SAILPLANE AND GLIDING

October-November 1981 95p

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SAILPLANE & GLIDING

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Cover: Peter White took this photograph of the NationGlide Sport Vega being flown over the Buckinghamshire countryside towards the end of the round-England-sponsored-glide. The pilot is Adrian Wright, an instructor at Booker, who is himself disabled.

Contents

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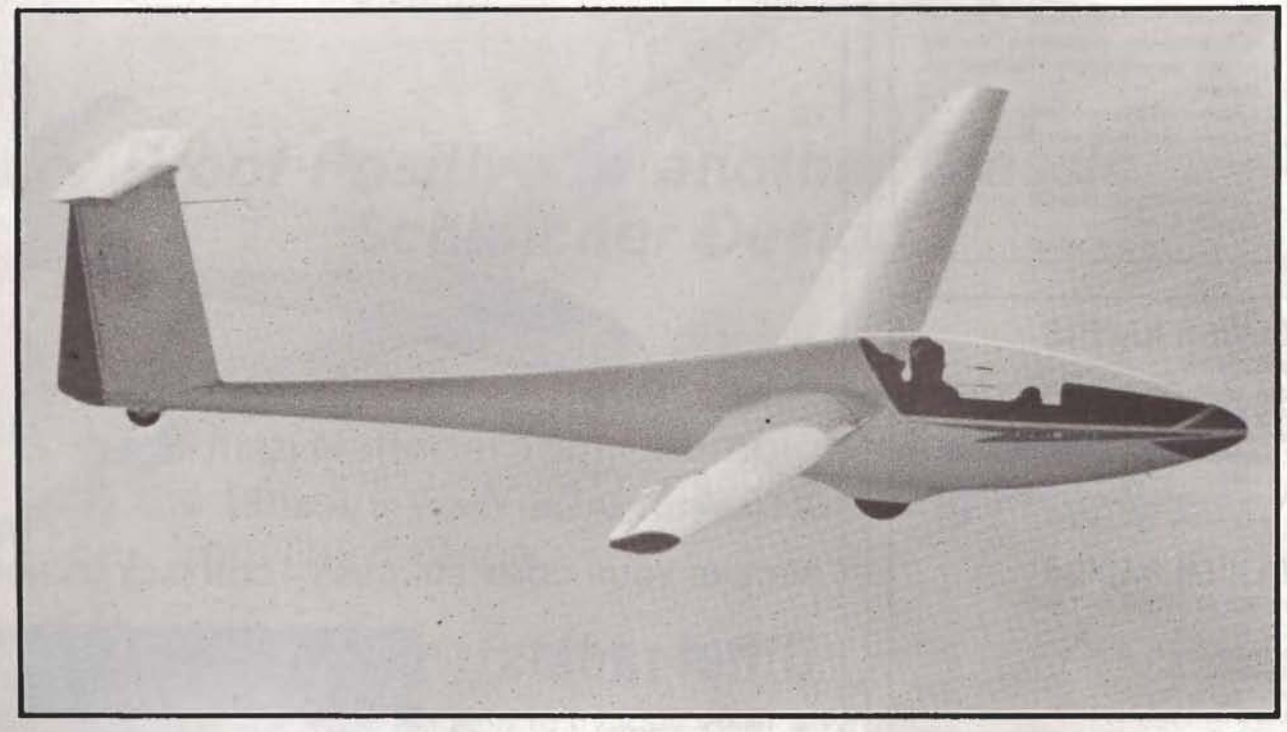

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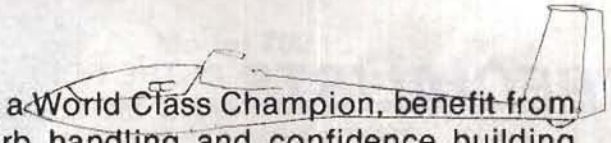

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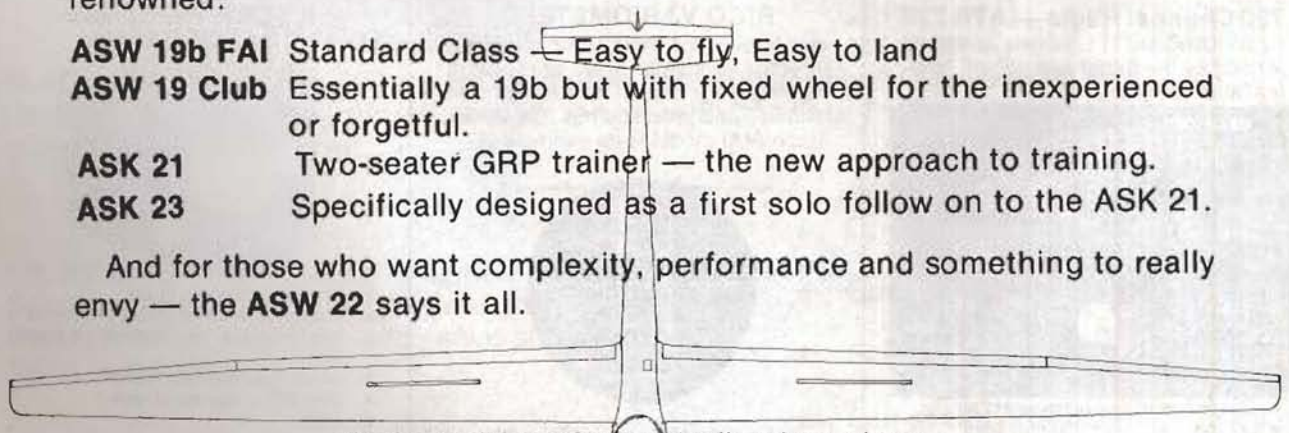

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COMPETITION ENTERPRISE

Shobdon, June 27-July 5

RHODA PARTRIDGE

LET'S face it, your average airfield has as much charm and atmosphere as a municipal car park. Our guests rolled up on a cold, still, grey afternoon and there we were, littered with light aircraft and teeming with parachutists. Not a bit like lovely North Hill. To add to the gloom, John Fielden, the brilliant archbishop of Enterprise, the spirited task setter who had never missed an Enterprise, had shingles and was missing this one. However, Philip Wills (who initiated the Comp as an escape from routinely racing Regionals) looked down from the glider pilots' paradise that he ornaments and here's what happened.

Saturday June 27. Ken Wilkinson declared us open (and spared us a long speech). Carl Davies (airport manager) gave a helpful (if threatening) talk on safety. Mike Garrod (Met) held a small crystal ball aloft and said "Light northerly, moist, unstable". Tony Maitland (lynch pin without whom we would have fallen apart) set a pilot selected O/R. To be selected when airborne, one point out, two points return and (by popular demand) 25 points bonus for landing back. Paul Kite (Vega) was Glass ship winner with 235km. Chris Ellis (Olympia 460) did 154km and won for Wooden ships. The day turned out better than expected and people regretted not having flown further.

Sunday, June 28. Same Met as yesterday. Tony set a selection of TPs to give possibilities for O/R or triangles (including 300km) or cat's cradles. First Glass was Tony Moulang (ASW-15), who did Ledbury, Abergavenny, Mynd. First Wood was Norman Smith (Skylark 4) who said he had spent a pleasant, relaxed day wandering 120km around the countryside taking photos.

Norman Smith, who won for Wood. Photo: Tony Smallwood.

Monday, June 29. Met similar to previous days but a change on the way. Tony set a 306km triangle, railway junction NE of Oswestry, Little Rissington, for Glass and a 175km triangle, Welshpool, Worcester, for Wood. Paul Kite (Vega) won Glass again (comment from old Enterprise hand "His first Comp. Most alarming"). He also gained his Diamond goal. Norman Smith won again for Wooden ships. The day turned out really difficult and there was a scatter of outlandings in the Cotwolds.

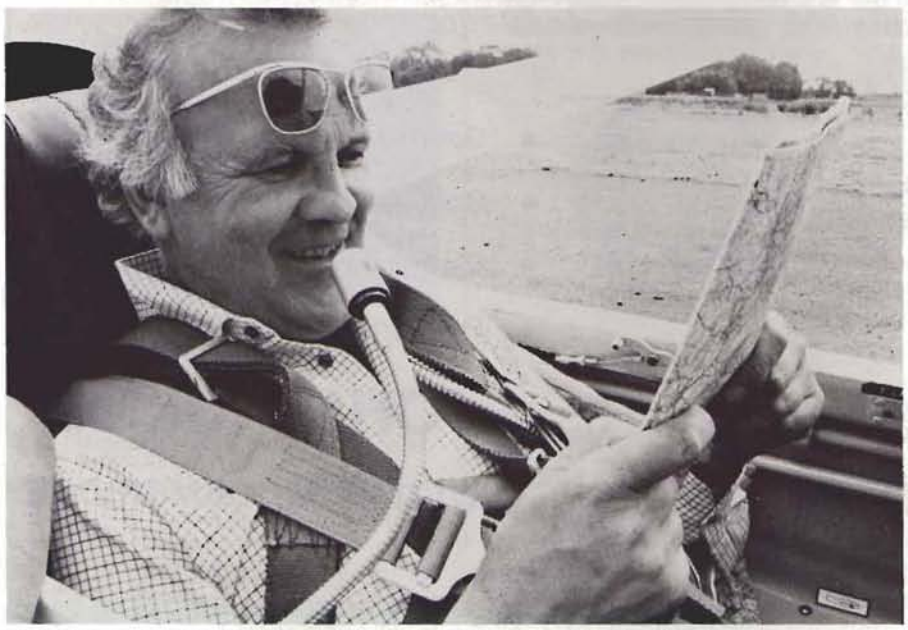
Tuesday, June 30. Warm fronts had gone through overnight. Strong NW wind, 8/8 cloud, 2000ft cloudbase and wave above. Tony set a choice between height points or an O/R or triangle on a line between Newport (Mon) and Wrexham. Photographs depending on holes ("What holes?") Or if no holes appear go ridge soaring in the Black Mountains and land at Talgarth.

John Bally then gave a calming briefing about his Black Mountain site. We listened, goggle-eyed. At 1200hrs there was a re-briefing and Philip King gave an excellent talk on the Shobdon wave relating it to local landmarks. Even old Shobdon hands learnt a lot from it. A few gliders launched through a small hole, which then closed. After a three hour wait I took the Glasflügel 304 up (*hors concours*) through a tiny hole that opened as the tug and I reached cloudbase and found myself in a small white pudding basin. The PIK 20E slipped through like a fish. The 460 and the Twin Astir followed. The hole then closed. It was hilarious. Tiny holes all over the Welsh borders had little collections of gliders perched above them. Anxious pilots trying to identify a small town with a caravan site, a wiggley river and a disused railway. All border towns look like that through a small hole.

Anxious pilots

The radio chat "Can you identify . . .? I think it's . . . No it's not". Roger Harlow, flying the Shobdon Twin Astir, replied to a query on his position "Somewhere over the UK but it could be Welshpool." Actually it was Church Stretton. It was so beautiful and it was funny. In the evening it opened up and starry-eyed pilots came home to Shobdon and Mike Russell who had his first wave flight (in the little Moswey) decided not to give up gliding. John Cadman told us how lovely the Moswey looked against the wave clouds. We all had tales to tell. It was an exceptionally happy day. Rod Witter (PIK 20E) won for Glass with a flight to Wrexham and Hay. Jerry Ramsden (Skylark 4) won for Wood with 13 000ft which gave him Gold height.

Wednesday, July 1. Met same as yester-



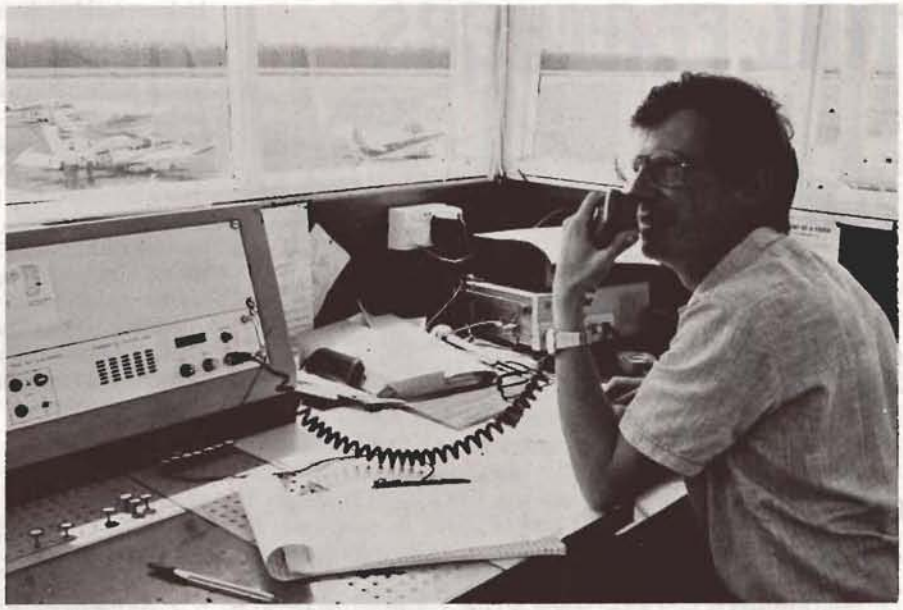
Chris Simpson, who thought it the "best Enterprise ever". Photo: Tony Smallwood.

day but with more cloud (could there be?) and less wind. Task, O/R or triangle, pilot selected. Norman Smith launched early, climbed in wave to 9000ft and shot off to Shrewsbury. He didn't quite get back, but he won for Wood. John Bally surprised even himself. He launched in the evening and took his Diamant on a remarkable ridge ride to turn Crickhowell and he got back. About eight miles were between 600 and 800ft, but the cloudbase went up later and he got to over 4000ft over Talgarth to final glide all the way back from Cwmdu. This was his first Comp and he won the day for Glass.

Thursday, July 2. Westerly and grotty. Tony said "Most clubs won't be flying, so go and photograph as many as you can to infuriate them. Wooden ships may also photograph recognisable castles, not just heaps of stones." Chris Ellis (460) won for Wood. He said "It was horrible, round hills from field to field. I photographed Cosford and the Mynd. The thermals just didn't work." Reg Mayo (Diamant) photographed Talgarth and the Mynd to win for Glass. I had an extra mug to present at briefing because Chris Simpson's son David did his first and second parachute jumps.

Friday, July 3. (Have you noticed something?) Unstable WSW. Task, O/R to selected turning points. Tony had arranged them in pairs so that if the far one looked impossible you could photograph the near one and come home. A cunning elastic sort of task. John Cadman (Mosquito) and Reg Mayo tied for Glass and Mike Russell did a really remarkable flight in the Moswey to win for Wood. Lovely to hear him describe it, eyes blazing with excitement. He'd ridge soared to the Mynd. Dived over from the east ("so low"). Done three beats, picked up a thermal at the south end to 4200ft and arrived home with enough height (just!) to do a competition finish. Quite a few gliders fell down around Ellesmere and others failed to clear Shobdon hill on the way home and had to back track and land out.

Saturday, July 5. (You've noticed now, haven't you, everyday a competition day. Eight on the trot.) Met. — gubbins from the west but Shobdon in wind shadow from the Welsh mountains. Task, Glass a 195km triangle, Ellesmere canal basin, Madley airfield. Wood, a 107km triangle, Madley airfield. Philip King flying our club Twin Astir won for Glass and Norman Smith (Skylark 4) and Chris Ellis (460) tied for Wood.



Tony Maitland, the lynch pin. Photo: Tony Smallwood.

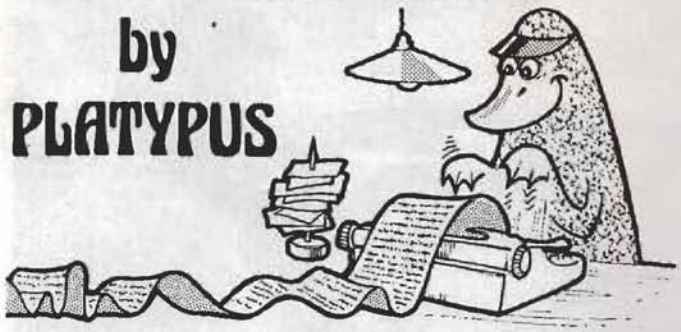
The wave day photographed by Mike Garrod.

At a cheerful end of Enterprise party trophies were presented and there was much kissing. John Cadman in his Mosquito was overall winner. Norman Smith (Skylark 4) won for Wood. The Farnborough K-13 won the two-seater prize and the special trophy for the most enterprising flight of the year went to Tom Docherty. He took-off from Portmoak at 8am, climbed in wave and descended through 8/8 to land near Cambridge at 1pm.

Roll on next year

Our guests flew themselves into a state of total exhaustion — 14 728km were flown. They loved it. Specially the wave day. Tony Maitland did a superb job (two or three superb jobs). John Fielden (who came to the party still looking rotten ill) can be proud of his apprentice. Marjorie Hobby womaned the telephone with practised skill. Mike the Met was very accurate. He worked extremely hard and was helped by a new toy. You plug it into the phone and it draws charts for you. Mike says it saves petrol. Justin Wills (who has promised to fly in the whole Comp next year) appeared at weekends and shot round tasks at alarming speed. One struggle-some day he shot round twice. His final glides and competition finishes caused us yokels (who had never seen the like) to cling together hiding our eyes. Two quotes — Chris Simpson (who won last year) said "This was the best Enterprise ever". John Bally, who only soloed a couple of years ago and who came third, said at the party "I'm looking forward to next year's Enterprise already." ■

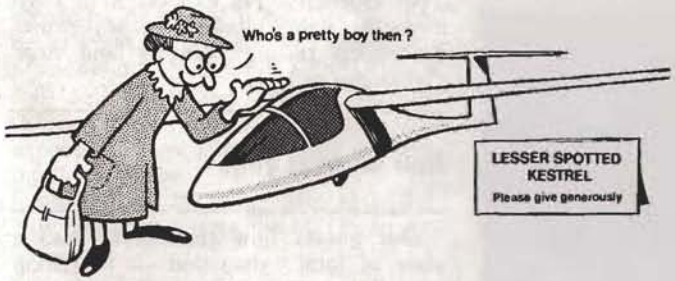
TAIL FEATHERS by PLATYPUS



Retrieves I

YOU have surely all read the priceless anecdote from the World Championships about the American pilot who had a sign written in German saying "I am a glider pilot, please help me" which he showed to a passing *Frau* after an outlanding. That good citizen rummaged in her handbag, produced a Deutschmark, gave it to him and went on her way.

Whether the dear woman knew he wanted a retrieve is neither here nor there; what the story proves is that the German public, who are vastly better informed about gliding than our own (hardly difficult, I admit, since the British public's knowledge of gliding is a minus quantity — that is, most of what they know ain't so) immediately bracket the words "Glider pilot"



Nearly extinct.

with pauper, strolling vagabond, itinerant bum — in short, a beggar, liable to rattle a tin cup at any passing toff with a whingeing "give a poor fellow the price of an aerotow, guv!" Try that on a British passer-by and you'd get nowhere unless you'd persuaded her that a glider was a nearly extinct specimen of bird, the prevention of cruelty to which was your sole vocation in life.

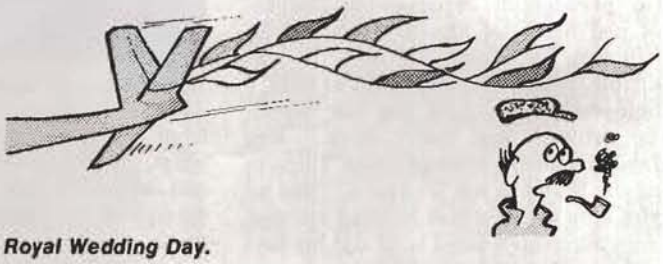
Retrieves II

National characteristics should never be crudely stereotyped. It's rude and wrong to assume that the English are cold, the Americans loud, the Germans boringly efficient, the Italians randy, etc. etc. I once landed at a farm in France, where after hosing the cowpats out of the tail parachute the farmer's two children kindly took me to the pond where the three of us began to fish with crude bamboo rods. In no time I hooked a sizeable perch which I swung joyously over my head on to the grass. Knowing the French hunted solely for food and not, as the English, for the pleasure of inflicting terror and pain on dumb animals, I set about this fish with my rod and bashed its head in, yelling "Look kids, supper!" in my best French. They burst into tears. "That's Alphonse", they cried, "we always throw him back!" I could have thrown myself into the pond in remorse.

All the same, they recovered their *sangfroid* and not long after, Alphonse, *sautéed* in homemade butter, was as good to them as they formerly had been to him. Maybe the stereotypes have *something* to be said for them after all.

"That's Alphonse."

Retrieves III

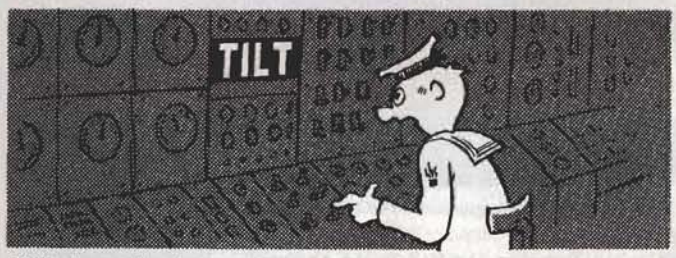


Royal Wedding Day.

If I set aside the humiliation, disgrace, loss of 900 points, chagrin and fury at seeing the cumulus blossoming the moment my wheel kissed the stubble (a rather brutal kiss which b.gg.r.d the wheel brake, as R. Jones Esq delicately observed) then my most enjoyable outlanding of recent years was on the Royal Wedding Day.

The farmer showed the usual abysmal ignorance of gliding: "Those flat-topped cu can be a bit deceptive early in the day, can't they? You weren't very well centred; the cores were obviously shifting upwind, etc. etc." You know, the usual sort of thing.

When I'd finished grinding my teeth, I accepted a lift into the village, about ten miles from Stonehenge. One pub, one church, one telephone. A one horse town I guessed. Between the church and the village green a small group of people were waiting. Along a wooded lane there eventually came a procession of



Skilled merchant seaman.

children in fancy dress, all looking dreadfully self-conscious, led by a bearded man in a top hat and a white smock with bells tied under his knees, banging a massive drum. And the one horse, whose young rider promptly fell off. After what seemed to a thirsty stranger like an age, beer and cider barrels appeared, cooks with a barbecue almost as hot as that miraculous sun after the long wet summer, Morris dancers, musicians and finally, in the middle of it all, my crew and trailer. It's the first time my son has crewed for me and he now thinks crewing's terrific.

I have not yet explained that a *real* retrieve entails arriving in a ploughed field at midnight, in pouring rain, the pilot or glider untraceable, all pubs and garages and restaurants closed (especially the type that advertises itself as 24 Hour Service. Some friends of mine tried one such at 3am: Indignant, sleepy face appears at window. "What the hell?!" "Aren't you a 24 hour service?" "Yes we are, but not at this bloody time of night!" *Slam*).

No, I'm not going to get nostalgic about old-style downwind ballooning — in which the average achieved still-air speed of the glider was about half the windspeed — or about the allnight retrieves that ensued. I can only say that in those days crewing was *crewing* (print that right, Mrs Editor, this is a family magazine) just as being a merchant seaman today is a skilled job but it doesn't quite compare with reefing sails on a schooner in an icy force 8. It's just different now. Thank Heavens.

Retrieves IV

Rape could lead to your glider being imprisoned! If you think that makes the punishment more than fit the crime, I ought to explain that the rape in question is an increasingly valuable crop in farmers' fields in July and August. Unlike most other crops it is not harvested instantly, but is first cut, then allowed to lie for some days, then gathered in. Meanwhile unsuspecting glider pilots may imagine it is loose straw that is merely going to be raked up or burnt (the latter being no problem unless your glider is in the field at the moment they set fire to it). Anyway, the point is that rape must not be interfered with (!) during this

In quarantine.

period and gliders landing in it are likely to remain in quarantine for quite a few days until the gathering-in begins. Two case histories of pilots grounded because of rape are already on record this season.

No comment.

Wingtips Against the Wall, Buddy!

Today, paranoia (I understand that's a belief that other people are invisibly padding around after you with murder in their hearts) is rampant. In the old days you'd scratch your nose in a crowded room and inadvertently buy a Rembrandt; nowadays you scratch your backside in an open space and get shot by a nervous cop. The decision to blast any flying object (identified or not) that ventured within umpteen miles of the Honeymoon Train on July 29 is the latest manifestation of the current phobia.

Gliders leaving the Lasham Comp had to finish at Greenham Common (no great hardship for me since I was magicked down hours earlier at Stonehenge) and had to pay £8 each to make the otherwise effortless trip home once the Purple Carpet had rolled up in the wake of the Happy Couple. Next thing there'll be a permanent cheese two miles high and fifteen miles wide round Chequers against berserck balloonists.

Shaddup you fool! Quiet, whaddya think ya doing? Now he's gone and done it, etc, etc.

Down at Stonehenge.

Horses for Courses

Like economists, ask two variometers to tell you what speed to fly at and you get three opinions. (Where's the extra one come from? The seat of your pants, of course, silly.) In my panel the Polish vario is exhorting like a cavalry captain "Vot you vaiting for? Is racehorse, not carthorse! Come on, 80 knots, 90 knots, 100!" while the American vario is drawling "Easy now, fella. Let's just mosey along to that li'l ol' cloud, get there nice 'n' high, 65 knots'll do nicely, y'all hear?" It's nothing to do with politics that makes the seat of my pants agree with the US adviser, just cowardice. The Polish vane-vario I now set permanently not on speed to fly but on rate of climb; its lag does not show up the horrible holes in my thermals (which the US electric vario is always belching at) but shows ascents of reassuring smoothness all the way round.

I am told that you probably couldn't even get two identical varios of certain makes to give you the same reading, in the same panel, piped into the same plumbing, though that's maybe just a vile rumour. Certainly two different makes with different total energy systems (the bane of my life) are just bound to disagree.

What should one do? My advice, which I warn you in advance is worthless, except as a way of stimulating the circulation of heated air in the bar, is that, like two or more women in the same kitchen, varios should each have quite different jobs to do at any one time. If, like the Continentals who don't have blind-flying instruments and fill the available space with extra varios dials and switches, you have a plethora of rate-of-climb indicators, then use one for quick-response centring, one for general rate-of-climb averaging (preferably calibrated in a properly equipped workshop), one for speed-to-fly etc. The fact that some of them are over-reading or under-reading is not especially important so long as you have learnt how to live with them. After all, on speed to fly, I always do the job backwards:

Properly equipped workshop.

I decide what speed my nerves will permit, then wind the ring to the point where the needle indicates the desired speed. This craven habit occasionally presupposes a negative rate of climb, but so what? My rate of climb often *is* negative.

However, I do begin to wonder why all that money is spent on such gadgets, some ruinously expensive, when I am sure their proud — not to say rich — owners have never checked them out. . .

A Feast for Velivoles

BOB RODWELL eyes the goodies at le Bourget's huge *Salon*

WHILE George Lee was making gliding history at Paderborn many soaring pilots were becoming footsore pilots padding around the now intimidatingly huge biennial Paris air show at *le* Bourget in June. They marvelled at a wide array of gliding hardware and what seemed like squadrons of rag-wing micro-lights incongruously filling what little space remained between such giants as the KC-10 in-flight supertanker, Russia's vast Mi-26 helicopter and the European space launcher, Ariane.

Among the gliding goodies on display were a specialist tug from the designers who gave the world the PIK 20 sailplane; yet another two-seater in Romania's ever-increasing range; a clutch of motor gliders and a gallimaufry of Gallic sailplanes. At the same time the superb *Musée de l'Air* opened a big new hall devoted largely to the French view of gliding history.

The French company Centrair, formed only 11 years ago by former naval pilot Marc Ranjon, has done much to bring France to a newly important position in sailplane manufacture — first through the agency sale of other companies' designs; latterly by licence-manufacture of the ASW-20 together with improvements of that design, and now by the development of its own in-house designs.

Ranjon was showing his latest ASW-20 development, the wingletted ASW-20FP, for which a 2.8 improvement is claimed in glide ratio over the standard ASW-20F at 57kt. The ASW-20FP exhibited was one of more than 100 ASW-20s now built by Centrair and carried the South African registration obtained by its export purchaser.

Centrair is currently completing the prototype of a 15m Standard Class design, the Centrair 101, for a maiden flight in early autumn and series production next year. A glide ratio improvement of between 10 and 15 per cent over that of the ASW-19 is estimated. The airfoil of its double-trapesium wing has been developed from Wortmann's FX 61-147 in computer-aided studies at the French aeronautical research institute ONERA — one measure of hefty French government support. For special competition versions winglets are being considered together with lightening of the airframe by substitution of Kevlar for the normal glass-fibre.

Also on display was the prototype of the Carman C-38, which made its first flight last March. Following on the designer's successful JP 15.34 and 15.36 designs — more than 50 of the latter have been produced — it is a conventional Standard Class aircraft incorporating some carbon fibre, for which a glide performance of 40:1 at 54kt is claimed.

The C-38 is to be produced by an associate company of the Siren group, which recently purchased the entire PIK 20E project from the original Finnish maker, Eiri-Avion. The first French-built PIK 20E is now flying and production should be running at two to three a month by November, said Ranjon, who also represents Siren.

The latest PIK design, the PIK 23 Towmaster, was exhibited as a slightly incomplete and as yet unflown prototype by Valmet O/Y, the Finnish national aircraft manufacturer. Developed from the one-off PIK 19 tug, which has flown some 14 000 launches in 2000 hours and nine years with the Helsinki University GC, the Towmaster is a low-wing, side-by-side two-seater with a 180hp Lycoming engine and a 360-degree-vision canopy. Construction is wholly of a glass-fibre/epoxy/PVC foam sandwich. Valmet's export manager and test pilot Mikko Järvi said he expected to make the maiden flight in late summer. Production rate would be "modest" and aircraft not available before 1983 or 1984. With a lavish cockpit fit, designed for instrument as well as basic training, the aircraft would be relatively expensive, he warned, but it may also be made available as a semi-finished kit.

Among motor gliders were two attractive two-seat newcomers, with the RF-10 the latest, all-composite, design from the stylish pen of Réné Fournier and the Hoffman H-36 Dimona from the designer of Scheibe's HF-34 lightweight two-seater, the Delphin.

The first RF-10 was lost in aft-CG spinning trials but certification of the second and third prototypes is expected about now, with production near Tours starting in October. The Fournier factory has been "unloaded" by licensing all production of the RF-6B tourer to Slingsby; with the floor thus cleared, Fournier plans to complete one RF-10 every week. Power comes from the new 80hp US Revmaster flat-four, in either unblown or turbocharged versions, and a powered cruise speed of 110kt is claimed, together with a powered range of over 600 miles. Gliding performance, with the three-position Hoffman prop feathered, is quoted as 30:1 at 45kt and the flyaway cost as 200 000 francs — about £18 000.

The Dimona is considerably cheaper, with a fixed undercarriage and training, rather than performance flying and long range, being the designer's primary aim. Again an all-composite machine with

PIK 23 Towmaster

IS-28M2

Hoffman H-36 Dimona

side-by-side seating, the Dimona is powered by an 80hp Limbach engine and flew for the first time last October. Production of the German design has begun in Austria for first deliveries in the late summer at what the makers say is the lowest price of any two-seat motor glider — DM63 000 (£13 125) ex works. More than 60 orders have been placed, Hoffman said.

The Romanians mounted their biggest Paris showing so far, displaying for the first time the IS-30 two-seat sailplane, a development of the established IS-28B2. It has a revised empennage, improved forward fuselage and greater span. Also on show was the 43rd production example of the IS-28M2 motor glider, examples of which are now commonly ferried across the world on their delivery flights, often after having been collected at the Brasov plant by their purchasers. Three such aircraft have now flown, in a loose gaggle and without incident, to Australia, another to the Philippines while flights the length and breadth of Europe are now commonplace.

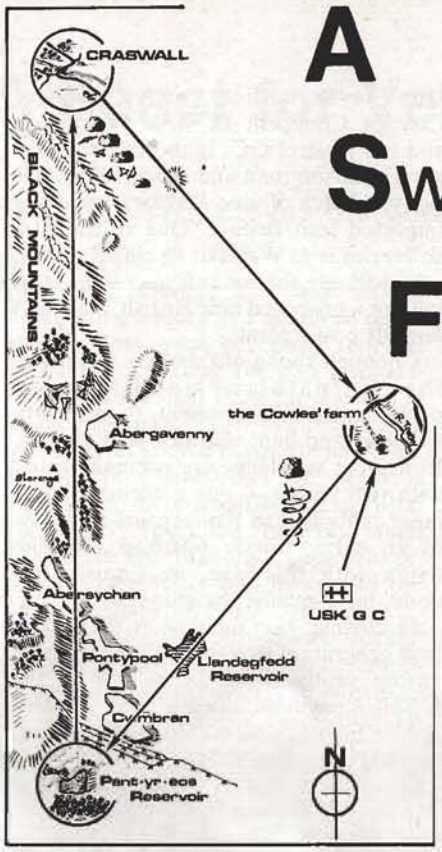
British Aerospace is giving marketing assistance to the Romanians as part of the RomBac programme under which the Romanians are now building the One-Eleven airliner under licence. Charles Chappell, of BAe Weybridge and the Kestrel GC, is the British company's liaison man and reports that, initially, a batch of nine IS-28M2s are being imported into Britain. One of the first deliveries is to Weslake Racing Engines, who will use the aircraft as a flying test bed for a proposed new British 75hp light aircraft powerplant.

Chappell spoke of fabulous soaring in the Carpathian mountains on performance-measurement flights with engineer and demonstrator Imil Iliescu. Romanian sailplanes are normally fitted with two varios — one a normal instrument calibrated to 10m/sec and the other to an extraordinary 60m/sec. Imagine flying with that one, as Charles has done, hard against the stops!

In closing: two funnies. A very basic first-generation Rogallo-style hang glider swung gently from the rafters of the USSR's pavilion, alongside the massive Salyut/Soyuz spacecraft combination. Named the Slavotitch and with an unlikely performance of 7:1 claimed, it was credited somewhat improbably to the Antonov design bureau, better known for heavy transport and combat aircraft.

And dwarfed by almost everything in the static park was the minute Caproni C-22J light twin-jet trainer, which Italy's big Agusta (*rpt Agusta*) group is now taking up. Its formed fuselage is based upon that of the A-21 Calif sailplane and the genesis showed through, unmistakably. Stuck on to the canopy with a dab of Sellotape was that aid to precise flying either loved or loathed by soaring pilots — a yawstring. It looked very odd upon what is designed as a 400kt military jet.

(See also Overseas News, p230, for news of the ASW-22.)



A Swift Flight of Fancy

JUSTIN WILLS gives the background to his 100km triangle UK record and describes the 51min flight on Easter Saturday when he achieved a speed of 120km/h over 102km.

Philosophy. I have never been particularly enthusiastic about trying to rush round small triangles at record speeds. Somehow the prospect of awaiting the optimum moment on an excellent soaring day and then exercising flawless technique in the form of innumerable small but crucial decisions to achieve the necessary split second advantages never excited my imagination. Far rather I would dream of some single grand scheme which, by a combination of heroic human endeavour, extraordinary weather and enormous luck, would produce a sudden sensational result. The improbability of such a scheme simply reinforced my belief that practically anything worthwhile is almost unattainable. But not quite: perhaps if . . .

However, this is an account of how one, admittedly less grandiose, idea was applied to a small triangle with surprising results.

The Idea. John Fielden sowed the first seeds at Competition Enterprise 1974 when he moved the whole contest from a rain soaked Devon to Usk for the day, and despite the absence of thermals set an exciting task along the eastern facing hills that stretch from Newport to Hay-on-Wye. At their southern end the main slopes face somewhat south of east and rise to around 1400ft asl, but as they run north they back to face north-east and reach over 2300ft to form the eastern escarpment of the Black Mountains.

Subsequent flights in the area, and in particular a glorious day last October spent whispering along the ridges admiring their autumn colours, led me to speculate on the possibility of reverting to old fashioned hill soaring along these slopes during a triangle, and thus achieve a record speed by avoiding the inherent drawback in conventional thermals of gaining height but going nowhere.

The Armchair Bit. Clearly I could only hope to use this idea on one leg of the triangle, but calculations showed that by keeping the first and third legs of a 100km triangle to the minimum permitted distance of 28km each, and assuming that one could hill soar the whole of the 44km middle leg, the course might be covered without circling at all. Given an easterly wind of 15kt and a good racing start, a fully ballasted 15m glider should cover a 28km south-westerly leg at 70kt IAS and arrive at the first turning point with about 1500ft in hand.

During the second leg operating altitude should gradually increase as the terrain rises towards the next turning

point, and thereafter, due to the flatness of the triangle, a bit of back tracking would add little to the overall distance yet quickly bring one into range of the finish line. If all went to plan calculations showed the average speed should be 122km/h, well in excess of the current UK records.

Planning and Preparation. The essential thing was to establish the appropriate middle leg of the triangle. A convenient reservoir tucked into the southern end of the hills was the obvious choice for the first turning point, but identifying a suitable landmark for the second proved more difficult as they seemed somewhat scarce in that rugged part of the country. Thus one February day found Gillian and I, armed with Ordnance Survey maps, skirting mist shrouded mountains in a Cessna until we managed to locate a distinctive road junction in the hamlet of Craswall, almost exactly 44km north of the reservoir. Then we simply radiused two arcs equivalent to 29km each (to allow a small margin) from each turning point, and hoped that where they intersected on the map would prove a suitable start and finish line.

Perfectly flat field

In mid-March we leapt into the car and roared off to investigate. True to form, as we approached the area the road narrowed to single track, and the surrounding fields became both small and rather vertical. However, abandoning the car we trudged over the brow of a hill and discovered a perfectly flat field beside the river Trothy at the precise point required. It was so much better than anything else we had seen that we dismissed the fact that it lay at right angles to the anticipated wind direction, that the approach was guarded by trees and that half of it was under water!

Luckily, Mr and Mrs Cowles, who farmed the area, seemed accustomed to strangers knocking on their back door with odd requests. Certainly they showed little surprise as they quietly listened to our plan, and then delighted us by giving their full consent and encouragement. For the first time the whole enterprise became a practical possibility, and all that remained was to prepare the appropriate declarations and await the right day.

Practice. Good Friday looked a possibility, albeit with a rather low inversion and poor visibility, and a 20kt north-easterly wind some 45° from the optimum. We drove down to the Usk GC which was only ten miles from our chosen start line, and alerted the Cowles, who said they had been expecting us and had even rolled the field that morning. At Usk we found Ivor Shattock who volunteered to accompany me along the second leg. The subsequent flight was both exciting and instinctive, the main lessons being:

a) The best lift is very close to the hillsides, and this is particularly important in marginal situations when the wind is almost parallel to the slope.
b) It isn't as fraught as it looks (just as well), but watch out for power lines.
c) The Blorenge Mountain is not to be relied upon.
d) Once you reach the Black Mountains you can really go for it.

My speed for this flight was 107km/h despite numerous circles and tacks, and convinced me that given slightly better conditions it could be done substantially faster. The weather forecast that evening said "same again", so we crossed our fingers and hung on.

The Performance. The next day the wind looked about the same, but the inversion had lifted and the thermals were much better. Cumulus were already forming at 10am as we rigged the LS-4 I was borrowing and filled it full of water from the Usk stream. Gillian set off to the Cowles' again, while I watched the club fleet disappear upwards, leaving the field to myself and the tug. By 2.15pm cloudbase was over 4000ft, so I took-off and towed to the start line where I released and dived across it.

Ten kilometres along the first leg the Usk K-8 was marking a 6kt thermal, a pull up in which, together with a couple more convenient clouds, enabled me to reach the first turning point at 2300ft, 600ft higher and one minute up on yesterday. This extra height allowed me to overfly the south-easterly facing slopes with their dreaded power lines at the start of the second leg, and cross the gap to the second range. These hillsides are tree covered and not particularly steep so, finding no lift and being down to 1200ft and well below the top, I thankfully scuttled round a corner into a more northerly facing gulley. To my alarm there was no welcoming surge of lift and looking out at a cottage going past the wingtip I noticed its washing hanging motionless. The wind had stopped!

The only three turns

Horrified, I reviewed the prospect of an immediate landing, while the glider cleared another shallow spur by about 50ft. Suddenly there was a tremendous heave and instinctively I pulled up and began to turn, convinced that, so close to the ground, the glider would fall out of the thermal at any moment. Surprisingly it did not, and after three circles in a steady 7kt I was back to 2200ft and pressed on, ignoring the treacherous Blorenge, straight for the Black Mountains. These three turns were the only ones made during the whole flight, and enabled me to reach the southern end of the main escarpment at 1300ft. Here I was confronted by the sight of about 30 hang gliders looking like multi-coloured moths seemingly pinned to the hillside by their kingposts, whilst a similar number clearly marked the several strong thermals coming up the face. Thus despite the lack of wind I was able to maintain 80kt whilst steadily climbing and waving to my fellow airmen.

I reached the second turning point seven minutes up on yesterday, and turned for home. Now above 2000ft I encountered a different strata of hang gliders, who were marking the strongest lift under a growing cumulus in front of the hill. A couple more pull-ups and I reached 2500ft, the highest point of the flight excluding the start. From here two more patches of lift and a steady 85kt got me back to the finish. The average speed worked out at 120.2km/h.

The Reviews. It is immensely satisfying to have an idea and then prove it can work, however obvious it may seem with hindsight. The flight itself proved very exciting due both to the close-up views of the spring countryside and the ease of keeping track of one's progress throughout. The final glide to a remote small field held one's attention to the end. But none of it would have been possible without the help of a large number of people, including the Cowles, Usk members, the agents for the LS-4 and Gillian. If the record is homologated they should share it.

50 YEARS AGO

First Time Called "International"

A. E. SLATER

THE 1931 contest on the Wasserkuppe had been advertised for the first time as "International" but the many foreign visitors brought no gliders. Yet two British entries had been announced early in the year: a professor from the London Club who never got around to organising a crew, let alone a pilot; and a Scud I entered by a Mr Russel Taylor. Early in 1930 this character produced an impressive prospectus for a gliding school, with some big names as sponsors, such as Gordon England and The Master of Sempill, but all withdrew their names before the year was out, and as far as I know he never even got around to finding a site. Somehow he managed to build up a reputation in the north of England as a gliding expert and according to Slingsby he would collect a crowd by advertising a gliding demonstration, then strap himself into a glider, make his helpers move it around in various directions, then unstrap himself and get out on some such excuse as that the wind was wrong. His last appearance in S&G was when he visited a club which expected a highly skilled demonstration of how to do it, but then found he had not even got an A Certificate.

★ ★ ★

At the Wasserkuppe the last day of the meeting was the most spectacular. In a SE wind under a clear sky a few experts were soaring over a suitable slope at the far end of the ridge and every now and then one of them would throw a circle or two and return to the slope. At last Kronfeld got away, endlessly circling in very weak lift until he vanished from sight far to the NW. He went 187km and Professor Georgii was most enthusiastic about the feat because, he said, "there was not a cloud in the sky". But I had taken repeated photographs of a line of enormous cumulus clouds on the far northern horizon, each throwing off an "anvil" above freezing level. Kronfeld and Groenhoff flew to Magdeburg, which is NE, and Hirth, who landed at Halle, reported having encountered a thunderstorm front.

60 YEARS AGO

A DURATION RECORD IN GUSTS

ON September 13, 1921, Friedrich Harth, an architect from Bamberg in public employ there, soared for 21 minutes plus a number of seconds variously given as figures between 13 and 57. To the newspapers this was just another cunning use of "currents" by those clever Germans, and two history books assert that it was done in slope lift, but it was not. The record was unique in that height was claimed to have been maintained by the use of gust energy. The site was Heidelstein, a little distance from the Wasserkuppe where the annual rally had ended over a month before, and at which duration records had been put up of 13 minutes by Klemperer and 15 minutes by Martens, both being prolonged descents through weak slope lift; the previous actual soaring record had been 9¾ minutes by Orville Wright in 1911.

News of the real nature of Harth's flight reached England in 1923 in the book **Gliding and Soaring Flight** by J. Bernard Weiss who wrote: "The slope of the land below was one of only six degrees, and it was claimed that the flight was made by taking advantage of the energy supplied by gusts . . . " From later sources came further details: the only control of the glider was by changing the incidence of the wings, each hand having a control stick for the wing on that side; the machine climbed 400ft or more and, according to one authority, performed circles and figures of eight; but finally something broke in one of the controls at 400ft and he crashed at a point 40ft lower than the start, breaking both legs (few authorities mention this).

An extraordinary feature of this flight was the paucity of total flying experience the pilot could have had before successfully using an original technique which no instructor could have taught him. He began making gliders in 1910, helped by Willi Messerschmitt, then a boy. He installed rotating wings in 1913 in his third glider, suggesting that the idea of using gusts for flying dominated his whole aviation career. His first visit to Heidelstein was in August 1916 during leave from the war, in which he could not have been in the German Air Force or we would certainly have heard about it. Here he made a flight of 3½ minutes without loss of height. In 1921 he made a few shorter flights before setting up the record.

But his manoeuvres suggest another puzzle. It is generally assumed that you must face the wind in order to capture energy from gusts. But C. H. Latimer-Needham, the BGA's first Technical Committee chairman, showed in an article in the pre-war S&G that you should get just as much dynamic lift from the onset of a gust whether you flew through it going upwind or downwind.

What did Harth's glider look like? He was such a secretive character that photographs are hard to come by. But after the crash Messerschmitt built a similar glider of which a photograph is published in Brütting's book on **Famous Sailplanes.** It shows the pilot sitting in the open with each hand on a control lever but with no attempt to streamline the pilot's body, so quite a lot of gust energy must have been used up in pushing it through the air. The tail, with apparently fixed surfaces, is at the end of an open structure like that of a Zögling but made of steel tubes.

What happened to Harth? A. R. Weyl, who came to Dunstable in 1934 after holding a high post in the German Air Ministry, in which he seemed to have acquired an encyclopaedic knowledge of the personalities and foibles of everyone of note in German aviation, said that Harth gave up flying after the crash. He then joined Hitler's group in its early days, as a result of which he lost his job and was in a bad way for many years, and Weyl lost track of him. He was certainly not rehabilitated when Hitler came to power. Had his nonconformism pushed him over to the other side?

The Cautionary Tales of Joe

BY MENTOR

JOE had begun to feel that he was learning about gliding the hard way! There was his crash into the trees in the spring, then the cable break that almost caught him out, the escapade with the electric fences and finally the "clutching hand" that dumped him out of the sky when he undershot up at that hill site. The latter had bruised him and his confidence but luckily not the K-8 so he was flying again the next weekend. And at last the summer came good for him. In one flight that was really very simple he got Silver height and distance, leaving only the rather tedious duration between him and real punditry! Morale nicely restored, Joe decided to join an autumnal visit to a wave site. He hardly dared hope for Gold height . . . but maybe five hours?

★ ★ ★ ★

Three days into the expedition and Joe hadn't even flown! There was plenty of time to listen to the advice offered by the locals, though, and Joe was an avid listener. Talk of slots closing, wind shears disturbing the even flow of wave motion, turbulent aerotows under the rotor system. On the Tuesday the skies cleared from the west and Joe was offered a check ride in the club's glass two-seater. The wave was fairly clearly marked as they towed out to the first slot upwind and in no time at all they were climbing well. Joe had never seen anything like it! Mile upon mile of gently undulating clouds receding steadily below them; bright sun in a flawless blue sky; unbelievably smooth as the varios seemed to stick at four knots and the altimeter wound steadily through 6000ft. The climb topped out soon after that and Joe was taught how to judge the beat back and forth, measuring time and noting heading, so as to stay orientated to the wind, the wave, and the ground far below. Soon his turn was over. Others were waiting so they let down through the slot into what, by comparison, was a very gloomy scene.

★ ★ ★ ★

Back at the airfield Joe got his K-8 ready and was briefed. He would find the main difference would be his glider's lack of penetration and he would have to be particularly careful about orientation. He must beware a very real tendency to be moved back downwind and thence into the wave sink and probable descent over unfamiliar terrain. But if he could keep his eye on the right slot he would be all right. Oh, yes! And keep an ear open for the radio. If any of the experts saw anything odd beginning to happen they would let everyone know!

★ ★ ★ ★

For the next three hours Joe thought he must be in Heaven! *This* was where virtuous glider pilots would spend eternity! The slots stayed open and Joe flogged back and forth, timing his beats to north and to south. The sun was warm (although his feet were cold enough!) and he began to think that maybe five hours was on. He had taken-off at two o'clock and sunset was at seven fifteen. His briefing had included a stern warning to be on the ground by seven thirty at the latest.

At first he had enjoyed chatting with some of the others. That had been fun but gradually they had faded and for an hour now there hadn't been a peep out of the radio. He had called base but got no response. Oh, well! He could manage. The pioneers hadn't had radio!

★ ★ ★ ★

With an hour to go Joe spotted a Std Cirrus, brakes open, flying fast and descending into the slot below. Probably forgotten his plastic bag! Then, as he tracked towards the south for the umpteenth time, Joe saw that "his" slot was slightly eroded on its upwind edge. This was curious! If anything the slot had tended to widen as the evening wore on. This was the first time it had shown signs of becoming narrower. Time to turn north again. He would check it again next time he came south. He was also aware that the sun was being thinned down by increasing cirrus. And he had dropped below 6000ft for the first time in over two hours.

★ ★ ★ ★

Five minutes later, as he completed his next turn towards the south Joe's heart almost stopped! His slot had gone!! No question of it. No slot, anywhere! No ground in sight and suddenly his Heaven became a chilly menacing place to Joe. The cloud cresting the wave upwind of him looked higher than before, the wave floor closer. He tried to fly the same speed and heading as before so that hopefully he would stay over the same strip of ground that he had idly studied throughout that long autumn afternoon. At the proper time he turned north again but then realised that he was unconsciously flying faster and had lost another 500ft. As he descended inexorably towards the cloud tops he made a last despairing radio call. Silence!

★ ★ ★ ★

Think, Joe!
The wind? Westerly.
The mountains? To the west.
To the east? Low ground.
Ergo, fly east!

Joe flew east. Soon he was sinking fast and was swallowed up in the cloud that reached up for him. It was a different eternity now, the long wait to emerge into clear air. At one moment, his concentration lapsing, Joe found himself flying west again. Visions of granite hills looming out of the mists, he turned, trying to guess 180 degrees, confused by the seemingly aimless gyrations of the compass. At last the clouds thinned, to reveal gloomy, drizzling, semi-darkness, and a totally strange countryside 2000ft below.

★ ★ ★ ★

By the time he got to a phone it was 8pm and the Rescue Services had been alerted.

Please send all contributions to S&G to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH. Telephone 0223 247725.

MAKING THE BEST USE OF OUR GLIDER RADIO

COLIN DEWS, chairman of the BGA Radio Committee

NOW that we can use three glider/ground and one ground only radio channels, we have an opportunity to intelligently spread the radio traffic by establishing which gliding activity should have priority on a particular channel.

We all want to use our radios when we *need* to pass messages, but if we fail to impose and practice a meaningful self discipline, we shall all surely suffer from the effects of channel congestion with 95% of the radio traffic taking place on 130.4MHz. This channel, intended for cloud flying and genuine cross-country flying, will become blocked with a form of **aeronautical CB!**

Perhaps the most convenient method of illustrating a solution is to present the various gliding activities and the available radio channels in the form of a matrix and determine the primary, and where appropriate, the secondary use for each channel. (Fig 1)

Fig 1

Activity	130.4 Only	130.125 Primary	130.125 Secondary	130.1 Primary	130.1 Secondary	129.9 Only
Cloud Flying	✓					
Cross-country Flying	✓	✓				
Competitions (start/finish Lines)			✓	✓		
Training (Lead and follow)		✓			✓	
Local and Other Glider Flying			✓	✓		
Ground/Ground Winch Signals Retrieve Recovery						✓

We can consider the radio channels individually starting with 130.4MHz. This channel should be used only for cloud flying, and genuine cross-country flying messages concerning position reports etc. The new channel 130.125MHz should be used primarily by the training schools for "lead and follow" operations and also as a back up for cross-country flying when 130.4MHz is extremely busy.

130.1MHz should be used primarily for competition start and finish lines and also for local and all other glider flying activities not accommodated above. The secondary use of the channels 130.125 and 130.1MHz should be as indicated on the matrix and every endeavour must be made to use the alternatives (secondary use) only when the primary channel is very busy. 129.9MHz must only be used for ground to ground operations such as retrieving or winch signals etc.

To simplify the above for easy reference for those of us who are not involved in competition flying or "lead and follow" training activities, we need only memorise the following —

Frequency MHz	Activity
130.4	Cloud flying/Cross-country only
130.125	Back up for cross-country flying
130.1	All other glider flying
129.9	Ground to ground only

Operating Procedure. At this point it may be prudent to mention a few guide lines concerning radio telephony operating procedure. First, we must make a real effort to be brief with our transmissions, think what we are going to say before pressing the transmit button and economise in the words used to convey the message. The use of a few standard phrases will prove useful provided the phrases are self-evident. Unless the signals are extremely weak, call signs need only be used during the initial contact; further immediate exchanges can successfully use voice identification.

Channel Changing. When changing channel it is suggested that reference should be made only to the decimal part of the frequency — for example "Call sign — change to point one two five" would only be interpreted as "change to 130.125MHz etc.

No Response Calls. If there is no response from a station when you call, do not block the channel with repetitive calls — wait a few minutes before calling again.

Avoid using the "Do you read?" routine; the chances are that if the station has not received your call sign. "Do you read?" will not be received either.

Use simple messages to convey your progress on a cross-country flight — do not attempt to give detailed *exact* positions unless you are about to land out. Messages such as "Call sign — 70km on first leg, 4000ft" would convey all that is necessary to your crew.

Cloud Flying. You are required to give your position and height amsl before entering cloud, it is also necessary if any other gliders are around to ensure separation by regularly transmitting your height amsl whilst in the cloud. To avoid confusion between glider competition numbers and height the message should be, for example "Seven thousand six" rather than "Seven six".

Finally. During the summer months on a good weekend day we could be sharing the radio channels with 700 or more other gliders and their ground stations. When the channels are busy please keep the social chat to the absolute minimum. The chorus who bellow "shut up" every time someone speaks out of turn on **their** channel only aggravate the situation. We shall only get it right by patience and example. ■

REGIONALS' RESULTS

Inter-Services Regionals Results — May 5-14, Greenham Common

Open Class

	No. Pilot	Sailplane H'cap	Day 1.5.5 143km ▲	Day 2.8.5 127km ▲	Day 3.14.5 143km ▲	Total Points
1	Jones, R.	123 Nimbus 2CS	23¹	810	912	1745
2	Gough, A. W.	104 Janus C	0	772	928	1700
3	Hartley, K.	118 Nimbus 2	0	766	913	1679
4	Cook, P. G.	109 Ventus B	0	713	911	1624
5	Fleming, A. M.	118 Nimbus 2	52¹	683¹	887	1622
6	Young, J. R.	118 Nimbus 2	42	698	844	1584
7	Boldi, R.	108 ASW-20F	0	539	907	1446
8	Hymers, S.	108 Mosquito B	0	589	793	1382
9	Morris, B. C.	106 Mini Nimbus	0	351	1000	1351
10	Harkins, A.	108 Mini Nimbus	0	443	555	998
11	Tootell, W.	108 ASW-20	7	687	271	965
12	Whitehead, P. F.	108 ASW-20	53²	DNF	835	888
13	Throssell, M. G.	104 Janus B	0	650	176	826
14	Clemo, R. W.	114 Kestrel 19	0	713	0¹	713
15	West, J. M.	108 Mosquito B	0	0	706	706
16	Caunt, D.	114 Kestrel 19	0	488	153¹	641
17	Nichols, G.	111 LS-3 17	0	370²	227	597
18	Buckner	108 ASW-20	15	499	5	519
19	Read, I. B.	106 PIK 20D	0	11	371	382
20	Dimock, H. R.	108 Mini Nimbus	0	0	62	62
21	Cooke, J. N. C.	108 Vega	0	14	0	14

1 = 5% photo penalty; 2 = 20% photo penalty; 3 = uncontrolled at TP.

Standard Class

	No. Pilot	Sailplane H'cap	Day 1.5.5 143km ▲	Day 2.8.5 93km ▲	Day 3.14.5 121km ▲	Total Points
1	Kiely, K.	100 ASW-19	379	478	988	1845
2	Smith, E. R.	99 Astir CS	277	482	990	1749
3	Benoist, J. D.	102 ASW-19B	293	453	955	1725
4	Wilson, F. G.	96 Sport Vega	253	565	889	1707
5	Cardiff, J.	95 K-21	26	670	1000	1696
6	Mitchell, K.	99 Astir CS	240	515	940	1695
7	Stephenson, E. K.	96 Libelle	202	454	908	1564
8	Harrison, J. G.	97 Astir	0	479	849	1328
9	Clarke, M. A.	100 Cirrus	0	463	845	1308
10	Hibberd, G. P.	99 Astir	0	378	808	1186
11	Jarvis, H. R.	100 Cirrus 75	285	559	258	1113
12	Dean, M. J.	100 DG-100	0	361	708¹	1085
13	Gildea, C. J.	100 SHK	257	369	261	887
14	Wright, S. D.	96 Cobra	0	369	516	885
15	Hardy, M. F.	99 Astir CS	179	361	326	866
16	Odell, J. H.	99 Astir	0	0	838	838
17	Marriott, J. P.	99 Astir CS	0	421	236	657
18	Bush, W. H.	100 Cirrus	0	511	145	656
19	Davis, M. J.	95 K-21	0	0	370	370
20	Dempster, N. W.	99 Astir	0	74	261	335
21	Terry, C. J.	99 Astir CS	0	42	193	235
22	Orr, M. J.	99 Astir	0	59	140	199
23	Lawrence, S. W.	99 Astir CS	73	0	37	110
24	Smith, I.	99 Astir CS	0	29¹	64¹	93
25	Tapson, B.	96 Twin Astir	0	0	56	56
26	Fox, J. A.	97 Astir	0	0	DNF	0

1 = 15% photo penalty; 2 = 20% photo penalty; 3 = Not controlled at TP.

Club Class

	No. Pilot	Sailplane H'cap	Day 1.8.5 56km ▲	Day 2.12.5 44km ▲	Day 3.14.5 73km ▲	Total Points
1	Sherlock, C.	78 K-8	710	73	480	1263
2	Barley, P. R.	78 K-8	744	0	518	1262
3	Phillips, G. J.	78 K-8	590	63	550	1203
4	Russell, G. J.	78 K-8	678	33	387	1098
5	Hull, J. A.	78 K-8	727	25	177	929
6	Sullivan, J. P.	78 K-8	527	38	325	890
7	Chapple, H.	66 Mu-13	581	0	0	581
8	Armstrong, J.	78 K-8	0	38	459	497
9	Mulhern, P. G.	78 K-8	0	45	376	421
10	Martin, G.	82 Pirat	8	60	264	332
11	Hanson, R. G.	78 K-8	0	70	0	70
12	Davey, C. M.	78 K-8	0	38	0	38

Sport Class

	No. Pilot	Sailplane H'cap	Day 1.8.5 93km ▲	Day 2.12.5 77km ▲	Day 3.13.5 158km ■	Day 4.14.5 106km ▲	Total Points
1	Hoy, S. L.	94 IS-29	872	35	51	890	1848
2	Harmer, P. M.	86 Skylark 4	842	19	0	830	1691
3	Millward, G.	86 K-18	752	19	0	880	1651
4	Eagles, T. W.	90 K-6E	724	13	0	790	1587
5	Kosak, J. G.	94 Dart 17R	601	49	0	789	1439
6	Richardson, J. L.	86 K-18	189	19	0	1000	1208
7	Memstock, G. G.	86 K-18	711	50	0	272	1033
8	Almey, D. B.	88 Dart 15	812	9	0	210	1031
9	Mitchell, T. M.	86 K-18	71	0	49	852	973
10	Eddie, A. J.	86 K-18	849	0	0	91	940
11	Jackson, R.	86 K-18	0	51	0	696	747
12	Stewart, P. J.	94 Dart 17R	0	0	0	329	329
13	Matthews, G. V.	86 K-18	0	0	0	299	299
14	Hewitt, I. N.	94 Club Libelle	235	0	0	0	235
15	Edwards, J. A.	94 Dart 17R	0	9	0	77	86

Western Regionals — Nympsfield, June 13-21

No.	Pilot	Sailplane H'cap	Day 1.14.6 178km goal	Day 2.15.6 182km ▲	Day 3.16.6 117km ⇄	Day 4.18.6 316km ▲	Day 5.21.6 182km ▲	Total Points
1	Kay, A. E.	111 ASW-20FL	7	—	654	—	857	
	Watt, D. S.		—	449	—	739	—	2706
2	Hodsman, D. A.	106 Nimbus 15	0'	601	535	528	797*	2461
3	Cowderoy, R. L.	103 Phoebus 17C	179	431	466	586	748	2412
4	Morris, G. D.	111 ASW-20L	0	524	441	603	732	2300
5	Jefferyes, M. B.	108 DG-200	109	394	349	532	803	2247
6	Jones, R.	109 Ventus B	86*	139	568	409	1000	2202
7	Harding, R.	100 Cirrus 75	131	403	219	590	748	2091
8	Findon, D. E.	118 Nimbus 2C	208	158	448	494	673	1981
9	Harrington, T.	108 Vega	109	509	407	236	585	1846
10	Guthrie, P.	97 Astir CS	0	381	495	350	615	1841
11	Taylor, K.	100 SHK	131	375	449	363	501	1819
12	Roberts, D. G.	118 Nimbus 2B	86	308	527	143	738	1802
13	Corbett, G.	108 Nimbus 15	80	394	454	125	651	1704
14	Sheard, P. G.	109 Ventus A	0	116	458	377	739	1690
15	Gibbon, J.	90 K-6E	0	—	446	—	459	
	Roberts, D.		—	445	—	173	—	1523
16	Shadrach, D.	100 DG-100	88	406	397	0	598	1489
17	Hill, B.	98 Std Cirrus	0	—	418	—	391*	
	Winning, E.		—	415	—	242	—	1466
18	Aldridge, K.	85 Std Austria	114	312	145	221	666	1458
19	Cervantes, S.	100 SHK	0	405	DNF	283	687*	1375
20	Russell, F.	118 Glasflugel 604	55	290	413	51	566	1373
21	Parker, S.	101 LS-4	54	154'	531	0	578	1317
22	Vennard, D.	104 PIK 20B	0	479*	468	167	193	1305
23	Lloyd, K.	110 LS-3 17	0	223'	428	0	525	1176
24	Barrett, R.	108 Vega	109	—	DNF	—	416	
	Pennycuick, C.		—	539	—	0	—	1064
25	Hajdukiewicz, H.	100 SHK	32	346	0'	200	458	1036
26	Knowles, D	86 Skylark 4	0	—	22	—	83	
	Knowles, J		—	306*	—	599	—	1010
27	Forrest, B.	82 Olympia 463	0	490	6	0	453	949
28	Holland, J.	102 Cirrus 17.7m	53	309	0'	0	418	780
29	Butt, P.	84 Skylark 3F	0	521	53	0	136	710
30	Wend, J.	100 Std Cirrus	94	552	DNF	DNF	DNF	646
31	Szabo-Toth, G	108 LS-3A	42	156	0	102	243*	543
32	Bleakin, L.	118 Nimbus 2	38	DNF	421	DNF	DNF	459
33	Peck, J.	100 DG-100	0	75	4	191	171	441

1 = No control at TP, 2 = Barograph failure, 20pts penalty, 3 = TP penalty, 30pts; 4 = TP penalty, 50pts; 5 = TP penalty, 150pts, 6 = RTI penalty, 20pts; DNF = did not fly.

Midland Regionals — Husbands Bosworth, July 11-19

No.	Pilot	Sailplane H'cap	Day 1.11.7 146km ▲	Day 2.12.7 152km ▲	Day 3.13.7 144km ⇄	Day 4.14.7 108km ▲	Day 5.15.7 120km ▲	Day 6.17.7 142/147km ▲	Day 7.18.7 310km ■	Day 8.19.7 126km ⇄	Total Points
1	Langrick, J.	98 Std Cirrus	356	726	394	282	12	910	896	408	3955
2	Murphy, T	106 PIK 20D	341*	860	102	282	274	1000	552	295	3756
3	Baker, R.	102 Cirrus	43	—	378	—	46	—	533	—	
	Baker, P.		—	833	—	286	—	988	—	261	3348
4	Hoye, J.	104 Pik 20B	33	807	257	244	0	799	527	407	3076
5	Cousins, R.	106 ASW-20	78	296	239	184	49	960	1000	0	2807
6	Davidson, R.	108 Mosquito	8	651*	233	46	0	714	961	0	2607
7	Keogh, B.	98 Libelle	31	873	378	193*	84	415	581	0	2552
8	Pozerskis, P.	118 ASW-17	347	1000	204	0	92	280	496		2419
9	Willett, M.	100 Std Cirrus	38	650	413	0	0	874	380	0	2355
10	Findon, D	118 Nimbus 2C	176	864	204	0	124		432	324	2124
11	Feakes, R.	105 Mini-Nimbus	10	811	239	0	53	772	163	0	2048
12	Allen, M.	96 Std Cirrus	53	688	487	237	59	239	270	0	2033
13	Owles, C.	94 Dart 17	—	152	—	226	—	828	—	178	
	Tarrant, J.		40	—	0	—	95	—	311	—	1627
14	King, P.	108 Mosquito	0	883	—	—	—	—	DNF	DNF	
	Willett, R.		—	—	60	0	24	288	—	—	1255
15	Bass, I.	112 Kestrel 19	1	804*	0	0	46	345	122	0	1118
16	Thomas, C.	82 BG-135	9	66	0	0	0	629*	350	0	1054
17	Manley, K.	104 Cirrus	0	0	0	0	0	297	0	209	506
18	Gothard, G.	108 DG-200	12	DNF	DNF	DNF	DNF	DNF	DNF	DNF	12

* = 5% photo penalty, DNF = did not fly.

Northern Regionals — July 25-August 2

Open Class

No.	Pilot	Sailplane H'cap	Day 1.25.7 132km ▲	Day 2.26.7 120km ⇄	Day 3.27.7 306km ⇄	Day 4.28.7 138km ▲	Day 5.29.7 171km ▲	Day 6.30.7 160km ⇄	Day 7.31.7 133km ▲	Day 8.1.8 166km ▲	Day 9.2.8 103km ▲	Total Points
1	Hunt, S.	108 LS-3	975	0	783	499	677	977	446	716	590	5683
2	Taylor, K.	100 SHK	938	126	105	834	656	903	437	748	451	5198
3	Gaunt, N.	100 DG-100	832	111	197	293	688	364	473	543	410	3909
4	Ramsden, P.	112 Kestrel 19	780	22	295	189	723	774	356	718	DNF	3857
5	Pozerskis, A.	118 Nimbus 2t	117	—	731	242	602	1000	442	DNF	531	3665
6	Hood, L.	96 Twin Astir	228	23	802	36	1000	574	265	8	521	3457
7	Walsh, T.	106 Mosquito	321	13	450	0	533	547	249	793	506	3412
8	Cervantes, S.	100 SHK	567	—	—	314	797	397	223	583	324	3205
9	Ellis, J.		—	16	31	—	—	873	—	515	325	
	Rees, J.	112 Kestrel 19	532	—	—	0	308	—	355	—	—	3055
10	Sheridan, A.	100 SHK	690	7	695	—	461*	124	275	8	358	2618
11	Ivey, G.	108 DG-200	104	0	338	206	474	866	199	105	294	2586
12	Hulme, A. J.	104 PIK 20D	163	0	33	396	467	821	299	41	357	2577
13	Taylor, C.	98 ASW-15B	189	0	43	367	532	545	456	0	253	2385
14	Rice, J.											
	Swannick, J.	112 Kestrel 19	895	9	665	95	DNF	DNF	DNF	DNF	DNF	1664

1 = corrected index; * = penalty for not finishing; DNF = did not fly.

Sport Class

No.	Pilot	Sailplane H'cap	Day 1.25.7 89km ▲	Day 2.26.7 102km ▲	Day 3.27.7 106km ▲	Day 4.28.7 80km ▲	Day 5.29.7 82km ▲	Day 6.30.7 68km ⇄	Day 7.31.7 62km ⇄	Day 8.1.8 81km ▲	Day 9.2.8 72km ▲	Total Points
1	Ward, M.	70 Olympia 2B	193	—	207	—	669	—	304	—	556	2307
	Hannigan, R.		0	0	—	160	—	187	—	21	—	
2	Rogers, N.		182	—	38	—	453	—	—	400	—	
	Griffin, B.	78 Skylark 2	—	0	—	86	—	403	192	—	305	2059
3	Norrison, P.	90 K-6E	141	19	297	292	369	441	0	22	463	2044
4	Roberts, E. M.	84 K-6CR	0	105	0	220	430	684	168	132	275	2034
5	White, M.	96 Libelle 201B	36	0	203	140	130	121	0	238	526	1394
6	Sheffield, R. J.	96 Silene	0	198	52	146	530	0	0	46	276	1248
7	Acey, E.		—	106*	—	0	—	0	—	325	—	1193
	Hunter, J.	90 K-6E	159	—	0	—	359	—	0	—	244	
8	Svenson, B.		209	—	0	107	—	0	—	0	503	1163
	Reeves, C.	72 K-7	—	0	—	—	344	—	0	—	—	
9	Fox, B.	96 Cobra	86	0	26	140	238	121	0	0	308	917

* = 15% penalty for landing in Leeming ATZ.

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Lasham Regionals — July 26-August 2
Group 1-110

No.	Pilot	Sailplane H'cap	Day 1.26.7 142km ▲	Day 2.27.7 224km ▲	Day 3.28.7 302km ▲	Day 4.29.7 225km →	Day 5.30.7 218km ▲	Day 6.2.8 340km ▲	Total Points
1	Jones, R.	110 Ventus B	729	1000	970	870	1000	965	5534
2	Cunningham, G. W.	112 Kestrel 19	690	843	888	787	824	800	4832
3	Purdie, P. G.	118 Nimbus 2C	758	—	—	—	—	876	
	Innes, D.		—	829	836	625	788	—	4710
4	Watt, D. S.	111 ASW-20FL	—	—	—	1000	814	1000	
	Kay, A. E.		627	197	1000	—	—	—	4638
5	Pozerskis, P.	118 ASW-17	722	971	871	844	856	348	4612
6	Reed, D. W.	114 Kestrel 19	504	838	684	787	806	894	4513
7	Hancock, A. R.	116 ASW-17	826	890	857	185	826	881	4465
8	Taylor, J. J. T.	118 Nimbus 2	567	841	702	660	768	859	4397
9	Hanfrey, A.	118 Nimbus 2B	182	809	957	794	849	766	4337
10	Foot, R. A.	118 Nimbus 2C	610	255	870	779	746	831	4091
11	Miller, A.	146 Nimbus 3	553	744	699	703	634	752	4085
12	Fleming, A.	118 Nimbus 2	890	255	691	730	801	427	4064
13	Davies, F.	114 Kestrel 19	639	34	911	842	648	880	3954
14	Young, J.	118 Nimbus 2	594	945	280	817	845	431	3912
15	Sole, L.	112 Jantar 1	752	303	406	833	656	895	3845
16	Bird, M.	118 Nimbus 2	537	793	807	72	778	792	3779
17	Docherty, T. P.	118 Nimbus 2C	620	787	446	612	532	772	3768
18	Walker, D.	112 Kestrel 19C	273	193	850	747	840	755	3658
19	Szulc, B.	118 Nimbus 2B	440	968	650	421	806	815	3500
20	Tutt, V. F.	114 Kestrel 19	565	211	760	407	766	163	2872
21	Packham, M.	114 Kestrel 19	615	209	352	358	516	443	2503
22	Bickwell, C.	114 Kestrel 19	667	319	325	334	676	73	2394
23	Herringshaw, G. R.	115 Kestrel 20	282	407	394	520	284	444	2331
24	Gee, M.	114 Kestrel 19	118	579	325	99	216	447	1784
25	Scarborough, C. R.	112 Kestrel 19	82	409	346	227	246	259	1569

Group 2 — 103-9

No	Pilot	Sailplane H'cap	Day 1.26.7 114km ▲	Day 2.27.7 172km ▲	Day 3.28.7 271km ▲	Day 4.29.7 316km →	Day 5.30.7 218km ▲	Day 6.2.8 340km ▲	Total Points
1	Curtis, C. J.	108 ASW-20F	765	935	752	923	1000	995	5370
2	Dixon, R. T.	108 ASW-20	751	927	762	957	902	1000	5299
3	Lovell, C. D.	108 Mosquito B	647	709	718	898	935	741	4648
4	Pope, M. H. B.	108 Vega	580	—	—	—	914	580	
	Fischell, B.		—	1000	1000	573	—	—	4647
5	Lysakowski, E. R.	109 Janus C	518	872	800	660	851	897	4598
6	Webb, M. J.	108 ASW-20	568	769	699	602	875	721	4234
7	Ritchie, P. J.	108 Mini Nimbus	225	788	429	853	715	939	3949
8	West, J. M.	108 Mosquito	511	225	345	298	948	934	3261
9	Brisbourne, R. P.	108 DG-200	400	664	411	383	692	642	3192
10	Decker, B.	108 Mosquito	—	743	691	3	707	721	
	Gordon, R.		0	—	—	—	—	—	2865
11	Scull, W. G.	108 ASW-20	123	113	537	567	667	743	2770
12	Alway, E. J.	108 ASW-20	198	843	334	317	743	231	2466
13	Powell, D. B.	103 LS-4	618	—	647	—	789		
	Eade, D. J.		—	0	—	10	—	162	2226
14	Bobbin, T. G.	108 Kestrel 17	543	663	0	355	DNF	656	2217
15	Cousins, R.	108 ASW-20	501	864	730	69	DNF	DNF	2164
16	Clutterbuck, A. F. G.	108 Vega	570	109	591	287	458	0	2015
17	Dimock, H. R.	108 Mini Nimbus	0	225	582	0	303	212	1322
18	Luke, J.	103 Phoebus 17	0	233	185	0	318	0	736

Group 3 — ≤102

No	Pilot	Sailplane H'cap	Day 1.26.7 98km ▲	Day 2.27.7 120km ▲	Day 3.28.7 210km ▲	Day 4.29.7 316km ▲	Day 5.30.7 156km ▲	Day 6.2.8 318km ▲	Total Points
1	Breeze, D.	100 SHK	892	772	911	712	945	1000	5232
2	Taylor, J. R.	100 Std Cirrus	905	909	1000	521	931	769	5035
3	Gaisford, P. A.	99 Astir CS	390	772	911	872	978	965	4908
4	Stewart, K.	100 Std Cirrus	882	897	700	381	945	999	4804
5	Aldiss, C. J.	100 Std Cirrus	541	736	885	627	848	701	4338
6	Piggott, A. D.	99 Astir CS	893	960	149	727	834	715	4278
7	Gaunt, T. R.	100 Cirrus 75	437	820	745	446	1000	731	4179
8	Watson, A. J.	100 ASW-19	137	935	726	747	888	624	4057
9	Pentecost, P. R.	96 Sport Vega	274	910	931	417	339	968	3839
10	Evans, M. F.	90 K-6E	333	677	513	659	720	758	3660
11	Gibberd, R. P.	96 Sport Vega	440	324	816	549	769	574	3472
12	Milson, A. J.	97 Astir CS	848	761	810	28	274	507	3228
13	Reading, P. T.	94 Club Libelle	853	742	710	0	344	367	3016
14	Bacon, G. M.	102 ASW-19	392	DNF	867	195	919	591	2964
15	Watson, P. M.	98 Libelle	477	92	761	36	976	558	2900
16	Farthing, R. C.	100 ASW-19	0	734	260	310	574	948	2829
17	Ross, P. W.	90 SF-27A	875	—	664	—	135	—	
	Grant, R. M.		—	164	—	68	—	580	2486
18	Disdale, P. J.	96 Sport Vega	345	781	550	74	679	0	2429
19	Nash, S. R.	96 Cobra	43	640	512	345	621	147	2308
20	Coombes, A. J.	88 Olympia 419	398	846	616	118	448	DNF	2226
21	Kilcoyne, D. A.	100 Std Cirrus	318	87	561	56	694	160	1916
22	Dawson, V. C. W.	98 Std Cirrus	0	0	468	309	545	578	1900
23	Clarke, M.	96 JP 15-36 AR	215	96	515	0	565	494	1875
24	Mackintosh, S. S.	90 K-6E	0	119	540	48	357	399	1463

Centre of Gravity Position and Performance

FRANK IRVING

IN pursuit of the maximum performance, pilots wish to minimise the effects of the additional induced drag which arises as a consequence of the tail lift force.

It is common knowledge that a tail lift force produces some extra induced drag, since the tail is simply a small wing. It is also common to suppose that down-loads are more unfavourable than up-loads, on the argument that up-loads relieve the wing lift whereas down-loads increase it. On this basis, pilots have tended to think in terms of reducing the down-load on the tail at high speeds by ballasting the machine to get the C of G to the aft limit, or perhaps even imprudently further aft.

A good starting point for analysis is the splendid article in *Soaring* for October 1979 by that famous aerodynamicist, Robert T. Jones.[1] He explains, *inter alia*, Munk's analysis of the total induced drag of a pair of lifting surfaces in tandem, such as a wing and a tail, taking into account their mutual interference. It turns out that if the tail is producing a lift force then, for the same total lift, the induced drag is always greater than with zero tail lift, and, moreover, *the direction of the tail lift is of no consequence*. Also, the relative fore-and-aft location of the surfaces is of no consequence: the result for a canard aircraft is the same as for a conventional layout.

(These results assume that the trailing vortex systems of the two surfaces are close to the same horizontal plane: with a T-tail, all of the results quoted in this article need slight modification).

The consequence of this result is that upward tail lift is just as undesirable as downward tail lift. If we consider a Standard Class sailplane for the sake of simplicity, whose C of G position cannot be altered in flight, then there could be a small up-load on the tail in slow circling flight and an appreciable down-load in fast straight flight. Both will produce an increment in the induced drag. Percentage-wise, the increment may well be greater at the higher speed but, since the induced drag is then a smaller proportion of the total drag, the actual drag increment in newtons or pounds could well be smaller than at low speed. But what really interests the pilot is the loss of energy due to the induced drag increments: in effect, how much further he has to climb in the course of a flight to make good the energy loss.

It is a straightforward matter to calculate the tail lift force for a given machine under known conditions of flight: one simply needs to know some geometrical quantities, the pitching moment coefficient of the machine (minus its tail) about the aerodynamic centre, the location of the latter and of the C of G, the total lift and the equivalent airspeed (Refs 2 and 3).

Having determined the tail lift force, one can use one of the formulae quoted by R. T. Jones (derived by M. Munk in the context of biplanes as long ago as 1919) to find the *additional* induced drag which it produces. In other words, we can find the total induced drag of the wing and tail, taking into account the mutual interference effects, and then subtract the induced drag which would have occurred had all the lift been generated by the wing alone, other things being equal. In applying Munk's expression to circling flight, we implicitly assume that the effect of the vortex wakes of the wing and tail becoming helical can be neglected.

If the additional induced drag due to the tail lift force is known at a certain speed, multiplying these quantities together gives the rate of loss of energy. So the loss of energy in, say, an hour can be found. Dividing this by the weight of the machine gives the loss of energy height: in effect, how much further it will be necessary to climb in an hour to make good this energy loss.

The calculations are rendered somewhat more complicated because both the circling and straight glide conditions have to be taken into account. This presents no great difficulty if we can find the proportion of the flight time spent circling, and this quantity can be deduced if we assume that the MacCready theory applies. We need to know the performance of the sailplane and the mean rate of climb (or the corresponding gliding speed between the thermals). In fact, if we assume that the performance curve can be defined by the usual simple equation (Ref 4) then a correspondingly simple expression relates the proportion of the time spent circling to the interthermal gliding speed.

These calculations have been carried out for a typical Standard Class glider for which it was assumed that, when circling in thermals, the speed was 47kt (87km/h) and the angle of bank 35°, giving a load factor of 1.22.

For a gliding speed of 80kt (148km/h) the results are as follows:

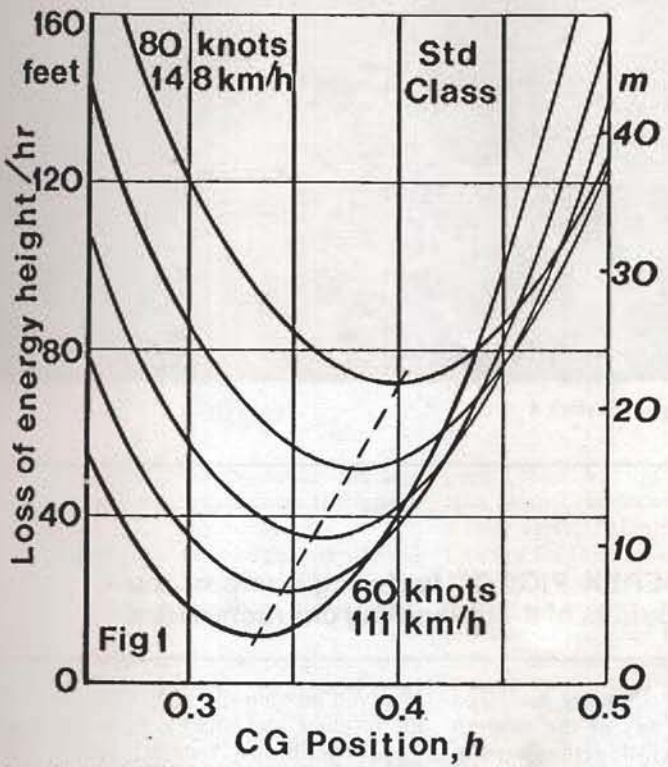
	Loss of energy height/hr, metres		
C of G position	**Circling**	**Gliding**	**Total**
0.25	3.36	51.95	55.31
0.30	0.07	36.49	36.56
0.35	1.67	23.75	25.42
0.40	8.15	13.74	21.89
0.45	19.52	6.45	25.97
0.50	35.77	1.88	37.65

The C of G position is given in multiples of the mean aerodynamic chord (mac).

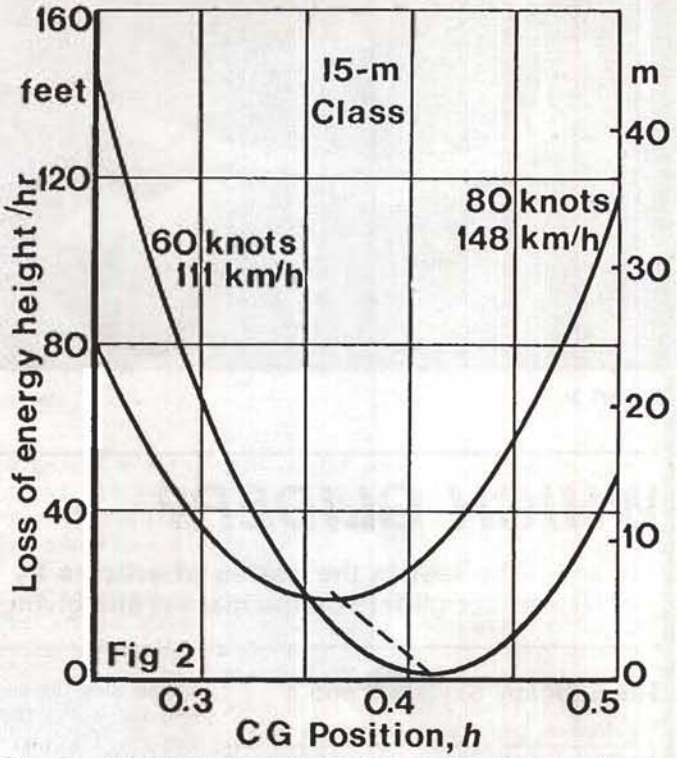
It will be seen that when the C of G is well forward, the energy loss in the straight glide is predominant whilst, when the C of G is far aft, the energy loss in circling flight is the greater component.

Similar figures for the total loss of energy height per hour for various gliding speeds are plotted in Fig 1. Each curve has a minimum and, the higher the speed during the glides, the further aft is the optimum C of G position, as one would expect. But the significant feature of the results is that they show that there is no point whatsoever in getting the C of G aft of 0.4 of the mac, for speeds up to 80kt (148km/h), corresponding to an average rate of climb of a little over 4½kt (2.3m/s) for this sailplane. Altering the C of G position in accordance with forecast thermal strengths seems a somewhat improbable occupation, but if the C of G were fixed at about 0.37 of the mac, the loss of energy height per hour would be within a few feet of the minimum for any of the conditions considered here. The quoted figures for loss of energy height per hour will only apply if the flight takes place near sea-level but the conclusions on optimum C of G positions are unaffected by the mean altitude.

When the sailplane has flaps, the calculations become a little more complicated because of the different flap settings when circling and gliding. Some calculations for a 15m sailplane with flap settings deduced from Ref 5 lead to the curves of Fig 2. The effect of the flaps is to reduce the tail loads during the glide, and hence the overall energy loss. Indeed, with the C of G at 0.4 of the mac and with a glide speed of 60kt (111km/h), the minimum loss of energy is quite negligible since, as it happens, the tail loads in both conditions of flight are very small. For this machine, the optimum C of G position moves forward as the glide speed increases, due to the differing flap deflections at the



Loss of energy height per hour due to the effect of tail lift on the induced drag for a typical Standard Class sailplane. The curves are drawn at 5kt intervals of gliding speed between the thermals. The C of G position is expressed as a multiple of the mean aerodynamic chord.



Loss of energy height per hour due to the effect of tail lift on the induced drag for a typical 15m Class sailplane. Only two values of the gliding speed between the thermals are considered.

various gliding speeds. Once again, the most aft optimum C of G position is about 0.4 of the mac and if it were fixed at 0.37 of the mac, the departure from optimum would be negligible.

The most important conclusion which emerges from these calculations is that, in the case of the Standard Class sailplane, the optimum C of G position is reasonably well aft but by no means extremely so. Very aft C of G positions lead to an excessive loss of energy due to the up-load on the tail in circling flight. In the case of the flapped 15m machine, the effect of the flaps is to alter the tail loads in the favourable sense. The energy loss is generally very small indeed and can be almost zero. There is no point in flying with excessively aft of C of G positions.

It is worth saying that, in performing these calculations, no attempt was made to influence the results so as to satisfy those with fairly conventional views on desirable handling characteristics. The "typical" sailplane was chosen and the calculations were performed once only.

These considerations also lead one to conclude that the tail size of the "typical" machines considered (corresponding to a tail volume of 0.57) is close to the optimum: the optimum C of G position does not depend on the tail area but, with the C of G at this position, the tail area would appear to be enough to provide adequate static margins.

In the case of the Standard machine, one is tempted to wonder whether it would be profitable to alter the C of G position in flight. For example, if the gliding speed between thermals were 70kt (130km/h), the energy losses due to tail loads could be reduced to zero by circling with the C of G at 0.3 of the mac and gliding with it at 0.5 of the mac. The saving in energy height per hour, relative to the minimum loss with the C of G fixed at 0.35 of the mac, would be 35.7ft (10.9m) and, since the average rate of climb for this gliding speed is 2.9kt (1.5m/s), the saving in time would be about 7sec/hr or 0.02%. To produce this C of G shift would involve moving a mass of 8kg through a distance of nearly 5m along the fuselage, doubtless by pumping waterballast. Also, with the C of G at 0.5 of the mac, the machine would be slightly unstable. To restore some stability, a slightly larger tailplane would be required, thus increasing the profile drag. Also, the C of G shift would require a greater change of elevator angle between the two conditions of flight, compared with the fixed C of G condition, again increasing the profile drag. Moving the C of G in flight appears to be a profitless occupation.

We conclude that the optimum centre of gravity position, to minimise the mean rate of loss of energy arising from the additional induced drag caused by tail lift forces, is a function of the gliding speed between thermals (or of the corresponding rate of climb in the thermals). However, if typical Standard and 15m sailplanes are considered it is found that a single C of G position will provide near-optimum conditions over a reasonable range of gliding speeds. The optimum C of G position, in the cases considered, was somewhat forward of the likely aft limit which, for the machines considered, would be at about 0.40 or 0.42 of the mac. Detailed calculations for an Open Class sailplane have not been made but the results are likely to be much the same as for the 15m.

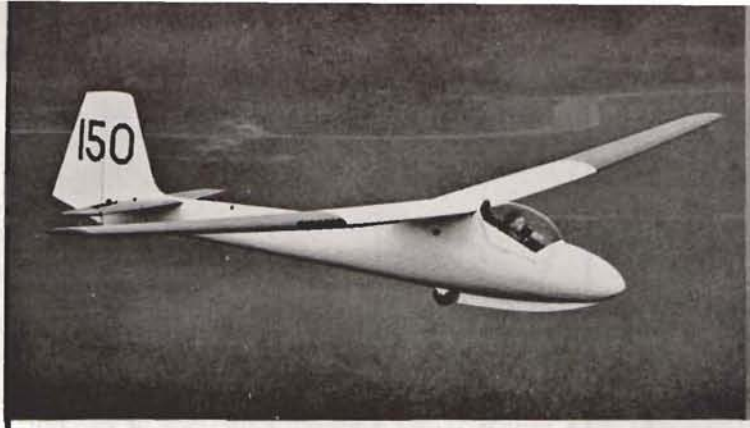
Some rough calculations for a sailplane with a T-tail suggest that the additional induced drag in circling flight is likely to be more, and that in straight flight less, respectively, than the values found by the above calculations. The optimum C of G position is therefore likely to be further forward than suggested above.

Varying the C of G position in flight to maintain zero tail-load at all times does not appear to be worthwhile.

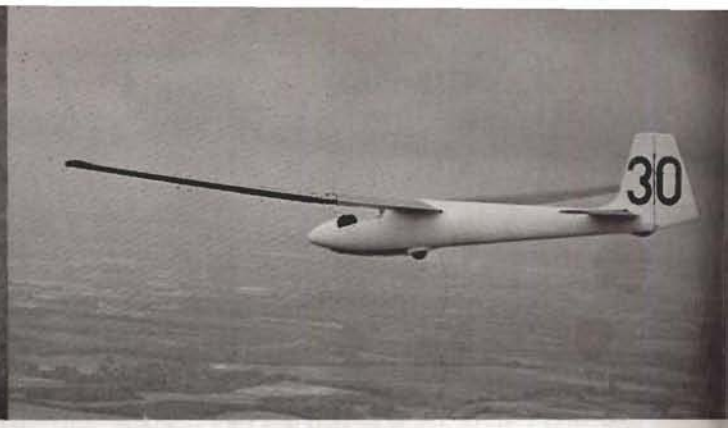
REFERENCES

1. Jones, Robert T. "Minimising Induced Drag". *Soaring*, October 1979; 2. Irving, F. G. "An Introduction to the Longitudinal Static Stability of Low-Speed Aircraft", Pergamon, 1966; 3. Morelli, P. "Static Stability and Control of Sailplanes", OSTIV, 1976; 4. Welch and Irving. **New Soaring Pilot**, App7, John Murray, 1977 and 5. Althaus, D. "Stuttgarter Profilkatalog I". Institut für Aero-und Gasdynamik der Universität Stuttgart, 1972.

A fuller version of this paper with details of the calculations and the characteristics of the "typical" sailplane was presented to the XVII OSTIV Congress held in Paderborn, May 27-June 6, 1981. It will be printed in Aero Revue *and OSTIV Publication XVI.* □



Skylark 3F

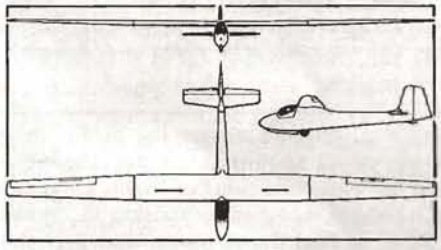


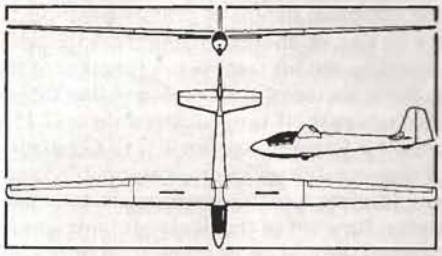
Skylark 4

WHICH GLIDER?

The last in the series of articles by DEREK PIGGOT featuring some of the older gliders on the market and giving details of their handling characteristics

The Slingsby Skylark 3 and 4





IF you are out for performance there is still no substitute for span and most of our smaller gliders can be greatly improved by the addition of a few extra feet. For this reason it was quite an obvious development to stretch the Skylark 2 to 18 metres. This inevitably results in a reduced rate of roll and very often in poor stability unless the fuselage and tail feathers are suitably enlarged.

The Skylark 3 was really a scaled up version of the 2 with some improvements thrown in. The cockpit is larger and much more comfortable for a tall and well-built pilot.

This glider is very stable with rather high stick forces so that it is quite hard work to fly unless the elevator trim is used for each significant change of speed or angle of bank. The ailerons are also heavy, with the rate of roll noticeably worse than the early 15 metre machines and far worse than any of the modern designs. This takes a little getting used to and means that the low final turns can be dangerous rather than just exciting. Certainly you should give yourself plenty of height for the first few flights while you get familiar with the aircraft.

The Skylark 3 has excellent airbrakes, making it easy to land accurately. Unlike most modern machines, there is very little snatch or tendency for them to suck open. As with most of the early designs the airbrakes are speed limiting in a vertical dive — if you like that kind of descent or get into trouble in cloud.

The low stalling and thermalling speeds make it a good scraper in very weak lift and the overall performance is perhaps fractionally better than the K-6CR.

Altogether it is a very simple machine to fly and one which is suitable for any well trained beginner. However it is a big machine and rather heavy for both ground handling and rigging. The ground handling is better than the Skylark 2 but lifting the centre-section is a back-breaker and spoils the otherwise simple rigging.

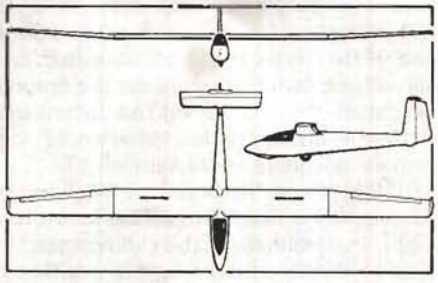
Minor changes

There were several versions of the Skylark 3. The B and subsequent models featured a longer nose, fixed main wheel in place of the optional droppable dolly wheels and various minor structural changes. On later models geared tabs were fitted to the ailerons to reduce the heavy stick forces and finally the aileron chord was reduced which had the same result.

The Skylark 4 was the next step and involved moving the wing lower so that the fuselage and cockpit are much slimmer. The blown bubble canopy was replaced by a well contoured moulded one and the tailplane position moved to reduce the induced drag at speeds. These changes gave the aircraft a new look and a small improvement in performance over the Skylark 3.

Summing up. A Skylark 3 and 4 is almost ideal for the inexperienced pilot with ambitions. The lower wing loading makes them easy to fly, docile and good climbers. The large cockpit makes them particularly suited to large and heavy pilots. The only drawback is the sheer size and weight of the components for rigging and ground handling. The poor rate of roll is a disadvantage but one which is easy to live with.

PZL Pirat



The Polish Pirat is in my opinion a greatly underrated machine. With a best gliding angle of about 32:1, it is superior to the Skylarks and K-6CR and only a little below the K-6E and Pilatus B-4.

Inspired, it seems, by the Skylark 2, the only dubious feature still incorporated is the three piece wing with the inevitable heavy centre-section. How-

Pirat

Pilatus B-4

ever if hangarage is available, the tips can be removed to reduce the space required.

The cockpit is very large, the ground clearance is ample and the double decker airbrakes powerful without being unforgiving.

I had a share in a Pirat for three years and flew Nationals, Regionals and aerobatic displays in it. A few minor and inexpensive mods were needed to make it really safe for the average pilot. (Thev were all BGA approved.)

Without the addition of a bungy between the airbrake operating handle and the nose, the airbrake snatch loads are so high that I doubt if a young woman pilot could close them above 50kt. With the bungy the loads are reduced and the airbrakes are easily adjusted at any speed.

Unusual movement

I also found that the small round knobs on both the airbrake lever and the release are rather too small to grab quickly and it was an easy matter to make larger ones out of nylon rod. The rudder pedals have rather an unusual movement which some people do not care for, but otherwise the cockpit and controls get full marks. With a 5ft woman and a 6ft 8in 200lb man in our syndicate it says a lot that both were comfortable and happy on long flights.

The Pirat handles well in every respect and meets all the requirements for an early solo and first cross-country machine. Two members of my syndicate completed their Silver C and made 300km triangular Diamond flights.

We fitted a total energy tube on the fin and a John Willey dolphin device to give airmass. Together these are worth at least an extra five points to the glide angle and enabled us to dolphin our way cross-country over long distances.

From the flying point of view I have only one real criticism. The winch/car-tow release is rather too far back. This gives superb launches but an uncontrollable initial climb when flown by a light pilot. After leaving the ground it may take almost full forward stick to prevent a near vertical climb away. Do *not* trim forward for the take-off on a wire launch. The tab reduces the effective down movement and is better left in the neutral position as the stick forces are still quite light. The nose hook makes aerotowing simple.

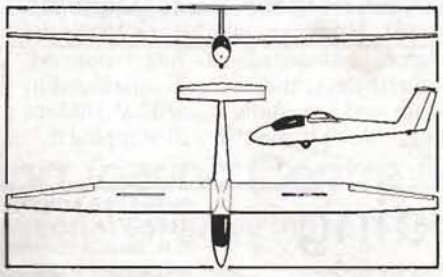
The Pirat is designed to be +6.3*g*-3.15*g* with a safety factor of 1.5 and is therefore considerably stronger than most other machines (OSTIV requirements are +5.3*g*-2.65*g*).

Thorough DI needed

However in many respects the wooden structure and light steel fittings are rather old-fashioned and a thorough DI is the order of the day, particularly as these machines get older. Avoid screwing the rigging pins into the fittings as the rather soft metal can "pick up" and score easily. Push them straight in after carefully cleaning and greasing them each time.

Summing up. The only real snag with the Pirat is the heavy centre-section for rigging. Otherwise it is an ideal first machine and one of the few with a large enough cockpit.

Pilatus B-4



The Swiss Pilatus is the only all-metal machine in the early solo class. One advantage of metal construction is that it can be left out in almost all weathers without serious harm. It is also an advantage in countries where the repair of wooden or glass gliders is difficult. Any metal worker can tackle minor damage and all the parts are precisely made so that replacement parts are easy to fit.

The B-4 is beautifully built and a nice machine to fly in every respect. It has a retractable main wheel and a "pump up" tail wheel which makes it easy to move the glider in straight lines without the need to lift the rather heavy tail end.

The cockpit is roomy and everything is much as you might expect from a country which specialises in watch and clock making.

Perhaps this is a machine best suited to a syndicate or private owner than to a club operation. The metal skins are thin and quite easily bruised or dented by careless handling in the hangar or trailer. The dents are likely to be permanent as they are difficult to remove. A little extra care is needed assembling the glider as it is possible to bend the fairings at the wing root.

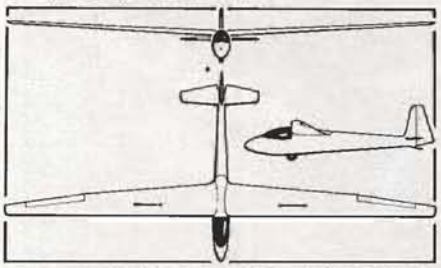
No reason to worry

If you have never flown a metal glider, you may be alarmed by the clanking noises which occur in flight. These are often amplified by the structure so that a flapping undercarriage door, for example, can sound like a major structural failure. However, there is no cause for alarm.

The B-4 is a +6.3*g*-3.15*g* aircraft and the later model has additional strengthening to allow more advanced aerobatics. The performance is very similar to a K-6E, *ie* about 33 to 34:1 and the crisp handling helps to make it a good climber. The stall is well defined and the B-4 will spin fairly readily if provoked and be warned, the noise of buckling metal is alarming. However the recovery is very positive.

Summing up. The Pilatus B-4 is an excellent machine in all respects and quite suitable for a well trained pilot of about Bronze C standard. Perhaps it is more suited to private ownership than club use.

The Schleicher K-6E



K-6E

Although the K-6E looks rather similar to the earlier K-6 it has many improvements. A general cleaning up of the fuselage, nose and wing root and a far better aerofoil together with an all-moving stabiliser give it a super performance. If you can sit comfortably in the rather small cockpit, this is the ideal glider to own for your first few years of soaring.

Converting to the K-6E needs a little caution because of the all-moving stabiliser. The only feel through the stick is the spring force from the trimming device and this is the same at 100kt as it is at the stall. The spring trimmer gives it only a very small force and extreme caution is needed at high speeds as it is relatively easy to overcontrol and overstress the aircraft.

The elevator is very light and it is best to avoid any sudden movement of the stick during the first few aerotows. On one of the early flights in smooth conditions, it is a good idea to try out the elevator gently while gradually increasing the speed up to about 100kt. It will feel very light and rather twitchy at speed. The K-6E is not really suitable for aerobatics because of the risk of overstressing it at high speeds. In other aircraft the stick forces increase with speed making it more difficult to exceed the limitations accidentally.

In all other aspects the K-6E is just another K-6 so refer to the comments in the previous article (August issue, p163).

Summing up. The K-6E has everything to offer if you are not too large for it. Its performance makes it competitive in any Regionals yet it is a beginner's machine. I still envy the K-6E owners.

The Carden-Baynes auxiliary — a memory

J. P. DEWSBERY

Some time during the summer of 1936, when I was a "houseman" at the London Hospital, I was approached jointly by Sir John Carden and Mr L. E. Baynes to flight-test a motorised sailplane that the latter had designed and had had built.

Although Baynes was the designer of the original Scud, there was, to the best of my memory, little resemblance between that aircraft and the one that he had designed so that "you could put a little engine in it."

It was constructed in a workshop in or near Farnham and it was there that I first set eyes on it. The engine was a Villiers' two-stroke, so noisy that when the aircraft was tested at Woodley airfield, near Reading, Mr Miles (of the Miles Hawk), who lived in a house overlooking the airfield, complained.

One afternoon, accompanied by a fellow houseman, I drove out to Woodley for the test. The engine was mounted behind the wing and, when retracted, tucked itself into the pylon upon which the wing was mounted. Baynes explained to me that when I stopped the engine, the airscrew should be centred in the "six o'clock" position, by means of a cable arrangement. I was then to turn a handle and the whole issue would tuck itself neatly into the pylon and out of sight; soaring flight would start.

It was a grass airfield — most were in those days — and I was three-quarters across the airfield before the Carden-Baynes Auxiliary was finally airborne. Progress over the last two or three furlongs of the airfield had consisted of leaps of increasing length from tussock to tussock. As I reached for the sky, I distinctly remember passing well below the top of an oak tree at the edge of the airfield.

A slow climb then ensued: at 37mph, she was flying straight and level; at 34, while still flying straight and level, she was just beginning to stall. Somewhere between these two speeds, height was gained. However, just before 2000ft the engine, exhausted of fuel, stopped. Nevertheless, the airscrew continued to rotate and, to quote a medical student song, "there was no way of stopping it." It finally came to rest in the "three o'clock" position and this is not a quote from another medical song, but what we used to refer to in my naval days as "athwartships". So I wound the engine down in that position until the blades of the airscrew were sticking out sideways like the fins of a trout.

At this stage in the narrative, it is customary to announce that "surely there is a lesson in this somewhere."

There is, I have already pointed out that there were very few concrete runways in those days. If there had been, I would not have exhausted half the fuel in getting myself unstuck from the tussocks of Woodley. Likewise, if I had had a bungey launch, the same. "*C'est le premier pas qui coute*," as they say.

A photo of it (the Carden-Baynes Auxiliary) appeared in the *Aeroplane* and, standing beside it, a scowling figure that my son assures me is his father. I suppose he's right, but I had more hair on my head in those days.

DUAL FOR JOY — my fight for flight

This being the International Year of Disabled People PETER FOSTER of the Staffordshire GC writes of his sustained enthusiasm for gliding even though now handicapped and restricted to a two-seater.

I sat by my car, keeping the log on Easter Saturday. My wife was distributing the latest newsletter. We were parked on our beautiful Peak District National Park gliding site surrounded by club members who were thoroughly enjoying themselves. It was a cold, clear day with some blue thermals. Everyone had flown the recently renovated K-13 and it was my turn for the joy of dual flying.

Two years ago, after twelve years of gliding, my flying days seemed to be over. I had been diagnosed as suffering from Multiple Sclerosis — a disease affecting the central nervous system. Thanks to my understanding CFI, Charles Webb, and my sympathetic doctor, who had obtained his PPL at the age of 69!, I was allowed to continue flying "if accompanied". Since flying dual, my horizons have increased enormously. Most flights are now voyages of discovery into the vast oceans of air.

Exhilarating launch

I was helped into the two-seater, full of anticipation and excitement. One of my regular co-pilots, Colin Ratcliffe, climbed into the back seat and we were soon ready to go. While we were waiting for the K-8 to be cleared from the take-off area I noticed a skylark rise quickly and effortlessly to a height of about 200ft singing his continuous song which seemed to mock our inability to get airborne without assistance. Having tried most other methods of launching — reverse-pulley, bungy, aerotow, autotow — I still find winch launching the most exhilarating.

After a long bumpy ground run, we were airborne and the K-13 was eased back at a safe height into a full climb, forcing me hard into the seat. As we released the cable a whole new world opened up at our feet. The view in every direction was spectacular — rugged mountains to the north, Cheshire plains to the west, potteries to the south and gently undulating hills to the east. Now was the time to put theory into practice. Up until now the flights had been short and mainly right hand circuits. How about exploring wind shadow thermals off our ridge which was facing the sun and in the lee of the wind?

A small puff of cloud was over the ridge, so we turned left towards it. We held our breath until we reached it and I let out a yell as we found lift. Convection was rough, narrow, hard to centre and we spent ten minutes like a roller coaster until we could relax at about 2000ft in smooth lift. At this height we could see the inversion level below us with pale blue sky above. An advantage of dual flying is that the second pilot can have a good look out while the first pilot is flying.

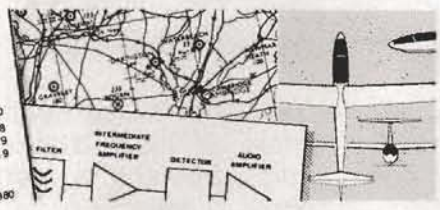
Upwind and about 1000ft below we could see a glider struggling to stay airborne. He must have spotted us at the same time, as he came over to our thermal. When he got close we recognised him as Tony Adams in his Cirrus No. 454 from Sleap on his way back from Camphill. His speed and circles were greater than ours and we looked down at him climbing up to us. Suddenly he must have hit the core of the thermal, screwed his plane round and overtook us. When he reached 2500ft he darted off at high speed. What fun it is to mark and share a thermal with other gliders.

Peter in the front seat with Colin.

By exploring the area to the north-east of our site we discovered the source of the lift — a smooth grassy saucer-shaped piece of land on the sun facing side of a sheltered hill producing a strong and continuous highway to the sky.

The 40 minute flight-time limit was fast approaching so we used up our height in high speed cross-country flying, side slipping and long low approach pattern. Once again, my fight for flight had been won in the joy of dual flying.

BGA and General News



15 METRE CLASS NATIONALS

Dave Watt is the new 15 Metre Class Nationals Champion after winning three of the seven contest days at Dunstable. He gained 6362pts, Chris Rollings, in second place, 6153pts and Brian Spreckley was third with 6028pts. All three pilots were flying ASW-20s. Full report in the next issue.

John Glossop, who was burned when his Vega hit power cables early in the competition, is recovering well in hospital and sends his thanks for all the many messages and cards.

THE CURATE'S EGG

This season has been good in parts, as evidenced by the 15 Metre Class Nationals and Regionals. A glance at the results in this issue tells its own story.

The Inter-Services had three days, the Open/Standard Class Nationals were almost washed out and then we find some later competitions hitting peak conditions.

CHAIRMAN KILLED

It was with deep regret that we heard of the death of Stan Armstrong, Chairman of the Derby and Lancs GC, on August 26. He was flying a Motor Falke which was in collision with a Capstan at 400ft on approach.

Stan and his passenger were killed. The Capstan landed safely.

We send our sympathy to his wife Pat and family. An obituary will be in the next issue.

NATIONGLIDE'S SUCCESS

We reported on NationGlide in the June issue, p124, and since then the group of Bannerdown GC pilots have gained enviable publicity on their round England sponsored flight. The aim was to raise enough money to buy and operate a two-seater motor glider for the disabled throughout England.

The Sport Vega, featured on our cover, was used for the numerous legs which started at their base, RAF Hullavington, Wilts, and took in major towns and cities where they promoted their appeal. They were given tremendous support and encouragement all the way and have a long list of acknowledgements thanking the many people and associations who became involved and helped NationGlide make its impact.

There were countless incidents, amusing and impressive — sometimes both. The Vega was slotted into a schedule of Harriers, Hunters, Sea Kings and Wasps by air traffic controllers at RNAS Yeovilton; aerotowed out from Blackpool's main runway with permission granted for a low level run along the sea front; welcomed at many of the service stations, RAF, Naval and USAF; given a stand at the International Air Tattoo, Greenham Common, and featured on regional TV programmes. Several TV presenters actually took part on some of the legs and so assured full regional coverage.

Bob Brown, a skilled RAFGSA pilot and himself disabled, flew the last leg of all from Greenham Common to Hullavington.

Peter White, the organiser, says the real work remains to be done. They have already flown disabled at Hullavington, Colerne and Lyneham, using the ex Dorset GC Eagle which a group of them have bought and are adapting. They are hoping an international company will provide a motor glider for national use so that the funds already raised during NationGlide will finance its operation.

"In the mean time," Peter adds "if every club reading this were to arrange one flying session for the disabled it would make a lot of people very happy: not least, you the pilots — try it and see."

NATIONAL LADDER

Open Ladder

Leading pilot	*Club*	*Pts*	*Flts*
1. D. S. Watt	Airways	7172	4
2. N. G. Hackett	Coventry	4960	4
3. F. J. Sheppard	Airways	4340	4
4. L. K. Forsey	London	4124	4

Club Ladder

Leading pilot	*Club*	*Pts*	*Flts*
1. C. G. Starkey	Imperial College	6430	4
2. R. Crossley	Thames Valley	2805	4
3. R. Pentecost	Surrey & Hants	2416	2
4. M. Jefferyes	Essex	2310	2

BGA MOGAS TRIALS

Arthur Doughty, until recently chairman of the BGA Safety panel, has congratulated Dick Stratton, BGA technical officer, on his excellent article in the June issue, p126, on the BGA Mogas trials but picked up some points about safety. Meanwhile Dick has emphasised some safety factors in his progress report in his technical notes on the trials.

Arthur, who said it would be a great pity if good work by the BGA and Dick in particular should be negatived by an incident or accident attributable to careless fuel handling, makes the following points:

1. The need for absolute cleanliness. If fuel is purchased in relatively small quantities, *eg* jerry cans, they should be reserved for that purpose and not stored where they can collect all the dirt and dust or water that happens to be around.
2. Fuel should be strained when poured into fuel tanks, either through fine mesh gauze strainers or chamois leather.
3. Earthing the aircraft.
4. Fuelling to take place in a well ventilated place or preferably in the open air.
5. Fire risk from unsuitable clothing. I have a shirt which rubbing against the skin generates enough electricity to give a really bright spark accompanied by a loud crack.
6. The need to observe Home Office regulations relating to the handling and storage of petroleum spirit. I have not researched these but off hand I know that containers must meet some conditions as to construction and marking.

Dick Stratton reports in his technical notes that the BGA Airedale has flown 170hrs on BS 4040 4 star. An AG-operator has tested a 260hp Lycoming on "referenced" Mogas (a special brew covering the worst features of BS 4040, *eg* high aromatic content/low rating) and established a knock rating only by advancing the ignition from 25 to 40°. The results are satisfactory.

A large flying school has test-bedded a Lycoming 160 also on "referenced" Mogas to a CAA schedule with satisfactory results.

Dirty fuel causes engine malfunctions. Three cases have been reported of fuel pump malfunction (Gypsy) due to dirty fuel fouling the filters and the non-return valves in the pumps. In one case both sand and water were drained off. It is most improbable that the fuel left the vendors pumps in this condition. Therefore, the contamination was engineered into the systems by poor standards of handling by the operating gliding club. Please check your storage systems and fit sump drains to refuelling devices.

Fuel tank sump drains should also be installed in all aircraft (where possible) and sampled on each daily inspection. (Applicable especially to Austers and Chipmunks, which don't have such drains but can be so modified.) (See also letter from W. E. Malpas, p244.)

TRAILER VENTILATOR

There is an effective way of ventilating your trailer — the Flettner 2000 which is easily fitted to the roof and works on a simple principle. The extractor fan, mounted on a spindle, is driven by an air scoop which catches the air stream created by the vehicle's motion. There are eight vanes below which expel air centrifugally and draw stale air from the trailer.

Because of its excellent performance at very low wind speeds, it will keep the trailer fresh even when stationary. The price, with the shutter unit, is £24.85p.

AN APPRECIATION

PADDY KEARON

Air Commodore Norman Walter Kearon, CMG, CBE, RAF (Retired), "Paddy" to his many friends, was tragically killed in a car accident in Saudi Arabia on May 1. He was 67. His son-in-law Dr J. M. "Dick" Richards was also killed instantly in the same accident.

Paddy had an immensely varied, complex and successful life and yet managed to retain a natural warmth and joy of living which never failed to touch all those with whom he came into contact.

Born in Dublin he came from a long line of Wicklow seafarers. After a spell as a Merchant Navy Cadet in 1933 he went through the Metropolitan Police College and served with the force until March 1939.

Commissioned in the RAF in 1939 he served in France, North Africa, Sicily and Italy, commanding a mobile supply unit. He was Mentioned in Dispatches five times and received the OBE in 1943. Notable amongst his RAF appointments were an advisory posting to the Royal Hellenic Air Force concerned with the development of logistics and mobility, Senior Director of Studies at the RAF Staff College and, finally in 1966, Director General (Organisation) RAF at the MoD.

Paddy started gliding at Salzgitter in 1945 during his German tour and in May 1947 he took part in the first ever RAF Gliding Championships. It became a matter of great concern to him that the RAF had so little gliding presence in the national scene. Then in 1949, in the back of a London taxi, Chris Paul, Roy Goodbody, Jock Forbes and Paddy became the instigators of the RAFGSA. Paddy became deputy Chairman and a real powerhouse behind the GSA for the first 10 years of its existence. He frequently went to the limit as an equipment officer in obtaining equipment and materials on behalf of the Association. As a member of the BGA council he fought for an understanding of the RAFGSA's viewpoint maintaining that as the Service represented about one third of the national glider fleet at the time, its voice could not be ignored. In addition he served on the BGA instructors' panel for many years.

Paddy was instrumental in setting up the RAFGSA Centre at Bicester in 1961 to support the Service's regional clubs with both equipment and training.

A tenacious "scratcher"

On a personal gliding level, Paddy (radio call sign "Wacko") was himself a formidable competition pilot and competed in many National and RAF contests — he was the RAF team captain (flying) for many years. During the 1950s and '60s he acquired something of a reputation nationally as a tenacious "scratcher" and was often to be seen steaming back in the twilight when all other competitors had landed. He completed a 134 mile flight in the '59 Nationals never more than 1000ft above the ground. In the '67 Nationals he and Brigadier later General Tony Deane Drummond collided at 8000ft in cloud over Oxfordshire. Although both aircraft were damaged they landed safely at Bicester and South Marston. Paddy held the Gold C and Diamond goal.

Irish team captain

The high point of Paddy's gliding career was undoubtedly the 1965 World Gliding Championships when he was captain of the Irish team. He was 52 at the time and flew an Olympia 419 into 14th place overall.

In 1967 Paddy applied for premature voluntary retirement on being offered an appointment as Resident Director of the Saudi Arabian Air Defence Consortium at Riyadh backed by BAC, AEI (later Marconi) and Airwork.

In his later years Paddy developed a great affinity with the desert and its people. He spoke little Arabic but developed a remarkable sympathy with Saudi customs and seized every opportunity to explore the countryside. In return, he was respected by the Saudis for his courtesy and support of their projects to which he brought his unique gift for logistics which had been so clearly demonstrated throughout his whole career.

Paddy Kearon always worked on a broad canvas and was unperturbed by minor problems. Refusing to take "no" for an answer he was adept at circumventing bureaucracy and tedious regulation and used his Irish charm and persuasiveness to the full. He worked tirelessly for the RAFGSA especially to provide those in non flying careers with opportunities to share in the joy of gliding.

Throughout all he was ably and patiently supported by Pat, his wife, who set up home on four separate occasions in the Middle East. To Pat and to Sally, Jane, Sheila, Sean and Patrick we extend our love, our sympathy and our support.

Max Bacon with Anne Ince

OBITUARY

ALEXANDER IVANOFF

"Sacha" Ivanoff, formerly of the London Club, was co-designer with John Sproule of the "Camel", a glider of small span with a single wing-strut each side, Illustrated in S&G for Sept 1938, p208. It was eventually destroyed in a collision in 1948 when a Kirby Kite wingtip hit one of the struts. He planned an improved version but never got around to building it. He came to England from SE Russia with his mother and younger brother soon after the Bolshevik revolution, then trained as an engineer and eventually got a job with a Luton firm for whom he designed pumps.

He joined the London Club about 1931 and immediately put on weight due to appetite produced by weekend doses of fresh air. After the war he joined the club committee and edited its Gazette. Eventually he married Mary who ran an infant school in Luton, and put in much work on the social side of the club. Then his firm sent him to the USA where they lived in a flat at Greenwich, Connecticut. But in 1979 he developed cancer, and in spite of surgery he suffered a relapse and died last December.

A. E. SLATER

TRAVELLING LIGHT

German geography teacher, Günter Rodell, called in at Portmoak and amazed members when he unpacked a tent, television and a bicycle from his hired Motor Falke. He was on a flying holiday around the UK, calling in at gliding clubs. Günter belongs to the Lübeck flying club, has more than 500hrs power flying and is now learning to glide. Packing the Falke calls for methodical planning: he sits on the tent, dismantles the bicycle and places the television, camping gas stove, five gallons of spare petrol, water bucket, electric razor, tinned food, clothing and spare parts for the engine on the back seat. *(Report by Ann Shaw.)*

GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	Name	Club	1981
115	M. T. A. Sands	Ulster (in USA)	15.4
116	C. G. Starkey	Surrey & Hants	27.6

DIAMOND DISTANCE

No.	Name	Club	1981
1/177	M. T. A. Sands	Ulster (in USA)	15.4
1/178	C. G. Starkey	Surrey & Hants	27.6

DIAMOND GOAL

No.	Name	Club	1981
2/1020	M. E. Lee	Two Rivers	18.4
2/1021	J. F. Beringer	Eagle	18.4
2/1022	A. J. Munro	London	22.6
2/1023	R. A. Pye	Eagle	18.4
2/1024	P. J. Kite	RAE Farnborough	29.6
2/1025	K. S. Whiteley	Cambridge Univ	27.3
2/1026	T. A. T. Chapman	Shropshire	27.3
2/1027	P. S. Crossley	Thames Valley	21.6
2/1028	G. W. Cunningham	Four Counties	28.2

DIAMOND HEIGHT

No.	Name	Club	1981
3/491	S. W. Brown	Deeside	7.7
3/492	P. J. Stratten	Fulmar	17.5

GOLD C COMPLETE

No.	Name	Club	1981
803	A. J. Munro	London	22.6
804	K. S. Whiteley	Cambridge Univ	27.3
805	T. A. T. Chapman	Shropshire	27.6
806	C. W. H. Boucher	Herefordshire	14.6

GOLD C DISTANCE

Name	Club	1981
M. E. Lee	Two Rivers	18.4
J. F. Beringer	Eagle	18.4
A. J. Munro	London	22.6
R. A. Pye	Eagle	18.4
Mary Scarborough	Midland	16.6
P. J. Kite	RAE Farnborough	29.6
K. S. Whiteley	Cambridge Univ	27.3
T. A. T. Chapman	Shropshire	27.6
P. S. Crossley	Thames Valley	21.6
G. W. Cunningham	Four Counties	28.7

GOLD C HEIGHT

Name	Club	1981
M. Munday	SGU	16.6
K. Jones	Hambletons	14.6
A. J. Munro	London	13.4
S. W. Brown	Deeside	7.7
S. A. Sheriden	Yorkshire	30.6
C. W. H. Boucher	Herefordshire	14.6
D. P. Paxton	Borders	7.7
M. J. Bromley	Borders	7.7

SILVER C

No.	Name	Club	1981
5872	Jane Watson	Surrey & Hants	21.6
5873	P. G. Marks	SGU	16.6
5874	K. Pick	Phoenix	14.6
5875	Angie Pears	Wyvern	21.6
5876	L. S. Norman	RSRE Pershore	21.6
5877	D. A. Hatfield	Southdown	21.6
5878	C. Van den Berghe	East Sussex	21.6
5879	A. C. Hughes	Strathclyde	14.6
5880	T. B. Sargeant	Devon & Somerset	15.4
5881	Z. S. Heller	Polish AFA	4.5
5882	J. G. Leishman	SGU	30.6
5883	J. Taylor	Yorkshire	30.6
5884	S. L. Reed	South Wales	22.6
5885	W. R. Irving	Newcastle	28.6
5886	R. Rodger	Dumfries	27.6
5887	C. S. Wilson	Humber	24.5
5888	I. A. Fraser	Bicester	27.6
5889	E. Thompson	Bath & Wilts	27.6
5890	A. P. Robins	Ridgewell	3.7
5891	G. A. Burtenshaw	Southdown	27.6
5892	F. S. Haughton	Midland	16.6
5893	R. K. Hutchins	Cranwell	4.7
5894	J. Jesty	Coventry	27.6
5895	J. P. Walker	Coventry	28.6
5896	D. Fall	Herefordshire	10.7
5897	M. P. Wakem	Southdown	27.6
5898	R. I. Gibbs	Humber	4.7
5899	T. A. Polak	East Sussex	29.6
5900	B. J. Butler	Sebring (USA)	23.4
5901	N. Eyon	Vale of Neath	20.4
5902	T. S. Hills	RAE Farnborough	18.7
5903	R. Hiles	Trent Valley	22.6
5904	R. Cornish	Portsmouth Naval	27.6
5905	N. Clements	Midland	18.7
5906	G. A. W. Murray	Coventry	17.7
5907	J. Attaway	Chilterns	21.6
5908	M. J. Bromley	Borders	10.7
5909	Joy Shephard	Eagle	8.7
5910	A. J. Unwin	Southdown	21.6
5911	T. Austin	London	18.7
5912	J. R. Wilson	Humber	27.7
5913	I. Thompson	Derby & Lancs	12.7
5914	T. J. Scott	Airways	18.7
5915	D. J. McKenzie	Derby & Lancs	4.7
5916	R. S. Walker	Cranwell	21.7
5917	S. H. Simpson	Bicester	21.7
5918	B. J. Hunter	Herefordshire	19.7
5919	A. Rapp	Kent	8.7
5920	R. S. Manley	Surrey & Hants	30.7
5921	G. K. Payne	Thames Valley	28.7
5922	Angela Saunders	Thames Valley	30.7
5923	J. R. Bennett	Bristol & Glos	1.8
5924	B. Kroemeke	Four Counties	2.8
5925	J. Toy	Woodspring	28.6
5926	S. V. Price	Thames Valley	30.7

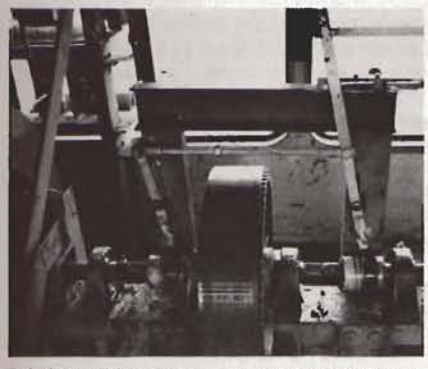
Avro GC's Leyland Tiger Cub Winch

A report by R. E. BROCKLEHURST, ground engineer

The bus showing rollers and clear vision panel. Photos: P. Adshead.

FOLLOWING the demise of our best Daimler "bus winch" engine (1947 vintage), and a fruitless search for a suitable replacement engine, I holidayed in Malta missing one committee meeting. On my return I found I had been elected chairman of a sub-committee charged with finding a suitable bus, preferably single-decked, to convert into a replacement winch.

In my absence Stuart Lowe, an ex-ground engineer and the guiding light of many projects, found what he considered to be the ideal vehicles in a breaker's yard in Nantwich, and no sooner had I touched down than I was



Belt drive, sliding selectors, gate lock shaft drives, blue drum and roller frame.

promptly whisked off to look and assess the vehicles, two identical Leyland Tiger Cubs with 6.5 litre engines and fluid drives. Both were started and run, the younger, a 1965 model, being in the best mechanical condition. The only problem was the mid-engine arrangement and how to couple a power take-off to drive the drums, but Stuart had thoughts of a belt drive between the engine and gearbox, which seemed feasible, so the 'bus was bought for £700 and driven to Woodford on trade plates the following week (end of March, 1979).

At Woodford, Roger Bostock and Stuart spent several weeks under the 'bus measuring to see how a power take-off and winch gear would best fit. Several principles were established, also:

1. The 'bus should remain self-propelled.
2. All the winch gear should be above floor level incorporating two drums.
3. We should deface both the inside and outside of the 'bus as little as possible to leave open the possibility of transporting the unit under its own power to other sites by road.
4. The belt drive was decided upon as the only method of power transmission, and a suitable width, toothed belt was calculated.
5. It was decided for speed of construction, to use as much equipment from the U/S winch as possible, which amounted to basically just the roller gear and frames, as the old winch bore little resemblance to what was proposed in the new.
6. Necessity dictated that the construction be predominantly bolted together, as welding facilities were not readily to hand.

Winch driver's seat with panoramic window, hand throttle, drum brake controls, signal light, guillotine handle and start/stop panel to the left.

Roger Bostock was charged with the design work, which was completed in the autumn, and work commenced to strengthen the chassis and position the winch gear supporting framework. Drawings of the mechanical components were also available, and the items farmed out to several club members to have made as foreigners etc. (At this point we must thank several local engineering firms for their unwitting assistance.) We were also extremely grateful to Mr Fred Taylor, the father of one of our members, for manufacturing the two toothed belt pulleys we required at no cost to the club. We must also thank Leyland Truck and 'Bus Division for their kind assistance on technical queries we had on the effect of a belt drive on the pre-select gearbox, and their interest in the project as a whole.

Most components were available at the end of January, 1980, and assembly started in earnest. There were trial launches on one drum to prove the system at the end of March. We launch with piano wire due to extensive uses of tarmac runways. One or two minor changes were found necessary and both drums were tried for the first time over the Easter weekend, with the mods working well.

After proving the mechanics of the winch, we started on the internal refinements, *eg* winch driver and spotter seating, clear vision panel, floor guards, window guards, remote start/stop panel, hand throttle, signal light and drum braking. The brakes were purely for tensioning the cables when towing out. For simplicity I decided to try using the 'bus compressed air supply to operate the hydraulic wheel cylinders inside the drums, and this proved successful after reducing the return spring rate slightly.

The winch was completed by the end of June, 1980, and is working extremely well, having over 5000 launches to its credit with no problems. The tooth belt shows no significant sign of wear after 12 months and the other moving parts are also wear-free. As can be seen from the photographs, the whole arrangement is extremely neat and simple and provides extremely civilised accommodation for winch driver, spotter and tractor driver. We think we have probably the best winch in this country, if not the world. In any event, it's certainly unique.

I realise that other clubs may not have the same access to engineering facilities and the cost of having the parts made sub-contract would make this conversion

Red drum showing the "A" frame type mounting of the drum.

expensive. The whole project cost us approximately £1200 including the 'bus, and some work on the road springs to stand the extra weight of the winch gear.

The major innovation of the tooth-belt drive does, however, open up the possibility of using the current range of rear engine 'buses and mid-engined coaches for future winches. If the exercise was carried out again, we would go for an 8.5 to 10 litre unit, although it must be said that the 6.5 litre Leyland is more than adequate providing launches of 1500ft into a 10kt wind.

If any club is interested in building along similar lines, we would be happy to point out the pitfalls. Anyone wishing to see the winch should contact our secretary, Mr J. Niman, c/o British Aerospace, Woodford, Stockport, Cheshire, tel 061-439-5050 ext 61 (business), who will arrange a visit to the airfield.

GLIDING ABROAD

BILL SCULL, BGA director of operations

Gliding abroad is often talked about but, for the most part, remains the exclusive province of the private owner. Of the countries offering good and consistent soaring conditions one of the least talked about is Spain. Recently there has been an opportunity to visit a site near Segovia in central Spain which is the base of the Aeroclub of Fuentemilanos. The site is ten miles from Segovia and 50 miles north of Madrid; conditions there are, according to reliable sources, nearly as good as those in Australia or South Africa. The airfield is high at 1001m amsl and the single runway is 1km long — necessary when the temperatures are 30°C or more. The club fleet comprises two Blaniks, a Mini-Nimbus, ASW-15 and a SF-27 as well as two tugs.

An interesting arrangement exists between Oerlinghausen, Germany's largest gliding school, and the Aeroclub of Fuentemilanos. From the beginning of June until mid-September Ingo Renner runs cross-country courses; Ingo's technique is somewhat different from those used here — he gathers a gaggle and then races them around the task. Whatever the method the suitability of the venue is confirmed by the following statistics:

FLYING		WEATHER (out of 97 days)
Hours flown	3819	16 with low cloud
Launches	1571	30 with no cloud
Cross-country flights:		16 wave days
0-299km	172	36 with cloudbase 3-6000ft agl
300-499km	121	25 with cloudbase 6-9000ft agl
Over 500km	25	7 with cloudbase over 12000ft agl
Total kilometres	84133	16 with highest temp under 20°C
Days with distance over:		15 with highest temp above 30°C
300km	33 out of 97	65 days with over 6hrs usable thermals
500km	9 out of 97	14 days with over 9hrs usable thermals

The kilometres per flight average 53.5 but it should be borne in mind that many of the pilots attending courses will be trying for their first 300km.

Discussions with the club management at Fuentemilanos and with Ingo Renner suggest that a few more gliders could be accommodated; the provisos are that the group would have to be organised and supervised along the German lines. Any takers?

Two week stay recommended

Despite the distance — some 1000 miles from Calais, 830 from Le Havre — the costs would not be excessive if the gliders were taken out on a cost-sharing basis and left there for at least six weeks. The notes in the Oerlinghausen programme recommend two pilots for each glider and certainly not more than three; a stay of at least two weeks are also recommended. Accommodation costs vary quite a bit. For rooms booked in advance as part of the course they range from £8-9 for a single room in a four-star hotel down to £4-5 for a double room with shower in a one- or two-star hotel. Hotel and camping facilities are planned at the airfield.

The possibility of being able to fly most days is very tempting and for a better achievement on the coaching cross-country course and the squad preparation scheme the benefits might well outweigh the extra costs. If the venture were well enough supported (and the fixed costs shared) then the potential is tremendous.

Any club or individuals who would like to participate in an organised expedition should contact the BGA office, Bill Scull or Brian Spreckley as soon as possible. If an expedition is to be organised commitments must be made before the end of November 1981.

FLYING AT SEGOVIA

BRIAN SPRECKLEY, who had two "fantastic soaring days" at Segovia when on his way to Mora where Mike Carlton was flying in the Spanish Nationals, gives his impression of the site's potential.

Soaring generally begins at around 11.30am when the thermals are high enough to start a cross-country. Usually there are blue thermals over the site and a few cumulus over the mountains and although it's blue for about 50% of the time, they are not like the British blue days. Most days will show cumulus for some period and with careful task setting you can fly with clouds for most of the day. Thermals start to die at around 7.30pm local time, particularly over the plain, but it is possible to soar for another two hours along the mountains, though one has to be careful to land back before dark.

The Thermals. The similarity between soaring in Spain and South Africa was quite striking — one would expect European type thermals and weather, not the hot air thermals of the desert. The best days are when the temperature is highest, hovering around 30-33°C, but in a heatwave when it may be up to 42°C the thermals go to 14 000ft or more. How about a Gold height in a blue 8kt thermal?

The normal depth of convection is between 5000ft to 8000ft but on the days I flew, considered average by Ingo Renner, the thermals went to 12 000ft asl, which is 9000ft agl. The most significant feature of thermals in a hot dry airmass compared with ours in a cold moist air, is the narrowness of the cores and their strength. The thermals themselves are quite large and circling gently one can climb at 4 to 6kt if you tighten the turn right into the core of the thermal, but it is possible to achieve more than this. I was achieving 8kt average in most thermals with occasional cores of 10kt.

The countryside also makes a difference to thermal strengths. One normally stays where it is brown and dry and avoids the green river valleys.

Tasks. The location of the site is perfect for most triangular distance tasks, the Sierra Guadarrama mountain range providing excellent soaring conditions for 100km to the NE and 80km to the SW. Tasks can be fitted into the plain area, starting along the mountains ten miles from the site and finishing along the mountains to extend the soaring day.

The 300km triangle I flew was along the mountains to the NE and then back past the site to the SW. It was possible to cruise for long periods along the tops of the mountains under good cumulus, only circling when getting nervous about the height of the next peak.

Navigating. I found navigating quite difficult, mainly because the maps were not up to our standards. There were large areas which had no resemblance to what was on the map. However with the correct choice of task and correct briefing this shouldn't be a major problem and the site is relatively simple to find.

Airspace. The actual rules regarding controlled airspace seem to depend on whom you ask, but basically gliders have very little difficulty and can even fly in cloud outside controlled airspace. The Madrid TMA boundary is less than 20 miles from the site but is marked extremely well by the back of the mountain range and gliders aren't allowed into it at all.

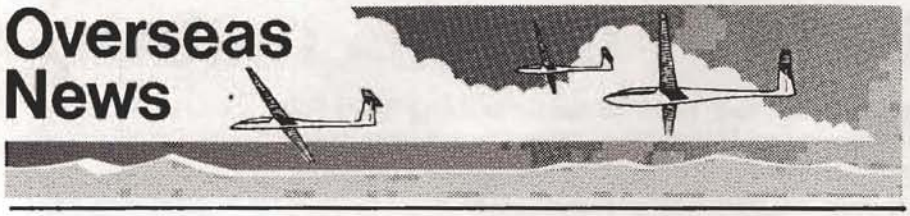
Landing out. The plain of Segovia is mostly arable land and there are numerous satisfactory fields. The worst problem is communication and it is recommended to land within walking distance of a village as there are few farmhouses and telephones. The large areas of scrubland are basically unlandable though in the normal task area they are small enough to glide over, but there are some large areas of unlandable countryside in the foothills of the mountains to the SW — only the more experienced pilots fly here and then only with a high cloudbase and good cumulus.

In the mountains themselves there is nowhere you could even have a respectable crash. For that reason you don't fly into them if low, but if level with a peak you can still glide close to landable fields, though it isn't advisable to wait that long before moving to the edge to give oneself good landing options.

Wave. I asked Ingo if they ever had fronts which caused bad weather. He told me that when a front comes you don't normally see it and it rarely affects the weather in which you soar. Sometimes though it changes the normally light northerly to a strong south-westerly or southerly giving wave. The highest wave climb is to 28 000ft in beautiful warm, sunny weather.

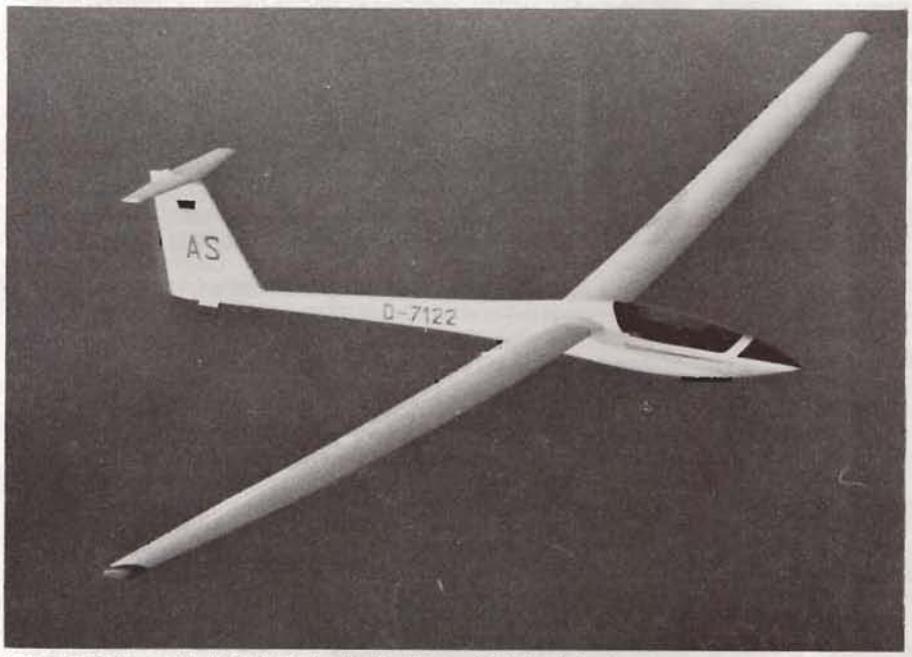
It is like 1976 every day at Segovia and if you weren't flying in 1976 you should go to Spain and get two weeks of it.

Overseas News



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

ASW-22 FLIES



Edgar Kremer of Schleicher's took the eagerly awaited 24m ASW-22 on its maiden flight on July 8 at Ziegenhain.

Ease of handling and good flying characteristics convinced other pilots, such as Hans-Werner Grosse, Sigi Baumgartl, Walter Neubert and others who flew it, immediately that the expectations as to its performance should be realised when the finishing touches have been applied.

The test flying programme as well as comparison trials are well under way — it is hoped that series production can start towards the end of the year.

Technical data

Span (m)	24	22
Wing area (m²)	15.50	14.90
Aspect ratio	37.2	32.5
Wing section	ASW-20	modified
Wing loading at 85kg (kg/m²)	32.6	50.3
Empty weight (kg)	420	
Max cockpit load (kg)	115	
AUW (kg)	600	750
Waterballast (kg)	100	220
Best glide at 105km/h	55:1	
Min sink at 85km/h (m/sec)	0.45	
Stall speed (km/h)	70	
Cruising speed (km/h)	175	
VNE (km/h)	270	

KLAUS HOLIGHAUS WINS USA 15m NATIONALS

With nine contest days out of a possible ten and tasks varying from 400-700km at best speeds of between 130-153km/h the 65 pilots flying in this event, which was held at Minden, Nevada from June 30 to July 9, seem to have had some interesting weather during this period to produce these high speeds.

Klaus Holighaus, Germany, flying a Ventus took first place with 6767pts, Ray Gimmey and Al Leffler both in ASW-20s were second and third with 6649 and 6587pts respectively.

DUTCH NATIONALS

These 15m Class Nationals, held during the middle of June at Terlet, were hampered by poor weather and a fatal accident on the second contest day — June 21. Four contest days resulted which were all won by Kees Musters in a Ventus A with 3900pts. 2. Daan Paré, Ventus B, 3626pts. 3. Jaap van Steinfoorn, ASW-20L, 3564pts.

TRANS-EUROPEAN

The 4th Trans-European started from Angers on June 14 with a record number of starters — 15 teams with at least 28 pilots. Several two-seaters had been entered with instructors using the contest to train their pupils. For the first time ever in France winches were used to launch the competitors from Angers.

Wolfgang Gross, W. Germany, Nimbus 2, and Jean-Claud Penaud, France, Mosquito, took first and second place being the only two pilots to complete the 3000km course by landing back at Angers. Andreas Kath, W. Germany, in a DG-200 finished within 50km of Angers and came third. — *Aviasport*

EUROPEAN YOUTH COURSES

The Federal German government gives financial support each year to gliding courses for young people aged 16 to 25 from all European countries. They are organised under the aegis of the German Aero Club by: Haus Der Luftsportjugend, Hirzenhain, Marburg.

Each course last 2½ weeks and is designed for beginners. Dual instruction is given on K-7 and K-13 aircraft (winch launching only) and students may go solo and progress to the German C standard. The price of a course (accommodation, food, flying and insurance included) is DM820 (about £175). — *Aviasport*

WINCH REBORN IN FRANCE

After years of lavish, government-subsidised aerotowing leading to the virtual disappearance of the winch in French clubs, fuel prices are causing the French gliding movement to look again at this method of launching. The club at Challes-les-Eaux, near Chambery in the Alps, is now using a Haulotte winch with hydraulic transmission, and a similar winch is shortly to be delivered to the National Gliding Centre at St Auban.

A Lille engineering firm (Schaffner Industrie S.A.) is about to put another new winch on the market. Powered by a V8 petrol engine, which yields 175hp at 5000 revs/min, the winch has a Ford automatic gear-box, twin drums and an enclosed driver's cabin for two people. — *Aviasport*

SOARING IN CHINA

There are high hopes that a team from the People's Republic of China will compete at the next World Championships in Argentina. A delegation of observers was present at Paderborn (and at Chateauroux in 1978) gathering experience of international-level competition. As might be expected, soaring in China is largely financed by the state, but a spokesman said that it was purely sporting in nature and not used — as for example in East Germany — as a form of military training for young people. Several high performance gliders have been imported from Germany and orders have been placed for several more Janus and Nimbus aircraft. One of the delegation at Paderborn was Zhang Yi-rong, China's most successful lady pilot, who was holder of several outright national records.

A German pilot, Dieter Hornschild, succeeded during a visit to China in March 1981, in flying with the Chinese at their centre in Anyang, now designated as national cross-country centre. Anyang lies near the northern boundary of the province of Hunan and is a town with a 3500 year history, now given over to heavy industry, jade and carpet manufacturing. The airfield is on the broad plain of the Anyang river north of the town. It has

two 1000m parallel runways with a grass strip between them, used by gliders. The airfield is uncontrolled and has no signals square and no windsock. A large number of Antonov 2 biplanes were parked on the airfield (used for dropping sport parachutists) and YAK RK 18 Ys were used for aerotowing. These Yaks have nine cylinder radial engines giving 240hp.

The Chinese glider pilots wore jeans, flying jackets and "beanie hats" and gave Herr Hornschild a very warm welcome. Mr Wei, the chief instructor, first gave him a familiarisation flight in a Tandem-Falke and a couple of check flights in the Twin Astir, after which he was cleared to fly the Nimbus 2c. Despite the poor soaring conditions, Herr Hornschild, understandably, considers gliding in China to be an unforgettable experience.

For early solo training the Chinese use a locally built single-seater called the "Quian Jin" ('Forwards'). With a shoulder wing and a glide angle of 24, its cockpit resembles that of the SF-27. — *Aerokurier.*

OBITUARY

PIRAT GEHRIGER

Photo: Ann Welch.

After more than 30 years as the personification of International gliding it is hard to believe that Pirat is dead; but it is easy to remember his enthusiasm, forthright way of speaking — in any of five languages, his helpfulness and sense of fun.

Pirat first appeared on the world scene as a young man with a lawyer's training as director of the International Championships at Samedan, Switzerland, in 1948, and ever since his contribution to soaring has been great. This may not have always been apparent because most of his work was done behind the scenes as president of CIVV, a position to which he was "re-elected with acclamation" for more than 20 years.

He was a fine president, prepared to listen, but with an incisive brain able to cut through woolly thinking to the basics of any problem. Under his guidance sound Championship rules, scoring systems, closed circuit speed tasks, Diamonds, and the 1000km badges were developed — and duration records abolished. His meetings had an adventurous flavour; there were always results even if sometimes unexpected ones.

But Pirat was not just a paper merchant — he flew for Switzerland in several World Championships and was a pilot in the Swiss Air Force reserve.

At the Yugoslav Nationals in 1953 on a formation aerotow retrieve he set his glider on fire when a box of matches burst into flame and fell under the seat. I remember this well as I was in position on his right wing watching with fascination the antics of his Weihe while he tried to put out the fire with a bag of plums! There was never a dull moment in his company.

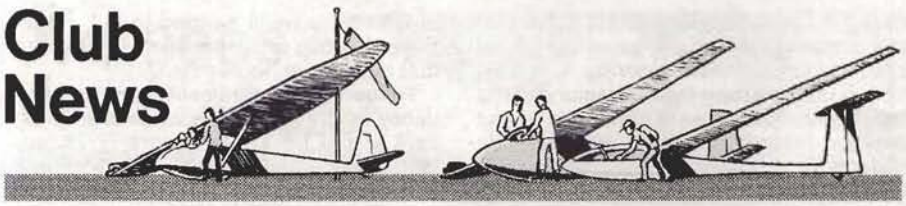
Following his retirement from the presidency of CIVV he was soon elected president of FAI for the two years 77/78, and then president of Honour; still continuing to devote time and talents towards his unswerving belief in the importance of sporting flying. Professionally, he worked for Swissair as a director and their top level troubleshooter.

He died on June 10, the day a large letter arrived for him from the '81 World Gliding Championships signed by every competitor and organiser at Paderborn.

It is said that no one is indispensable, but some are irreplaceable.

ANN WELCH

Club News



Copy and photographs for the December-January issue of S&G should be sent to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH, tel 247725, to arrive not later than October 13 and for the February-March 1982 issue to arrive not later than December 1.

August 12, 1981 **GILLIAN BRYCE-SMITH**

BORDERS (Milfield)

Our Friday and Saturday evening courses continue to be popular, providing air experience flights for many different groups and a useful income for the club funds. Our first week long course for the education authorities proved to be a success thanks to a lot of hard work by the instructors and members.

Silver distances have been flown by Jim Shepherd, Mike Bromley and George Brown — George's after years of training pupils rather than flying himself.

A.J.B.

BRISTOL & GLOUCESTERSHIRE (Nympsfield Airfield)

At last the Grob G102 has arrived. It is the first glass ship in the club fleet and an eminent replacement for the Skylark 4. With the K-13 in the air again, the club fleet is at full strength with a Blanik, Bocian, K-13, two K-8s and the Grob. A club expedition is planned in the autumn to Aboyne, taking a two-seater and a single-seater to try the wave.

Several pilots have been taking part in the various inter-club weekends which, judging from reports, are an outstanding success. Our weekend is at the end of August when a grand barbecue is planned.

Enstone has been the goal for several Silver distances recently. The Western Regionals, under the direction of our CFI, Ron Sandford, were the usual success but marred by the tragic death of Jim Webster in an outlanding accident.

Our holiday courses have been well subscribed and should help the club financially in these difficult times.

OBITUARY — Jim Webster

Jim Webster was tragically killed in a gliding accident near Stratford on Avon during the Western Regionals on June 15. Jim had been a member of our club since 1960 and flown more than 1500hrs in 35 glider types. As a fully rated instructor, he was willing to fly with any pupil at almost any time — the only time Jim would sidestep instructing was when he was flying solo, such was his intense love affair with gliding. The absence of his ever happy personality has made Nympsfield a quieter and sadder place and his effervescent enthusiasm for life is missed by many members both young and old alike.

Robbie Robertson

BUCKMINSTER (Saltby Airfield)

The long awaited Astir for club flying has just arrived. This will give a few of our members their first opportunity to fly glass. Our thanks to Ken Ballington for his efforts in bringing it back from Germany.

Tom Marchant flew the club K-8 to Strubby for Silver distance, and then stayed over site and made duration and height. Pete Goodwin also flew Silver distance plus a 100km triangle in the K-8. Congratulations to Annette Immins on going solo.

On July 25 Jeff Roberts contacted wave over the site up to 8000ft and was quickly joined by a few others. This is a rare treat at Saltby.

It is with deep regret that we report the death of Dave Davenport after some months' illness. Dave enjoyed his gliding in the Blanik with Dib and John and was an enthusiastic member. He will be missed by his many friends. We extend our deepest sympathy to Pat and the rest of his family.

T.C.M.

COTSWOLD (Aston Down)

It has been an eventful year. The beginning saw the auction of our site and the acquisition of a large part of it by the club. Negotiations still continue for a small part of the remainder for which we have joined a consortium of interested parties.

Tim and Geralyn.

Early in the season Tim Macfadyen married Geralyn, one of his pupils, and they celebrated by leaping into the Bergfalke for their first married flight in full nuptial rig. There are all sorts of first solos!

The spring open day was a great success with 194 launches before rain stopped play, thus contributing handsomely to club funds and recruitment. Our thanks to Dowty GC and RRE Pershore who helped with their K-7s.

The control tower is taking shape very nicely as our first clubhouse and social events in it are proving a great success. At a VIP evening in July we thanked those who helped during our struggles. Sir Anthony Kershaw and other dignitaries were joined by the BGA chairman and Mrs Tom Zealley. Col Lowsley Williams, our new patron, was presented with a silver tankard in recognition of the way he took up his rights to certain parts of the airfield, sold them to the club and thus made it all possible.

Despite the poor summer, we have been very active with midweek gliding, air experience flights and our first full time summer courses. Jonathan Beard went solo as near as

possible to his 16th birthday and followed this shortly afterwards with his duration. Dave Roberts (Nimbus) completed a 500km triangle on a blue day.

Members have competed in the Nationals, Western, Lasham and Enstone Regionals, Dave Breeze (SHK) doing particularly well in winning his Class at Lasham.

J.D.H.

COVENTRY (Husbands Bosworth)

After a dreadful start to the season, the position began to improve in June. Our launch rate has risen to match the previous year's figures by this time in the season. Cross-country flying has shown a healthy increase, helped by the club SF-27 which has proved very popular. Membership is on the increase and there have been many first solos and numerous Bronze legs.

James Cooper flew to Dunstable for Silver distance in Jacob's Ladder, the famous Oly 1, and in July took the same glider a very creditable 222km on a Gold distance attempt. Jeremy Landrick has this year acquired his full Cat, Gold distance, Diamond goal and won the East Midland Regionals. Congratulations.

Our thanks to Claud Woodhouse and his team for running a very friendly and successful Regionals in July. The ladies set the seal on the event by putting on a splendid barbecue.

B.R.

DEESIDE (Aboyne Airfield)

The excellent spring and summer weather has meant lots of good thermal days for us — with frequent good wave as well proving more accessible than usual in summer. Bruce Cooper took the DG-100 to 30 000 in July — a climb which broke off in 3 to 4kt lift because of oxygen system worries. We'll get those records back here yet!

There's been a lot more cross-country flying this summer. Our folk are getting quite good at navigating "down in the weeds" below 10 000ft. The clubhouse frame will arrive soon and we hope will be clad before winter.

J.R.B.

DEVON & SOMERSET (North Hill)

Mark Crompton (Dart 15) has gained Silver height; so did Duncan Babbington but with the galling realisation that his barograph was not switched on. Chris Dobbs (K-6) flew to Davidstow for Silver distance. Colin Watt (K-6) flew 68km to Wincanton, but was defeated by the 1% rule.

Roy Thompson, Roger Palmer and Colin Lord have soloed; Colin is polishing up his old B badge earned with the ATC. Ian McLeod, Ron Smith, Derek Webb and Dick Wolff have their Bronze Cs.

Tim Gardner (DG-100) and David Minson (Skylark 4) are both treading the cross-country trail regularly. Steve Frank (Skylark 4) has left us temporarily for the north of Scotland low flying area, where he will be flying peregrine falcons instead.

Sadly, inflation has hit our flying charges; after two years without change, winch launches are now 25% dearer at just over the £1, and aerotows and soaring time are also up; so is the launch rate, for the time being. Our summer courses are well attended with many familiar faces returning yet again.

I.D.K.

DUNKESWELL (Dunkeswell Airfield)

Mike Fairclough ventured to the USA to gain his Diamond distance and Diamond goal. Chris Heide has completed two Bronze legs and Harvey Wallace-Williams, Gareth Jones, Mark Scott and Chris Beard have gone solo.

We are all now taking advantage of the belated soaring weather to at last enjoy some lengthy flights and cross-countries.

Among our recent visitors, we were delighted to welcome Don and Norah Johnson who let us fly their Ogar motor glider.

B.H.F.

EAST SUSSEX (Ringmer)

A welcome to our new chairman, Stewart Forster, elected at our AGM in March.

During recent months we have been receiving more complaints about aerotowing and alleged flight path deviations from a vociferous minority of local objectors, culminating in a series of meetings with planning officers, council members and complainants. At the various meetings we set out the steps being taken by us to minimise the risks of deviations including, *inter alia*, dual flight checks, flight path monitoring and aerial photographs of landmarks. Altogether, a valuable lesson in public relations. Special thanks to Bill Scull and Johnny Morris for their support and attendance at the meetings.

Electricity has been provided on the field and we can now see when tucking the gliders down for the night.

A K-8 has now been added to our club fleet and has already produced a severe rash of Bronze legs, something which the Swallow seemed incapable of.

Despite the inclement weather, our open day on the Spring Bank Holiday was a moderate success.

Congratulations to Clive Vandenberghe, Neil Kelly, Paul Tickner, Joe Batchelor and Henry Nicholson on their Silver Cs, to Peter Whitmore and Andrew Nopper on their Bronze Cs and to Tony Kerwin-Nye, Graham Treharne, Patricia Richardson, David Hopkins, David Chowen, Pip Nowell, Nigel Dufty, Joe Sutton and Sue Huckstep on going solo.

V.N.

ESSEX & SUFFOLK (Hadleigh)

Congratulations to Peter Smart and Robin Haltwell on their Bronze Cs (Robin has now left us for Australia where we wish him many happy hours of soaring) and to Gavin Sasson on the first Silver distance of the season.

All our thanks to Bert Bearcroft for his hard work as chief tug pilot for several years. Richard Harris takes over this demanding job.

We recently played host for the third round of the East Anglian League and although poor weather prevented most from completing the tasks, the winner was Norfolk GC who claimed the most accurate spot landings. We are grateful to Mr Alston who allowed us to use Lavenham Airfield as our own site is limited due to planning restrictions. There was much fun at the ensuing barbecue.

V.H.

HAMBLETONS (RAF Dishforth)

Misfortunes with the fleet continue, our tug CUBI having suffered serious damage to its engine. However, on one almost tug-less day recently we were able to join with Clevelands in producing a number of winch launches which was a record for recent years.

Summer has arrived at last, bringing a number of Bronze and Silver legs, and a weekend of wave in June produced three Gold heights. John Gao, Sandra Cooper, Nigel Taylor and Shaun Garrity have gone solo, and there have been several conversions to the Oly.

Our injured K-6 returned just in time to take Eric Roberts to fourth place in the Northerns, his first competition. We are still awaiting the return of the Astir.

J.P.

HEREFORDSHIRE (Shobdon)

A lot of wave this summer. Mid-June Charles Boucher (Mini Nimbus) went to 15 000ft for Gold height, Richard Marsden (Kestrel) also reached 15 000ft, Oliver Cowley (Vega) 10 000ft and the club K-8 went to around 10 000ft with Bruce Hunter, Lyn Ballard (who awaits his Club Libelle and will be flying with us) and Geoff Harris.

We have two new instructors, Ken Martin and Oliver Cowley. The Rock Polishers League visited Usk, where Graham Mason was first for beginners, and the Mynd, where Andy Williams came second for beginners and Phil King second for pundits. Phil King also came second in the IBM Comp in Belgium.

Bruce Hunter, Andy Williams and Dave Falls have completed their Silver Cs. Bruce and Andy give a lot of credit to Roger Harlow and Phil King who were PIs in the club's

Twin Astir for Enterprise. They booked it and entered it and Roger and Phil took alternative days. Les Dawson and Geoff Harris were with them and they got some splendid flying and invaluable experience.

Mid-July Richard Marsden (Kestrel) got to 18 800ft for Diamond height during a very difficult 5½hr flight and on August 1 Anthony Maitland (Mini Nimbus) flew 328km.

There have been too many wave to 8000ft days to mention. We have been spoilt and a lot of visiting clubs and syndicates too. The Avro Club spent two weeks with us, bringing their Skylark 3F, K-7 and instructors. They did 83hrs including three five-hour flights, one Silver height and one 4hr 55min (better luck next time, Sandy).

R.P.

IMPERIAL COLLEGE (Lasham Airfield)

It has been a successful year. Over Christmas and the New Year nine members went to Portmoak resulting in two Gold heights. Chris Starkey, who has taken part in team training this year, gained his Diamond height in March.

During spring our newly acquired living quarters at Lasham, which had been uninhabited for two years, were transformed into a very comfortable bunkhouse and workshop.

Over Easter two members gained their Silver distance. On June 27 our Astir was flown on O/Rs to Shrewsbury no less than three times. Four 100km flights and a 500km triangle were completed that day.

There have been four courses since the New Year and 11 have gone solo. The year ended with five members competing in the Inter-University task week at Cambridge.

A.D and C.L.

KENT (Challock)

We have had few opportunities during this poor season for cross-countries, however Tony Moulang, John Hoye and Ron Cousins have done well in competitions around the country. Alan Garside, Richard Whittington, Mike Johnson, Tony Goodman and Simon Cassidy have their full ratings; Derek Waldron went solo in the K-8 and got two Bronze legs on the same day; John Bailey also has two Bronze legs while Ed Johnson gained his Silver height and duration on a trip to Portmoak.

The annual barbecue was a great success as was the cheese and wine party: many thanks to Jean Austin for the catering. We have a further open weekend on September 19/20 to raise funds and encourage new members.

At a dinner-dance in October to celebrate our 25th anniversary we are hoping former members will come and reminisce about the good old days. Anyone interested should contact Tim Gardiner.

J.H.

LONDON (Dunstable)

Congratulations to Ian Hunt who progressed from *ab-initio* to Silver C in just four weeks. Meanwhile the plodders managed five days flying during the club's task week which was won by John Cardiff in the Pundit Class and Kestrel "CNX" in the Intermediate Class.

Patrick Young waiting to take-off in the London GC's K-13 to give his mother, Mrs Christine Young, her first flight at the age of 83. She thoroughly enjoyed the 40min flight.

We have also been doing very well again in the Inter-Club League. At the North Weald meeting Steve Lynn did very well to finish a Diamond goal flight on a slow day. Graham Smith was less lucky, landing just short in a rape field on the Sunday to discover that the farmer would not permit a retrieve until it had been harvested on the Wednesday.

Dave Cornelius has had some interesting outlandings. On one occasion he landed in a reasonable-looking field, whereupon about 30 people rushed out of an adjacent barn, saying "Welcome to the Welland Gliding Club". His was the first glider to land there. Another time he returned without his ASW-15, having been found asleep in the cockpit by another crew collecting a glider in the same field.

The club fleet has been increased by another K-21 and an ASW-19 Club which, flown by JJ, is one of the large contingent that we are sending to the Booker Regionals.

F.K.R.

MIDLAND (Long Mynd)

Although June and July gave few cross-country days, they provided some excellent wave conditions instead with Gold climbs achieved on several occasions.

The advanced soaring course was a great success for the ten club pilots involved. All completed their Bronze Cs, ten Silver legs were claimed and the field landing practice spurred Jeff Rowson and Neil Clements to complete their Silver distances to Usk soon afterwards.

It is with pleasure that I report a Diamond goal flight by Charles Wingfield. Charles flew his Gold distance in 1947 and his was one of the very first completed Gold Cs. Now he has returned to gliding after many years and flew his Vega to a Diamond height at the Mynd last year. He has been heard to complain that his rate of progress is rather slow! May the last Diamond soon come your way, Charles.

Congratulations on going solo to Barbara Reed, Linda Dickin, Michael Lloyd-Masters, Hugh Henderson, A. Dickinson, J. Munro and R. Andrews and to Nick Tyler and David Bailey on gaining their assistant instructor ratings.

Steve Allsop and Bob Scarborough have put much effort into air experience flights for the general public during the summer evenings and raised much interest and money by so doing.

Many in the gliding movement will be sorry to hear of the sudden death of Theo Testar. He was a valued instructor at the Mynd for many years and his many friends are saddened by his loss.

J.S.

MARCHINGTON (Marchington)

At the AGM Ron Eckford joined the committee and Syd Brixton is now treasurer.

Only four days flying have been lost in the last two months and the new Super Cub is proving a good investment being very efficient and reliable. At the first course week on the new site in July there were some soaring flights although conditions weren't good enough for cross-countries. However our chief pundit Garth Lawley did land at Uttoxeter racecourse. Ron Roberts has joined the instructors.

There has been further site clearance and we now have an antique grass cutter, which keeps the edges of the runway clear of wingtip catching weeds.

S.D.B.

NORFOLK (Tibenham Airfield)

There have been some excellent flights in the past few days including a 325km by Mike Lee (Hornet) and good cross-countries by Dave Hill (Astir) and Denis Cooper (Mosquito), Bruce Owen, Terry Cooper, David Hodgson and Derek Foster have Silver distances and Dave Person gained both Bronze legs.

The Falke has been busy on the courses and in converting pilots wanting SLMG PPLs as well as for Bronze C checks. At the moment we have a flying week for Bronze C pilots.

On the social side we had our excellent annual car treasure hunt organised by the CFI/secretary.

M.J.R.L.

NORTHUMBRIA (Currock Hill)

The weather has picked up after a very wet spring and June and July have seen much better flying conditions. Andy Townsend got to Diamond height in wave in July, only to find that his barograph, although switched on, was not recording. Elaine Routledge went to 11 000ft on the same day in the Swallow for her Silver height. She is now our only female passenger carrier.

Al Scott has completed his Bronze C with the aid of their new air data computer. Ian Haggart and John Givens have just re-soloed after gaps of five years and three years respectively.

A number of members have been down to Saltby for their summer holiday, Rob Thompson completing his Silver distance and George Edmundson managing 90km. Gwenda Greenwood also had her first solo flight on one of these trips.

The new club Dart is performing well and already some good flights have been accomplished. The summer courses have been well attended and, with the exception of the CFI's solo course in July, the weather has been very good.

We have had another spate of "break ins" in the clubhouse but hopefully the new burglar alarm will deter all but the most determined. A recent attempt (unsuccessful) was made to break in through a wood and concrete wall.

J.W.

NORTH WALES (Pen-y-Parc, Nr Holywell)

Our thanks to Derby & Lancs GC for their hospitality during our enjoyable annual camp at their club. Congratulations to the CFI's wife, Julie Payne, who is our first solo pilot of the year and the first female member to fly solo. Congratulations also to her husband, Ken, for achieving the club's first cross-country as well as to Ray Ball and Doug Kominski on their Bronze C.

Our thanks to retiring committee members Alan Ellicott, secretary, and John Mahony, for their three years' hard work.

We still need instructors and if interested, please contact Rory McGough of 14 Llewellyn Drive, Bryn-y-Baal, Nr Mold, Clwyd, tel Mold 4028 (home), Chester 317667/8 (business).

R.G.M.

OUSE (Rufforth Airfield)

After years of uncertainty it is finally ours — we bought the airfield. The final price (63 acres of land and runways for £95 000) was higher than anticipated and we have taken on a large debt, but we are now one of the few clubs with security. We couldn't have bought the site without the help of the Sports Council and the support of "die hard" members who have been behind the club throughout the crisis.

Our sincere thanks to our site officers and chairmen, past and present, who have given countless hours on our behalf. The present chairman, Dick Boddy, thinks he may even be able to concentrate on flying again. Since buying the site we have attracted many new members and everything is pointing to a healthy future.

The soaring season has improved dramatically over the last two months with several good cross-countries. The Skylark 4 syndicate are going to Portmoak badge hunting and the club ski section are invading Europe again this winter.

S.R.L.

PETERBOROUGH & SPALDING (Crowland Airfield)

On August 2 there was an outstanding flight at our airfield. Freddie Logins, who has suffered a spastic disablement since birth, achieved his duration. Flying the Capstan in which he has a share, Fred confounded the pundits by going solo and then gaining his Bronze C. His duration, in blue thermals, is unlikely to be bettered by a club pilot this year.

The Inter-Club League competition has brought new friends and some interesting flights, promoting a more competitive spirit in some of our pilots.

Barclays Bank has given us a welcome boost to club funds with 90 of their staff having air experience flights during the summer.

M.C.

RSRE (Pershore)

In spite of rumours, at the time of writing it is still business as usual at Pershore, although our tenancy of the hangar is now on a week-by-week concession basis. The uncertainty has at least served to clarify the minds of some, resulting in a crop of Bronze and Silver legs.

Recent achievements of note were Les Norman's uphill cross-country to Nympsfield to complete his Silver C, while David Bland followed up a 16th birthday solo with a B certificate flight on his second launch.

At the AGM the officers were all re-elected unopposed, but with obvious relief the retiring secretary announced that Colin Bullock had finally been persuaded to take over the hot seat.

A.B.

SCOTTISH GLIDING UNION (Portmoak)

Despite a generally poor flying year there have been several highlights — Tom Docherty's flight to Cambridge (see Competition Enterprise report), the success of our task weekends which gave five competition days out of three weekends and the recent crop of new solo pilots.

Another major success has been our winch system, inaugurated in March and proving extremely reliable. We welcome Dennis Brown and Phil Morley, our two professional winch drivers who provide a seven-day coverage.

Jane McCoshin, an 18 year-old student vet, goes solo at the SGU.

At the AGM in early July the entire board was re-elected *en masse*.

S.M.

NB. Tom Docherty (Nimbus 2) flew 617km to the Kent GC on Sunday, August 16, making his fifth attempt at crossing the Channel. This time he was beaten by lack of daylight and landed at 6.40pm.

SHALBOURNE SOARING GROUP (Nr Hungerford)

Thanks to instructors G. Nichols, B. Morris, S. Nash and K. Mackley giving winter evening lectures a lot of young pilots have passed their Bronze C papers. We are steadily increasing in strength and some of our earlier pilots are forming their own syndicates — already we have a K-8, Pirat and Blanik.

We at last have permission from the council to build a clubhouse which we have already bought in anticipation. This will be a great boost to the club as at the moment we only have a small caravan.

We held our own Royal Wedding celebrations on July 29, flying all day with a barbecue and dance in the evening. Our thanks to the social committee.

J.D.

SHROPSHIRE SOARING GROUP (Sleap Airfield)

We now have 30 members including three tug pilots who are not glider pilots and four who are. They fly our Chipmunk tug and tow our eight glass ships and two wooden ones, owned in small syndicates. We started in 1972 and since then have acquired a good deal of knowledge of the way thermals, sea breezes and Welsh waves interact over our area — enough to realize that there is more to learn. In the first week of August we borrow from the RAF a large grass airfield, Chetwynd, about 16 miles east of Shrewsbury.

Last summer the two weeks were mostly washed out in common with other sites. Visitors are welcome but we ask for prior knowledge so as to make adequate arrangements.

We have had some good wave and thermal flights. The maximum height last year was around 23 000 QNH, with the site record at around 27 000ft. So far we have only achieved one 500km triangle but several Diamond 300km flights.

In June a party of four went to Minden, Nevada *via* Dallas and Reno, renting one LS-3 and one 1:35 (Schweizer). Conditions were good, but not the best, and more than 82hrs were flown in three weeks with one Diamond height of 27 000ft.

We welcome visitors to Sleap and are open every weekend, Bank holidays and after 5pm on summer weekdays.

P.L.U.M.

SOUTHDOWN (Storrington)

Our Sport Vega has arrived to upgrade the fleet and on its first flying day it took G. Burtenshaw to Silver height to complete his Silver C. D. Hatfield, M. Wakem and C. Foss have also completed their Silver Cs recently.

Six members went solo in July. The K-13 and K-7 recently had evening wave flights with R. Traves and J. Ward taking the K-13 to Petersfield and back at 3500ft.

D.C.

SOUTH WALES (Usk)

Steve Reed has his Silver distance, Ton "Von" Hooper his five hours and Corrine Westacott a Bronze leg. Our July task week was won by Ian Kennedy. We are indebted to all the instructors and helpers who ran the courses again this year to help with our financial struggles.

A Std Jantar has appeared on our site. The club K-8 collected four faults whilst negotiating a hedge and may have to be put down.

P.A.C.

STAFFORDSHIRE (Morridge)

What a wonderful association we all belong to! Inter-club activities have filtered down even to our modest club. We have exchanged visits with the Blackpool and Fylde GC, calling on them on their task week following an exchange of newsletters. North Hill was visited in June and further expeditions are due in August and October. Another joint venture is arranged for August with the kind invitation of the Shropshire Soaring Group to their summer camp at Chetwynd. Our new Astir syndicate have also been grateful to the Shropshire SG and the Marchington GC for the use of their facilities. In October we are going to Portmoak for the first time with our K-13 and private fleet.

Pauline Gwinnett, Ken Lane and John Hind have their Bronze Cs. We are buying another solo machine and would appreciate hearing from anyone with a K-18 for sale.

P.F.F.

STRUBBY (Strubby Airfield)

We are delighted to have two new honorary members. Secretary, Brian Chase, watched the final glide of the Space Shuttle Columbia on TV and decided that if the crew were going to be called glider pilots they should belong to a gliding club. Somewhat tongue in cheek he wrote to NADA to congratulate them and offer membership of our club. To his surprise a letter of acceptance and signed photo of the two crew arrived and we are proud to include the names John Young and Bob Crippen on our membership. Good luck to them and all the future Shuttle "glider" pilots.

Our airfield continues to shrink and it looks as though we shall have to settle for a short winch run with aerotow supplement — efforts are being made to set up a tug syndicate and get the winch completed.

P.B.

SURREY & HANTS (Lasham Airfield)

It's been a poor season apart from one or two notable exceptions. Saturday, June 27, brought our first 500km badge flight of 1981. Chris Starkey, who also flies under the Imperial College banner, flew our Astir to Lewes, Sussex, hill soared most of the way back and then as the thermals brewed he carried on to Ludlow and return. A very enterprising trip. Roy Pentecost was one thermal short on the same flight, landing at Inkpen.

The other exception was our Regionals in which Chris Day and Tom Bradbury dreamt up six very good contest days for all three Classes.

C.L.

SWINDON (South Marston)

We had a very successful open weekend on June 20-21 with club flying between 4am and 9am on the Saturday. Cooked breakfast was provided by Angie Higgs, Anne Bradley and Alison Lock and as a result of the weekend we have several new members.

The Hambro task week wasn't as successful as last year due to the weather but creditable performances were achieved by John Le Cayte, Eric Winning, Bev Hill and our CFI, John Baxter.

R.W.L.

TRENT VALLEY (Kirton Lindsey)

We were pleased that our president, Marcus Kimball, MP, had been awarded a knighthood in the Queen's Birthday Honours list. Shortly afterwards we welcomed Sir Marcus to fly with us at a president's day followed by a hangar disco.

Our Northern League competition suffered poor weather on the Sundays but the Saturdays have produced some good tasks, leaving us several points behind our rivals, Doncaster, who we hope to overtake on the reserve days!

Mick Ward and Dick Hannigan flew magnificently to win the Northern Regionals' Sport Class in the Oly 2, while Neil Rogers and Brian Griffin were runners up in the Skylark 2. A DG-100 has just arrived at the site, so someone must think glass has a future! The K-13 is back after a repair.

Vistors should note that there is a new permanent barbed wire fence across the north-west corner of our field which has shortened our longest run a little.

J.R.S.

ULSTER (Bellarena)

After a run of filthy weather July 26 was a pleasant respite with day-long wave in which five pilots made Gold C-style climbs. While two don't need the endorsement Ruth Hall, Billy Bowden and Billy Craig are all filing claims. Ruth and Billy B made it past 12 000ft in their respective K-6CRs while Billy C climbed to 11 600ft in his ASW-20.

The privately owned fleet is growing constantly. The newest aircraft on the site is Bob Rodwell's Phoebus 17C, which arrived on July 12, while the K-6CR purchased and being refinished by Jerome Connolly and Charles Hill is expected imminently. Also growing rapidly with the sterling labours of Jim Wallace and new member Alan McKillen is our long-awaited toilet block which, we hope, will soon be in full flush.

A week of continuous flying is planned from August 22 to 30 to coincide with the visit of Justin Wills and three other pilots bringing three aircraft from England. To celebrate this first journey to Bellarena from across the water by *equipped* visitors, Brian Willmott is organising our summer dinner for August 28.

Another eagerly awaited safari is the now customary joint Dublin/Ulster autumn wave camp in Co Kerry where Atlantic south-westerlies meet Macgillicuddy's Reeks and, losing the battle, generally wave wildly. If a tug transpires the safari will be based upon Farranfore airfield. If not, it will be a few miles to the west where Parafil ropes will come out and we will autotow off Fermoyle and Inch strands, on the north and south coasts respectively of the Dingle peninsula. One runs E-W, and the other N-S. Out here in the west, we keep all options open.

R.R.R.

WELLAND (Middleton)

We are flying again, although some work remains to be done on the airfield. After four good weekends, including a Silver duration (congratulations Ray Clarke) our open day was a bit damp. There was some flying and everyone enjoyed the party.

Sunday was completely washed out, but a very instructive day resulted from the talks in the hangar — thanks Bruce Tapson and Horace Bryant.

R.S.

WOLDS (Pocklington)

Four of our gliders were entered in the Northern Regionals and Pete Norrison came third in the Sport Class.

Back at Pocklington Bill Young flew 318km, missing his Diamond goal by landing down the road. Bernie Svenson held a successful flying week in July, attended by a group from a local school, while Colin Milner's task week in early August hit poor weather. However what flying there was proved quite entertaining with the M-100 and K-7 winning the team games with a flight of about 5km!

Congratulations to Clive Porter on going solo.

H.N.

WOODSPRING (Weston-Super-Mare)

A club expedition to North Hill during July was such a success that an even larger one is planned for their task week during August.

Congratulations to Jon Toy on completing his Silver C and to Carol Reeves and Phil Ebbs for going solo.

Our annual barbeque at the hangar was on July 25 with Jon Toy and his group providing the music with Harry Chatterly filling the "guest" spot.

The recent bad weather curtailed flying to such an extent that even the CFI was observed riding the tractor. So far club historians have failed to establish when this phenomenon last occurred!

A.J.H.

YORKSHIRE (Sutton Bank)

The club finished as leaders in the Northern League, thanks mainly to a fine flight by Mike Wood (Jantar) to Durham Cathedral in poor conditions but a sea breeze front saved the day. The same front was used by John Taylor for Silver distance.

Congratulations to Jim Grainger who celebrated his 25th year in gliding by achieving Gold height.

Our plot to beat the weather succeeded this year giving us nine competition days in the Northerns. Congratulations to Steve Hunt and the Ward/Hannagan team for winning the Open and Standard Class respectively, and thanks to John Mawson, our competition director, for the exceptionally smooth organisation.

We are hoping to see our normal contingent of visitors for the winter.

W.R.B and J.R.

SERVICE NEWS

BICESTER (RAFGSA Centre)

The soaring season finally arrived with occasional weak wave and some reasonable thermals. August 2 was the best day with eight attempting Gold distance/Diamond goal and four — Alfie Bass, Nobby Clark, John Duncan and Ken Stephenson — completing the task. At least three other visitors have completed equally as long tasks with numerous shorter cross-countries flown.

At least six have gained Silver legs and Steve Brownlow, Ian Fraser and Stu Simpson have completed their Silver Cs, Stu being a member of the Centre staff.

The number of female instructors flying here regularly has doubled with the addition of Jackie Hymers and Angie Watt. The fleet updating continues with a new K-21 and a Nimbus 3 expected to replace the ASW-17. The T-21 and Grunau have been refurbished so we also have the joys of wood and open gliders.

J.W.

CRANWELL (RAFGSA)

With the improvement in the weather we have had quite a few badge claims, including five durations with Bill Barker and Ray Hutchings completing their Silver Cs. Doug Ramsay has his Bronze C and Dave Cooper, Barry Mills and Mark Wilson have gone solo.

Dave Inwood and Ray Walker have their assistant instructor ratings and Geoff Bolton his full category rating.

Ken Hartley (Nimbus) climbed in wave over the site to 11 000ft.

We recently had a weekend detachment to RAF Swinderby and were blessed with good weather and soaring. Our thanks to the CO for his hospitality.

Several pilots are training for their SLMG PPL and Simon Hall has already gone solo.

G.A.B.

EAGLE (Detmold)

This year once again the weather plagued the BFG Comps with only four marginal days. Eagle results were: Open Class, 2 Ray Pye and Jeremy Beringer (Astir); 6 Dave Campbell and Robbie Knight (K-6); Club Class, 3 Dave Lancaster (Swallow), 4 John Mitchell (K-13). The admin side was the best ever thanks to Malcolm Hook.

Our second course for ten pilots resulted in everyone going solo with four soloing on the following course. Geoff McVey, Steve Cozens, Lance Buckland, Simon Wallwork and Marcie Thompson have Silver legs, Marcie completing her Silver C.

The LS-3 arrived in July and is very popular, especially in the 17m version. It has also been on a two-week expedition to France. The Swallow has returned to the UK to be sold and the K-8 is going in the winter.

Our thanks to Dave Campbell, posted to the UK, for his work as bar member and we welcome two instructors, Tony Evans and Ray Washer.

J.F.B.

PORTSMOUTH NAVAL (Lee-on-Solent)

For a change we had a couple of fantastic weekends instead of our normal 15min blue hole. On June 20 Roger Cornish and John Hale achieved durations and the following Saturday Dave Wadham got his five hours, Roger Cornish his Silver distance and Mike Draper Silver height. We also had a good display on June 27 with the one and only Swordfish flying around.

Membership, although down on last year, is steadily improving with many Naval personnel joining. Unfortunately we are losing our CFI, Phil Moore, who surprisingly has to go and join a ship.

Regrettably since our last report our secretary, Peter Sharp, died suddenly. The new secretary is Paul Mapletoft.

J.M.D.

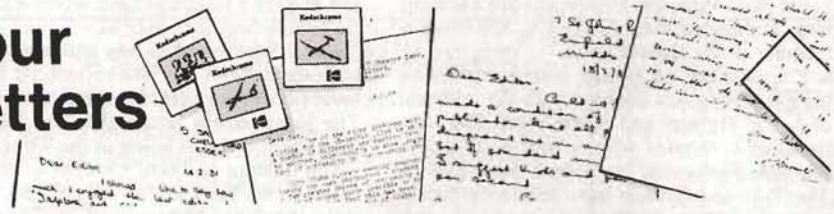
WREKIN (RAF Cosford)

Our thanks to Barry Elliott for all his hard work as deputy CFI before his recent posting. Lorraine Arkless and Sharron Veitch went solo before their posting and we also say goodbye to John Smith, leaving us for Cottesmore.

We welcome Harry and Val Chapple from Odiham. Harry is taking over as aircraft member from John Lambert and his Mü-13 helps to boost our growing vintage fleet. Dave Wakefield and Bam-Bam have their Silver heights.

J.L.R.

Your Letters



SPORTSMAN OF THE YEAR

Dear Editor,

I am sure that every reader will wish to extend congratulations to George Lee and the British Team on their outstanding performances in the World Championships. Perhaps we can attract the attention of the media if, every time an opportunity arises, we submit a vote for George Lee as Sportsman of the Year or the equivalent in the various polls run by the national newspapers and television in 1981.

Public relations are becoming increasingly important to the gliding movement, and we cannot afford to miss opportunities for favourable publicity. George Lee has given us one again. Let's use it!

A. C. BOYCE, **Brighton.**

BGA MOGAS TRIALS

Dear Editor,

Congratulations to Dick Stratton and his efforts to reduce the cost of aerotowing by using Mogas instead of Avgas, (see June issue, p126). Furthermore, when the next petroleum shortage occurs, his work may enable us to keep going in a situation where Avgas becomes difficult to find.

One word of warning to those who store their tow-plane fuel in drums. Avgas is heavily inhibited and normally contains less gum-forming material than Mogas and will remain stable for a long time. Mogas is stable for approximately eight months in tanks but only for about three months in half-full drums stored in the open. After such a period — more or less — according to variations in temperature, Mogas is liable to form gummy substances which deposit in fuel systems as a kind of varnish. Later, these deposits may flake off to plug filters and carburettors. Fortunately, a good nose will detect the onset of this hazard as the gasoline will have a characteristic bad odour, which is probably familiar to all experienced mechanics and pilots.

WILLIAM MALPAS, **Upper Montclair, NJ, USA.**

COST AND PLEASURE IN GLIDING

Dear Editor,

Gliding liberates people but everywhere I see pilots in chains. They buy gliders they can't possibly afford and although they may feel very free when airborne they must groan from the burden of repaying their loans the rest of the time. There were cries of protest when the cost of a Kestrel went above £2500, and gliders are now nudging the £25 000 mark. Perhaps when they cost £2½ million people will wake up and think about doing something about it.

There is undoubtedly a lot of fun in winning the World Champs but as so few enjoy this pleasure it's not very effective. Likewise in the old days there was a wide range of tasks and to do well you had to arm yourself with a wide range of skills in order to succeed. Nowadays it is fairly agreed that if you enter cloud you nearly always lose out, so the range of tasks has become rather restricted and boring.

This seems wrong since these are self-inflicted injuries. One remembers the instance when no task was flown but one Justin Wills turned up and flew 500km. I can't say I have an easy answer. If I can lay my hands on the money I am going to buy the best tools going and fly in every contest in sight.

It can't be a very healthy sport if a young pilot in his early twenties and then presumably at the height of his prowess has no hope of getting a £25 000 ship in which to compete. The medical branch at Farnborough have already adapted electronic games of the Space Invaders variety in order to test and train pilots; RAF fighter pilots now do 90% of their flying in this manner so that if there is ever another Battle of Britain we will be streets ahead of the Russians.

Most gliding clubs have their resident electronic wizards so why can't they get down to the business of re-programming the Space Invaders in the bar so that ordinary club members can have the advantage of the latest RAF training?

BRENNIG JAMES, **Marlow Common, Bucks.**

KRONFELD'S VARIOMETER

Dear Editor,

While I am unable to refer to the article by Peter Riedel in the October issue, p228, and in no way wish to discredit Kronfeld for his original work on the variometer, having read Dr Slater's article in the February issue, p13, I may perhaps be able to add to the history of this piece of equipment.

While I was with the British Aerial Transport drawing office (1918-20) I was entrusted to take a bubble statoscope by safe hand to someone in the Air Board (then in the Hotel Cecil). This had no doubt been flight tested and my job was to ensure its safe return.

The instrument consisted of a thermos flask with a liquid filled curved tube on the face and, of course, the tell-tale bubble.

This incident is impressed on my memory because I travelled by tube to the city and the undulations of the tube from station to station allowed the instrument to display its remarkable sensitivity to minute altitude variation to great advantage.

If I remember rightly the affair bore evidence of being a converted thermos flask, rather than a production job; in other words, very much as the Kronfeld job described in the article.

My experience pre-dates Kronfeld by some ten years and as I cannot imagine the instrument being fitted to a power aircraft of that period, I wonder if it could be a legacy from the days of free ballooning.

J. D. CAMPBELL, **Queensland, Australia.**

COMMENT ON VMC

Dear Editor,

Bernie Morris writing in the June S&G (p138) seems to be missing the point a bit on VMC. It is essential that glider pilots know what rules our powered friends are mostly following, and this will become more important as Ultra Lights get more numerous. Collision avoidance is on a see and be seen basis and it helps if you know which way the danger is most likely to be.

C. J. CHAPMAN, **Birmingham.**

GRASSHOPPER MISLAID

Dear Editor,

An inquiry of the BGA about an alleged glider called Grasshopper has been passed to me but I have never heard of any such glider type at any time during the last 60 years: could it be an inaccurately remembered pronunciation of "groundhopper" as primary training gliders were called?

Two machines in early aeroplane history had the name applied to them by spectators, not their inventors, because of the way they behaved when trying to take-off. One was the Demoiselle of Santos-Dumont which flew in 1909; and the other, described by Peter Lewis in his book **British Aircraft 1809 to 1914,** which included gliders, was the Everett Edgcumbe tractor monoplane which made repeated hops at Colindale in 1910 but never got properly airborne.

Has anyone heard of a Grasshopper glider?

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

DO YOUR GRP WINGS SCREAM?

Dear Editor,

Concerning the fatigue life of GRP gliders (April issue, p77), there is a perfectly good and proven method of examining GRP structures to determine if they are sound — acoustic emission. It is quite simple in principle and used by the chemical industry.

Basically the method relies on the fact that when some materials are placed under strain they emit noise. Tin "sings" if it is bent, some of the strain energy being dissipated as noise. In GRP structures the noise originates from the fracture of the glass-fibres and the ruptures of the resin/glass bands giving rise to bursts of noise. The fracture site can be determined by using instruments and triangulation techniques.

If a GRP structure is tested this way and

stressed to the maximum recommended by the manufacturer and no noise is heard, the structure is sound. However if noise is heard the structure is damaged and further stressing to that level accelerates the rate at which the damage is occurring.

Unless the damage is gross, it may be virtually invisible to the eye. Repairs in industrial structures are usually of the "belt and braces" type and greatly in excess of the minimum requirements. Many repairers prefer to scrap the damaged item because there is always some uncertainty as to the effectiveness of the repair bonding.

I consider AE testing of GRP gliders is an entirely feasible proposition. The equipment is expensive but one could imagine "MOT" stations for GRP gliders where they could be given an annual check for C of A renewal or an examination after an accident etc. The testing would be a fairly quick process.

Take heart all you GRP sailplane owners and remember that no noise will be good news, but just consider that the next time your wings are bending in that graceful arc so beloved of contest-line crossers they may literally be screaming out loud!
D. F. BARLEY, **West Croydon, Surrey.**

Dick Stratton, BGA chief technical officer, replies: The application of acoustic emission non-destructive testing techniques for aerospace applications will no doubt be developed for GRP helicopter blades, the AV8B Harrier etc. Certainly in sophisticated cases they will be seen to be viable. However, already in GRP gliders the initial fatigue life of 3000hrs has somewhat arbitrarily been **doubled** in some cases! (It can therefore be assumed that the initial figure was no more than a semi-inspired guess.) "In the field" detection of internal damage to GRP sailplanes is very necessary if we are to avoid flying gliders which have suffered such damage in groundloop-type accidents. It transpires that such structures can be very damage tolerant and so far few (if any) catastrophes have occurred. Experienced repairers have developed simple techniques such as directing sources of light and "wheel-tapping technology". Hopefully we will resort to high cost technology as a last resort!

DAVE REPLIES

Dear Editor,

I didn't think my letter concerning the National Ladder (April issue, p90) was all that rude and besides, who wants to read nice letters? However the suggestion in the last issue, p196, that I write articles on accident prevention shows that the sensitive Mr Wulff has a fine sense of humour.
DAVE WATT, **Maidenhead, Berks.**

classified section

Advertisements, with remittance, should be sent to Cheiron Press Ltd, 7 Amersham Hill, High Wycombe, Bucks. Tel 0494 442423. Rate 25p a word. Minimum £5.00. Box numbers £2.00 extra. Replies to box numbers should be sent to the same address, the closing date for classified advertisements for the December-January issue is November 5, a.m.

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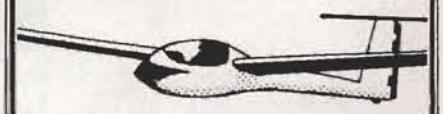

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