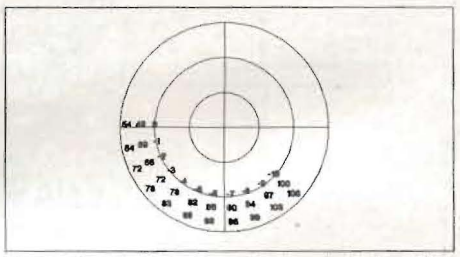


Fig 3. MacCready rings for headwinds of 10-20kt.

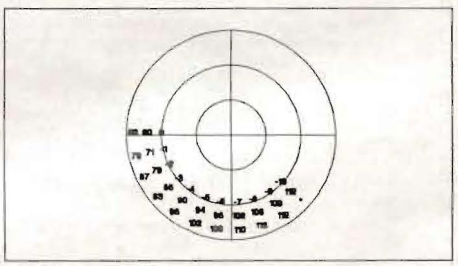


Fig 4. MacCready rings for headwinds of 30-40kt.

I've made a few upwind wave jumps now, unfortunately without carrying any of this material. Now that it is finally in print, I'll carry Fig 2 and probably fall out of the sky!

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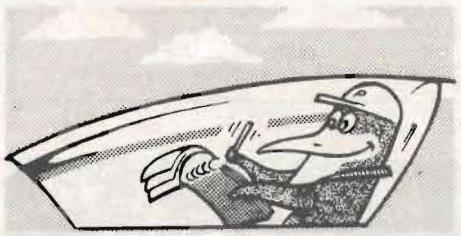
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WAY OFF TRACK



A push from the winch

Heard the one about four Irishmen, the English winch - not just an English winch but a *Yorkshire* winch - and a Swedish car?

It was an enterprising Dublin GC syndicate who arrived at Burn GC sometime ago to buy a winch and declare their independence come safari time. They'd have the means to do their own thing in the Wicklow mountains - so stuff the committee.

They'd come in a big old Volvo to tow the beast home for although self-propelled within the confines of the airfield it wasn't MoT-ed, insured and taxed for use on the road. No matter: Burn GC threw in a rigid gun-barrel towbar to make their homeward journey easier than if they were dangling on both ends of a rope.

Initially all went well, if rather slowly. The aged Volvo could feel the three-ton winch behind, the diesel propulsion engine of which was kept idling to provide braking servo power when needed, since the Volvo wasn't up to bringing the whole équipage to an urgent halt.

It was on a motorway and nearing the Welsh border that Paul, driving the Volvo, thought that not all was quite as it should be. What little speed they had fell away. His engine was still running but delivering negligible power. He steered the whole ensemble on to the hard shoulder.

A police car passed by. The crew cast a quick glance at the two vehicles (it was late evening in dark December) and, perhaps noting the yellow beacon light atop the winch truck, clearly assumed some stranded motorist had had the wit to organise a breakdown truck himself.

But speedy action was required, for among many myths harboured by Paul about the Brits is the belief that they fine you £200 - if not actually throwing you into the Tower - for stopping on the motorway.

"Quick, Tom," Paul told the helmsman in the winch cab. "Just push us to the next exit and we'll sort things out from there."

With the winch diesel engine now engaged in gear, they proceeded to the next exit and to the first garage beyond, Paul experiencing what some had longed to confer on him for years - firm propulsion from behind.

Nearing 8pm and about to close, the garageman was friendly enough but not practically helpful. "It's one of your timing chains - you've lost the right bank," he said, referring to three of the V-6 Volvo's pots.

For all four men, the news was as dire as it would have been for Paris if it had been told it had lost the *left* bank. In about two hours the boat would depart from Holyhead. Tomorrow was Tuesday and they'd only fixed a three-day weekend: non-arrival at work would mean they were AWOL.

Now over 20 years I've bought many a pint for Paul without remembered reciprocation so he won't mind if I say that while he's renowned as no mean hand on the accordion at club functions he'd not previously been noted as a quick-thinking pragmatist.

But he was the right man for this crisis. "Drive on," he told Tom. "Just push us to the flamin' boat."

At one time a police car followed them for about three miles, visible in Tom's mirror but, of course, obscured in Paul's, before pulling out to pass them and giving them that long, hard, Sweeney's stare. Tom's a man for a crisis, too, for he had the sense to take his foot off the pedal to reduce the labouring diesel's belchings of smoke. Paul waved an insouciant hand as the police car passed and pulled ahead.

They caught the boat by virtue of its sailing being delayed - and were dismayed to be directed to drive *up* on to one of the suspended sidedecks, providing another test of the winch's prime mover which had to push the Volvo up ahead of itself.

But that was their salvation in the dark hour before dawn at Dun Laoghaire, where the winch batteries were flat. The Volvo was quickly unhitched and backed on its three working cylinders alongside the winch to try a jump-lead start. The jump leads weren't long enough.

By this time the ferry crew were ready to throw our bold aviators overboard, and their vehicles too - they were clearly anxious to hit their pits.

But a moment's respite was won. The Volvo was hitched on again to the front end of the gun barrel and every available shoulder was bent to the task of pushing the whole caboodle along to the lip of the ramp down to the main vehicle deck.

Though offering no more than a 10ft fall, the slope was just enough to fire up the diesel - and the winch then pushed the Volvo up the next ramp on to the quay.

Now they were only about 30 miles from home at Gowran Grange.

Yes, they did make it, the winch pushing from the rear, the Volvo impotently spluttering in front, Paul making extravagant gestures at the latter's wheel to convince the Gardai, as he'd fooled their English and Welsh counterparts, that all was proceeding to plan.

It's a pity about the winch, though. It's only been used once since, as three of its owners aren't talking to each other and the fourth has emigrated.

Sabotaged

None of his three readers could accuse Penguin of being a male chauvinist. The briefest perusal of the WOT tear-sheet file, should such an archive exist, would turn up examples of my advocacy of the cause of women in gliding.

Ask Diana King, Queen Bee of something called the BGA women's working group. Pam Hawkins and Sally Wells may remember the warmth of my printed regard. Of other sports, I went to the barricades to laud the achievements of *Maiden's* all-woman crew who metaphorically shoved the distaff elbow into the male face with its achievements and endurance in that most testing of trials, the Whitbread round-the-world yacht race.

I've proclaimed loudly - I rarely do anything otherwise - my joy at working in a field where, during my career, women have largely overcome discrimination to achieve reasonable equity and the boss's chair at *S&G*.

And I react fiercely to any assumption that aviation is an inherently masculine activity, that gliding is predominantly a male sport, that sailplanes are boys' toys.

Gliding was offered to my own three daughters who rejected it in favour of other pursuits, as did my two sons. But, ever hopeful, my hand hovers near my chequebook ready to aid my eldest grandchild, Rachel, towards a first solo at 16.

All my proselytising is for naught, however. It is sabotaged from within, shot down by one of those it is intended to help.

I opened a BGA Newsletter recently from Merri Head, that charming daughter of the American revolution, an expatriate member of Annie Oakley's nation, which doesn't lack for battlin' women and is the seedbed of most aspects of feminist expression from its most admirable to the downright ghastly.

And how did Merri start her missive?

"Hi Guys!"

Not much bread - just the oven

Four times in my career I've had trips to New Zealand arranged, only to have each frustrated because of editorial whims, conflicting demands and once by illness while in Australia.

So my continuing sense of being cheated by cruel fate was revived by Mike Russell's marvellous report of the World Championships at Omarama in the last *S&G*, which came a few weeks after a series of uncharacteristically euphoric features from NZ by the normally caustic *Times* columnist, Bernard Levin.

That Kiwiland is a remarkably blessed country of no ordinary people is clear from Mike's first paragraph. The guest of honour opening the event flies himself in aboard his personal vintage Spitfire; the contest director arrives by helibungy-jump and the main sponsor's representative glides in cross-country from another site.

And 8000 members of the public turn out, in

this thinly populated country, to watch the opening ceremonies - a crowd which, nowadays, would pass in Britain as a fair-sized league football gate and probably more than would watch London's Lord Mayor's Show.

For much of last year Hen Penguin and I enjoyed a constant stream of narrative letters back from our younger son, Damon, and his fiancée as they worked, hiked and ran through almost all corners of NZ.

He upheld the Penguin family's sporting prowess by winning the King of the Mountains prize, not soaring in lee waves but in knocking 4.5min off the record time from Lake Te Anau to Luxmore Peak when he ran in the gruelling 68km Kepler Challenge race over the eponymous mountains in the Southern Alps.

But I couldn't commend the Kiwis for the appropriateness of the prizes they award. Damon thought the listed $500 would fund his and Sara's spartan lifestyle for another week or so. Instead, it came as a custom-designed, digitally controlled, fully automatic Japanese bread oven.

"Just what my backpack was lacking," he wrote back home wryly, before flogging it in Queenstown, still boxed, for a knocked-down 350 Kiwi bucks.

SOAPBOX

Readers are invited to speak out about the things that annoy or mildly irritate them with Brennig James leading the way with his question, "How much should you be taught?

Parents who are too possessive stunt their children's emotional growth. Patients become hooked on doctors and doctors on patients, to their mutual disadvantage.

Many years ago when Lasham bought their first F100 towcar it was decreed that every towcar driver had to be checked out, and the checker outs themselves had to be checked out by a master checker out. You can imagine the rest.

There came the day when no checked out towcar driver was available. Someone was asked if they could drive the towcar. Yes, but I haven't been checked out. Get on with it.

A Tomahawk spun in a few years ago and I received a circular telling me how to recover from a spin when you are flying a Tomahawk. It was four pages long. I replied that when you are in a spin you don't have time to read four pages. I never got any more circulars. It's a funny world.

Whenever there is an accident there is a committee meeting somewhere and it is decided that more training is the answer, The result is another round of the Lasham F100 syndrome and another reason to make you call the instructor sir.

I was lucky enough to get my Silver badge and Gold height in 1949, so when I joined the RAF for my National Service in Germany I was the only one in the command who even had a leg of the Silver badge. When I turned up at the station gliding club I did not get much of a welcome from the officer i/c gliding whose name had been God until then.

The point about the hierarchical structure of society is that everyone likes you to come in at the bottom. There are a large number of ranks in the profession of arms, and a corresponding number in the Civil Service, the reason for which is never questioned - rank is so sacred that its requirement is never questioned, so its assumptions slowly permeate through the gliding movement without being questioned or debated.

When you fly with a talented pupil he grabs the stick out of your hand and you never get a chance to fly. Ninety per cent of what you learn about gliding you have to teach yourself, so when I find someone trying to teach me something I can easily figure out for myself, I tend to ask whether he is trying to shift his rocks or mine?

Glider pilots moan about bureaucrats but given the chance they become the worst.

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Then there's my sort.

Having been encouraged by Ian McCaskill the night before, I arose at cock-crow to complete all the farm chores so that I could arrive early at the club, be at the top of the flying list and corner the better of the two club barographs, because today I was going to declare the first of my Silver flights – the 50km.

With the other early birds I fuelled and oiled the Land-Rover, the three tractors (tow starting the one with the flat battery), DI'd the winch and towed it to the position where we hoped the duty instructor (DI) would want it. As the only winch driver present I manned the machine while the cables were pulled out, and as nobody seemed to be coming to collect me, walked the mile (well, almost) back to the launch point, inspecting the cables as I went, to find that the DI had arrived and that all other preparations were completed.

At the briefing, it was said that the weather would not be suitable for a downwind dash to Husbands Bosworth before midday and so I opted to take the first stint on the winch, hoping that by giving everyone cracking launches I would get a good one when my turn came.

As the morning neared its end and my replacement was prised out of the clubhouse, I watched all our gliders floating above me in a fever of impatience, only to find when I arrived back at the launch point that one of the floaters was the K-8, the only club aircraft in which first cross-country attempts were allowed. As club rules permitted local flights of 90min in single-seaters, and as I had just launched the K-8, it looked like a long wait. So I joined the ground crew to be sure that no-one else grabbed **my** glider when it returned.

Finally taking possession, I tried to smuggle barograph, map, landing-out form etc in to the glider unseen. Some hope. Where are you going...? Cloudbase is only 3500...I just had six down over Bill's mother's house...and all the other confidence boosting comments that a barograph seems to provoke.

Wondering if it was worth going, being fifth in the queue, I started to adjust the cushions, alter the pedals etc when the duty marshal dashed across and asked whether I had DI'd the red tractor this morning and did I know that there was no oil in it and that the big-ends had all gone. We sorted that out – the dip stick was not going right down and I guessed at piston slap – and so back to the launch point to learn that there would be a slight delay as the winch had thrown a wobbly.

I won't bore you with details of the flight, but on the map it measured exactly eight miles.

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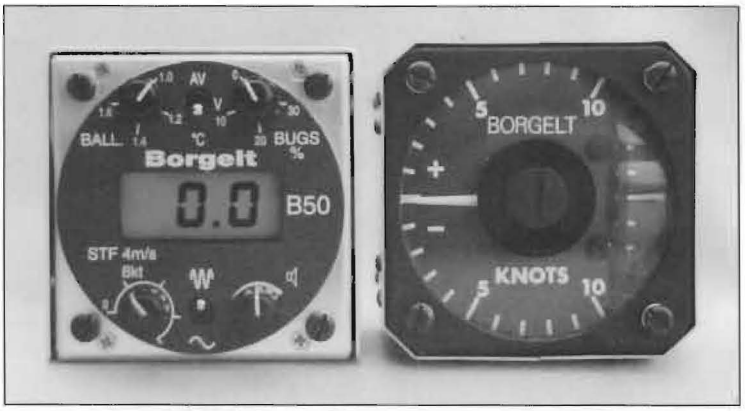
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