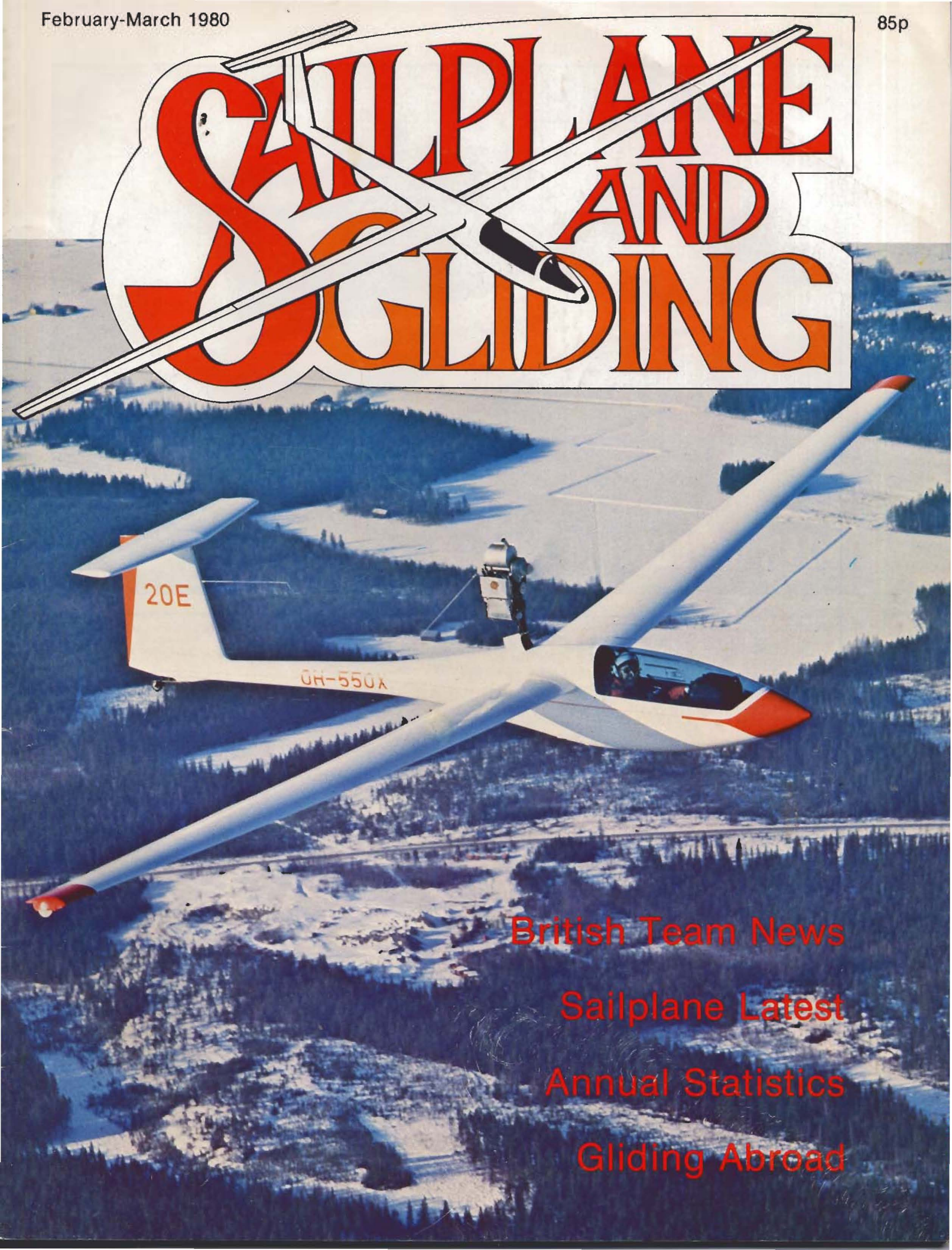
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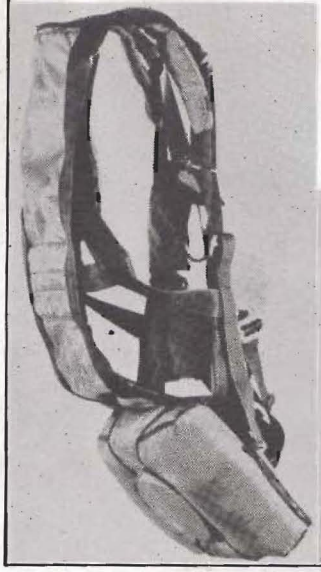
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SAILPLANE & GLIDING

Magazine of the BRITISH GLIDING ASSOCIATION

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Peggy Mieville, Cheiron Press Ltd., 7 Amersham Hill, High Wycombe, Bucks. HP13 6Q. Tel. 0494-442423.

Cover: The PIK-20E taken against a Finnish snowscape by Eiriavion's photographer.



2 **The British Team**
3 **Round the World in 80 Days (Twice)** A. D. Purnell
4 **The Great American Dream — Part 2** T. J. Wills
6 **The First Clubs to Fly** A. E. Slater
7 **Whatever Happened to the Daily Inspection?** W. G. Scull
9 **Down in the South — Something Stirred!** I. B. Reed
10 **Dynamic Polars** The Arm-Chair Pilot
13 **Gliding in the Early Days** J. S. Sproule
16 **Those were the Days** R. Riley
17 **Instructors** "Badgered of HB"
Only Funny Now
18 **Disorientation in Flight**
22 **Gliding Abroad**
24 **Annual Statistics**
26 **Flying Machines**
30 **BGA and General News**
31 **Obituaries — Mungo Buxton** A. E. Slater
Frank Heath, Fred Smith C. Wills
32 **Accident Summary** W. G. Scull
33 **1980 Nationals Qualifying Lists**
35 **Gliding Certificates**
Canigetbackometer M. T. Butcher
36 **Overseas News**
Obituary — Charles Fauvel C. Wills
38 **Club News**
44 **Service News**
48 **Your Letters** A. H. Yates, A. E. Slater, J. F. Beringer, C. Roney, P. Bell (reply by W. G. Scull), Rhoda Partridge.
49 **Book Review** Gillian Bryce-Smith

FEBRUARY-MARCH 1980 Volume XXXI No. 1

Published by British Gliding Association
Kimberley House, Vaughan Way, Leicester. Telephone Leicester 51051

Printed in England by Blackfriars Press Ltd., Smith Dorrien Road, Leicester.

THE BRITISH TEAM

A First Visit



Town Hall, Paderborn.

The German emblem for the Championships

Mike Carlton, the British Team Manager, together with Mike Pope and Rika Harwood, made a reconnaissance trip to Paderborn, the site of the 1981 World Championships.

The last World Championships were in France at a huge airfield — Chateauroux. The venue for the next is at a much smaller airfield — Paderborn-Haxterberg in West Germany. Despite the contrasts we were impressed with what we saw on a brief visit at the end of October.

The airfield lies just south of the town of Paderborn; from it one can see the cathedral and a town which has clearly been developed to show off its historic buildings, the oldest of which dates back to the year 777. It will provide a fitting backdrop and much of interest for those with time to explore.

Work on the site is already in progress. Indeed, we arrived by road as dusk fell to find a group of people working by the light of car headlamps laying cables to the caravan site — this despite the bitter wind and rock hard ground. The organisers will provide each of the participating countries with a large caravan, complete with toilet and shower, as a team facility and focal point. These caravans are grouped along the road to the clubhouse. This arrangement will, no doubt, help create a friendly atmosphere during the Championships and make it easier for the teams to get to know each other. When teams live off site (which is usually the case), it is more difficult to create a feeling of unity. By having a "home" on the site, the organisers hope to keep people together to join in the various social events being planned.

Wine, log fire and camaraderie

The clubhouse was very cosy when we arrived on the Friday evening. There were not many members about but, nevertheless, we were made very welcome. There is nothing quite like a glass of Glühwine, a roaring log fire and gliding camaraderie to make you feel at home.

We were fortunate to meet some of the organisers, as well as Renate Gaensicke, the German Aero Club's Gliding Secretary, at Paderborn for meetings with Fred Weinholtz. He had spent Friday in Paris for the CIVV Bureau meeting. In charge of the Organisation Department for the World Championships is Carl Tüshaus, a Paderborn Town Councillor and chairman of various town sub-committees. He appears to have a clear understanding of the size of the task ahead and so is eminently suitable for the job he has taken on.

On Saturday we had our first glimpse of the airfield in daylight. It is a grass airfield with two parallel strips of about 1200m by 30m lying WSW/ENE with clear approaches in either direction and good views all round. On either side of the strips are grass areas with the proposed trailer park farthest away on the northern side of the field. All the contest buildings, etc, will be close together on the southern side where the clubhouse is situated; this will make for ease of access for organisers and competitors alike.

The President of West Germany, Karl Carstens, has kindly consented to be Patron of this important event and he intends to visit the Championships. There will also be considerable support from the Landesverband — the Municipality in which Paderborn lies. Such support is typical of the German attitude to gliding!

The official interpreter for the contest will be Max Bishop, from the UK, who did such excellent work as interpreter at Chateauroux — his German is even better than his French! The important task of public Relations and Press has been taken by Teddy Stedtfeld who has done this for the German Team on previous occasions as well as being Team doctor. News about the contest will be constantly updated and shown on TV monitors. This should make life a lot easier for the many reporters expected.

Team News

The official members of the British Team Squad are:

Andrew Davis	George Lee	Rocky Stone
John Delafield	Ted Lysakowski	Dave Watt
Bernard Fitchett	Tim Macfadyen	Steve White
Chris Garton	Chris Rollings	Justin Wills
Nick Hackett	Graham Smith	
Alister Kay	Brian Spreckley	

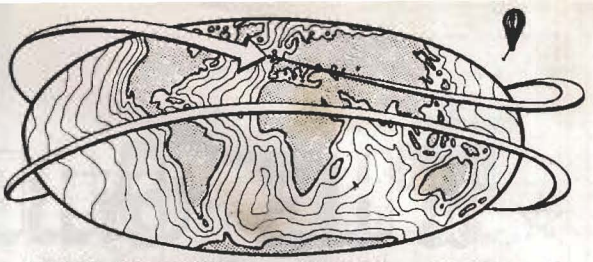
This summer a practice period and contest will be held at Paderborn from July 20 to August 10 in conjunction with the German Aeroclub contest. Forty German pilots, including their Team Squad, will take part and a further forty entries will be accepted from other National Aero Clubs. At present there is a limit of four gliders per country, but, depending on the number of applications received, this may have to be reduced. However, more than one pilot may use the same glider so there is plenty of scope for the 1981 "possibles" to sample the air over Germany. It is anticipated that four of the British Team Squad will participate to broaden their experience before the World Championships which are to be held between May 24 and June 7, 1981.

A magnificent effort by John Jeffries, CFI and Manager of the London Gliding Club, Dunstable, has resulted in a major success in obtaining sponsorship not only for the British Team but also for the National Championships and the British gliding movement as a whole. The sponsor is Allied Breweries who are promoting their new product, ARCTIC LITE lager. If we do well by our sponsors — giving them the publicity they need — it could have a significant effect for gliding at all levels as well as increasing public recognition and acceptance of the sport with all the benefits that this will bring.

Message from the Team Manager

We have now won the World Gliding Championships twice in a row. George Lee is a member of your gliding movement and you can be a part of the British Team by supporting both him, the British Team and the Team Kitty. The hat trick is within reach if we give the Team — our Team — the support it needs. The price of one aerotow from everyone in the movement will raise £60 000. In one of the few sports where Britain can produce a World Champion, is this too much to ask?
Don't leave the third time to chance.

ROUND THE WORLD IN 80 DAYS (TWICE)



ALAN PURNELL (Alfa Lima)

Whatever the conditions, Alan is always covering impressive distances. At least that is the way it seems and so we persuaded him to write about the changes in gliding he has noticed and experienced since he first started.

The geographically-minded amongst you may have noted that the above represents 52 000 miles and 3840 hours. In fact I haven't quite made 3840 being at the time of writing about 40 short. To make up for this deficiency I have exceeded the 52 000 by 13 000 miles having comfortably passed the 100 000km mark. Before anyone accuses me of being bigheaded the computer-minded amongst you may also have noted that the average speed these figures represent is 17mph or 27km/h which is not enough to win many competition days — which is one possible reason why I don't enter competitions any more. Also on reflection I think I can run faster than that — or at least I used to.

To be fair to myself these hours do include a lot of floating around 10 000ft or sitting on hills waiting for a wave to form or charging round *Tiny Triangles (which I don't count in the mileage figures) or wandering up and down sea breeze fronts or simply local soaring.

Cost per mile is 10p

The reason why I like local soaring is that it is completely free (free of cost that is). Perhaps I had better explain — if I add up all my yearly expenses such as insurance C of A, launch costs, hangarage, membership etc it might come to £600 say. If my annual cross-country mileage is say 6000 miles the cost per mile is 10p. I account all my expenses to cross-country flying which I particularly enjoy so I don't mind spending my hard earned pennies on it. A 500km flight would cost £31.07 and a 300km flight £18.66 which you must agree is good value. Even a 50km flight only costs £3.11 which is less than the cost of an aerotow. So what else does all this mean? It means that local soaring must be completely free — even the launch. Anything that comes free simply must be fun.

Having spent half a page explaining the title of this article I had better get on to the subject at hand. What has the last 25 years done for me? I haven't been around for some of it but the changes have been dramatic over that period. As far as I'm concerned it all boils down to the development of the computer (by which I earn a living) and to a combination of Professor Wortmann and the unknown (to me that is) inventor of adaquately stressed glass-fibre structures. No doubt this is unfair on the wooden glider manufacturers who could produce a superb wing surface if money was no limit and unfair to NACA whose wing sections were not made accurately enough. But that's life — if you don't produce the goods no one remembers you. All the other ingredients for good flying have been around for years — varios, MacCready techniques, good well organised sites, aerotowing, relative freedom from bureaucracy and the weather (especially the weather). Just think how many 1976s we have missed. We have no idea how many years like that there have been since the year dot. Come back 1976 — we know how to use you properly now.

The materials and sections have given us really stupendous advances in cross-country speeds without any apparant sacrifice in climb rate. Just compare the sink of a Nimbus at 70kt with that of a Sky (the hot ship 25 years ago) and you get a factor of about three. That's progress by any standard. Couple that with understanding of dolphining and you get more flying just because the speeds are so much greater compared with the windspeed. There was a time when I didn't go flying if I could see blades of grass moving when I woke up in the morning. Nowadays we can get good cross-country flying even if the trees are thrashing about.

Perhaps a word about various types of cross-country flying is in order here. Thank goodness the days of the downwind dash are over, although on reflection perhaps the second leg of an upwind out and return is really a downwind dash in disguise. Nowadays not only are there Downward Dash Devotees there are Terrors of the Tremendous Task, the Horrendous Hundred Km triangle bashers and the Wandering Minstrels. I tend towards the Tremendous Task and the Wandering Minstrel. That is I declare large tasks if the forecast is good but am prepared to change plans if the weather becomes unsuitable for the original task. Admittedly I may occasionally be rather woolly about a verbal declaration (such as Wales and back) but that is a reflection on the uncertainty of the weather forecast. So perhaps after all I really am a Wandering Minstrel yet with a purpose — a Pied Piper maybe.

Anyway I don't care I enjoy it.

all pilots can read – but the BEST PILOTS read

Sailplane & Gliding

The magazine can be obtained from most Gliding Clubs in Gt. Britain, alternatively send £6.25 postage included for an annual subscription to the British Gliding Association, Kimberley House, Vaughan Way, Leicester. Single copies, including postage £1.05.

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*See Alan's article in the August 1977 issue of S&G, p150.

THE GREAT AMERICAN DREAM

JUSTIN WILLS

Part 2

At the end of the US Standard Class Nationals we still had a week before we had to return the car and trailer to Chicago and fly home. Thus prizegiving and the subsequent SSA Directors' meeting, cleverly held immediately thereafter in open session to encourage participation, gave us the opportunity to seek advice as to how we should make the most of it.

We finally decided on Colorado, regretfully declining a very generous invitation from Wally Scott and his wife Boots to visit them at Odessa, Texas. As Angie Schreder put it: "If Wally thought there was any real chance of your flying 600 miles out of Texas in the next few days he would drag you there almost whether you wanted to go or not." But the weather pattern did not look too hopeful, and thus we accepted John Brittingham's understatement: "I think you would enjoy Colorado."

Most of the 400 mile journey there was under clear skies, but as we reached the Colorado border a most remarkable solitary cloud street appeared stretching to the north and south as far as the eye could see. Its convective power was confirmed by the great number of dust devils beneath it, and I concluded it must mark the convergence zone between the humid air which comes up across the flat plains from the Gulf of Mexico, and the drier air from the Rockies. It looked like a world distance record day.

Black Forest gliderport is situated a dozen miles east of the mountains, which are remarkable for the suddenness with which they rise from a plain that hitherto has been flat for 1500 miles. With a predominantly westerly airstream the site is ideally placed for wave flights, and 65% of all recent Diamond altitudes in the US have been gained there. It also has the invaluable asset of being staffed by the nicest crowd of people you could find, who from Mark Wild down did everything they possibly could to make Black Forest the most memorable gliding club we have visited.

Thermal conditions over the mountains can be phenomenal, and on my first flight I encountered regular 9kt thermals and cloudbase that appeared to be well over 20 000ft, although without oxygen I endeavoured to remain below 17 000ft and still incurred a severe headache. Despite such physical shortcomings I achieved my fastest ever 245 miles in 2hrs 50mins. Interestingly, this speed was made possible not so much by the strength of the individual thermals but by a helpful cloud pattern and the absence of strong sink, even when flying across the lines of convection.

The following day was rather more unstable and a vigorous shear line formed along the edge of the mountains, drifting slowly eastwards. At one moment this gave sufficient lift to carry the Mosquito upwards into cloud at 500ft/m despite an almost terminal velocity dive at 85kts with the brakes fully out. In these conditions I was able to make even more rapid progress than the day before, but my choice of course was limited to the eastern edge of the mountains. As I reached Bianca Peak on the Sangre de Cristo Range cries on the radio indicated that the shear line had now reached Black Forest causing an aerotow to be aborted and the tug to turn over on landing. In an effort to retrace my steps I ran into such violent turbulence that the terminals on the glider battery were broken off and I decided to land at Pueblo Airport. There was obviously a strong wind blowing, and after the departure of a Boeing 737 I descended vertically on to the ramp in front of the Tower and stayed in the

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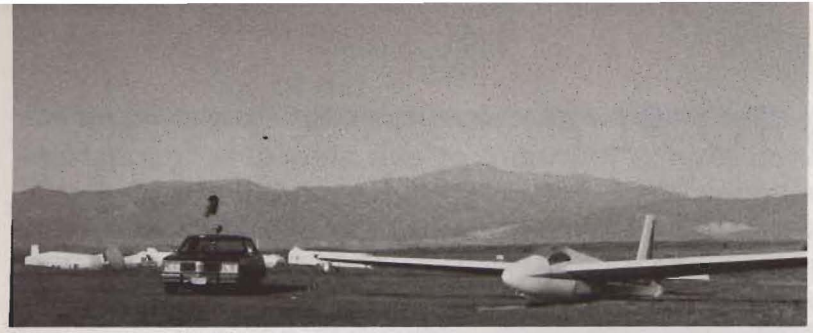
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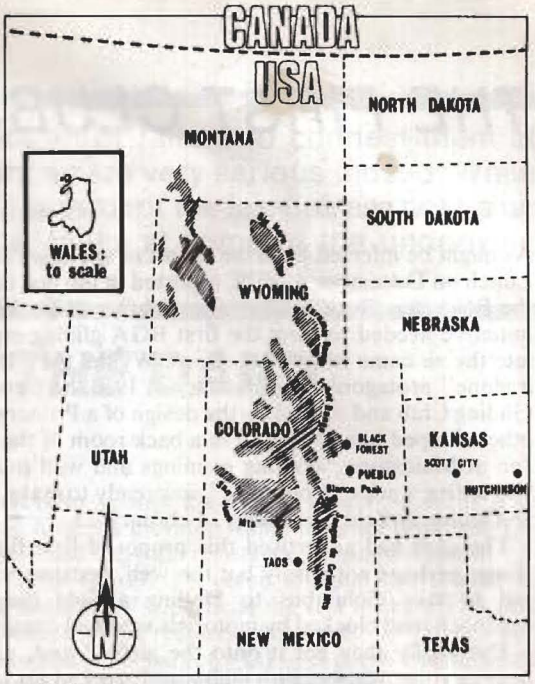
Colorado skies — morning.



Colorado skies — noon.



Colorado skies — 14.00hrs.



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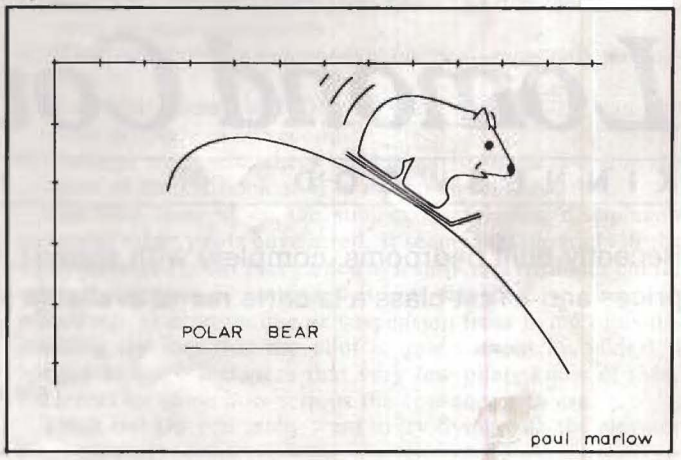
glider, hanging on to the wheel brake. Shortly thereafter a most attractive girl appeared, clutching at her very brief mini skirt and wearing a sash which bore the wildly fluttering inscription "Welcome to Flower Aviation". I beckoned her over and explained that although this would not be my normal opening request on such an occasion, nevertheless would she please return to the Terminal as quickly as possible and send me the two largest, hairiest men she could find. With their help I picketed the glider in the lee of a building and got the radio to work again so that I could talk to the Tower, and learnt that wind on the ground was now blowing at 55kt!

After these two flights I became very excited at the prospect of a long distance flight, and after lots of discussion drew up plans to start from Taos, in New Mexico, and fly northwards along the mountains, hopefully right up to the Big Horn Mountains in Wyoming, and beyond, into Montana. Unfortunately, the weather refused to co-operate for the next two days, and the forecast for the third (and our last) was very pessimistic. Thus we stayed at Black Forest, but typically the final day dawned bright and clear. I was caught quite unprepared, and did not get going until mid-day. Thereafter I flew a dogleg westwards to Leadville, and thence east, away from the mountains back towards Hutchinson. Conditions over the plain were cloudless, and whilst the ground wind was south easterly and the upper wind north-westerly, the convective layer was virtually still. After 6½hrs I just scraped into Scott City Airport, after a flight of 400 miles. I had borrowed oxygen equipment that day from Dave Johnson (the brother of Dick), and unbeknown to me the green foam on the mask had started to dissolve with my sunburn cream. It took the airport operator some time to adjust to the appearance of a motorless plane with a bright green pilot speaking with a strong English accent.

From there we drove back, *via* Hutchinson, to Chicago and returned the car and glider safely to Mike Greenwald and Ecke Friederich. They were delighted by our surprising success, and held a tremendous party to celebrate.

And so we came home, with a host of memories: of the inn called The Fox in The Forest, where the juke box played only country and western music, and the hitching rail outside enabled customers to park their cars of the late '60s against it so their great chrome teeth and wings stared in through the windows like the prehistoric monsters they now undoubtedly are. Of Zie (his real name was said to be unpronounceable) who repaired our aluminium belly trolley at 11pm on a Saturday night in a remote, but spotless, workshop, where he was building, single-handed, a fleet of Acrostar aerobatic aircraft, and who we had the greatest difficulty in persuading to accept any payment. And, finally, my personal Great American Dream:

It is evening and I am sitting outside Cal Loving's famous restaurant in Taos, New Mexico. Across the square I can see the faithful Oldsmobile and trailer parked in front of the El Pueblo Motel. Behind me the Sangre de Cristo mountains rise up to form a black line against the clear night sky. The air feels cool. A coyote howls. And I know that tomorrow will be *the* day.



THE FIRST CLUBS TO FLY

A. E. SLATER

As might be inferred from the report of speeches at the Gliding Lunch on December 4, 1929, reported in the last article ("How the BGA was Born", December S&G, p260), the energy and initiative needed to form the first BGA gliding club and get it into the air came from C. H. Lowe-Wylde, the "Britain can do it alone" protagonist. On January 4, 1930, he formed the Kent Gliding Club and started on the design of a Primary glider. Five others helped him to build it in a back room of the Nag's Head Inn at Maidstone, working evenings and well into the nights, and in five weeks "Columbus" was ready to make its first flight at Detling airfield on Sunday, February 23.

The club had advertised this proposed first flight in Maidstone, perhaps not wisely but too well, because when they set out to take Columbus to Detling airfield they found the approach road blocked by motorists who had come to see it fly.

Eventually they got it onto the airfield and, using a single bungey rope, started with slides and worked up to a final hop 10ft high and 30 yards long.

At this the crowd, who were expecting something far more spectacular, began to turn nasty, and "a riot nearly developed" in the words of the Secretary, Miss Sinclair, so they hurried the glider away. Perhaps some of them had read accounts of the early ballooning days when, if the balloon refused to rise, the crowd would burst onto the field like a lot of football fans and tear the thing to pieces.

Ashwell-Cooke and Latimer-Needham of the London Club, who were present, learned the lesson, and decided that their own club's first flying trials, fixed for Sunday, March 16, should be kept as secret as possible and be held on an out of the way field near Guildford bordering the River Wey and approached by a lane.

Unfortunately a fairly well-known airman, who had been out of the public eye for a period (something to do with the consequences of a motoring accident) was back again in circulation and anxious to rehabilitate himself with the public. He got to hear of the proposed event and telephoned Dagnall to ask if he could fly the glider. Dagnall gave a vague assent, whereupon the fellow told the entire Press that So-and-so, "the famous airman," could be seen "testing a glider" at . . . (giving the time and place), So a large crowd turned up, accompanied by the Press.

A Young Lady Spy

Ashwell-Cooke was furious, even with the Press (the *Daily Mail* said sadly: "After all our paper has done for aviation"), but vented his full wrath on a young lady who said she was the "famous" airman's secretary, and had come to spy out the land — Ashwell-Cooke was sure her boss was parked in a lane near by.

There were two gliders, a Zögling and a Dagling, both presented to the club by R. F. Dagnall, whose works were near by. An initial trouble was everyone's ignorance of bungey techniques: they kept piling on more and more men — club members and conscripts from the public — until there were 12 a side. Only experienced power pilots did the flying.

In the end, when the Press and public and nearly all the members had gone and everything had been packed up except the Dagling, the few that remained suggested that Dagnall should have a launch in his own glider. When he was strapped in I heard him say "I suppose I wait till it begins to move and then pull the stick back." Nobody answered him, so he took silence for consent and did just that, with the result that he shot up to about 20ft, stalled, came down sideways and was flung into the alluvial mud on the banks of the Wey without hurting himself. He kindly rebuilt his own Dagling.

Correction: *In Doc Slater's article in the last issue, p260, column 2, paragraph 5, line 2: "too busy reading* Flight" *should have been: "too busy to read* Flight."

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Incidents or accidents due to incorrect control connection or failure to connect them at all are on the increase—and sometimes the consequences are very serious indeed. While there have been efforts to educate pilots as to the risks it is evident the lessons are not being learned. Here BILL SCULL, BGA Director of Operations, looks at some of the underlying reasons.

WHATEVER HAPPENED TO THE DAILY INSPECTION?

On the face of it failure to connect a primary control circuit might be regarded as incredibly negligent yet the people who have done it would not be regarded by their fellow club members or syndicate partners as even slightly careless. What then is the root cause of such critical lapses? I believe that, for the most part, it is because the modern glider is so simple to assemble. In days of yore no one got it wrong with the T-31 or the Tutor (before you pick me up on this point I would add that there were a few clubs that rigged and de-rigged gliders on a daily basis). The sheer number of connections to be made practically guaranteed that a double check would be carried out. Over the years gliders have become simpler to rig and, of particular importance, some of the connections are made automatically as the wing or tailplane was attached to the fuselage (or fin).

There is not enough evidence to suggest that with the increasing use of automatic connections the number of incidents involving controls-not-connected increased. Typically an airbrake was not connected and this probably meant that the brake sucked open on the launch; generally the pilot was able to correct the yaw and nothing untoward occurred. This sort of incident was not unusual in the early days of the Skylarks. Later gliders, notably the Libelles and Kestrels, were flown from time to time with one or both ailerons not properly connected.

Pilot without lateral control

The reason for this — or honestly the excuse — was that it was difficult to tell whether the connection was properly made because of the eye-end of the push-pull rod in the wing located in the shrouded fork-end connection in the fuselage. The weight of the aileron held this connection in position and the only visual indication that the pin was not through the eye would be that the aileron appeared not to be in line with the wing trailing edge (assuming the stick to be neutral). Naturally as the glider reached flying speed the aileron floated up leaving the pilot without lateral control if both were disconnected. If only one aileron were free then whilst the pilot had lateral control it was almost always the case that the floating aileron would oscillate and cause a low frequency oscillation of the wing. The amplitude would be quite large however. To my knowledge there were no serious accidents as a result of this oversight on the pilot's part.

The next phase of this unhappy saga was to T tail gliders in which the elevator connection was made independent of mounting the tailplane. I suppose the pilot — usually a private owner — most at risk was one who had been used to a glider with auto-coupling elevator or an all-flying tailplane. Nevertheless the risk with the T tail requiring a separate elevator connection to be made is, or should be, fairly obvious. If the connection is not made the weight of the elevator causes it to rest on the push-pull rod that drives it. **Connected or not, movement of the stick makes the elevator go up and down.**

The only check once the tailplane is attached (because usually the elevator connection can no longer be seen) is to have someone hold the elevator whilst the pilot doing the DI moves the stick and feels the resistance in **both directions.**

The business of the DI I'll come to again later. What is essential, no matter how superficial the rest of the DI, is this fundamental check which requires assistance.

Taken in context — as part of a DI — it doesn't seem much to ask but here we come to the nub of the problem. The pilot rigging his shiny new ASW-20 or PIK-20 (and many other gliders no doubt) has done literally hundreds of DI's without control checks made in this particular way. The adage "you can't teach an old dog new tricks" couldn't be more appropriate. The only long term remedy to this is to teach and carry out all DI's with the ailerons and elevator being held, whether or not it is relevant to the particular glider.

The root cause of the problem

These factors apart there is still one other possible cause and this is due to the glider's simplicity. A private glider taken from its trailer by the same person who put it away is unlikely to have sustained any damage at all (even if it had, the very nature of the GRP construction means that the outward signs of significant damage may be only hair-line cracks). The consequence is that putting the glider together constitutes doing the DI — it shouldn't, but it does, and here, I believe, is the root cause of the problem. The whole approach has become too casual.

Remember the days of wood and fabric and the detailed examination to which the whole structure was subjected? If you don't then talk to someone who does. Only if we restored the DI to its former importance will these dreadful accidents be avoided. The key points are:

1. Having rigged the glider leave it for a while and go round it again.
2. If you can't inspect all control connections visually then have someone hold the surfaces and feel that there is resistance to stick movements.
3. If in doubt have an independent check — especially the controls.
4. Treat the aircraft and DI with more respect — it can't be done properly in 60 seconds.
5. Perhaps we need a check card to assist; there is one in the front of the DI book so if in doubt why not use that.

The final thought on the subject is regarding disciplinary measures when pilots have erred. It seems that the fright or the badly damaged glider is regarded as a sufficient reminder but for my money there is nothing that gets the message across as effectively as a grounding or suspension from flying (notwithstanding the fact that the pilot is now without his glider). I believe in some instances that very few pilots know of these accidents let alone how serious the consequences are.

Think on! Do you really want to try flying with the elevator disconnected!

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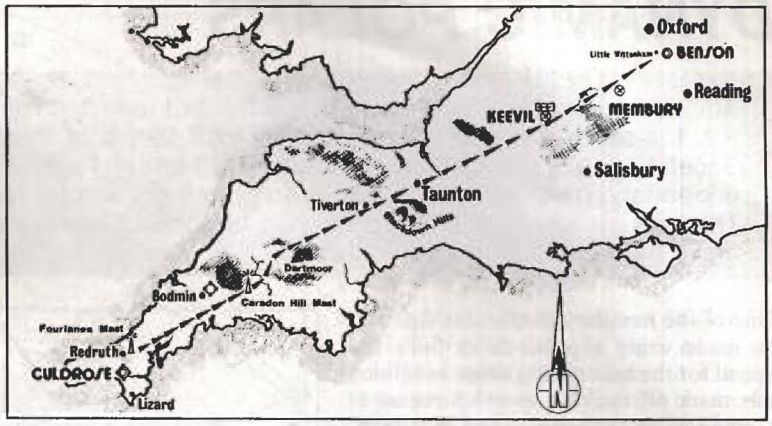
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Down in the South : Something Stirred!!



IAN B. REED

Culdrose is a Royal Naval Air Station eight miles from the Lizard, the most southerly point in England. A small but very close-knit gliding club exists here for whom the chance of a decent cross-country is a rare proposition indeed. With an active airfield and usually only weekend gliding available you will appreciate our problem, and the sea being on three sides of us does not help the idea of a good long flight.

On Monday, August 20, our Station Met Office forecast a cold front passing through south-west England that evening with the possibility of good soaring weather behind it. After talking to our Met Officer I elected to try on Wednesday, hoping that conditions would be even better than the Tuesday.

Wednesday came clear and blue and by 09.00hrs there were the first signs of cumulus. Our Dart 17 (61) was already rigged in our ample hangar. Maps that had been prepared at least a month previously were in the cockpit, together with JSW calculator, sunglasses, photograph of the British Team and a lock of George Lee's hair! The airfield was active at this time and permission had to be obtained from Air Traffic before launching.

I released at 11.45hrs at 2000ft. Mostly thin cumulus in this area but one longer than the rest over Redruth. Two knots under this and as I climbed into cloud at 2300ft there was an increase to 3kts — a ride to 4500ft gave me a fighting chance and I cruised towards Truro, its Cathedral standing out in the brilliant sunlight as I approached. A few turns in this area kept me near cloudbase as I stabbed onwards to the claypits of St Austell, running at 60kt. Here the cloudbase was lower than anticipated and lift in the area not what I would have expected. The cloud ahead did not look very good and I nearly made a decision to return.

"Sweating on my gamble . . ."

A ragged line of cu that gave negative sink tempted me further on track and just south of Bodmin I burst out of the low cloud into the sun once again. A good 4kt over the village of Llanivet raised me once again past 4000ft and enabled me to cruise past the BBC mast at Caradon Hill. I had decided to go north of Dartmoor rather than the southern route — south of the Moor looked rather poor. Between the mast and Dartmoor I came low over the high ground with the nearest cu several miles ahead. I decided to try for this relying on the ground dropping away beneath me as I approached it and the Dart's glide angle. Sweating on my gamble, once again the feeling of rough air around me, good solid lift showed in the form of 5kt. Here the cloudbase was much higher than further south and conditions looked good ahead.

Over Tiverton at 13.00hrs the thermals were good and strong and one could be selective. Sliding under Amber 25 I ran a good line of cumulus up the western edge of the Blackdown Hills. Listening to radio chat from North Hill and also wave reports from Usk it was in this area that I spotted a wave cloud in a dead area over Weston Zoyland airfield which is a notorious "wet" area. I elected however to stay with the thermals away from this area and climbed over Somerton in a rough and difficult thermal (perhaps wave interference here). Frome passed under my port wing from where I could see the Westbury chimney in the clear air ahead. My original distance was to make Membury airfield from Culdrose, but having been released higher and further from Culdrose than expected I would need to go further.

Not much down the Keevil Gap so I hung about Warminster until I spotted the chimney kicking off thermals. Leaving Warminster and skirting the danger area north of it, I flashed down the Keevil Gap passing south of Membury. A detour again after crossing the M4 and having decided I had covered well over 300km, there was plenty of time to select a large field at Little Wittenham, south west of Benson, a distance of 327km. Having landed at 16.50hrs next to a field which had a small stubble fire, and watching it increasing to a raging inferno, the glider and I looked like a duo from the Black and White Minstrels with all the ash that was blowing about.

You wouldn't believe the beer I had to buy — do we really have that many members? A completed Gold after 13 years gliding — slow maybe but very satisfying. *So if you are down in Cornwall at the weekend and you want to visit the best Gliding Club in England, come and see us.*

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DYNAMIC POLARS

The Arm-Chair Pilot

After this article had been sent to the Editor I learnt, through correspondence with Helmut Reichmann, that the same idea had occurred to Richard Meyer of Zurich, and was published in *Aero-Revue* for December 1975 ("Segelflug im Delphinstil", p671). I agree with Meyer that the "contest glider pilot's understanding of what happens in dolphin flight will be remarkably improved by studying [his] paper". The present article is being published in spite of its repetition of Meyer's work in the hope that it will make his idea more widely known.

One of the familiar calculations that can be made using a polar curve finds the speed for the best gliding angle in sinking air: mark off the rate at which the air is sinking, **a**, on the positive half of the vertical axis, and draw the tangent from this point, A, to the polar (Fig 1). The reason this construction works is that drawing the tangent from A to the polar is the same in effect as drawing the tangent from O to a polar depressed everywhere by an amount **a** (Fig 2), because this polar is, of course, the actual polar with respect to the ground of the glider in the sinking air.

If, instead, the glider is flying in rising air, the polar with respect to the ground (which is, after all, what matters) may similarly be drawn, and if the rate at which the air is rising exceeds the minimum sinking speed of the glider, the curve will cross the horizontal axis (Fig 3, curve (a)). The question of the speed for the best gliding angle is now of lesser interest than the speed for zero gliding angle (infinite glide ratio) given by the point Q at which the curve crosses the axis. For this is the dolphin point: fly faster and we will descend, fly slower and we will ascend, but fly at speed v_q and we will live happily ever after.

In the real world, however, rising air does not go on for ever. Suppose instead

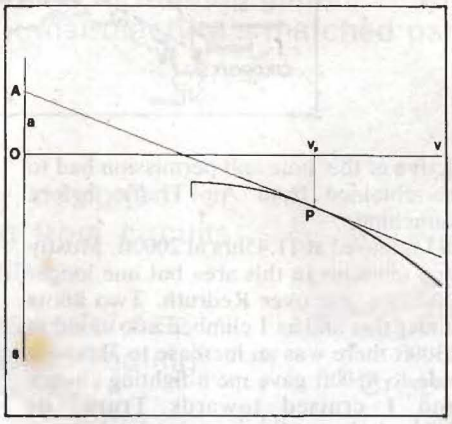


Fig 1. Finding the best-gliding-angle speed in air sinking at rate **a**.

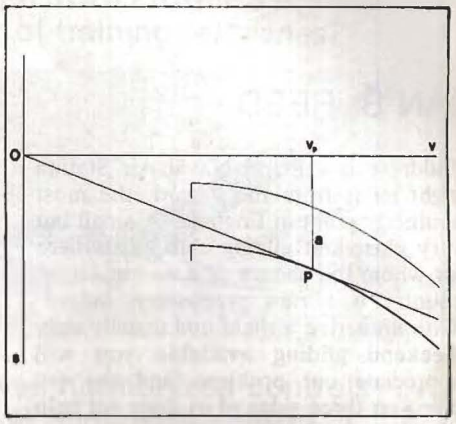


Fig 2. The polar depressed by an amount **a** *to explain the construction of Fig 1.*

that we fly through air half of which is sinking and half rising, each at the same rate. Now (with respect to the ground) we have two polars, each in use for half the distance (Fig 3, curves (a) and (b)). What is the average speed through the air, and the overall gliding angle, if we fly at the best-gliding-angle points P_1 and P_2 in the rising and sinking air respectively? In other words, what point in Fig 3 represents the "average" of P_1 and P_2? The question is quite general: if P_1 and P_2 are any two points on a graph of sinking speed **s** against forward speed **v**, and each applies for half the distance, what point P represents the average sinking and forward speeds? The answer is found by averaging the gliding angles (or, exactly, their trigonometric tangents) and finding the harmonic mean of the forward speeds, as is easily proved.

Fig 3 shows the construction. Draw the lines P_1P_2, OP_1, OP_2, and an arbitrary vertical line to cut OP_1 and OP_2 in R_1 and R_2; bisect R_1R_2 to find R, and draw OR. Where OR extended cuts P_1P_2 is the resultant point P describing the average sinking and forward speeds. The



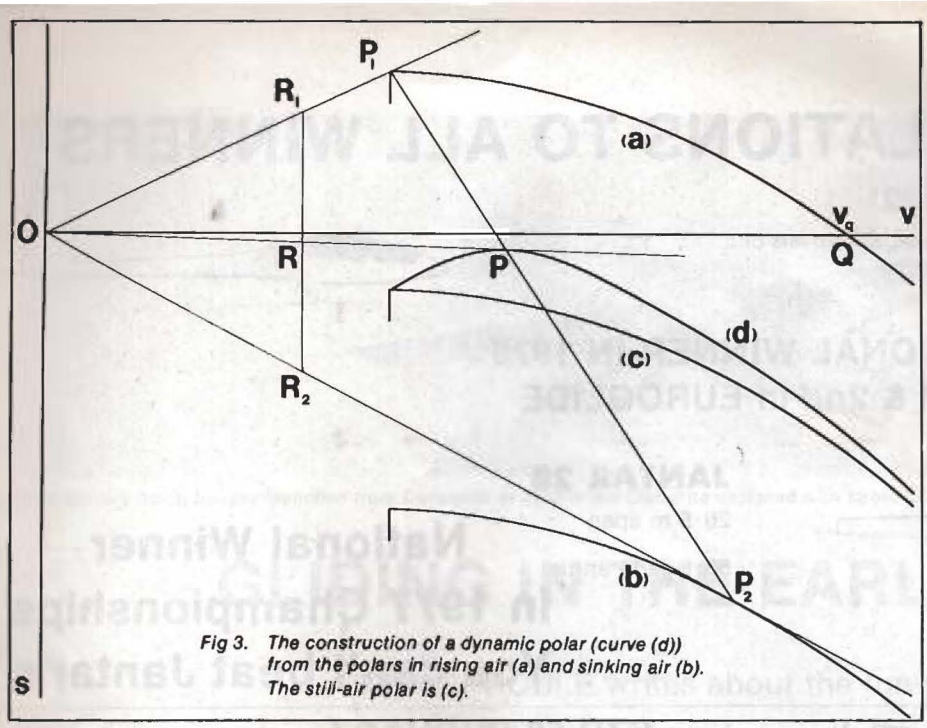


Fig 3. The construction of a dynamic polar (curve (d)) from the polars in rising air (a) and sinking air (b). The still-air polar is (c).

same construction applies if the proportions of the distance flown at P_1 and P_2 are not ½ and ½; just divide R_1R_2 according to the new proportions.

We may note in passing that we have just proved what every glider pilot suspects, namely that in still air we cannot "beat the polar" by varying our speed: for the polar is concave when viewed from below, and a mixture of speeds will, by the above argument, always lead to a resultant point below the polar, where we will be worse off. Only if there is lift and sink about does it pay to vary the speed.

Now if P in Fig 3 is the resultant best-glide point, the question arises as to what would be the corresponding resultant complete polar? In other words, if we elect to fly through the rising and sinking air so as to average a certain forward speed, what would be the average rate of sink given that we choose the individual forward speeds so as to minimise it? Obviously, if we fly at the same speed in both rising and sinking air the resultant polar will be half way between the two polars (a) and (b) in Fig 3 — which is simply the original polar, (c). However, if we fly faster in the sinking air than in the rising air we will be able to achieve points which, like P, are above the original polar. We must vary our speed in such a way as to obtain the best resultant polar possible.

But we know how to do this from the usual dolphin theory — fly according to a particular MacCready ring setting and the resultant overall gliding angle will be the best possible for the average speed

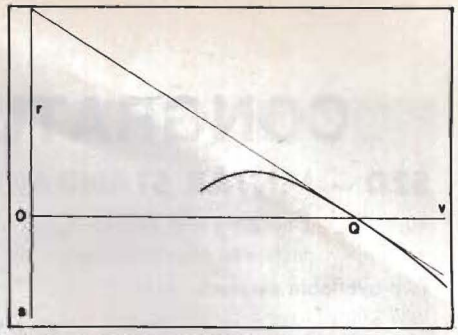


Fig 4. A dynamic polar showing the dolphin point Q when the ring setting is r.

achieved (see "On becoming a dolphin", S&G, Feb 1977, p13). In Fig 3 we must therefore repeat the construction with the tangents drawn not from O but from successive points on the vertical axis, corresponding to successive ring settings in the usual way. Finding the average point in each case, we generate an entire polar (Fig 3, curve (d)). v is now the **average** speed and s the **average** sink.

This resultant polar, (d), may be called the "dynamic polar" (the name given it by Richard Baker of the Cambridge University Gliding Club) because it represents the performance of the glider taking into account the rising and sinking air. It will be better than the normal polar (as we have already noted) and, just as with the normal polar, if we do not fly according to the optimal rule we will fall below it.

Can be repeated for chosen distribution

We have made the calculations for a particularly simple distribution of lift and sink, but they can be repeated, using a computer, for any chosen distribution. Since the extremes of the distribution — the strong lift and the heavy sink — will be the most influential parts, however, the simple model will be good enough to get the principles straight.

Armed with a dynamic polar two points which many people have found difficult to understand immediately become obvious. First, true dolphin flight maintaining height in the long run will only be possible if the dynamic polar cuts the horizontal axis as in Fig 4. At Q the gliding angle is zero (infinite glide ratio) and if we travel any faster overall we will lose height. Secondly, if we encounter any lift stronger than **r**, the ring setting, it will pay to circle in it (pace the Arm-Chair Pilot's "Rule 2"); for there is nothing magic about a dynamic polar — all the usual theory applies and, in particular, if we encounter lift stronger than the current ring setting we must either use it or increase the ring setting.

Finally, thinking in terms of dynamic polars enables us to understand why the modern glider is **so much** better than its wooden predecessor, for the differences between the "static" polars are magnified when vertical air movements are taken into account.

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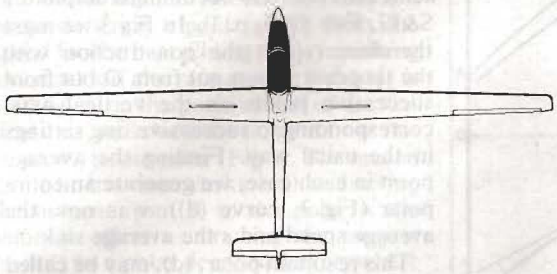
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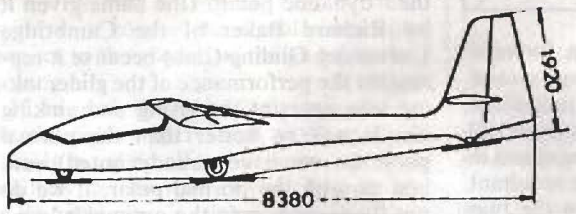


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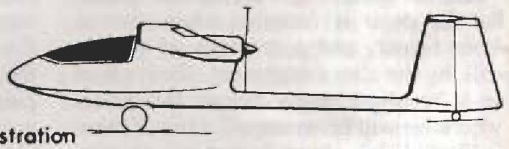
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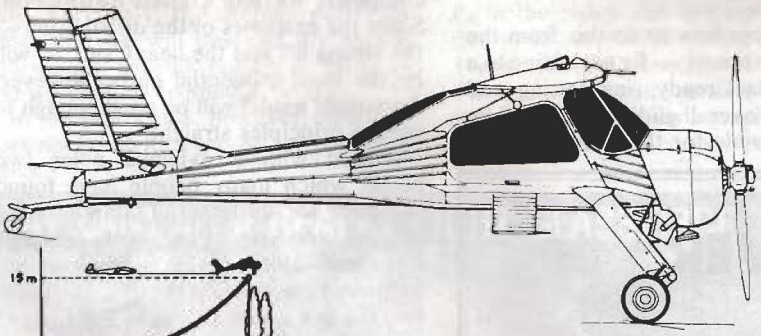
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John Sproule being bungey launched from Dunstable in 1938 in the Camel he designed with stress calculations by A. Ivanoff.

GLIDING IN THE EARLY DAYS

JOHN SPROULE writes about the fun he has had from gliding and puts forward a suggestion for "stealing a free ride on the wind"

In the Thirties when I was a lissom youth, the direction and speed of the wind at the weekends played a very important part in my life. For I was passionately devoted to gliding to the exclusion of almost everything else. From 1929 when I was first bitten by the bug I progressed laboriously from aerial tobogganing in a primitive single-seat Zögling training glider to slope soaring in sailplanes with an occasional foray to 5000ft or so in a passing thermal. By 1939 I had amassed 200hrs of this kind of flying, mostly in Yorkshire, and in 1937 I achieved my Silver C with a flight in a Grunau Baby from Sutton Bank to Filey beach. Apart from 1½hrs dual in an Avro Avian to get my A licence under the Civil Air Guard scheme, I had gone solo from the start.

This pre-war gliding was tremendous fun. It was cheap, otherwise a perpetually hard-up young chap like myself could not have done it; the sport was new and you knew everyone throughout the land who was devoted to it. And what wonderful characters they were — Sebert Humphries, the irrepressible miller from Weybridge who flew the Crested Wren at Dunstable; Norman Sharpe from Bradford who printed millions of Christmas cards and fathered the Yorkshire Gliding Club; and Tim Hervey of the London Gliding Club who had been shot down by von Richthofen and survived. All wonderful chaps from whom I learned much and many of them, I am happy to say, are still around to swap yarns with. And there were the splendid girl glider pilots to whom I lost my heart in turn: Emi von Roretz from Austria, Naomi Heron Maxwell who also did parachute jumps in Alan Cobham's circus, and Joan Meakin. And of course Amy Johnson who was both unaffected and kind in spite of her fame, and who let me fly her Kirby Kite sailplane.

The machines were beautiful creations of birch plywood and spruce and in 1937 you could buy the best for about £100. Some of them, notably the excellent Wren series designed by W. L. Manuel, were simple enough to build at home in your garage. In those days a painted finish was regarded with great suspicion as it might have been intended to hide poor workmanship — for most pre-war sailplanes were varnished like yachts and the white fabric covering the wings was almost transparent.

Multitude of wood screws

All these gliders in their construction were direct descendants of the German Albatross and Fokker D VIIs of the then not-so-distant Great War. In that conflict the Germans had pioneered monocoque plywood skinned structures which relied on casein glued joints only, unlike the British doctrine of "stick and string" and a multitude of wood screws. In German practice all joints were cramped and the nails withdrawn after the glue had set, and it was considered a crime to wound a hard-working piece of timber by stabbing it with a woodscrew! As the Germans had pioneered the art of sailflying as a result of the restrictions on power flying at the end of the war, it was natural that their advanced aircraft woodworking methods should be used in the building of the gliders which they began to develop at Darmstadt and other places. The German designs were so successful that from 1930 or so on they began to be licence-built and copied throughout the world. In England the glider building firm of Slingsby Sailplanes began in this way in 1932 with the excellent Falke and Grunau Baby types.

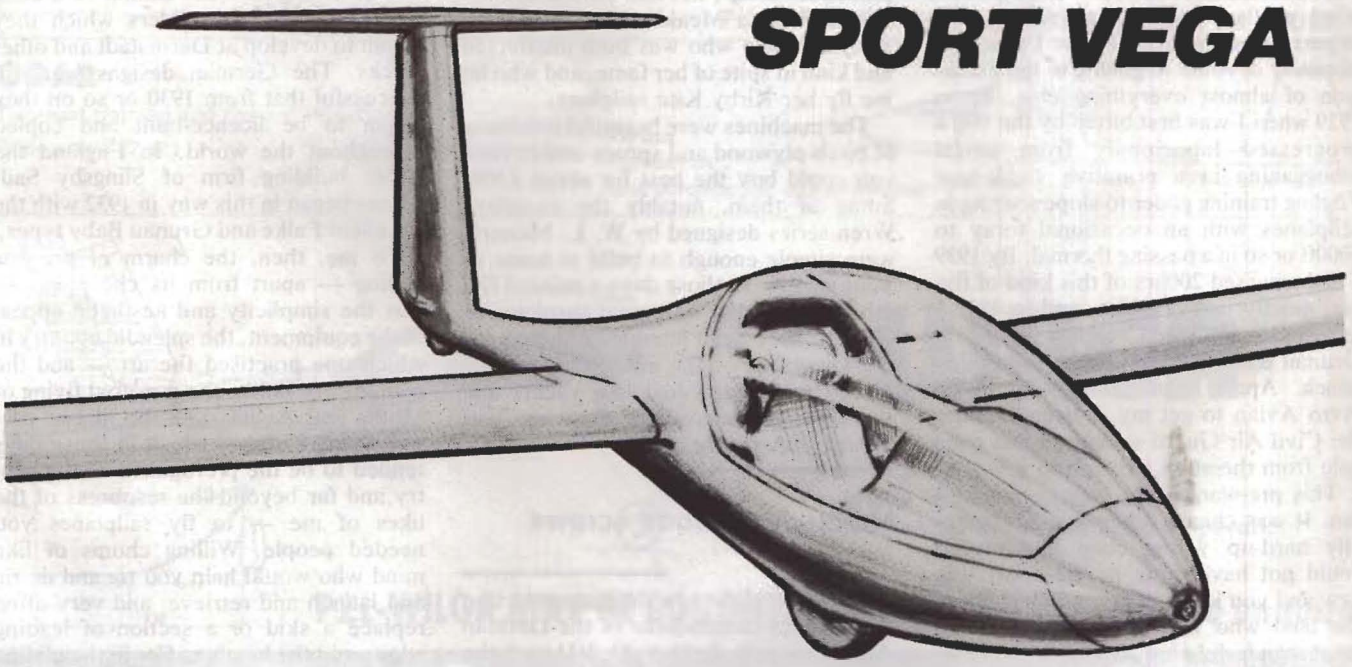
To me, then, the charm of pre-war gliding — apart from its cheapness — was the simplicity and aesthetic appeal of the equipment, the splendid country in which one practised the art — and the people. For unlike the powered flying of Moths and Avians and the like at pre-war flying clubs — which in those days tended to be the prerogative of the gentry and far beyond the resources of the likes of me — to fly sailplanes you needed people. Willing chums of like mind who would help you rig and de-rig and launch and retrieve, and very often replace a skid or a section of leading edge amid the heather. For in the gliding game, played by enthusiasts from every level of society, you were much more involved in the nuts and bolts of the aircraft. You put the glider together and took it apart every time you flew — and decided yourself whether it was airworthy or not.

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Yorkshire where we slept in a ghostly abandoned mine railway signal box at the top of the great heather covered slope; Sutton Bank and jolly beery evenings in the Golden Fleece at Thirsk; Bradwell Edge and the Long Mynd were the scenes of joyful expeditions of forty-five years ago when we rigged our machines, bungey launched ourselves into space and flew for hours on the wind.

As in all human activity, gliding lent itself to competition, the necessary stretching out of the frontiers of skill and knowledge without which we would get nowhere. In the years just before the war the aces began to emerge in the British gliding movement: Eric Collins, the first to fly 100 miles, Mungo Buxton, who climbed to 8000ft in a thundercloud, Kit Nicholson — and of course the great Philip Wills — all of them contributing to the longer and longer cross-country flights and altitudes achieved in motorless aircraft in England. The BGA, managed almost entirely in the early days by spare time unpaid amateurs, gradually built up prestige and expertise so that gliding could be put on a properly organised footing. As the gliding movement grew more and more attention could be paid to standards of airworthiness, methods of training and the prevention of accidents — for of course the odd one happened from time to time.

Pastime in itself

While the high performance stuff was fine for the competitive and affluent, it always appeared to me that slope-soaring, after being bungeyed off a range of hills in a simple machine which responded to the controls in a positive manner, was quite a pastime in itself. Skimming along the downs at Dunstable on a nice summer evening in the beautiful little Grunau Baby built by Louis Desoutter had, for my money, everything that skiing had — but I was doing it in a sitting position! And exploring the Sutton Bank ridge away to the north and far away from the launching place, wheeling like a gull with the wind whistling past your ears, was incomparable fun.

All this leads one to the present day. I have been a member of the splendid Lasham Soaring Centre for many years and with my wife and offspring I repair there with our small caravan on every possible occasion. It is alive with aeronautical activity — sometimes there is an old chum to talk to — and the hangar is filled with the most beautiful sailplanes. But these days, instead of being made of spruce and plywood they are made of glass-fibre, cost an awful lot of money and require a towing aeroplane or car to get them up among the thermals. The skill of the pilots of these sophisticated birds is unbelievable, both in the arts of interpreting the weather to stay airborne for hundreds of miles, and in navigating complex triangular flights with all the complications of forbidden zones and the vagaries of English visibility. So I take-off my hat to them, long hair and all. But on the other hand I do not fly these modern sailplanes as they are much too expensive for me — in my old age I rub along with a much cheaper 100hp two-seater aeroplane! I operate this because I still like to fly something or other, but I do not dart about quite as much as I did when I was a lad and gliding is physically a very active pursuit. In passing I am ashamed to relate that just as in the Moth days, my aircraft is pushed from its hangar by some splendid chaps who are paid to do it — and all I have to do is get in and fly!

Nostalgia for carefree days

But as far as the sport of gliding is concerned — the joy of my youth — I sometimes wonder if the inevitable march of progress into the glass-fibre era of aerodynamic perfection has not taken it too far away from the game that I once knew. Gliding is now a big and highly organised sport, the scene is littered with pilots' categorisations and tests and cards of various colours and we have almost got to the stage of needing six A levels to be allowed to participate! I am exaggerating, of course, and I am sure a lot of it is necessary, but I confess to nostalgia for the carefree early days when, instead of needing £10 000 to feel happy about your outfit, you found the present day equivalent of £500 or so with some friends — or built the darned thing yourself! It may well be old age but I for one would not feel at all happy about having several thousands of pounds worth of apparatus strapped to my behind when faced with a hairy non-airfield landing. For instead of wafting in at 30mph with the capability of landing safely on half a football pitch, these days there is a pre-landing cockpit drill as comprehensive as on some light-twin aeroplanes. You whistle in with tail parachute a-streaming, knowing full well that the slightest misjudgment will lead to the services of a white-coated scientist to stick the thing together again! In the old days as likely as not you carried out the repairs yourself, but those days are over.

Of course slope-soaring still goes on at the well established gliding clubs in England, *ie* at Sutton Bank, Dunstable Downs and Long Mynd, etc, but it tends to be done in quite expensive machines, mainly the excellent Schleicher K series — the counterparts of which are no longer constructed in England.

What I have in mind, however, is whether the current flying of extremely simple hang gliders, is not indicative of the fact that there are many people like me who do not aspire to be World Champ in a glass-fibre cocoon, or who simply cannot afford the outlay.

Its sheer simplicity

One of the fascinations of the early gliding business was its sheer simplicity — and the glee that one got out of stealing a free ride on the wind. Something of this glee is lost, I am sure, if the necessary apparatus causes an appalling flurry of cash if you bust it!

So, taking a leaf out of the past such as when Geoffrey de Havilland came along with his 60hp and very practical Moth, after the flea-powered light aeroplanes of 1932, I am wondering if one could advance in 1979 from the very basic hang glider level to a practical, cheap and very simple slope-soaring device in which one could sit down in a civilised manner. In other words to look back to 1937 or so and with a few new ideas from the present, satisfy the needs of those chaps who would be quite happy to drift in sustained motorless flight along a range of hills in something capable of being built at home in the winter months. I am sure the slope winds still blow as they did for me forty-five years ago, and the fun and exhilaration of doing it in simple equipment — perhaps created with your own hands — would still be the same.

In other words the introduction of an airborne *Mirror* dinghy, or *Yachting World* Cadet, into the gliding firmament. I will therefore be happy to suggest the following specification.

A gliding machine of not more than 36ft span and 160lb empty weight, capable of being built without extremes of skill in easily obtainable materials. I suggest a VNE of 65mph and an L/D of about 20. The machine to be easily rigged and de-rigged and designed for catapult launching only, with the minimum of help. The design exercise to include an easily constructed trailer for transportation.

In these days of recurring energy crisis one has to be prepared for anything, and it is to be hoped that the specification of the trailer will never have to include the capability of being towed by a team of push-bicycles! But if ever we did suffer a complete ban on the operation of towing aircraft — it is nice to know that gliding of some kind could continue without the benefit of petrol. And think how healthy the exercise would be!

First printed in **Flight International**

THOSE WERE THE DAYS

Ron Riley, A Certificate No. 891, gives a graphic description of just what it was like learning to glide before the last war

"You can hold the stick in the middle this time."

It was at Dunstable in January 1938. I was sitting in a Dagling and Tim Hervey, Manager of the London GC, was holding the wingtip. These were the words I had been waiting to hear since joining the Imperial College section the previous October.

At that time, instruction was solo right from the start. The first ten or 11 launches were ground slides and the pupil had strict instructions to keep the rudder bar straight and the stick hard forward against the stop. One of the club's bullnose Morris cars was hooked up to the Dagling with a bungey and two members held the aircraft back on the tail.

The signal was given, the car started, the rubber stretched and the man on the wingtip said "Let go." The object was to learn how to keep the wings level with the ailerons and it took quite a few high-speed slides to get it right. At an average of two ground slides per full day, it also took quite a few days to get in the ten or 11 launches.

But this time I was really going to fly. It was certainly a more impressive occasion than going solo in a Cirrus Moth a few months later. "Let go" and you shot into the air, four or five feet high for a 15 second, pump-handling flight. After this you got somewhat stronger launches for half a dozen low hops and half a dozen high (30ft) hops.

At this stage you were ready for the hill. Before the war, the club had installed an endless rope going from the bottom of the hill round a large pulley well behind the crest. This was operated by a member who sat in a little box at the bottom, driving a Morris car engine. Members wanting to get a bungey launch from the top hitched their aircraft to the endless rope which towed them slowly to the top.



The hill winch described above, photographed in 1938 by Alan Yates. Note the beginnings of the tree growth which now covers the hill at Dunstable.

Thus I found myself sitting in a Dagling just behind the brow of the hill looking at the backs of eight members manning the bungey. Two people held back on the tail. "Walk" — and the rope stretched. "Run" — and the eight men disappeared over the brow. "Let go" — and I was off with no means of stopping the launch, of course.

Now as an engineering student I suppose I knew what a stall was. But I'd never done a stall and nobody had told me anything about the subject, or linked the stall with spinning.

So on this bright Sunday morning in March 1938, I eased back the stick and with a feeling of delight seemed to soar above the launch point out over the brow of the hill. I remember thinking that I was turning slightly to the left towards the power wires which ran down the airfield boundary. Then I thought: "its the opposite of a bicycle" because it was my first turn and use of the rudder is not instinctive.

After gingerly moving stick and rudder to the right the Dagling continued to turn to the left and the nose went down a bit. So I put on full right aileron and stick full back and the Dagling (new from Slingsby's at £50) continued downwards more steeply, still turning to the left.

From this position I was pointing roughly towards the motor box at the bottom of the hill and I watched the driver get out and run towards the hedge, accompanied by two or three members who had dropped their wingtips in order to join him. This I recall was a comical sight.

At that time, a member who broke a London Gliding Club aircraft paid the first £3 of the repair bill. In its generosity, the Imperial College section subsidised the hard-up student who crashed by donating thirty shillings. Needless to say, I got the bill for thirty bob. The Dagling's wingtip and nose skid hit the ground together and the whole outfit disintegrated into a mass of wires and broken wood. I was not hurt, which was surprising because there had been no need to release the straps — they had just burst adrift.

When I met Tim Hervey he didn't say anything, but just looked at me sadly. Of course, people quickly explained things to me and the next Sunday I was shot off the hill again in another Dagling and, happily to relate, all the controls worked properly and I clocked 31 seconds for the coveted A certificate. Three more launches from the top of the hill produced the B certificate and then one graduated to a "hot" ship. This was still a Dagling, but it had a little nacelle built round the pilot which reduced the sinking-speed just enough to make it possible to hill soar in a fresh wind.

Once again then, on the top of the hill: "Let go". But this time, immediately after launching, I turned to the right along the hill anxiously scanning for the batman who was stationed half way to the bowl with a couple of bats. His job was to signal Too Fast; Too Slow; Too Near or Too Far Out. Thus started my soaring, which as all glider pilots know is really where gliding begins. But that's another story.

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INSTRUCTORS —

A View from the Front Cockpit

By Badgered of Husbands Bosworth

There are of course many different types of instructors, few of them perfect. I suppose the main problem between instructor and pupil is one of "wavelength". I mean, I know what I'm trying to do and he knows what he wants me to do but somehow the two are seldom the same. If he would only understand that I have a perfectly good reason for doing a slipping turn.

Personally the type I dislike most is the "you're going to fly this thing properly even if it kills you" type. He's the one who starts with comments before you're even in the glider. "Have you done your external checks?" Choking back such answers as "Any fool can see it's got two wings, a tail plane and a rudder" I mention that the last instructor I flew with told me not to bother. "Well, when you fly with me you always do them." Ah well, there's nothing like consistency. The comments then continue all through the aerotow and the rest of the flight. I know it's for my own good but so is All-Bran and I don't like that either. Another trick of this paragon is to tell you to fly downwind away from the airfield and then complain when you get back that you were too low over your high key position.

"A right one here!"

Fellow pupils may have observed the way he always notices you are doing something wrong just after you realised it yourself but before you've had a chance to correct it. For me the main problem is speed. There I am flying along feeling at one with the universe apart from that berk in the back when I realise that there's rather a lot of ground visible in the canopy and that we seem to be approaching VNE. Of course, I'm just about to put the matter right when that voice in the back chimes in "Get that bloody stick back!" There's something in his voice that tells you he's thinking "We've got a right one here."

While I'm on the subject of speed, have you ever noticed how often you're told not to chase the ASI but the bloke in the back still keeps commenting on the reading all the same?

The exact opposite of this kind is the "bored, can't be bothered, I'm only here to get away from the wife" kind. You know the sort, once he's climbed in the back and you're strapped in so you can't turn round, you're never entirely sure whether he's awake or not. One way of finding out is to wait until you're coming into land and leave the round-out a little late. If you hear a scream of "I have control" then he's still there.

It is possible that this lack of comment could be because your flying is really coming along well, but between this lot and the first kind you're never really quite sure how good or bad you are. This is probably because the first rule for instructors seems to be "never let the blighters think they've got it taped".

There are also the technical ones who when asked about secondary effects of controls go into details about venturi and differential ailerons, which to someone who has only just learned how to spell aileron is baffling to say the least.

I feel I must say, however, that bad instructors are very few, certainly at the Coventry Club where most of them do a difficult job well and please Mr Davidson can I go solo next week?

ONLY FUNNY NOW . . .

Two pieces of war nostalgia have turned up on the S&G desk and viewed with the comfortable distance of time, now make amusing reading.

The first, sent me by John Hirst, is a summary of accidents from the December 1917 records of the Royal Flying Corps.

Six avoidable accidents are listed

1 The pilot of a Shorthorn with over seven hours experience, seriously damaged the undercarriage on landing. He had failed to land at as fast a speed as possible, as recommended in the Aviation Pocket Handbook.

2 A BE 2 stalled and crashed during an artillery exercise. The pilot had been struck on the head by the semaphore of his observer who was signalling to the gunners.

3 Another pilot in a BE 2 failed to get airborne. By error of judgment he was attempting to fly at mid-day instead of during the recommended best lift periods, *ie*, just after dawn and just before sunset.

4 A Longhorn pilot lost control and crashed in a bog near Chipping Sodbury. An error of skill on the part of the pilot in not being able to control a machine with a wide speed band of 10mph between top speed and stalling speed.

5 Whilst low flying in a Shorthorn, the pilot crashed into the top deck of a horse drawn bus, near Stonehenge.

6 A BE 2 pilot was seen to be attempting a banked turn at a constant height before he crashed. A grave error by an experienced aviator.

There were 29 Unavoidable Accidents

1 The top wing of a Camel fell off due to fatigue failure of the flying wires. A successful emergency landing was carried out.

2 Sixteen BE 2s and nine Shorthorns had complete engine failures. A marked improvement over November's figures.

3 Pigeons destroyed a Camel and two Longhorns after mid-air strikes.

Cost of Accidents

Accidents during the last three months of 1917 cost £317.10.6—money down the drain and sufficient to buy new gaiters and spurs for each and every pilot and observer in the Service.

The other relic is a booklet issued to pilots during the second World War which includes an article on "Tug Pilots" for the benefit of those towing the Horsa military gliders. It is dated April 1943 and was unearthed by Harry Boal.

After various advice on take-off and the warning against giving the "goods train jerk" by banging open the throttles because the troops in the glider will be thrown over the floor, we get to the actual flight.

"Get airborne about five to ten miles per hour above your normal speed and climb away at a steady rate of climb, raise flaps when convenient and carry on as if you had no glider on the back. Level flight presents no difficulties, except that it is infuriating not to be able to trim your aircraft to fly straight and level for a single minute. It is constantly being pulled off course by even the best glider pilot.

"Cut out slipping in and other forms of sloppy flying. If you see a large cloud ahead, don't go into it. The glider is usually blind and helpless on tow in cloud, where it cannot see the tug, and if you suddenly decide to throttle back and dive out of the cloud, you may find yourself formating on the glider which had come out first."

DISORIENTATION IN FLIGHT

Disorientation means a situation in which a pilot is confused about the position, attitude or motion of his aircraft because of false bodily sensations. Mild temporary disorientation is a common experience in flying and does not normally cause trouble for experienced pilots who learn to disregard the erroneous sensations. However, serious disorientation, with loss of control resulting in an accident, can and does occur and all pilots should know about this problem and how to deal with it.

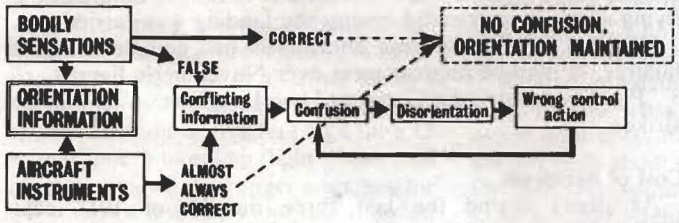
On the ground you remain oriented by the balance mechanism in your ears and the muscle, joint and skin receptors throughout your body ("seat of the pants" sensors). Above all, your eyes indicate your orientation by sight of things about you.

In the air the effect of accelerations and visual illusions mean that all these sensors can mislead you and disorientation may result. The pilot and the aircraft form an integrated control system and the pilot is the weaker link in this system because of human limitations. There are two main ways in which the weak link may break down:

(i) Confusion from conflicting illusory information received in the brain from different sensors, *eg* your eyes and the balance mechanism of your ears.

(ii) Failure to obtain the correct information *eg* misreading or, more rarely, the fault of an instrument or neglect of essential information because attention is directed elsewhere.

Should either of these situations occur, wrong control action may be taken and a potential accident sequence initiated.



Many situations predispose to spatial disorientation. The main ones are:

(i) Any situation involving a reduction or change in the way essential cues are available to you, *eg* on transition from visual to instrument flight or attempting to fly visually as in poor light, haze or at high altitude.

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(ii) Immediately after aerobatics, particularly prolonged spinning or rolling manoeuvres.

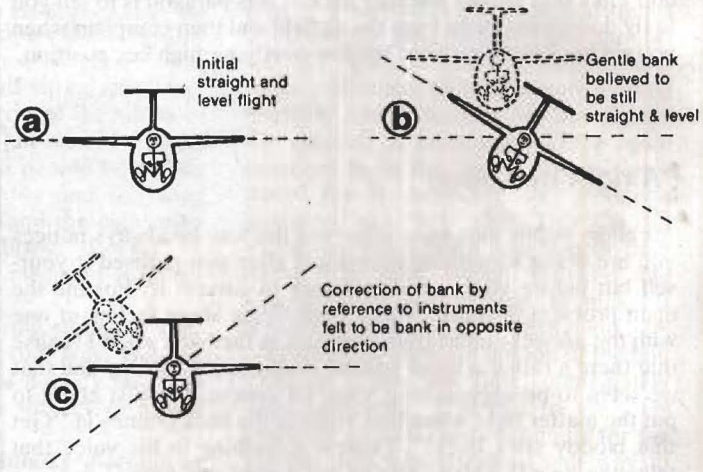
(iii) When head movements are made in a turning aircraft and outside visual reference is lost, as in changing an R/T frequency.

(iv) When out of flying practice.

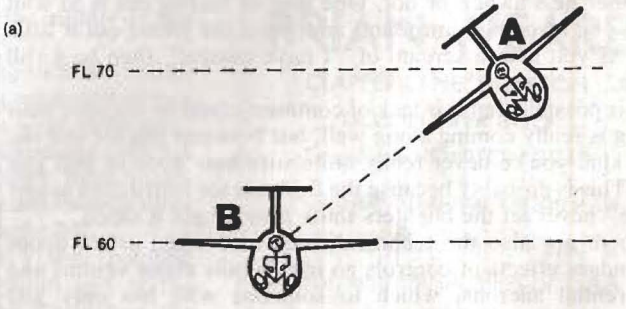
(v) Impairment of brain function by oxygen-lack, alcohol, fatigue, emotional disturbance or medication.

Among the commonest types of disorientation are:

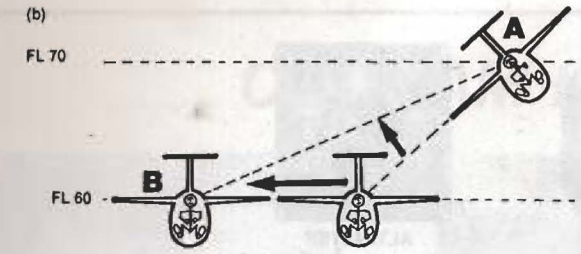
(i) **False sensation of attitude.** This often occurs in straight and level flight. The aircraft having gently banked without your sensing it, owing to lack of attention, the banked attitude may be wrongly perceived as straight and level. Correction of the bank to the level position, as indicated on the instruments, will now give a feeling of bank in the opposite direction:



This experience, common in many pilots, is known as the "Leans"! Further in (b) above, a pilot looking along the wing of his aircraft, which he believes to be straight and level with will have the false impression that another aircraft, in line with the wing, is at the same flight level:

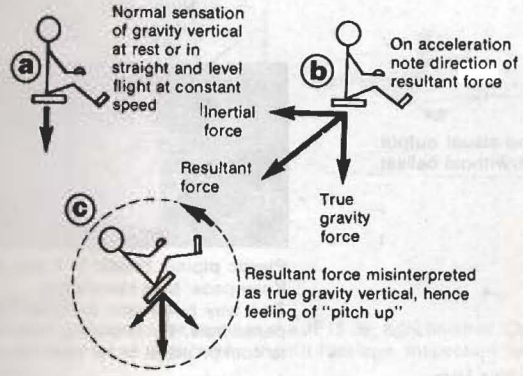


If the lower aircraft (B) now changes its position at the same flight level, the pilot in the higher aircraft (A) may deduce that the lower aircraft has climbed:



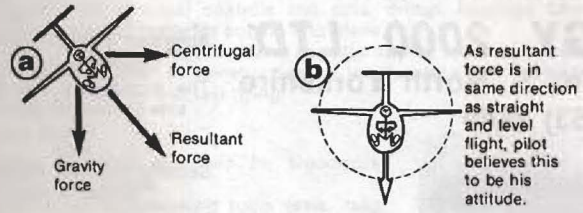
Such a situation has definite confusion and accident potential.

(ii) **Misinterpretation of the gravity vertical.** This can occur because of the resultant of the forces acting on an aircraft, to which the body balance mechanism responds, does not coincide with the true gravity vertical. A false sensation of attitude will arise if the pilot regards the resultant acceleration as his vertical reference as can occur in forward acceleration on take-off or overshoot:



The opposite effect will occur with deceleration giving resultant feeling of "pitch-down".

The same misinterpretation of the gravity vertical is possible in a co-ordinated turn:



These forces and effects are most apparent in high performance aircraft. The danger of inadvertent "correction" by the pilot in response to these illusions cannot be overstressed.

(iii) **False sensation of turning.** If the aircraft is deliberately turned, the balance mechanism of the ears senses the turn and this information is passed to the brain. If a constant rate of turn is now maintained, the sensation of turning lessens and may disappear altogether. If the pilot then rolls out of the turn to fly straight and level he may feel that he is now turning in the opposite direction, and compensatory eye movements which involuntarily accompany such a feeling may blur vision and make attitude checking difficult, with possible disorientation and loss of aircraft control.

(iv) **Coriolis stimulation.** If while the aircraft is turning in one direction the pilot moves his head in another direction, perhaps to select a switch or alter a setting, the stimulation of the balance mechanism of the ears in the two planes of rotation at the same time can produce a spontaneous stimulation of the balance mechanism in a third plane of rotation, with completely confusing messages being then sent to the brain. Severe disorientation may follow.

(v) **Pressure vertigo.** Sudden changes of pressure in the ears when clearing them, either on ascent or descent, can produce in susceptible pilots a strong feeling of disorientation, usually lasting only a few seconds. While present it can be most alarming and has been known to cause severe impairment of flying performance.

To summarise so far:

1. False sensations or sensory illusions may occur at any time in a pilot's career and in fact commonly do occur in the normal course of events.
2. These illusions are most likely when trying to fly visually without adequate external cues, and loss of aircraft control may result.
3. The impression created by these illusions on the pilot may be very powerful. Determined and persistent concentration on the aircraft instruments is often required to overcome the feeling of disorientation.
4. Except when flying in good visual conditions, when the eyes can easily verify your position, attitude and motion, with respect to the surface of the earth, bodily sensations are usually unreliable, whereas failure of the flight instruments is much less likely to have occurred.

To prevent disorientation:

1. Make sure you feel fit to fly. Anxiety, alcohol, drugs, fatigue, even missed meals can predispose to disorientation.
2. Maintain as high a standard of instrument flying as you can, and be thoroughly familiar with each type of aircraft you fly and flight procedures so that mental conflict is less likely to occur.
3. Be on your guard against the possibility of disorientation and try to avoid situations likely to produce difficulties.

What to do if disorientation does occur

Since temporary mild disorientation is something pilots learn to live with, the majority are probably not consciously aware of having to do anything. However, if troublesome or severe disorientation does occur, then:

(i) Get on instruments. Scan and check your instruments systematically. Believe absolutely in the accuracy of their information (they can't all be wrong) and try to disregard conflicting body sensations.

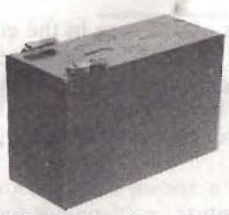
(ii) Stay on instruments until unambiguous external cues become available.

(iii) Avoid rapid head movements until instrument orientation is established.

(iv) If severe disorientation persists, discontinue possible aggravating procedures, hand over to co-pilot/instructor or summon a companion aircraft. If flying solo, abort the sortie, inform ground control of your problem and request GCA or other available aids.

Any further information or advice on this subject may be obtained by contacting the Civil Aviation Authority Medical Department at the following address: Civil Aviation Authority, Medical Dept., Shell Mex House, Strand, London WC2; telephone No. 01-836 1207, ext. 493.

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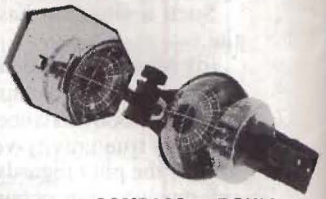
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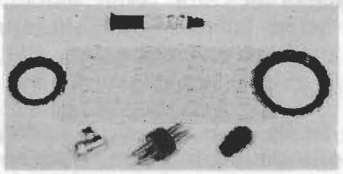
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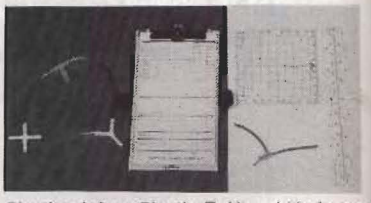
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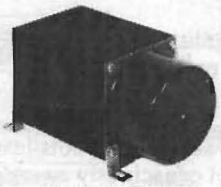
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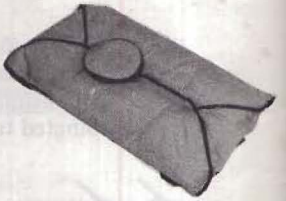
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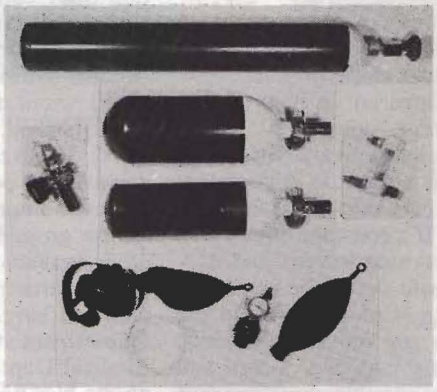
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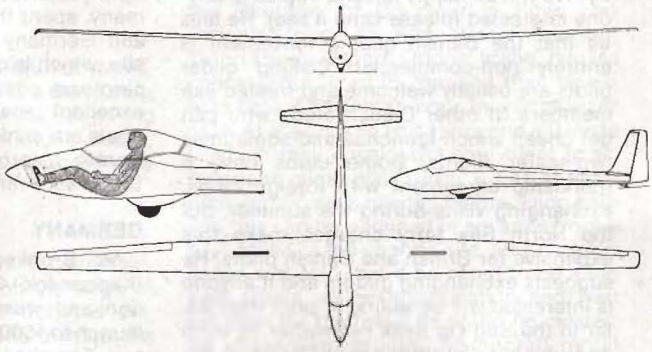






EVEN A CHILD COULD BUILD IT! —





— AND THESE PICTURES PROVE IT!



WHAT YOU GET

1. The wings — which are the same as the JP15.36, fully finished. Complete and ready to fly when attached to the Kit fuselage. Inspection certificate supplied.
2. All materials required to make the wooden fuselage and tailplane. The plywood sides are already scarfed together: all longerons and timbers are planed to correct sections and numbered.
3. The following ready made items:
   a. Glass fibre front fuselage moulding and dorsal moulding ready to fit to basic structure.
   b. Canopy already fitted to its glass fibre surround requiring only minor fitting adjustments.
   c. Complete set of metal controls and rods, drilled, bearings fitted, painted, certified ready for bolting into place.
4. Full scale set of plans which can serve as patterns plus separate manuals describing each detail of construction of the fuselage and tailplane, inspection procedures and test flying.

WHAT YOU NEED

1. A heated workshop equipped for woodwork, measuring 7 x 3 metres.
2. A minimum of woodworking tools (saw, rasp, chisels, wood-vice). (Machine tools such as a planer and band-saw are not required).
3. Materials to make jigs as follows:
   3 lengths of timber 6 cm x 18 cm x 580 cm
   1 sheet 10 mm ply
   1 sheet 15-20 mm ply or equivalent
   Assorted cramps etc. for gluing



THE 15.34 GLIDER

★ GLASS FIBRE PERFORMANCE — Best Glide Angle 36:1 at 90 kph/48 knots
★ EASY TO FLY — very good handling characteristics
★ EASY TO REG — wings weight only 135 lb each, single centre pin
★ EASY TO MAINTAIN — all parts accessible and interchangeable
★ EFFECTIVE AILERONS — 3 seconds roll
★ POWERFUL AIR BRAKES — 6 m/s sink, speed limiting
★ ADJUSTABLE RUDDER PEDALS
★ ROOMY COCKPIT — will take up to 6 ft 6 in and 16 stone in comfort

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SPECIFICATIONS:

WING SPAN	15 m
WING AREA	11 m²
ASPECT RATIO	20.4
AIRFOIL	Wortmann
LENGTH	6.50 m
WIDTH	.58 m
HEIGHT	.90 m
EMPTY WEIGHT	225 kg
GROSS WEIGHT	335 kg
WING LOADING	30.5 kg/m²
VNE	220 km/h
BEST GLIDE ANGLE at 90 km/h	36
MIN SINK at 75 km/h	.64 m/s
STALLING SPEED	63 km/h



GLIDING ABROAD

Personal recommendations of foreign gliding sites

We are most grateful to the pilots who sent us details of the clubs they have visited overseas. The one common factor running through all the reports is the friendliness shown to visitors. If any reader is particularly interested in a club mentioned and would like to know more about it, do write to us for the full address of the contributor.

AUSTRIA

St Johann GC is 11km north of Kitzbuhel in the Tyrol, the site being only 1.3km SE of the village centre. It is very professional and combined with a power flying club, a commercial air taxi service and a parachute club. Mr. R. I. Godden of Willingham, Cambridge went there recently and was impressed with the excellent facilities, including a concrete strip. A licence to fly in Austria was quoted as 100Sch and at this site it was 8Sch/min for the Motor Falke with a 30Sch landing fee.

Mr Godden also visited a smaller gliding club at Kufstein-Langkampfen which is close to the German border on the Munich/Salzburg motorway. It has a small grass strip and flying fees for visitors in the Falke were 9Sch/min with again a 30Sch landing fee. The flying was described by Mr Godden as "more exciting than in England because they fly *very* close to the vertical face of the mountains." At both sites radio is mandatory.

BOLIVIA

Mr P. Charatan flies at the Ayar Uchu GC where a minimum height of 13 000ft agl is guaranteed! That is the height at which you take-off from the club strip on the Alto Plano just outside the city of La Paz in the Andes. Oxygen masks are used at 2-3000m agl. Thermals are especially good in October and November. This is followed by the rainy season until about March and there is virtually no flying during these wet months. It is 71p for a winch launch but costs about £1000 for a return airfare!

CANADA

Cu-Nim GC, Black Diamond, 15 miles south of Calgary, Alberta, was visited by Mr J. F. Thurlow of Colchester. He found the Alberta weather variable for after several days of looking at skies covered with wave clouds or cumulus, the day he flew was poor. It cost $5 for a 2000ft aerotow and $5 for 30min in the Blanik. You need the Canadian Department of Transport endorsement of the gliding licence to fly club aircraft solo and this is given after passing an Air Regulations examination. For this, apply to the DoT Dept, Calgary International Airport. The contact at the club is Bruce Hea of 1528 23 Street NW, Calgary, tel 282-3974. This club also has wave camps at Cowley in the Rockies.

DENMARK

Mr. C. Ulrich of Højbjerg, Denmark has sent us some excellent background material on the possibilities of flying in his country. We will be happy to send copies to anyone interested (please send a sae). He tells us that the Danish gliding movement is entirely non-commercial. Visiting glider pilots are usually welcome and treated like members of other Danish clubs who can get cheap winch launches and sometimes two-seater flights. Some clubs have a friendship agreement with foreign clubs, exchanging visits during the summer, but the North Sea ferry charges make this expensive for British and Danish pilots. He suggests exchanging gliders and if anyone is interested will be willing to print their letter in the Stig Og Synk newsletter he edits and which is distributed to all Danish clubs. The address is Filippavej 32, 8270 Højbjerg, Denmark, tel 06-273632.

Incidentally Mr Ulrich wants to find someone in Britain with a Club Libelle that may be flown in a British competition by his son during the coming summer in return for flying their ASW-20 based at Christianshede airfield near Silkeborg.

FINLAND

Nummela GC is 45km outside Helsinki and when Mr C. Barnes of Stubbington, Hants, called there late in the evening the Falke was pulled out of the hangar and he flew for 30min. He wasn't allowed to pay for the flight but he thinks it would be about £8/hr. His reaction to the pine forest scenery was "super but I did wonder where you would land out if the need arose."

Mr P. Jones of Weybridge, Surrey, went to the Oulu GC at Pudasjärvi, 80km ENE of Oulu on the west coast. He found the launch and rental very cheap but as there wasn't a day membership available it meant either paying an annual fee of £25 or negotiating. The members are very friendly but communication can be difficult.

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FRANCE

Mr H. T. Brookes of Detmold, West Germany, spent three weeks gliding in France and Germany last summer. At the Loiret site, which is close to the Loire river, 1700ft aerotows cost 35f. Although flat it is an excellent soaring area where Diamond goals are achieved. The contact is Chef du Centre, L'aeroport de St Denis de L'Hotel, Loiret 45, France.

GERMANY

Mr Brookes visited the German site (Klippeneck 48 06N 08 46E) for a competition and was charged 6DM for a winch launch to 1500ft and 16DM for a 2000ft aerotow. The site is 3117ft asl and has a magnificent ridge running north-south so that if winch launched towards the west you are immediately at more than 2500ft agl.

INDIA

Mr Jones writes that any visitor looking for a gliding site in this country will have a hard time. As far as he could determine there are only two sites — at Poona and New Delhi. Flights are government subsidised and cost almost nothing. The Poona site enjoys fine soaring from winch launches and have various Rawipindis and a K-6.

NORWAY

Mr A. Monro from the London GC, who has been in Norway for two years where he has flown his ASW-20, has sent us a mass of valuable information for anyone wanting to glide in this country. Sixteen clubs are listed with copious details of equipment, facilities, dates of courses, flying charges — and aerotows range from 3.50 to 6Kr/min —, advice on where to stay, plus useful background material on how gliding is administered in Norway. We will be pleased to send copies to anyone interested (please enclose sae). He says there is no problem for a pilot of any experience to fly in Norway and writes of off-the-clock lift to 6500-8500ft cloudbase and of flying over countryside "as beautiful and as terrifying as anybody could wish."

The best way to begin gliding in Norway is to contact Vidar Halvorsen at the Norwegian Aero Club, Postboks 9514 Egertorget, Oslo 1. Vidar is the head of the NAK gliding section, an active glider pilot and instructor and described by Angus as "among the kindest and most helpful peo-

ple I have ever met". Angus will be spending the summer at Dunstable and be pleased to give any further details.

SOUTH AFRICA

Mr J. Hollenberg of Portsmouth flew at Witwatersrand Gliding Trust which operates from Baragwanath airfield, ten minutes from the centre of Johannesburg. The club welcomes solo pilots from the UK and doesn't charge a temporary membership fee provided you have a valid membership card from your own club. Also take along your gliding certificate and logbook. An aerotow costs 0.85Rand/min with a minimum charge of 7Rand plus a flight levy of 0.50Rand and a soaring fee of 10Rand/min. The contact is Mr Ray Forsyth, PO Box 6875, Johannesburg 2000, South Africa, tel 833 5930 (business).

SWEDEN

Mr I. Nemes glides at the Munkfors GC, 30 miles north of Karlstad. It is a grass strip and gliding usually starts at the beginning of May and goes through into October, June being the prime month. Aerotowing is 3Kr/min.

SWITZERLAND

Mr J. F. Crawford flies from Schaenis airfield, 50km ESE of Zurich on the edge of the Alps. It offers gliding over both the lowlands and the mountains where there are few airspace restrictions. If you bring your own glider it costs 70f/month for parking, though you can join the club for a month for 450f which includes all flying time with the additional cost of aerotows at 4.90f/min. Usually if a visitor is cleared to fly glass-fibre machines there is something available except on good weekends. The best thermals are in spring and early summer. A British gliding licence is valid for a visitor flying in Switzerland, but a validation is needed to fly to another country which must be a consideration when gliding at Schaenis. The validation can be arranged through the Office Federal de L'Aviation Civile, Bundeshaus Inselgasse, CH-3003 Bern, Switzerland.

USA

Mr T. C. Llewellyn Jones of Ipswich flew at two sites last summer, located through the Directory of US Soaring Sites and Organisations. At Red Baron Soaring, Teton Peaks Airport, Driggs, Idaho, he was checked out in an IS-28B2 and then flew it solo before having an hour in a Schweizer 1-34. At the time he had 15hrs and a Bronze C which they considered equivalent to an American glider pilot's PPL. A FAA student pilot certificate is needed before flying solo and this can be obtained in advance from a FAA office or the soaring site. Mr Llewellyn Jones was told that if he cared to take the FAA pilot's written examination and wait ten days for the result he could be cleared for passenger carrying. An aircraft rental agreement had to be signed before flying at this particular site. The cost for a 2000ft aerotow was $10.85.

He also flew a Schweizer 2-33 with the Sunbird Aviation Centre at Gallatin Field Airport, Bozeman, Montana. This is a club operation and they didn't have the facility to send him solo. He soared to 9700ft amsl in 2-8kt thermals with an estimated cloudbase that day of 15 000ft amsl. Club members are able to hire a Schweizer 1-26 for the day for $75 plus aerotow charges. Neither site required any form of medical certificate.

Sebring Soaring Centre, Florida, was visited by Mr D. Crump of Lasham Gliding Society for "a most satisfactory and enjoyable two week vacation." He found the weather superb and the Centre's facilities excellent. (For further details see S&G August 1979, p191.)

Cross-country restrictions

Mr P. Jones also writes of his experiences of flying in the USA and says that established pundits are likely to get quite a different reception from pilots looking for Silver leg opportunities. A study of the US Site Directory reveals that few sites allow cross-country activities and the one he personally tried claimed their advertised cross-country opportunities was a misprint in the directory. He also stresses that the question of a licence needs to be considered. "An easy solution is to suppress the ego and take out a student pilot's licence which can be issued locally with a minimum of formality. Alternatively it is necessary to apply to a CAA office, one of which is allegedly located in each state.

"I hope these comments haven't discouraged anyone from enjoying the delights of the USA soaring scene but it is important to be aware that all sites are commercial enterprises, clubs are comprised of groups of private owners with no general membership and unless a visitor can lay his hands on a private ship, he generally has to settle for supervised local soaring in a Schweitzer," he adds.

Mr Jones went to the Great Western Soaring School at Chrystalaire, Pearlblossom, near Palmdale, California where he found fine soaring and good wave. Then to Wortsboro, New York, which was an excellent site, much recommended with a fine ridge. This is a small enterprise with an informal atmosphere.

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Altimeters, Accelerometers, Airspeed Ind., Anemometers (hand held), Aerials, Air Temperature Ind., Airband Receivers, Compasses, Climb and Descent Ind., Clocks, Directional Gyros, Fire Extinguishers, Horizons, Headsets, Hourmeters, Hair Hygrometers, Inverters, Knee Boards, Life Vests, Navigation Equipment, Pressure Gauges, Pressure Switches, Rescue Strobes, Sextants, Sliptubes, Stopwatches, Temperature Gauges various, Venturi, Vacuum Pumps, Variometers, Wrist Watches.

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SEBRING SOARING CENTRE
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SOAR IN SUNNY FLORIDA THIS WINTER, WHILE THE U.K. FREEZES.
K-7, PIK 20D, K-6CR.
BRING THE FAMILY, DISNEY WORLD AND MANY OTHER ATTRACTIONS WITHIN GLIDING DISTANCE.

C.F.I. DEREK JOHNSON

ANNUAL STATISTICS — OCTOBER 1, 1978 TO SEPTEMBER 30, 1979

GLIDING CLUBS	AIRCRAFT				LAUNCHES	HOURS	CROSS-COUNTRY Kms	FLYING DAYS		COURSES		MEMBERSHIP	
	Club 2s	Club 1s	PO	Tugs				Total	Soaring	No.	Pupils	Flying	Non-Flying
ALBATROSS	2	1	2	—	623	58	—	28	11	2	21	38	12
ALTAIR	1	1	1	—	1200	112½	274	53	14	—	—	14	—
ANGUS	2	2	2	—	3813	578	—	96	35	—	—	60	10
AQUILA	NO STATISTICS RECEIVED											43	
AVRO	3	1	—	—	3631	384	—	100	43	—	—	114	10
BAC	NO STATISTICS RECEIVED											20	
BATH & WILTSHIRE	2	2	20	2	3884	1511	12100	71	54	—	—	101	18
BLACKPOOL & FYLDE	2	3	16	—	3133	1405	987	96	71	—	—	168	—
BORDERS (Milfield)	2	3	4	—	2962	456	700	109	—	—	—	48	6
BRISTOL & GLOUCESTERSHIRE	3	3	31	3	5975	3365	8254	199	135	24	128	210	48
BUCKMINSTER	NO STATISTICS RECEIVED											103	
BURTON & DERBY	NO STATISTICS RECEIVED											80	
CAIRNGORM	2	—	2	—	1860	460	800	109	52	20	72	30	6
CAMBRIDGE UNIVERSITY	3	5	27	3	7132	3638	33252	185	97	9	54	236	81
CORNISH	4	—	7	1	4357	849	700	119	69	16	117	67	23
COTSWOLD	4	3	16	—	5996	1737	9125	141	71	1	6	162	31
COVENTRY	4	2	43	3	6004	3659	70760	195	79	24	168	281	76
CRANFIELD	1	2	10	2	1123	537	3000	62	33	—	—	96	—
DEESIDE	3	2	4	2	3290	2092	700	265	120	2	10	80	—
DEFFORD (RSRE)	2	1	—	—	1118	107	120	39	12	—	—	20	4
DERBY & LANCS	5	3	24	—	4511	2002	3500	140	125	24	159	202	70
DEVON & SOMERSET	4	6	15	1	6339	1950	9782	181	120	6	46	161	37
DONCASTER	3	4	20	2	7125	2332	5000	174	78	4	20	136	14
DORSET	3	3	14	2	3233	1321	—	102	83	—	—	135	56
DOWTY	3	5	7	1	2045	359	1750	135	93	—	—	40	1
DUMFRIES	2	—	2	—	553	67	—	46	—	—	—	24	8
DUNKESWELL	2	1	4	1	2800	282	790	125	35	5	40	55	10
EAST SUSSEX	2	1	10	—	3573	604	2500	95	31	1	6	115	32
ENSTONE	2	—	19	1	3418	860	12000	100	44	1	6	70	4
ESSEX	3	2	24	1	6222	1834	12200	—	—	26	146	197	11
ESSEX & SUFFOLK	2	1	11	2	2672	1958	1200	113	49	—	—	105	—
GLAMORGAN	—	1	—	—	INCLUDED IN SOUTH WALES RETURN							6	—
HAMBLETONS	2	3	—	1	3423	1103	—	154	67	—	—	197	—
HEREFORDSHIRE	3	1	20	2	4117	3187	3200	209	110	28	113	142	—
HIGHLAND	1	2	1	—	2430	346	150	103	38	—	—	38	—
IMPERIAL COLLEGE	—	3	3	—	793	416	8000	—	—	1	7	45	—
INKPEN	NO STATISTICS RECEIVED											30	
KENT	4	3	15	2	9306	—	4156	255	105	30	270	258	46
LAKES	NO STATISTICS RECEIVED											56	
LASHAM	6	—	110	5	34035	8438	74594	285	199	90	271	695	290
LONDON	4	5	69	5	14572	6230	—	—	—	32	264	328	50
MIDLAND	3	4	17	—	10591	3491	9601	197	154	29	306	184	68
NEWCASTLE & TEESIDE	3	—	6	1	—	—	—	120	60	—	—	50	5
NORFOLK	3	3	18	2	3586	2031	13616	186	88	8	50	130	33
NORTHUMBRIA	3	1	17	1	3939	786	1700	165	89	12	72	115	19
NORTH WALES	1	1	1	—	467	52	—	25	14	—	—	26	2
NORWICH SOARING	NO STATISTICS RECEIVED											11	
OUSE	2	2	13	1	935	185	—	36	7	—	—	90	—
OXFORD	2	3	12	—	2858	904	3250	108	—	—	—	110	5
PETERBOROUGH & SPALDING	4	4	7	1	—	—	—	—	—	1	5	64	—
PHOENIX SOARING	1	—	—	—	57	34	—	19	16	—	—	4	—
POLISH AFA	—	2	1	1	—	—	—	—	—	—	—	25	6
RATTLESDEN	4	2	6	—	2088	201	603	73	41	1	20	51	—
RIDGEWELL OATLEY	3	1	4	1	1849	139	—	79	42	—	—	14	12
ROYAL AIRCRAFT ESTABLISHMENT	2	3	6	—	4486	1178	5206	128	57	—	—	70	15

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	Club 2s	Club 1s	PO	Tugs				Total	Soaring	No.	Pupils	Flying	Non-Flying
SCOTTISH GLIDING UNION	3	4	20	2	11575	7571	11777	284	219	23	188	320	10
SCOUT ASSOCIATION	NO STATISTICS RECEIVED											40	
SHROPSHIRE	—	—	11	1	568	575	5200	76	62	—	—	28	—
SOUTHDOWN	2	3	16	1	5494	1875	7568	162	70	—	—	209	54
SOUTH WALES	2	1	11	1	2709	1023	3600	121	46	3	20	90	12
SOUTH YORKS & NOTTS	1	1	4	—	3121	440	1166	115	49	—	—	55	—
STAFFORDSHIRE	2	2	6	—	1572	223	90	71	30	2	20	75	3
STRATFORD ON AVON	2	3	12	3	5405	1088	—	131	—	2	20	110	10
STRATHCLYDE	2	1	1	—	1204	224	1185	65	6	1	8	54	1
STRUBBY	2	1	4	—	3736	484	437	105	42	—	—	24	—
SURREY & HANTS	—	11	—	—	6450	2571	12393	—	—	32	264	279	63
SWINDON	2	3	10	1	3384	899	11421	141	55	—	—	82	8
TIGER CLUB SOARING	—	—	1	3	135	56	—	16	2	—	—	10	—
TRENT VALLEY	2	2	15	—	6397	1371	4950	91	32	—	—	80	10
TYNE & WEAR	NO STATISTICS RECEIVED											26	
ULSTER	2	1	6	1	1025	515	280	87	68	—	—	35	—
UPWARD BOUND	3	—	1	—	3081	327	290	77	29	Cont. prog.	281	18	2
VALE OF NEATH	2	2	4	—	1641	237	350	73	52	2	24	35	5
WELLAND	2	—	3	—	1394	141	500	43	21	—	—	28	—
WEST WALES	NO STATISTICS RECEIVED											28	
WOLDS	3	1	9	1	5712	957	6000	144	28	2	16	154	11
WOODSPRING	2	2	5	—	4149	560	250	113	47	3	22	102	—
WYCOMBE (AIRWAYS & THAMES VALLEY)	NO STATISTICS RECEIVED											487	
YORKSHIRE	2	4	44	3	6750	2000	—	240	180	22	190	340	34
CIVILIAN CLUB TOTALS:	158	143	844	67	272646	86375	386027					8659	1342
ARMY GLIDING ASSOCIATION:													
KESTREL	2	5	3	1	5407	810	10000	102	41	—	—	75	25
SOUTH WEST DISTRICT (Wyvern)	2	4	6	1	5869	1365	6783	166	128	4	42	105	—
ROYAL AIR FORCE GSA:													
BANNERDOWN	3	5	3	—	8215	1433	12000	143	65	2	14	137	—
BICESTER	8	22	—	7	20764	7844	27614	—	—	15	310	600	—
CHILTERNS	3	2	2	—	2331	662	3509	101	35	—	—	35	5
CLEVELANDS	2	5	9	3	4110	1806	8047	180	115	4	14	188	—
CRANWELL	4	5	3	—	2930	522	2800	92	43	—	—	88	—
EAST MIDLANDS	3	3	1	—	2124	343	663	80	46	—	—	40	—
FENLAND	2	2	3	—	6600	1175	7899	137	42	—	—	100	—
FOUR COUNTIES	3	4	—	—	5750	1780	9800	112	74	—	—	98	2
FULMAR	2	2	—	—	3803	571	2238	83	34	—	—	64	—
GREYLAG	1	—	—	—	324	23	—	17	—	—	—	18	—
HUMBER	2	2	6	—	5788	815	7307	103	36	—	—	75	7
WREKIN	4	1	6	1	5575	1005	1550	125	—	2	20	149	—
ROYAL NAVAL GSA:													
CULDROSE	3	2	2	2	2876	568	2821	79	30	1	12	59	—
HERON	3	3	6	1	2252	818	2060	85	40	—	—	95	—
PORTSMOUTH NAVAL	4	3	3	3	3276	807	2007	105	25	1	15	180	10
SERVICE CLUB TOTALS:	51	70	53	19	87994	22347	107098					2106	49
CIVILIAN CLUB TOTALS:	158	143	844	67	272,646	86,375	386027					8659	1342
GRAND TOTAL:	209	213	897	86	360640	108722	493125					10765	1391

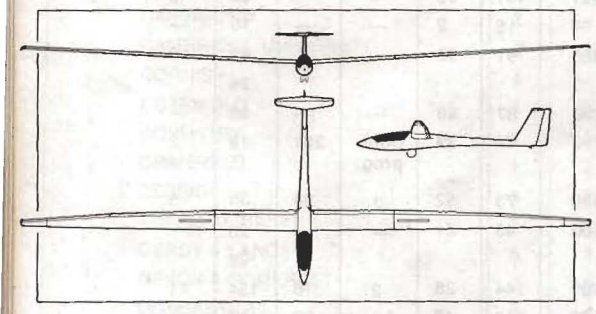


The ULF-1 foot launch sailplane

FLYING MACHINES

From Sigma to Solar plus latest sailplane news

ASW-22



In the pursuit of ultimate performance, Alexander Schleicher's have officially unveiled some details of their latest Open Class sailplane, the ASW-22. Almost exclusive use of carbon based and aramid fibres has converted theoretical aerodynamic improvement into a practical reality. After thorough computer assisted analysis of all the alternative configurations and methods of squeezing out extra performance, included sophisticated Fowler flaps and telescopic wings (both hideously expensive), it was found that a basically conventional wing with a slightly greater span and higher aspect ratio than current Open Class gliders, would achieve better results at less cost and complication.

So a basic span of 22 metres has been selected with the wing in four pieces and with a max gross weight of 1540lb including waterballast. For absolute glide performance, tip extensions increase the span to 24 metres, the permitted gross weight allowance reducing to 1320lb. A special 21 metre version with a gross weight allowance above 1540lb will also be available for competitive flying and record breaking in strong conditions.

Very steep controlled glide paths for landing are possible through a flap/airbrake combination similar to that employed on the ASW-20. The unconventional double wheel, oleo-pneumatically damped main undercarriage gear copes with the potentially high take-off and landing loads, with powerful disc brakes to kill ground run inertia. The tail wheel retracts with the main wheels.

Although the empty weight of the glider is approximately 880lb, none of the four main wing sections weigh more than 132lb with the small tip extensions a mere 9lb each.

With a max glide ratio in excess of 1:55 in the 60 to 70kt speed range and a Min sink less than 1kt, can the illusive all-straight-line soaring technique be far away?

JOHN JEFFRIES

SIGMA UP-DATE

Readers of S&G may recall that the prototype sailplane Sigma, developed in the UK by Operation Sigma Ltd, was given to me for further research and development of the variable geometry wing concept. Modifications of the flap system were carried out by me at Cranfield and the initial test flights with the new flap were made there in July 1978. There then followed a long interval while the glider was shipped to Canada and formalities of obtaining a Canadian experimental flight permit were gone through. An intervening winter with lots of snow and low temperatures also accounted for some delay, but Sigma had its first flight in Canada on May 13, 1979.

Since that time it has flown an additional 16 hours, about ten of them in soaring conditions.

Modifications

The original flap system provided a hydraulically driven plane flap that slid out of the wing to extend the wing chord by 36% and at the same time provide a cambered high lift wing section. This flap system was somewhat infamous for its complexity although it did work and did provide the high lift needed to be able to slow down for thermal flight. This entire flap system was removed and replaced by a 35% chord slotted flap which can be extended and retracted by a manually driven mechanism similar to the one used on the Blanik. The photogragh shows the flap in its extended and retracted positions. The slotted flap is full span and the wingtip section has been removed here for a better view of the flap.

Some advantages of the new flap system are:

(a) Simple mechanism for flap extension since the flap moves out only 15% of chord.

(b) Good lateral control because outboard portions of the flap are used as ailerons.

(c) Large deflection of the inboard 65% of the flap span can be used to provide a steep approach for landing and low touch down speed.

(d) The manually operated flap retraction allows fast and easy transition from climb configuration to cruise configuration.

Flight Test Results

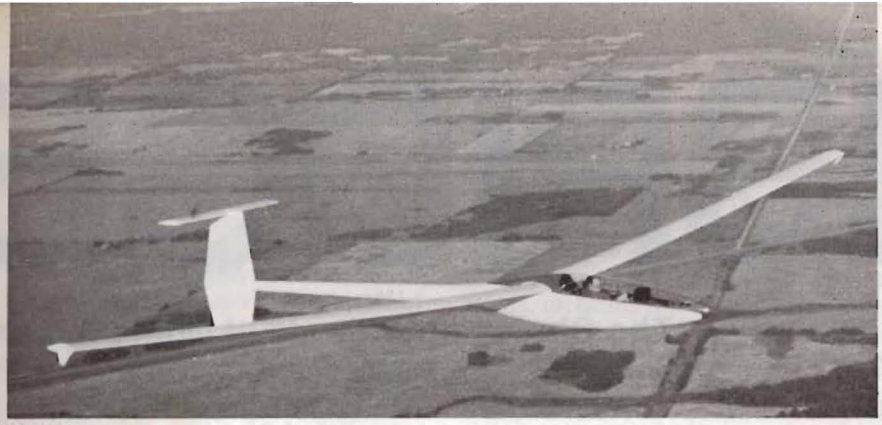
Although serious efforts have been made to obtain performance data (tows to 6000ft in the grey light of dawn!) no good quality data has yet been obtained, apparently because of movement of the atmosphere. For example, on one flight two separate measurements showed the glide ratio at 60kt to be 28:1 and 57:1.

Not all the data was that scattered how-

The flap in its extended and retracted positions.







Sigma



Solar One

ever, and it appears that the best glide ratio is about 43:1 at about 60kt. With its heavy wing loading it is still doing 35:1 at 90kt! min sink with flap extended is 140 to 150ft/min at 42kt, about the same as with the original flap but at one or two knots lower speed. The major improvement is in controllability in circling flight with the large slotted ailerons. Sigma now circles in thermals very comfortably at 45kt indicated airspeed with no tendency to stall or lose lateral control in gusty conditions. Its behaviour at low speed is more typical of the club trainer than of a racing sailplane with 11.75lb/ft² wing loading. A limited amount of flying in thermals with other sailplanes indicates that its climb capability is comparable to that of an unballasted 15m sailplane, as would be consistent with the measured min sink of 145ft/min at 42 kt.

Sigma will at last be "operational" for the 1980 soaring season. It certainly has the capability to set some new records in the coming season and should even be reasonably effective in competition. In the meantime, Sigma is still flying and is beginning to show promise of fulfilling those early high expectations.

D. J. MARSDEN,
University of Alberta, Canada

PIK-20F

There are two newcomers to the Eiriavion collection—the Standard and Club Class PIK-20F. The Standard version takes waterballast and the Club PIK has a fixed wheel. They have been designed for club and demanding competitive use with carbon fibre spars, a carbon reinforced cockpit area, plus a double floor for added safety. A new full epoxy finish on the wings and fuselage has also been incorporated.

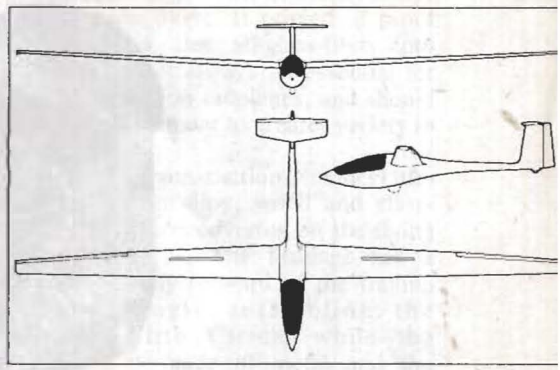
For small-field landings

With a low empty weight of 220kg, it is claimed the PIK-20F has a low sinking speed and good thermalling characteristics to make soaring possible even in weak conditions. The modified profile and small drag fuselage give a maximum L/D of 40,5:1 while the Schempp-Hirth dive brakes ensure an efficient sinking speed so that small-field landings are no problem.

Rudder pedal, back rest and head rest are adjustable during flight; the canopy with its carbon reinforced frame opens forward and the take-off and landing are made comfortable with a spring loaded undercarriage.

Technical data

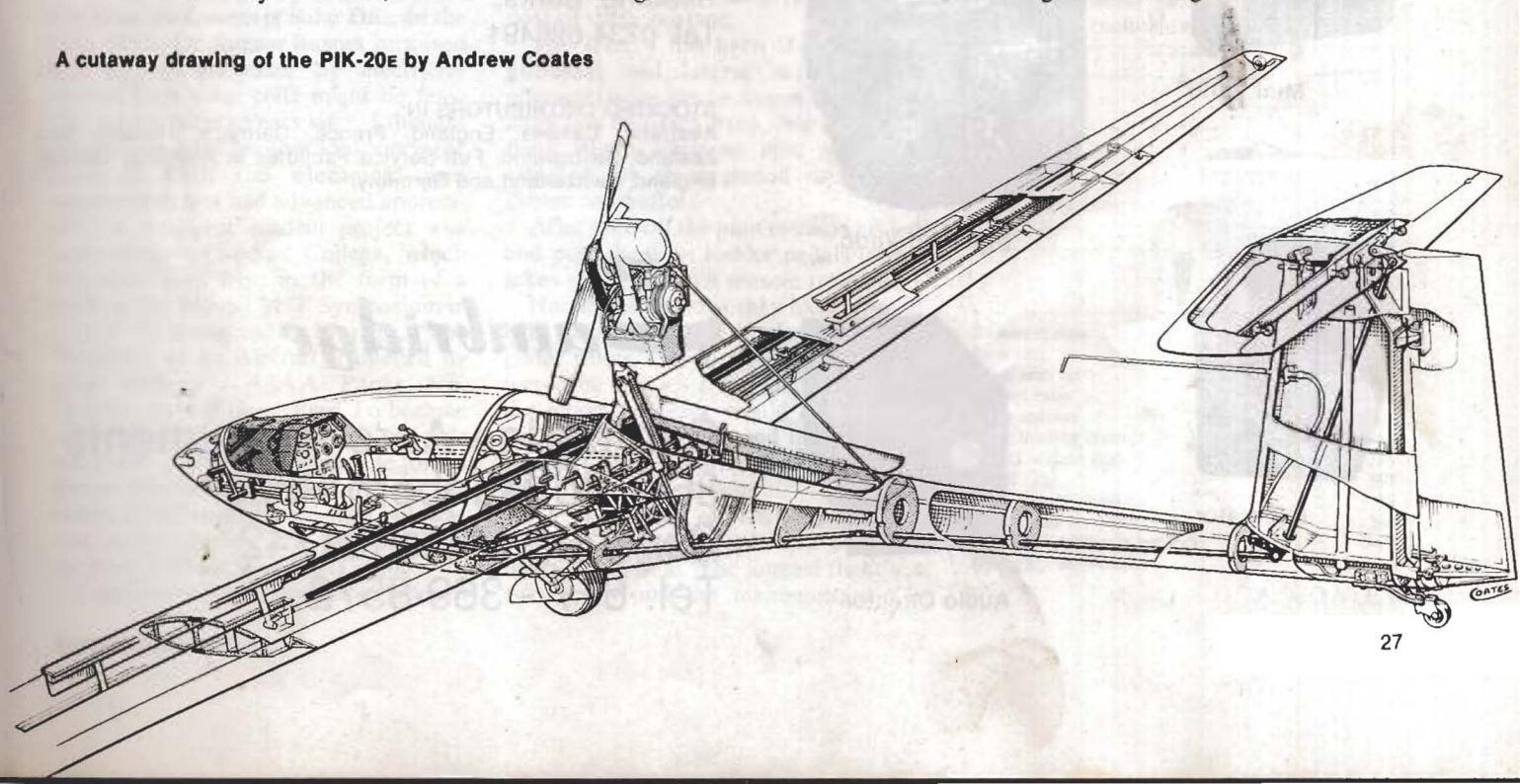
Span (m)	15
Wing area (m²)	10
Aspect ratio	22.5
Wing loading (kg/m²)	29-45
Empty weight (kg)	220
Max AUW (kg)	450
Max waterballast (kg)	140
Min sink at 92km/h (m/sec)	0.69
Max speed (km/h)	292
Best L/D at 117km/h	40,5:1



SOLAR ONE

Last year saw Britain's first solar-powered aircraft, Solar One, making its maiden flight at Lasham, having previously achieved a small hop on December 19, 1978. Two gliding instructors from Lasham were the pilots, Ken Stewart making the initial flight on June 11 with

A cutaway drawing of the PIK-20E by Andrew Coates



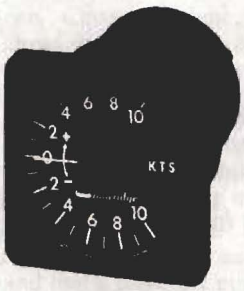
CAMBRIDGE



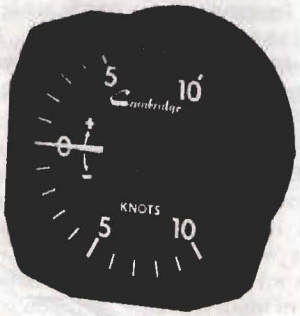
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Bill Maidment at the controls later the same day. They both covered nearly three-quarters of a mile before gliding to the ground on using up the available runway — it hadn't been certificated to leave the airfield boundary.

The aircraft is powered by electrical energy collected by solar cells and stored in batteries. Solar One's take-off speed on the first flight was reported as 18-20kt with a maximum speed of about 35kt and a maximum altitude of about 80ft.

It is the inspiration of Freddie To, who formed Solar-Powered Aircraft Developments to produce it, working to a design which was largely by consultant David Williams. Freddie and David took some nine months to build the aircraft which has a wooden frame covered by Solarfilm, a heat-shrunk thin plastic material used for model aeroplanes. They made the 68ft wing in three parts with a centre section and the power unit is mounted on a stalk at the front of the cockpit.

Four one horsepower Bosch motors were used and 24 nickel-cadmium accumulator cells which, with a capacity of 25 A/hr, gives enough climbing power for about eight minutes. The wing was designed to take 220sq ft of solar cells on its upper surface but lack of sponsorship meant they could only afford 37sq ft. The additional cells would have made it possible for Solar One to cruise continuously under sunshine and when they are eventually added it is hoped the aircraft will be able to make a London to Paris flight.

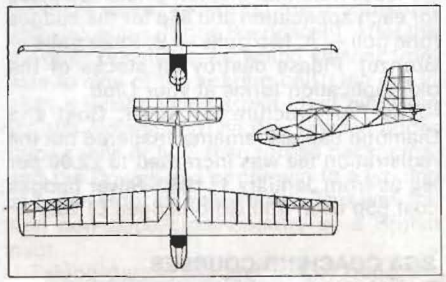
The technical data gives a length of 22ft, AUW (including motors, prop and batteries) 230lb, designed cruise speed 25kt, VNE 50kt and a maximum rate of climb of 70ft/min.

A Note on the Genesis of Solar One. In the early 1950s, Dr August Raspet surmised that aircraft propelled by electricity derived from solar cells might be feasible. About twenty years later, I thought the idea deserved another look since the state of both the electrical and aerodynamic arts had advanced appreciably. A final-year student project was undertaken at Imperial College, which ultimately bore fruit in the form of a paper at the Second MIT Symposium in 1974 (F. G. Irving and D. Morgan, "The Feasibility of an Aircraft Propelled by Solar Energy". AIAA Paper No. 74-1042). At that time, Fred To became interested, asked me to draw a possible aeroplane, and had a model made for his film on Man-Powered Flight. In fact, the model wasn't used in the film but was seen in my article "The Sun Ship" in the June, 1975 issue of S&G, p106.

Fred then became even more enthused and went ahead with Solar One, which differed from my original concept in being incapable of continuous level flight without using its batteries. Meanwhile, back in the USA, *Popular Mechanics* for September, 1978, took note of the 1974 MIT paper and various later developments, including Solar One. Their writer went on to mention a proposal for a 21-passenger aircraft with a span of 500ft!

F. G. IRVING

ULF-1



This foot launch sailplane, the ULF-1, is an ultralight designed by two German glider pilots for their own fun. After the maiden flight in November 1977 there was so much interest that Heiner Neumann, a flight test engineer in the MRCA Tornado programme, and Dieter Reich, layout specialist for advanced military aircraft at MBB, decided to make plans for the benefit of homebuilders.

The ultralight is of spruce, birch plywood and balsa wood and can be built within 800hrs. The construction plans, which are in English with 20 photographs of the major components, are 320DM. For further details contact the designers at Fichtenstr 7, 8077 Reichertshofen 2, West Germany, though please cover the cost of reply postage.

The ULF-1 has been tested for longitudinal and lateral stability, stall characteristics up to maximum sideslip angle, for recovery from wing drop situations (there were no spin tests) and checked for short period oscillations, flutter and buffet.

After take-off the pilot retracts his legs and puts them on rudder pedals (which takes some stomach muscle training!).

Heiner told us that they have a small, light parachute of the kind used by hang glider pilots and in an emergency this would be thrown from the cockpit and the whole sailplane would hang on the parachute. If altitude and time allowed, the pilot could separate from the aircraft with an open parachute.

At the time of writing, 65 foot launches had been made with a total of 25hrs flying time. The longest flight was two hours and the maximum gain of height 4000ft. Car tows are used for initial testing and for pilot checks.

Heiner claims it flies better than a conventional glider and it is possible to stay in the centre of a thermal at 20kt with a 25° to 30° bank.

Technical data

Span (m)	10.4
Wing section	Wortmann
Wing area (m²)	13.4
Aspect ratio	8
Wing loading (kg/m²)	10.4
Empty weight (kg)	45
Max AUW (kg)	136
Min sink (m/sec)	0.8
Max speed (km/h)	70
Best L/D	15:1

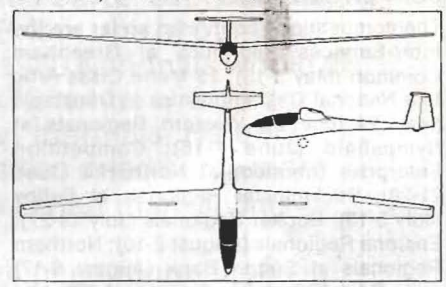
VSO-10c

The first International Club Class competition held in Sweden in July 1979 brought some surprises, not least of which was the Czechoslovakian VSO-10c which took both first and second places, flown by M. Brunecky and J. Vavra respectively. It proved, if proof were needed, that all-glass-fibre construction is not always an essential for good competition sailplanes, and should give encouragement to greater variety in design.

The mixed construction uses steel tubing, aluminium alloy, wood and glass-fibre, with fabric covering on the flying control surfaces. The fuselage has a glass-fibre body forward of the trailing edge, strongly resembling the Schempp-Hirth Cirrus, while the remainder is made of metal and the wings of wood.

Although the Club Class requirements demand that a specified number of the sailplane must have been produced, few details are yet available. The data and drawing are of the Standard Class VSO-10.

Details from Vyvojova Skupina Orlican, c/o Orlican Narodni Podnik, 565 37 Chocen, Czechoslovakia.



Technical data

Span (m)	15
Wing area (m²)	12
Aspect ratio	18.75
Wing section	FX61-163 & 60-126
Wing loading (kg/m²)	31.67
Empty weight (kg)	234
AUW (kg)	380
Stall speed (km/h)	68
Max speed (km/h)	260
Min sink at 72km/h (m/sec)	0.63
Best glide at 94km/h	36.2

A. COATES

BGA AND GENERAL NEWS

NEWS, NEWS, NEWS

The British Team Manager, Mike Carlton, offers you all a challenge, the prize to be a week for two in Barbados. During the 1980 season a series of weekend competitions will be held at clubs all over the country.

They are to be open to any pilot who can fly cross-country and has never flown in a Nationals or Euroglide Competition. In each of these competitions you can fly against a **British Team Squad member** and compare your skills. The prize for the best performance against a squad member during the season will be a week's holiday for two in Barbados. There will also be prizes each weekend for the best performance achieved.

The squad members wherever possible will be flying gliders of medium performance, *ie*, K-6, K-18 type gliders, and the tasks set will reflect the performance of the gliders entered. All scoring will be using the National Ladder formulae with normal BGA handicapping applying. The start and finish line procedure and the photographic evidence will be as used in rated competitions.

With an entry fee of only £5 (which goes to Team Squad Kitty) you can afford to enter and fly against some of the country's top pilots. If you would like to join in the fun, look in S&G for details of dates and venues, or write to Competition Kitty, c/o the BGA office.

COMPETITION DIARY

The competitions confirmed so far are the Inter-Services Regionals at Greenham Common (May 5-15); 15 Metre Class Artic Lite National Championships at Dunstable (May 24-June 2); Western Regionals at Nympsfield (June 7-16); Competition Enterprise (unrated) at North Hill (June 21-29); Buckminster Regionals at Saltby (July 5-13); Booker Regionals (July 19-27); Enstone Regionals (August 2-10); Northern Regionals at Sutton Bank (August 9-17) and Open/Standard Classes Artic Lite National Championships at Lasham (August 16-25).

CHURCHILL AWARD

Once again nominations are invited for a gliding project to capture the Churchill Award for 1980. This annual award of £100 is available to individual pilots for organised projects of some kind of research into gliding or related subjects such as meteorology.

Full details and entry forms are available from the BGA office and the closing date for receipt of entries is May 31.

GLIDING CERTIFICATE CHANGES

As detailed in the June issue of S&G, p134, qualifications for the BGA badge structure were amended with effect from January 1, 1980. The new badges are as follows:

A badge — one solo circuit in a glider (or motor glider in unpowered flight after launch).

B badge — a soaring flight of at least 5 minutes at or above previous lowest point after launch.

Bronze badge — as for present Bronze C.

Please note that the new prices are **£1.50** for each application and **65p** for the badges (one gull — A, two gulls — B, three gulls — Bronze). Please destroy all stocks of the old application forms at your Club.

The FAI structure for Silver, Gold and Diamond badges remains unaltered but the registration fee was increased to **£2.00** per leg as from January 1, 1980. Silver badges cost 65p each and Gold badges £1.25.

BGA COACHING COURSES

The 1980 programme includes the following courses: **Instructors** (assistant) — 7 days; **Soaring and Cross-country** (replacing the task weeks of previous years) — 9 days; **Soaring and Advanced** — 4 days and **Wave Weeks** — 4 days.

The **Instructors'** courses are from March 1-7 (Lasham); March 8-14 (Lasham); March 22-28 (Lasham); March 29-April 4 (Kent); April 12-18 (Booker); April 19-25 (Booker); April 26-May 4 (Booker); May 26-June 1 (Husbands Bosworth); July 5-11 (Husbands Bosworth); July 12-18 (Husbands Bosworth); August 2-8 (Portmoak); Sept 13-19 (Sutton Bank); Sept 20-26 (Sutton Bank); Sept 27-Oct 3 (Lasham) with two dates, Oct 11-17 and Oct 18-24, reserved but not allocated.

The **Soaring and Cross-country** courses are from May 10-18 (Booker); June 7-15 (Lasham); June 21-29 (Husbands Bosworth) and August 30-Sept 7 (Dunstable).

The **Soaring and Advanced** courses are from May 5-9 (Lasham); June 3-6 (Booker); June 30-July 4 (Saltby); July 28-31 (Lasham) and August 25-29 (Booker).

The **Wave Weeks** are March 17-23 and March 24-30, both at Shobdon.

For further details contact the BGA office: it is essential to book early for most of these courses.

W. G. Scull
Director of Operations

UNIGLIDE '79

Uniglide '79 was held at Camphill, home of the Derby & Lancs GC, in the last week of September with representatives from six universities, Edinburgh, Cambridge, Manchester, Birmingham, Bristol and Newcastle. The aim was to encourage gliding among the lower echelons of the sport by introducing an element of competition.

Experience levels ranged from pre-solo to instructor, the majority being around Bronze C. Two days were lost through bad weather but the rest of the time produced some good soaring and height tests were set.

Anyone interested in Uniglide '80 should contact Ken Gerber of 217 Albert Drive, Pollokshields, Glasgow 641 2NB for further details. It is intended for undergraduates and graduates from universities and colleges of further education.

BGA VICE-PRESIDENT HONOURED

Ken Wilkinson, a BGA Past Chairman and deputy Chairman of British Airways, has been awarded The Royal Aeronautical Society's British Gold medal for his outstanding contribution to civil aviation and, in particular, in the development of British European Airways and subsequently British Airways.

INTER-UNIVERSITY TASK WEEK

The second Inter-University task week will again be at Saltby airfield, home of Buckminster GC, from June 30 to July 4. Entries are invited from university and polytechnic gliding clubs and the tasks will be set by Brian Spreckley, National Coach.

It is hoped that pre-Bronze C pilots will have the opportunity to compete in two-seaters with experienced pilots from their own club, thus giving valuable cross-country experience.

For further details, contact Dave Chapman, Nottingham University GC, Athletics Union, University Park, Nottingham NG7 2RD.

TECHNICAL NEWS

Tugs/Motor Gliders

Compression checks, by hand-turning the engine backward (for safety), are 100% cost-effective in detecting the poor condition of the "hot-end" of piston engines. Poor starting and poor performance are directly related to poor compressions. Tug accidents have been attributed to the failure to detect one (or more) poor compressions made instantly disastrous by valve-head failure.

Motor glider variants of the VW, when operated on AVGAS 100LL, may be expected to suffer from accelerated valve deterioration. Frequent re-adjustment of the valve clearances may prolong valve life.

Re-conditioned cylinder-head assemblies should be held in stock where high utilisations are required.

Engine overhaul costs: The typical cost of overhauling 150/180hp engines is now of the order of £4000. Are you making proper provisions for this kind of recurring expenditure?

Tug tow release locations: The two fatal accidents in 1978 have still failed to impress on some club managements their obligations to provide the safest possible arrangements for their tug pilots. Please check all tugs for satisfactory compliance with the requirements, that releases should be readily accessible with upper body restraint harness tight, and under negative *g* conditions. Ref BCAR Section K4-10 and several BGA TNS in 1978.

(Extracts from the BGA Technical News Sheet compiled by R. B. Stratton, BGA Technical Office.)

BGA WEEKEND

Guest of Honour at the BGA Weekend on 15-16 March will be Helmut Reichmann, current 15 Metre Class World Champion. Helmut will be talking to us at the open session on Saturday afternoon, immediately after the AGM and if members have questions that they would like put to Helmut then please submit them in advance to the BGA office.

CLASSED AS "MAJOR MODIFICATIONS"

The BGA Technical Committee have asked us to point out that modifications to gliders effecting the structural integrity, weight and balance, flying characteristics, speed and manoeuvre margins, are categorised as "major modifications" and must be dealt with in accordance with Section 15 of the BGA Technical Procedure Manual. DIY construction kits or DIY designs must be processed in accordance with Section 17 of the BGA Technical Procedure Manual, copies of which are in the hands of BGA Inspectors or available from the BGA office, price 50p.

BUCKMINSTER GLIDING CLUB

are now accepting entries

for the

EAST MIDLANDS REGIONAL GLIDING CHAMPIONSHIPS

to be held at

SALTBY AIRFIELD

from 5th to 13th JULY 1980

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OBITUARIES

G. MUNGO BUXTON

Mungo Buxton could be properly described as the first British gliding pundit. He was not among the instructors at the London Club's first regular site near Tring, but by June 1930 they had mostly faded out with the club's move to Ivinghoe Beacon, where he was busy sharing with Latimer-Needham the instructing of *ab-initios* on two Primary gliders.

Even here he displayed his scientific approach to gliding: instead of flying a Primary straight down from the hilltop, as every previous instructor had done, he would wander about among the irregular Ivinghoe slopes exploring the irregular lift and sink areas during the descent. After the move to Dunstable, he would wander from side to side of the soaring belt. One day in 1931 a terrific cloud street lifted him from the Whipsnade end: he flew upwind under it for a mile or two, then turned back, crossed the Downs and continued to a landing at Luton Hoo, six miles away. This was the first non-slope cross-country by a British pilot.

Taking part in the first British Nationals in the Furness region in 1933, Buxton flew Slingsby's first product, a British Falcon, up the Duddon Estuary, over the pass at the top, then along the mountains bordering Lake Coniston to a landing beyond the far end of the lake. Here he was asked by a small boy, "How fast did you come?". Buxton explained that you don't try to go fast in a glider (you didn't in those days), so the question was changed to "How slow did you come?"

His greatest soaring exploit was during the 1934 Nationals at Sutton Bank in Yorkshire. Flying a Scud 2, which he shared with Philip Wills, he went inside a passing frontal thunderstorm without blind flying instruments, was violently thrown about but meanwhile lifted to 8323ft, just short of Kronfeld's world height record of 8494ft set up five years earlier which had remained the record till only six months before Buxton's flight.

Mungo Buxton was a highly skilled technical scientist in the RAF, where he was at this time developing a radio controlled aircraft called "Queen Bee". He was soon applying his skill to design a sailplane, the Hjordis, (named after a legendary Swedish lady whose name few could pronounce), highly efficient yet bearing no resemblance to any typical German design. Philip Wills set up British records with it and flew it in the first Internationals at the Wasserkuppe in 1937. But a "Hjordis 2", or King Kite, specially designed for that meeting, of which three were entered, showed a tendency to spin, though it won an altitude prize one day.

After this Mungo Buxton rather faded out of active gliding, though he had previously written many technical articles and letters for S&G under the pen name "Kentigern." But post-war I only saw him twice: in 1945 at the RAF Salzgitter gliding centre, and at Philip Wills' memorial service, where he was on crutches, having been unfortunately afflicted with paralysis of the legs in his last years. He died in November.

A. E. SLATER

FRANK JAMES RAYMOND HEATH

Frank Heath, known to his friends as "Bonzo", died on November 13 and another link with the British pre-war gliding era has gone. He trained at London GC from where he flew Silver distance in a Kite

BGA MAIL ORDER

I was searching for ideas to describe the latest goodies available from our Sales Dept. and noticed I was doodling with one of our new PLATIGNUM LONGLIFE DE LUXE BALLPOINTS (chrome cap with blue barrel overprinted with the BGA motif — £1.85). Then I was interrupted by Brian, one of our tame National Coaches, and I wondered if his chances in the 1980 Nationals would be improved by wearing one of the new BGA BEANY HATS (white with glider design in blue — £1.40) to keep his brain cool between thermals. He only wanted another cup of tea, so one of our lovely young ladies dried some more cups using one of the BGA TEA TOWELS (I'd Rather be Flying than Drying — £1.95).

If I don't stop now this ad. will get bigger and we shall need more pages in the magazine and you won't be able to fit your copy into the special luxurious RED LEATHERCLOTH BINDERS available only from the BGA at £3.40 each.

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1. Being a regular Army officer he organised the building of a Grunau Baby as an exercise for himself and his men, taking it to Egypt for their recreation. He took part in the North African campaigns as a Sapper.

"Bonzo" had a reputation for nearly always being right, especially about all things mechanical, thus he was very useful at gliding clubs. Our sympathies go to his family. "Bonzo's" warm character will be be remembered by many people.

C. WILLS

FRED SMITH

Fred Smith died on October 22 after a long and painful illness. His ashes were scattered at Huish, site of the 1933 BGA meeting where he had his first glider flight with Eric Collins in a BAC VII. After the meeting he and his father bought the BGA's towcar for £5 and formed the Wiltshire GC with a Zögling which was new from Germany and cost £45.

He gained his A Certificate in 1934 at the age of 15 after 82 ground slides/hops and a total flying time of eight minutes. His Gliding Certificate was No. 392.

His father formed a small company, Lavinia Light Aircraft, and several Zöglings, a *Hols der Teufel* and an interesting glider with a NACA 2412 wing profile were produced. The latter glider flew for many years until it struck a stone wall. The wreckage was taken to Slingsby's for repair and shortly afterwards the Slingsby Cadet appeared which looked similar to the Smith's glider. However, perhaps both were influenced by previous gliders.

Fred died at the age of 60 without having flown the Tutor he and his son have been lovingly rebuilding over the last three years. Our sincere sympathy goes to his family. We shall always remember his warm personality.

C. WILLS

BGA ACCIDENT SUMMARY

The following details have been compiled by Bill Scull, BGA Director of Operations, and we intend to make this a regular feature until that blessed day we run out of material for this spot.

	Glider Type	BGA No.	Damage	Date Time	Place	Pilot/Crew Age	Injury	P/Hrs.	Summary
1	Tutor	789	M	29.09.79 10.18	Milfield	42	N	1½	Pilot approached at high airspeed in calm conditions and failed to round out for landing, bounced and then landed.
2	K-13	1503	S	22.09.79 13.30	Morridge Passenger	53 ?	N M	140 —	Pilot failed to adequately monitor approach path and allowed glider to drift and touch down in rough area near edge of filled gully. On ground run glider ran over edge into unfilled part of gully.
3	K-13	1498	W/O	07.10.79 ?	Ashbourne A/F P2 150 launch	56 31	N S	302 14	Winch cable broke when glider was at about 200ft. Pupil lowered nose forcefully. Instructor took over and initiated steep turn through 180° to land back towards take-off point, the wind being 90° cross wind. At about 100ft glider entered spin and struck ground. Pupil sustained compound fracture right leg.
4	Mosquito	2225	M	16.09.79 ?	Camphill	33	M	1950	Winch cable broke at about 200ft. Pilot uncertain if he could reach ridge through wind gradient decided to land, touched down heavily, bounced and then collided with wall at edge of ridge.
5	K-13	1535	S	07.10.79 17.02	Weston on the Green	35	N	83	Glider observed on base leg at height described as normal, turned finals and airbrakes were opened. Height was lost rapidly and brakes were closed. Struck tree with wingtip 25ft above ground 174yds from perimeter track, struck second tree 12ft above ground 82yds further on and finally stopped 58yds from peritrack facing opposite direction.
6	Blanik	?	M	22.09.79 17.05	Long Marston P2	42 28	N N	210 8½ P2	Sheep grazing on left of landing area and right side occupied by glider awaiting retrieve and a lone sheep. The noise of touchdown disturbed the lone sheep which ran across the path of the landing glider, jumped up under the wing, striking flap and was then struck by tip of tailplane.
7	K-2B	2439	M	09.07.79 14.30	5 miles west of Saltby A/F (Harby Ridge) P2	20 19	N N	160 8¾	After hill soaring 5 miles from A/F got low and decided to land. Previously selected field in valley rejected when a herd of cows were seen in it and alternate hilltop field of cut hay selected. Stopped abruptly on 5ft high 1:4 slope not previously noticed.
8	K-13	1501	S	22.09.79 ?	Lasham P2	36 37	M M	135 ?	Towcar driver stopped launch when he thought he saw a "stop" signal when the glider was approx: 50-100ft. Pupil lowered nose but speed was slow to pick up and instructor was reluctant to lower nose further to increase speed. Glider landed heavily in semi-stalled condition on main wheel.
9	K-2	2324	M	07.07.79 18.10	Falgunzeon	61	N	26 min	Flew cramped circuit arriving too high on base leg. Corrected by extending base leg then backtracking to turn finals and closed airbrakes as he was now low. Brakes then seen to open and remain open until 10ft just before touchdown in rough undershoot. Pilot claims he did not open brakes and could not remember closing them when 10ft from ground.
10	K-2	2324	S	15.09.79 17.00	Falgunzeon Passenger	41 18 +	N N	145 —	At commencement of winch launch glider weathercocked slightly and as it became airborne the tail struck a mound of earth and heather which broke off the fin and rudder. Launch abandoned at about 50ft and glider groundlooped on touch down.

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

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1980 NATIONALS QUALIFYING LISTS

The purpose of the 1980 Nationals Qualifying Lists to decide the order of acceptance where either of the 1980 National Championships events is over-subscribed. In these circumstances, 11 places in the 15 Metre Class Nationals will be allocated to pilots from the Promotion List; the remaining 34 pilots coming from the Priority List. For the Open/Standard Nationals, 20 places will be available to pilots on the Promotion List and 40 from the Priority List. The following provisional lists have been compiled by Tony Burton in accordance with the procedure described in S&G, August 1978, p185. except that, as notified to pilots before the event, the 1979 Euroglide has been devalued slightly in comparison with the 1979 Nationals by adjusting pilots' performance index to the power 0.85.

Any queries on the Lists should be raised *via* the BGA office.

Gordon Camp, *Chairman, BGA Competitions Committee.*

PRIORITY LIST 1980

1	Watt, D. S.	21	Wheeler, J. H.	41	Ellis, C. A. P.	61	Pozerskis, P.	81	Aldridge, K.
2	Hackett, N. G. G.	22	Jones, R.	42	Randle, M.	62	Burton G. E.	82	Murdoch, I. M.
3	Spreckley, B. T.	23	White, S. A.	43	Aldous, R. F.	63	Blackmore, R. H. T.	83	Mason, E. J.
4	Fitchett, B.	24	Watson, A. J.	44	Robertson, D. J.	64	Henfrey, A. W.	84	Jeffries, J. R.
5	Davis, A. J.	25	Redman, S. J.	45	Woodford, J. M.	65	Breeze, D.	85	Pozerskis, F.
6	Macfadyen, T. E.	26	Camp, G. W. G.	46	Cowderoy, R. I.	66	Tanner, L. E. N.	86	Dimock, H. R.
7	Lee, D. G.	27	Rollings, C. C.	47	Miller, A. S.	67	St. Pierre, A. M. G.	87	Gaunt, N.
8	Stone, A. J.	28	Cook, P. G.	48	Cockburn, D.	68	Wilton-Jones, M.	88	Pope, M. H. B.
9	Shepherd, E. G.	29	Hood, L. S.	49	Cardiff, J. D.	69	Jury, A. R.	89	Waller, C. J. N.
10	Garton, C.	30	Carlton, M. R.	50	Hall, R. A.	70	Carter, M.	90	Tull, V. F. G.
11	Smith, G. N. D.	31	Keogh, B. F.	51	Gorringe, J. P.	71	Lusted, E. J. F.	91	Hynes, K.
12	Campbell, D. R.	32	Wells, M. D.	52	Brown, H. F.	72	Clarke, R. W.	92	Herringshaw, G. H.
13	Lysakowski, E. R.	33	Piggot, A. D.	53	Webb, M. J.	73	Burton, A. J.	93	Gaunt, T. R. F.
14	Kay, A. E.	34	Gough, A. W.	54	Bromwich, R. C.	74	Cook, I. R.	94	Lombard, W. C.
15	Throssell, M. G.	35	Roberts, D. G.	55	Williamson, J. S.	75	Crawshaw, G. H.	95	Lilburn, D. N.
16	Glossop, J. D. J.	36	Crouch, R.	56	Farmer, A.	76	Purdie, P. G. H.	96	Dobson, B.
17	Delafield, J.	37	Stafford-Allen, P. R.	57	Cooper, B.	77	Spottiswood, J. D.	97	Tipney, C.
18	Rowland, C. D.	38	Dixon, R.	58	Malpas, W. E.	78	Docherty, T.	98	Sherman, R.
19	Wills, T. J.	39	Hogg, A. J.	59	Taylor, T. R.	79	Cole, D.	99	Phillips, D. M.
20	Forsey, L. K.	40	Sheard, P. G.	60	Taylor, J. R.	80	Walker, R.	100	Heames, C.

REGIONALS PROMOTION LIST 1980

1	May, R. C.	21	Woodford, J.	41	Randle, Jane	61	Crawshaw, G. H.	81	Cowderoy, R. I.
2	Jones, R.	22	Fleming, A. M.	42	Gorringe, J. P.	62	Farthing, R. C.	82	Mortimer, R.
3	Watt, D. S.	23	Wilton-Jones, M.	43	Mainwaring, A. J.	63	Breeze, D.	83	Dean, M. J.
4	Metcalfe, G.	24	Hunt, S.	44	Smith, G.	64	Batty, C. J.	84	Dobson, B.
5	Fitchett, B.	25	Forrest, B.	45	Hartley, K.	65	Spottiswood, J. D.	85	Hymers, S.
6	Freeman, D. J.	26	Carlton, M. R.	46	Cook, P. G.	66	Torode, H. A.	86	McGill, Janis
7	Aldous, R. F.	27	Innes, D.	47	King, P. J. S.	67	Hall, R. A.	87	Sharman, R.
8	Hart, J. E. B.	28	Huttley, C.	48	Jarvis, H.	68	Bleaken, L.	88	Hanfrey, A. W.
9	Harmer, P. M.	29	Boydon, M. V.	49	Pobjoy, I.	69	Lombard, W.	89	Lusted, E. J. F.
10	Lysakowski, E. R.	30	Odell, J.	50	Reed, D. W.	70	Sly, T.	90	Morris, G. D.
11	Christy, R. B.	31	Moulang, A.	51	Welsh, J. H.	71	Jeffries, J. R.	91	King, J. R. C.
12	Purdie, P. G. H.	32	Blacklin, P. A.	52	Watchorn, T.	72	Forrest, R. G.	92	Heames, C.
13	Sandford, R. A.	33	Ellis, J. J.	53	Campbell, D. R.	73	Lovell, C.	93	Cook, P. G.
14	Benoist, J. D.	34	Corbett, G.	54	Giddins, J. B.	74	Gaunt, N.	94	Hobson, R.
15	Jeffries, M. B.	35	Keogh, B.	55	Bromwich, R. C.	75	Lidbury, P. D. G.	95	Stafford-Allen, P. R.
16	Warminger, A. H.	36	Bond, M.	56	Hawes, C. W.	76	Elkin, D.	96	Foot, R.
17	Bradley, R.	37	Hale, R.	57	Carter, M.	77	King, Sally	97	Kay, A. E.
18	Hayes, D. M.	38	Throssell, M. G.	58	James, P. W.	78	Watson, A. J.	98	Milner, C.
19	Hancock, A. R.	39	Gaunt, D.	59	Cherrill, J. G.	79	Davies, F. J.	99	Hoy, S. L.
20	Cunningham, G. W.	40	Austen, D. G.	60	Taylor, N.	80	Pope, M. H. B.	100	Wilson, F. G.

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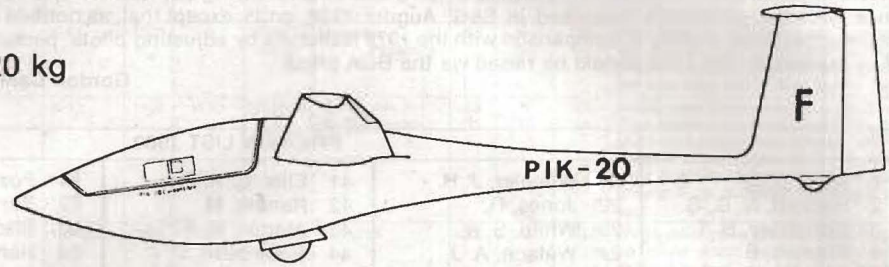
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ALL THREE DIAMONDS

No.	Name	Club	1979
100	C. Dews	Cambridge Univ.	28.9
101	M. R. Carlton	Thames Valley	19.10
102	P. Pozerskis	Coventry	4.11
103	P. L. Sears	Sebring (USA)	14.10

DIAMOND GOAL

No.	Name	Club	1979
2/939	R. R. Rodwell	Ulster	13.8
2/940	P. J. S. King	Buckminster	5.5
2/941	G. C. Nicholls	Surrey & Hants	19.5

DIAMOND HEIGHT

No.	Name	Club	1979
3/420	J. R. Woodley	SGU	20.9
3/421	C. Dews	Cambridge Univ	28.9
3/422	M. R. Carlton	Thames Valley	19.10
3/423	R. J. Thorley	Surrey & Hants	28.9
3/424	R. C. Haddon	Cambridge Univ	28.9
3/425	T. R. F. Gaunt	Wyvern	8.10
3/426	J. E. Harber	Wyvern	8.10
3/427	M. O. Breen	Thames Valley	19.10
3/428	J. H. Nunneley	Airways	19.10
3/429	J. C. Shipley	Derby & Lancs	22.10
3/430	A. F. Gough	SOSA (Canada)	14.10
3/431	R. A. Harlow	Herefordshire	9.11
3/432	P. C. Gill	Essex	8.10
3/433	P. Pozerskis	Coventry	4.11
3/434	P. L. Sears	Sebring (USA)	14.10

GOLD C COMPLETE

No.	Name	Club	1979
733	P. W. Andrews	Kestrel	16.9
734	D. K. McCarthy	Kestrel	16.9
735	C. V. J. Heames	Clevelands	16.9
736	R. R. Rodwell	Ulster	13.8
737	I. McLean	Four Counties	19.10
738	T. A. Johnson	Heron	19.10
739	D. W. Davis	Bath & Wilts	22.10
740	A. L. Housden	Cotswold	18.11

GOLD C HEIGHT

Name	Club	1979
P. W. Andrews	Kestrel	16.9
D. K. McCarthy	Kestrel	16.9
C. V. J. Heames	Clevelands	16.9
Jacqueline Hancock	Bannerdown	16.9
I. Stromberg	Yorkshire	16.9
G. E. McAndrew	Northumbria	2.9
S. Hurst	Trent Valley	16.9
P. G. Franklands	Derby & Lancs	2.9
S. J. Cushing	Essex	30.9
N. O. Cook	Yorkshire	8.10
I. H. B. S. Hicks	Shropshire	8.10
J. R. Smalley	Trent Valley	18.9
D. S. McKay	Aquila	30.9
R. R. Page	611GS	8.10
R. A. W. Downing	Airways	19.10
L. R. Merritt	Southdown	22.10
I. McLean	Four Counties	19.10
A. Elliot	Fenlands	22.10
T. A. Johnson	Heron	19.10
I. Barlow	Airways	18.10
P. C. Gill	Essex	8.10
C. Milner	Hambletons	4.11
Joan Wilson	Bicester	1.11
D. W. Davis	Bath & Wilts	22.10
R. Miller	Hambletons	17.7
I. D. Smith	Essex	30.9
B. Thompson	Clevelands	4.11
A. L. Housden	Cotswold	18.11
Sally King	Booker	19.11
Mary Charlett-Green	Clevelands	18.11

GOLD C DISTANCE

Name	Club	1979
R. R. Rodwell	Ulster	13.8
P. Carter	Borders	30.9
P. J. S. King	Buckminster	5.5
G. C. Nicholls	Surrey & Hants	19.5

SILVER C

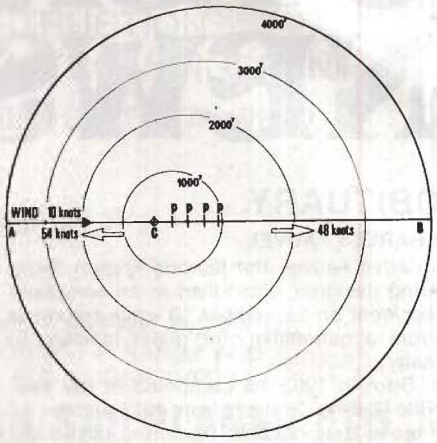
5362	R. M. Darby	East Sussex	5.8
5363	P. J. G. Brown	Bicester	5.8
5364	P. F. Taylor	Avro	11.7
5365	J. T. Simonite	Stratford	4.8
5366	C. D. Hatcher	Thames Valley	5.8
5367	L. C. Cameron	SGU	18.7
5368	D. A. Smith	Bath & Wilts	1.7
5369	A. T. Calder	Borders	5.7
5370	C. Sword	Borders	5.7
5371	D. Alney	Welland	15.7
5372	R. E. Moorey	London	15.7
5373	R. Cadd	East Midlands	5.8
5374	I. J. Metcalfe	Bristol & Glos	4.8
5375	M. W. Harris	London	6.8
5376	T. E. Bint	Kent	6.8
5377	D. A. Hawkins	Thames Valley	5.8
5378	E. J. Ayling	643GS	26.7
5379	J. W. Fincham	Peterborough	14.7
5380	R. A. Putt	Coventry	11.8
5381	B. Chaplain	Thames Valley	5.8
5382	J. Armstrong	Bicester	11.8
5383	C. Wilby	Essex & Suffolk	15.8
5384	G. Ivey	Bicester	5.8
5385	V. W. Carter	Bicester	4.8
5386	Ruth A. Hall	Ulster	29.7
5387	G. W. Bleasdale	Blackpool & Fylde	27.6
5388	Gwen Babcock	Bicester	4.8
5389	A. J. Edwards	Bannerdown	4.8
5390	S. D. Brixton	Burton & Derby	26.7
5391	Jacqueline Pobjoy	Kestrel	21.8
5392	C. Roberts	Stratford	26.8
5393	B. Naish	Fenland	26.8
5394	P. Potgeiter	Portsmouth	22.8
5395	M. J. Eldridge	Kestrel	23.6
5396	J. H. Swales	Heron	21.8
5397	J. R. Neild	Two Rivers	5.8
5398	B. J. Managhan	West Wales	4.8
5399	N. Braithwaite	Lakes	25.8
5400	A. W. Reid	Kestrel	19.5
5401	J. A. McKenzie	Cambridge Univ	14.5
5402	C. Uncles	Devon & Somerset	22.8
5403	D. R. Birks	Stratford	5.8
5404	M. R. Nickolls	Oxford	28.8
5405	M. Hajoukiewicz	Cotswold	28.8
5406	M. J. Jordy	Cornish	26.8
5407	J. Wiater	Surrey & Hants	26.8
5408	W. M. Kay	London	7.9
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5410	R. J. Walker	London	26.8
5411	D. A. Loucks	Bicester	26.8
5412	D. J. E. Howse	Cambridge Univ	15.8
5413	J. F. White	Trent Valley	27.8
5414	A. Rose	Aquila	19.5
5415	A. T. Grimley	Cranwell	15.9
5416	M. Thompson	Ouse	16.9
5417	I. A. Lane	Peterborough	15.9
5418	R. H. Walton	Northumbria	2.9
5419	B. Yeardley	Pegasus	13.4
5420	Heather Norrison	Wolds	15.9
5421	J. P. Galloway	SGU	10.9
5422	B. Richmond	Newcastle	29.7
5423	C. S. Baker	London	15.9
5424	Carol Bisset	Deeside	10.9
5425	R. A. Brown	Essex	15.9
5426	G. R. Mitchell	Swindon	27.8
5427	S. Pepler	Swindon	22.8
5428	B. R. Swaffield	Lasham	14.9
5429	J. W. Harrison	Cranwell	15.9
5430	L. J. Sole	Lasham	13.9
5431	I. F. Smith	Surrey & Hants	13.9
5432	A. P. Stacey	Phoenix	16.9
5433	P. W. Armstrong	Clevelands	2.9
5434	J. D. Spencer	London	16.9
5435	D. H. Felix	Southdown	22.9
5436	W. J. Murray	Inkpen	22.9
5437	P. R. Bloomfield	Bannerdown	15.9
5438	N. A. C. Norman	Cairngorm	29.8
5439	I. A. Hardwick	Wyvern	21.9
5440	N. O. Cook	Yorkshire	19.9
5441	D. B. McBride	Bath & Wilts	5.7
5442	B. McBride	Bath & Wilts	1.7
5443	B. Pocock	Bath & Wilts	27.8
5444	K. Cutty	Newcastle	21.7
5445	A. Etchells	Dowty	29.9
5446	A. R. Reeves	Imperial College	27.9
5447	D. L. Beaney	Cranwell	26.8
5448	D. R. Chapman	Buckminster	12.7
5449	C. A. Major	SGU	13.5
5450	P. J. Lewis	Bicester	14.7
5451	Aileen Appleyard	SGU	23.9
5452	R. R. Harris	Essex & Suffolk	29.9
5453	P. R. Martin	Cambridge Univ	9.9
5454	N. J. Chapman	Aquila	6.10
5455	R. W. Crompton	Stratford	7.9
5456	J. C. G. Owles	Norfolk	14.7
5457	M. Sandy	Bicester	21.9

CANIGETBACKOMETER

M. T. BUTCHER

While away non-gliding days doing something useful. Play with your polar curve, or your John Willy if you have one, and make a Canigetbackometer. It's simple, and might make all the difference sometime this year when the weather suddenly clags your cross-country. Why use calculators at times of panic when this device will tell you immediately what you most need to know — can I get back?

To make it you need a sheet of clear plastic, a felt tip pen or two and a pair of compasses (*not* a Cook and a Bohli!). Draw a wind direction line AB on your plastic and add an arrow and centre point C. Use John Willy or your sailplane's polar curve to determine the best glide speeds for a headwind and a tailwind of, say, 10kt, and mark the line accordingly. Also determine the distance covered at those speeds per 1000ft height loss, *ie* for the headwind and tailwind, and convert these to the scale of a ½-mill map. Let these be x and y respectively. Calculate $\frac{y-x}{2}$ and $\frac{x+y}{2}$ and call them p and q. Draw a circle of radius q with its centre p to the right of C, and mark it 1000ft. Then draw as many circles as you feel like, doubling p and q for 2000ft, trebling them for 3000ft etc until you get fed up or run out of plastic. Trim



round the last one you draw and you have a Canigetbackometer.

To use it, place C over your glider's position on a half-mill map with the arrow pointing in the direction of the wind, when the circle appropriate to your height will indicate how far you can get without further lift, and what speed to fly at. Of course the wind won't always be 10kt, which is where a second felt tip pen would enable you to superimpose another set of circles in a different colour for 15kt.

P.S. Don't forget to allow for the height of the boundary hedge!

OVERSEAS NEWS

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

OBITUARY

CHARLES FAUVEL

Charles Fauvel, the famous French flying wing designer, was killed in an aeroplane accident on September 10 while returning from a national motor glider meeting in Italy.

Born in 1903, he competed in the Vauville Gliding Contests from 1925 and set up French National records during the 1930s. For much of his life he was in the Armée de L'Air but took time off to work at AVIA, the French glider design office, and was a test pilot. During 1940 he served in the Armée de L'Air in Morocco and gained his instructor's certificate at La Montagne Noire in 1941, a year later becoming the Chef du Centre of the Military Gliding Centre at Avignon until the occupation. More recently he was President of the Fayence Soaring Centre.

His many medals included the Croix de Guerre 40-45, Grand Silver medal of the French Aero Club for his light aircraft records and the FFVV Grand Gold medal. He was also Officer de la Legion d'Honeur and Colonel of the Reserve. He helped form the University Club, the CAU, in 1928.

He conceived the all wing aircraft in 1928 during the contest at Vauville when gliders with increased wing spans were entered for the first time. Charles Fauvel felt that for structural reasons aspect ratios could not be indefinitely increased to gain performance. Another way would be to reduce parasite drag to an absolute minimum by eliminating the conventional fuselage and tailplane. His first prototype, the AV-3, flew in 1933 but his greatest success, the AV-36, had to wait until 1951. Fifty were built in France from kits and a further 50 were built abroad. The 11m wing span was similar in performance to the 15m Olympia Meise and flown more than 400km by Eric Nessler.

His first two-seater, the AV-22, came in 1956 with the motorised single-seater AV-45 four years later and the motorised AV-22, the AV-221, followed in 1965. In 1954 he started his own enterprise, Survol, at Cannes.

Charles Fauvel will be remembered as one of the world's great gliding personalities.

C. WILLS

SOVIET RECORDS

At a training camp for the Russian National Team at Oriel in May each pilot averaged about 5000km of cross-country flying and four Soviet records were claimed in one day on May 31. Oleg Pasiechnik (LAK-10) flew a 622km out and return at an average speed of 112km/h; Tamara Zagainova (Jantar 2B) a 574km out and return to beat the women's National out and return record held by Moldavian Liudmilla Kluieva by 30km: Leonid Vaskov averaged 106km/h over a 518km triangle, reaching 3200m, and Eda Laan (Std Jantar) flew a 555km triangle at 90km/h.

A. Kovale

(Translated and shortened from the August issue of *Krilya Rodiny* by C. Wills.)

Latest news: On going to press we heard that Bernard Fitchett (Vega) won the 15 Metre Class in the South African Nationals at Vryburg from Dec 16-31. There were 14 contest days with several large tasks of 750 and 692km completed and one attempted 1000km.

Michael Carlton and Con Greaves (Calif 21A) flew further than any previous British glider pilot when they completed 982km of a declared 1030km triangle, landing when they ran out of daylight. Mike with three co-pilots, Con, John Glossop and Mark French, are claiming three British National records. Further details in the next issue.

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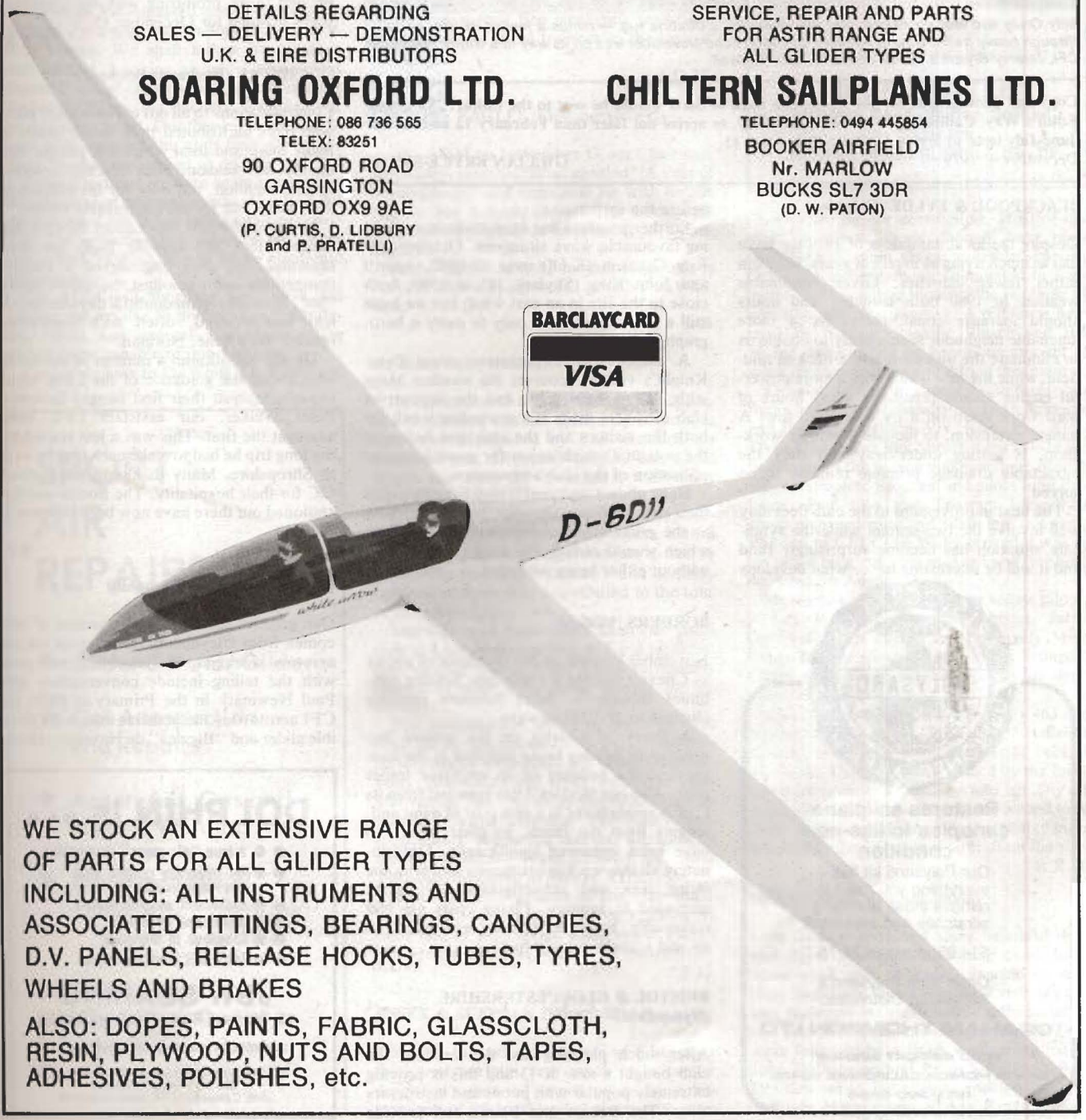
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CLUB NEWS

Billy Craig and Mervyn Farrell pilot the Ulster GC's Citabria tug — minus a few of its vital parts — through heavy traffic around Belfast's City Hall. Echo November was on its way to a winter respray at CFI, Jeremy Bryson's home. Photo: Crispin Rodwell.

Copy and photographs for the April-May issue of S&G should be sent to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH, tel 47725, to arrive not later than February 12 and for the June-July issue to arrive not later than April 11.

December 4, 1979 **GILLIAN BRYCE-SMITH**

BLACKPOOL & FYLDE (Chipping)

Despite the local dampness of 1979 we have had as much flying as in recent years, but from rather fewer launches. Given reasonable weather in 1980 both launches and hours should increase considerably, for a more amenable neighbour seems likely to enable us to eliminate the awkward bottle-neck in mid-field, while the new winch with a more powerful engine should repay the many hours of hard work spent on it by a devoted few. A hangar extension, to include a vehicle workshop, is getting under way and only the intractable drainage problem remains to be solved.

The next improvement to the club fleet may well involve the two-seaters while the syndicate situation has become surprisingly fluid and it will be interesting to see what develops before the spring.

Further progress has been made in exploiting favourable wave situations. October saw Roy Greason (K-6E) over 10 000ft (again!) and John King (Skylark 3F) at 8500, both close to the site in an east wind; but we have still a lot to learn — if only to carry a barograph, John!

A successful experiment was Tony Knight's visitors' course; the weather along with Tony's hard work and the support of club members made it a rewarding week for both the visitors and the club and indicated the potential which exists for more intensive utilisation of the club's resources.

Hang gliders on "our" ridge have enlarged their activities considerably, but we are now at the point of an understanding with them which should reduce the risks to both sides without either being excluded.

J.T.

BORDERS (Milfield)

November brought us our first taste of winter as Cheviot donned a white cap. Soaring continues though — Peter Johnson recently climbed to 12 500ft in wave.

A flurry of activity on the ground has resulted in lighting being installed in the hangar and the building of an enclosed trailer park. Also our Skylark 3 has returned from its C of A resplendent in a new coat of paint and, judging from the finish, its glide angle will have been improved significantly. Unfortunately all this work costs money and both the flying fees and subscriptions are to be increased in January. Flying costs are still reasonable, however, and our beautiful fresh air and scenery remain free!

A.J.B.

BRISTOL & GLOUCESTERSHIRE (Nympsfield)

After much planning and deliberation, the club bought a new K-13 and this is proving extremely popular with pupils and instructors alike. The Bocian and Blanik still provide good service but one or two serviceability problems meant that we were low on two-seaters for a while. Happily, all three are now in service.

We have had a pleasant autumn although very little flying of note has occurred, despite both ridges working and the odd day or two of wave. Several new syndicates have been formed including a Vega, an ASW-20 and a PIK-20E. Our club Skylark 4 has been awaiting a new tailplane to be built since its old one was demolished in an outlanding. One aircraft which will be sadly missed is No 81 (Rhubarb and Custard) which has gone to the Blackpool & Fylde GC to make way for something more slippery.

The social outlook for Christmas and beyond looks promising with the Christmas party planned for December 15.

R.A.R.

COVENTRY (Husbands Bosworth)

Congratulations to all our cross-country pilots who have contributed their ladder points to make the grand total which has put our club on top this season. Nick Hackett deserves special mention, not only for his addition to the ladder, but for his competition results.

Norman Marriott, our Ladder Steward, has ensured that any notable flight has been recorded. He also engendered a friendly competitive spirit amongst the cross-country "lot" so that even on doubtful days the umbilical was severed, often with remarkable results. Well done, Norman.

During the autumn a number of our members under the guidance of the Long Mynd experts enjoyed their first bungey launches, Peter Walker, our assistant CFI, being amongst the first. This was a just reward for the long trip he had to make each time he went to Shropshire. Many thanks to the Midland GC for their hospitality. The Bocian and K-8 stationed out there have now been returned to base.

B.R.

DERBY & LANCS (Camphill)

Our grateful thanks to the warmest of welcomes from Clevelands/Hambletons for our aerotow weekend. Stories which will grow with the telling include conversations with Paul Newmark in the Primary at 800ft; the CFI aerotowing the invisible man in his invisible glider and "Biggles" de Haverley reliving

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in the Moth his 1942 exploits at Dishforth.

There has been the usual mixed bag of Badge news. Ashley Birkbeck and Dave Martin have their five hours; Paul (Hog) Shannon gained his Silver height within an hour of converting to the K-8, whilst Phil Farnham failed to get his Silver distance only through the machinations of the height rule. Congratulations to Chris Churchill on being the first club member to go solo on the K-7.

Mid-November and already we have been snowed off — surely last winter can't repeat itself!

S.G.

DEVON & SOMERSET (North Hill)

A new shape has appeared over North Hill — Richard Fortescue has imported a JP15-36 from France. We shall follow its progress with interest. Looking ahead, a home-build Duster is under construction by our retiring Technical Officer, Ian Beckett, who deserves his well-earned rest. Our thanks to him for his hard work keeping the club fleet fit to fly. Tony Thomas has agreed to replace him.

Evening lectures are here again to continue the education of tyro and pundit alike, and put the fancies of bar flying into proper perspective. The workshop has assumed its winter role — for C of A work, and trailer repair and maintenance.

Our AGM will shortly review 1979 and confirm our resolve to do better in 1980; flying, safety and general airfield operation always being capable of improvement.

Congratulations to D. Wolff, D. Webb and Ian McLeod on going solo, and Tony Stockwell, from Lasham, who has now soloed with us; also to Bob Beard, Mike Pilditch, Derry Reaney and Ted Wilcox on completing Bronze C, and to Tony Thomas, Chris Chesney and Arthur Ball on their ½hrs.

Silver Cs have been completed by Colin Uncles (distance) and Ian King (distance/height). Ian also brought the Tarrhill cup back from Dorset, for a brief stay (see Dorset's notes in S&G, August 1979, p193). Silver distances were also achieved by Gordon Peters, Les Hill, Louise Norton, Keith Nichols, Paul Trotter, Mike Pilditch, Derry Reaney and Brendan Sargeant. Brendan reached Lasham, gaining his Silver height on the way.

With our training lists full all we need now are the proverbial fine weekends to further the initiation of these trainees to the joys of our sport.

I.D.K.

ENSTONE EAGLES (Enstone Airfield)

At the AGM on November 17 our Chairman, Eric Giles, gave his report entitled "A year of development" and expressed his wish for the club to buy a single-seater. The Committee was elected with Eric continuing as Chairman.

It was agreed to hold another Regionals in August with a flying week, possibly at Whitsun.

S.G.

ESSEX (North Weald)

With the season at a close the annual pilgrimage to Aboyne was not quite as successful as last year. Hampered by bad weather, we achieved one Diamond height, one Gold height and three Silver heights, with many good flights of 10 000ft plus.

Our club has had a very good soaring season, topping our target of 10 000km with a total of 12 200km. Congratulations to the 18 pilots who flew Silver distance and commiserations to those who contributed to the total of 50 outlandings.

The CFI and three pilots from our sister club at Ludwigshaven flew in for a weekend visit despite bad weather which fortunately cleared to give them some soaring on the Sunday.

The competitions this year seem to have been hit by the weather, but very creditable performances were made by Mike Throssell, Tony Manwaring and Mike Jefferyes. Tony Manwaring has also been responsible for an excellent social calendar with many very good, well supported events including a superb medieval feast chaired by Mike Throssell disguised as Henry VIII.

There is much chatter in the club about buying glass so perhaps we are now seeing the beginning of the change from wood. I can't help feeling that next year will be even better.

P.G.

ESSEX & SUFFOLK (Whatfield)

Contrary to what the readers of S&G must think, we are still very much in existence, despite a concerted attack on us by a few members of the local landed gentry who seem "hell bent" on our destruction. Most of the other nearby residents, though, have been very helpful, often giving valuable support. Our fight to keep flying culminated in September with a public inquiry, the outcome of which we are now awaiting. A reference here must be made to Neville Bleach and Bill Horne, who put in an enormous amount of work, both preceding and during the inquiry.

Despite all this unwanted excitement, our flying has continued unabated. Indeed, Steele and Bonnie Haughton, Viv Haley, Paul Rice, Dave Gilder and Neil Sheath went solo at the beginning of the season and now have Bronze legs or complete Bronzes; and pilots John Ballance, Paul Cox and Tristram Llewellyn-Jones managed solos and Silver legs this year. The son of CFI Clive Wilby proved it was in his blood by going solo in April and finishing his Silver in August.

Meanwhile, some of our more sedate pilots, *ie* Les Marshall, Jonathan Abbess, Jerry Cornwell, John Haugh and the lovely Miss Paros have also completed their Bronzes. Credit must go to all these pilots for their enthusiasm and skill.

Due to Tony Woof selling his Oly 463 and buying a half share in Bob Bousefield's Libelle, a slot for another aircraft became available. This was quickly filled by the formation of a new syndicate, and an Oly 2B from Trent Valley which has proceeded to do (both in and out of the trailer) probably more kilometres than any other aircraft on the site.

R.R.H.

HEREFORDSHIRE (Shobdon)

Late autumn produced some beautiful thermal days. The Dunstable mob came for a wave week and, as usual, amazed us with their dual tows, flights in ghastly visibility and this packing case thing with a telly aerial on top that tells them how to get home. They were followed by a BGA wave week led by John Williamson and Brian Spreckley. Both lots flew wave, but nothing spectacular.

Roger Harlow and Rhoda Partridge took

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Carbon Broomstick (the astonishing Mini Nimbus) to Portmoak for a fortnight's holiday. Just as the light was failing on the last day Roger came rocketing down from Diamond height. Dennis Johnson went to Aboyne for a weekend. He shot up to 10 500ft on his check flight. Then they stopped operating because it was so nasty for the tug. Watch out Aboyne, Dennis will be back.

There was good wave at Shobdon on November 24 with a lot of the fleet over 10 000ft and a Gold height for Ray Buckley. The Twin Astir is invaluable on days like that with our best wave pilots sharpening us up by explaining why they go where.

R.P.

MIDLAND (Long Mynd)

This autumn has been generous with its westerly winds. We have been pleased to welcome visitors from many clubs to share our ridge and wave soaring, and our hospitality.

Cambridge University GC spent a fortnight with us in September, much of the time in wave. Steven Longland, Philip King and Andrew Hulme achieved notable out and return wave flights to the Conway and Bettsw-y-Coed areas of Wales. This fortnight was a welcome revival of the regular two week Cambridge camps which feature so notably in our annals.

We shall be pleased to welcome visiting pilots with their gliders through the winter season. Midweek flying may be arranged. Please contact our CFI, Bob Scarborough, at 1 Brockton, Much Wenlock, Salop, tel Brockton 675, if you are hoping to visit.

Our Silene has recently arrived from Issoire and is much appreciated by those who have flown her.

Congratulations to Adrian Ridley, John Hill and Philip Webb on their solos and to those who have achieved height and duration flights this autumn.

Changes of occupation have necessitated the resignation of three instructors — Len Dent, Chris Ellis and Rob Cook. They have all contributed much to the MGC and will be sadly missed.

J.S.

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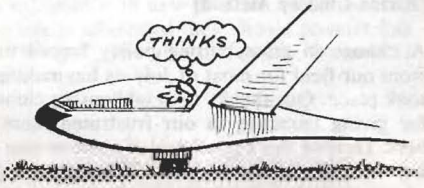
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NORFOLK (Tibenham)

The recently acquired K-18 is really justifying itself. Fifty hours in 50 flights, many of them Bronze legs, have turned several boys into men rarin' to go cross-country next year. They were helped by a series of Bronze C lecture evenings, which resulted in no fewer than 19 successes with the Bronze papers at the end of the course. This winter will provide a companion course on cross-country flying.

The older of our two K-13s, veteran of thousands of training flights, will have a major this winter, including a change of fabric. The new workshop will not be fitted out in time so the work will have to be paid for. Probably just as well, as we'll want to fly the 13 next year.



Ron Brown is proudly allowing his friends to sit in his new Vega. This brings the glass fleet to seven. Next year should see a lot of waterballast being loaded. Hesitantly we mention that a lease for part of the airfield may soon be signed, but we touch a *wooden* glider as we say it!

M.T.B.

NORTHUMBRIA (Currock Hill)

Following our rush of Badge claims and good wave flights reported in the last issue, the weather has been less than clement and we have been mostly reduced to circuits and training.

Andy Townsend and Elaine gave a magnificent dinner party in the new clubhouse early in November, and the party which followed proved to be one of the best in recent years. Gwenda Greenwell is planning a similar event in January, numbers limited to 24.

The annual party and prizegiving at the end of November was as always very successful.

Once again John Greenwell won the cup for the best wave flight (16 800ft) and also the ladder, with Andy Townsend as runner up. The league 2 winner was Rick Walton and Graham McAndrew was second.

Rick Walton and Harry Mallender shared the award for the best distance flight. All the new solo pilots received a copy of **Principles of Flight** by Bill Scull. Very welcome guests came from Millfield and Dumfries.

We hope to start flying on Fridays shortly, which will mean a four day operation all the year round, and a Tuesday night group will be starting in May.

J.W.

PETERBOROUGH & SPALDING (Crowland Airfield)

Date for your diary: Sunday May 18, 1980. We are holding an air show day at our club airfield on the A1073 Crowland to Spalding Road, entrance by the Banks Farms' sign. Please come and support us; we are hoping it will be the first of an annual event.

A group of members spent the first week of November at Portmoak with two private aircraft, and although some got in several hours no badge flights were attained.

Flying continues, weather permitting, by courtesy of Messrs Ward and Thorpe, owners of the Rallye tug in the absence of the club Terrier. Our grateful thanks to them; their help keeps us moving!

New members and old friends are always welcome and we now have an expanding social side to the club with monthly get-togethers in the local hostelry, a Christmas lunch to be held in the clubhouse and the annual dinner-dance in the New Year.

A.G.

SHALBOURNE SOARING GROUP (near Hungerford)

In the winter of 1978 a small group of keen gliding people talked over the idea of starting a new club at the old Inkpen site near Hungerford. The idea was put to Mr M. Hine and we couldn't have wished for a better landowner. He said he would be delighted to see the gliders back and immediately helped us to get the club started.

With the kind help of Mr and Mrs Hine and Mr W. Sheppard we bought a K-7 and reconditioned a winch. We started flying on May 12, 1979 with two instructors and four solo pilots and the club was born. We now have 45 members with one full Cat instructor and two assistant instructors. We have an Oly 2B and already syndicates are forming and a Mini Nimbus, Std Libelle and Bocian are flying with us. Another Oly 2B and a Kranich are on their way.

Congratulations to Mr Eastman for being the first member to go solo with Mr J. Jones a close second; Mr G. Wells and Mr J. Mace for re-soloing and Mr G. Nicholls who has gained his assistant instructors' rating.

We are looking forward to the winter to bring north winds to enable us to use the superb ridge which runs from Shalbourne to Highclere.

We welcome anyone who wishes to use the ridge and our launching facilities, so why not come with your glider and enjoy flying from a site that will give exciting ridge flying and some excellent field landing practice ready for next spring? But please no aeroplanes.

J.D.

SOUTH WALES (Usk)

The wave we have been waiting for finally appeared on November 18 but unfortunately nobody got a Diamond or Gold, either because of a lack of a barograph or oxygen. Two of our fold didn't even realise it was waving! They spent a busy hour riding out the rotor on nearby Wentwood ridge, probably wondering where everybody else was. Meanwhile at 15 500ft the club K-13 was breaking off from a 3kt climb. There was more wave the next weekend, but only for the brave and experienced.

Congratulations to those who gained Bronze Cs this summer. They include Nick Birkham, Martyn Acreman, John Millard, Huw Morgan, Mark Howell, Gerald Wald-

cock, John Murphy and Bob Voyce. Special congratulations to Mark who also qualified for a Whitbread bursary.

After many years service Norman Evans, our Chairman, stepped down at our AGM. Ian Edwards has taken his place.

P.A.C.

SURREY & HANTS (Lasham Airfield)

Captain Gerry Jones — an appreciation. With the sudden untimely death of Gerry Jones on November 10, his unmistakably friendly face and immaculately kept ageing red Triumph sports car have vanished from Lasham forever. Although Gerry had not been gliding for very long he achieved the distinction of a Silver distance on stubble fires in his syndicate Pirat (No. 435) and would have attended a BGA instructors' course earlier this year but for ill health.

Many people on the Isle of Wight have Gerry to thank for helping to re-establish gliding on the Island despite countless difficulties and hang-ups. He spent a great deal of time and effort working as club Secretary up to his resignation last year. The Vectis Club newsletter which emerged was of a particularly high standard largely thanks to the continuing saga of his Silver distance.

Gerry had a unique quality of encouraging newcomers and talking with shy course members, and was just as eager to help pundits rig as he was to keep the bat waving in howling wind conditions at the launch point. I always remember the countless times he made the ferry crossing from his home at Cowes only to spend a week at Lasham sitting in the clubhouse watching the rain and 8/8 of nimbostratus.

In addition to gliding, Gerry held a PPL and will certainly be missed at the Sandown Power Club where he flew Cessnas.

C. E. K. Walker

TRENT VALLEY
(Kirton-Lindsey Airfield)

A change in grass cutting policy forced us from our field for most of July as haymaking took place. Our thanks to neighbouring clubs for giving launches to our frustrated members. Despite this a good deal of positive soaring has been done. York Minster being photographed at regular intervals.

Real wave visited us *via* thermals on September 16, John Rice setting a new site record at 14 200ft. Steve Hurt gained his Gold height with 13 300ft and several lesser climbs were made.

A week later Bob Baines and John Rice collected the inter-club trophies from Lindholme and Pocklington in a formations triangular swoop.

A new telephone exchange has modified our number which is now Kirton-Lindsey 648777.

J.R.S.

ULSTER (Bellarena)

The winter closedown started at the end of October, three weeks earlier than had been intended, when it was decided to fly the Citabria to Newtownards for an engine change and full C of A, including a re-spray at Hillsborough. The sudden end of operations was particularly galling as November and early December featured numerous bright, soarable days. Most aircraft were pulled back for storage at Aldergrove and off-season C of A renewals at various members' homes but the Capstan remained at Ballarena in readiness for some mid-winter Parafil autotowing off the beach.

After nearly a year's delay it is hoped that when the 1980 season opens early in February the hangar will, at last, be going up.

Thought has been given to a radical reshaping of the club fleet to meet the new circumstances at Bellarena and our still inadequate membership. As a result the Twin Astir is for sale together with the Citabria, which we hope to replace with a Super Cub 180. The Citabria has been reliable and well liked but the latter would increase crosswind capability from our long but somewhat narrow site.

R.R.R.

VINTAGE NEWS

In spite of the two bad losses sustained during the July Meeting in Switzerland our Movement is still making progress.

The Swedish Weihe, which was flown by Paul MacCready to second place in the 1950 World Gliding Championships in Sweden, has been bought by Andrew Coates and is part of the Russavia Duxford Collection. The Russavia collection hopes to have their newly acquired Moswey 3, the Short Nimbus, Petrel, Kronfeld Drone and Weihe all flying this year. At Tangmere there has been real progress on the Rhönsperber which was last flown in 1939. The "Sperber" has now all its com-



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ponents and will definitely fly this year. Congratulations to Rodi Morgan and Fred Stickland. They have also made considerable progress with their Castel C-25S, French two-seater.

The Scud 3, belonging to Les Collins, is also nearly ready. This will be the second Scud 3 to fly again of the three that were built in 1935. Also to be finished by this year will be Michael Maufe's Kite 1 in Yorkshire. David Jones, who has already restored the Rheinland and built two aeroplanes, has resolved to build again Mungo Buxton's King Kite. Good progress is also being made on Paul William's Kranich at Moreton in the Marsh.

Chris Wills has discovered a firm who, he believes, will build a minimum of 50 Kranich 2s in Spain with new glue for £4500 each. If anyone is interested they should contact him at "Wings", The Street, Ewelme, Oxon OX1 1AA.

C.W.

WELLAND SOARING GROUP (Careby)

The successful 1979 season drew to a close with yet further legs being achieved. Pete Hendly now has both his Bronze, Pete Hinton has one and John Rowell his second. Our congratulations also to Eric Cunnington, the latest Welland solo. We now have a period of winch and tractor fettling. I am told that several aircraft require painting and we are fortunate in having our own superb refinisher.

We are having a period of reshuffling among our syndicates which suggests yet more aircraft in 1980 — anyone know how to fit rubber walls to hangars?

E.C.W.C.

WYCOMBE AIR PARK (Booker)

The 1980 fleet is now headed by a PIK-20D which arrived recently and is already well liked, even though the flights so far have been mainly local. The rest of the line up is: Jantar, two CS and two Jeans Astirs, two K-8s, four K-13s and a Twin Astir (currently up for sale). We have two 180 Super Cubs and a Terrier, plus the use of a Chipmunk and Robin Regent. This sounds a super fleet but we have found one disadvantage — there is always at least one aircraft u/s! We even had to beg the use of another tug recently when all five were away or out of action.

There will be a lot of local competition this coming season between our pundits in the various comps. Last year saw some interesting jockeying for top spots.

We are looking forward to seeing Harry Cook back at the club and wish him a speedy and full recovery.

E.D.

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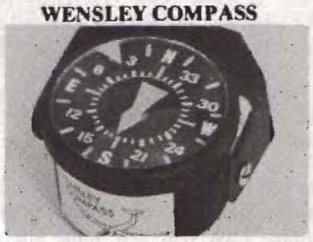
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SERVICE NEWS

BICESTER (RAFGSA Centre)

Rising costs and concern about aviation fuel supplies have prompted renewed interest in winch launching and we have a new addition to the winch fleet. The basic winch, which was designed by Nick Allford of the Centre staff and built mainly by him, Steve Dennis and Neil Scanes with occasional assistance from other members, is based on the chassis and other major parts from a former London Transport double decker bus. A transfer box used after the preselect gearbox enables selection of drive either to the rear axle or to the cable drum. The floating roller box feeding the cable onto the drum — see photo — was designed and built by Grp Capt John Calnan. Taking up slack with the new winch is a smooth swift operation and good launch heights are obtained with the K-13s. Mid-field retrieving of the cable further reduces the fuel used and has improved the launch rate.

Flying has been possible here on most weekend days and winch launches have been much in demand. In late October, five pilots took two aircraft on separate trips to Aboyne and enjoyed some wave flying. Recent achievements by pilots who regularly fly at Bicester include Gold heights by Mary Charlett-Green (at Dishforth) and Joan Wilson (at Aboyne), and first solos by Cliff Evanson and Angie Watt.

J.W.

CRUSADERS (Cyprus)

The last few months have proved a very busy and successful time for all club members. Although there have been difficulties with the winches and cables, there have been a lot of achievements.

We have said farewell to Steve Vaux and to Dave Lancaster, who gained his Silver height in the Astir just before he left. Mick Long has his Bronze C, along with Nigel Grant, who has also gained his Silver height and has been checked out for passenger flying. Geoff Speake is also passenger flying and has his first Bronze leg. Barbara Sheehan, Bill Cundall and Paul Cox have all gone solo. Bill has gained his first Bronze leg and Paul has both Bronze legs.

Due to a little accident, we now have the Astir back on trestles awaiting spares. It should not be too long before it is back on line. Since the tug's return (after a few weeks off line), it has been in constant use and Avo has been kept very busy now that the soaring season is with us.

D.C.

EAGLE (Detmold)

Our AGM was in November. Generally things are looking good for the coming year and we are running *ab-initio* courses in April, June and September. Last year was a great improvement on 1978, though again not outstanding on the soaring front. Trophies went to Howard Small, Marcia "Blondie" Shephard. Dave Campbell (who won the Bronze C award) and Ian Powell (the Silver C trophy). Ian returned to gliding after a long lay off and finished his Silver in November on the ridge at Vennebeck.

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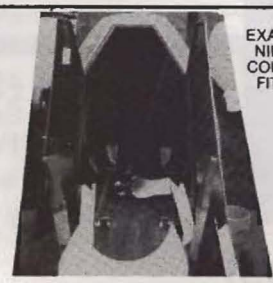
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Congratulations also to John Harrison for completing his Gold: Malcolm Hook for gaining his full Cat and Jeremy Beringer for being selected for the British Team Training Scheme.

We had a visit from Mike Carlton, British Team Manager, and Rika Harwood in October, (see p2). Paderborn, the 1981 World Championship site, is only 20km from us and we hope to be able to help the British Team in any way we can.

Our winter servicing programme has gone well and quickly. The Swallow has been resprayed, the K-13 revamped and resprayed, the winch refurbished and the clubroom and bar given an extensive face lift.

Mark Stanley has taken over from Alan Thompson as Treasurer and Jeremy Beringer has replaced John Harrison as House and Property Manager. Our thanks to Alan and John for their hard work. We hope to send Hugh Brookes, John Harrison and Robbie Knight on instructors' courses soon.

A party of eight are going to Aosta at the end of November in search of wave. We have had several workable wave days at our site.

The BFG Comps are once again being held here this coming year and we hope to see the return of our CFI from Canada in a couple of months.

J.F.B.

FENLAND (RAF Marham)

Last month our new Chairman, Wg Cdr Smith, and Dave Southcombe and Terry Cawley went solo, Ken Reeves and Chris Jacobs completed their Bronze C. Some members took two aircraft to Aboyne and Andy Elliott and John Marriott gained their Gold height.

The Astir is spending the winter at Dishforth for the wave season. We held our AGM on November 24 when the CFI reported a record number of launches and hours, and for the second year running we have had no flying accidents. The club funds and membership are both very healthy — long may it continue!

A.J.M.

FOUR COUNTIES (RAF Syerston)

The AGM on December 1 was a great success and attended by many members from other clubs. Prizes were awarded as follows: rose bowl for the best flight (500km triangle), Chris Curtis; Shirley trophy for the best flight in a club glider (300km triangle), Gary Stingemore; George Lee cup for the fastest 100km triangle, Dickie Feakes and the tankard for the best progress by a newcomer, Danny Thorogood. The last trophy went to "Prof" Atherton for all his hard work in the bar.

We said a sad farewell to Andy Penswick, a hard working perfectionist, and a special thank you to Clare Farmer and helpers who put on a tremendous spread of food.

Expeditions to Dishforth at Christmas and Aboyne in March are well in hand.

G.P.S.

FULMAR (Kinloss)

We had a very enjoyable expedition to Aboyne in October, though the weather wasn't ideal for wave soaring. Almost everyone who had already achieved Gold height did it again this year but none who needed it.

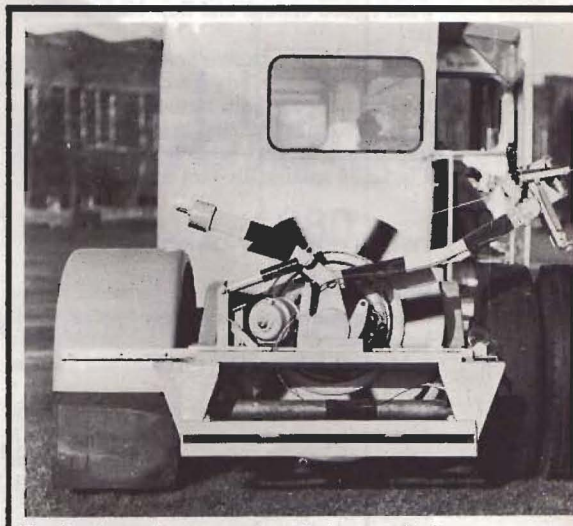
Wally Grout had the best climb to 20 500ft but unfortunately his barograph needle left the trace at 12 000 and rejoined it on the descent at 10 000ft. John Garrett gained Silver height and Alistair Thompson Silver duration.

Congratulations to Ron Jackson on gaining Gold height at Dishforth in November.

R.G.H.

HUMBER (RAF Lindholme)

As we come to the end of the year we are pleased to be able to report a record number of hours and launches. We have had one of our most successful years ever as far as



The floating roller box on Bicester's new winch. Photo: Dave Platt.

badges are concerned with two 300kms, (the first ever claimed from the site), six Silver legs, one Gold and one Diamond height, four complete Bronze badges and numerous legs, and several solos. Vic Wilson and "Mac" MacDonald are our latest recruits to the ever growing list of full Bronze Cs and our congratulations go to them both.

Our AGM was on December 1, followed by a party which was a prelude to the New Year's Eve party, which is always a great success and a good start to the New Year.

We would like to extend our good wishes for the New Year to the Clevelands GC and to Four Counties for their hospitality at various times throughout 1979.

K.M.G.

PORTSMOUTH NAVAL (Lee-on-Solent)

There have been several changes around the club since our last contribution. We have said farewell to our Chairman and Vice-Chairman, Tony Blofield and Geoff Andrews. We thank them for their efforts on our behalf during their terms in office and wish them both every success in their new appointments. We welcome Peter Spragg as our new Chairman and "Bunny" Hale as Vice-Chairman, Fred Stephenson has also recently left us and Dennis McCullum has taken over as Technical Officer, John Smith and Richard Thomas are newcomers, Richard stepping straight in as Liaison Officer.

The Skylark 4 rejoined the fleet after an extended C of A and has since been doing a lot of cross-country kilometres.

Two Bicester instructors visited us for a day, Tony Sabino and Jim Hough, and were immediately "pressed" into service, spending their time instructing in the Blanik and K-7. The club has also made two visits to Bicester during the period when our airfield was closed and many of our younger pilots have had the chance to test their soaring ability away from the effects of the sea breeze. During one of the visits an interesting attempt on a Silver distance was made by Brian Cornes. He set off downwind towards Lasham but decided when he was nearly there that the weather

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wasn't good enough and flew back to Bicester.

Numerous congratulations are in order, amongst them to Chris Adams for going solo the day after his 16th birthday, Nigel Clark for a Silver distance and height, Paul Potgeiter for a complete Silver C and "Nobby" Clarke on gaining his Full Rating. H.C.

TWO RIVERS (RAF Laarbruch)

January 1980 is a month of farewells for us; we say goodbye to some of our hardest working members. We wish good luck in the future to Martin Spalding, Dave Collins and Sue and Steve Balaam.

We are still without our Astir after its accident during our mini-comps, but hopefully it or a replacement will be with us soon. Our club fleet now comprises two K-8s, a K-3, K-2, K-13 and a Twin Astir.

We had three first solos within a week; congratulations to Ginge Carter, Trev Buckley and Steve McIlraith.

The airfield food bus is now running on a self-service basis under the auspices of Paul Johnson who is doing a grand job of keeping the fridges stocked with goodies.

J.L.

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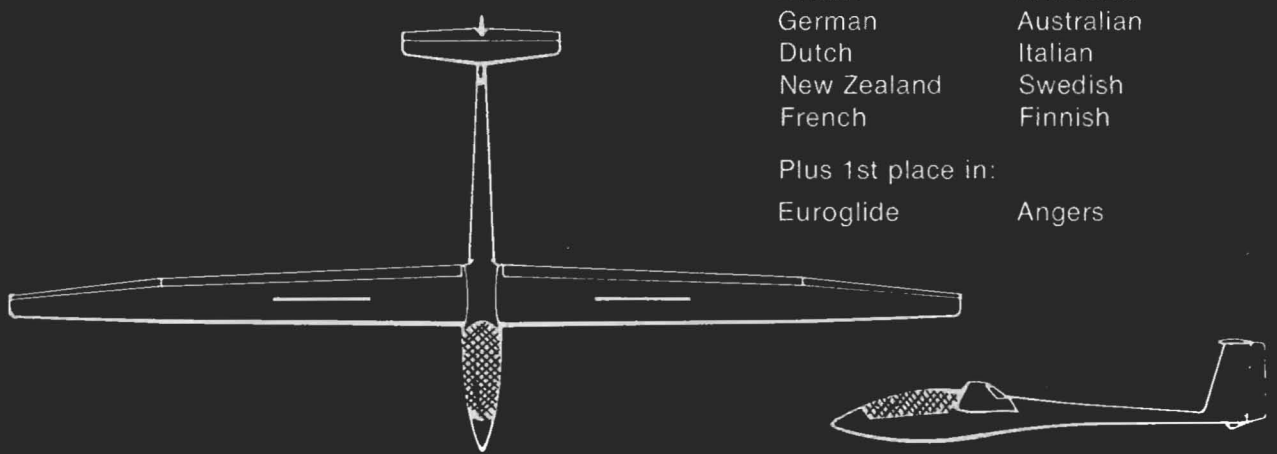
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YOUR LETTERS

THOSE GLIDING CERTIFICATE NUMBERS

Dear Editor,

The correspondence about gliding certificate numbers is *most peculiar*. The Certificates are marked FAI British Empire (Royal Aero Club) and were issued when you got your A Certificate and later endorsed for B, C, Silver and Diamonds.

Geoff Vaughan got No. 1076 in 1938 and S&G asks if this is the lowest! There must be *dozens* of active pilots with lower numbers. Mine is 887 from February 1938, but in early December I was with E. L. Mole who has No. 6 from 1930. I guess he is the lowest living number but he flies only power now.

ALAN YATES, **London.**

NOTE ON HANNA REITSCH

Dear Editor,

Many readers of S&G will have read Trevor-Roper's **The Last Days of Hitler** in which he gives an assessment of Hanna Reitsch's character. Few if any will have read the Second Edition (1950) in which he says he has received many criticisms of this assessment from those who knew her and from herself. He gives eight pages to discussing them and concludes that the effect "has not been to alter the narrative of fact but it has altered the description of personality and I regret that my first edition should have caused her pain and involved us both in controversy."

A. E. SLATER, **Cambridge.**

A THOUGHT ON TAIL DOLLIES

Dear Editor,

The one slight problem with tail dollies is that some pilots take-off with them still attached. Grob has tried to eliminate this with the Astir tail dolly (though I'm not totally convinced and it could probably do quite a bit of damage if it bounced the wrong way and struck the tail).

Because of the tail dolly problem we have recently started adding another letter to the cockpit check, teaching pupils from the onset. All it costs is a few extra seconds added onto the checks which is nothing to what it may cost if you forget. After "trim" we include "tail dolly" but don't add an extra "T".

So far we have had a 100% success rate and the solo pilots have adapted to it very well. I'm not saying that it should be taken up as a recommended practice but it is worth a thought, especially as people are converting to glass sooner than they used to (there are also many wooden ships with tail dollies, especially the K-6 range).

J. F. BERINGER, **(Eagle GC) Detmold, W. Germany.**

MISSING NUMBERS

Dear Editor,

It occurred to me whilst looking at an advertisement for various types of altimeters and also reading about two fatalities as a result of launch failures that it is about time we stopped using the altimeter in which the 200 and 300ft numbers are missing owing to the location of the millibar scale.

I feel that in the heat of a launch failure the altimeter could be misread, say 300ft when it is in fact 200ft, giving the crew little chance of survival if a badly executed 360° turn is negotiated.

COLIN RONEY, **Gt Whelnetham, Suffolk.**

AIRMANSHIP IN THERMALS

Dear Editor,

Bill Scull's article "Airmanship in Thermals" (October issue, p222) was, as usual, interesting and valuable. I found, however, that one hazardous situation, which is common whilst flying in areas of lift crowded with other gliders of varying behaviour, was not discussed in the article.

I refer to when one is turning and encounters another glider at the same level turning the same way but the two circles are overlapping each other. From my viewpoint, the other glider is perhaps going to cross my bows but appears to be on a collision course. Do I ease my rate of turn, tighten it hard, or change altitude in order to avoid a collision?

The situation can worsen rapidly without decisive action and I find that trying to pass in front of or behind the other glider is unwise. The only really safe action appears to be to roll out of the turn, but this is usually contrary to one's desired intention. In these circumstances, I usually continue my turn and pass above or below the other glider, so far without any heart-stopping moments. The question though is whether one should go above or below, and how one can avoid the possibility that the other pilot may choose the same option as oneself!

So far I have not analysed why I decide to go above or below the other glider but I think I know how it works out, and I propose the following as a useful practice:

> When a collision appears to be imminent between two gliders turning in the same direction in overlapping circles which are not concentric, the glider whose lower wing is pointing towards the other glider should give way, optionally by passing below the other glider, which should either maintain its level or climb slightly.

This seems to be a simple and natural thing to do in the air but I think it would be better if we all understood and adopted such a practice. I hope I have made myself clear and should be interested to hear what others think about my suggestion.

PETER BELL, **Reading.**

Bill Scull replies: Overlapping circles put gliders, in effect, on converging courses. The rule "the one which has the other on its right hand shall give way" may not be appropriate when circling to the left (you will have to sketch a few situations to convince yourself of this). In this instance Peter Bell's suggestion appears to offer a suitable addition. However the implication in "passing below the other glider . . ." is potentially fraught if one is relying on the other pilot taking compatible action — what if he is flying too slowly to climb?

Basic airmanship in thermals should mean not persisting with circles which are not concentric with those of other gliders. I don't think an additional rule would help. In such circumstances by the time one has thought "do I give way?" it may be too late!

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RHODA'S NEW FEAR!

Dear Editor,

I've been gliding for 17 years. I've got over 1000hrs and two Diamonds and I'm still frightened. I found Keith Nichols's tips on how to stop my fear from spoiling my delight very helpful. (See S&G, October 1979, p219.)

But now I have a new neurotic fear. It's that Mike Randle is going to draw me aside and tell me, with great kindness, to take up a less hazardous sport. (See letter in the last issue, "Perplexed by Article" p312.) Come to think of it, if gliding is a hazardous sport, aren't I right to be scared?

RHODA PARTRIDGE, **Presteigne, Powys.**

BOOK REVIEW

Jane's All The World's Aircraft 1979-80, edited by John W. R. Taylor. Published by Jane's Publishing Company at £35.

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Or 'phone: Steve White/Chris Rollings — Marlow 4035.

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