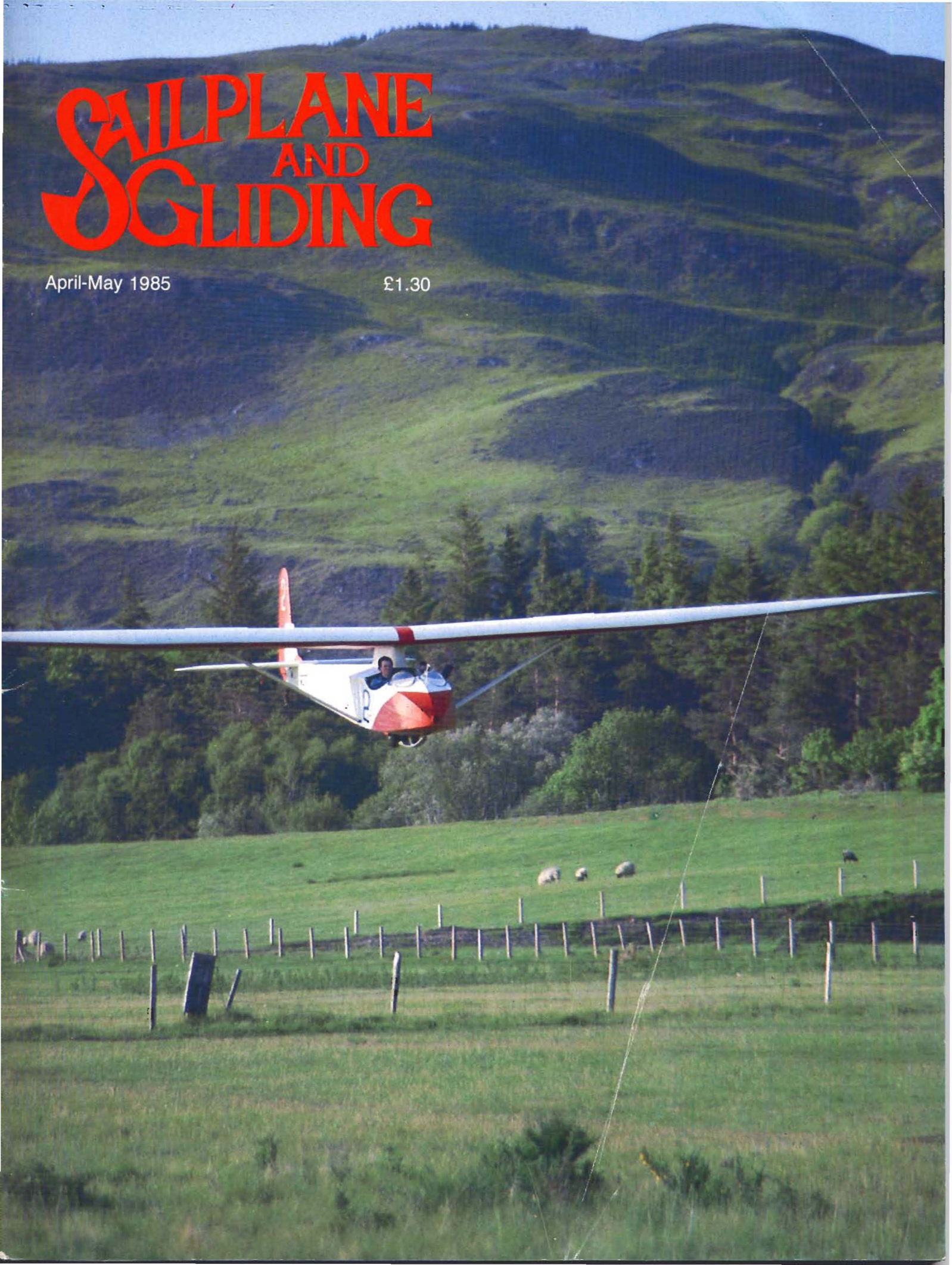


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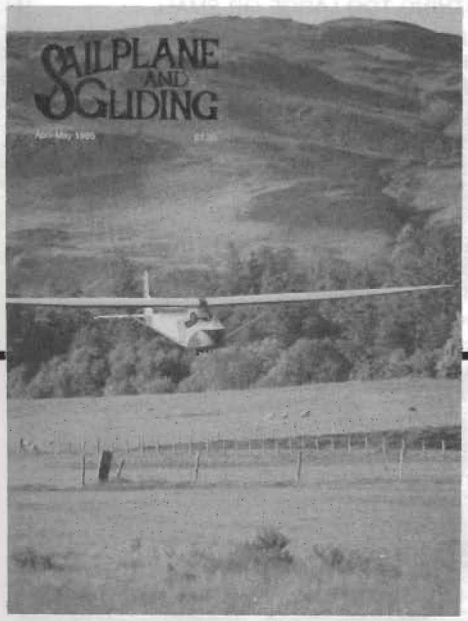
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CONTENTS

58 **Chairman's Report** T. S. Zealley
59 **World Championships 1985** B. B. C. Watson
60 **Get Your Wings On!** J. L. Bridge
61 **Book Review** The Arm-Chair Pilot
62 **Tail Feathers** Platypus
64 **Back to Basics** Part 4 A. D. Piggott
65 **The Progress of a North Wales Flyer** J. J. McCormick
68 **Milfield's New Home** J. Marshall
69 **Economics of a Gliding Club** H. G. Peters
70 **Simple Variometer Systems** J. S. Williamson
72 **Annual Records** Rika Harwood
74 **Travellers' Tales** H. Millgard, F. Humblet, L. Kirkham, S. Macintosh, J. Schilling
76 **The Risk of Collision** W. A. O'N Waugh
77 **Mid-Air Collision — between Rockwell Commander and Std Cirrus** W. G. Scull
79 **Throw Away the Task Board** C. A. P. Ellis
80 **BGA and General News**
81 **Gliding Certificates**
BGA Accident Summary A. K. Mitchell
83 **Be a Better Badge Hunter** Part 1 G. W. G. Camp
84 **Your Letters** V. Griffith, W. Dean (reply by W. G. Scull), C. Marren (reply by W. G. Scull), P. Layzell, L. E. N. Tanner, D. Roberts, S. W. Parker, S. Palmer, Karen Fitzgerald, Pam Rollason, G. Soars
85 **Fifty Years Ago** A. E. Slater
Forthcoming Events
86 **Club News**
91 **Service News**
97 **Overseas News** Rika Harwood, J. M. Bishop
Safety of the Public D. Donald

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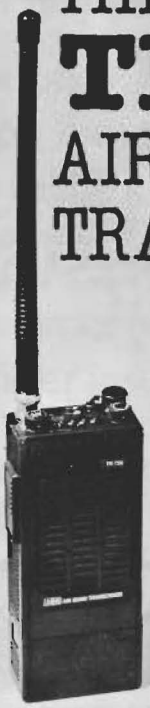
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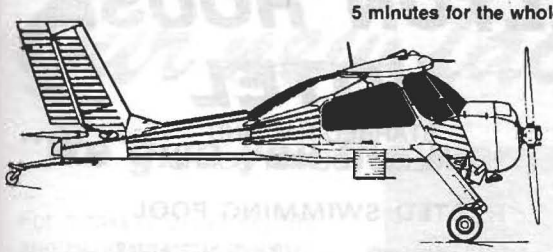
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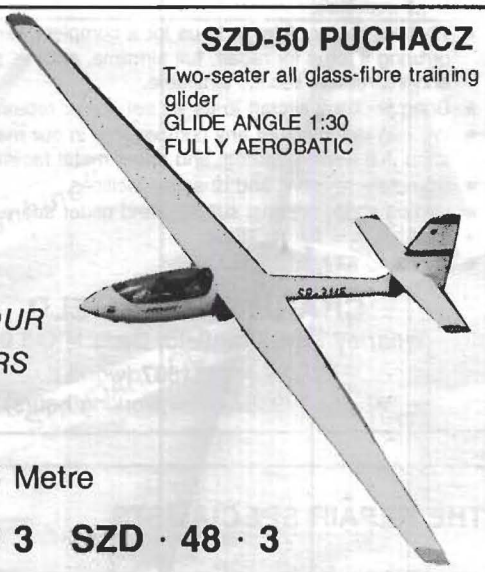
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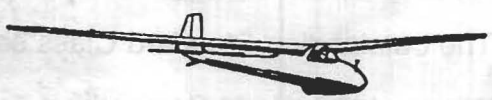
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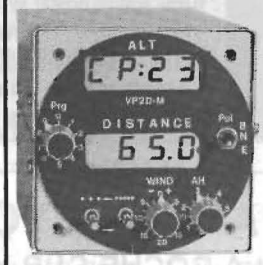
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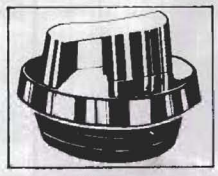
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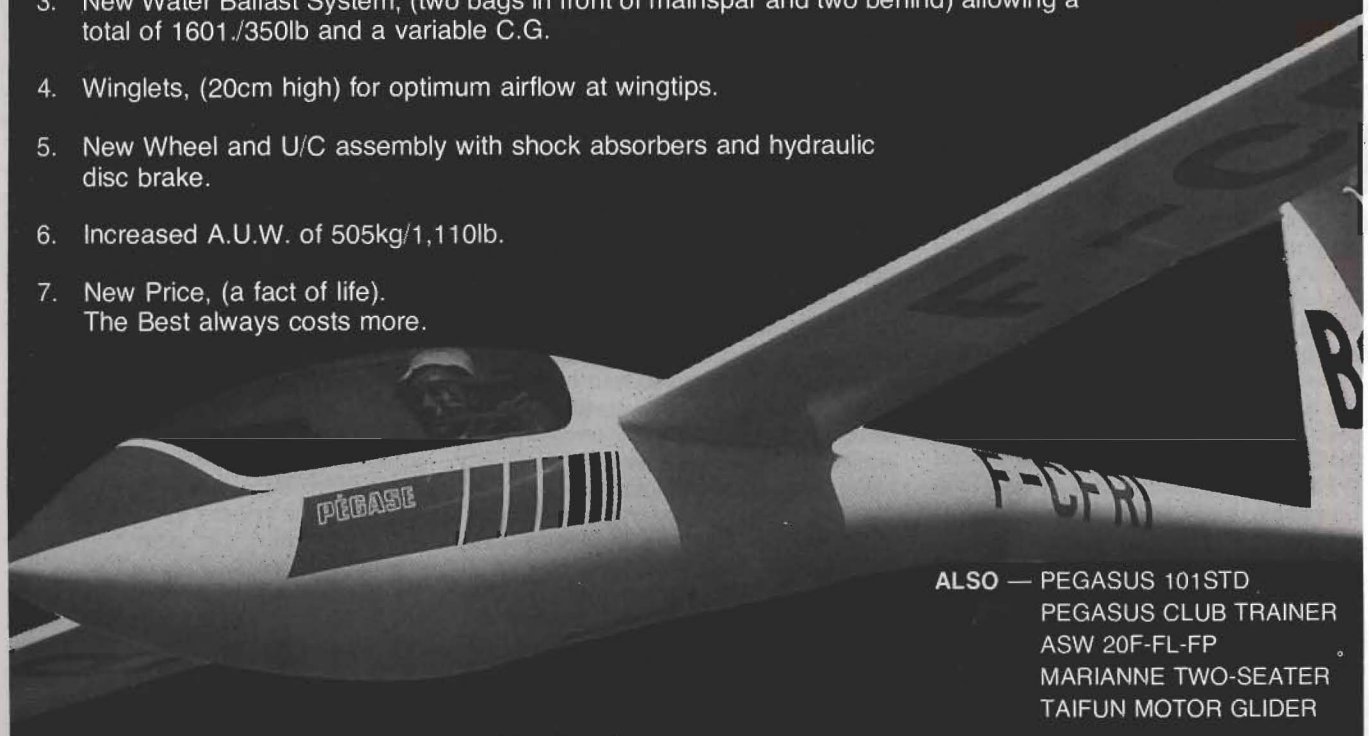
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CHAIRMAN'S REPORT

T. S. ZEALLEY

- **More optimism in clubs**
- **British team fund raising difficult**
- **Possibility of a new 18 Metre Class**
- **Right to cross airways in VMC threatened**
- **Concern about mid-air collisions and aerotowing "upsets"**

The past flying season was one of the best we have had for many years. Launches were up 13%, flying time was up 18% and cross-country distance was up 70%! Apart from flying member satisfaction, the good flying has boosted the finances of most clubs and at the area meetings I have attended recently, a generally more optimistic note has been discernible. Club membership seems to have turned the corner, with a modest increase compared with the succession of reductions in recent years. (We have recently sought to clarify and improve the statistical membership return form we get clubs to fill in so that we get a more accurate overall membership picture.)

While the main cause of improved membership must be ascribed to the generally improved economic climate, some credit must go to our own efforts. Early in the year the BGA appointed Nikki Campbell as our part-time professional PRO. Many clubs have also now appointed their own PROs and this public relations effort is reaping its reward. In a related move to improve our own internal communications we have recently decided to increase the circulation list for the BGA's (approximately) bi-monthly newsletter.

There were no World Gliding Championships in 1984, but European Championships were held at Vinon in France. We sent six pilots but none did outstandingly well. The next World Championships will be held in 1985 in Rieti, Italy; this will again involve mountain flying at which most British pilots are fairly inexperienced. We appointed our British team manager — Ben Watson — early in the year and the pilots themselves were selected in the autumn after all the Nationals had been completed.

Fund-raising for the British team will continue to be an important and difficult task. During the year a proposal to raise funds more especially from competition pilots led to a decision to increase the fee charged for the FAI competition licence, the extra money going to team funds. The growing importance of the European Championships alternating every other year with World Gliding Championships will create further fund-raising problems — unless we allow British team selection to be determined by wealth rather than by gliding competence!

The good weather ensured very satisfactory National Championships — organised as in recent years as three separate events: the Standard Class at Nympsfield, the 15 Metre Class at Dunstable and the Open Class at Lasham.

As the first step in a possible important change in glider Class structure, there was a special informal international meeting in Frankfurt, attended by representatives of most gliding countries but also by glider manufacturers. From this meeting (at which we were represented) it seems possible that a new 18 Metre Class will be introduced in four years' time. Elimination of any of the existing Classes currently seems unlikely.

Another important international meeting attended by the BGA during the year was the international Coaches Conference — likely to be renamed the International Safety and Training Committee. This body, led and chaired by our director of operations, Bill Scull, was started with just a few European countries some 12 years ago and has grown steadily in size and importance ever since. This reflects credit on both Bill and the BGA training set-up.

We continue to work to improve training and safety standards within our movement, but regrettably the year saw eight fatalities (six in gliders and two in tugs) — all, of course prompting careful appraisal for lessons to be learned. Two types caused particular concern: mid-air collisions and aerotowing "upsets". Improved safety costs money and we have also been concerned at the cost of our national coaching and instructor training activities. Although we receive Sports Council grants to assist here, these operations still represent a major outgoing for the BGA.

A key task for the BGA is to represent gliding interests to "officialdom". On airspace there have been continuing spasmodic exchanges on the Blue 22/ Portmoak issue with NATS and the politicians. The politically promised review has taken place, we understand, but its results have not been publicised. On another front a planned restriction to our long-established right to cross airways in VMC has been the subject of much discussion with NATS and is expected to come into force by the summer of 1985.

Discussions with the CAA include those relating to the operation of motor gliders where we are striving to defend the concessions over their use in connection with glider pilot training, against moves to circumscribe them.

Like its member clubs, the BGA depends very heavily on voluntary effort. Mostly, such work must be its own reward, but more formal honours and awards are bestowed in outstanding cases. This year I am pleased to be able to remind you of the award of the RAeC Silver Medal to John Brownlow, an FAI Tissandier Diploma to Tom Bradbury and BGA diplomas to Bill Manuel and Andrew Thorburn. I would also like to mention the valuable service of Mike Emmett who served for five years as chairman of the Airspace Committee and was replaced earlier in the year by Chris Nicholas; also a similar stint by Alan Yates as chairman of the Technical Committee, now replaced by Doug Jones. Naomi Christy concluded 15 years' service on the BGA staff and was replaced during the year as badges and certificates officer by Gordon Camp. Dickie Feakes and Pete Saundby will be retiring at this AGM after four years on the Executive Committee. I would like to thank all these people as well as all the others throughout the movement who continue to carry their various loads for the benefit of the sport.

I have mixed feelings as I write this, my last report as chairman of the BGA. I have regrets that in my time as chairman I have not achieved more. On the other hand I have relief at a burden soon to be set down and the pleasure in knowing that there are others willing and able to take on the tasks that have to be done.

I am grateful for being allowed the opportunity to head up a sport which comprises such a delightful bunch of people. Good gliding to you all.

WORLD CHAMPIONSHIPS 1985

Rieti, Italy, July 28-August 12

BEN WATSON, British team manager, sets the scene and introduces our pilots.



Ben



Justin



Andy



Ralph



Martyn

The Place

Rieti is 80km NE of Rome and about 24 hours motoring from Calais. It is a provincial town (50 000 population), 1200ft asl, situated on a rock above the crystal clear waters of the river Velino. The airfield is grass (or dust) with temperatures of 35°C in the day falling to 12°C at night. It is in a broad fertile valley overlooked by mountains of 3000ft on the west and to the east by Mount Termonillo 7278ft. These are the Abruzzi section of the Apennine range which stretches the length of Italy. The highest point is the Gran Sasso (9560ft) about 30km distant and a major landmark on nearly every task.

In short the scenery is dramatic and beautiful. The locals speak no English but are very friendly. The restaurants are numerous and excellent; also cheap.

The Championships

Rieti airfield has been the site of the Italian Nationals for many years. We have no worries about the organisation which is the excellent team that ran the 1984 Pre-Worlds. Piero Morelli is director with Max Faber as his deputy and Smilian Cibic is in charge of public relations. Fortunately all three of them speak excellent English which is the other official language.

Tor Johannessen is chairman of the jury with Wally Wallington as his deputy. The four stewards include Ann Welch, Hal Lattimore and John Roake.

Pilot operated starts will again be the rule. The ground clock will change every 3 minutes but camera clocks are permitted at pilots' option providing they conform to CIVV specifications. It is likely that some start height limitation will be imposed. In 1984 it was 2000m monitored by a motor glider. Spotting other competitors' numbers at that height requires a sharp eyed crew.

TP photography will be as at Hobbs and Rieti '84; overfly TP and photograph control point. It seems strange to us and can mean you turn 2km inside the control point, thus no good for FAI certificates. However it seems to cause few hassles and is popular with the pilots.

There is nothing else unusual in the rules. The Open Class is limited to 650kg take-off weight. No Bohlis of course. We're assuming four pilots as the grapevine says virtually certain. Maximum 90 gliders or 100 absolute limit.

The Competition

Amongst the other Nations we don't know who will be flying, and in which Classes. However we can be sure that competition will be tough, but beatable. In the Standard Class Brigliadori (winner Rieti '84) with his local knowledge is probably still the man to beat. Well Justin beat him on two days in 1984 and Martyn on three — and Andy beat both Justin and Martyn in the British Nationals, so . . .

Other names to juggle with are Nietlispach and Leutenegger (CH) and Lackner (D). In the 15M Class the picture looks more open. De Orleans would have won Rieti '84 comfortably but for scoring 0 on a 1000pt day. However he has never been placed in a Worlds. The holder, Kees Musters, came only 5th in the Europeans at Vinon '84 and Chris Garton was leading him up to Day 8, so . . .

The Open too seems open. Will Ingo Renner be there and can he fly the mountains? Will Klaus Holighaus fly Open or Standard? What about Gantenbrink, 2nd 3rd 2nd in the last three Worlds but only 3rd to Lherm (F) and Blatter (CH) in the '84 Europeans? This is Ralph's first chance to show what he can do in his beloved Open class, so . . .

The Pilots

To readers of S&G our pilots hardly need an introduction. In a way we seem like a new team (no Lee, Fitchett or Delafield) though in fact Justin is the only new boy. So let's start with him. Did you know that he: won the Norwegian Nationals in 1972; and was 4th in Swiss Nationals in 1973; flew Italian Nationals at Rieti in '71, '73, '78 and '84 (best place 2nd), won Vinon '77 and US Nationals '79, holds a bunch of UK speed records; had some innovative flights in New Zealand including gain of height record; enjoys skiing, canoeing and fishing?

I think that will do — but it would be great if we had another Wills as World Champion wouldn't it.

Justin will be flying an LS-6 in the 15M Class.

Three weeks' practice in Italy for Andy

Andy Davis next. It will be his third World Championships and still only 28. Quite a record! Andy has won the British Standard Class Nationals no less than four times ('78, '80, '82 and '84) as well as the 15M in '78. He has not yet flown Rieti but we are solving this by giving him three weeks out there before the Championships during a period which also includes a small competition. During the winter months he has been flying at Talgarth, Dunstable and any other mountains he can find. Andy flies commercially and lives in Macclesfield. He has purchased a Discus which he will be flying in the Standard Class.

Now Ralph's turn. What to say that's new. Five times winner of the British Open Class Nationals; holder of three British speed records. British team to Finland in 1976 flying, unbelievably, Standard Class where he still came 12th out of 46. This is surely his chance and he's bl . . .y well going to take it. Other interests? Well you lot bend so many gliders that he's not got much time left for anything else. Jane and he have

three splendid sons two of whom, Stephen and Howard, will be with him in Rieti. When he has some leisure in the winter he goes off with Footie and Simon to shoot grouse.

He will of course be flying his Nimbus 3 in the Open Class.

Finally Martyn. Winner of two British Nationals; at Hobbs drafted into the British team at the very last minute and then proceeded to win one day. At Rieti '84 came 3rd on three days, never having flown there before, beating Holighaus on five days. His CV quotes him as a chartered surveyor but I think really his life has been taken over by gliding. When he's not repairing his own aircraft he's building trailers for others. Mary and most of their splendid family will be crewing for him. Like Justin he has decided to go for the 15M Class with an LS-6.

The Aircraft

The two new designs are Discus and LS-6. Their improvements on the other Standard and 15M aircraft may be small. However no competitor wants to feel he is at a disadvantage, so in the Standard Class about 14 pilots including the leaders are expected to fly the Discus with most of the rest in LS-4s or DG-300s. In the 15M there will probably be about ten LS-6s with the remainder ASW-20s or Ventus'.

The Money

We are enormously grateful to all those who have supported the team with lottery tickets and donations. Please keep it up! The budget is £16 800 or £4200/pilot. Towards this the pilots have to contribute £500 each on top of paying for their new aircraft. The main costs are entry fees (US $750 each), insurance, living expenses for pilots and up to two crew at £12 each/day, aerotows and retrieve costs. The team manager and his assistant are self supporting. Most of the income comes from the 50p/head BGA levy, pilots' contribution and the Sports Council.

We very much hope for a major financial contribution from GEC Avionics as part of their sponsorship of the Nationals at Lasham. We also have some minor sponsorships; Townsend Thoresen 50% cross-channel fares and hopefully the loan of a Sherpa from British Leyland.

Finally our Patron HRH The Duke of Edinburgh has kindly agreed to receive us at Buckingham Palace on July 9 to wish us good luck. This will give a great send-off and when we come back with a Champion perhaps we shall get a return visit. ■

GET YOUR WINGS ON!

JOHN BRIDGE says there is a whole season ahead of you and there's everything to play for — get that badge, win that Comp and generally have a really good time.



John, an analyst programmer for British Petroleum, started gliding in 1979, now belongs to Essex GC with a share in a 19m Jantar, has 540hrs and All Three Diamonds.

Have you noticed something? The days seem to be getting longer, the birds are starting to sing and the air itself is beginning to sparkle. No longer do you have to scrape ice off car windscreens with over-used credit cards; even the rain feels warmer.

Yup. Spring has arrived.

For flat-land pilots (I'm one too, now), it's an exciting time. All winter you've kept your hand in with the occasional circuit at base, or perhaps a visit up to the mountains chasing some wave — but now, the whole season is ahead of you. You've each got a clean sheet and there's everything to play for — get that badge, win that Comp and generally have a really good time.

Right?

Well, you've spent the whole of winter reading all the right books to find out how the real pundits do it. You've studied their techniques down to the last detail and you just know you're going to crack it this season. You've got everything ready — latest maps, new sunglasses and a sun-hat. You're fit, on top form. It's going to be a great year.

The chairman gives you all a team talk (you know the sort of thing):

"Now listen, you lot. You're all rusty. You probably haven't even seen your gliders since September, never mind flown them. Take extra care when you do your DIs. Remember — I don't want any accidents on my airfield. If you feel you have to go cross-country, please, please choose a safe field with friendly farmers."

So you get your aircraft out of its box. You decide to postpone all those little jobs that you'd planned to do during the off-season. Today's far too good for fettling. With the pearls of wisdom uttered by the chairman still a-ringing in your ears you give the glider the most time-consuming DI imaginable, yet you still contrive to roll up to the launch point with the ailerons disconnected. You wisely decline the offer of a launch ("I think I'll wait until it gets a bit better . . ."). You connect the right bits together. Double check everything. Now you're ready. Go go go!

The first soaring flights of the season are hilarious! Even more fun if you listen to the various local radio stations broadcasting on 130.4:

"I think you'll find you'll climb faster with your wheel up, actually."

"Can we all agree to turn right at the next thermal, please?"

"I'm over a river with a bend in it, near a road."

Meanwhile you are trying to execute perfectly balanced turns in the same thermal at the same height as some cowboy who insists on flying at 60kt with 80° of bank. You soon stop laughing when you realise that although your vario tells you 4kt up, the ground really does look rather close and perhaps it might not have been a bad idea to have checked out the vario during the winter. You are also given an opportunity to demonstrate that you haven't lost your flair for landing out only 5km away from base.

★ ★ ★

The first Comp of the year. Not a Real Comp — club members only, designed to get all you cross-country pilots in the mood for the season. Funny thing about Comps — the main reason you like them is because the task director generously removes the need for you to set your own task. All you have to do is (don't laugh) fly there and (ho ho!) get back.

Expectant faces in the briefing room. And what, may I ask, is the first task of the year on this dismal overcast day? A 200km O/R with a downwind TP, that's what.

The reactions of the pilots vary somewhat, from:

"Gosh, what a challenging task, I'll put my tips on."

To:

"Has he been drinking?"

However, everyone gets onto the grid. Well, you never know.

Half-an-hour into the task, you're still in your start thermal, well out of gliding range back to base. You clench the stick like a vice and you don't even notice the cutting edge of the straps on your shoulders. You have this really bad feeling that you may not get back.

Three hours later, you land at the TP with all the other gliders (making sure you roll further than the last one) and join the queue of pilots waiting to make a call from the long-suffering farmer's now-public telephone system.

Next time you'll have the good sense not to start such a ridiculous task, won't you? Well, won't you?

★ ★ ★

Wind 25kt. Seems a bit blowy for a large cross-country. Still you decide to check what the club pundit's going to do.

HE arrives. You all casually ask the same question.

"Where are you going today, O Great One?"

"I think a 500km O/R will do," he replies, cheerfully filling his wings with water.

The man's obviously mad. You decide to do an O/R to half-past-three, just to see how far you can get. As your flight progresses, you realise how much hard work is involved. You congratulate yourself on the progress you're making; clearly Mr Pundit's over-reached himself this time. As you reach your TP, just when you're wondering whether you'll get back in time to retrieve the man after he lands out, you hear him calling "final glide fifteen minutes." After the initial shock you enter a phase of deep depression. You get back and derig, and in the bar you ponder on your failure to recognise a good day when it stares you in the face. Still, you console yourself with the thought that this guy will almost certainly go on to win the Nationals.

As the weeks pass, you find yourself attempting and occasionally finishing larger tasks. Obviously your technique is improving, you're finally getting the hang of thermalling. Your masochistic tendency to risk landing out makes you a prime target for the press-gang.

"Got any plans for next weekend?", they ask.

Think quickly. Oh no, too late. They've got you.

"Inter-Club League. At Wally GC. Briefing at nine. See you there."

Next weekend arrives as usual, and as usual they set another daft task. On the grid, adrenalin is pumping through your veins, your heart is pounding. With eleven other pilots you watch the approaching gloom with a growing sense of despair.

Now it's your turn to launch.

The team manager approaches.

"What are your tactics?", he asks.

"To win the task, boss," you reply.

"Good man," he says, and hooks you on.

"Off you go, to be released at final glide height to your chosen field.

★ ★ ★

The season mellows. Thermals are large and conditions are good late into the day. Just for a change, you decide to see the world and fly down Oxford way. It's a blue day with stacks of VMC, and you're in no great hurry. You take the lift as you find it — it won't take long to get back, anyway. You've even switched off the radio to enjoy the solitude. Tum-te-tum.

"A Nimbus 3 planform misses your nose by a few feet as it joins your thermal . . ."

Suddenly you see a flash of white approaching. A Nimbus 3 planform misses your nose by a few feet as it joins your thermal. ("Hang on, mate; a bit close, wasn't it?") Another one appears beneath you, considerately turning in the same direction. There's another. You look around. Dozens of the things are clustered around you.

"Aaah — the Nationals!".

On goes the radio. It's a different world out there.

"Tinkerbell Alpha Sierra minus two."

You try to leave the thermal but there are no gaps — you're surrounded.

"Roger, Malibu at Tango."

They fly near enough for you to see the grim determination etched onto their faces. They play it tight and very, very close: after all, points and reputations are at stake. With a bit of luck, their gliders will survive the week intact. If not? Well, Ralphy down the road will put them right. One thing's for certain — they'll all be back next time, with better machines and even more experience.

One glider leaves the pack. Another follows. Bang-bang-bang — they've all gone, leaving you twitching at the stick, a hundred feet lower than when they joined you. You're pretty relieved that these were all real pundits who knew exactly what they were doing.

★ ★ ★

Does gliding have to be that fraught? Of course not. Very occasionally when you least expect it, you somehow manage to achieve something just a little bit special. Perhaps finishing a difficult task under poor conditions, or an absolutely huge task for which you never thought you'd be fast enough. Just so your ego doesn't inflate too much you are reminded, "Yes, well done, but you should have done it faster really — oh dear oh dear, you could have flown the winch round on that day." Absolutely true. But your time wasn't all spent with your eyes glued to the vario, meeting checkpoint deadlines and playing with your John Willy. You saw the countryside, and the clouds were a bit more than thermal indicators.

All too soon, long before you're ready, you realise that the summer is over. So you may not have got that badge, and maybe you had some bad luck in the Comps; does it really matter?

The real test is how much pleasure you get from gliding. A day is not wasted because you choose to fly locally in 8kt thermals, any more than it's wasted because you fail to finish a competition race in first place. Like the best things in life — when it's good, it's superb; when it's bad, it's still pretty good. So get out there and enjoy it!

BOOK REVIEW

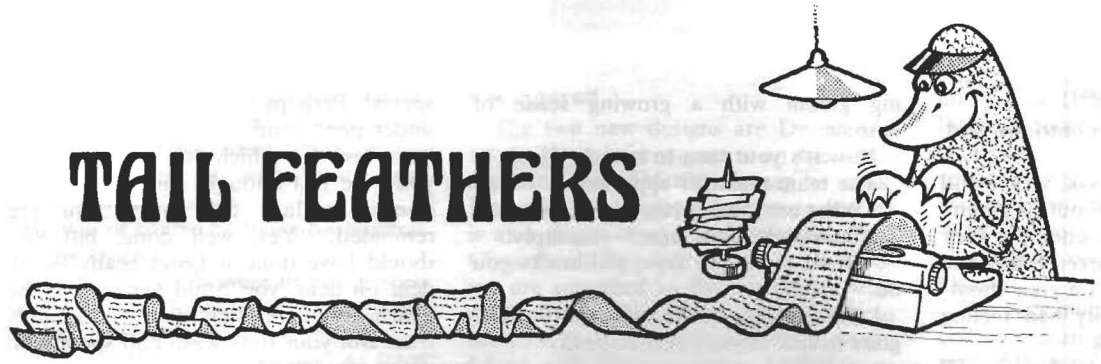
Skiing Down Everest & Other Crazy Adventures by Ingrid Cranfield. Published by Severn House Publishers Ltd at £5.95.

This is a bedside book of crazy adventures gleaned for the most part from the world's press, and ranging (as one would expect) from the fantastic to the fatuous. Quite a few of them are to do with ballooning and parachuting, and there is even a chap who flies a hang glider under water. Bungys are used by Oxford students to suspend themselves from suspension bridges whilst Lionel Alexander and Chris Riddell contribute a couple of Cambridge gliding reminiscences of relatively limited craziness.

I have to confess that sitting in a glider on some hitherto unflown mountainside as the bungy is stretched by a Landrover seems in retrospect quite adventurous by comparison with some of the exploits recorded. However, the author makes one comment that will endear her to all glider pilots (in connection with the prosecution of a man who went aloft under forty-five Met balloons). "Governments the world over seem to believe that the air belongs to them and not to the people".

THE ARM-CHAIR PILOT

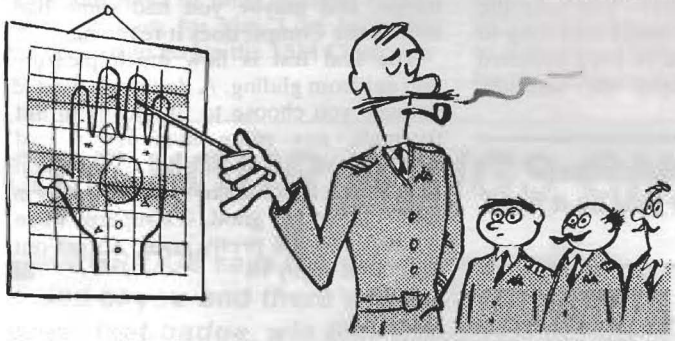
TAIL FEATHERS



by PLATYPUS

You too can fly like the boys in blue*

No doubt you've often wondered why you hardly ever hear of RAFGSA pilots getting lost. I certainly used to wonder why myself. Of course some are full time Air Force pilots who know the entire country like the backs of their hands (isn't that a daft



Air Force pilots know the country like the back of their hands.

expression? I bet if you showed most people photographs of the backs of their own hands they wouldn't recognise them) and can pop out of clouds for five seconds, take a quick shufti at the terrain, then pop back into the murk with an instant mental fix on their position. Lucky fellows!

Even so, most people in the RAF are not professional fliers, and still they seem to get around pretty well. I am leaving aside the ignoble suggestion that you don't hear of them getting lost because they keep damn quiet about it when they do. Certainly, if you hear plaintive bleats on the radio "Can anyone tell me what the airfield is with one runway going north-south, sorry no, east-west, between a big wood and reservoir shaped like an elephant's whatsit?" you can be sure the ninny in question is a civilian. After all, to admit on radio that you're lost is to confess at the top of your voice that you're capable of blundering into *verboten* airspace; I'm sure the GSA awards a real rocket to any member who stumbles into *verboten* air, with a special booster added if they let the whole world know about it. I mean, they have certain standards to maintain. So, they always wear those splendidly-pressed overalls with dozens of zip pockets and immaculate kneepads with coloured pencils and rulers and stuff: a place for everything and everything in its place. I have a place for everything but everything is in some other place.



Platypus has a place for everything.

"Boys in blue" is not quite appropriate, since the GSA overalls are dark green. Poetic licence, they call it.

On the ground, at any rate, they look utterly disciplined and organised. I suppose if you're flying one of the Queen's gliders you better had be, or you get fed to the corgis. RAFGSA wings are so highly polished that the coarse civilian pilots who have staggered out of bed just in time to get to the launch point can shave in them before take-off. (By the way, it is a good idea to shave and comb your hair before take-off, not in the Kamikaze tradition of looking neat as a pin before going to meet one's ancestors, but because the impression created if you land out is so much better. That was particularly vital when the Dunstable Rapist was at large during the 15-metre Nats last year. Any pilot landing *aux vaches* near Leighton Buzzard and looking, shall we say, somewhat casual was liable either to be shunned or shot at. Ask Ralph Jones.)

Anyway, some years ago I discovered the secret of the GSA navigational prowess. It was their beautiful Service maps, strictly not for giving out to civilians, with the precise layouts of all airfields on them, showing their boundaries and exact lengths and directions of runways. Of course! Any fool can navigate with such aids.

One day last year, amid rain and low cloud, I got slightly lost — oh, let's face it, horribly lost — and failed to identify a marvellous landmark, an airfield with three runways all crossing in



They say God looks after his idiots.

the middle, which is rather unusual. It took me 30 minutes to get sorted out and find the TP. (Ironically, many of my rivals who stuck accurately to track hit terrible weather and were washed onto the deck. They say God looks after his idiots. Sometimes, anyway.) That evening I discovered that Marjorie Hobby was selling new quarter-million scale *civilian* maps with those same detailed airfield layouts, and bought a whole set. No excuses now.

Incidentally, the mystery airfield was Wroughton near Swindon; I'd mistaken it for somewhere 27km away that hasn't got any runways at all! Next time, with my new idiot-proof maps, I shall be exactly on track and will no doubt be washed right onto the ground along with the best of them. But at least I shall know precisely *where* I've got sunk. Isn't progress wonderful?

Can a Platypus be a Quack?

In the old days, by which I mean a hundred years ago or more, people who were technically and scientifically bright were usually pretty good at the English language, too. Isaac Newton not only wrote memorably in his own language but wrote his greatest discoveries down in Latin. Nowadays you can take if that if



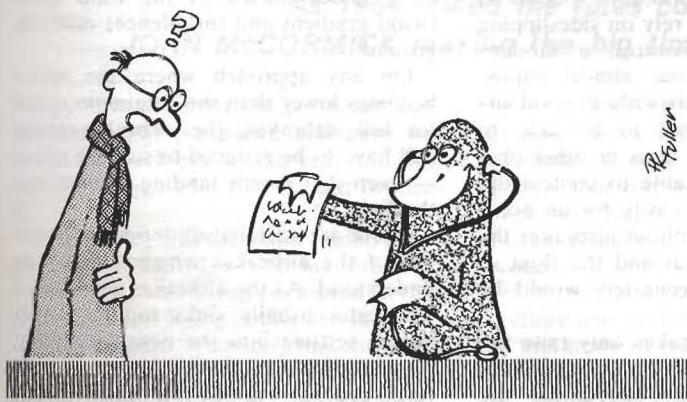
Isaac Newton wrote his greatest discoveries in Latin.

somebody is technically sophisticated you will be lucky if he can write his own name. Some computer magazines are written, often entertainly I admit, by people who cannot spell or punctuate the most elementary sentence. Glider pilots are fractionally better. The gliding women are a notable exception, though whether this reflects lack of technological sophistication I do not know. After ploughing through masses of illiterate communications by one outfit (the name is concealed so as to protect the guilty) my next financial donation to them was accompanied by a mildly remonstrating note asking them why they couldn't even spell "its" and "it's" correctly in the right situation. By return of post I received an immaculately handwritten note

Deer Platypuss,
Thanx for the check and your noat, unforchunatly yor riting is so ilegibul we cudn't reed wot it sed,

Yours Trooly
(— — (CFI) — — GC)

Ah, well, calligraphy is *different.* Nature really intended me to be a doctor, you see.



Blessed Competitions

Why do I abuse competitions in almost every issue of this organ and yet enter every contest that will have me? Does P. speak with forked tongue? No. Pride, the urge to win — or, for coarse pilots like me, the urge to claw one's way up from 30th place to 29th — is the only passion that is stronger than sloth, which is the most common deadly sin of our breed. Pride having propelled one headlong into the lists, one is now obliged by the imminence of a Comp to overcome that dreadful sloth, to fix the varios, recharge the batteries, both material and spiritual, and in short to get the show on the road and into the air. Otherwise one would hibernate all the year round amidst a litter of non-functioning gear.

Involving other people increases the psychological pressure. Having persuaded some poor innocent to crew for one, using (in the advertisement) a *nom de plume* or a *nom de guerre* or some other alias as long as it isn't one's real name, one now has a team rooting for one to get out there and do one's best, doesn't one? (Or if you fly two-seaters, two have a team rooting for two, don't two?) That's very important. I have some good friends who are also good pilots — a rare combination as you can see from the "S&G" correspondence columns — who are very reluctant to go off into the blue at weekends because they haven't got a properly organised crew standing by.

A Comp with an organised crew is a different matter. Then there are plenty of tugs and tug pilots. (When I *think* of the cracking non-competition days I have steamed up to the club in a lather of anticipation to find one tug is U/S, the other's flying back from its C of A, the other's retrieving some berk from a



The remaining tug pilot is having a three-course lunch.

field three miles down the road at mid-day already, one pilot is sick and the only remaining tug pilot is having a three-course lunch and is too big to be dragged forcibly from his trough, all the while cumulus are bubbling uselessly overhead. You know, I often think of summer days hundreds of years way back, say, in Shakespeare's day — he could write too, though he couldn't spell, I admit — and there must have been cloudstreets and wave and sea breeze fronts, with not a soul besides the wild birds to enjoy them. What a dreadful waste! It depresses me to think about it.) Then at Comps you have tailor-made Met forecasting, of a sort, which is better than anything you can buy off the shelf. I won't say anything about task-setters, since I believe the JJ solution rightly dispenses with such excrescences.

But most of all what I like about Comps is achieving things that are memorable to me, though not to the record books, on days when I would not ordinarily have opened the trailer doors. Like ridge soaring from Salisbury to Dorchester under a slate grey sky, having just made it to the Cathedral from Lasham after the solitary thermal of the whole day, a slow, slow, cloud climb. A day of hardly any points and no glory at all. Or again, scraping the slopes from Cheltenham to Stratford late in the day with dying thermals compensated by an aggressive north-westerly. Beautiful. A non-contest day, since insufficient pilots passed Y.

There's irony for you: "The great thing about contests is the brilliant flying you do on what turn out to be non-contest days". As they say in exam papers, **Discuss.**

BACK TO BASICS — Part 4 *The Use of Airbrakes*

DEREK PIGGOTT is mainly writing for beginners and instructors

In order to simplify learning to land it is easiest if the instructor takes over the whole responsibilities of planning the circuit and the approach. In other words, the student is talked round into position with the instructor using the airbrakes as necessary to bring the glider down towards the landing area ready for the landing. It is not even necessary for the student to be aware of their use while he is concerned only with the landing. Once the hold-off and touchdown has become fairly consistent, and without any uncontrolled ballooning, it is time to start both using the airbrakes and making the necessary judgments for the whole flight.

A proper understanding of the use of the airbrakes is essential for safe flying. They are not just a "landing" lever to be used automatically just after the final turn. Their use is not a matter of learning how to operate the lever but rather of when and how much must be used in the various situations and conditions which occur. For this reason it is of little value to have a beginner using the airbrakes if the instructor is telling him when and how to use them.

There are a number of different types of airbrakes in use today but with the exception of trailing edge brakes such as those used on the Mosquito, Mini Nimbus and Vegas, they all act as lift spoilers as well as increasing the drag. Part of the wing is seriously affected so that it makes less lift and this makes the aircraft behave as though the wings have been clipped. This loss of lift raises the stalling speed, typically by about 2-3kt. This might be thought of as a slight disadvantage as it means that the touch-down speed using full airbrake is that little bit faster than it would be with them closed. However, this rise in stalling speed is put to good use anytime that the glider is ballooned up a few feet during a landing.

It enables a heavy landing to be avoided by quickly closing the airbrakes partially or fully. This both reduces the drag so that further speed is lost more slowly and increases the lift so that the glider is able to continue flying at a lower speed. This is rather like using a burst of engine power in a light aircraft to prevent a heavy landing, except that closing the airbrakes have only a limited effect and they can only be closed once. In the old days flying the T-21B we used to say we were giving it a burst of no spoiler!

It is the combination of the loss of lift and the increase in drag which makes even the simple "spoilers" on the old T-21B and Falke motor gliders an effective way of steepening the approach path. With machines of a higher performance a much larger increase in drag is essential and more effective types are needed. These are sometimes known as "dive" brakes as they are designed to be used at any airspeed and to limit the diving speed.

If control is lost while cloud flying the pilot can open the airbrakes and know the speed won't become excessive

In most modern designs the airbrakes are speed limiting in a dive to an angle of 45° whereas earlier designs such as the Olympia, Skylarks and Capstans had airbrakes which would limit the speed to below VNE (the maximum diving speed allowed) in a continuous vertical dive. This is a useful feature if control is lost while cloud flying as the pilot can open the airbrakes and know that the speed will not become excessive. However the modern requirements seem to be adequate, although a little extra care is needed so as not to have an unnecessarily high approach when landing in a small field.

Whereas it may have been acceptable for a low performance glider like the Tutor to have no airbrakes or spoilers so that the pilot had to rely on sideslipping for the approach control, a modern machine would become almost impossible to land accurately without good airbrakes. It is essential to be able to descend steeply over trees or other obstructions and to be able to control the glide path and float easily for an accurate spot landing. Without airbrakes the glide would be so flat and the float so long that landing accurately would be practically impossible.

Although the airbrakes only raise the stalling speed by about 2-3kt, it becomes necessary to increase speed for the approach by about 8-10kt or risk a heavy landing. This is because of the effects of the extra drag caused by the airbrakes. As the round-out is started, there is a continuous loss of speed and if the approach is started too slowly there will not be sufficient speed left or enough control to round-out and to prevent a bad landing. In other words the extra speed is required when the airbrakes are open to ensure a safe round-out and a short float before touchdown.

Each type of glider will need different minimum approach speeds for full airbrake and it is important to know what they are for the types you are flying. It is also important to learn to find time to glance at the airspeed indicator several times on every approach in order to check the actual speed. Never rely on judging the speed by attitude on the approach. Always check the actual speed on the ASI. Remember that a few knots extra will merely increase the float before touchdown, whereas the loss of a few knots will result in, at best, a heavy landing.

Just after the final turn any loss of speed can be corrected by lowering the nose. However, if the speed gets too slow a little closer to the ground there will be neither the time nor the height to regain speed. The probable heavy landing can usually be averted by reducing the amount of airbrake. This both reduces the drag so that the speed is not lost rapidly and increases the lift so that the glider does not sink heavily onto the ground.

It is useful to know the minimum speeds which will allow a proper round-out and hold-off for full airbrake, approximately half airbrake, and for no airbrake. These basic speeds will need to be increased in winds to allow for the extra losses caused by the wind shear (wind gradient and turbulence) near the ground.

On any approach where the speed becomes lower than this minimum speed for full airbrakes, the airbrake setting will have to be reduced to suit the speed — even if it means landing further into the field.

There are various subtleties about the use of the airbrakes which need to be understood. As the airbrakes are opened the glider usually sinks rapidly 5-10ft before settling into the new glide path. You are liable to make a heavy, premature touchdown if you open them quickly near the ground. This sinking can be prevented by easing back on the stick as the airbrakes are opened and this technique must be mastered by the time a pilot is ready to start cross-country flying.

To avoid this problem, always try to arrange the final approach so that at least half airbrake is needed and has been applied for the final 50ft or so. With most types of airbrake it is easiest to unlock them on the base leg so that there is no jerk when you open them. This is particularly helpful if you can see the final turn is going to be rather low so that it is inevitable you will be opening the brakes close to the ground.

With very few exceptions, for example the K-7, Skylark 2 and the American Schweitzer 1-34 and 2-32, it is practical to make the whole round out and touchdown with full airbrake. If at first you find that full airbrake gives a worryingly steep approach and high rate of descent making the initial round out height rather difficult to judge, the airbrakes can easily be closed a little. However, apart from landing these rather overbraked types mentioned, it is a bad habit to get into to reduce the amount of airbrake automatically on every landing in order to get a very smooth touchdown. The landing is made with the stick, moving it back gently as the glider begins to sink to obtain a good touchdown.

There are several ways in which we can think of the effects of the airbrakes. Sometimes it is most useful to think of them as a means of throwing away excess height. Opening the brakes to get rid of two or three hundred feet is often safer than extending the downwind leg so that the final approach is very long.

On a very windy day, particularly on a hill top site where a severe curl over effect (downdraft) may occur, it is quite normal to make the final turn very high and close to the downwind boundary. The airbrakes are then used to throw away the excess height on the final approach. Because of the strong wind the approach will be very steep and any error in positioning the touchdown will be too small to be important.

The airbrakes can be used at any stage of a flight to get rid of excess height in a controlled manner. Ideally some excess height should be kept on the circuit at all times as a contingency against the risk of flying through an area of sinking air. This means that in most cases height will need to be lost on the base leg by using some airbrake. Once the excess height has been used up the airbrakes should be closed again, keeping them unlocked ready for further use on the approach.

Another way of thinking of their effects is to consider them as the means of adjusting the gliding angle, particularly on the final approach. Closing the airbrakes extends the glide and power pilots may like to think of their use as similar in principal to using the throttle. Moving the lever forward like opening the throttle will prevent an undershoot, but remember their effect is only limited.

Finally, the airbrakes have a braking effect and always cause a loss of speed unless the nose of the glider is lowered the appropriate amount. When full airbrake is applied the nose *must* be lowered or within a few seconds there will be a loss of speed. However, caution is needed when reducing the amount of brake not to raise the nose. If an undershoot seems imminent it is better to allow the flying speed to build up to improve the penetration against the wind and to extend the float before touchdown. If you attempt to keep the speed constant by raising the nose slightly as you close the airbrakes you will nearly always find yourself a few seconds later at a critically low speed.

Occasionally, while adjusting the approach to get down onto the landing area, the speed may become excessive. This kind of situation may be rather deceptive since it may look as though the aircraft will only just reach the landing area. However, with the excess speed the float and hold off will take the glider way down the field before it is ready to make a normal fully held off landing. In a case like this open the airbrakes fully without lowering the nose so that the drag cuts down the excess speed and shortens the float.

But perhaps most important is to think of reducing the airbrakes if the airspeed gets lower than the chosen speed and if there is insufficient height or time to lower the nose to regain it. Also remember that if you are unhappy about the final approach or if it looks as though it will result in landing rather close to another machine or an obstruction, **close those airbrakes** and land in a clear area further ahead. Most gliders will float several hundred yards if the airbrakes are closed just before touchdown.

* * * *

Finally, the airbrakes are there to use up height. Never use them before or during the final turn unless the turn itself will be higher than you really need to be for an easy, safe approach. If the turn is rather low make sure that the airbrakes are closed and wait until that turn has been completed before you re-open them again.

The Progress of a North Wales Flyer

As 1984 ended the fates continued to conspire against JOHN McCORMICK making the big time — or at least getting that Bronze C.

Now you must admit I'm persistent, not successful, but persistent, and here we are at the back end of the year and I'm still on the quest for that darned Bronze C.

Just one leg will do, I don't mind hopping into 1985. It's not my fault of course that I still haven't achieved it, the sheer skill and flying ability are there in superabundance, it's purely that the fates continue to conspire against me.

Take last Saturday, for example. There I was at the thin end of the field with a 15kt crosswind, weathercock on take-off and you take the windsock with you, drop the cable wrong and you black out Holywell as it drapes itself over the power lines that run along one side of the field. Holywell goes black, the cable glows red and the CFI goes an interesting shade of puce. Invariably you also discover that you've got a coward on the winch who can leap 20ft from a sitting position and cover 200 yards in under 10 seconds.

However, as I was saying, there I was carefully and professionally weighing up the multitude of complex factors appertaining to the situation, when my mind was finally made up with the help of some gentle encouragement from the duty instructor. "Get your blasted finger out, McCormick, and get strapped in," he roared. Purposefully I strode across to the K-8 and had just got one foot into the cockpit when I saw them. Watching me with obvious interest from the other side of the fence were two Franciscan friars.

Now I am certainly no more superstitious than the next man. Two magpies crossing my path on the way to the field means there's bound to be good thermals that day, and three black and white cows lying down together means the fish is going to be off in the pub after flying, but I felt that this particular sign was of too much significance to ignore.

Hastily I took my foot out again and hurried across to them. "Greetings, good fathers," I quoth (you always have to quoth to good fathers, it's the habit). "Do you know something that I don't?" Well, you can't be too careful, can you?

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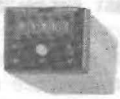
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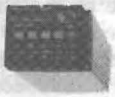
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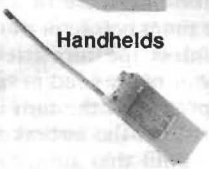


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After all, they are much closer to "Him" than me, what's 1500ft on a scale to infinity? All right, then, I'm exaggerating again, 1100ft then.

"Nay, my son," they replied, "we are but two weary travellers merely resting awhile." "Would it put you out to rest somewhere else?" I asked, "you've just grounded half the fleet." They were very understanding, but by the time they had put their sandals back on and wandered off down the hill the wave that I am sure had been stationary over the field and which had been destined to carry me to 20 000ft had disappeared and that flight lasted 4½min.

So you see how the fates work against me, them and Pen-y-Parc with its sea breezes, crosswinds and lack of thermals. Thanks to that combination, I've become one of the best landers and takers off in the business. Now all I've got to master is the bit in the middle.

One of our chaps had been down to the Cotswolds Club and got both Bronze legs on successive days. If he could do it I could do it. I'm better than he is, my wife says so. What, you may ask, does my wife know about gliding? Not a lot, is the answer, or she wouldn't have been rash enough to make that statement, but it does indicate a touching naïvety and loyalty rare in this materialistic world. On the other hand, she may have been after something at the time.

"Notice, no mention of gliding. I'm not daft and I've been married a fair while . . ."

"How would you like to go down to the Cotswolds for a few days?" I asked. "Gorgeous countryside and lovely olde worlde pubs." Notice, no mention of gliding. I'm not daft and I've been married a fair while, long enough to know how to approach the subject obliquely, to prepare the ground carefully and gradually, until to her surprise she finds herself sitting in the caravan on some desolate airfield or other. "That sounds lovely," she said. "Are there any gliding sites in the Cotswolds?" Nasty suspicious creatures wives, never take anything at face value. Mind you, she's been married a fair while too. Eventually we came up with the good old marital compromise, five days gliding, two days shopping in different cities, a new skirt and the bedroom to be redecorated when we got home.

To someone coming from a smallish grass field, Aston Down is enormous. I swear the runway itself is wider than Pen-y-Parc; it starts adjacent to the A419 and disappears in the direction of Cornwall. Even I could get down safely here, well, let's settle for on the airfield at least. They also have a unique method of launching, a reverse autotow with a gymbally pulley. No, it didn't mean much to me either, but it gives superb launches, although I soon found out you don't treat it quite like a winch.

"Lower the nose at the top," they said, so I did as I was bidden, but apparently not enough, for when I got down this fellow presented me with a twisted bit of piano wire. "You kinked our cable," he said, in that sort of tone that implied that if it happened again he would kink my neck. Next time up I lowered it so much they thought I was practising to become a Stuka pilot. It's well known I'm a coward, and that fellow looked as though he played front row for Gloucestershire.

I got checked out in between showers in the K-7. "Land over the DG," said the instructor on the final approach. I told him I didn't know their DG. Bit ostentatious anyway, I thought. I knew they had bought the airfield but to have a director general in charge seemed a little bit over the top. Still, I suppose we've got a chairman for what amounts currently to a small muddy field.

By the time he had explained that the DG was an aircraft standing ready for take-off on the runway, I had landed over a Bergfalke, a K-8 and a K-6E on the grass. Still, he was quite nice about it on the long walk back and cleared me to fly the K-8. It hadn't occurred to me to land back on the runway. I'm preconditioned to coming down on the green bit. Land on the black bit at our place and you are travelling up the A55. As he signed up my logbook, he stated that it was obvious that I was used to operating out of a small field. I'm still trying to work out the implications of that remark.

I have been saving this few days holiday for a rainy day, and so it turned out, it rained every day. The net result was leaden skies with no thermal activity worth mentioning and certainly none that I could find or use. At this time of year Aston Down only fly Wednesdays and weekends, so leaving the unfortunate Helen still sitting in the caravan by the control tower, I pushed off to Nympsfield.

Conditions weren't good, intermittent rain and high crosswinds, but I did get a couple of aerotows with a pleasant chap who has been flying almost as long as I have been living. The turbulence crossing the ridge was fierce and threw us all over the sky as I fought to stay behind the tug. When things had settled down I asked him whether he had helped out. "Not me, old boy," he replied, "you did it all yourself." If that is the case I can only report that I not only felt God on the controls pulling the other way, I also heard him gasping.

After a little while he said, "You are flying heavy right footed." Hastily I removed a tiny smidgeon of drift. A few minutes later he said it again, coupled with "and you are flying one wing high to compensate". He was quite right, of course, one wing was approx 3mm higher than the other and I had a ¼° of drift on. I hesitated to tell him that my normal standard was anywhere in the general direction at roughly upright. He then proceeded to give me a demonstration of perfect flying, not only on the ridge where I expected lift, but he also found thermals where there ought not to be any. I learned a lot that day, chiefly envy.

"The rain caught me, literally washing me out of the sky . . ."

For the next couple of days the rains poured down and I elected these as shopping days, for after all it doesn't rain in Marks & Spencer, so that it was Saturday before I got aloft again in the K-8 at Aston Down. This time the rain caught me whilst I was airborne, literally washing me out of the sky, and what with coping with six down and trying to keep the landing strip in view, with lashing rain and the resultant poor visibility, I flared out late and bounced it beautifully. It was, of course, an extremely well controlled bounce straight on to the main wheel, performed with a certain elegance and grace, but then one would expect no less from a past master at the art.

There and then I decided that it was time to return to North Wales. I told myself that it was because the Met man promised no better weather for the Sunday, but in retrospect my judgment may have been coloured by the thought that the rugby playing gentleman may have seen the bounce and come looking for me. As MacArthur said, "I will return"; the whole organisation was extremely well run, the gliding and facilities excellent and the natives very friendly. May I take this opportunity to say thank you.

So here we are into 1985, and I'm sure that by now you sympathise and see what I mean when I say the fates continue to conspire against me. Not only that, but I'm going to lose more flying time soon because she's holding me to the promise to redecorate the blasted bedroom.

Please send all contributions to S&G to the editorial office, 281 Queen Edith's Way, Cambridge CB1 4NH and not to the BGA office.

MILFIELD'S NEW HOME

Three years ago Milfield GC's future looked grim with their airfield gradually being eroded by gravel extraction. But JOHN MARSHALL tells how they were able to change their fortunes.

The origins of Milfield GC were fairly typical of most gliding clubs. It started in about 1969 with a few individuals persuading a farmer to let them use a disused airfield and pressing the farmer's Jaguar into service for autotowing at the same time. The airfield is a few miles south of the Scottish Border and in the lee of the Cheviot Hills.

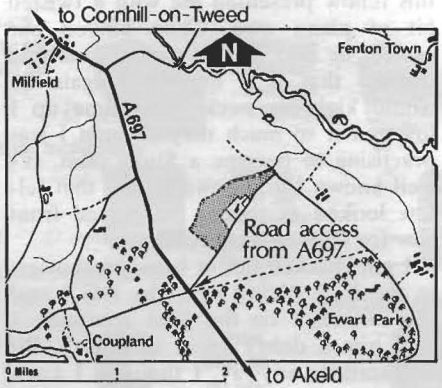
The club's first gliders were (surprise surprise) a T-21 and a Tutor (with spoilers I hasten to add!). The club winch launched until February 1982 when it changed virtually exclusively to aerotowing. The club fleet consists of a Bocian, a YS 53 and a K-8. Although the winch operation was very successful it was affected by the gradual erosion of the airfield for gravel extraction. By autumn 1981 the situation had reached the point where winching was generally unsatisfactory and becoming positively dangerous.

In early 1982 the club's future looked dismal. Our airfield was disappearing before our eyes and there was a build-up of frustration in the members due to increasingly unsatisfactory launching facilities. The tug overcame our operational problems. We knew nothing about tugs but nevertheless went out and bought a 180 Super Cub. I did a Silver C conversion along with a few other members and we were in business. We now have a profitable operation where the charge for a 2000ft tow has remained at £6.50 since we started. By this year membership had increased from an average of between 50-60 for the previous 10 years to over 100.

Dismissed as a possible future site because it looked uneven

Although the tug solved the operational problems it did not secure the future of the site. Gravel extraction continued unabated. In September 1983 Galewood Farm immediately adjoining the airfield, comprising 50 acres or so together with farmhouse cottage and farm buildings, came on the open market. With our treasurer I went to have a look at it. We dismissed it as a possible future site as we thought it looked very uneven, was the wrong shape and orientated in the wrong direction. We were wrong. On closer examination (by others I hasten to add) it was clear that there was a 900 yard crescent-shaped stretch of land of about 40 acres orientated NE/SW varying from 200-250 yards in width.

A few fences would need to be removed but this was probably all that needed to be done to make it operational. The farm was being sold in three lots comprising most of the land and farm buildings, the farmhouse and the cottage. We decided that we could only offer for the land and after much deliberation I submitted our offer of £60 000. A closing date for offers was fixed and we held our



breath. However, before the closing date passed I discovered there were others interested in all three lots and the farmer was not entertaining our offer for the land alone seriously. Gloom and despondency! However, after a particularly liquid lunch I made an offer of £125 000 for all three lots. It was accepted. Would anyone in the club ever speak to me again!

We then set about selling off the farmhouse, cottage and buildings which we did by the end of October 1984. We were also fortunate to obtain a grant of £10 000 and an interest-free loan from the Sports Council of £5000, which at the end of the day left us with a bank overdraft of £18 000 or thereabouts. There were problems as at one point it looked as if we would not get enough for the farmhouse, but in the end we did secure a good offer and the sale went through.

We were extremely lucky with planning permission. From having made a previous application on behalf of the club for planning consent which proved abortive I knew that the local planning officer was fairly sympathetic to our case and our application went through within six weeks without objection. I was amazed as I expected there to be much deliberation about noise levels, due to the proximity of the Northumberland National Park (we are within three miles of it). Our planning permission for the airfield was only temporary although it had been renewed for three year periods. We did, however, have something of a problem with the British Gas Corporation.

There is a gas pipeline which runs through the site and when the Gas Board engineers got wind of our planning application they foresaw difficulties. Initially they wished us to ban gliders and our tug landing on the pipeline but we managed to convince them that there was no possibility of a glider harming their reinforced pipeline set in concrete to the minimum depth of 5ft from the surface. Convincing them that the tug could not possibly damage the pipeline was a different matter. In the end we compromised and we agreed that tug pilots would "use their best endeavours" to avoid taking off or landing on the pipeline. In practical terms this should not prove difficult.

At the time of writing (November 29) we still have our hangar to move, electric power to lay on and the Portakabins we use as a clubhouse to move to their new location. The site has been cleared and levelled where necessary and sown to grass. By spring we should be able to operate from the new site which will be about the time we will have to cease operations on the old airfield. To say the new site was a timely acquisition would be the understatement of the club's history.

Grant aid and judicious asset stripping made ownership a reality

Site ownership opens many doors which are simply not available to other clubs. Not only does the club obviously become a permanent institution but the possibility of unheard of levels of Sports Council grant aid are available and rent reviews become a thing of the past. In our case grant aid and some judicious asset stripping have made site ownership possible.

As someone who has been very closely involved in the Milfield "experience" I would venture the following advice to clubs about to embark on such projects:

(1) Leave it all to a few individuals and give them absolute discretion on the matter. Few club committees are capable of making desperately difficult decisions quickly.

(2) Involve professional people in the chosen few if you are fortunate enough to have them as club members or at least permit the chosen few to take the best possible professional advice which can be obtained.

(3) Ensure that you are on the best possible terms with your bankers. Proposals for considerable bridging finance will be closely scrutinised. A reasonable level of residual borrowing will not concern your bank unduly. The negotiations with our bank were as protracted as the acquisition of the site itself.

(4) Prepare a detailed "prospectus" to include cash flows and projections etc as well as detailed explanation of club operation and future plans. This will help enormously to explain what is involved (*eg* to the club's bank manager and his head office).

(5) Involve the BGA. Bill Scull as BGA Development Officer proved helpful in connection with our application for a Sports Council grant. He is also able to give a valuable objective view on the overall proposition. Close involvement with any project means that one's own views become very subjective to the point where in desperation launching from a 200 yards strip 12ft in width orientated NS could look very attractive if there is no alternative.

(Continued on p71.)

ECONOMICS OF A GLIDING CLUB

Rank and File Versus the Pundit — *no need for conflict*
Getting More for Less — *by sound investment*

A critical look by GORDON PETERS

The steady expansion of private ownership against an almost static club fleet has become the norm for the UK. The Devon and Somerset GC is no exception.

Some say that private owners subsidise the club flyer. All pay the same membership and launch fees. The soaring charges don't cover insurance, C of A, repairs and depreciation. Therefore, the argument goes, club flying is subsidised.

Popular mythology has it that statistics can prove anything, but reality knows that the wrong denominator screws up any calculation.

The money generated by each plane less its total costs, determines its value to the club. A sum of these profits must be generous to pay for the site, buildings and launch equipment.

The club plane yields launch and soaring fees and, I submit, the membership fees of those who fly them regularly. Air experience flying attracts new members and a crash surcharge.

How are these apportioned at North Hill where good equipment and low charges suggest sound management?

DIVISION OF THE CLUB BY TYPE FLOWN (30.9.84)

MEMBERSHIP (£55)
2 K-13s — 73, K-8 — 12, K-6 — 24,
Astir — 6, Social — 52, Inactive — 47
Private owners (PO) — 56 sharing 21 gliders (2.7/glider)

LAUNCHES (£1.50)
K-13s — 5035, K-8 — 901, K-6 — 511,
Astir — 259
PO — 1667 for 21 or 78 each

SOARING HOURS
K-13s — 788, K-8 — 181, K-6 — 212
(6p/min after 10min)
Astir — 123 (9p/min after 10min)
PO — 1905

AIR EXPERIENCE HELPERS (£3.50 surcharge)
K-13s — 20%, K-8 — 4%, K-6 — 10%,
Astir — 13%, PO — 49%

CLUB COMMITTEE
K-13 — 0, K-8 — 0, K-6 — 1, Astir — 1,
PO — 9

The K-8 keeps 12 members in the club so is worth £55 × 12 = £660 as against £55 × 2.7 = £149 for the average syndicate plane. A replacement fund was charged at 10% + 5% for inflation.

The structure of gliding now looks very different. The exotic roof remains to be admired with laminar layers and bug resistant pinnacles of variable geometry. The financial pillars are revealed as the solo club flyers while the foundations are buried deep in the pockets of the *ab-initios*.

There is nothing wrong with such a structure, but not recognising it has led to an unfortunate spiral. First, committees think they already provide cheap flying for club members so certainly can't afford any more single-seaters. Fed up with the long queues some buy a glider. Soon it needs re-covering so one wants to opt out. There being no takers another oldy lies mouldering in its trailer.

Others see the financial noose so opt out altogether — just check last year's list and see how many new members don't renew their subscriptions. This would not happen if people could be launched without delay in modest gliders. A reliable winch and some wooden gliders are quite simply a licence to print money. With traditional winches two drums per 100 members would be a minimum to cope with peak demands.

As the number of club gliders increase the profit drops. What would happen if North Hill bought an extra K-8 and K-6?

With no additional flying they would still be in profit by £143/glider. Charging 6p/min from take off would put the income of each above the private owner and the inevitable increase in use, see the total closing on last year's figures. A Swallow could be offered at 2p/min and an LS-4 at 24p/min.

The sums given assume all launches were by winch. This would be possible when our second winch arrives. In fact last year 1/7 launches were by aerotow. Finances are not yet computerised so extraction would have been tedious.

However, at £5.50 the club loses. If £2 were deducted for each aerotow the figures would further embarrass the private owner. The pundit who has an aerotow, disappears for four or five hours and makes no other contribution is a liability.

The above is only meant to be provocative in the sense of suggesting to clubs that opportunities to promote the sport and earn cash are being missed.

Talking to the local hang gliding club last summer was revealing. Most had attended a gliding club, but interest evaporated at the prospect of biding around for hours before flying. They fly cheaply when they want to. The accident record and abysmal glide-angle are but minor deterrents.

Our club members are willing to fork out reasonable fees for moderate performance, not high sums to do a little better. Note the under-utilisation of the club Astir even when subsidised.

Glass-fibre training and conversion could be left to the professional clubs where seven-day-a-week operation makes better use of the capital invested. The 10% of pilots who can afford high performance single-seaters would still be offered favourable terms.

Changing investment priorities can increase profitability by pleasing and therefore retaining the rank and file. A new winch precedes a new tug and a second winch removes the cash losing queue. A glider for every eight club flyers is

(Continued on p71.)

VALUE OF EACH PLANE

(Figures derived from last year's annual returns.)

Private	
Income	£
Membership	149
Launches	114
Soaring	0
Air Exp	69
	332
Expenses	0
Profit	332

K-13	
Expenses	£
Insurance	700
C of A	81
Repairs	905
Depreciation	1050
	2736
Income	£
Membership	1980
Launches	4196
Soaring	540
Air Exp	280
	6996
Expenses	2736
Profit	4260

K-13	
Expenses	£
Insurance	800
C of A	100
Repairs	847
Depreciation	1200
	2947
Income	£
Membership	1980
Launches	3357
Soaring	420
Air Exp	280
Income	6037
Expenses	2947
Profit	3090

K-8	
Expenses	£
Insurance	350
C of A	100
Repairs	233
Depreciation	525
	1208
Income	£
Membership	660
Launch	1352
Soaring	315
Air Exp	119
	2446
Expenses	1208
Profit	1238

K-6	
Expenses	£
Insurance	350
C of A	80
Repairs	123
Depreciation	525
	1078
Income	£
Membership	1320
Launch	767
Soaring	518
Air Exp	295
	2900
Expenses	1078
Profit	1822

Astir	
Expenses	£
Insurance	800
C of A	50
Repairs	247
Depreciation	1200
	2297
Income	£
Membership	330
Launch	389
Soaring	478
Air Exp	387
Income	1584
Expenses	2297
Loss	713

SIMPLE VARIOMETER SYSTEMS

JOHN WILLIAMSON explains how they work, and why they don't!

Most glider pilots have a vague notion of how their variometer works, and will perhaps have read and forgotten Reichmann, Irving *et al.* Sometimes the explanations have been rather formal; sometimes weighed down with (entirely accurate and necessary) mathematics. But as one who recoils at the very mention of rho, blanches when confronted with Reynolds numbers and displays many of the other symptoms of discomfiture in the presence of the learned, I long ago undertook to arm myself with a plausible Noddy Guide to variometers. This is it!

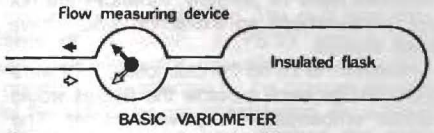


Fig 1.

I expect you are familiar with the basic set-up. A flask, insulated against sudden gross temperature changes is allowed to vent to the outside air (Fig 1). If it is lifted up air will need to flow out because the pressure inside the flask is momentarily greater than the pressure outside. Air will flow as long as there is a difference of pressure. If the flask is carried lower, air would need to flow *into* the flask to keep the pressures balanced. The familiar instrument which we call the variometer measures the flow, which is truly minute. Actually that little instrument is a bit of a marvel, so sensitive that it would flicker at a butterfly's blink. So treat it with care, please.

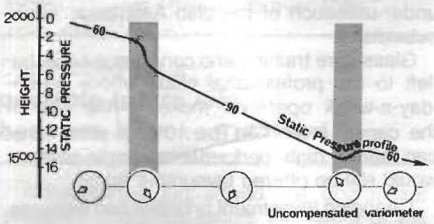


Fig 2. Uncompensated responses.

If you plonk these two items in your glider and set off downhill at a steady speed — say, at 60kt — the airflow into the flask will register as DOWN on the dial. If you then decide to hasten the action a bit, and push up to 90kt the vario will register the new rate of sink (Fig 2). But during the actual acceleration it will record, quite accurately, a much greater degree of sink, especially if you were in a considerable hurry to press on. That is, you dived rather steeply to reach 90kt then levelled out in the new attitude. Then you pull up, cream off 30kt and, say, 150ft, to settle back at 60kt again. During the climb air flowed out of the flask, registering as UP on the dial. Your intellect tells you that the "UP" was stick-lift; your predatory instinct as a soaring pilot cries out that it was a thermal, and you circle uselessly, seeking your prey!

Again, I am sure you are familiar with the remedy. At least, you think you are. I wonder! It's that "thing" sticking out of the fin, isn't it?

The forerunner of that "thing" was dreamed up by some ingenious fellow who got stuck the wrong side of WW2 just as he was about to go into print. Subsequently, along with V2s, flying bombs, Meises and Weihes the idea seeped out of Eastern Europe and struggled to the surface in England in about 1947. The idea was beautifully simple, but is still not always understood by the people who really matter — you and me!

You will remember that the vario responded to pressure changes by drawing air in or puffing it out as appropriate. The "thing" is a device to disguise the pressure changes to which the vario is responding. It "hides" the sudden pressure rise during the dive and the pressure fall during the pull-up behind a cunning screen. Now, what you want the vario to do is move sedately from one sink-rate to the next as you dive, and sedately back again as you pull up (Fig 3). It would, if you were sedate yourself and restrained yourself to change speed *very,*

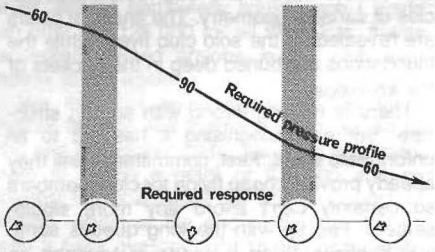


Fig 3. The required pressure gradient and response.

very slowly. But we aren't sedate, are we? We act like excitable dolphins, diving and zooming, trying to follow the dictates of MacCready and his blessed Ring! So, given that we are unlikely to be sedate about this matter, we must resort to subterfuge.

Let's study the difference between the pressure changes we have, and those we would like to achieve (Fig 4). The lower line represents static pressure. Yes, I know it's changing really, but what I want to show here

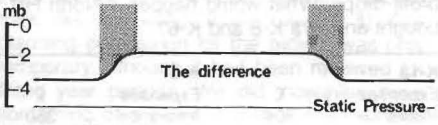


Fig 4. The difference.

is the *difference* between static pressure and our ideal pressure levels. You can see that the difference is greater at 90kt than at 60. And the way it is drawn suggests that it has to be *lower* than static pressure — it gets lower in response to higher airspeed. What device produces lower pressure the faster you go? The answer — the venturi, of course. And that's what the "thing" started out as. A plain venturi, seen perched on the elegant noses of Olympia, Sky and T-21 alike.

So perhaps you can see how the venturi tube, cleverly designed to give just the right amount of suck, was able to compensate for the dramatic pressure changes brought on by your exuberant use of the pole, as you followed The Ring, like Siegfried and the Valkyries. You will have to take my word for it that the more modern devices — Brunswick, Nicks and Irving tubes — do exactly the same job. They are all producing a suction that varies with airspeed. How much suction? Exactly as much as the pitot produces a positive pressure, but, naturally, in the opposite sense. Three or four millibars worth. Enough to make your ears pop if you were suddenly plugged into it. You want to know *why* it is just that much, no more, no less? Then read **New Soaring Pilot,** or buy Frank Irving a beer. Or just believe me, because I've read it for you. *And* bought Frank a beer, once!

I've shown you *how* it works. Now for why it *doesn't,* not always, anyway. First, you may be afflicted by that curse of modern varios — The Leak! In fact, I would guess that covers at least 40% of you, right now! Ever tried to keep the water out of an old boat? The stuff got in through the most insignificant of cracks and crannies. Air is somewhat thinner than water and gets through even more insignificant holes. None of which are visible, nor even suspected until diagnosis indicates otherwise. So first let's do the diagnostic bit. Fly the aeroplane in fairly calm conditions. Watch the vario as you speed up and slow down. Make the changes fairly abrupt — but not so as to put things through the canopy, or you through the floor — and observe the vario. It might do one of five things, or combinations of more than one:

a. Change smoothly from one sink rate to the other without going unduly UP or DOWN — in which case, rejoice, you've already cracked it and need do no more!
b. Go *way* DOWN as you dive and UP as you zoom. Oh! dear.
c. Something between a. and b.
d. Go UP when you dive, and DOWN when you zoom. Oh! dear x 2!
e. And it might *also* seem to want to read UP more than it should. It may seem to have a bias towards UP. This is temporarily very good for your morale but is not of much practical use in the end and needs to be investigated.

So let investigation commence!

First isolate the likely area. Look at Fig 5, and now imagine the whole system filled throughout, from the little hole in the venturi or probe to the inner recesses of the flask, with low pressure. Air wants to leak from high pressure to low. Ever had a puncture? But now the leak will be *inwards.* And just where the leak is will determine the symptoms you got when flying.

Conditions b. and c. would have been caused by a leak somewhere between the probe and the static connection on the vario itself. The effect of the leak is to *reduce* the

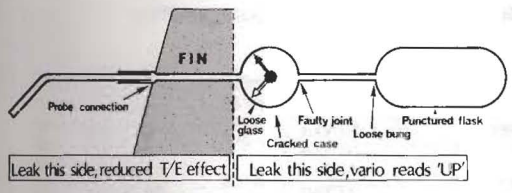


Fig. 5. T/E vario, with likely leaks.

difference between the pressure in the system and static pressure and so make a muck of the precise calculations inherent in the design of the probe! It won't fully compensate. The worse the leak the more nearly are we back to square one, day one, pre-WW2!

The most likely place for such a leak is where the probe enters it's mounting hole. Can you imagine trying to stop a leak in an old rowing boat with a piece of grubby white tape? No more will you be able to stop the leak which 25% of you already have in your probe connection with a grubby bit of white tape left over from the wings! You need a 2in piece of vinyl tubing of suitable dimension. First slide the vinyl onto the probe stem, then work the latter into its socket, carefully coaxing the vinyl over the outside of the socket. Provided there are no deep scratches in either probe or socket, no scruffy bits of paint or rubbish, the seal will be perfect, first time. **No more tape, please!** The same consideration and care should now be applied to any pipe connections and Tee pieces between probe and vario.

Incidentally a common place for leaks to occur is along the moulding "flashes" of some Tee pieces. These "flashes" are the tiny ridges left when the two halves of the mould came together and squeezed a smidgin of plastic out sideways. This "flash" must be taken off carefully with a sharp knife. But be careful not to cut a "flat" across the curve of the tube. The air doesn't mind if it's a bump or a hollow on the surface. It will sneak in and cause trouble just the same!

Not over the wing, please

Now for symptom d. This is much more difficult, and arises if the probe or venturi is working *too* hard. Short of creating a deliberate leak as in b. or c. to bleed off the excess suction — which I suggest would be jolly difficult to get just right — the alternative is to ensure that the probe is in the right place and operating at the correct angle. Probes can be at the nose, on the rear fuselage or in the fin — anywhere where the airflow is reasonably undisturbed and where the pressure field is about the same as static. So, **not** over the wing, please. Add the wing's low pressure, put the probe in the accelerated flow over the wing and you'll get what you deserve — rubbish! About two feet behind the wing, on the top fuselage, is OK. ASW-17s, -19s and -20s all have provision for it there, and it worked for George Lee, didn't it?

So now for symptom e. If a leak exists *anywhere* between the Static (probe) input to the vario and the far end of the flask, air will be drawn into the system (Fig 5 again). It will then travel inexorably towards the source of suction, like milk shake up a straw, passing gleefully through your vario on the way. And UP goes the needle. If the leak is gross the needle will hit the stop and stay there. It's being blown there by a considerable blast. If it goes up a little bit, above where you know it should be, then the leak is a little one. And the little ones are the very devil to locate.

Some Leaks I Have Known

A vario after an accident, the whole case crazed (but invisibly) like a popped car windscreen.

An oversize self-tapping screw snugged comfortably into the polystyrene outer layer of one of those small white German flasks, with the tip of the screw just *penetrating the flask itself.*

An unreachable hole in the connector pipe, somewhere near the base of the fin of a brand new sailplane, only accessible if you happen to have a reasonable crash first.

The glass front loose after someone "fixed" the vario during C of A — and forgot the rubber sealing ring.

Tiny rubber "O" rings perishing inside a Ball vario in the heat of an Australian summer.

PZL flask bung ditto.

PZL flask bung all seized up in the semi-Arctic of an English *summer!*

Six *separate bits of assorted rubber (perished), nylon, plastic etc etc tubing in the 12ft run from the flask behind the seat in a K-6, to the vario in the panel. Most of the joints were taped. Grubby white tape, of course.*

And so on!

★ ★ ★

Coming soon: How to trace your leaks without leaving the ground; and why, having cured all those pesky leaks, we introduce another, deliberately and on purpose!

And why we sabotaged the washing up!

But to be going on with, a quiz.

Given that your suction total energy is fitted and working correctly, what would the vario read:

1. Just before lift-off on aerotow?
2. Just before you stop rolling after landing?
3. If the probe got iced up solid?
4. In the few seconds after disconnecting the T/E line?
5. In the few seconds after you connect it up again?

Answers in the next issue.

(Continued from p68.)

(6) Above all, be prepared to dive in with both feet! Worry about planning consent, grant aid and the club's bankers afterwards. On a cautionary note however, it is essential to obtain the Sports Council's "prior approval" to purchase of land before signing a contract. In England the delay between planning an offer accepted "subject to contract" and formal exchange of contracts gives sufficient time for things to be done.

Things appear to have worked out for us at Milfield. If they had not the club would have been in liquidation by now and I would have probably had a price on my head. We hope to see you at Milfield this year, after all, Scotland is rather far to go. The site height record is 26 000ft.

(Continued from p69.)

charged at cost with the fleet adjusted by usage.

Rather than antagonise the private owner, the above sequence could guarantee a healthy club. With more flying on offer the club pilots would happily see their gliders contributing more to club funds than each syndicate.

Syndicates make poor use of capital. How often do all members turn up one day and none the next? Even with one glider/eight members pooling makes the club plane almost as available as the private one.

Flying in a syndicate is so expensive that members are not prepared to consider the possibility that they are subsidised. Indeed, I am dismayed to have developed this left wing treatise in the year that I left the club Astir for a flapped 19 metre contraption.

Syndicate Amalgamation?

On reflection there are other ways of achieving cheaper and hassle-free flying. The analysis given only measured the obvious, *ie* cost/minute can be reduced by reducing the capital value of each glider and by increasing the number of minutes flown each year.

The suggested solution involved clubs buying out existing syndicates. No doubt most committees will baulk at the capital implications even if they agree with the theoretical calculations.

How expensive is it to fly a private glider? Most members I asked were a little shy to reveal all but the owner of a new German beauty commented that Concord charges less/mile.

Utilisation at under 80 flights a year must create high costings. Obviously the figure reflects loss of interest by some and their inability to sell out. What a tragic waste.

A detailed look at syndicates demonstrates another weakness. All four members of one plane often arrive on Saturday and rarely on Sunday. In another, the opposite is true. The average member comes once a week on a preferred day and, not surprisingly, syndicates are formed by buddy groups with poor time spread.

Owners are prepared to pay more for availability, so four is considered to be a maximum. Joining the above two groups would increase availability at no extra cost.

Lower insurance charges

Alternatively, the benefit of pooling could be an increase of membership and cheaper flying. This private enterprise solution would benefit from lower insurance charges than club monopoly while happier pilots are more likely to continue paying subscriptions.

How about some American-styled entrepreneur investing in planes for hire at a cost/flight much less than private ownership?

Part of the economy of flying seen in Germany must reflect the domination of winch launching with enough capacity to remove queues — £1.50/launch yields at least 50% profit. More flights/plane will move us towards their soaring charges.

A club buying extra planes, the conglomeration of existing syndicates, or a hire company could each offer better value for money than the existing structure. Will anyone make the first move?

INTERNATIONAL GLIDING RECORDS (Correct as at 18.2.85)

SINGLE-SEATERS

Height Gain	12 894m	P. F. Bikle, USA	SGS 1-23E	25.2.1961
Absolute Altitude	14 102m	P. F. Bikle, USA	SGS 1-23E	25.2.1961
Straight Distance	1460.8km	H-W. Grosse, W. Germany	ASW-12	25.4.1972
Goal Distance	1254.26km	B. L. Drake, D. N. Speight, S. H. Georgeson, New Zealand	Nimbus 2	14.1.1978
Goal & Return Distance	1646.68km	T. L. Knauff, USA	Nimbus 3	25.4.1983
Triangular Distance	1306.85km	H-W Grosse, W. Germany (in Australia)	ASW-17	4.1.1981
100km Triangle	195.30km/h	I. Renner, Australia	Nimbus 3	14.12.1982
300km Triangle	162.19km/h	H-W. Grosse, W. Germany (in Australia)	ASW-22	9.12.1984
500km Triangle	159.64km/h	H-W. Grosse, W. Germany (in Australia)	ASW-22	20.12.1983
750km Triangle*	158.65km/h	H-W. Grosse, W. Germany (in Australia)	ASW-22	8.1.1985
1000km Triangle	145.32km/h	H-W. Grosse, W. Germany (in Australia)	ASW-17	3.1.1979
1250km Triangle	133.24km/h	H-W. Grosse, W. Germany (in Australia)	ASW-17	9.12.1980

MULTI-SEATERS

Height Gain	11 680m	S. Josefczak and J. Tarczon, Poland	Bocian	5.11.1966
Absolute Altitude	13 489m	L. Edgar and H. Klieforth, USA	Pratt Read	19.3.1952
Straight Distance	993.76km	S. H. Georgeson and Helen Georgeson, New Zealand	Janus C	31.10.1982
Goal Distance	993.76km	S. H. Georgeson and Helen Georgeson, New Zealand	Janus C	31.10.1982
Goal & Return Distance	1 052.74km	E. Müller and K. Senne, W. Germany (in Australia)	Janus C	26.12.1983
Triangular Distance	1112.62km	H-W. Grosse and H. Kohlmeyer, W. Germany (in Australia)	SB-10	28.12.1979
100km Triangle*	177km/h	E. Sommer and Mr. Andresen, W. Germany	Janus C	26.7.1984
300km Triangle*	149.3km/h	E. Müller and O. Schäffner, W. Germany (in Australia)	AS 22-2	28.12.1984
500km Triangle	146.69km/h	E. Müller and K. Senne, W. Germany (in South Africa)	MU 2	13.12.1981
750km Triangle	131.84km/h	H-W. Grosse and H. Kohlmeyer, W. Germany (in Australia)	SB-10	14.1.1980
1000km Triangle	129.54km/h	H-W. Grosse and H. Kohlmeyer, W. Germany (in Australia)	SB-10	21.12.1979

SINGLE-SEATERS (WOMEN)

Height Gain	9119m	Anne Burns, Gt Britain (in South Africa)	Skylark 3B	13.1.1961
Absolute Altitude	12 637m	Sabrina Jackintell, USA	Astir GS	14.2.1979
Straight Distance	949.7km	Karla Karel, Gt Britain (in Australia)	LS-3	20.1.1980
Goal Distance	748.37km	Joann Shaw, USA	Nimbus 2	17.8.1983
Goal & Return Distance	1127.68km	Doris Grove, USA	Nimbus 2	28.9.1981
Triangular Distance	847.27km	Joann Shaw, USA	Nimbus 2	5.8.1984
100km Triangle	139.45km/h	Susan Martin, Australia	LS-3	2.2.1979
300km Triangle*	138.7km/h	I. Müller, W. Germany (in SW Africa)	Ventus B	8.12.1984
500km Triangle	133.14km/h	Susan Martin, Australia	LS-3	29.1.1979
750km Triangle	110.53km/h	Pamela Hawkins, Gt Britain (in Australia)	ASW-17	17.11.1984

MULTI-SEATERS (WOMEN)

Height Gain	8430m	Adela Dankowska and M. Mateliska, Poland	Bocian	17.10.1967
Absolute Altitude	10 809m	Mary Nurr and H. Duncan, USA	SGS 2-32	5.3.1975
Straight Distance	864.85km	Tatiana Pavlova and L. Filomechkina, USSR	Blanik	3.6.1967
Goal Distance	864.86km	Isabella Gorokhova and Z. Koslova, USSR	Blanik	3.6.1967
Goal & Return Distance	617.43km	Pelagia Majewska and V. Malcher, Poland	Halny	14.5.1980
100km Triangle	126.28km/h	Adela Dankowska and E. Grzelak, Poland	Halny	1.8.1978
300km Triangle*	123.3km/h	I. Müller and K. Müller, W. Germany (in SW Africa)	Janus C	7.12.1984
500km Triangle*	93.7km/h	Adela Dankowska and S. Piatek, Poland	Halny	4.5.1980

BRITISH NATIONAL RECORDS (Correct as at 18.2.85)

SINGLE-SEATERS

Height Gain	10 965m	D. Benton	Nimbus 2	18.4.1980
Absolute Altitude	11 500m	H. C. N. Goodhart (in USA)	SGS 1-23	12.5.1955
Straight Distance	949.7km	Karla Karel (in Australia)	LS-3	20.1.1980
Goal Distance	579.36km	H. C. N. Goodhart	Skylark 3	10.5.1959
Goal & Return Distance	1000.88km	W. E. Malpas (in USA)	Mini-Nimbus	28.9.1981
Triangular Distance	840.2km	C. N. Varley (in Australia)	Mosquito	23.1.1982
300km Goal and Return	153.3km/h	A. Sands (in USA)	Kestrel 19	10.5.1983
500km Goal and Return	152.7km/h	M. R. Carlton (in South Africa)	ASW-17	24.12.1980
100km Triangle	143.3km/h	E. P. Hodge (in Rhodesia)	Std Cirrus	30.10.1976
300km Triangle	146.8km/h	E. Pearson (in South Africa)	Nimbus 2	30.11.1976
500km Triangle	141.3km/h	B. J. G. Pearson (in South Africa)	ASW-20	28.12.1982
750km Triangle	109.8km/h	M. R. Carlton (in South Africa)	Kestrel 19	5.1.1975

MULTI-SEATERS

Height Gain	9836m	T. J. Wills and B. Iggulden (in New Zealand)	Twin Astir	13.1.1982
Absolute Height	10 607m	T. J. Wills and B. Iggulden (in New Zealand)	Twin Astir	13.1.1982
Straight Distance	472.43km	M. R. Carlton and M. French (in South Africa)	Calif A-21	18.12.1979
Goal Distance	472.43km	M. R. Carlton and M. French (in South Africa)	Calif A-21	18.12.1979
Goal & Return Distance	692.02km	M. R. Carlton and C. Greaves (in South Africa)	Calif A-21	23.12.1978
Triangular Distance	762.72km	C. M. Greaves and C. Simpson (in South Africa)	Janus	28.12.1977
300km Goal and Return	105.44km/h	M. R. Carlton and C. Greaves (in South Africa)	Calif A-21	19.12.1978
500km Goal and Return	113.08km/h	M. R. Carlton and C. Greaves (in South Africa)	Calif A-21	23.12.1978
100km Triangle	137.22km/h	M. R. Carlton and Leonie Lawson (in South Africa)	Calif A-21	27.12.1978
300km Triangle	112.59km/h	M. R. Carlton and C. Greaves (in South Africa)	Calif A-21	17.12.1979
500km Triangle	108km/h	M. R. Carlton and C. Greaves (in South Africa)	Calif A-21	21.12.1978
750km Triangle	104.01km/h	C. M. Greaves and C. Simpson (in South Africa)	Janus	28.12.1977

SINGLE-SEATERS (WOMEN)

Height Gain	9119m	Anne Burns (in South Africa)	Skylark 3B	13.1.1961
Absolute Altitude	10 550m	Anne Burns (in South Africa)	Skylark 3B	13.1.1961
Straight Distance	949.7km	Karla Karel (in Australia)	LS-3	20.1.1980
Goal Distance	528km	Ann Welch (in Poland)	Jaskolka	20.6.1961
Goal & Return Distance	545km	Anne Burns (in South Africa)	Std Austria	6.1.1966
Triangular Distance	814.01km	Karla Karel (in Australia)	LS-3	9.1.1980
300km Goal and Return	107.5km/h	Karla Karel (in South Africa)	ASW-15B	1.1.1975
500km Goal and Return	102.6km/h	Karla Karel (in Rhodesia)	ASW-15B	16.10.1975
100km Triangle	110.8km/h	Karla Karel (in Rhodesia)	ASW-15B	2.11.1975
300km Triangle	125.87km/h	Karla Karel (in Australia)	LS-3	12.2.1980
500km Triangle	120.69km/h	Karla Karel (in Australia)	LS-3	20.2.1980
750km Triangle	110.53km/h	Pamela Hawkins (in Australia)	ASW-17	17.11.1984

UNITED KINGDOM RECORDS (Correct as at 18.2.85)

SINGLE-SEATERS

Height Gain	10 065m	D. Benton	Nimbus 2	18.4.1980
Absolute Altitude	11 031m	D. Benton	Nimbus 2	18.4.1980
Straight Distance	718km	T. J. Wills	Std Libelle	1.8.1976
Goal Distance	579.36km	H. C. N. Goodhart	Skylark 3	10.5.1959
Goal & Return Distance	801.3km	C. Garton	Kestrel 19	22.7.1976
Triangular Distance	632.3km	A. D. Purnell	Nimbus 3	3.8.1983
300km Goal & Return	114.5km/h	D. S. Watt	ASW-22	18.8.1983
500km Goal & Return	93km/h	M. B. Jefferyes	DG-202	12.5.1984
100km Triangle	123.2km/h	R. Jones	Nimbus 3	13.8.1983
200km Triangle	108.6km/h	R. Jones	Nimbus 3	14.8.1983
300km Triangle	112km/h	D. S. Watt	ASW-22	3.8.1983
400km Triangle	114.3km/h	R. Jones	Nimbus 3	1.8.1984
500km Triangle	106.9km/h	R. Jones	Nimbus 2	31.5.1975
600km Triangle	88.8km/h	C. Garton	Kestrel 19	10.6.1976
100km Goal	150km/h	T. J. Wills	LS-4	12.5.1984
200km Goal	127.1km/h	A. H. Warminger	Vega	12.5.1984
300km Goal	132.8km/h	A. H. Warminger	Kestrel 19	24.4.1976
400km Goal	73.8km/h	T. J. Wills	Std Libelle	7.6.1976
500km Goal	90.7km/h	H. C. N. Goodhart	Skylark 3	10.5.1959

SINGLE-SEATERS (WOMEN)

Height Gain	7833m	Alison Jordan	Astir CS	8.10.1978
Absolute Altitude	8701m	Alison Jordan	Astir CS	8.10.1978
Straight Distance	454km	Anne Burns	Skylark 3B	10.5.1959
Goal Distance	309km	Anne Burns	Skylark 3B	12.4.1958
Goal & Return Distance	334.2km	Ruth Housden	Libelle	29.5.1982
300km Goal & Return	60km/h	Anne Burns	Nimbus 2	25.7.1975
100km Triangle	80km/h	Anne Burns	Cirrus	14.6.1970
200km Triangle	69.3km/h	Anne Burns	Std Austria	22.8.1964
300km Triangle	76.8km/h	Jane Randle	Kestrel 19	18.8.1976
400km Triangle	60.6km/h	Anne Burns	SHK	5.8.1967
500km Triangle	76.1km/h	Anne Burns	Nimbus 2	31.5.1975
100km Goal	83km/h	Rika Harwood	Olympia 2B	27.5.1957
200km Goal	85.5km/h	Anne Burns	Olympia 419	2.6.1963
300km Goal	63.9km/h	Anne Burns	Skylark 3B	12.4.1958

UK 750km DIPLOMA

1. Goal & Return	801.3km	C. Garton	Kestrel 19	22.7.1976
2. Distance	761km	D. S. Watt	ASW-20L	6.5.1980

MULTI-SEATERS

Height Gain	6740m	J. R. Monteith (USA) and M. Mahon	Capstan	2.11.1972
Absolute Altitude	7650m	J. R. Monteith (USA) and M. Mahon	Capstan	2.11.1972
Straight Distance	421.5km	J. S. Fielden and Valerie Fielden	Bergfalke 3	14.8.1970
Goal Distance	421.5km	J. S. Fielden and Valerie Fielden	Bergfalke 3	14.8.1970
Goal & Return Distance	407.3km	J. S. Williamson and C. Buchanan	Twin Astir	24.8.1980
300km Goal & Return	81.91km/h	J. R. Jeffries and N. Foster	Calif A-21	17.8.1975
100km Triangle	83.5km/h	J. R. Jeffries and G. Love	Calif A-21	22.4.1974
200km Triangle	96.5km/h	R. Jones and M. Hackett	Janus C	10.8.1984
300km Triangle	85.87km/h	B. Fitchett and A. Miller	Janus	9.5.1979
400km Triangle	86.6km/h	D. S. Watt and I. Hargrove	Janus C	1.8.1984
500km Triangle	88.4km/h	J. R. Jeffries and Gillian Case	Calif A-21	31.5.1975
100km Goal	96.5km/h	D. B. James and K. O'Riley	Gull 2	27.5.1957
200km Goal	113.3km/h	R. Miller and B. Tapson	Janus C	11.5.1984
300km Goal	107.4km/h	P. R. Pentecost and A. H. Pentecost	Janus C	7.5.1984

RESTRICTED CLASS (+Also 15m Class Record)

Straight Distance+	718km	T. J. Wills	Std Libelle	1.8.1976
100km Triangle+	119.7km/h	T. J. Wills	LS-4	18.4.1981
200km Triangle	92.2km/h	A. J. Stone	Std Cirrus	16.8.1976
400km Triangle+	91.7km/h	S. J. Redman	Std Cirrus	31.5.1975
100km Goal+	150km/h	T. J. Wills	LS-4	12.5.1984
300km Goal+	131.1km/h	T. J. Wills	Std Libelle	24.4.1976
400km Goal+	73.8km/h	T. J. Wills	Std Libelle	7.6.1976

15m CLASS

500km Goal & Retum	79.1km/h	J. D. Benoist	ASW-20	9.4.1983
200km Triangle	93.49km/h	B. T. Spreckley	ASW-20	14.7.1979
300km Triangle	102.2km/h	R. C. May	ASW-20	1.8.1984
200km Goal	127.1km/h	A. H. Warminger	Vega	12.5.1984

MOTOR GLIDERS (+Also British National Record; †British National Record only)

SINGLE-SEATERS

Straight Distance†	652.7km	B. J. Willson (in Australia)	PIK-20E	10.1.1983
Goal Distance†	415.1km	B. J. Wilson (in Australia)	PIK-20E	11.1.1983
100km Triangle+	76.5km/h	I. W. Strachan	PIK-20E	11.5.1984
200km Triangle	48.2km/h	I. W. Strachan	SF-27M	23.8.1976
300km Triangle+	83.1km/h	I. W. Strachan	PIK-20E	19.8.1984
500km Triangle†	71.75km/h	B. J. Willson (in Finland)	PIK-20E	22.5.1980
100km Goal	85.7km/h	I. W. Strachan	SF-27M	16.7.1971

MULTI-SEATERS (†Also BRITISH NATIONAL RECORD)

Height Gain†	4355m	R. I. Lloyd and J. Fox	SF-28A	22.10.1982
100km Triangle†	35.6km/h	P. T. Ross and H. Daniels	SF-28A	27.6.1976
100km Goal	76.2km/h	P. T. Ross and K. Winfield	SF-28A	22.8.1976
200km Goal	66.3km/h	P. T. Ross and P. Fletcher	SF-28A	18.7.1976

INTERNATIONAL MOTOR GLIDERS (Correct as at 18.2.85)

SINGLE-SEATERS

Height Gain	8923m	G. Cichon, W. Germany	Nimbus 2M	27.5.1979
Absolute Altitude	10 408m	G. Cichon, W. Germany	Nimbus 2M	27.5.1979
Straight Distance*	1040km	W. Binder, W. Germany	ASW-22M	9.5.1984
Goal Distance*	1040km	W. Binder, W. Germany	ASW-22M	9.5.1984
Goal and Return Distance	1008.89km	F. Rueb, W. Germany (in South Africa)	Nimbus 2M	7.1.1981
Triangular Distance	1013.21km	F. Rueb, W. Germany (in South Africa)	Nimbus 2M	31.12.1979
100km Triangle	152.16km/h	F. Rueb, W. Germany (in South Africa)	Nimbus 2M	29.12.1977
300km Triangle*	145km/h	K. Abhau, W. Germany (in SW Africa)	Nimbus M	8.12.1984
500km Triangle*	148.2km/h	B. Bunzle, Switzerland (in SW Africa)	?	8.12.1984
750km Triangle*	142km/h	F. Rueb, W. Germany (in South Africa)	Nimbus 3M	21.12.1984
1000km Triangle	109.94km/h	F. Rueb, W. Germany (in South Africa)	Nimbus 2M	31.12.1979

MULTI-SEATERS

Height Gain	5044m	M. Niebler and G. Kraus, W. Germany	G-109	26.9.1982
Absolute Altitude*	6650m	K. Doser and J. Prasser, W. Germany	Dimona	8.11.1982
Straight Distance	952.53km	W. Binder and K. Heimann, W. Germany	Janus M	16.5.1980
Goal Distance	646.42km	G. Jacobs and G. Hüttel, W. Germany	SF-25E	28.4.1976
Goal & Return Distance	617.95km	L. de Preter (Belgium) and D. Sohn (W. Germany) (in South Africa)	Janus CM	29.12.1981
Triangular Distance	756km	W. Collee and K. Pummer, W. Germany (in South Africa)	Janus M	31.12.1979
100km Triangle	128km/h	W. Collee and E. Doerr, W. Germany (in South Africa)	Janus M	15.1.1980
300km Triangle	129.72km/h	O. Wegscheider and A. Ascher, W. Germany (in South Africa)	Janus CM	12.12.1980
500km Triangle	109.96km/h	O. Wegscheider and K. Zoulek, W. Germany (in South Africa)	Janus CM	5.12.1980
750km Triangle	98.97km/h	W. Collee and K. Pummer, W. Germany (in South Africa)	Janus M	31.12.1979

* = Subject to homologation

New records have to exceed the old ones by: Distance 10km. Heights 3%. Closed circuit speeds 2km/h. Goal speeds 5km/h.
For records, no side of a triangle may have a length less than 28% of the total distance of the course, except that for triangles of 750km or more for International and British National Records, or of 500km or more for UK Local Records, no side may have a length less than 25% or greater than 45% of the total distance.
Conversion Factors: Multiply km or km/h by 0.621 to get statute miles or mph. Multiply km by 0.54 to get nautical miles or kts. Multiply metres by 3.28 to get feet.



Harald took this photograph of a Mucha Standard above the Vistas valley in the eastern part of Kebnekaise.

WHERE GOLD ISN'T COUNTED

Soaring with Biegga-olbmai, the Lappish wind god by HARALD MILLGÅR.

Biegga-olbmai is — or was — the Lappish wind god in northern Sweden. He is strong and hard, keen and piercing when he rushes over the mountains. He can blow gently and gracefully, give coolness when the sun is shining too hot, and bring scents and sounds from reindeer and other animals. Biegga-olbmai was supposed to live in a cave, where he scooped in and out the wind as he pleased with his big shovel.

Yes, he *was* supposed to live . . . Nowadays the Laps are as modern and rational as the rest of the Swedes, the Norwegians and the Finns. But deep inside the rational soul there is, perhaps, a feeling that Biegga-olbmai may use his shovel now and then.

Inger Westerlund, a young soaring pilot from the mining-town Kiruna, is very interested in the Lappish way of life and thinking. There are no books about the gods but Inger found details of them on wall-hangings in Kiruna. She made sketches of the signs and adopted Biegga-olbmai as a god for soaring pilots who during the last 20 years fly over the high mountains of Kebnekaise, 35-40 miles west of Kiruna, for two weeks every winter from lake Paittasjärvi (1400ft asl). The Kebnekaise mountains have several tops of 6300ft and more.

This magnificent mountain range seemed at first to be hidden from the Kiruna soaring pilots, but a group from Finland, longing for high mountains lacking in their country, brooded over a road map of northern Sweden. They saw the Kebnekaise range and drove as far as the road went — to the Paittasjärvi lake near the little village Pirttivuopio some 15 miles from the Norwegian border. The road was important for bringing in supplies as there were no shops in the village.

The Finnish pioneers contacted the flying club in Kiruna and as a result of joint work a wave-camp was started at Pirttivuopio in April 1962. The camp grew and by 1975 there were 55 gliders and some tugs. About 70% of the pilots come from Finland. During the 22 years they have claimed more than 400 Diamonds — Golds aren't counted. All the winds from north-north-west over west to south-east give good waves. Thank you, Biegga-olbmai!

The best wave-hunter is Ake Svensson from Boden, who has flown nearly 40 Diamond heights, several to more than 30 000ft. He is a vegetarian and obviously a favourite with the wind god . . .

TRAVELLERS' TA

Pilots recount their experiences the USA with advice from the SS

THE $10 STICK . . . !

FRANCIS HUMBLET has been sampling the joys of gliding in Hawaii.

Early last year I heard the story of this Belgian pilot who, three times, went all the way to Hawaii to eventually get his five hours on their local ridge. Last April one issue of *Aviation News* was dedicated to the aviation scene in Hawaii and their intrepid reporter described his epic flight in a Schweizer 2-32 in such a way that it was obvious that he was no glider pilot himself! These events were, for me, the catalysts required to ensure a stopover in Hawaii *en route* for Australia.

Dillingham airfield is in the north-west corner of Oahu, the main island of the archipelago, with Honolulu and Pearl Harbour to the south. Following the Hertz map it proved easy to find, in fact there is only one highway (more of a B road really) heading in the direction of the field. One couldn't miss the entrance either, with its sign stating: "Glider rides — no waiting." Dillingham used to be a US Navy station during the war and it retains a 9000ft runway, just right for early solo, and is divided lengthwise into four — gliding, power, parachutist DZ and beyond a disused area. The open fronted glider hangar houses about a dozen machines side by side.

It was just 9am and the only person around was polishing a Blanik canopy. This pilot has always lived on the island and, after 5000hrs with the US Navy, went on to become an airline captain and now in retirement flies gliders and tugs six days a week. He also owns an immaculate Schweizer 2-33, and being a "type-collector" I could not resist a ride.

The tug, an ex US Army Cessna Bird-Dog, took us along the 800ft ridge, just south of the airfield. It was still early for ridge lift and thermals but the view was magnificent. From the air the airfield can be seen as occupying the only strip of land available between the mountain and the beautiful sandy beach bordering the Pacific. A near perfect location for keeping the crew happy!

An offer to fly solo was politely declined in order to use those extremely expensive dollars to have a go at yet another type, the Schweizer 2-32, now a 20 year-old metal sailplane with the unique characteristic of a rear seat wide enough for two people.

In the public car-park, things must have changed a bit since the *Aviation News* man came. Instead of just the original company advertising "Glider rides", a second outfit was also displaying a sign that said "Glider rides too." This is just to show that in a free world, when you are on to a good thing, there will always be someone around to get in on the act.

This new venture belongs to a female commercial pilot who operates a Blanik and

ALES

s flying in Sweden, Hawaii and SA

admits it is more profitable than flying from the right hand seat of a Twin Otter.

On the other side of the car-park, another woman was collecting the fares for the Honolulu Soaring Club Inc, which has operated successfully for the past 15 years, seven days a week from 1000 to 1730hrs. I was told a flight cost $29 for one or $39 for two.

"Could I please have a stick fitted at the back?" I pleaded, and was told this would be $39.

"What!? $10 more for a stick? Why's that?" was my exasperated retort.

"Well, because some people get hold of it and give the pilot a pretty rough ride" she answered.

"I've flown gliders before" I assured her.

"Have a word with the boss" was her final word.

The "boss" settled for $29 with a stick, mainly I think because the daily queue hadn't yet formed and I was next.

The 2-32 came to a halt exactly at the boarding point. An old couple, still smiling from the experience, was extracted from the rear seat and gave the pilot a $2 tip. I was strapped in, the stick appeared from nowhere and the pilot said that I could have a go from 3000ft down to 1000ft.

The launch point and the runway axis were offset by about 30 yards. Wingtip wheels were fitted so that the pilot could steer the glider behind the tug until the runway was reached.

Pineapple or sugar cane fields.

The pilot pointed out the high mountain where wave is common but he never went above 10 000ft. He owned a Duster and hoped to fly a real glass-fibre glider one day, the best one on the island having been an old Phoebus. He had flown a 50km O/R which took him to the zone around Honolulu. Field landing choice consists of rocks, pineapple fields or sugar cane fields. (Ralph's dreamland!?)

Not much lift about, I was enjoying flying this glider when I noticed a printed sign on the instrument panel to the effect: — as the owner does not pay the pilot, contributions from the passenger will be gratefully received. (I hope to recover the money over the next season and I have already made out a similar sign to put in the two-seater; the trouble is Brian Spreckley will probably want his beer money as well out of the large tips anticipated.)

From 1000ft over the ocean, the pilot set the airspeed at 95kt all the way to final, 90 over the fence, touch down at 70 and then used the hydraulic brake to stop right in front of the next customers.

For those specialising in local soaring, this place must be paradise and maybe that Belgian pilot mentioned earlier knew what he was doing when he kept going back!

HIGH COUNTRY SOARING

LEN KIRKHAM made his annual pilgrimage with John Jefferson to Minden in the Sierra Nevada last June for three and half weeks of mountain and high desert soaring.

The conditions proved to be the most difficult and the roughest I had experienced with rotor thermal, ridge lift (at 12 000ft) and wave all mixed up in the same climb. However, I logged thirty odd hours of soaring and learned a lot about what can be achieved with patience and sheer physical endurance. The terrain is to all intents and purposes totally unlandable and has best been summed up by George Moffatt who wrote: "The Sierra Nevada has the saving grace that both the brave and the foolhardy tend to be cautious." Actually there are places to land if you can find them, if they are wide enough to take a glider and not overgrown with sage brush and mesquite.

Anyone who has made the transition from thermal to really good wave knows how difficult that can be. The transition from a low tow up through thermals into the upgoing side of a big rotor and then into wave (if there is any) is about as patience trying as it can get. This highlights the problem of trying to thermal one's way out of a wave site like Minden when the wave isn't working.

A friend of ours, flying a Nimbus 3T in the US Nationals, compares soaring rotor thermals to bull riding: it comes down to how "much ass-bustin" punishment a guy's prepared to take. All this banging about compounded by the heat (100°F plus), altitude fatigue and the anxiety of the out-landing problem puts a visitor at a considerable disadvantage until acclimatised and experienced in the ways of the high country.

We hired an LS-3 but I was fortunate to be offered flights in several different gliders. My first flight proved to be a bit of a challenge as all the instruments in the LS-3 quit. On plugging in the oxygen mask mike lead, the main fuse blew followed by icing of the static vents (the pneumatic system had water in it) at 18 000ft. Surprisingly, this didn't prove as marrow curdling as I had expected as a flight of over five hours was salvaged. This gained me the reputation with the locals of having a very sensitive ass.

The second week was marked by an influx of Nimbus 3s and ASW-22s for the US Open Class Championships at Minden during our third week. Some had towed a trailer from the east coast, a round trip of 6000 miles.

(Len's only longish flight, a 300km triangle into the tall timber country via the Hardy Station Marine Corps camp and Stead Airport north of Reno, was memorable. On the return journey he writes that he begins to enjoy the flight and the fabulous scenery with snow capped mountains up to 12 000ft and deep, glacial valleys clad with Douglas fir and Ponderosa pine.)

For sheer rugged beauty this kind of soaring is probably unsurpassed anywhere in the world. I took some slides of the spectacular scenery which, in places was higher than me.

Having logged close on ninety hours soaring in this area, I view the whole dimension of mountain and high desert soaring with mixed feelings. If one goes out just to claim absurd badges, then it will almost certainly prove disappointing. If, however, one enjoys spectacular scenery and pushing one's ability to the limit, then it's an experience of a lifetime. My only regret is that I can't persuade more UK pilots to try it.

This account first appeared in the Staffordshire GC newsletter.

AEROBATICS IN ARIZONA

SIMON MACKINTOSH, who used to fly at Portmoak before going to Canada where he is a member of Edmonton Soaring Club, went with three friends to Estrella, Arizona in late October to join one of Les Horvath's aerobatic courses.

The field has three parallel runways, one paved and two open desert. The 250hp Pawnee tugs give 5000ft launches in less than five minutes. It is soarable most days of the year (and every day we were there) with hill lift, wave and thermal conditions.

Les told us that on the first day he opened a pilot arrived with his glider on tow and when asked how he found the field, said he knew it was somewhere south of Phoenix so looked at the map and asked himself where he would put a gliding site.

The aerobatics course is in two Grob 103 Twin Acros. These differ from the conventional 103 in having steel, instead of

(Continued on p78.)

High Sierra Nevada country photographed by Len from an LS-3.



THE RISK OF COLLISION

BILL WAUGH, Professor of Statistics at Toronto University, analyses the risk of collision between gliders and other aircraft

Methods used in evaluating the probability of a collision between a glider and other aircraft are described. The chief purpose is to explain how the risk is evaluated and to state some results without giving any of the mathematical analysis, which is available elsewhere. The limitations of such an approach to an essentially mathematical analysis are acknowledged. It is hoped the convenience of a readable, purely verbal, outline will make this acceptable. For any critical evaluation of the analysis, reference to the technical material is the only possible approach.

In 1963, Admiral H. C. N. Goodhart calculated the probability of a collision between a glider and a commercial aircraft flying in uncontrolled airspace over the south of England (see S&G, February 1963, p4). One of the achievements of the relationship between the BGA and the UK Air Traffic Control authorities was the acceptance of his results in discussions of any possible hazard. Goodhart was able to express his results in a striking way. This was that if the practice of gliding and flying commercial aircraft continued (as to traffic etc) just as it was in 1963, there could be expected to be one collision in 370 years.

It is worth looking back at Goodhart's work because it is clearly understandable without going into technical details, and because it contains almost all the elements needed for a study of collision probabilities in more complex situations. Further, it pre-dates the emergence of "Risk Analysis" as a new discipline by nearly 20 years. Today there is an international Society for Risk Analysis. It publishes a journal in which the risks in such activities as operating nuclear plants, using carcinogenic materials, and transporting inflammable liquids are studied extensively and in depth.

Bill was one of the youngest transatlantic captains in 1944 and subsequently flew as a jet fighter pilot until 1950. Since then he has continued to fly as a private pilot in gliders and aeroplanes both in Canada and in the UK at the Yorkshire GC. Bill came to the Airspace Committee via *an instructors' course at Lasham some years ago. Since then he has done a considerable amount of work towards quantifying the risk in air traffic systems.*

Recent work on the problem of gliders crossing airways shows a collision probability as one in 1250 years

As stated in the introductory paragraph, I omit all formulae and calculations. Without them, it is still possible to give an outline of Goodhart's method, although analysis of it requires them.

In outline, what Goodhart did was rather simple. He was concerned with gliders in uncontrolled airspace over part of southern England, and he identified this as a "box" of area 25 000 square miles and height 12 000ft. He started by considering just one glider and one commercial aircraft, each of which he assumed to be equally likely to be anywhere in the "box". During one second of flight the commercial aircraft would "sweep out" a certain volume, and if part of the glider was in that volume there would be a collision in the one-second interval, otherwise not.

Goodhart assumed that the commercial aircraft was in transit and could be regarded as flying straight and level. In such cases the glider would present a larger "target" if it was crossing in front and banked as in a turn. He assumed that this was so. Quite simple algebra and trigonometry then gave the critical volume in such a "bad" case. Since the glider might be anywhere in the airspace "box" during the second in question, the chance of collision in the one-second period was the quotient of this critical volume divided by the volume of the whole box, and this was approximately 0.000 000 000 3.

This very small probability is of course just for one glider and one commercial aircraft, anywhere in the airspace "box", in one second. Standard methods allow such a probability to be used to calculate the probability of a collision when an arbitrary number of gliders and commercial aircraft are involved. Also it is necessary to consider a longer time and Goodhart introduced a year as his unit.

Goodhart took what he described as a "pessimistic view", that is he took estimates of the numbers of commercial aircraft and gliders that might be involved on the "high side" so that his estimate of the collision probability would be correspondingly high (hence "pessimistic") and unlikely to be an underestimate. He also supposed that both pilots would be keeping a lookout, and that the chance was nine out of ten that one of them at least would see an impending collision and avert it by avoiding action. This again can be considered "pessimistic" and the consequence of his estimates and the standard calculations mentioned was a probability of 0.0027 approximately for a collision in a year, and this is equivalent to the intuitively striking statement mentioned, of approximately one such collision in 370 years.

We can note several elements that make up Goodhart's analysis, forms of which apply to the problem of collision in other situations:

(1) The shape, size and attitude of the aircraft at risk may affect the collision probability (note Goodhart's assumption that the glider is banked). This can be called the problem of "collision geometry".

(2) Goodhart assumed that both glider and commercial aircraft might be anywhere in the airspace (technically, their positions are uniformly and independently randomly distributed). In a different problem there may be a different situation. For example in that of an airway crossing, the aircraft on the airway may be expected to be on a given track and at a given flight level, or near to these, with an allowance for errors of autopilot or navigational equipment.

(3) Goodhart included a factor to allow for incipient collisions which are averted by "see and avoid".

(4) The number of gliders and commercial aircraft in the airspace in question entered into the probability of collision. This is the problem of "traffic density" and we note that Goodhart made some assumptions which would make his estimates be in error rather on the "high side" than otherwise, where he had to deal with incomplete information.

All these elements can be observed in risk analyses such as appear in the journal *Risk Analysis*. The aim is usually some sort of statement of the level of risk, and the statement in terms of a number of years is an intuitive one. Assumptions which tend to increase the estimated risk, such as that of the glider being banked, are referred to as "conservative" and also are commonly adopted. The mathematical analysis of collision geometry, and of the distribution in position of the aircraft at risk, has its counterpart in almost every risk analysis.

Recent work by myself and others has been directed to the problem of gliders crossing airways. Several models have been considered. A simple one I used, of a glider crossing a single-track airway at 90° led, with conservative assumptions, to a collision probability expressible as one in 1250 years. Other models have introduced such complications as the glider not flying straight.

It is notable that the conclusions while naturally different are of the *same order of magnitude*, that is, one in several centuries. In statistical terms it seems that there is a sort of insensitivity or "robustness" of the results. That is to say the detailed assumptions defining the collision geometry and the precise location of flight paths within the airway have a limited effect on these results. Thus the small order of magnitude of the

probabilities is characteristic of the problem.

In these analyses the traffic density plays an important role. It needs no statistical analysis to see that crossing the approach path to London Airport in a glider would involve a high collision risk. What a statistical analysis does show is that such high-density, high-risk locations are surprisingly limited in size and number over the country.

Recently I attempted to assess the traffic density on some airway sectors in the UK. The difficulty of this, due to wide daily and seasonal fluctuations and limited data, is clear. However, it is probably no worse than that which faces the risk analyst confronted with the problems of radiation hazards or those of the side effects of drugs. Something can be done, and indeed the attempt must be made.

Using the CAA 1980 Air Traffic Census, and making conservative assumptions where necessary, surprisingly low traffic densities were found in two cases studied in detail (A25, and the complex A1 — A2 — R3, both in the height band 3000ft to FL80). Together with the collision geometry studies, this strongly suggests that crossing of these airways by gliders involves much less risk than many other routine air traffic activities.

As stated at the outset, fuller consideration of these results requires some study of the underlying probability calculations, and these are not discussed here. However, an intuitive argument may lessen the surprise which some may feel on comparing the low densities, even on a busy airway sector, with the obviously intense traffic on the approach path to London Airport. Imagine standing near the threshold of the runway at London Airport and observing the stream of aircraft landing. Twenty or thirty minutes ago they were distributed among ten airways that converge on the London TCA. We must allow for some of them to have begun descending from *(eg)* transatlantic cruising levels, but even between the base at 3000ft and FL245 there are 19 available flight levels (between FL55 to FL245). Clearly the number travelling a particular track and flight level need not be particularly large for the effect of their convergence upon a single final approach path to produce a high density.

"Perceived risk"

I conclude with some remarks on the "perceived risk" — a term which is also current among the practitioners of risk analysis. It is known that most people who are concerned with a situation involving risk, have a personal perception of the level of it which may not be numerically evaluated but upon which they will act. For example, some people will volunteer for special teams that enter nuclear reactors, wearing protective clothing, to do overhauls. Others will refuse to consider such employment. It seems that a person's assessment of the risk comes from a complex of factors, among which the objectionableness of the hazard faced, and an impression of the likelihood of suffering it are particularly important. The latter comes from the special sample of the operation of the process in question that the individual observes.

Most dwellers in large urban areas can see and hear the traffic on the approach lanes to their neighbouring airport. This is their special sample, and it is understandable if they infer from it a perception of high traffic densities on the airways. This has a connection with the occasional outbreaks of public disquiet about air traffic, including some that have referred to gliders.

Professionals in various fields of aviation will have a perceived risk level, just as much as members of the general public. A commercial pilot is most aware of traffic when he is at one of the concentration points, and a controller observing an airway sector is aware of the aircraft at all flight levels simultaneously. It would be understandable if their perceived traffic level was elevated by these impressions, and a comparison with what can be inferred from available data is called for. The analyses referred to above make this possible. However, the notes accompanying the 1980 Air Traffic Census tables make it clear that the original data, if still available, would make possible more direct and hence "tighter" estimates of traffic densities. These should definitely be developed, using also any additional data that may be available, as soon as possible.

MID-AIR COLLISION — between Rockwell Commander and Std Cirrus

The BGA Safety Panel objected to the way the accident had been reported in the AIB bulletin and now put the record straight

The AIB bulletin on this accident on May 12, 1984 has been queried by the BGA Safety Panel. In particular, our interpretation of the two paragraphs below was that they did not present the circumstances of the accident in a balanced way:

"Subsequent examination of the wreckage showed that, as the Rockwell was flying straight and level, the Cirrus had descended on top of it from the right-hand side. Propeller cuts in the wing and fuselage of the Cirrus indicated that the two aircraft had converged at an angle of 29° with the Rockwell overtaking the Cirrus with a relative velocity of 65kt. Blind areas caused by cockpit structure and the fact that, according to one witness, the Cirrus had just completed a turn, make it difficult to assess the visibility of one aircraft from the other. Also the Cirrus which was coloured white would have been camouflaged against the white/grey cloudbase. Both aircraft however were clear of cloud and in uncontrolled airspace where the Visual Flight Rules applied."

The Safety Panel's response was to write to the chief inspector, Geoff Wilkinson, who replied as follows:

"The bulletin, as you know, is intended to record the facts established by the branch and is solely a flight safety tool. It is not meant to provide a vehicle for litigation.

"The penultimate paragraph of the bulletin which appears to have upset your Safety Panel simply states the impact parameters. The evidence is clear that on impact the Cirrus was above the Rockwell in a shallow descent. It should not be taken as implying any particular flight path for the glider prior to impact as there is inadequate evidence as to the glider's flight path immediately prior to the collision. It certainly does not imply that the Cirrus was anything other than the aircraft with the right of way, which it was.

"The Rockwell was clearly the give way aircraft with the responsibility of keeping clear of the Cirrus. As the pilot of the Rockwell did not deliberately set out to have a collision it must be assumed that the accident resulted from the failure of the see and be seen philosophy to provide adequate separation between the two aircraft involved.

"After review of the evidence I do not consider that any useful purpose would be served by re-opening the investigation into this accident."

Subsequently, at the Executive Committee's direction, we met with AIB and the outcome was that we could publish our own comments on the accident but they (AIB) still did not think the bulletin warranted alteration. This being so we have the following comments:

The first of the (bulletin) paragraphs caused considerable concern because of the emphasis given by the order and choice of words — ". . . the Cirrus had descended on top of it (Rockwell) . . .". In our view the vertical component of relative motion was likely to be very small especially when compared with the relative horizontal velocity of 65kt and that the latter was much more relevant in the context of the collision.

The further implication of "descending on top of it" was that the accident had occurred *because* the glider was descending and since no mention was made of "rights of way" this implied, in our view, that the accident was the glider pilot's fault. Obviously the accident has to be viewed in the light of the rules on three counts:

- Aeroplanes give way to gliders
- An overtaking aircraft shall keep out of the way of the aircraft being overtaken
- Converging; the aircraft which has the other on its right shall give way.

For the rest the aeroplane pilot should have been able to see the glider. Cloudbase was at 6000ft (approx) and the collision at 3000ft. There was some 4/8 cumulus with good visibility. The bulletin quotes a witness as saying that the glider had just completed a turn, but it is not clear whether this witness saw the collision and, if not, what was the time interval between the witness observing the glider turning and the collision? Whatever the answer here, the evidence indicates that in the moments before the collision there was little possibility of the glider pilot seeing the Rockwell which was approaching him from

behind and below. On the other hand the Rockwell pilot, because he was flying straight and level, would have the glider in front of him — well in his field of vision — at least for the minute or so before the collision. The relative closing speed of 65kt and the maximum likely vertical descent speed of the glider of 5kt means that the glider would have been at an angle of no more than 1 in 13 above the horizontal — well inside the field of vision from the Rockwell cockpit. As such it can only be presumed that for some time immediately prior to the collision the Rockwell pilot was not looking out.

In the final analysis the accident only serves to reinforce the importance of keeping a good lookout.

Bill Scull, *BGA director of operations*

(Continued from p75.)

aluminium, control pushrods, a five-point harness and a slightly beefed-up mainspar. Redline on the ASI is at 135kt and at +6*g* and −4*g* on the accelerometer. It is as luxuriously laid out as its predecessor, the Twin Astir, but is much pleasanter to handle.

Each day started with a briefing when manoeuvres were explained, questions answered and misconceptions shattered. On the first day there was discussion on the physiology of aerobatics, especially negative *g*, and of desert flying, after which we had one flight and did a loop, a half loop to inverted, inverted flight and a half roll out of inverted flight.

On subsequent days we had two or more flights and continued to practise these manoeuvres while introducing a half roll to inverted, full roll, split-S and half Cuban 8. By Thursday we were ready to go solo. As one of our party put it after landing, "That's the second bravest thing I ever did after getting married."

For the rest of the week we continued to practise, both dual and solo, and started putting together consecutive manoeuvres. Most started with a 45° dive, the speed and the *g* force to pull out of the dive varying according to the manoeuvre. The loop was entered at 100kt and 4*g* pulled until near the top where the stick was eased forward to round off the top, then pulled back to regain 4*g* in the pull out. From half loop to inverted flight, we maintained the dive until 110kt then pulled back holding 4*g*. The entry to the roll was from 95kt with a pull back at 2*g*. As a competition aerobatic pilot Les puts a lot of emphasis on how the manoeuvre looks from the ground and an integral part of the course was judging from the ground what went wrong in the air.

The emphasis on the course was not only on doing the manoeuvres well, which takes a lot more practice than we had time for, but on doing them safely. When flying at 80kt inverted an aircraft like the Grob reaches VNE very quickly and you can't just haul back on the stick and half loop out when things start to go wrong.

We all enjoyed ourselves immensely and when we have sufficiently practised intend to return to tackle more advanced manoeuvres. One of us has even started dieting to be light enough to fly one of the Saltos Les has on order.

So You Want Glide in the USA

Advice from JESSIE SCHILLING, SSA's administrative assistant

On your next trip to the United States, why not sample some American gliding. Perhaps the following information from the Soaring Society of America, Inc (the US equivalent of your BGA) will help you to plan your next trip to include some gliding.

The BGA now has copies of the latest **Directory of Sites** produced by the SSA. This booklet lists clubs, chapters, and commercial operators and gives useful information such as addresses, telephone numbers, gliders available for hire, tugs used, rides, instruction, etc, all arranged alphabetically by state and interspersed with advertisements by the various commercial operators.

One difference between the US and the UK is that while there are many active clubs and chapters in the US, there are also commercial operators whose business it is to rent gliders, tow, and instruct. They are located in many parts of the country, and unless you are going to be here for some time, you may find it more convenient to fly with one of them. It is often easier to hire gliders and get check-outs and instruction there than at a club which operates on a volunteer basis and often only on weekends.

US conditions include wave, ridge, and thermal. The wave season is usually from January through March with the highest altitudes being achieved in the Reno, Nevada, California City, California and Denver, Colorado, areas. On the east coast, wave is also found in West Virginia and in New Hampshire (Mount Washington) during those months.

Some operators and/or clubs sponsor "wave camps" or temporary operations at a site which has a dependable wave phenomenon. Ridge Soaring (Pennsylvania) and Bay Soaring (Maryland) operate camps in West Virginia, and RESCO and PASCO operate camps in California City and Minden, Nevada, respectively.

The best known ridge lift is on the east coast. Many of you are familiar with the Bald Eagle Ridge made famous by Karl Striedieck, Tom Knauff, and Doris Grove. The ridge works best during the early spring and late autumn but a check with operators in the area (such as Ridge Soaring) will give you the current conditions. This is especially important if you're after a ridge Diamond distance.

Thermal soaring is generally best between April and September across the US. Some areas are more like the UK (*ie* the east coast and midwest) whilst western conditions and land-out alternatives tend to be more challenging. If you come during the summer months, though, you can count on some good gliding anywhere in the country.

Licensing requirements are straightforward. Bring your UK certificate, your logbooks, and your medical certificate (if you have one) and present them at the nearest Federal Aviation Administration (FAA) office before you head for your gliding field. (There is usually one in every major city in the US, and the telephone number is often listed in the local telephone directory under the US Government, Department of Transportation, FAA, and either Flight Standards District Office (FSDO) or General Aviation District Office (GADO). If you cannot find one, call the SSA office in Los Angeles and they will be happy to help you locate the nearest facility.) The FAA office will issue you a US certificate based on your UK one according to the ICAO agreement.

When you know the dates of your trip and the area you will be visiting, the SSA recommends that you contact the operators (and clubs if you like) directly. They are usually happy to give you information on accommodations, transportation, meals, etc, as well as their current rates and scheduling requirements. If you are visiting during the gliding season, they may suggest that you schedule early in order to be able to fly the glider of your choice.

Field operations are similar to yours. When you first arrive at the field you will probably have a "field check" or "familiarisation ride" with an instructor. This may consist simply of a single tow in which the instructor points out field rules, valuable landmarks, and local idiosyncrasies, or may be a full-blown check-ride including airwork and landings. In any case, the instructor wants to ensure your own safety and, let's be honest, that of his gliders. He will make the check as thorough as he feels necessary, and after that will turn you loose to fly on your own.

The SSA looks forward to having you visit and wishes you a wonderful gliding holiday in the United States. If you need further assistance or have additional questions, do not hesitate to contact them directly. Their address is PO Box 66071, Los Angeles, California, 90066-0071, tel (213) 390-4447.

Sailplane & Gliding

The magazine can be obtained from most Gliding Clubs in Gt. Britain, alternatively send £9.50 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 B.G.A.

Price £4.25 (£4.74, including post and packing).

OVERSEAS AGENTS

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THROW AWAY THE TASK BOARD

Or, says CHARLES ELLIS, let's do our own thing and run Nationals to suit national needs.

Since writing "Throw away the Task Setter" (see S&G, April 1968, p122) I have seen numerous views expressed in S&G critical of the existing form of competition flying, the latest being that of John Jeffries in the December issue, p252. It was the latter that has inspired this article since the time appears ripe for a reversal of the present BGA policy that has ossified competition rules in the interest of international conformity.

It may not be generally appreciated that until the BGA Flying Committee went Parkinsonian, British competition flying was permitted to develop in response to changing needs normally instigated by the organising club. There is, of course, no reason why we should not have competitions conforming to FAI rules and such a system is obviously essential if we wish to compete in FAI contests with any hope of winning. But why should we not run National competitions to suit national needs? In which case the competitions we now call "Nationals" would become "International Trials", and would be restricted to those with World Championships aspirations.

Improve situation by eliminating officials

As I pointed out in "Throw away the Task Setter", the main reason for unsatisfactory tasks lies in errors made by Met and the task setter, so that the elimination of these officials should be a first step towards improving the situation. A second step would be to accept the other suggestion I made then and make distance the sole criterion of performance. This would eliminate the cry so frequently made under the present rules, that the task was either "over set" or "under set", and I can see little prospect of this criticism diminishing as long as we expect the task setter to specify a course length that will satisfy all competitors. In my experience the most annoying example of tasks that go wrong are those where the entire field finds itself battling with unforecast weather at some stage of the course, when it becomes quite clear that nobody is going to finish and fifty or so field landings are about to take place over a small area of countryside.

When TP photography was initiated a generation ago I was amongst the objectors for I did not believe that the simple system chosen was capable of producing satisfactory results. I was wrong. The results achieved with this equipment proved a revelation. Today the chief problem lies in persuading pilots to point their cameras in the right direction! However, the main advantage claimed for TP photography is that it gives great flexibility in task setting; but why confine such flexibility to the task setter? Should it not be used to give flexibility to the pilot trying to perform an impossible task, *ie* let the pilot choose his TPs?

Of course, the objection to this proposal is that it is not possible to evaluate relative pilot skill under the same conditions, which is the main reason for the present FAI rules. This criticism is valid only if we maintain that there is no merit in good route selection or weather assessment, a point of view which I think can be held only by those already "hooked" upon FAI style competitions.

What qualities do we expect to find in a gliding champion? If I bend an unbiased ear to club chatter I find that the pilot most admired has two envied qualities:

1) He always (well, nearly always) gets back.
2) Whilst getting back he has ventured farther from base than any other, thereby getting more flying and more fun for his money.

The existing FAI system does not reward this type of expertise and moreover encourages pilots to spend the minimum amount of time in the air and thereby raise the "cost/hour" rate. For sportsmen who claim to be individualists it encourages some remarkably gregarious tactics. Why not, then, experiment with a distinctly new form of contest aimed at overcoming the objections currently being aired about the FAI system and at the same time eliminate many unpopular duties that at present "ground" a large number of keen pilots required to man Met, task setting, start and finish lines, height frame, time keepers etc?

Some penalty depending on magnitude of failure

The simplest form of task that we can devise using "flexible TPs" is to tell the pilot to fly to the furthest point from which he thinks he can return with confidence. Evidence would be a photo of his chosen TP, similar to those presently used. He would be marked for the full distance if he returned to base, or otherwise receive some penalty depending upon the magnitude of his failure. Strangely, I cannot recall from thirty-seven years of contest flying, that we have ever had a "pilot selected goal and return" task in Nationals, although we have had "pilot selected goal" and "designated goal and return races".

A "pilot selected goal and return", whilst silencing the "under/over set" grouchers, and avoiding all the hassle of start and finish lines, does not reward the weather-wise who can detect a changing situation and wishes to modify his flight plan *en route*. Let us imagine such a pilot who has assessed the weather before take-off and decided he can fly to point "A" and return with some confidence. Progressing along track to "A" he detects an unforecast change in conditions which, if exploited, would enable him to go much further than "A" if he diverts say 45° from his present track. If he were not in a competition this is what he would do to extract the maximum enjoyment from the day, and after making one or more additional changes in track, say to TPs "B" and "C", return to base. What do we need to do in order to evaluate this pilot's performance against others so that it may be made competitive? I suggest that all that is required is the identification of TPs that will enable us to measure, in the time available for verification, the total distance from take-off to landing, and agree a system of penalties for those who fail to get home.

Restriction on the times the same TP is used

Since landing out could entail disastrous penalties there will be an undesirable but understandable tendency to stay close to base and use only the nearest TPs. This can be discouraged by the organisers specifying TPs beyond a certain radius from base and by restricting the number of times the same TP may be used. As evaluation of performance depends upon only distance flown, the sole problem that I can see is how to compare the pilot who flies a relatively short distance and gets home, with another who flies a much greater distance and just fails to get back.

To argue a solution to this problem I considered four pilots flying under the above rules and achieving the following performances:

Pilot A flies 300km and gets back.
Pilot B flies 400km and fails to get back by 50km.
Pilot C flies 200km but fails to get back by 10km.
Pilot D flies 185km and gets back.

In considering pilots A and B we have to ask "How meritorious is the extra distance flown by B having regard to his failure to get back?" If for example we decided that for scoring purposes we reduce his 400km by the distance he failed to make back, the resulting 350km is a substantial lead over A and cannot be justified by the commotion incited amongst his partners, the farming community and possibly (horrid thought!) his underwriters. If we double this penalty we get results as follows:

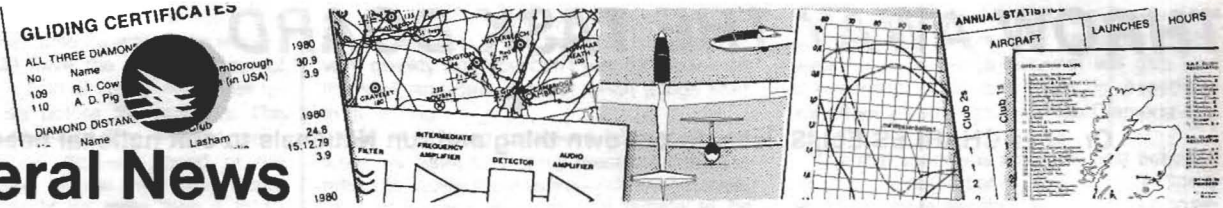
A 300 marks
B 400-(50 × 2) = 300 marks
C 200-(10 × 2) = 180 marks
D 185 marks.

A and B tie and D beats C to third place by a small margin.

This may be an acceptable order of merit but has one fatal (!) flaw. The pilots are under pressure to (a) keep going as long as pos-

(Continued on p94.)

BGA and General News



COMPS COMMITTEE JOTTINGS

Lack of space permits only some telegraphic style notes:

The 350 or so pilots who flew in five Regionals and three Nationals in 1984 fared well: each Comp had at least six contest days, some as many as eight. Competition Enterprise had eight days. Let us trust that this season is at least as good. The plan is to have six Regionals, so it should not be too difficult to secure a place if you want to have a go.

The Nationals are well subscribed; there are 57 applications for Open, 70 for 15 Metre and 64 for Standard. Each Class shall have 40 entries.

Comp organisers will have an option to use **pilot operated starts** as an alternative to the conventional startline. These can be achieved with the aid of **time recording cameras** or a **ground clock.** With either method the pilot must photograph — at the time of starting — a ground target with a fixed camera mounted on the designated side of the cockpit. The TP photo interpreter has more work to do but there is no longer a need for the numerous skilled startline observers.

Booker plans to use TR cameras for the 15M Nationals, Lasham will retain the conventional startline for the Open and the Hus Bos arrangements for the Standard Class are not yet finalised.

As an experiment, we have accepted that John Jeffries' "Alternative Competition" put forward in the December issue, p252 would be OK as a qualifying Comp for the '86 Nationals. If Dunstable chooses to run its '85 Regionals in that way — watch that space!

The priority list for the '86 European Championships will be evolved in late September on the basis of the '85 Nationals (and Worlds!) results. This will be done either through a mechanistic system based entirely on competition placings or through a conventional vote; to be finalised before publication of this issue.

The '86 team squad for the '87 World Championships at Benalla will likewise be evolved in September by the same method as in recent years, namely the '85 Champions and the runners up in each Class qualify automatically and the remaining places, up to a total of 16, are decided by a voting panel of 40 pilots comprising the top 12 in each Class and the '85 World team.

The CIVV has introduced some amendments to the current FAI **Sporting Code;** their effect is to open up the options for distance badge requirements. Gordon Camp will write on this topic in the next issue of S&G; in the meantime please consult the BGA Newsletter through your club for details.

Finally, please remember the BGA trophies and awards for 1985. The distance and speed awards are based on handicapped results, so anyone can have a go. If you do a flight which might qualify, please drop us a line.

Happy soaring!

Ted Lysakowski, *Chairman, BGA Comps & Badges Committee*

INSTRUCTORS' INSURANCE

The insurance policy taken out last year by the BGA to give liability cover to all currently rated gliding instructors came up for renewal recently. Underwriters decided to double the annual premium from £2000 to £4000 following a reassessment of the risk involved and a general hardening of all aviation market rates — this despite our claim-free first year!

The Executive Committee felt that the cover must remain and we have reluctantly settled the increased premium, which has made an unexpected dent in the 1985 budget. If this policy is to be continued in future years and the premium continues to rise above inflationary rates then we must consider making a pro-rata charge to clubs in respect of their number of rated instructors. At present levels this would be about £2.50/head which still seems to be good value for cover of £250 000.

However, we would like to hear from member clubs this year with their reaction to this proposal. The policy has to be for block coverage of all instructors and cannot be an individual option at these rates. Incidentally, we would take this opportunity to remind you that if your rating has not been renewed for any reason then your cover is not valid.

Barry Rolfe, *BGA administrator*

FEMALE POWER AT COTSWOLD



Ruth with Tony and Simon. Photo: The Press Association.

Ruth Housden is the new CFI of the Cotswold GC and, apart from Barbara Fairclough's brief spell in charge of Dunkeswell before its demise last year, this is new feminine territory.

Her husband Tony, also an instructor, proudly commented: "She is good at gliding and instructing and we are very proud of her," also speaking for their son Simon who recently went solo on his 16th birthday.

This has been quite a phase for Ruth, an auditor who lives at Nailsworth, Stroud. She was recently awarded the British Women Pilots Association cup for services to gliding.

She started out as the typical, dutiful gliding wife — interested enough in the flying to go to the airfield and content with the occasional passenger trip. When Simon was old enough to leave on the ground Ruth decided to learn and began flying ten years ago, becoming an instructor after five years. She has a Diamond and is chasing Gold height.

But Ruth deserts the gliding field on winter Saturday afternoons for her other love — she is a keen hockey player.

PUT GLIDING ON THE MAP IN 1985

Now is the time for taking action in publicity and public relations for the 1985 season — it's only just round the corner! Are you ready for it? Have you got all your publicity material lined up? Adverts booked? Press day organised?

It's not too late. If you need advice or my information pack on PR and publicity, then ring me or write to me NOW. And don't forget the Introducing Gliding brochures and Go Gliding posters available from Barry Rolfe at the BGA Leicester. It is worth investing in a few of each of these.

Last season many clubs made a real public relations and publicity drive. They have all reaped the rewards. So why not join in this year and put gliding on the map in your area? Ideas which worked well for other clubs last year were:

* Distribution of leaflets in newspapers by local newsagents at nominal cost.
* Letters to newspaper editors pointing out errors or omissions in reports on gliding. They were often published, especially if not carping but informative and humorous. Club members keep an eye open and pass on to club PRO.
* Simple single page handout given to spectators and visitors at gliding clubs to lure them further in and assure them of a welcome. Proved very effective by Wolds GC. (If you'd like more details ring me.)
* Cheap advertising on local commercial radio at odd times — worth investigating *eg* Hereward Radio offer 40 second adverts at only £3 between 7pm and 1am.

* Silly season of press mid-July to September — often desperate for material.
* Well-organised flying evenings *ie* good helpers, members ready to fly with visitors, letters to organisations who have previously come on an air experience evening to encourage them to have another one and letters to those who haven't!
* Press coverage of visits by disabled, WI, schools etc improves image as part of community especially for clubs seeking loans and grants from local authorities etc.
* Positive and helpful attitude of existing members to visiting and new members backed perhaps by an introductory membership scheme, new members' pack (logbook, laws and rules, club handbook etc).
* Good response reported from advertising courses in *Pilot* magazine.
* Press days very rewarding.

Latest news on the national front is a monthly gliding column in *Aviation News* written by me and starting in April in *Pilot* magazine, with an introductory article by me, will be a monthly gliding column written by Derek Piggott. Building on the increased coverage on competitions last year, I hope to capitalise on the World Gliding Championships and get as much publicity out of them as possible.

Some clubs are taking part in the Sports Council's "Ever Thought of Sport Campaign" and are thus gaining free publicity and some funds for youth projects. This is a national campaign and should attract plenty of attention.

But back to the grass roots, because this is where all the important work is done, by you in your area. Like stones thrown in a pond, the ripples spread out and eventually join up. It's the best way of increasing support for our sport whether with a supply of new members, sympathetic officials or understanding farmers.

So go to it and I'll help all I can.

Nikki Campbell, *BGA publicity officer*

GLIDING CERTIFICATES

The most recent Silver Badge (No. 6889) has been awarded to Robert Gibson of the Ulster GC. Having gained his duration and height legs in 1952, Robert completed the third leg 32 years later with a distance flight of 92km from Gowran Grange, Eire during last year's John Williamson soaring course.

The year ended happily for two members of the Connel GC in Scotland; on New Year's Eve Alex Fleming and John MacGilvray gained respectively Silver and Gold heights from an autotow. Whilst they were no doubt still celebrating the next day in true Scottish spirit, Ivor Cainey gained his duration on January 1 with a five-hour hill soaring flight from the Mendip GC's site at Weston-Super-Mare.

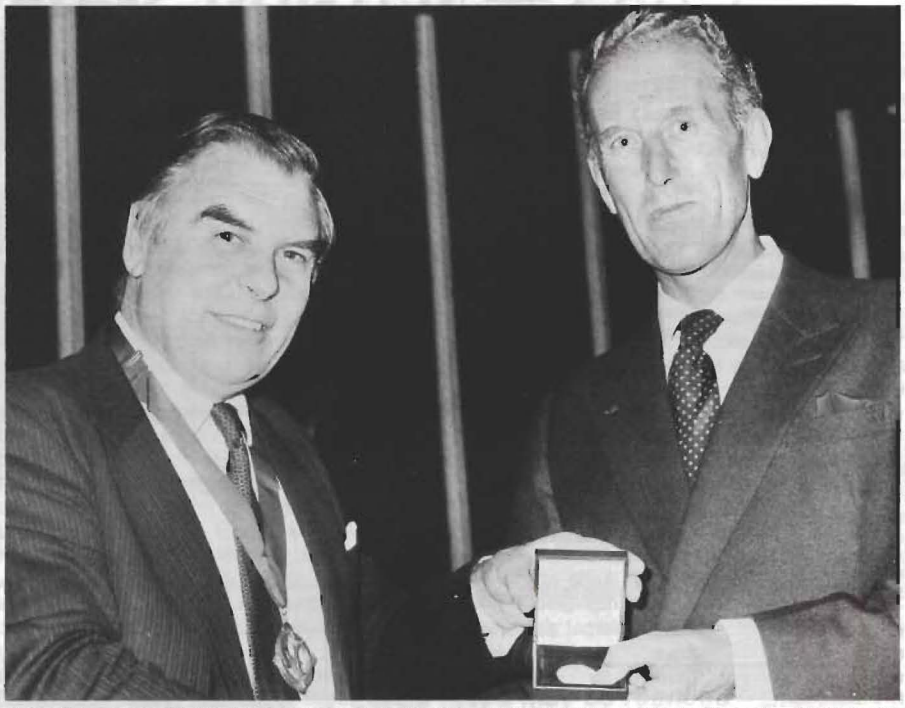
It is most encouraging to see such adventure on the part of two of our smaller clubs, proving that you can be soaring in the depths of winter from a wire launch!

Gordon Camp, *FAI certificates' officer*

ALL THREE DIAMONDS

No.	Name	Club	1984
175	R. J. S. Knight	Phoenix (in Australia)	1.6

MEDAL WINNERS



John Brownlow (right) is photographed receiving his Royal Aero Club Silver Medal from Dr Geoffrey Pardoe, president of the Royal Aeronautical Society, at a reception in December in the Science Museum's Aeronautical Gallery. John has spent 37 years in the RAF from cadet to AVM, initially as a navigator and then a pilot. He has been a CFI at two clubs and served as the mainspring of original thought and action on the RAFGSA Executive Council for more than 15 years, the last three as chairman. He also brought his clear brain and diplomatic skills to the BGA Executive. He is a tenacious soaring pilot, a thorough gliding instructor and held the UK multi-seater 200km triangle record.

Tom Bradbury, who has been providing Met forecasts for Nationals and Regionals for about 20 years, was awarded the Tissandier Diploma. Since the early 1970s he has been the Met consultant for the British team in World Championships, has presented Met papers to OSTIV, published numerous works on gliding and Met and has contributed significantly to our better understanding of the subject. Tom has been gliding for nearly 30 years.

BGA ACCIDENT SUMMARY — Compiled by KEITH MITCHELL, Chairman, BGA Safety Panel

Ref. No.	Glider Type	BGA No.	Damage	Date Time	Place	Pilot/Crew Age	Pilot/Crew Injury	Pilot/Crew P/Hrs	
135	T-21	1215	W/O	12.8.84 18.55	Edgehill	24	N	4min	After a normal initial stage of a winch launch the glider was about to increase the climb when speed was lost due to the shutting down of power at the winch. Cable was released, but the pilot failed to react in time to prevent the stall. After striking the runway the glider bounced, turned and crossed a fence into an adjacent field.
136	PIK 20E	G-POPE	M	13.8.84 17.35	Talgarth	54	N	590	After a well controlled circuit a grassy hump in the touchdown area resulted in a heavy landing and consequent undercarriage collapse.
137	Vega	2728	M	6.8.84 13.45	Camphill	31	M	150	Airspeed after final turn was insufficient to cope with wind gradient and glider stalled near the ground with insufficient height to recover.
138	K-7	2489	M	11.8.84 19.49	Camphill	39	N	7	Approach speed allowed to build up excessively with very little airbrake. Over controlling after roundout resulted in three or four landings, the last one causing damage.
139	Pirat	1932	S	18.8.84 14.45	Barford	17	N	15	While on a cross-country a field was selected at about 1800ft, and after further search for lift it was decided to land. Downslope was spotted on latter half of field. Side-slip approach was used to land in near part of field, but on straightening up speed was low and the aircraft stalled into the ground.
140	Bocian 1E	1884	M	19.8.84 18.15	Pen-y-Parc P2	48 ?	N N	405 3	Shortly after lift-off on winch launch the glider veered to the right. Before the instructor took over the starboard wing struck and snapped the pole of the windsock in the boundary fence. Instructor released cable and landed ahead.
141	Sport Vega	2616	M	8.8.84 12.30	Lasham	33	N	37	At the start of the car launch glider veered to the left and released the cable. Pilot failed to steer the glider straight on the ground run, also the wheel brake was not working. Sport Vega collided with two parked gliders.

DIAMOND DISTANCE

No.	Name	Club	1984
1/257	R. J. S. Knight	Phoenix (in Australia)	1.6

DIAMOND GOAL

No.	Name	Club	1984
2/1369	W. N. Gibson	Booker	1.8
2/1370	S. D. Minson	Devon & Somerset	3.7
2/1371	A. G. Evans	Eagle	11.6
2/1372	E. Rigby	Booker	12.8
2/1373	D. J. Ellis	Surrey & Hants (in USA)	14.6

DIAMOND HEIGHT

No.	Name	Club	1984
3/688	R. C. Bromwich	Bath & Wilts	9.10
3/689	C. J. Shawdon	Booker	23.10
3/690	A. D. Matyear	Wyvern	23.10
3/691	J. L. Houghton	Cleveland	30.8
3/692	J. T. Morgan	Coventry	31.8

GOLD C COMPLETE

No.	Name	Club	1984
1065	E. Rigby	Booker	12.8
1066	S. J. Pepler	Swindon	26.6

GOLD C DISTANCE

Name	Club	1984
W. N. Gibson	Booker	1.8
S. D. Minson	Devon & Somerset	3.7
A. G. Evans	Eagle	11.6
E. Rigby	Booker	12.8
D. J. Ellis	Surrey & Hants (in USA)	14.6

GOLD C HEIGHT

Name	Club	1984
R. W. Coon	Fenland	7.10
R. C. Bromwich	Bath & Wilts	9.10
G. J. Phillips	Four Counties	11.10
P. C. Broome	Booker	23.10
G. J. Lyons	Booker	30.10
C. J. Shawdon	Booker	23.10
A. D. Matyear	Wyvern	23.10
B. Cross	Yorkshire	23.10
H. F. Lamphrey	Kenya	8.4
S. J. Pepler	Swindon	26.6
R. C. Willis-Fleming	Fulmar	9.10
N. I. Claughton	Clevelands	14.10
C. D. Sword	Borders	29.11
K. Fairness	Borders	30.11
A. Johnson-Laird	Surrey & Hants	7.10
N. S. C. Roberts	Bristol & Glos	8.10

SILVER BADGE

No.	Name	Club	1984
6877	P. J. Jones	Mendip	16.9
6878	E. H. Bleasdale	Surrey & Hants	23.8
6879	K. G. Grumbley	Pegasus	19.10

142	K-7	2139	M	7.8.84 19.10	Nympsfield P2	36 25	N N	392 27	Pupil was making the approach in a strong crosswind, allowing for drift and using full air-brake. Instructor reminded pupil to "kick off drift correction" but before action was taken a heavy landing had resulted.
143	Kestrel 19	1945	M?	17.8.84 18.00	Cirencester	61	M	1740	Whilst making a field landing into sun in poor visibility glider ran into a wire fence which could not be seen on the approach.
144	K-6CR	659	N	31.7.84 14.00	Lasham	57	N	80	Glider is only fitted with a belly hook. Pilot had difficulty maintaining position during the aerotow. Glider pitched nose up lifting the tail of the tug. Tug pilot released the glider. Both a/c landed safely.
145	Bocian 1E	2034	S	23.8.84 16.30	Keevil P2	57 32	N N	1800 —	On the ground run after a simulated cable break glider hit a wooden post hidden by tall thistles.
146	Olympia 2B	603	W/O	19.8.84 12.09	Canal Head, Pocklington	34	M	14	Airbrakes came open early on tow. Tug pilot continued tow hoping to get glider to landable situation, but encountered sink and had to release. Only enough height for glider to land straight ahead.
147	Olympia 2B	505	S	11.8.84 17.00	Fulbourn, Cambs	30	N	100	Pilot on cross-country flight left weak lift aiming to reach developing cu, experienced strong sink and was faced with landing into standing crop. Extensive damage to tailplane and rear fuselage.
148	Skylark 3B	870	N	13.4.84 12.00	Parham	57	N	83	At about 100ft on aerotow pilot discovered he had no aileron control. Released at 200ft and landed back at the airfield where he discovered the ailerons were not connected.
149	ASW-20F	2461	M	9.8.84	Booker	30	N	216	Returning from a local soaring flight pilot selected half landing flap and 50kt approach speed. When starting to flare glider suddenly dropped causing damage to u/c fork. Part of the flap linkage had become loose allowing the flaps to retract suddenly.
150	Pirat	1931	S/WO	1.8.84 13.00	North Weald	57	S	230	During what the pilot describes as a normal reverse pulley launch the nose pitched up. The cable was released and the nose lowered. Port wing went under cable and parachute. Pilot attempted to land ahead. A very heavy landing resulted.
151	K-2	2587	W/O	26.8.84 16.05	Strathaven P1 P2	47 31	M S	141	360° turn attempted after cable break at 200ft. Turn was over-ruddered and incipient spin ensued. Port wing touched and glider cart-wheeled into the ground.
152 A	ASW-20	2424	W/O	17.8.84 15.39	Lasham	33	M	666	Involved in mid-air collision with another glider at the start of a task during the Nationals. Very poor visibility at the time. Pilot bailed out and landed by parachute in trees.
152 B	ASW-20L	2618	S	17.8.84	Lasham	34	M	400	Involved in a mid-air collision with another glider at the start of the Open Class Nationals. Pilot had difficulty bailing out but landed safely by parachute with minor injuries.
153	K-21		M	5.8.84 17.00	Lasham P1 P2	55 17	N N	720 —	Rear canopy opened and the perspex smashed as the glider lifted off during aerotow launch, glider landed ahead safely.

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

6880	R. J. Peck	Derby & Lancs	21.10	6885	N. H. Wall	Bristol & Glos	23.5
6881	T. A. R. Hanney	Lasham	26.10	6886	C. L. Jones	Coventry	30.6
6882	D. M. Smith	Booker	16.10	6887	B. Cross	Yorkshire	6.5.81
6883	M. G. Bolton	London	4.11	6888	J. Forrester	Essex	27.9
6884	J. F. Gao	Hambletons	12.5	6889	R. C. Gibson	Ulster	28.6

BGA MAIL ORDER

WHICH WAY ROUND?

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BE A BETTER BADGE HUNTER — Part 1

GORDON CAMP, the BGA FAI certificates officer, reminds pilots and official observers of the various requirements for the Silver, Gold and Diamond badges — explains the current rules in simple terms — and draws attention to some of the pitfalls.

The Sporting Code. The master document which tells you all the requirements for the Silver, Gold and Diamond badges is Section 3 (Gliders) of the FAI **Sporting Code.** To maintain the FAI badges as respected awards, the rules have to be rigidly applied, and although the BGA can influence rule changes through its representative on CIVV (the FAI sub-committee responsible for **Sporting Code** Section 3), the BGA has no authority to exercise any discretion in interpreting or applying the rules currently in force. The current edition of the **Sporting Code** is dated 1981, as amended by change No. 1 (effective on January 1, 84) and No. 2 (effective on January 1, 85).

The three basic types of qualifying flights are duration, gain of height, and distance; in the following discussions of each type, many of the points apply equally to records, but be warned that competition regulations often vary from badge rules.

Duration. The qualification for the Silver duration leg is quite simply 5hrs of free flight; note that you are timed from the moment of release, and particularly in the case of an aerotow make due allowance for the non-effective time on launch. A barograph trace is necessary to substantiate the length of flight, but when, exceptionally, the glider is in visual range of an official observer throughout (such as localised hill soaring), a certificate of continuous observation will suffice.

"... give yourself a head start by taking a launch to 1000m ..."

Considering how many pilots are sunk after 4¾hrs, you are perfectly entitled to give yourself a head start by taking a launch to 1000m (3281ft) and, provided you have a Bronze badge and your CFI's permission, you can also leave the home site in search of the lift if conditions fade towards the end, although a field landing should not be contemplated lightly at the end of a long flight.

Although somewhat anomalous that the Gold duration is also 5hrs (should the Silver be reduced to 3hrs?), gaining the Silver automatically gives you the Gold duration leg.

Gain of Height. The requirements for Silver, Gold and Diamond heights are respectively 1000, 3000 and 5000m, being the gain of height from the previous "low point". Often this is the point of release itself, and if possible the pilot should register a clearly defined "notch" in the barograph trace by diving the glider momentarily after release. You can legitimately "gain" 100ft or so in this way; I'm sure many pilots otherwise miss a height leg by just this amount.

To substantiate a height claim, the barograph trace is compared with an approved calibration chart produced within 12 months before the flight or one month afterwards. Remember that a height gain is calculated as a theoretical figure in comparison with the pressure curve of the International Standard Atmosphere; no one will ever know exactly what altitude you reached, although if your altimeter is a good one its readings will not differ much from that deduced from the barograph.

Distance. By far the greatest complexity in badge rules relates to distance flights, and it is this aspect which has seen a number of changes in the **Sporting Code** in recent years, including a significant change effective from January 1, 1985.

The requirements for Silver, Gold and Diamond distance are respectively 50, 300 and 500km, which can be achieved by flights of various shapes as discussed later. In addition there is the separate qualification of Diamond goal whose particular requirement is a completed 300km closed-circuit over a pre-declared O/R course or a triangular course flown in a designated sequence.

Although distance flights may be attempted in different ways, the basic principle is that the distance achieved is the cumulative great circle distance from a **departure point** to a **finish point** *via* up to three pre-declared TPs.

The departure point can be the place of release, or a startline, or some defined point declared before take-off as a remote departure point. The finish point can be the place of landing, or a finish line, or somewhere declared before take-off as a remote finish point.

In the simplest case of a straight flight, which is permissible for Silver, Gold and Diamond distances, you are measured from the point of release to wherever you land; no declarations are needed and all you need on board are a barograph and a map, but don't forget to get a landing certificate signed. Remember also, though, that the distance will be proportionately reduced if the difference in altitude between release and landing exceeds 1000m or (when less than 100km) 1% of the distance; see Table A for a summary of these distance penalties, which incidentally apply equally to closed-circuit flights.

TABLE A Distance penalties relevant to Silver, Gold and Diamond distances

Height Loss (ft)	1640	1706	1771	1837	1902	1968	2296	2624	2952	3281
Dist required for Silver (km)	50	52	54	56	58	60	70	80	90	100
Height loss (ft)		3281		3609		3937		4265	4593	4921
Dist required for Gold (km)		300		305		310		315	320	325
Dist required for Diamond (km)		500		505		510		515	520	525

Turning Points. Nowadays most attempts at Gold and Diamond distance, and as an option for Silver too, involve TPs, and this immediately introduces the complication of a declaration and arranging visual observation or taking photographs at each TP, as described below. TPs must be pre-declared in writing and signed by the pilot and an official observer. Only one declaration (the latest) is valid for one flight, and when using photographic evidence the declaration must be photographed legibly before take-off; the best way is to chalk the details on a blackboard and photograph the board — pieces of paper are rarely legible on film.

TPs may be rounded in any sequence but not the same one twice

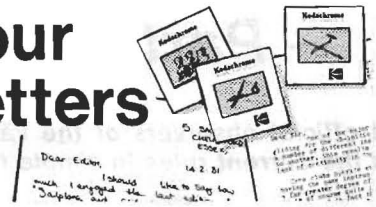
From January 1, 1985 up to three TPs may be declared (including any remote departure or finish points), and these may be rounded in any sequence decided in flight, but not the same one twice. For Diamond goal, though, you must keep to the designated sequence. This latest amendment to the **Sporting Code** gives considerable freedom, and the various permutations will be discussed in detail in Part 2 of this article in the next issue.

To have rounded a TP you must either be seen by an official observer on the ground to be within the visual observation zone, or you must present a satisfactory photograph of the TP taken from within the photographic zone. The zones are 90° quadrants on the outside of the turn and symmetrical with the inbound and outbound tracks. For visual observation you must be within 2km and below 1000m agl, but for photographs there are no height or range limits. Evidence from other airborne pilots, even if official observers, is never acceptable.

If you do not round a TP correctly, the badge attempt is immediately invalidated and there is no point in continuing the flight except for the fun of it. It was with much regret that a 500km triangle had to be rejected last year because the pilot's photo of his first TP was taken no more than 0.5km outside the zone.

In Part 2 I will deal with photographic evidence, barograph traces and the different options for attempting distance legs. In the meantime may I remind you that a new green form has been introduced for submitting your badge claims. The fee payable to the BGA is £3 per leg (a simultaneous Gold distance and Diamond goal counts as two legs, but Gold duration is awarded *gratis* automatically with the 5hr Silver duration).

Your Letters



HIGH TOW

Dear Editor,

I noted with interest Bill Scull's illustrated article on the "Right position on tow" in the December issue, p259, and heartily agree with the BGA directive.

A "bonus" not mentioned was effectively demonstrated to me during a check flight at the Johannesburg Club about two years ago in very turbulent conditions. It is much smoother in the "low tow", especially below the slipstream. The locals, like the Australians Bill quoted, go into the low position from take-off and change to the level or high for the release.

VINCENT GRIFFITH, **Burnham-on-Sea, Somerset.**

AEROTOW UPSETS

Dear Editor,

I was particularly interested to read Bill Scull's article on Aerotow Accidents in the last issue, p10, because in both recent fatalities the glider was a K-18; for the last three years I have owned a K-18 which is used extensively for club flying by early pilots and does not have a nose hook.

I feel that there is a critical factor which is not mentioned in the article, and that is pilot weight and aircraft C of G position.

It is vital that inexperienced pilots do not fly anywhere near the aft limit for the C of G (Min cockpit load). With the C of G further forward the glider will be much more stable making the stick forces higher, and the nose heaviness will provide additional elevator range to control any nosing up tendency.

When we heard of the recent accidents, Derek Piggott (with my complete agreement) put an arbitrary Min cockpit load for aerotowing on my K-18 of 155lbs, compared with the placard minimum of 90lbs which we still use for wire launching.

When wire launched with the C of G near the aft limit, the K-18 in common with many gliders will hold the full climb attitude with the stick on the forward stop; in other words you cannot get the nose down with the stick alone, you have to release.

We have a club owned K-6CR on site which has had several incidents with light pilots, including one classic upset which the tug pilot survived because it happened just high enough. The machine is now being fitted with a nose hook.

BILL DEAN, **Lasham.**

Bill Scull comments: Recommended Practice (RP) 12 (Laws and Rules for Glider Pilots) reminds pilots and instructors that "gliders C of G towards aft limit" is one of the factors "which may cumulatively contribute to a hazardous situation".

TIGHTEN UP FLYING STANDARDS

Dear Editor,

The proposal to mount nose hooks in all sailplanes new or old has not hit the nail on the head. The problem is one of lack of training, briefing and supervision. No amount of technical alterations in sailplane design can make up for poor flying practices.

Has the BGA considered the cost and inconvenience of the 99% of people who find aerotows no problem at all? Also what has happened to the development of new tug hooks? Please don't penalise the majority for not identifying the root cause.

To take the BGA's argument one step further; why don't we move the belly hook further forward at the same time? This is bound to make winch launching much safer as it will prevent those dangerous rocket launches which we all know cause many accidents. While we're there let's ban the all flying tailplane. Some people could get into a nasty PIO situation.

Seriously, leave the glider hooks alone and let's get into the business of tightening up on our flying standards.

CHRIS MARREN, **Aboyne.**

Bill Scull comments: Chris is right that the main problem is "lack of training, briefing and supervision." The trouble is getting the message to the rank-and-file instructor. How many CFIs have standardised their instructors on the recommendations made in the last S&G? How closely are logbooks being scrutinised for aerotowing experience and recency?

So far as the new tug hooks are concerned development work continues. The designs tested so far do not afford the desired protection. Meanwhile tow on nose hooks whenever possible and, if in doubt about the pilot's experience or recency to cope, dual check him or her using the C of G hook on a two-seater.

WHAT AN IMAGE!

Dear Editor,

I recently came across the following line in a book by Michael Packe entitled **First Airborne** (Secker & Warburg Ltd):

"Most glider pilots tend to be handsome because of bursting vigour and faultless nerves."

Where did I go wrong?

PAUL LAYZELL, **Tring, Herts.**

GLIDERS AND MATZ

Dear Editor,

I read the article by Chris Terry in the last issue, p21, with a mixture of incredulity and horror. Here is an RAF officer saying that RAF pilots fly around on good gliding days without looking out, in the direction they are travelling, for distances of up to 10 miles! He admits that gliders do not always show up on radar. This is surely irresponsible flying on the part of those pilots who appear to believe that they have the sole rights to weekday airspace.

Chris Terry should wake up to the fact that on gliding days there are likely to be more gliders flying than military aircraft. Indeed from the examples quoted the gliders outnumbered the Tornados by 3:2. He suggests that glider pilots should plan their routes to avoid service airfields. Has he any suggestions for the gliding people at Bardney, Lincs?

The military have enough airspace already and use other people's without warning. He should come to Aboyne and count the military aircraft that infringe our patch.

My message to Chris Terry and his jet jockeys is the same as that presented at all of their flying briefings. "LOOK OUT!"

L. E. N. TANNER, **Aboyne.**

THE DROP-OUT FACTOR

Dear Editor,

The drop-out rate in my own club is of the order of 15% pa. There are no doubt various reasons for that, but I feel the main one is The Price (with apologies to John Alway in the October issue, p214), coupled with too few opportunities to fly.

When Bronze C stage is reached it is almost obligatory for a pilot to join a syndicate to get the sort of flying he needs at the right time of the day. In these financially restrictive times, however, his disposable income may be just sufficient to cover his gliding expenses (travel, subscription, launch fees and soaring charges), leaving nothing for buying into a syndicate and paying for Cs of A and insurance, a move which will only save soaring charges.

It seems a typically British concept that we share club facilities (field, clubhouse, launching, training, early solo machines) but when we become established pilots we are expected to "go private" and own an aircraft. Scanning through the annual statistics in the last February issue, p22, the dearth of club single-seaters in this country as compared with Germany (see Rachel Duncan's letter in the December issue, p281) has meant very cheap flying for the Germans and much more expensive flying for ourselves.

I often think of those promising, invariably young, pilots who have given up and I think I know the reason why. Perhaps a greater emphasis on club aircraft might have kept them flying.

DAVID ROBERTS, **Taunton, Somerset.**

ADVICE TO NEWCOMERS

Dear Editor,

Perhaps Mr George (see the letter in the December Issue, p281) should take up a sport that doesn't require him to help anyone else in its pursuit, *eg* golf, Ludo etc.

I too have a passion for flying and have recently started gliding with the Wolds GC. Perhaps some clubs may be difficult to become "part of" but isn't this the fault of the newcomer? I soon realised that to be accepted I had to get involved in all aspects of running the club.

Mr George may now realise that being a member of any gliding club entails more than arriving at 10am, getting three flights by 11.30 and leaving at midday. Out of the first six full days I spent at Wolds only three were

good enough for flying. The rest were spent digging holes, repairing fences, clearing rubbish, even mixing concrete while others were busy doing a thousand and one other jobs necessary to maintain the very fabric of the club to keep it running safely, smoothly and efficiently.

There is perhaps only one thing to say to newcomers — get involved and you'll enjoy it.
SIMON PARKER, **York.**

A PAT ON THE BACK

Dear Editor,

There has been a great deal of debate in your columns recently concerning the public relations aspect of the British gliding movement. As a non-pilot and therefore as an outsider, may I place on record my admiration for the marvellous PR job done by the many members of gliding clubs that I have chanced to meet in pursuance of my hobby.

I am one of those strange people to be seen wandering around gliding sites taking photographs, peering into cockpits, noting down registrations, competition Nos, etc. Without exception, all members of the gliding movement I have spoken to, from the humblest *ab-initio* to some of the top competition pilots, have been both friendly and helpful. Thank you all very much.
SIMON PALMER, **Calcot, Reading.**

USE AND CARE OF PARACHUTES

Dear Editor,

Since living in Scotland I've become closely involved with a parachuting centre and recently sold a "jump pilot's" parachute to a glider pilot. His wife, who is learning to glide, said that when she asked her instructor how to use her parachute, she was told "Don't touch it, you don't need to know!"

Unfortunately this didn't surprise me having been brought up in gliders (Devon & Somerset GC). I find this attitude all too common. But please, instructors, tell people how to use and look after their parachutes. If you don't know, then find out because that lump of fabric is designed to save your life.

You must treat it with respect. Don't leave parachutes out on the grass or wings, or anywhere they will get damp or cold for if (God forbid) you have to bale out the canopy won't open if it is damp.

Always DI your parachute as well as your glider and if it isn't in a satisfactory condition, then get another one. Get your rigs opened and packed at least every six months. This is essential because if packed for too long the "kicker springs" get tired and it will not open.

If you have to use your parachute in an emergency, roll out of your glider and open your canopy as soon as possible. Don't do any counting etc, grab the rip cord with both hands and pull forwards sharply. Check your canopy and look where you are going. When you land, keep your feet together and bend your knees. Remember, don't delay in opening. That ground is very hard!

Here is a little horror story. One of our experienced skydivers visited an established gliding club with the intention of trying gliding. On seeing a pile of parachutes he asked about them and was told: "They've never been looked at, we don't bother."

He was horrified and offered to open and repack them. On pulling the ripcords, nothing happened. The canopies were damp and mouldy and the springs were worn out. Each of those rigs, which were sent away and needed a lot of attention, would have been a fatality if used.

Information on how to care for and use your parachute can be supplied.
KAREN FITZGERALD, *Grampian Skydiving Centre, Fordoun Aerodrome, Kincardineshire, Scotland.*

A LETTER TO PLATYPUS

Dear Platypus,

It always astonishes me that there are some women who actually complain that their menfolk spend all their waking hours gliding! The benefits are so enormous that I am surprised S&G isn't innundated with letters of tearful gratitude. I thought you might like these, most of which are true:

"Gliding saved my marriage. We were going to get a legal separation when a friend introduced him to Otfurs." *Canvey Island Pilot.*

"He's so lovely to live with. I hardly see him at all these days." Mother of ten (youngest now aged seven).

"Friends say I look years younger since he bought into a syndicate." OAP.

"He does his thing and I do mine." Christine (Tel 0241-4444).

"He used to hate my mother but now he's turned on the CFI. Mummy sends her regards." Edna — South Wimbledon.

"I see so much more of the countryside now he's trying for his Silver distance. Unfortunately it's only in 50km steps." Hopeful — North Weald.

"Now *he's* got problems with sink!" Overworked and underpaid.

"Cloud Nine is 5000m above release height." Annabel (42-22-36).

"I don't care what happens at Husbands Bosworth and Nympsfield just as long as he brings home the Diamonds." Name and address supplied.

"What better way to save on the housekeeping money! Is Denis too old to take it up?" MT — Westminister.
PAM ROLLASON,
Another wife from Chelmsford, Essex.

SOARS BY NAME, SOARS BY NATURE

Dear Editor,

You wouldn't believe how interesting and sometimes funny names can be.

I'm a glider pilot from Eagles GC, Detmold, W. Germany and recently wrote a letter on the subject to a local military newspaper. Weeks later the news editor phoned to say he was apprehensive about publishing it — the name bothered him.

During my recent PPL medical the doctor gave me a sharp look when I gave my name. We laughed about it afterwards and I think I persuaded him to come and have a flight but the poor chap always has a cold!
GRAHAM SOARS, **Detmold.**

50 YEARS AGO

A. E. SLATER

Even in 1935 we were still being plagued by quarrels about that subsidy. Philip Wills worked for "our" side and I have a sheaf of letters from him saying what stage in the negotiations had been reached. Eventually the London Club got £4000 of the first annual instalment of £5000 mainly to pay for its clubhouse, which cost £3000, but the whole of this sum had been guaranteed by its members, a fact which impressed the Ministry of Civil Aviation greatly. However, things "looked better" the following year.

The Midland Club had secured its site at last and awaited its clubhouse-hangar. The Yorkshire Club was preparing for its second holding of the Nationals.

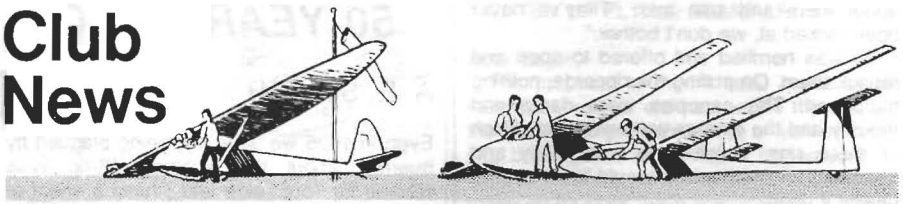
Early in the year an up-to-date textbook on waves was published and reviewed. Throughout the last century nearly everybody seemed to think that the first attempt at human aviation would be made in an up-current over the windward side of an ocean wave: this was ridiculous because a fully-grown wave travels nearly as fast as the wind.

In May we started publishing a series on "Sailplane Construction for the Amateur" which people had been clamouring for but until then nobody would write. The author, W. Butterfield, was a founder of the Furness Club, and during the previous war had worked at Barrow in Furness on designing rigid airships in an attempt to get even with Count Zeppelin.

FORTHCOMING EVENTS

MAY 15-22: Hahnweide International Contest, Kirchheim-Teck, West Germany.
JUNE 1-9: Western Regionals, Nympsfield.
JUNE 11-20: US 15 Metre Class Nationals, Cordele, Georgia.
JUNE 15-23: Open Class Nationals, Lasham.
JUNE 15-23: Lasham Regionals.
JUNE 29-JULY 7: Competition Enterprise, Sutton Bank.
JUNE 29-JULY 15: Trans-European Rally, Angers, France.
JULY 2-11: US Standard Class Nationals, Hobbs, New Mexico.
JULY 13-21: 15 Metre Class Nationals, Booker.
JULY 13-21: Booker Regionals.
JULY 16-25: US Open Class Nationals, Hutchinson, Kansas.
JULY 20-28: 13th International Vintage Glider Rally, Amlikon, Switzerland.
JULY 20-AUGUST 8: Inter-Services Regionals, RAF Hullavington.
JULY 21-AUGUST 1: 1985 World Cup for Mountain Gliding, Vinon, France.
JULY 27-AUGUST 4: Northern Regionals, Sutton Bank.
JULY 27-AUGUST 4: Dunstable Regionals, Dunstable.
JULY 28-AUGUST 12: World Championships, Rieti, Italy.
AUGUST 17-25: Enstone Regionals.
AUGUST 10-18: Standard Class Nationals, Husbands Bosworth.

Club News



Copy and photographs for the June-July issue of S&G should be sent to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH, telephone 0223 247725, to arrive not later than April 5 and for the August-September issue to arrive not later than June 6.

February 6, 1985

GILLIAN BRYCE-SMITH

ANGUS (Arbroath)

After a lapse of a few years, we would like to inform readers that we are still alive and well. Our club fleet consists of a K-7, Bocian, Pirat and, our most recent addition, an SF-34 bought with the help of a Scottish Sports Council grant.

We are planning another April flying week after the tremendous success last year when there were many Bronze and Silver legs due to the excellent soaring conditions.

Many thanks to Boyd McLaren for his eight years of hard work as chairman and congratulations to his successor, Mike McGreevey. Congratulations also to Ron Davidson (Vega) on his 300km Diamond triangle from Condor for which he was awarded the Bob Kerr memorial trophy.

B.J.M.

AVRO (Woodford)

It has been a good year with 5000 plus launches and many badge claims, the most notable probably being by Paul Bibby, who flew Silver distance in his Grunau Baby, and Bob and Pauline Watson and Jeremy Nimon who gained Gold heights.

Our AGM in November was chaired by Charles Mosefield who was presented with a silver trophy in honour of his ten years' in office.

Our site is now shared by the newly formed Avro Aero Club who are operating a Piper Tomahawk and allowing our members to achieve their PPLs on site.

We have just celebrated a record December with a Bronze leg going to Duncan Allen in wave, all below 1200ft.

S.T.

BATH & WILTS (Keevil Airfield)

Quite a few hours have been logged on our ridge, formed by the NNW edge of Salisbury Plain. January 1 was particularly good when Ron Lynch and Andy Smith showed what is possible by ridge soaring to Alfred's Tower and back, an O/R of over 70km!

At our annual dinner trophies were presented to Vince Griffiths in recognition of his many years service and to Andy Smith for the most notable 1984 flights.

Congratulations to Andrew Davis on being selected for the World Champs and to Chris Lockyer on going solo.

P.D.

BLACKPOOL & FYLDE (Chipping)

We're all rather glum here in Chipping
The winter's been dreary and dank.
Although we've good drains
They've not coped with the rains
And in puddles the tractors near sank.

So we took a 13 up to Walney
Helpful and kind was our host.
But four hours of driving
And dark soon arriving
Proved too much a hassle for most.

Well, someday this winter will finish
Will the moaning all stop? Not a bit.
On our newly dried land
Herds of cows will soon stand
And again we'll be covered with cow-dung.

PS. Seriously though, we would like to thank the Lakes GC for making our K-13 and many of ours members very welcome during the winter. And blame Platypus for the poetry — he did ask for club news in rhyme.

V.H.

(Platypus has lots of ideas and perhaps this isn't his best! Amusing as it may be once, please, club news reporters, don't emulate. It takes up too much space. Ed.)

BORDERS (Milfield)

We had some excellent wave for our November flying week with Gold heights for Ken Fairness and Colin Sword and many good climbs made without barographs, including Ian Lowes' fifth time to Gold height.

On November 30 Phil Marks and Peter Carter (Twin Astir) had to break off the highest climb of the week at 19 700ft owing to extreme cold and icing. We only had two launches that day due to violent turbulence.

The dinner-dance was again well attended with Jim Hogarth, chairman, giving a speech.

Work on the new site has slowed down in the wintery weather although some continue the clearing up in dismal conditions.

T.P.

BURN (Burn Airfield Nr Selby)

The miners' strike is having a serious effect on us — they have switched off our local power stations and we now have to be content with 5min winch launches. We are wondering if we can include a clause in our lease with the CEGB linking the rent to the amount of coal burnt by the power stations.

The increased ground time has resulted in the completion of our new winch much to the delight of everyone below 5ft 9in who must now be excused winch duty due to its mammoth proportions. There has also been time for a series of gliding lectures.

Steve Naylor witnessed his wife Lesley going solo, our second Burn trained female pilot.

Our clubhouse and hangar are now in use and our thanks to Joe Millward for designing such superb facilities and for his patience in dealing with our lack of understanding of planning processes.

V.F.F.

CAMBRIDGE UNIVERSITY (Cambridge and Duxford)

Winter flying started with a successful social evening on November 10. The weather remained unseasonable until the middle of December with plenty of flights including one by Peter O'Donald of 58min on November 24. Congratulations to Peggy Allcott and George Cooke, the last to go solo in 1984, and to Ed Pearson and Don Lees, the first to solo in 1985.

We are now into our Golden Jubilee year and hope to see or hear from past members.

G.K.F.

COTSWOLD (Aston Down)

Winter flying was much curtailed by the weather but we compensated with a number of parties in the control tower.

Our series of talks have been very successful and well attended, most notable being by Alex Waldron who flew gliders during the war. Their aim was to get down as quickly as possible once off tow, losing 2000ft in two minutes in a seven ton glider carrying a tank.

Congratulations to Rob Thompson and Graham Turrell on going solo.

We have a new CFI — Trevor Wilson has handed over to Ruth Housden to concentrate on his own flying and our thanks to him for five years' hard work. (See also BGA news.)

L.M.B.

COVENTRY (Husbands Bosworth)

Our annual dinner was an outstanding success with Ken and Hiliary Stewart as guests of honour.

The trophies were awarded as follows: Founders trophy (best progress by a female) Ann Wildman; *Coventry Telegraph* cup (best progress) Terry Hurley; Kettering trophy (first Silver C leg in a club glider) Bill Thorpe; Migration cup (first closed circuit cross-country exceeding 100km) Nick Hackett; Group cup (best points total for a glider flown by two or more syndicate members) Claude Woodhouse and Guy Gothard; Clipston Mutual Venture trophy (best two-seater performance) Gary Wills and Roy Bains; Barge trophy (most meritorious flight in a glider with a handicap of 70 or less) and the Jimmick trophy (most meritorious performance) Lou

If some of your names are wrong in these reports, then blame the club news contributors! Usually most of you sending handwritten copy are good about printing names, but this time rather a lot of you have forgotten and we've had problems working out what some of them could be. Also, and this is a relatively new problem, three reports arrived minus the name of the club. However, full marks to 98% of contributors for keeping our tiresome deadlines. This is much appreciated. The copy date for the next issue is April 5.

Frank and Norman James; Task Week tankard (best Club Class performance) David Booth; Challenge shield (best task week Open Class performance) Claude Woodhouse; Club (National) Ladder trophy, Roger Goodman; Open (National) Ladder trophy, Mike Costin; Boomerang trophy (longest closed circuit from site) Barry Atkinson; President's cup (longest club glider flight) Joe Horwood and the Grotty Potty (biggest faux pas) Alan Kangurs.

Special thanks went to the Ladies committee for their fund-raising efforts organising parties etc and for their catering.

Congratulations to Neale Ward on going solo and to Neil Jones on gaining his Bronze C three months after going solo.

Our task week is May 25-June 2 with the Standard Class Nationals from August 10-18.

N.B.

CRANFIELD (Cranfield Airfield)

We had a fairly quite winter with our efforts divided between fettling and flying. The club Bocian has undergone a major transformation and is now a tasteful shade of blue with dazzling white wings. The Tiger Moth flew again for the first time in a long while in September and we look forward to the battles between the prop swingers and a warm Gipsy Major engine in the summer.

From April 1 (appropriate date) parachuting will commence. While we walk round practising our Tony Hancock impressions and give renditions of the "Test Pilot", will you, our potential visitors, please keep your eyes peeled — we're not the quiet aviation backwater that we used to be.

D.P.S.

DERBYSHIRE & LANCASHIRE (Camphill)

A particularly arctic winter in the Peak District produced numerous unflyable Sundays although several Saturdays have been flyable, albeit with light easterly winds. This has meant little soaring but the less experienced have had some solo flying and Phil McKiddie and Tony Wade went solo in January.

A busy calendar is taking shape for summer with John Williamson booked for lead-and-follow flying during one of our club weeks. We bought a K-18 from Dunstable and a new Tost winch is coming from Germany.

J.R.H.

DEVON & SOMERSET (North Hill)

At the December AGM confidence in the committee was expressed by re-election of all retiring members, after their decision to invest the equivalent of a K-21 in a new winch had been discussed and approved. This will give us an up-to-date version of our old winch, designed over 20 years ago by David Clayton and now modifed by him to cope with the anticipated demands of the coming 20 years. Mike Robins replaces Andrew Blackburn as secretary.

Pots were awarded to Dave Reilly and a few others! He won the trophies for the best cross-country, best place in a BGA competition, for winning the task week and the club ladder and the two-seater challenge. Dave Brummitt gained the shield for best progress; Tim Gardner the best height gain award and Ian Beckett "the Wily Old Bird" for his Duster.

Les (R. G.) Hill has soloed and Peter Moverley (K-6ε) achieved his five hours at Portmoak in October. Tony Stockwell has a full instructor rating, giving us for the first time in years a majority of full Cats.

K-13 prangery has been all too frequent and as we need an adequate two-seater fleet with an influx of new members, a third two-seater could soon appear.

We have two task weeks (June 3-8 and August 12-17) and six course weeks which are filling well. Aerotow operations should be improved when the new tug hangar is commissioned.

I.D.K.

DORSET (Old Sarum)

We had a party to celebrate the construction of our hangar followed by several successful social evenings in our clubhouse.

We have added another K-13 to the club fleet and this, with the sale of one of our Austers, gives our R&D team the incentive to produce the long awaited new winch for the season.

Our annual dinner in February was a resounding success and Julian Rees was congratulated on completing his Gold C, despite having deserted us for Lasham. Congratulations also to John Martin, Chris McPherson and Paul Slade on going solo and converting to the K-8, Paul being our youngest solo pilot at 16 years.

A.W.T.

ENSTONE EAGLES (Eastern Airfield)

This winter must have been the quietest on record with low cloud and then snow keeping us grounded. However, the ice was broken when Jonathan Kingerlee soared to 11 700ft in wave over Chipping Norton, nearly breaking the club altitude record.

With only four places left, the Regionals looks set for success again.

G.D.

ESSEX (North Weald)

We kept flying throughout the winter. John Bridge tested the January thermals with a flight of over an hour on the 5th whilst Tony Manwearing did just 40km.

John Bailey and Ken Durno have their full ratings.

On January 26 many members, past and present, enjoyed a reunion party to celebrate the 10th birthday of our control tower clubhouse with drinks at 1975 prices.

The annual dinner-dance was in February and our thanks to the organiser, Mike Audritt.

P.W.B.

ESSEX & SUFFOLK (Whatfield)

A wet winter has caused us to conserve the grass strip, 24m at the narrowest part, by either not flying in the wettest conditions or by using the edges only. Pilots spot landing on the centre line have been press-ganged into an airstrip maintenance session.

The annual trophies have been won as follows: 100km club triangle, Peter Wilby (90km/h on handicap); club ladder, Colin Smith and for the longest flight, Tristram Llewellyn-Jones.

R.C.A.

HAMBLETONS (RAF Dishforth)

We had some good wave in the autumn, giving Diamond height to chairman John Jones, Gold to Jerry Niman and Claire Jarvis and Silver to Roger Mann and Richard Kalin. Following this the winter was uneventful, with an unprecedented series of fogs and drizzles before Christmas and some pleasant flying over the snow afterwards.

Several site members and visitors enjoyed an excellent dinner following their flying on Christmas Day: thanks yet again to Jackie and Mandy.

J.P.

HEREFORDSHIRE (Shobdon Airfield)

It's been a quiet winter with occasional flurries of activity. Hill soaring has been exploited on those horribly frequent low cloudbase days, although some 10 000ft days have been recorded. Dave Fall has attended an instructors' course and Dennis Johnson has his instrument rating.

Our last Blanik has gone which leaves us for the first time with an all-glass fleet.

D.J.

INKPEN (Thruxton Airfield)

The gloss was knocked off 1984 by an unexpectedly high maintenance bill on our tug. This, coupled with other changes, has kept us busy during the winter.

But our progress has been affected by the loss of key members taken away by their careers. The departure of Andy Durbin and his wife Trish, who are returning to work in the USA, deprives us of a very committed committee member and instructor. We thank him for his contribution and with envy wish him well in his gliding in sunnier climes.

Our Blanik is having a C of A with a number of members helping Pat Hudson in his new role as maintenance co-ordinator. The much loved Oly has been sold as part of our plan to improve the club fleet.

Midweek flying has continued and we are planning a seven day week operation this season with a course instructor available.

I.D.

KENT (Challock)

Our overhaul of club equipment has progressed well. Ron Cousins has built a control tower and Joan and her staff have redecorated the clubhouse.

We welcome John Harvey, a member and instructor of many years standing, as our senior course instructor. Tim Gardiner, treasurer, isn't predicting any major increases in the 1985 tariff which should encourage new members.

Our task week is from August 10-18 and we would be pleased if other clubs participate.

J.B.

KENT MOTOR GLIDING & SOARING CENTRE (Manston)

After a tremendous effort from all members in lobbying the local council's support against strong local opposition, we have planning permission for our new site at Waldershare Park near Dover on a one year trial basis so that we can convince the locals that gliding really is innocuous.

Once we move at the beginning of April we will change our name to the Channel GC (with a new phone No. Dover 824888) and will operate seven days a week. We look forward to some real soaring from this inland site. The

EVER FANCIED A NIMBUS 3 IN TEXAS??

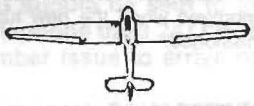
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white cliffs of Dover and Folkestone are within reach and a few experimental trips in the Motor Falke have proved them to be a good source of lift.

We look forward to receiving many visitors but ask pilots to contact us before flying in so that we can point out the sensitive areas to avoid.

E.S.

LAKES (Walney Airfield)
The new year brought plenty of wave soaring with wave to 10 000ft plus on three consecutive flying days. On December 31 Keith Butterfield took the club's height record to 19 000ft with a Diamond height climb from 1700ft. Next time he'll take a barograph!

The visiting Foka did some alternative wave soaring when vandals pushed it in its trailer into the pond; fortunately the aircraft can be restored.

Ray Gardner has flown the Capstan solo and we are pleased to have the Blackpool Club's K-13 wintering on the site.

Our course preparations are well in hand with many improvements; early bookings are advised.

E.K.

MENDIP (Weston-Super-Mare)
1984 finished with some excellent ridge soaring. Our 25km SW ridge and 15km N ridge provided some interesting flying. Ivor Cainey achieved his 5hrs with Bronze legs for Dave Maddicks and Mark Harris. Graham Taylor and David Scuthorpe have recently gone solo and Chris Crabb and Phil Hogarth are new instructors.

A second Dart 15 syndicate has been formed giving us ten privately owned aircraft.

H.P.

NENE VALLEY (RAF Upwood)
The circuits and bumps season is ending but unfortunately we've had rather a lot of the latter with John Young and Dave Jordan doing sterling work keeping the club flying. There was a good response to the February non flying weekend to get the site and aircraft ready for the season. Our thanks to Gordon Reece and Lee Parker for letting us use their aircraft during the C of A work and other times of peak demand.

Congratulations to Ivan Greenfield on going solo. We said goodbye to John and Les — Chris Sherlock is now CFI — and farewell to Werner Leutfeld who, as chairman, has seen the club blossom and lead us through some turbulent times.

The AGM was well attended and Pauline Reece is now the social member and Lee Parker the PR officer. The hunt is on for a cheap single-seater and a K-7 fuselage.

The Peter George airline now boasts two gliders, D. J. keeps mentioning his L-Spatz and we might soon have our first privately owned glass ship.

The Bronze C lectures have finished; some members are getting aerotow experience at other clubs and the expedition to Dishforth was enjoyable though fogbound. We were made extremely welcome and hope to return at Easter.

D.H.

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B.G.A., C.A.A., P.F.A. APPROVALS

NEWARK & NOTTS (Winthorpe Airfield)
The gloom of winter was made worse by the valves in the winch beating in the heads of the pistons. Frantic work still meant five weeks without flying.

A bright spot, however, was the presentation dinner. John Sentance, CFI, won the height trophy; Derek Heapey, a relative newcomer showing his ability as a spanner, the chairman's award for his efforts along with Ron Cousins; Rance Noon his own shield for cross-country flying and Dave Foster the wooden spoon for the shortest attempt he could be seen landing from the launch point, and in a Comp too!

The clubhouse has had a refit with some splendid tables and chairs and is being redecorated.

D.P.

NORTH DEVON (Eaglescott)
Last year saw great advances — our hangar completed with a concrete apron and a skydiving section built on the back, a toilet block and the clubhouse, kindly donated by David Winton, which should be ready soon.

Again our thanks to the passenger carriers from clubs as far as Teesside. For the second year we have given winch launches to 2500 schoolchildren in our two Bergfalkes, supplemented occasionally by the Grob 109A. For heat waves we may even go back to open cockpits with one ex-RAF T-31!

We welcomed many new members, some returning to gliding after a long lay-off. Gordon Richards, deputy SATCO at Plymouth Airport, re-soloed and is flying his K-10 and Duncan Andrews his Kirby Kite. Others to solo include Martin Edworthy and David Blake in their Bergfalke and Tim Riddle, aged 16, and 17 year-old Kevin Thompson.

Robin Boyes, Martin Thompson and Brian Hillman gained their PPL SLMGs, tested by George Collins. Others to solo in the Grob were Ron Crossland, Barry Young, Bryn Andrew, Jim Duthie and Rod Lock who now has a Grob 109B.

We look forward to seeing old friends and more passenger carriers this season.

B.P.

NORTH WALES (Pen-y-Parc, Nr Holywell)
Precious little gliding is being achieved because of the state of the ground for when the going gets soft the farmer prevents us flying for fear of ploughing up his pasture with the winch and retrieve vehicles. We managed to get airborne in the recent cold spell with a frozen field and a couple of inches of snow and Robert Vaughan became our first solo of the year.

Work has now started on the Holywell bypass and level poles have appeared across our field lopping off approximately 200 yards. The new field is not yet ready to take us so we are operating with a reduced take-off run and still managing reasonably well unless there is a no wind condition.

Tony Knight has once again come to our rescue during these long winter months and is putting on a very interesting and informative series of slide shows with commentaries.

J.J.M.

OUSE (Rufforth Airfield)
Congratulations to Dave Appleby on going solo. Bob McLean has opened his new light repair shop within hailing distance — welcome Bob and Karen.

According to Richard Thompson's statistics our number of launches will catch Lasham in seven years and membership in five!

The course season starts shortly when we will be operating seven days a week all summer. Air experience flights will bring interesting people again like last year's female Rugby League referee who freely admitted getting into the bath with the the men after the match.

The in thing at Ouse are yellow Landrovers — we have ten.

R.G.M.

PETERBOROUGH & SPALDING (Crowland Airfield)
Thanks to Tony Fidler's efforts, our annual dinner-dance was well supported with Mike Jefferyes as guest of honour.

Eric Arthur retained the Club Ladder cup but John Palmer was a well-deserved close runner-up proving pundits must work hard to stay ahead of a determined novice. Chris Curtis won the Fidler trophy for the fastest 100km triangle and, as usual, we had silly prizes for silly people from which nobody is immune!

An industrious team led by Mike Ainley are setting up a new holiday course operation and the publicity machine again swings into action.

We host the first round of the East Anglian Inter-Club League and several expeditions are being planned.

K.R.D.

ROYAL AIRCRAFT ESTABLISHMENT (Farnborough)
After our absence from these pages for some months there have been far too many "firsts" to mention.

As has become the tradition, a few brave souls ventured forth on Christmas Day and they all flew before rain stopped play. We are looking forward to a returning upsurge in enthusiasm for 1985 with an active bunch of newcomers breathing life into the club.

C.J.F.

SHALBOURNE (Nr Hungerford)
Despite the winter we have had a lot of flying with our ridge working and on New Year's day one glider contacted wave.

Our series of lectures had a good start with talks given by Derek Piggott and John Williamson, both evenings attended by members from more than 12 clubs. The Christmas dinner was also a great success and our thanks to the organisers, Angi and Steve.

J.S.

SHROPSHIRE SOARING GROUP (Sleap)

We had a good year with a full membership of 12 gliders — two Kestrel 19s, two Mosquitoes, two Vegas and a Nimbus 2, ASW-19, Twin Astir, Cirrus, Std Cirrus and Hornet, plus a Chipmunk tug — and 31 members.

Men of the year were Tony Adams for a Gold distance and Diamond goal plus arduous work as treasurer; Hans Wiesenthal for achieving around 120hrs; Vic Carr for flying in October after a hip replacement in September; our tug pilots, including Peter Whitehead, head of our ministry of administrative affairs and Barry Bates who keeps trouble out o't mill. Also a big hand as woman of the year to Utta Wiesenthal, awarded 110% for efficiency as Hans' crew member and keeper of logs and field accounts.

Ray Jones and Frank Humphries have their Bronze Cs flying the Twin Astir, Ray also gaining two Silver legs.

Several members visited Calgrath and appreciated the site and co-operation of the resident group enough to consider returning.

Experience shows the Group TP photography needs brushing up.

A big sadness was the passing of Bill Mack, our former chairman. Bill was the kindliest person. He flew troop-carrying gliders from our site during the war and landed at Arnhem. He was then captured and escaped three times.

Bill flew the Hornet and the Twin Astir. Margaret, his widow, has kindly made a donation to support a best badge flight award. Bill was a founder member having started — or I should say restarted — at the Long Mynd in 1968. We shall always remember Bill.

Our annual fortnight at Chetwynd airfield was a success helped by good weather with only two days of rain. Our friends from Morridge came again. The most important contribution was the rubbish collection and sanitary work done by Mr Plum. RAF Shawbury is warmly thanked for its help, as always — eight times now.

Two members made an enjoyable trip to Minden, Nevada, USA (See Travellers' Tales).

P.L.U.M.

SOUTHDOWN (Parham Airfield)

We had a good start to 1985 with thermal, ridge and wave flying by the end of January. The cross-country book is already well in use with John Ward recording a very fast time for the Harvey-Harting ridge run.

Ken Stewart, BGA national coach, presented a very good lecture on "Safety and Cross-County Flying" which fitted in well with our regular and well-attended winter Saturday evening briefings. Our congratulations to Nick Barrie on his Bronze C.

R.A.W.

STAFFORDSHIRE (Morridge)

Alan Jones, our secretary, started 1985 well with a flight of over 1½hrs on New Year's day in his Oly 2B when wave was in evidence, though we could only reach the rotor whilst one of our Camphill neighbours was at over 16 000ft.

Our winter lecture programme was completed with the last two evenings dedicated to Bronze C subjects in preparation for the new season. Our K-8 is back after a major refurbish.

Our involvement with the local Sports Council and the "Ever Thought of Sport?" campaign resulted in talks on gliding being given to three local groups on evenings

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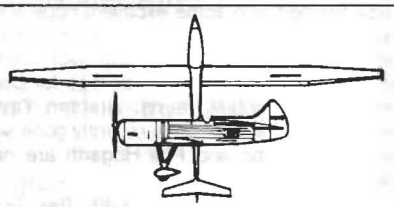
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devoted to "unusual sports". These were very successful, not only in stimulating a number of inquiries about membership but also in giving the lie to the popular view that gliding folk have two heads and own oil wells.

B.G.

STRUBBY (Strubby Airfield)



A group from the Midland Bank enjoyed a flying evening at Strubby GC. The photograph by John Reed shows Griffin, alias Mark Gibbon, about to join Roy Partington for a flight in the T-21.

SWINDON (South Marston)

Uncertainty continues about our future. South Marston airfield is to be sold for industrial development and so should be viewed with extreme caution by would-be visitors.

At the moment we plan to aerotow from the grass area on the NE corner of the airfield while the hunt continues for a new site. We are investigating the possibility of amalgamating with another club.

P.A.M.

ULSTER (Bellarena)

With more than 40 000 visitors the four-day Festival of Youth in Belfast's King's Hall in January gave us a bookful of inquirers' names on which to start a hard sell for memberships, courses and group air experience evenings. Our course programme may strain our purely voluntary resources a bit; if you're a fully rated instructor who'd like to help out by working a five-day Monday-to-Friday stint in June, July or August, and thus subsidise a soaring or touring holiday to sample the super conditions here, please give CFI Bill Craig a call on 0232 656334 and talk terms.

A surprisingly healthy financial surplus in 1984 — the first in the writer's 16-year memory — has replaced an overdraft with a savings account holding a modest nest egg towards possible site purchase when it goes on the market within the next few months.

On May 6 we're running our first organised open day. Before then, we are looking forward with pleasure to the visit of national coach Ken Stewart with the BGA Super Falke to support our nine-day Easter camp and task week. We'd welcome other visitors from mainland GB, with or without wings. A simple phone call is all it needs and if you come without wheels too, we can easily meet you off the boat or aeroplane.

R.R.R.

VECTIS (Sandown Airport, Isle of Wight)

We should have our aircraft ready for the season and our thanks to Ken Taylor and stalwarts for making a fine job of the Blanik trailer.

S.M.

WELLAND (Middleton)

We are pleased Mike Till has been elected CFI and wish him well in the job.

Our thanks to Coventry GC for the loan of Alan Kangurs as a guest instructor over the past few months and to Alan for his efforts.

Some of our members enjoyed a recent visit to the Long Mynd and we thank the Midland GC for their hospitality.

R.H.S.

WOLDS (Pocklington)

Our holiday courses start soon and bookings are well underway with the evening visit programme filling up. Our new tea bus will be ready by the summer with the grass strips alongside the runways well established. Parties from other clubs are always welcome and can fly during the week when we have courses.

We have two syndicate gliders and two members are in the British team junior squad with plans for several entries in the Northerns and the Enstone Regionals.

Congratulations to John Young, Mike Thompson and Mike Skinner on going solo.

T.H.

YORKSHIRE (Sutton Bank)

Members and visitors took advantage of good hill soaring conditions during the winter with wave a welcome bonus on occasions.

The annual dinner-dance and presentation of trophies was highly enjoyable. It's always difficult to believe that the suave and sophisticated attendees are the same scruffy pilots and crew normally seen on the airfield.

We are delighted to host Competition Enterprise, starting on June 29 with the Northerns starting on July 27. Come and sample the delights of Sutton Bank during those weeks.

P.L.

SERVICE NEWS

ANGLIA (RAF Wattisham)

The winter brought the usual 90° crosswind and marshy conditions on the airfield but we struggled through with a new batch of instructors. Ted Richards is now an assistant Cat and "Mouse" Ackroyd and Keith Harsant are full Cats; Keith somehow managed to evade this honour during his 10 years and 700hrs as an assistant Cat.

At a very successful AGM in January we determined to beat 1984's figures of 600hrs and 4600 launches. Phil Turvil won the CFI's trophy.

Our first expedition within living memory is to Portmoak in March and all the aircraft, and some of the trailers, have spent much of the winter in the workshop, or on the bonfire, in preparation. The Sprite has recovered from some of its strange flying habits and we may soon be losing the "small, unfriendly wings" of the K-4. A Skylark 2 has appeared along with Colin Wheeler and Ted Hampson and we welcome Radar from Fenlands.

E.W.R.

BANNERDOWN (RAF Hullavington)

We are celebrating our 25th anniversary this year with a long weekend fly-in at Easter with a party and grand draw.

The trailer-building team have been doing wonders and we fitted out a new canteen/control bus in time for the Inter-Services Regionals which we enjoyed hosting. We have moved to a new hangar which is much better fitted out and positioned.

Congratulations to the new solo pilots including Trevor Keson, who now has a Bronze C, Paul Davis, Martin Abbott, Bob Cresswell and Lynn Turner. We've had a fair crop of Bronze legs and Pete Laws, Marylen Kay, Paul Davies, Eddie Wilkson and Andy Winton have Silver heights; Bob O'Hara, Phil Kitchen and Paul Mason durations with Silver Cs for Dave Pratt, Phil Sheard and "Nipper" Stonebanks. "Nipper" was our first pilot to gain Silver distance with an O/R (a 122km) — in fact he did it twice owing to slight TP photo problems!

Alan Quartly and Colin Hale have Gold distance and Diamond goals and Derek Findlay and Bryan Logan Gold heights.

At the AGM in November trophies were awarded to John Charlett-Green and Eddie Wilkinson for their hard work; "Nipper" Stonebanks for the most progress; Martin Abbott, best *ab-initio;* Paul Armstrong the Navigation trophy and Gerry O'dell for the best flight (a 300km in the K-18 during the Regionals).

Grp Cp Wally Mears, the CO, is posted and to mark our appreciation for all his help he was given a pot and a framed photo.

We wish good luck to all those who are posted, including Andy Winton, Paul Armstrong, Dave Pratt, Phil Sheard and Paul Mason.

V.R.D.

BICESTER (RAFGSA Centre)

This winter has seen lots of activity with flying at every opportunity. Our congratulations to Shelley Law on going solo.

Best wishes to Ian Hazel, who has left the RAF, and our thanks for his ground equipment work. Paul Steiner has left for a stint in the Falkland Islands.

At the AGM and party, trophies were presented to Mick Boick for his 500km attempt, Nick Murphy for his club work and the novice trophy was won jointly by our *ab-initios* from Henlow, Chris and Bob. A special trophy of a mounted propeller tip was presented to Vic Dawson for landing the G109 when the undercarriage collapsed due to structural failure.

S. & J.

CLEVELANDS (RAF Dishforth)
Our winter wave attracted 54 aircraft, rivalling the Inter-Services Regionals as the biggest military gathering of the year. Unfortunately most of the time was spent in the bar watching the freezing fog with only one flying day producing some gentle wave.

Our K-7 has arrived. Accepting it was the last job Andy Smart performed before leaving for southern England.

P.W.

CRANWELL (RAFGSA)
Since the last report we achieved our first 500km with a flight by George Foster (Nimbus 2) on April 4. We have also had many first solos; Meryl Jenkinson in her Eagle, Sue Hutchings, Neil Rushden, Amanda Fincham, Andy Radley, Jim Mills and Geoff Turner to name a few. Pauling Hewitt and Gary Moxham have their Silver Cs, Angie Tapson, Keith Tapson, Roger Smith, Mike Foster and Don Beech converted to the Astir and Jayne Lee has checked out as a tug pilot.

Several members competed in the Regionals and Nationals — most successful was Simon Hutchinson who won the Enstone Regionals' Sport Class.

Scott Harris had an eventful first solo in a motor glider when he had to make a forced landing in an adjacent field following engine failure on climb out. He handled this well and the Falke was towed back by car undamaged.

Ian Tapson and Barry Briggs gained assistant Cat ratings at the very successful course run by Syerston while the rest of the club sat in the fog at Dishforth. We did have wave on one day though when Keith Tapson gained his Silver height, the only badge flight of the expedition.

Finally we welcome Ski from Detmold, W. Germany.

J.L.

FOUR COUNTIES (RAF Syerston)
The year began well with wave soaring, eight days flying over the festive period and four new instructors, Martin Goodwin, Trev Goreley, Ian Tapson and Jenni Duignan, believed to be our first woman instructor. Our thanks to Bruce Tapson for the presence of the Falke and tug and to Ian Smith for helping ensure the course's success.

John Cook handed over as CFI to Graham Benniston. Thanks John for a job well done.

Dave Smith has recently gone solo in the Acro, much to John Richardson's delight.

A.F.M.D.

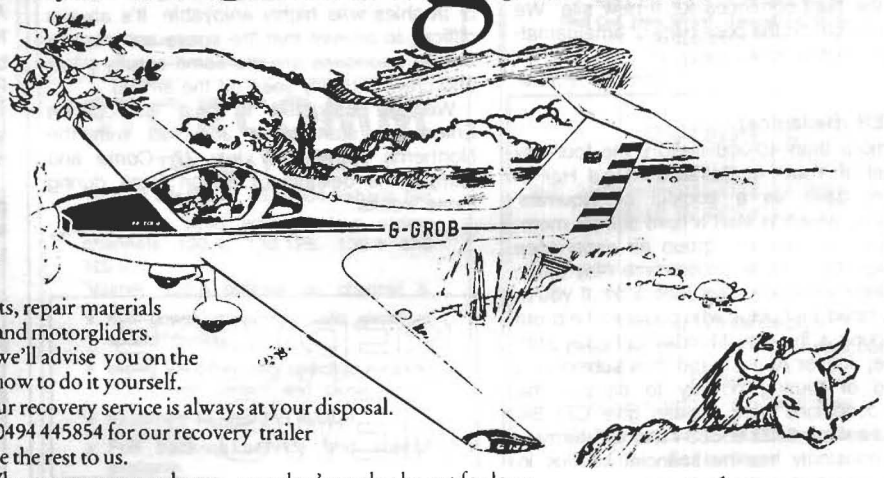
FULMAR (RAF Kinloss)
We had an interesting day on January 26 when the entire fleet was airborne in soaring conditions to 5300ft. The inland temperature was down to −20°C and with the sea at +2°C a land breeze effect was set up and the lift was static over the airfield with a northerly wind. Even the ATC were soaring!

Jim Francey and Willie McGregor went to Silver height without barographs and Eddie "Diamond" Shotton gained the first hour off the winch in the K-8. Calum McColl, at height near Aviemore on skis at the time, recovered by having a wave trip on the 27th.

W.G.

HUMBER (RAF Scampton)
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this year with bad weather giving us a poor start.

We had a few changes at the AGM in December. Phil Hutchison has moved from secretary to MT member and Chris Swinnerton has taken over the books from him; Dick Gibbs has moved from MT to aircraft member in Tony Smith's absence and Bruce Davisdon stays on as field treasurer. We have a new deputy chairman as Sandy Weaver was posted and a new CFI, Roger Hanson, with John Jenkins as deputy. Chris Gildea has retired from another long stint and we thank him for his efforts.

The CFI's trophy (fastest 100km triangle) was awarded to Chris with the Scouts' trophy (best progress) going to Tom Doyle; the Workers' pot to Phil Hutchison and the Vicar's pot (first 1984 Bronze C) to Barry Munday.

Our K-7 is being replaced by a Grob Acro. The K-13 is on a lengthy C of A and Bicester have kindly filled the gap with the loan of a Blanik.

K.M.G.

PEGASUS (RAF Gütersloh)

There was a big increase in flying last year due to Al Stacy's enthusiasm. Mick Boydon flew the Vega and Astir in Comps, coming 5th at Buckeburg and 2nd at Malden, Holland with the Astir. We did well in the BFG competition at Detmold with Ray Shackleton winning the best novice trophy.

We said goodbye to John Jenkins, Derick Jones, Keith and Jenny Grumbly and Janice Stevens, and hello to Jeff Mecham, our new CFI, Mrs Stacy and many new members.

The AGM was a good night with a "rent a crowd" from the other GGA clubs — we had sent a crowd to Brüggen the week before — and we had an enjoyable Christmas plus birthday party for Chris Milton and Jacki Boydon.

Projects include majors on the K-7 and Vega; the rebuilding of the Unimog engine; repair of the winch and the new bus kitchen being given more dining seats.

Congratulations on going solo to Jacki Boydon, Arthur English, David and Mark Jones and Sue Fisher.

We had two expeditions, to Paderborn and Innsbrück, giving three weeks of good flying.

R.D.G.H.

PHOENIX (RAF Brüggen)

Our Innsbrück expedition in October and our AGM in November were both a great success. Dave Stewart walked away from Innsbrück with a Diamond height and from the AGM with most of the trophies.

The clubhouse modernisation continues thanks to Rhod Evans, Al Kirkley and helpers. We welcome Alfie Bass, Colin Davey, Dave Pratt, Derek Jones and Ralph Dixon, new RAFGSA air member.

We say a very sad goodbye to Al Kirkley, Bic Smith, Dave Stewart, John Allison and Andy Miller, ex GGA air member. Expeditions are planned in May and October to Austria. Al Kirkley, "Woody" Woodcock, Kev Crawley and Sue Cavener have their Bronze Cs.

I.S.

PORTSMOUTH NAVAL (Lee-on-Solent)
We welcome our new chairman, Cpt J. Williams RN, who is an instructor and tug pilot.

The Easter course runs from April 15 at Thorney Island and evening flying, which was great fun and very successful last year, starts on April 29.

P.P.

TWO RIVERS (Laarbruch)
We have a big influx of new members and our lectures are popular with pilots of all experience levels.

The first February weekend gave us 6kt thermals to 3000ft and 210 launches. We have the use of Vince Mallon's Motor Falke which has greatly enhanced training.

We welcome Keith Tegg from Fenlands GC, D.C. back from the Falklands and say goodbye to Al Thomson after three years' of dedicated work. Our loss is Fenland GC's gain.

P.J.S.

WYVERN (RAF Upavon)
Several members spent Christmas and New Year at Dishforth but were plagued by fog and low cloud and had little flying. The Aboyne expedition was more successful, resulting in a Diamond height for Adrian Matyear. Steve Welsh reached Gold height but suffered a frozen-up barograph!

Ken Moules is now a passenger carrier; Alan Lacey, Mike Law and Charlie Tebbs have converted to the Kestrel and Colin Baker, "Stormy" Fairweather and Penny Smith to the Cirrus.

P.A.S.

(Continued from p.79)

sible (b) to get back. This must inevitably lead to some very high risk flying on the final leg home, which I do not wish to encourage. I suggest this could be overcome by proscribing landings within an area around the base airfield to ensure that before crossing it a competitor would climb to an adequate height. The radius of this area would depend upon the Class of glider competing but is unlikely to be less than 30km. Anyone landing within this area would be scored only to the point where his track from last TP crossed the boundary of the zone. In addition he could collect penalties as decreed by the organisers.

Summary

To summarise we now have a competition which will:

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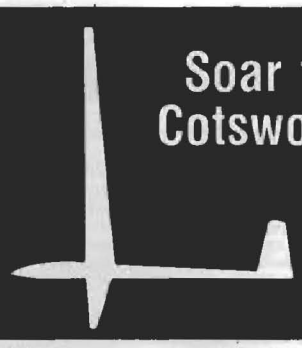
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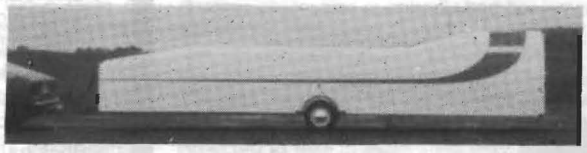
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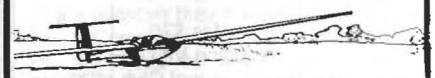
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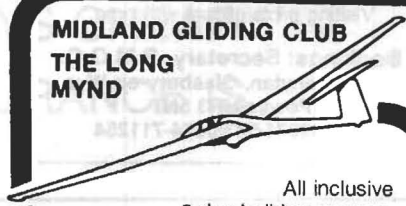
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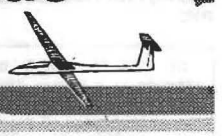
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Overseas News



Please send news and exchange copies of journals to the Overseas Editor: A. E. Slater, 7 Highworth Avenue, Cambridge, CB4 2BQ, England.

South African Nationals. With an entry of seven in the Open, 16 in the 15m and six in the Standard Class the competitors from South Africa, France, Holland, Italy and Switzerland enjoyed initially difficult, but gradually improving weather conditions for the 10/11 tasks they flew from Vryburg between December 18-29.

The shortest task was flown on the first day — a 113km triangle. The others were two 200km, five 300km, two 500km and one 763km triangle (some were O/Rs). In general the tasks for the Standard Class were somewhat shorter — they flew the same tasks on three days.

December 22 saw the 763km triangle with 513km for the Standard Class. Jean-Paul Castel of France in his long-winged Nimbus 3 bettered but not broke the world record with a speed of 144.46km/h. Fourteen pilots completed this task.

Day 7 on December 24 had to be cancelled for the Open as the very turbulent conditions made launching them too dangerous. Day 9 and 10 both with over 500km tasks were very fast despite a strong blusterly surface wind on Day 10. Many national records were broken on these days with the winning speed around 155km/h.

The contest finished with moderately strong blue thermals with all pilots completing the 369km triangle set.

Pat Beatty, South Africa had to cope with some problems normally expected in a new design — he came fourth in his B-7 in the Open Class. Leading results (unfortunately no sailplanes except for the two mentioned were given in the result list).

Open Class: 1, Jean Paul Castel, France 9629pts. 2, Hans Binder, Switzerland, 8522pts. 3, Jaques Rantet, France, 7647pts. 15m Class: 1, Granville Dunbar, 10298pts. 2, Graham Anderson, 10084pts. 3, Laurens Goudriaan*, 10047pts. Standard Class: 1, Dick Bradley, 9939pts. 2, Zigi Heiriss, 8838pts. 3, Teuns Welgemoed, 8223pts.

* Laurens' father Klaas took 4th and his brother Oscar took 5th place in the 15m Class. This probably does not happen too often in a Nationals!

First Pyrenees 1000km triangle. Gerard Lherm, the French Air Force man whose military duties consist primarily of flying large triangles in a Nimbus 3, has completed the first 1000km triangle in the Pyrenees. This time in an ASW-20, he took off from Nogaro at 0745 on November 30 and took a long high tow, releasing at over 8000ft asl some 30km S of Pau. Photographing the Col d'Aubisque, he headed for the Pays Basque *via* Laruns, Bedoux, St Jean Pied-de-Port, and San Esteban. After passing San Sebastian, he continued west some distance off the Spanish coast and took a TP picture of Lequeitio.

More or less retracing his footsteps as far as the Col d'Aubisque, Lherm found excellent wave all the way and was able to route *via* the Maladeta, Carlit and Canigou mountains to his next TP, Arles-sur-Tech near the Mediterranean coast S of Perpignan. Running low on oxygen, he tried to remain below 16 000ft, but to stay level he had to fly at about 110kt. Having plenty of time in hand with such high average speeds, Lherm flew back to the Pays Basque and took another photo to the west of San Sebastian before returning to Oloron.

Lherm covered 1118km in 7hrs 30min, and considers that the wave systems of the Pyrenees are only just beginning to be exploited. In a southerly flow they offer extremely exciting opportunities, better than anything available in the Alps, says Lherm.

SAFETY OF THE PUBLIC

DOUGLAS DONALD, Borders GC safety officer, gives a warning.

Like most other clubs, we run air experience flights and before the start of this summer it might be worth noting an unfortunate experience we had last year.

We run courses for the County Council to give youth leaders, teachers etc a taste of gliding and during one of these events we had what was very nearly a tragic accident.

A girl had just completed a flight in the Falke and was instructed to climb out and walk along just in front of the wing to where the rest of the course members were standing. To maintain a quick turnround the Falke engine was left idling. Unfortunately, in the excitement of the moment, the girl walked straight to her friends who were slightly in front of the aircraft. The downgoing propeller blade caught her arm and very luckily pushed her clear.

Horrified club members rushed to her assistance and were amazed to find that the only damage was a torn jumper sleeve and a slight graze to her elbow. Unaware of how close she had been to serious injury or worse she quite happily carried on and later flew in another glider. She eventually had her jumper replaced by the club.

A full briefing was held at the beginning of the course and the danger of propellers was included. However, we have concluded that uninitiated members of the public cannot be expected to take in everything from a briefing when they are excited. They simply do not always understand the dangers of propellers, winch cables and all the other things we take for granted.

Since the incident we have hopefully improved our procedures by keeping non-members well away from power aircraft unless they are entering or leaving. When they are entering or leaving any aircraft an experienced club member now goes with them, straps them in and later helps them out.

Probably we have been behind the times and everybody has been using such procedures for years. However, if you don't, *think*, could anybody else ever come so close to a moving propeller and suffer so little damage?

Late news: Stratford-on-Avon GC have moved to Avon Soaring Centre's site at Bidford for the next six months. Full details in the next issue.

CLASSIFIED SECTION

Advertisements, with remittance, should be sent to Chelron Press Ltd, 7 Amersham Hill, High Wycombe, Bucks. Tel 0494 442423. Rate 30p a word. Minimum £6.00. We can accept black and white photographs at £3.00 extra. Box numbers £2.40 extra. Replies to box numbers should be sent to the same address, the closing date for classified advertisements for the June-July issue is April 30, a.m.

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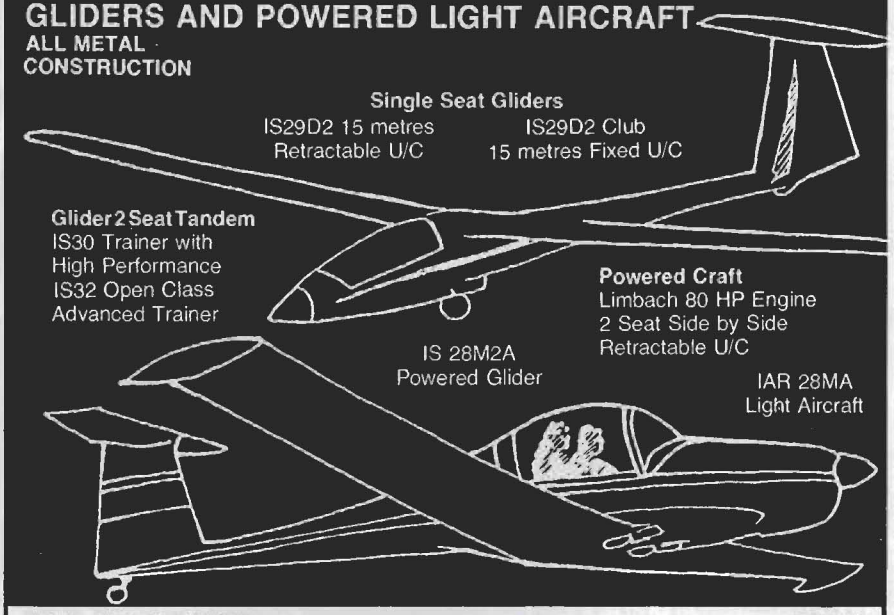
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ADVERTISERS' INDEX

Adnams Wines	52
Alton House Hotel	52
AMF Enterprises	95
Aero Marketing Associates	55
Air Apparatus & Valve	56
Anglo-Polish Sailplanes	51
Austin Aviation	90
Avon Soaring Centre	94
Black Mountains Gliding Club	95
Bristol & Gloucestershire Gliding Club	95, 99
British Gliding Association	82
Cambridge Aero Instruments	53
Cambridge University Gliding Club	95
Chiltern Sailplanes	92
Classifieds	97-99
Peter Clifford Aviation	99
Cornish Gliding & Flying Club	95
Cotswold Gliding Club	96
Coventry Gliding Club	95, 99
Cradley Jewellers	94
Deeside Gliding Club	95
Devon & Somerset Gliding Club	96
Enstone Eagles Gliding Club	96
Glider Instruments	88
Gliderwork	88
HT Communications	90
J. A. Harrison (Brokers)	50
Herefordshire Gliding Club	96
Irvin (GB) Limited	50
JSW Soaring	88
Kent Gliding Club	96
Kent Motor Gliding & Soaring Centre	96
Alan Kirtley	53
Lasham Gliding Society	96
London Gliding Club	96
London Sailplanes	55
Lowe Electronics	50
Lowndes Lambert	57
R. L. McLean	54
Marchington Gliding Club	100
Maxwell-Fendt	98
Midland Gliding Club	96
Miller Aviation Models	90
Mowbray Vale Insurance	IFC
Nine Four Aviation	57
Norfolk Gliding Club	100
Oxfordshire Sportflying Club	55
Perry Clamps	90
Peterborough Sailplanes	50
Piggott Bros & Co	94
RD Aviation (Avionic Dittel)	66
RD Aviation	93
Bob Reece	54
Sailplane & Engineering Services	56
Sailplane & Gliding	78
Schofield Aviation Limited	99
Scottish Gliding Union	100
Soaring Oxford	56
Southdown Aero Services	88
Southern Sailplanes	BC
Specialist Systems	88
Speedsoaring	51
Speedwell Sailplanes	52
Sutton Hall	100
Ultimate Equipment	IBC
Vol à Voile Yonnais	56
Brian Weare	89
Westley Aircraft	52
C. P. Witter	98
Yorkshire Gliding Club	90, 95, 100

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Course Secretary
Marchington Gliding Club
Marchington Airfield, Morton Lane
Marchington, Nr Uttoxeter ST14 8LP
Telephone: 0283 222046

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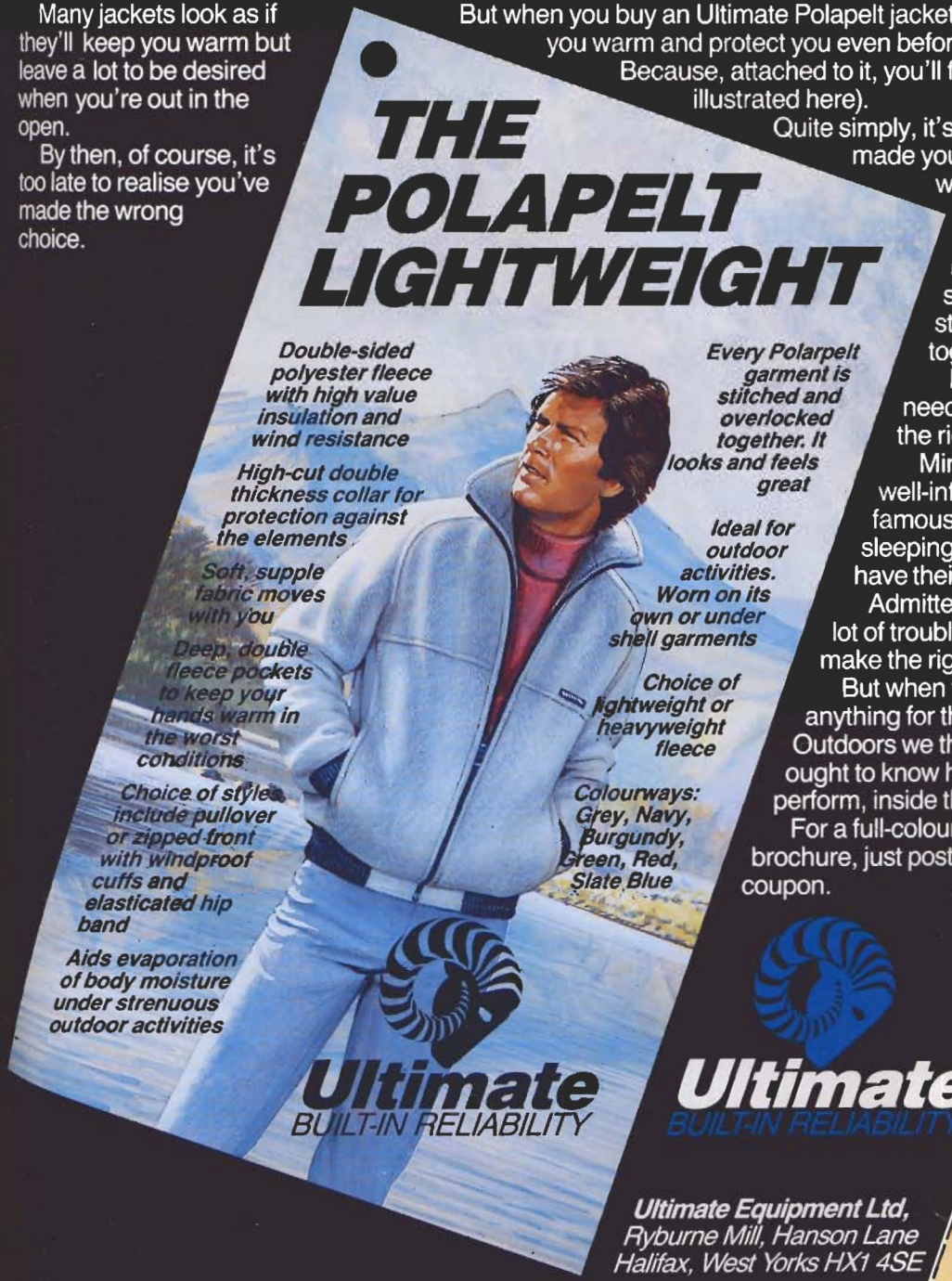
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