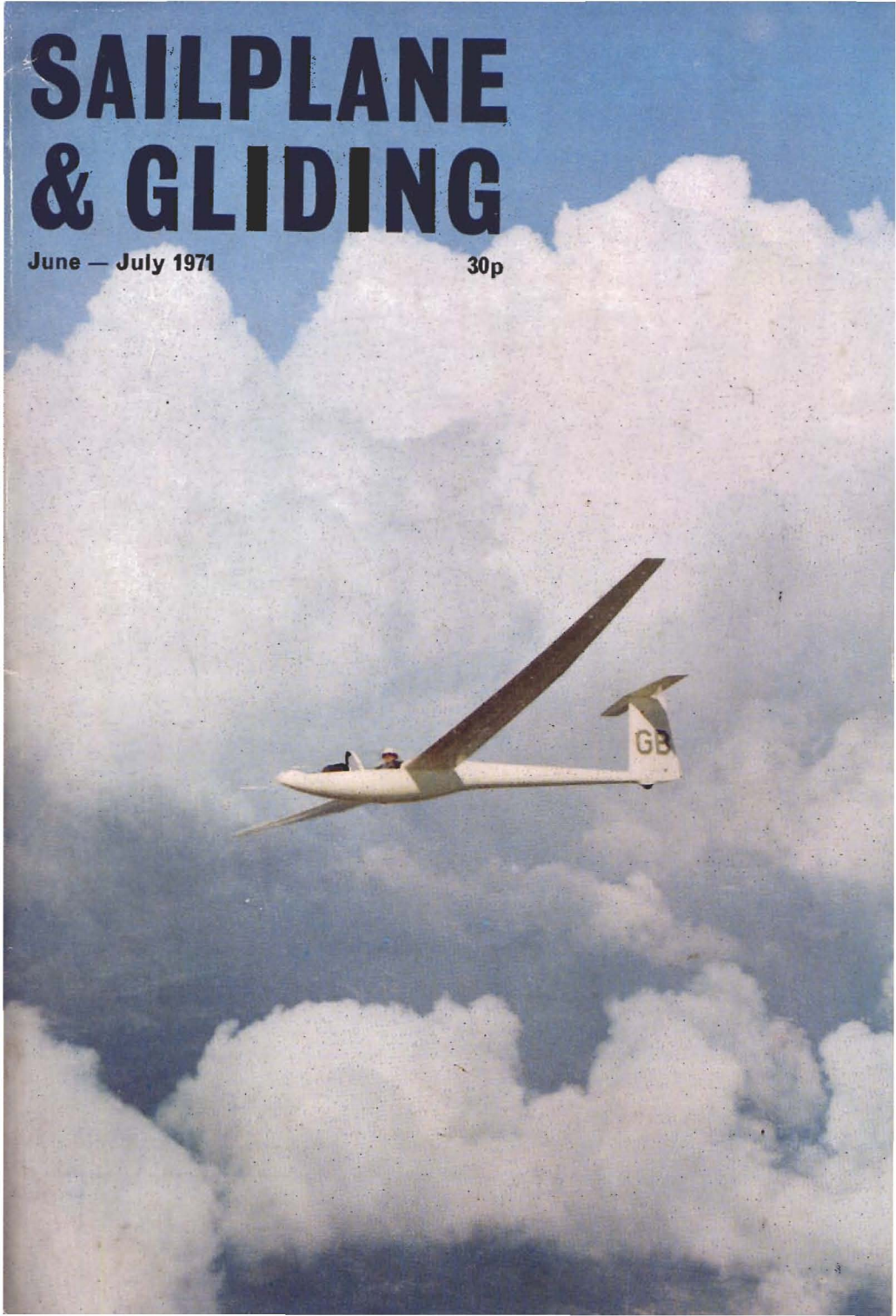
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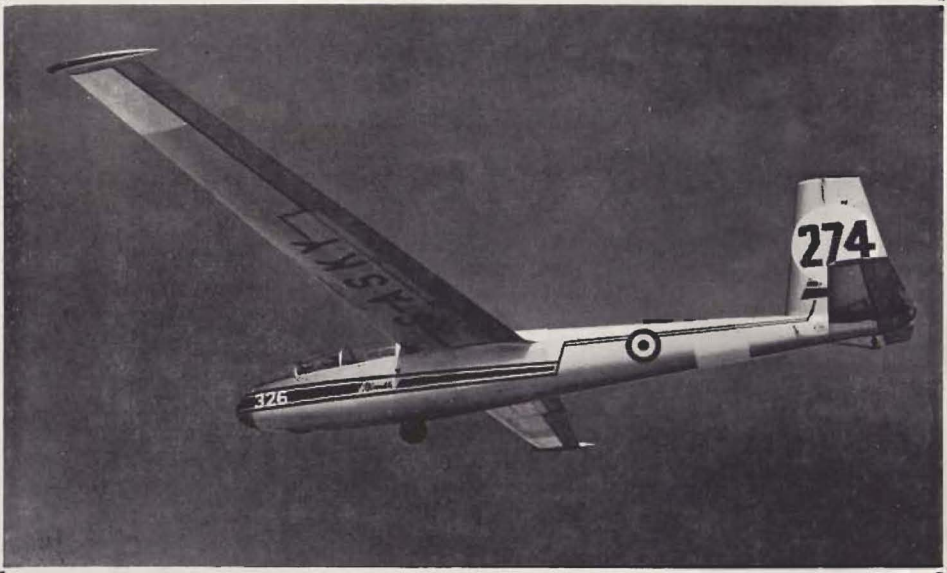
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Editor: George Lacke

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Committee: Philip Wills, Chairman — G. Harwood — M. Bird — A. W. F. Edwards

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Cover photograph: The Glasflügel Kestrel 17 modified to 19m flown by George Burton. Photo by Laurence Hill.

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THE GENERAL COUNCIL OF THE ROYAL AERO CLUB

By PHILIP WILLS

THOSE of us who have been in the game long enough happily remember the days when the Royal Aero Club was situated at 119 Piccadilly, and through the generosity of Lord Londonderry, who left it for a period for the use of the Aero Club, all the affiliated bodies had offices round the corner at Londonderry House in Park Lane.

This not only meant that we all knew each other, but we had a most dazzling suite of ballrooms, with walls covered with paintings, and one of the great staircases of London with marble statues and all. Thus, our first annual balls were held in the most distinguished surroundings. In contrast, the BGA office was in what used to be the butler's pantry.

Council meetings took place at 119, and we were all in and out of the Aero Club, for meals and drinks, almost every day.

When Lady Londonderry died, Londonderry House, one of the grandest houses in London, was sold, knocked down, and the site has now been "redeveloped" as an hotel. The Aero Club left 119 and became a tenant, first of the Lansdowne Club, then of the Junior Carlton Club in Pall Mall. The affiliated bodies dispersed, some to Artillery Mansions, and the inevitable facts of geography meant that our parent body, the Royal Aero Club, became something few of us visited, because we could use it so seldom.

Now all this is about to change. The Royal Aero Club and the United Service Club have amalgamated themselves and become the United Service and Royal Aero Club, situated in the historic Nash building at 116 Pall Mall, the home of the United Service Club since the beginning of time. A plan is afoot to raise a large sum of money by public appeal, and with it to renovate the basement of 116 Pall Mall and turn it into an air-conditioned set of offices to house the central bodies of all the affiliated associations, plus a bar/clubroom for the use of a new type of associate member.

Associated with the change will come into effect a major re-structuring of all branches of sporting flying, with the formation of a General Council of the Royal Aero Club of the United Kingdom. Although there are still lots of loose ends to tie up (including even the somewhat clumsy name of the body), the general idea and function is as follows:

The main responsibility of the old Royal Aero Club was that it is the UK member of the Fédération Aéronautique Internationale, the central body for the control of international records and competitions and the award of international medals. Whereas each affiliated body deals with its own specialist FAI committee (thus the BGA sends its representative to the FAI gliding commission, CIVV), only the Aero Club can represent the United Kingdom at meetings of the FAI General Council.

So the new General Council of the RAeC will have on it delegates of each of its affiliated specialist bodies, who will retain full autonomy in their own fields, but also the chairman of the FAI committee who represents it at the FAI General Council, plus a member of the Awards committee of the Aero Club. It will, therefore, look something like this:

Chairman, vice-chairman and treasurer, plus delegates from the Competitions Committee (power flying), BLAC (light aviation), BGA (gliding), BBA (ballooning), UFA (ultra-light aircraft), SMAe (model aircraft), Awards, BPA (parachuting) and the FAI.

The BLAC will probably be renamed the Aero Club Aviation Centre.

The chairman of the General Council and the chairman of the House Committee will each be a vice-chairman of the new club, and Prince Philip has agreed to accept the Chairmanship of the entire structure for an initial period.

The General Council will have few executive powers, but in the main will act as a co-ordinating body when any of its members need one on some particular subject. But it will, of course, be

responsible for the Club's FAI policy, and for administering any funds coming to it from any source.

These would primarily go to paying the FAI subscription, and then to reducing the rents of the affiliated bodies in 116 Pall Mall.

If all this sounds complicated, it doesn't sound half as complicated as it has been in fact, for Peter Masefield and others have been working at it for more than three years, and even now it is not entirely buttoned up. But the goal is worth working for, because at 116 Pall Mall the new club has a 60 year lease at an extremely low fixed rent, and if all the bodies controlling all the many aspects of sporting flying can get together under one roof in the heart of the West End at a fixed low rent for the next 60 years, the benefits that will flow from this will be immeasurable.

SOME LONG-TERM EFFECTS OF THE SELF-LAUNCHING SAILPLANE

By MARTIN SIMONS

NOT even excepting the long distance runner, there is probably no sportsman more solitary than the solo glider pilot, once he has left the ground. He has, however, always in the past been dependent on some sort of organisation to get him off and to bring him back. It is probably because of this that the gliding movement has always been club-oriented.

A change towards commercial organisation is already apparent, particularly in the USA, where nearly 100 commercial gliding schools already exist, though many of these retain the club atmosphere.

The self-launching sailplane (SLS) seems likely to change everything completely. A divergence of interests between gliding and the SLS movement is not desirable, and it is not to be supposed that adapting competition rules to admit the SLS will be sufficient to prevent any breach. On the contrary, such a step is likely to encourage the development of the SLS, and more pilots will wish to fly them if the likely improvement in gliding performance comes about. Where do the gliding clubs find themselves in this situation?

It seems very likely indeed that before long glider pilot training will be done mainly with motor gliders. The advantages are tremendous, and the transition to a SLS rather than to an orthodox glider is clearly a very natural one. The newcomer to the sport will not fail to contrast the easy convenience of his powered training with the fumbling frustration of the winch or car tow. He is also likely to quickly realise that an aero-tow has severe limitations, too, especially when he finds himself grounded for lack of a tug pilot, or towed aloft by someone who cannot recognise a good thermal and waves him off in sink.

The newcomer will also be aware that it costs him valuable time and money to get to the gliding club, and he may, when he begins to think of private ownership, realise that there is no need for him to make this journey at all. He could buy a SLS and operate it from the ordinary aerodrome or even a big field nearest to his home. The fact that here he would be subject to air traffic rules and restrictions on his soaring would be of no importance, for with his motor he would be able to fly in any direction to reach clear airspace and fly back again in the same way later in the day. Certainly he might have to buy a multi-channel radio, but this cost would be more than met by his saving in travelling costs. Thus the SLS pilot is very likely to leave the club that trained him at the very time when his dedication and enthusiasm for the sport would at present tend to make him cleave closer to it. The club might retain the interest of its older members, imbued with

tradition and surrounded by old friends, but it would be short-sighted to imagine that some of these too would not feel the attraction of the newly forming syndicates based on city aerodromes, and drift away. This trend, once established, will continue, and it seems certain that before long the training activities too would move towards the ordinary aerodromes.

With a motor glider for training, an organisation could base itself on an established airfield: No worries about leasing the gliding site, no problems with accommodation, maintenance facilities all to hand, customers living locally or a bus-ride away, and every chance of attracting new clients from the power flying fraternity and their families or friends.

Meanwhile, the old established gliding clubs, usually in fairly remote places because gliders need clear airspace and open country for out-landings, will be unable to draw new trainees and unable to retain the keen pilots they already have. What answer can such clubs find?

In some cases, of course, the city is already coming to the club. As the suburbs sprawl ever wider, clubs who are at the moment fighting against encroachments all round, and above them, may eventually, if they can survive the interim period, discover they can adapt with perfect ease to the new conditions. But other clubs, will be forced to move or face a lingering death at their old sites. Unquestionably it will be better to move and adapt than to die.

The first step, it seems, would be for a club to set up a motorised training school at an aerodrome close to some large centre of population. This to begin with would be a small operation—a recruiting centre and a preliminary training base, the trainees moving out to the old site when the time came for them to convert to gliders. But it would be quite unsurprising to find these same pilots returning quite soon, with their own self-launching sailplanes, to the aerodrome where they trained. What had begun as an annexe of the club would thus grow until it became the club headquarters. The transition would hardly be painless and possibly some "purists" would continue to use the old site for many years. But the centre of gravity would surely

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shift steadily citywards as the proportion of self-launching sailplanes to gliders increased.

If, however, the clubs cannot or will not adapt to the SLS, it is impossible to believe that commercial gliding schools will fail to do so. In their case the growth points will be the same geographically, but, of course, different in spirit and intention. A pilot who has been trained commercially can feel no loyalty to a club, and if he takes up soaring seriously it will seem quite unnecessary to him that anyone should drive fifty or a hundred miles to the remote centre where some traditionalists still launch themselves by winch or tow car without any means of retrieving themselves. He will form his new group or syndicate in the suburbs, he will sleep at home o'nights, and meet the old-style glider pilots once a year at the annual ball or, if he is allowed to enter, at the Nationals. And, since he gets more time in the air, samples a wider range of conditions, flies when gliders at remote sites are grounded by poor local conditions, the chances of his winning the Nationals are high.

The point of this article will be lost if anyone supposes that the self-launching sailplane should be or can be effectively discouraged or banned by the gliding movement. The expansion of soaring has been badly hindered in the past by the hitherto inevitably slow training methods and the inherent difficulty of getting off the ground and home again after a cross-country flight. In addition, while gliding clubs are fine places for pilots they are usually thoroughly deplorable for wives and families. How many first-rate pilots have been forced to give up gliding for these and related reasons? The pilot of an SLS, based at a local airfield, can get home for tea every evening, he can take his family out for supper, can live a life at least as normal as the dedicated golfer, yet he can soar as well. Once the idea of the home-based SLS catches on there will be no stopping it and every reason for encouraging the development of the new techniques. If for any reason the present gliding movement will not or cannot adapt (where it should actually be leading), the new movement will nevertheless continue, a little slower perhaps because of our lethargy, but in the end it will come to dominate the sport whether we like it or not. It is time to join. (See also letter, p222.)

A FUN WEEKEND

By ERICA SCURR

I HAVE just returned from the 1971 Symposium on Competitive Soaring, held in the snowbound heart of Appalachia. Before someone "over there" decides to take another swipe at the serious, computerised, American competition pilot I thought I would let you in on what it was really like.

The Byars Snowball Fight, as the symposium was irreverently titled by a certain Southern wit who shall remain nameless, was held on February 13 and 14 at Mont Chateau, a resort lodge in the mountains of West Virginia, just north of Morgantown and 50 or so miles south of Pittsburgh.

For those able to take a Friday off, there was a seminar on "Low speed aerodynamics as applied to the design of modern sailplanes", given by Klaus Holighaus at West Virginia University. This was followed by an "Early bird" party. I arrived too late to attend this, so I shall start with breakfast on Saturday morning.

The dining room was filled with about 200 people, all of whom seemed to have met at some time and had obviously been starved of intelligent conversation ever since that meeting. I was confronted by the faces and voices of pilots, crews, familiar, remembered and famous, from all points of the compass. Conversation at this and all subsequent meals was simultaneously impossible, constant and rapid. It was as though everyone present was trying to absorb enough of the soaring atmosphere to last them until the first cumulus of spring appeared to destroy the gloom of the long cold winter.

The pilots ranged in age from 16 to 60-plus, flew everything from 1-26's to the Nimbus and had competition experience levels from zero to World Champion.

The management of the lodge had

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been well briefed on the Soaring Symposia mania for punctuality and breakfast was long over when Ed Byars introduced the first faculty member at 9am.

I am not going to tell you what George Moffat said about "Task strategy". I just think that if you don't read it up you will be sorry, and when you do you will wonder why all those other pilots are not world champions. The way the ideas were presented made them seem so common-sense and obvious that it is impossible to understand why we don't all fly that way.

A. J. Smith's lecture on "Airmanship and in-flight decisions" started with an almost Neave-like plea to the pilot to "have a good look round". Can you afford to miss the development of this theme into information, from one of the masters, on the making of weather assessments and the evaluation of the advantages and disadvantages of flight changes based on these assessments?

If you are in the habit of extensively polishing or sanding the wings of your glider before a contest you will be interested in the data collected by Paul Bikle on the smoothness of wings measured during recent performance testing experiments. It appears that the winners of the United States sanding contest are the wings of Ross Briegleb's Diamant 18 and Ben Greene's ASW-12. Mr. Bikle added, however, that he was still not convinced that the practice actually improved performance—it probably did more for the pilot's soul than the L/D, he said. After listing a number of other useful sailplane preparation exercises, Mr. Bikle's lecture concluded: "Above all, fly".

Bearing in mind the limited understanding some of us have of Reynolds numbers and lift co-efficients, Klaus Holighaus opened the afternoon's proceedings with an enlightening review of the criteria, both in terms of thermal type and strength, and sailplane requirements, used by the designer to give us optimum performance in modern competition gliders. The subsequent question and answer period brought forth some interesting comments on why the Nimbus works in Texas and the BJ-4 does not, and how Herr Holighaus felt about the Sigma project: "I do not believe in it."

Those US competition pilots (unfortunately a large number in 1970) who seem bent on the destruction of Klaus's creations were also catered for. Manfred (Fred) Jiran, a sort of travelling fairy godmother who will for about $1,000 wave a magic wand over your wounded bird, gave some general and very practical hints on how to assess and repair damage to glass-fibre sailplanes. Dr. Byars then introduced the "Ed and Fred Show", an hour-long videotape showing, in detail, the repair of the broken fuselage of a Kestrel. When asked if he would explain how the damage had occurred, Ed Byars gave the illuminating answer, "No".

The after-dinner speaker on Saturday evening turned out to be Bill Holbrook, who took advantage of a rare opportunity to introduce some behind-the-scenes members of the Soaring Symposia team: Sophie Holbrook, secretary, treasurer, co-ordinator of Ed and Bill, mediator and receptionist; Betsy Byars, co-ordinator of the ladies' programme and, just by coincidence, winning author of the 1971 Newbery Medal for children's literature; Dr. Lee Ransome, general electronic genius and keeper of the tapes from which the "Proceedings" are transcribed, and Gren Seibels, latest addition to the gallery of great authors published by Soaring Symposia, who had a few amusing comments to make about his publishers. Finally, as a balance to the World Height record holder on the faculty, Bill introduced one of the student body, joint World Distance record holder, Ben Greene.

The party began to break up when those of us not staying at the lodge realised that a "micro-meteorological" situation had resulted in the accumulation of about eight inches of snow. We had to drive a mile down one mountainside and up another to reach the country club where we were staying.

Getting up at 6.30am on a cold, windy, winter Sunday morning in the mountains of West Virginia may just seem reasonable if you are wave hunting. It is difficult, however, to convince yourself of the necessity of a 7am breakfast and a classroom start at eight. Nevertheless, I don't think anyone was late for the panel discussion on "Class competition", a controversial subject close to the heart of every competition pilot in the US. Be warned: the insularity exhibited by President Nixon in his trade and foreign policies is beginning to show in the American soaring fraternity. This discussion and the following one (centred around the American Design Competition and including some pleas from Dick Schreder for a real policy on the Standard Class) suggested to me that both pilots and designers are beginning to feel that it is time that "the American way" stopped trying to compromise with European ideas.

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The weekend concluded with a very special treat, a private showing of a feature-length colour documentary starring Gleb Derujinsky and George Moffat flying in the 1969 Sugarbush, Vermont, regionals and the Marfa Nationals. This is certainly a masterpiece as an expression of our sport. However, I am unable to be objective about the commercial aspects of such a production so I can only suggest that, if you would like to see it, someone with influence at the BBC should at least alert their colour documentary people to the existence of "Charlie Item and Double X" and its producer, Bob Drew.

I fully expect that a month or so from now (February, 1971), you will be able to purchase the "Proceedings of the 1971 Symposium on Competitive Soaring" for the new pence equivalent of $5.00. When Bill Holbrook sends you your copy, you can read, mark, learn and inwardly digest all the weighty information imparted by this year's faculty. But I'm afraid you've already missed all the fun!

Soaring Symposia expects the "Proceedings" to be available about mid-summer.

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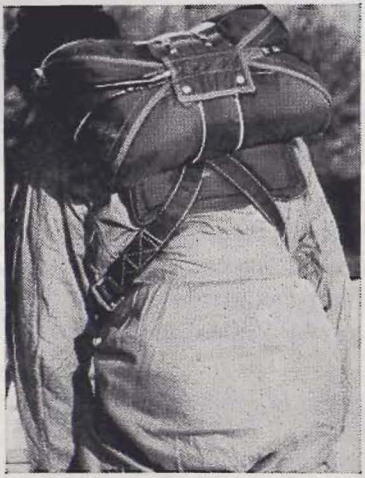
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MY HORIZONS

By RHODA PARTRIDGE

NO DOUBT about it, gliding's widened them (my horizons). Since I started gliding 10 years ago I've set up a flourishing studio pottery business (to pay for my gliding) with the result that I'm the astonished owner of Broomstick ("the most beautiful K-6E the Schleicher works ever turned out"). I've been supersonic (no, you fool, in a Hunter that was going downhill at the time). I've been gliding in France and Italy and Germany. I've met a lot of really super people (and a few right bastards). I've had some remarkable receptions when I've landed out. At the end of my Silver C distance I fell among friends and they gave me lots of whisky, followed by dinner and lots of wine followed by lots of brandy. Bob arrived with the trailer at 9.30, and when it came to de-rigging all I could do was lurch around the glider giggling. In contrast was the maddened farm manager who came charging across the recently cleared hayfield I'd landed in and greeted me thus: "I don't know how you got that damn thing in here, but you're not having it out." He didn't know I could take my wings off and he was unhappy about his gateway.

This year they got widened again (my horizons). So there I was in this Television Studio (wearing an incredibly cunning make up and false eyelashes) drooped tenderly over this gorgeous young man (also beautifully made up) who was seated in the front of this K-13. "If you push it that way," I said wisely, "that wing goes down," and he gazed trustingly up at me as though I know the lot. I was surprised, actually, that they didn't pick one of our feminine pundits who really do know the lot, but it seems that it was the middle-aged mother-of-five image that they wanted. I only hope that the result of the programme won't be the saturation of British gliding facilities by great hoards of middle-aged mothers of five.

It was a nice programme to do. A chat about what a glider is (remember when you didn't know?). A look at the beautiful K-13 Charles Lagus and John Strugnall had brought over from Booker. A commentary on some excellent film of flying in progress at the Mynd, including a really homesick-making bungy launch which, I was delighted to see, they showed twice. I got my fare to London and back, a car out to Elstree and back, twenty pounds and a pair of false eyelashes, and I really enjoyed doing it.

ATV Studios at Elstree are quite extraordinary: A cross between Hampton Court maze and a huge school for preoccupied adults. The studio (I'd never seen one before) struck me as strangely beautiful. Lofty and shadowed and enormous, like a temple or a cathedral. Pews for the congregation (we didn't have one, of course). Lots of softly moving priests and acolytes and servers, and an absolutely delightful bishop they called the floor manager. The god in that particular studio was David Foster (an excellent character who's flown at the Mynd and understands the blisses of bungy launches). I think they call him the production manager, and when we were doing the run through he disappeared to somewhere invisible on high and controlled priests, acolytes, etc, by some magical silent method. One of them would suddenly get a glazed listening look (like Joan of Arc), motion me to shut up, and say "yes David, but . . .". To my horror, when I was standing on my mark waiting for the first run through to start, my heart suddenly began bounding about in my bosom like a rabbit in a trap. I suppose they're used to people being scared, but I was really impressed by the care and kindness with which they gentled me through what could have been an ordeal. Specially the bishop. I really went for the bishop.

So what about the programme? How

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did it go? I wish I knew. When it was shown I was at Aosta (Italian mountains near Mont Blanc) flying a dreamy, borrowed, brand new, Open Class Cirrus and having them widened (my horizons). So I didn't see it. But I'll tell you something a bit odd. Since I've been home I haven't found one single person who did see it. Do you suppose I dreamed it all up? One of my Walter Mitty-style fantasies ("So there I was at 30,000ft in this Nimbus, photographing the second turning point on my two thousand kilometre triangle"). But no, it can't have been like that. ATV wouldn't have sent a cheque. Well, anyhow, if you saw it and I was super, do be a love and tell me! And if I was quite embarrassingly frightful just keep quiet about it. I'd so much rather not know.

WAVE FLIGHTS SURVEY—part 1

A MAJOR feature of our first report of our wave flight collecting scheme (S & G, April) was the emergence of two splendid wave days at Portmoak on March 9 and 10, during which pilots exceeded 25,000ft. At the time of going to press, it appears that Arthur Doughty made the best height, a figure of over 27,500ft which constitutes a new site record. Steve White also exceeded 25,000ft. There were several other flights which exceeded 20,000ft, including one by Tom Bradbury, who has written the two days up for us. Notes by several of the pilots on their flights on these days have been appended to Tom's article.

Although no details are available, it is understood that Sam St Pierre has once again suffered the frustration of flying in wave from Dishforth to Portmoak, only to arrive five miles east of the site and unable to see it. He returned, to achieve once again a 500km out-and-return without a turning point photograph. This was on April 18.

We were particularly pleased to receive reports of wave flights from Cambridge and Booker—sites not normally associated with such conditions, and here we would like to emphasise that we are interested in details of all wave flights, whatever their magnitude. Both Paul Loewenstein's and Graham Saw's flights proved that it is worth spending a few bob—if one is still legally permitted to use the term—on a higher tow to contact.

Wave forms are available from the BGA office.

WAVE FLIGHTS

Site	*Date*	*Name of pilot*	*Height wave contacted (ft)*	*Absolute height (ft)*
Booker	11-4	G. P. Saw	4,030	4,620
Cambridge	10-3	P. Loewenstein	2,950	4,250
Camphill	21-3	E. Boyne and B. Platt	900	5,500
Hedley	28-3	J. Little	2,000	7,700
		J. Williamson	2,000	3,000
		R. Corker	2,000	4,500
		J. Greenwell	2,000	10,200
		R. Robson	2,000	10,500
		M. Haley	2,000	5,500
		J. Clark	2,000	9,000
		D. Pattison	2,000	8,000
		J. Head	850	2,000
		R. Cawthorn	950	2,000
		D. Driver	900	2,000
Mynd	17-4	D. Brown	800	3,000
	18-4	D. Brown	700	8,000
Portmoak	2-3	P. D. Boyer	3,370	13,520
	5-3	P. D. Boyer	5,000	8,000
	7-3	A. W. Doughty	2,860	4,660
	9-3	D. W. Evans	1,550	22,170
		I. H. Hobday	1,500	8,800
		A. W. Doughty	2,500	27,500
		R. J. Buckels	4,000	14,800
		P. D. Boyer	3,000	18,650
		T. A. M. Bradbury	3,000	19,000
		J. J. Ellis	1,500	23,650
		B. Kirby	1,950	13,250
		S. White	3,000	25,300
	10-3	I. H. Hobday	1,700	13,800
		A. W. Doughty	1,500	16,500
		T. A. M. Bradbury	3,000	23,000
		J. J. Ellis	1,000	8,500
	12-3	A. W. Doughty	1,700	5,100
		J. J. Ellis	1,500	12,500
	21-3	J. O'Donnell	900	4,000
	26-3	R. J. Lyndon	4,000	16,600
Shobdon	16-3	J. Atkinson	4,325	8,000
	17-3	K. A. Harrison	4,500	7,500
	23-3	K. A. Harrison	3,500	5,500
	24-3	K. A. Harrison	3,000	3,200
	25-3	K. A. Harrison	4,000	6,100
	26-3	K. A. Harrison	5,200	15,000
Usk	12-4	I. H. Shattock	3,200	4,200
	17-4	I. H. Shattock	4,000	10,800

THOSE PORTMOAK WAVES AGAIN

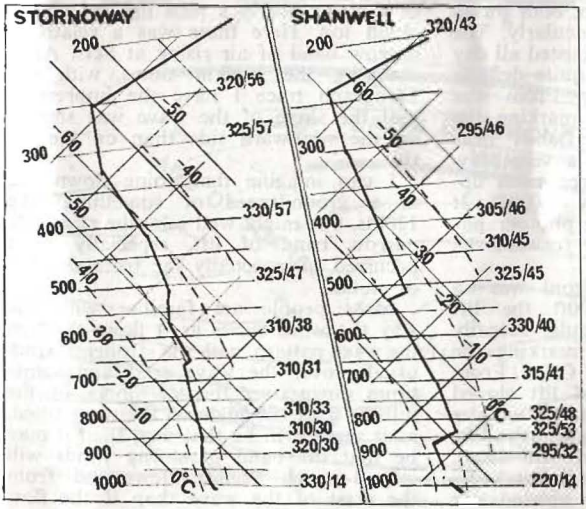
By TOM BRADBURY

THIS is a brief account of two consecutive wave days at Portmoak, March 9 and 10, 1971. On both days the waves were soarable above the 5km level and several people went high, the best height being about 27,500 feet on the 9th; this was achieved by Arthur Doughty in a Skylark 4.

The surface charts for midday on the 9th and 10th both show high pressure west of Ireland with a north or north-westerly airflow across Scotland. On the 9th, a cold front moved south across Portmoak soon after midday. The front trailed back towards southwest Iceland, and next day a small warm front wave developed and ran down over the western half of Scotland during the afternoon. Satellite photos showed a considerable width of cloud associated with these fronts each day, but the Scottish highlands bore the brunt of the weather and to the lee of the Grampians there was always some sort of slot for people to descend through. At first glance the charts hardly suggest two such good wave days, but the front did not in fact change the essential character of the air, except in the lowest 5,000 feet. On both days the winds and temperatures aloft were fairly similar. The upper winds were from the sector 330 to 300 degrees, with speeds increasing upwards from about 35 knots at 10,000 to 50 knots at 30,000 feet.

These speeds are for the undisturbed flow upwind of the mountains. Once the wave flow developed the wind speed altered considerably in different parts of the wave, and the effect was surprising. More of this later.

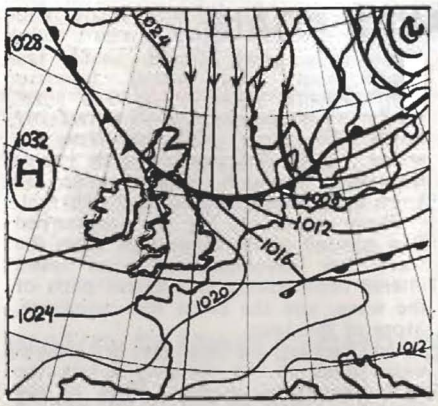
On Tuesday the 9th, the best waves were found in the morning before the cold front came through. Most of the climbs were started from above the old airfield at Balado. Earlier that morning an unknown pilot announced on the radio that he was in snow, and it was blowing at 70kts. Since it was evidently fine for miles around Portmoak we supposed the call came from the wilder parts of the Highlands, and were not perturbed. However, it was disconcerting to hear Portmoak radio at 13:30 saying that the cloud was on the Ochils and snow showers were reducing visibility. Luckily this did not last, but at least one pilot had an interesting ride home. The listeners heard how his descent below



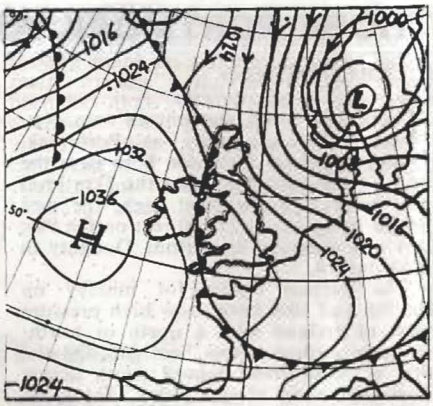
MARCH 10—12.00 GMT.

Observed winds entered, at various pressure levels

700 mb approx 10,000ft
500 mb approx 18,300ft
300 mb approx 30,000ft



9 March 1971



10 March 1971

cloud had brought him out over some (unidentified) town. This was followed by a rather prolonged and ultimately triumphant scrape home along a lesser range of hills. It was at times hard to be sure of one's exact position when the only identifiable landmark was the Firth of Clyde 30 miles away.

On Wednesday the 10th, there was much more space between the clouds until late in the afternoon. The cloud pattern was unhelpful and the waves were weak in the morning. The surface wind was back to WSW, nearly at right angles to the upper winds. Later on, both waves and clouds developed spectacularly. The interesting feature which persisted all day was that the waves had a quite definite tilt forward with height. From the scruffy little bar of cloud marking the wave to the lee of the Ochils near Milnathort, to the top of a very slow climb, we had to move three miles upwind for a gain of only 6,000ft. It was only after checking the photographs that I realised just how far forward the wave sloped.

This tilt to the wave front was so marked that above 20,000ft the lift just ahead of one big lenticular actually overlapped the low cloud marking the next upwind wave abeam of Crieff. From bottom to top the area of lift sloped forward a good seven miles. No wonder we find these high lenticulars misleading when trying to work the wave low down.

These tilted waves seem to be markedly symmetric. The lift on the upwind side may be greater than the sink on the lee side, but if so the effect is balanced by the much greater width of the sink.

Going into wind between West Lomond and Bridge of Earn the distance between waves was about seven miles. For six minutes, the rate of sink was fairly constant and averaged 8.3kts. Assuming that the Skylark 4 sinks at about 5kts at a true airspeed of 80kts, the air was descending at 3.3kts. Arriving over the bar of cloud it was disheartening to find no lift. As before the lift was well forward of the low cloud, the best of it being nearly a mile upwind of the cloud top. Here there was a relatively narrow band of air rising at 6kts. After checking the inflight notes with the barograph trace I have the impression that the slope of the wave was steeper on the windward side than on the lee side.

I can imagine that going downwind at a groundspeed of something like 120kts, one might well miss the relatively narrow band of lift, especially if it occurred unexpectedly far from the bar of cloud.

Most people are familiar with the way the wind varies as it flows through the wave pattern, with the strongest winds usually over the wave crest and sometimes down over the lee slopes of the hills as well. If one draws the wave tilted, as it seemed to be that day, then it may be that the band of strong winds will extend much further downwind from the crest of the wave than if the flow

was perfectly symmetrical. I think I ran into this near Loch Lomond when trying to push forward into wind at a height of 19,000ft. It took a little while to appreciate that I wasn't getting anywhere at an IAS of 80 knots, and increasing the speed to 110, which should have meant about 140 true, did not improve matters. One doesn't expect to see much progress over the ground, but when one isn't gaining on the clouds either it becomes disheartening. Both clear vision panels were open because the canopy was frosted over, and the only result of 7,000ft of noisy descent was to disperse about two square feet of frost. Forward progress seemed negligible, the cloud top was about 12,000, and the control zone not far downwind, so it seemed wise to crab across wind to the wave I had left so light heartedly a few minutes earlier.

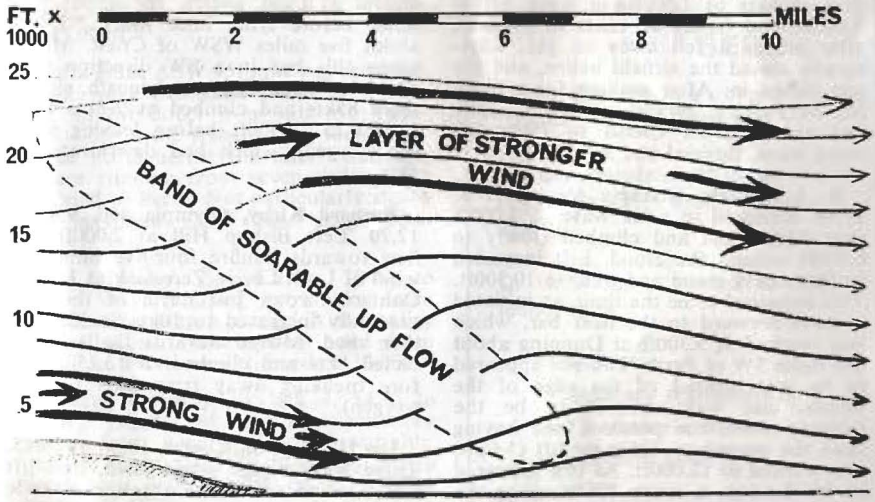
Even this wave wasn't up to much at first, but became magnificent further east. More than one pilot made good speed along it, with 4 knots up at an IAS of 80 knots in places. Even including the fumble at Loch Lomond it still only took 45 minutes to cover the 105kms to Leuchars where the wave seemed to be blocked off by a different line of cloud.

To conclude, I have tried to put all the features of the waves on March 10 into a single sketch showing the apparent flow pattern. These streamlines also seem to fit some of the features previously described by the resident experts at Portmoak. The shape bears some resemblance to a few of the various computer drawn streamlines in having a tilted wave front and similar distribution of horizontal wind speed, but computed patterns generally show the waves becoming more symmetrical further downwind. The rather distorted shape probably only occurs close to the mountains, and could be due to interference from waves of different length.

PILOTS' REPORTS—MARCH 9

John Ellis, ASW-15, time not recorded. Initial climb in secondary wave from hill-soaring Bishop Hill; transferred to primary at about 10,000ft. Reached 23,650ft. Climb timed at 1,000fpm between 16,000 and 19,000ft.

P. D. Boyer, K-8B, 10.45 to 14.45. Picked up from two puffs of cloud in likely wave location. Tracking ahead of this, reached sink and turned to find large black cloud formed behind. Thermalled up under the centre of this over Balado airfield, with all the usual indications of a strong thermal. Reached



Airflow diagram for March 10

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cloudbase and tracked to leading edge. Climbed in secondary wave towards Falkirk from Ochils to 5,000ft at 4kts, then at 6kts to 7,000ft, in weak lift to 9,000ft, and finally at 12kts to 14,000ft, after which it fell away to ½kt. Rain-squalls closed the airfield below, and the gap closed in. After making for a landing at Falkirk, picked up wave again, and soared from Cleish to Portmoak using wave, thermal and hill lift.

R. J. Buckels, Olympia 460, 15.45 to 17.45. Released in weak wave at 4,000ft over Milnathort and climbed slowly to 6,000ft around the cloud. Lift increased to 5kts above cloud and went to 10,300ft. This appeared to be the limit, so initiated a move forward to the next bar, which was reached at 5,300ft at Dunning about five miles SW of Perth. This bar appeared to be just upwind of the edge of the Ochils, and was assumed to be the primary wave, the previous one having been the secondary. Stronger lift (5-6kts) was worked to 12,000ft. As this appeared to be the top, a move WSW along the wave was initiated, speed being adjusted to give zero sink as lift was encountered. At a position about two miles WSW of Auchterarder, the bar tended to turn NW, almost at right angles, for about four miles before lying once more NE-SW, about five miles WSW of Crieff. Moved along this bar in a SW direction until over the largest strato-cu beneath, slowed from 85kts and climbed at 7-8kts from 11,000 to 14,800ft before leaving wave (no oxygen), which had deteriorated to 5kts.

Bernard Kirby, Olympia 460, 9.45 to 12.20. Left Bishop Hill at 2,000ft and flew towards bonfire four-five miles upwind of Loch Leven. Zero sink at 1,800ft. Contacted rotor just north of this; lift gradually increased to 10kts at 10,000ft, then died. Moved towards Dollar, contacted 8kts and climbed to 13,250ft before breaking away from 5kts lift (no oxygen).

Ian Hobday, Std Cirrus, 18.00 to 19.15. Three wavelengths investigated, best lift 2-4kts, wind northerly, absolute altitude 8,800ft.

David W. Evans, Olympia 463, 9.45 to 15.00. Contacted from creep-out from Bishop Hill, one or two miles SW of Balado Bridge airfield, after hearing report from Steve White. Six to 8kts lift at its best. Maximum altitude, 22,170ft.

Arthur Doughty, Skylark 4, 10.30 to 13.45. Entered wave about 12.20, discovered on exploratory probe from the west end of Benarty Hill. Average strength 4-6kts with short spell at 6-8kts. One wave system only used; explored to southwest to Kincardine Bridge. Climb abandoned at about 27,500ft, when slot started to close in, although still climbing at 3kts.

Steve White, Std Cirrus, 10.00 to 13.30. The wave was contacted upwind of Bishop Hill near Balado at 3,000ft asl, with lift very weak and broken until 6,000ft. There was steady 4 becoming 8kts in the 10-20,000ft band. After discontinuing climb three other upwind wave systems were used. Wavelength about six miles. Wind relatively light even at height.

MARCH 10

David W. Evans, Olympia 463, time not recorded. Wave contacted over Glenfarg from end of cloudstreet, breaking off at 12,350ft because I had no oxygen. There was even stronger wave-lift between Dollar and Kinross, but had to leave it at 13,000ft.

John Ellis, ASW-15, time not recorded. Weak wave contacted north of Bishop Hill almost direct from hill lift. Taken to 5,000ft in the Balado area, then transferred north across the hills to another system running from seven miles south of Crieff to Perth. Not particularly strong lift—maximum 2kts. Best height was 8,500ft.

Ian Hobday, Std Cirrus, 10.00 to 15.00. Wave marked by smoke from field fire forming a wedge in the valley over Kinross. Wave system used from Dollar to Perth, and climbed to 13,800ft.

Arthur Doughty, Skylark 4, 14.30 to 18.10. Discovered from exploratory probes from Benarty Hill. Lift variable, mainly about four to six knots, but a short spell with needles on stops. Best height, 16,500ft.

Steve White, Std Cirrus, 14.30 to 16.30. Together with an Olympia 460 the north face of Bishop was left at 2,000ft in zero sink, eventually arriving over the river Tay. Wave cloud was forming all around over the Ochils and a climb to 10,000ft was made where sight of the Oly was lost. Continuing to 15,000ft one could see wave extending from south of Dundee in the east to Loch Lomond and beyond in the west. Trading climb for speed flying along the edge of the wave, at times at max permitted without losing height, Loch Lomond was reached after 40 minutes, an average of 150km/h. The wave extended further now in a SW direction to Macheihaish and on to Ireland. However, turning south the return leg was flown along the wave to Portmoak which was reached at 9,000ft.

On approaching Loch Leven, the wave suddenly collapsed within minutes and a hurried descent with full airbrakes had to be made before the gap closed in.

This was the largest wave I have ever used and one that had both north and south of the wave 8/8Sc. The total distance of 200km was flown in two hours including the initial climb.

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500km TRIANGLE SMASHED IN APRIL

THE 500km triangle in Britain was rather like the 4-minute mile. For many years, it was a beckoning candle beyond the reach of the day's last thermal, and it was only in 1968 that the first one was achieved, by Brennig James in a Diamant 18. In June last year, Bernard Fitchett repeated the feat, at a slightly faster speed, in a Cirrus.

Then, on the last, bracing, Wednesday in April, three pilots flew 500km triangles. One, airline pilot Steve White, rounded his 505km course at about 77km/h, a speed comfortably higher than Bernard Fitchett's previous record 60.9km/h. Steve's speed, by the way, also exceeds that of the United Kingdom 300 and 400km triangles. He flew a Std Cirrus from Booker. The others, Anne Burns and Alan Purnell, were launched at Lasham, each in a Cirrus.

The flights were a fitting climax to what was probably one of the most stimulating Aprils of all time. Saturday, April 17, provided an inkling of what was to come. Several pilots from Lasham (Hugh Hilditch, Alan Purnell, Wally Kahn and Anne Burns) completed 300km triangles, while Chris Garton achieved a distance of 440km on a 500km triangle attempt. His turning points were Hereford and Huntingdon, and he landed at Henley.

The next "cracker" dawned on Tuesday, April 20. Four pilots from Lasham completed 300km triangles (Guy Butler-Madden, Chris Lovell, Nigel Stevenson and Barton Docker) while Steve White made a nice warm-up flight with a 300km triangle from Booker which approximately equalled Nick Goodhart's UK record. The calibre of the day is emphasised by John Jeffries, who whirled round a 100km triangle from Dunstable in 54 minutes (111km/h). John would have taken George Burton's record by more than 15km/h had he been carrying a barograph.

His account of the day is interesting. The 54 minute flight was the second of three in his ASW-12 round the triangle Shepherds Furze - Olney - Dunstable. He flew between 90 and 100kts throughout the flight, and only used three thermals: His initial climb to about 4,500ft, which enabled him to round Shepherds Furze at 2,500ft, a second climb to a little under 5,000ft just after the TP, which enabled him to pass Olney, after which he took a short climb of 1,000ft before gliding back at the placard speed. The thermal strength according to the averager was about 6kts, he said.

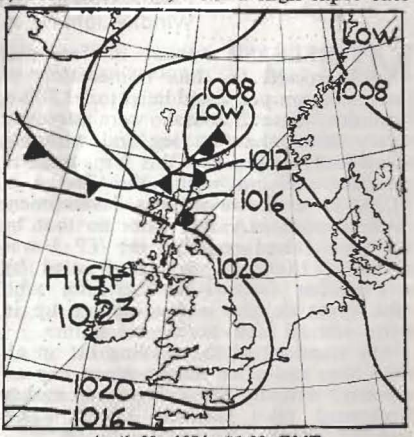
There was no wind, and about 4/8 to 5/8 shallow cu. These were arranged in lines, some running east to west and others, randomly, north to south. It was possible to "motor" along the lines as though they were cloud streets. John thought that it was an unusually good windless day, and that a 500km triangle would have been possible at a record speed.

It was eight days later that the record was smashed.

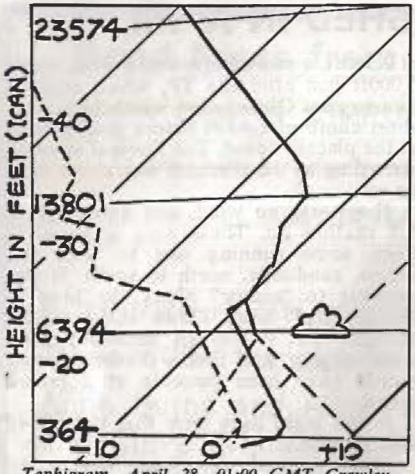
Mike Garrod described Wednesday, April 28, as "another classic case of April snow followed by exceptional soaring weather within 48 hours.

"On April 26, there had been heavy snowfall in southern England, the cause being a small depression moving up the English channel. This receded south-east, and an Icelandic high moved down over the British Isles by the 28th.

"Deep, unstable air came under the influence of the anticyclone, resulting in the formation of an inversion by Wednesday morning at around 7,000ft. By the afternoon, it had lowered to about 5,000ft. However, with a high lapse rate



April 28, 1971, 06:00 GMT



Tephigram, April 28, 01:00 GMT Crawley

beneath the inversion and relatively low surface humidity, cloudbase formed about 3,000ft mid-morning, rising to 6,000ft in the afternoon. Cloudbase amounts remained 3/8 or less throughout the day and, combined with light winds, made the perfect situation for high speed closed circuit flying."

Steve's account of his flight is below. Alan Purnell flew the 510km triangle Culmhead-Bramscote-Lasham in 9 hours 10 minutes, while Anne Burns flew 510km round the course Wrekin-Stamford-Lasham. Hugh Hilditch, in an SHK, tried a 500km out-and-return to Lake Ballimore in North Wales, but had to turn back before the turning point, although his total distance flown was well over the 500km mark.

Among other flights were several 300km triangles, including Geoff King and Roy Cross from Lasham, Vera Wates and Mike Hutchinson from Booker and Stan Easton from Swanton Morley. Frank Pozerskis completed a 200km triangle from Dunstable, just failing to beat the existing UK record by the necessary margin, while Brennig James, who started late from Booker, flew four times round a 100km triangle.

It was natural to suppose that after such splendid April flying, that May-day would arrive as an anti-climax. Not a bit of it—Justin Wills took off from Swanton Morley in his Std Libelle and flew to Penzance on the heels of a brisk north-easterly, to cover a distance of about 540km, the second longest flight in Britain.

* * *

HOW I DUNNIT

By STEVE WHITE

Date:—Wednesday, April 28
Task:—505km triangle, Yeovil, The Wrekin, Booker
Wind:—Light NE in south and east, light NW in west and central

MY RELEASE was at 10.45am and I crossed the line immediately at the maximum permitted height of 1,000m. Cumulus, base 3,500asl, were streeting nicely down the first leg and with my speed-to-fly ring set at 3kts I made good progress, arriving in the Yeovil area at 12.30. Here, however, overdevelopment made conditions rather poor so that by the time I had rounded the TP I was down to 1,000ft. I was confronted by a Phantom from RN Yeovilton who took great delight in beating me up in both vertical and horizontal planes.

My standard of thermalling hit an all time low, and after what seemed like an eternity, actually 20 minutes, a rather frightened pilot reached 3,000ft again and set course.

By Bristol I was back in a confident frame of mind. Although no longer streeting, cloudbase had risen to 4,000ft asl. However, my spirits were soon damped when I realised that sea air from the Severn Estuary had completely killed convection over a 15-mile gap. I was forced to skirt up to the East bank of the Severn to Gloucester from where, by taking a climb in cloud to 6,000ft (my highest point of the flight and my only cloud climb) I was able to reach Ross-on-Wye beyond which conditions improved again.

Thermals were now rough and broken but of the order of 4-6kts, with plenty of sink, however, in between.

By 14.30 I was about 15 miles south of the Wrekin and could see a pro-

gressively thickening layer of cirrus cloud approaching from the north. A climb to 4,000ft under the last rugged cumulus saw me set course for the second TP, which I reached at 1,000ft, below the level of the summit. The upper cloud had obviously damped down all thermal activity. The wind which was now a very light NW proved just sufficient for me to hill-soar and I soon regained the height of the hill, took a few hurried camera shots, and turned downwind towards the chimneys of Coalbrookdale.

I had expected some turbulence in the curl-over behind the hill, but, in fact, all hell seemed to have let loose and the vario hit 10 down and stayed there. My courage, already at a low ebb, was further reduced by a distinct lack of landing areas among the slag heaps and chimneys. In fact, there was absolutely nowhere to land. A hasty call was answered by No 44 who relayed for me. Thanks, Alf! I reached the chimneys at about 500ft and after a very rough, dirty and slow climb, I eventually reached 2,000ft from where I set course for better conditions to the south. From now on, the last leg was an absolute joy, and despite a number of "blue patches", I was able to work a height band between 2,500 and cloudbase, which was now at 5,000ft, with my speed-to-fly ring set at a confident 4kts. I crossed the finish line at 17.17 after a well guessed final glide from Oxford. Yes, my calculator had ended up under my seat. Elapsed time was 6hrs 32min.

CONCLUSIONS

1. My decision to go downwind on the first leg proved to be correct, so that despite a rather low cloudbase I could still make good progress under the streets.
2. I would have done better to have bypassed Bristol to the east and to have kept further inland over Nympsfield before turning west across the Severn. This would have kept me out of the influence of sea air. Even quite large angular deviations from track give only a small increase in distance.
3. I was extremely lucky not to have ended up a wreck among the chimneys of Coalbrookdale.
4. By careful planning I succeeded in getting a small but significant tailwind on two legs (the first and the last), and together with a ruthless disregard for anything less than 4kts I was able to maintain a good average.
5. Although plentiful, thermals were only moderate in strength. Cloudbase started at 3,500 and finished 5,000ft asl.
6. I arrived back at Booker at 17.17. Gliders were still airborne at 19.00. I feel sure I could have started an hour earlier. A 700km triangle next time?

NATIONALS PREVIEW

Open/Standard Class—RAF Newton, May 29 to June 6
Sport/Club Class—Husbands Bosworth, June 12 to 20

THE National Gliding Championships 1971 are likely to prove one of the most important of the last decade. Not only will the results of the four classes have a strong bearing on the selection of the British team for the World Championships, to be held in Yugoslavia in 1972, but the efforts of two *hors concours* pilots in the Sport and Club class championships will be watched keenly throughout the gliding movement.

The first, Ian Strachan, is planning to fly an SF-27M motor glider *hors concours*. He hopes that experience of flying the machine at Husbands Bosworth will help to provide guidelines for rules governing the future entry of motor gliders in open competition.

He plans to operate the machine in a self-launching capacity on some days, and on others will have an ordinary aerotow. On the self-launching days, he intends to be witnessed at the dropping zone by an observer in a tug. Although he will be able to restart the engine in flight, should he touch the ignition switch in flight after he has switched off at the dropping zone, he will automatically score no points. If the field in which he finally lands is big enough, he will retrieve himself, but if he wants a re-light after landing out, he will be retrieved by road.

On the days when he is aerotowed, he

will probably put the engine's plugs in his pocket so that he will not be able to start the motor in flight. The two methods, Ian says, are designed to see if he experiences any differences in mental attitude when flying in the non-restartable configuration compared with the restartable configuration.

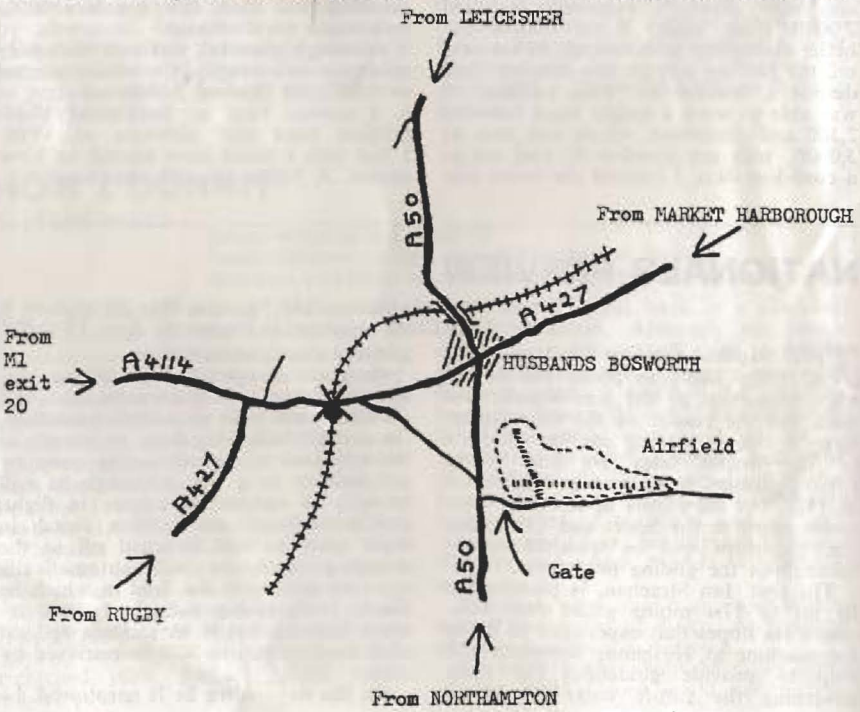
Ian estimates, from flying experience so far, that the SF-27M has a performance similar to that of the metal-spar Dart 15.

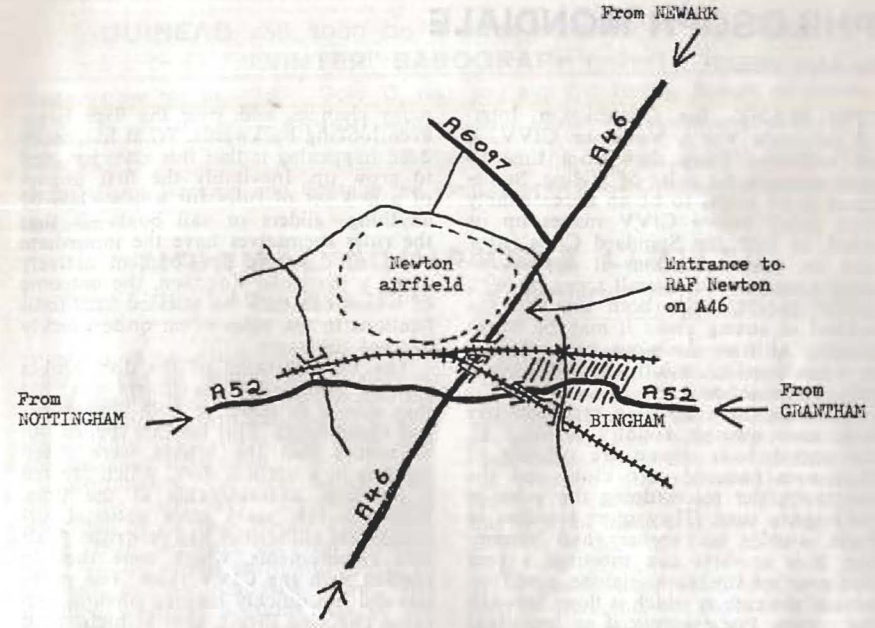
Although John Williamson, last year's Sport/Standard Class Champion, will defend his title at RAF Newton, near Nottingham, this year, he is also hoping to fly the new British designed Torva Sport 15M sailplane *hors concours* at Husbands Bosworth. This machine, if it proves successful, could provide a boost to the renascence of the British glider manufacturing industry initiated by the reborn Slingsby Sailplanes.

It must be emphasised that this year there are four separate classes; pilots at RAF Newton are able to fly in the Open or the Standard class but not both, and pilots at Husbands Bosworth in the Sport or Club class but, again, not both. The Open and the Standard class will both be scored on a non-handicapped basis (and may, in fact, be set separate tasks), while machines in both the Sport and Club classes will be scored on handicap. Scores in the Open and Standard classes will, however, be recalculated on handicap for rating list purposes.

Forty-four pilots have been accepted for RAF Newton, and 44 for Husbands Bosworth. The number has been increased from the original maximum of 40 as a result of some entries not being received in time as a result of the recent postal strike; some pilots whose entries arrived after the deadline have thus been accommodated.

Apart from the *hors concours* entries, there are no new types of glider making their appearance this year, although a 19m version of the Kestrel will be flown





by George Burton. Flying in the Open class, he will renew his battle with champion John Cardiff, who will again be flying the ASW-12. In all, eight of the nine leading pilots in last year's Open class will be competing at RAF Newton. Bernard Fitchett (Cirrus), Mike Costin, Cirrus) Frank Pozerskis (Cirrus) and Alf Warminger (Phoebus 17) will be flying unchanged machines in the Open class, while Ralph Jones (Std Cirrus) and David Ince (LS-1c) will compete in the Standard.

The three highest-placed pilots in last year's Sport/Standard class will also fly at Newton: John Williamson (Std Libelle) and Mike Garrod (ASW-15) in the Standard class, and Barrie Goldsborough (Diamant 18) in the Open. Much speculation will centre on how Barrie, so successful with the Sky and the Dart 17R, will fare with the Diamant.

Con Greaves, a member of the Marfa team, will be flying the BS-1 in the Open class, while Andy Gough will fly a Std Cirrus. Nick Goodhart also returns to the Nationals, flying a Std Libelle.

Among pilots flying in the Sport and Club classes at Husbands Bosworth are Mike Smith (who flew his Dart 17R to third place in last year's Open class), Stuart Walker, "Zot" Zotov and Steve White.

Three women pilots will be competing: Anne Burns (a former national champion) in the Open class, and Angela Smith (who won last year's Booker regionals) and Pamela Shipton in the Club class.

Most of the machines entered in the Open class have a handicap of 84, while those in the Standard class bloc fall into two groups—gliders like the Std Libelle, ASW-15, LS-1c and Std Cirrus with a handicap of 88 and a batch of K-6E's with a handicap of 96.

The Sport/Club class at Husbands Bosworth is perhaps the closest the British gliding movement has come so far to a "uniform-performance" Nationals. The handicap ranges of machines entered in the Sport class is from 88 to 90 and in the Club class from 96 to 100, with one glider at 102.

Birmingham Guild Ltd plans to exhibit the prototype BG-100/13.5m (S & G, Feb 71) at Husbands Bosworth at the weekends.

PHILOSOPH MONDIALE

By ANN WELCH

TO MANY, the Commission Internationale Vol à Voile, or CIVV, is an unknown thing that from time to time changes the rules of gliding. Sometimes there seems to be an unreasonably long delay before CIVV makes up its mind, as with the Standard Class rules, and on other occasions it appears to jump ahead of the overall scene, as with motor gliders. Since both are still the subject of strong views it may be worth looking at how decisions are achieved in a multi-nation, multi-language, voluntary, organisation.

CIVV is made up of a representative from each member country of the FAI, the parent body. Some are officials of their own national aero clubs and the rest are glider pilots doing the work in their spare time. They meet together in Paris, usually in February and November. It is at these two meetings a year that most of the work is done, and they control the rate at which it flows through the system. For example, if an important paper is circulated before the November meeting, it would be fully discussed at that meeting and recommendations agreed. Delegates then return home, talk over the recommendations with their own national aero clubs, and in February meet again to consider controversial points and to take decisions. The time scale to deal with a single major item covers, therefore, the best part of a year. If, however, delegates come back with major queries or disagreements, it may not be possible to take the final decision until another round of talks back home have been held, with the result that now about 18 months will have passed. This may appear to be a long time to decide on changes, but in fact, it rarely causes difficulty. It is more important that the matter has time to be fully considered.

Generally the most critical item as regards timing is the World Championships, so that the new organiser will have as much time as possible to get through the mammoth amount of work involved.

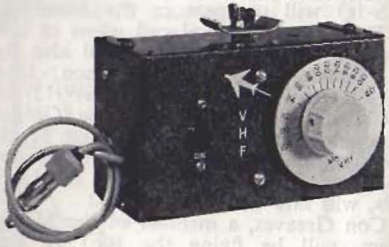
Perhaps the most difficult problem in recent years has been the Standard Class rules, with CIVV being accused of being unable to make up its mind, making too many changes, and, over the flaps issue, even looking backwards. What has really been happening is that this class has had to grow up. Inevitably the first impact of a new set of rules for a new class of anything—gliders or sail boats—is that the rules themselves have the immediate effect of directing development actively along a particular direction, the outcome of which can only be guessed at. Modifications to the rules often quite quickly become necessary.

The first intention of the dive brakes rule on Standard Class gliders was that they should be good for both approaches and cloud flying. This became spelled out to ensure that the brakes were speed limiting in a vertical dive, which created a problem, unforeseeable at the time. Within a few years some national airworthiness authorities had re-written their own requirements, which were then in conflict with the CIVV rules. The problem did not quickly become obvious, because checking dive brakes at high speed

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is not a thing which can sensibly be done by contest officials at the start of a championship. In any case, because the gliders complied with national airworthiness requirements there was little that anyone could have done.

Unfortunately, the mist which hung over the airbrakes argument was thickened by the flaps furore. Flaps were better than airbrakes in every possible way, said the protagonists, and should be allowed in the Standard Class. But deciding whether to allow flaps or not took CIVV all of three years. The problem was not whether flaps were good or not, but how to make a rule which would define them properly and which could also be checked simply by contest officials on the spot; once bitten, twice shy.

First, there was the speed limiting aspect. No one had produced flaps that could operate as speed limiting devices in a few seconds, not even with non-Standard Class aids such as hydraulics. Secondly, no one had succeeded in defining a simple flap which did not open the flood gates of clever minds to developing ingenious variable geometry devices in the Standard Class, a development universally agreed as undesirable. So the argument swung back and forth. CIVV delegates would return home to recommend to their aero-clubs that flaps should be banned, and come back to the next meeting ready to have flaps. By the end of the meeting it would be virtually agreed to have flaps—until the next time when re-thinking had once again swung the balance the other way.

The first break-through came when it was proposed and agreed to drop all reference to speed limitation from the airbrakes rule, and return this function to airworthiness authorities, where it rightfully belonged. This automatically removed from the championships rules any problems over rapid flap-lowering at high speeds. With this out of the way, the problem was reduced to one of defining a simple hinged flap. But even this was not made cast iron without the addition of drawings (see p207) to show what was permitted. It was not prejudice against flaps which took so much time to overcome, but the need to ensure that the Standard Class, which had achieved so much in the 12 years of its existence, should not suffer an irreversible change to becoming a poor, but equally expensive, relation of the Open Class, because of an inadequate rule.

When motor gliders came seriously on the scene a few years ago, the big issue was whether, for badges and records, the flight could count if the engine was not restarted in flight, or whether it should count only if the engine *could not* be restarted. Some countries felt that for any "glider" flight it should not be possible to restart the engine, others considered that separatism was best and that motor glider badges should be a different colour, and a few believed that any flight should count if the engine was not restarted. Again, as with the Standard Class, there was a swing of opinion at successive meetings while more knowledge was gained of the impact of motor gliders on the gliding scene. Coloured badges of different colours departed most quickly because of the complication of getting, say, Silver height in a motor glider and distance in a glider.

There was probably always some acceptance that badges could have

different standards from records, and there were several reasons for this. For example, when a pilot made a badge claim he would not be taking anything from anyone else. Further, the argument that with a motor glider the pilot would fly over land or water that he might not venture over in a pure glider was not very strong, since most badge flights today are done over fairly well trodden countryside. But perhaps the strongest reason for allowing motor gliders to be used as such for badge flights (provided that the engine was not restarted) was simply that these would increasingly be the aircraft that clubs would be using. If motor gliders were to remain an integral and useful part of gliding it was essential that they could be used for soaring by club members, and badges obtained on them without the complication and control that would be needed to ensure that the engine *could* not be restarted.

At the last CIVV meeting it was agreed unanimously that badges could be gained on motor gliders provided that the engine was not restarted during the flight. Records, it was accepted, were quite different, and a glider record should be obtainable only on a pure glider or a motor glider in which it was not possible to restart the engine after it had been stopped prior to crossing the start line. However, it was also agreed to have a separate record category for motor gliders which would encourage their development along glider lines. Such an extension of the sport was becoming increasingly necessary as the growth of controlled airspace reduced the areas where soaring was free, or even possible.

So this is the situation now. Twenty to 25 countries, ranging from the large and hot to the small and damp, have been represented at CIVV and have taken the decisions. Individual viewpoints have been aired, and the inherent unfairness of life recognised. Under the remarkably able chairmanship of Pirat Gehriger, CIVV appreciates the inevitable changes that are taking place in gliding, the threats to its growth and in some cases even to its existence, and its fabulous technical progress. It tries to maintain a rules framework that will work effectively, without the complications that have bedevilled so many other sports.

Ann Welch, a Vice-President of CIVV, is the BGA representative to the commission.

MORE ABOUT SPOILERONS

By BILL DANIELS

THE adoption of a spoileron (roll-controlling spoiler) system by sailplanes of conventional design was favoured by Humphrey Dimock in a letter in S & G, Feb 1971, p65. He referred to an article of mine published in "Soaring", May 1969, which described the flight tests of the Marske Pioneer flying wing which is equipped with differential spoilers for roll control.

While I generally agree with Mr. Dimock, I find that my experience with the Pioneer has made me aware that the whole subject of spoileron control is far more complex than I, and I suspect he, realised. For me, it was a matter of departing from the conventional and thereby gaining by experience a new and unique appreciation for the ordinary way of doing things.

Spoilers, in addition to the assets ascribed to them by Mr. Dimock, have several disadvantages, such as the dead-band (lack of effect at small openings), perfect co-ordination occurring at only one speed (with skidding turns at higher speeds and slipping turns at lower speeds). In even the best designs, they tend to increase the roughness of the upper surface of the airfoil.

For those and other reasons, it seems that the simple adoption of spoilers to replace ailerons is merely to exchange one set of undesirable side effects for another without a net gain. However, since Jim Marske and I are resolved to

the development of flying-wing sailplanes, we are left with the task of developing a suitable roll, or, more appropriately, turning system.

For the past two years, this task has occupied my mind and I think I am beginning to reach some conclusions.

With flying-wings, one is forced to contend with weak or non-existent directional stability. As a result, any residual torques applied about the yaw axis by the roll control system will immediately become obvious and cannot be tolerated. With conventional sailplanes, which have a much stronger yaw stability, these torques are not as noticeable. But they do add to manoeuvring drag and should, if possible, be eliminated.

My first thought was to adapt the aileron plus spoiler system popular with STOL designers, and which is illustrated on the VC 10 jetliner alongside Mr. Dimock's letter. Wind tunnel and flight test data indicated that if properly proportioned, almost yaw free control could be obtained through the C_L range of interest. On further investigation, however, it appeared that there would still be enough unwanted yaw torque to require a rudder of some kind. I wanted to use only aileron to hold off overbanking and not incur spoiler drag.

During the flight tests or subsequent sport flying of the Pioneer, someone who had just flown the ship remarked that the spoilers produced an effect not unlike that of a very effective rudder which produced a large yaw-to-roll coupling. He further suggested that it would feel more logical if the spoilers were connected to the pedals instead of the stick.

The accuracy of this remark haunted me. What the Pioneer really had was two rudder systems. Both produced yaw and roll in the direction of the turn, and neither system could produce, nor recover from, uncoordinated situations. It was this that led me to my appreciation for the ordinary way of doing things.

Could it be, I wondered, that the adverse yaw that we had set out to eliminate was really a necessary effect? The more I thought about this, the more convinced I became that this was the case. When holding off overbanking with ailerons, the adverse yaw produced helps to reduce the amount of bottom rudder required: or, rather, it cancels the asymetrical drag distribution due to the different airspeeds each wingtip has in a turn. When recovering from a slip, the adverse yaw swings the nose into the airflow, assisting recovery. In a crosswind take-off, holding upwind aileron assists the downwind rudder.

The conventional system of two controls, rudder and aileron, permits the pilot to contend effectively with any situation as long as he fully understands how to use them. On the basis of this, I decided that the Pioneer should be modified to have small ailerons connected to the stick in the normal manner and to connect the spoilers to the pedals, eliminating the conventional rudder. This system should behave much like a conventional system except that the pilot would rely more on the pedals for roll at slow speeds. It would be impossible here to relate all the control movements for all situations, but suffice it to say that they would be of the same magnitude and in the same direction as those of a conventional sailplane, except for small differences in proportions.

It should be noted that the bulk of aeronautical experience is with ailerons and that they have been subjected to more research and development than spoilers. There are both good and bad spoiler designs, just as there are good and bad aileron designs, and I am sure that many of the undesirable effects of spoilers can be eliminated.

* * *

Comments by FRANK IRVING: There is one further disadvantage of a spoilers-only system. It is inevitable that one must hold off bank in a turn (due to the average speed of the outer wing being greater than that of the inner wing). If you hold off bank with spoilers, that on the outer wing will always be slightly raised during a turn, producing undesirable drag. This is, of course, the source of a yawing motion in the undesired sense, requiring more rudder. It, therefore, seems pretty essential to have ailerons as well, arranged so that the spoilers only start to open when a suitable aileron deflection has already occurred. Holding off bank is then normally done on ailerons alone.

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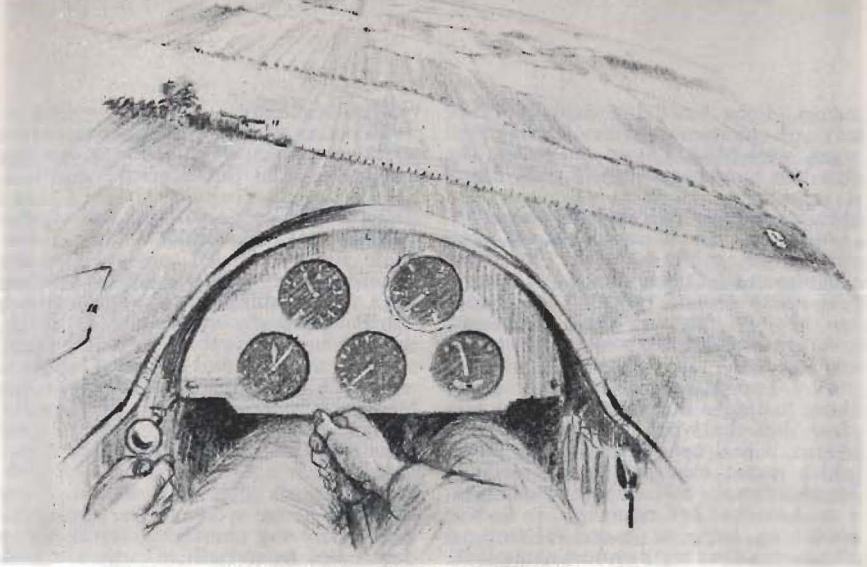
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PICK OF THE FIELDS

By MIKE WILSON

DURING cross-country flying, the possibility of interfacing with the buttercups at short notice looms large. A rapid and continuous assessment of the real estate underneath, coupled with the ability to put an expensive sailplane down in genteel fashion on a wide variety of surfaces, must, therefore, be part of the pilot's stock-in-trade. Gliding across country these days without formal training is asking for trouble: from one's underwriters, farmers, the CFI and one's club or syndicate colleagues.

I am by nature lazy. My 40 hours of gliding experience had all been centred on Lasham, to where a sneaky return was always possible when the weather began to sag or (more frequently) the skill ran out. Syndicate ownership of a Skylark 2 generated a guilt-complex about the whole thing, like having a tooth cavity. Something would have to be done about it.

And so one Monday morning in early spring, I found myself at the clubhouse of the Lasham Gliding Society with three other neophytes, about to embark on Advanced Gliding Course D. We were met by the CFI, Derek Piggott, lately returned from a bout of filming in Ireland for *My Darling Lili*, and handed over to Jim, the staff instructor who was to shepherd us through the hazards of the week.

Course D began with a lecture on the mystique of field landings, the techniques of getting safely into fields, large and small, and the habits, location and recognition of cows, trees, slopes and fences. Outside the rain hammered down and the hangar strove to maintain its shape against a wind of horrifying strength. We clearly would not fly that day. I was secretly relieved; not having flown since the end of the previous season (six months back), the rust would undoubtedly show through. The others felt the same. So when Jim indicated that we would have a quick circuit apiece with him after lunch, to see what we were made of, there was a shocked silence.

We DI'ed the K-13 reserved for the course and pushed it (or, rather, were blown) to the launch point. The rain had lessened, but the wind was still Strength Bad. Frozen (so much for the thermal inertia of flesh and the U value of anoraks) I contemplated the possibility of getting out of the whole rotten business and returning to the office world of attractive secretaries, drinkable coffee, comfortable chairs and *warmth*. The others seemed no more enthusiastic. Their

names, since we didn't actually break any of Lasham's gliders during the week, were Mike, Laurie and Brian. The first two had shares in a Skylark 2 and 3 respectively, so there was at least a theoretical basis of expertise among us.

Mike and Jim climbed aboard, tow-cars moved, cables tightened; the flying component of Course D unstuck after a zero-length ground roll and disappeared immediately into the leaky stratus. By common consent we wrote the exercise off.

Day Two dawned. A front, or something, had gone through and the sky was clear, but the wind continued to rage. Worse, it had gone round to the north, which meant changing to the medium-length runway, still out of wind, however. I skulked behind the K-13's fin and rudder, the better to observe the fortunes of others before my own turn came.

But the plot was quickly penetrated and I was commanded aboard. Confidence sank to nought. By what right did I (or, indeed, the Lasham Gliding Society) assume that my few solo hours were sufficient to qualify me for a course which demanded a fairly high level of competence for starters? Were they *only* after my money? Jim got in and we closed the canopy, shutting out the hateful wind.

We rolled forward, lifted and began to climb. Despite the wind, the speed dropped to 45kts and some clumsy wing-waggling didn't restore it. The cable treacherously back-released at 400ft and a quick return was clearly desirable. Mis-application of hand and feet, generating a volley of slip-balls, got us aligned for the downwind leg, when a voice broke through from the back seat. We would, it said, simulate a field landing by turning on to the base leg very early, crossing the line of trees which lay parallel with the operational runway, using our newly acquired knowledge to drop gracefully out of the sky and land across the 100yd-wide grass strip which separated the trees from the run-way. And in fact that is what happened. The sequence —check ASI at 50kt, miss trees by 15ft, brakes open and nose hard down to nail the speed, round-out and touch-down—was completed in a single movement. We ground to a halt two-thirds the way across the strip. Jim was pleased, yes, quite pleased.

The rest of the morning was spent getting acquainted with the K-8. This single-seat 15m Schleicher product was designed as a replacement for the Grunau Baby a decade or so ago, and is now seeping into the British gliding movement in default of any comparable "home-grown" glider. Lightness and ease of handling on the ground are attributes equally applicable in the air, but the interior appointments are, again, spartan and, in the particular example allocated to Course D, a 40kt column of icy air entering by way of the nose-mounted cable-release, not only pressurised the cockpit, but froze everything within it.

Over lunch Jim disclosed the *chef d'oeuvre* of the syllabus. We would take a K-8 and tug aircraft to Hattingley, a few miles from Lasham, where a suitable meadow (placed at the disposal of the Lasham Gliding Society by a local farmer) provided a base where genuine field landings could take place under controlled (*sic*) conditions.

The glider and Super Cub were accordingly ferried out to Hattingley by Jim and another pilot, while the U/T element of Course D followed by car, specifically a white Zephyr, chosen not by random selection, but with a certain cunning. Hopefully it would stand out from the air, providing a landmark in time of need.

The Field was reassuringly large, long and narrow, but sloping gently down and tapering to a gate in one corner. The wind was strong and, naturally, across it. We left the car—pointing into wind, to aid airborne memory and orientation—and made our way to the glider and tug which were already sitting on the grass.

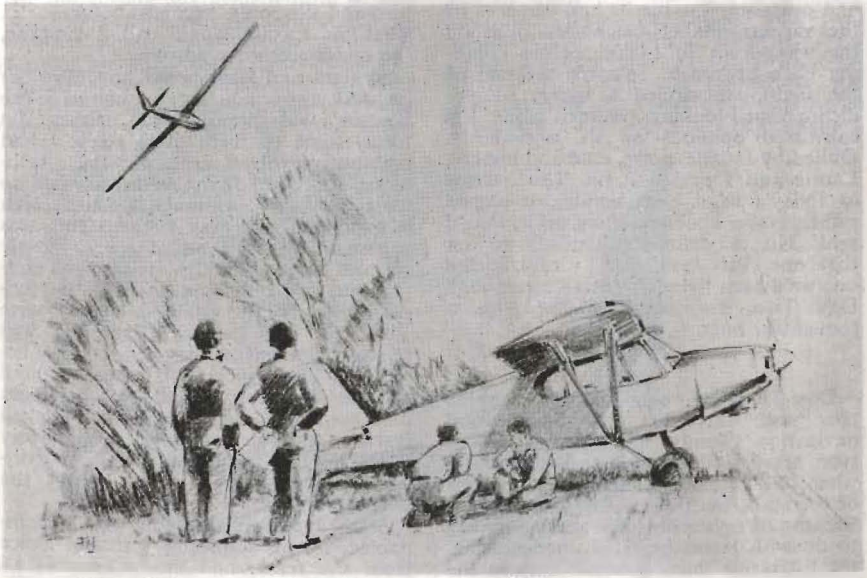
Jim was expansive. We could take off more or less into wind, uphill, or more or less out of it, downhill; the choice was ours. We held a rapid conference and Mike selected the first option. He was soon airborne, the Cub's sprightly rate of climb with the lightweight K-8 on tow making any take-off decisions really immaterial. After casting off, he did one or two circles as briefed, while Jim in the Cub hurried downstairs to view the proceedings from ground level. Mike's approach and landing, across the field

and into wind, was acceptable. Verdict? We wanted to watch it, it was dead easy to lose the field if we didn't track the Cub on the way down. The other two made nearly identical circuits and landed. Laurie got himself over the downwind boundary at 500ft, realised he wouldn't get in, began a leisurely circle away from the Field, and was immediately whisked half a mile downwind. Far from an overshoot it now became a near-undershoot. (The bracketing technique worked, however, and he got it right on the next flight.) Their advice was unanimous: it was easy to get lost. I'd better watch it.

Trundling across the Field on the ridiculously short take-off run, I reflected on the joys of aviating from a non-aerodrome with just a small informal group of people. Flying must have been like this In The Beginning. We began a gentle turn and, glancing back, I caught sight of the Field, the remnant of Course D and the white Zephyr. You couldn't possibly miss them, they stood out a mile. So much for the airmanship of the others.

Filled with an effervescent feeling of well-being (generated not by ability, but merely unaccustomed warmth), I cast off at 1,200ft, some 300ft below everybody else's height. Disdaining to follow the tug down, I flew on, looking for lift and—horrors—ran slap into strong sink. By the time we had come out the other side, the altimeter was showing less than 1,000ft, and that dribbling away fast. None of the carefully memorised landmarks were in view. Apprehension turned to alarm as the unpleasant truth percolated through: the Field had disguised itself as a field. Mars itself could not have presented a more alien aspect than this element of Hampshire, now panning in rapidly towards us. Standing the glider on a wing-tip to make a final despairing survey before abandoning myself to the uncertain fate of a non-Jim-approved meadow, I caught sight of the Zephyr and the Cub, directly below. Reaction set in. It was probably the first time a glider has been vibration-tested in flight.

But there was no time to lose, or even to be clever and plan an approach down the length of the Field, something no-one else had yet done. A quick turn to get



. . . began a leisurely circle . . .

downwind, and then on to finals, the landing area, seen obliquely, looking very short indeed. Speed! Heavens, yes, 60 . . . 70 . . . much too high. Quickly pull back to 50kt and out with the brakes. Just time to set up a reasonable approach path before clearing the wire fence by a rather well judged 5ft (earning Jim's censure) and touching down.

On the second flight (we each had two) I cast off at 1,500ft and kept the Cub in sight all the way down. All the landmarks slotted in and there was no problem. A completely out-of-wind approach was planned and flown, and incredible quantities of drift were kicked off at exactly the right moment to pull off a greaser, marred only slightly by the breeze getting under the windward wing and causing us to ground-loop in front of the company.

Back at the airfield Jim thought it would be fun to do some field selection from the air, a suggestion received without obvious enthusiasm by the sedentary creatures of Course D.

We flew round the Hampshire countryside in an Auster viewing it from 2,000ft, Jim and two students at a time, closing the throttle occasionally and discussing the merits and demerits of the various bits of patchwork quilt on the way down to 1,000ft before climbing back up again. Towards the end of the flight, we circled a wedge of undistinguished-looking pasture, while Jim canvassed opinions on its land-ability. Dulled by fatigue, noise, cold and hunger, Laurie and I passed it up. Too narrow in today's wind, and besides, it sloped rather. Never choose sloping fields, they'd said. No, a definite thumbs-down on that one. Pity, said Jim, wasn't it the one we'd been flying out of all afternoon? Day Two, for some, finished on a thoughtful note.

* * *

Day Three was scheduled to combine two more exercises: cloud flying and navigation. Clouds, of the puffy cumulus type, are desirable things to have around when one is gliding. They mark the tops of thermals, but their utility goes further. Because of mysterious phenomena having to do with latent heats of condensation, the lift inside them is better than in the clear air outside, and so one frequently wants to be able to continue the climb inside the cloud itself. Staying in the best lift needs quite accurate flying, in circles too, and hence the need for tuition.

There were, unfortunately, no clouds around, or likely to be, because of the strong inversion. It would have to be a "hood" exercise in the two-seater.

With the aid of a bottle of Windolene, an opaque film was formed on the outside of the K-13's canopy, obscuring the rear-occupant's view of the outside world. To prevent him from looking forward over the instructor's shoulder and through the windscreen, a temporary plywood bulkhead was secured above the rear instrument panel, snugly fitting the inside contour of the canopy. I sat back in this monastic cell while we were aero-towed to 4,000ft, Jim doing the flying from the front seat. The tow was extremely rough (the stick exhibiting rapid large-amplitude Brownian motion), and having nothing better to do than admire the Wagnerian tints of pink and grey chase themselves around the perspex, I began to feel disturbingly queasy. Jim finally pulled off at 4,000ft, I having remembered to switch on the turn-and-slip only seconds before . . . what the medics would call, I suppose, the under-arousal syndrome.

Straight and level posed no difficulties on ASI, turn-and-slip and compass (no horizon was fitted), and neither did turns, some of them quite steep. I had previously evolved, armchairwise, a technique for blind flying which seemed to work very well, although I hadn't seen it explained that way before. This was to regard oneself as a very loosely coupled servo, in which strict speed control was not only non-essential, but undesirable. If the stalling speed were 35kt, then one flew at a nominal 50kt so that the excursions could vary between 40kt and 60kt, say, without causing any worry. Control of the flight path could then be achieved in a relaxed fashion without having to chase every knot. Hardly good enough for pundit-flying, of course, but that wasn't the purpose anyway.

Stalls and incipient spins were accompanied by an agreeably satisfied voice from the front, and in no time at all we were down to 500ft. The voice

advised a right turn through 70° . . . we were very low now, but the expected shift of responsibility didn't come; thinking he had forgotten, I transmitted a status report on the visibility from the rear. That's all right, came back cheerfully. Just a shade more right. Flare gently now . . . more . . . more . . . we rumbled across the turf.

A second flight later in the day with a different voice verified in a most gratifying manner the non-singularity of the first flight.

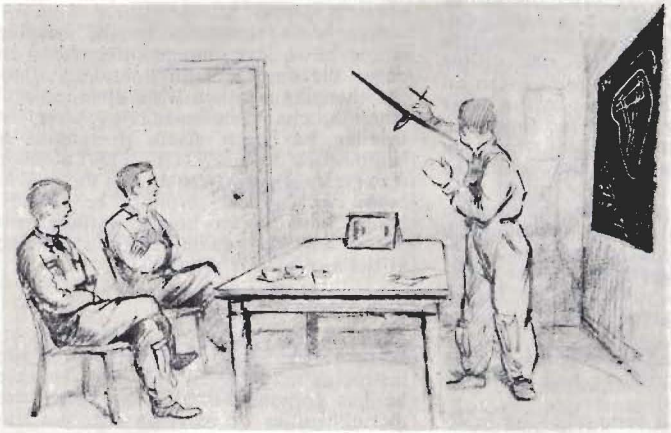
A navigation exercise that evening, in an Auster, took us around one of the standard 100 kilometre triangle cross-country courses: Lasham-Stockbridge-Newbury-Lasham. We were now in fine form, and confident enough to pull Jim up sharply for getting off course near Greenham Common.

And that, apart from a transfer of £22 10s and a signing of log-books, was that. Day Three ended, Course D disbanded.

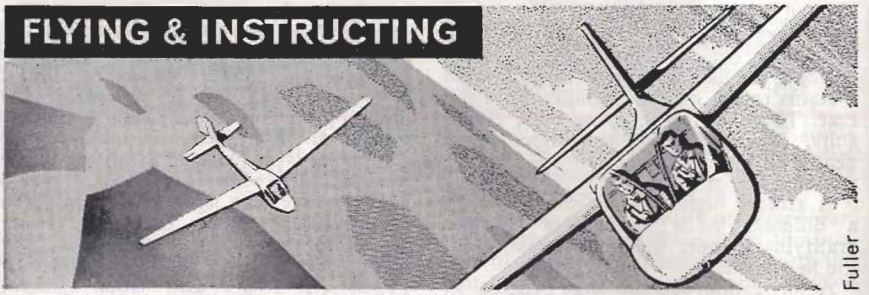
A Silver C flight in the syndicate Skylark to RAF Keevil, an allegedly deserted airfield near Bath, followed a month or so later. Arrival over the white-crossed runways and a precautionary circuit, without raising any evident form of life, was followed by an explosion of activity as soon as we arrived on the ground. A Klaxon blared, a white flare soared into the sky. It wasn't possible to do anything about it (even if I'd remembered what a white flare stood for) and a Land Rover raced towards us at alarming speed. The duty air traffic control officer wasn't pleased. Hercules from nearby Lyneham were due any *second* to make paradrops. My glider was in the centre of the dropping zone—could I move it, quickly please. In that case, I thought (but complying with the command) the glider was probably safer there than it would be anywhere else on the airfield. Sure enough, only 90min later, the Hercs hove into view and did their stuff. But before that time we had been joined by 17-year-old Lynn, also from Lasham on her first cross-country, who had been flying two or three thermals behind me.

The plot envisaged an aero-tow retrieve back to Lasham, but the Lyneham controller put his foot down; movements from deserted airfields were too unsafe to be sanctioned. Syndicate colleague Charles arrived with the trailer just before darkness, and we arrived home at 1am the next morning.

It's all different nowadays. A device called a Falke (German, of course) has arrived on the scene. One is wafted cosily over the countryside, assuredly sustained by 26hp's worth of Volkswagen engine, and simulated or actual landings can be made into any field at will. On the way there navigation and field selection can be taught, likewise cloud flying. Landing back at the airfield the aircraft is taxied—not pushed—to the next customer. As I said, the disadvantage of gliders is that they don't have engines.



. . . the disadvantage of gliders is that they don't have engines



THE BGA Safety Panel, concerned at the number of accidents involving visitors to hill sites, asked the Instructors Committee to look into the problem.

It was generally agreed that the main area for improvement was in the briefing and supervision of visitors. If a club accepting visitors has a large local membership, the availability of two-seaters and instructors may be severely limited. Indeed, it might be thought necessary to warn visitors to arrive during the week, when the facilities will not be stretched.

The way to deal with the problem was thought to be by education, and the following article by the National Coach is the beginning of our approach. Feedback from CFIs and instructors, particularly from hill and wave sites, would be appreciated.

ROGER A. NEAVES

* * *

HILL SITE VISITOR SUPERVISION

SITE BRIEFING

It is evident that one aspect of the supervision of solo pilots is not being carried out as well as it might be—that of visitors to hill sites.

Generally, it might be said that the onus is on the resident instructor to give a site briefing. He may brief the visitor on what concerns the day's operations, or he may give a more comprehensive briefing, in which he tells the visitor everything about the site relevant to all wind directions. The danger in the latter is that the briefing can be too thorough, particularly if there are ridges which are soarable in various wind directions. The result is that the instructor might give the visiting pilot so much information that he is saturated and consequently does not take in the very things which may be the most important. If the briefing is too long, the visitor will get bored, especially if it happens to be soarable at the time.

Also, after having given quite a good briefing, the instructor may fail to summarise.

The feeling that a comprehensive briefing is essential stems from the system we use. The visitor at the hill site for a few days may in fact need several checks if conditions change. There is probably a limited two-seater capacity for checking visiting pilots. If this is so, then I would ask this: Should pilots be invited to fly at a site if they cannot be supervised properly?

The ideal approach to the briefing would be to give enough information to cover the day's operation and to allow for changing weather, wind direction and strength, cloud amounts, etc. After the briefing has been given, it should be summarised concisely. Up to half a dozen statements clearly written on the blackboard will almost certainly be remembered, whereas an hour's waffling will not. I will give examples of a briefing at the end of this article.

THE CHECK FLIGHT

There are a number of problems relating to the check flight which the site instructor may fail to deal with because he has forgotten two things. They are the difficulties of carrying out, particu-

larly, winch launches in severe turbulence (especially if the visitor is used to being launched by auto-tow or aero-tow) and certain psychological problems.

The psychological problems are considerable and include flying from a much smaller field than usual. The implications of this are that he may be unable to plan his circuit well because he tends to fly by fixed landmarks. If there are peculiarities or hazards about the site which tend to be avoided by reference to land marks (such as not going behind the gulley at Sutton Bank or the wall at Camphill in westerlies), then the instructor must make sure that the visitor knows these landmarks.

Some of the many psychological problems for the flat-site pilot flying at a hill site may never be overcome. For example, flying at 400ft above site and well beyond normal gliding range. Also operating at heights which are below normal circuit height. Both these may be overcome to some extent by making the pilot being checked go deliberately low to gain confidence on the hill and demonstrating how strong the lift is when low.

Many pilots will fail to soar a hill which is working quite well because they are in the wrong position, fail to get close enough or fly too fast. Portmoak illustrates this point quite well, when from a winch launch one glides towards a hill which is much higher than the machine—a traumatic experience for a lot of people until they have done the exercise a number of times. The instructor should make the visitor practise this several times on a check flight. This particular situation is probably worst when the winds are light and the glider must be positioned close to the hill if it is to go up at all.

BRIAN WEARE

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TRAILERS

The suitability of the hill lift may depend very much on the wind strength. Think back to the days of the Tutor, when for months on end the wind was either too strong or too light to allow the pilot to make his first ridge-soaring flight. If we take care as much of the visitor as we did of the Tutor pilot, we would be doing quite a good job of solo supervision.

A HILL SITE DETAILED

I choose, as an example, Sutton Bank solely because I have more experience there than at other hill sites, and am not casting aspersions on the Yorkshire Gliding Club.

The ridge, which is a cliff in places, offers soaring in wind directions from S to NW. This range of wind directions only applies to the first bowl; the one on which the landing area is situated. The second bowl and beyond, northwards for about four miles, is only really satisfactory in winds of 20kts or more. The relationship between wind direction and the position of the lift is too complex to go into detail. There are two runways which are very approximately SW-NE and N-S.

When the ridge is working in all directions except south, the launch will take place from the SW run and will be crosswind. Due to the shape of the hill, a cliff edge, turbulent conditions will frequently exist in the launch area. The launch may be low, say 3-400ft, and it will not always be the part of the ridge at the point of release which is working. The 3-400ft launch will normally be adequate if the pilot is familiar with the ridge and the position of the best lift. If, however, the glider is allowed to drift due to the crosswind on the launch, quite a lot of height will be lost in penetrating to the best lift. During this penetration, the speed will be increased with the result that the attempts to soar the hill may be made at too high a speed and the glider will not climb. Due to the narrow band of lift when low down, the turns at the end of each beat will be out of the lift, anyhow, and as the glider gets lower, proximity of the hill will force the inexperienced hill-soaring pilot to move further away from the hill. The result, a landing at the bottom.

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If a bottom landing is not desired (either because it costs a fiver or because the rest of the party won't get a chance to fly) then for psychological reasons the pilot will attempt to land back at the normal landing area instead of making a crosswind landing, usually on the south run.

The briefing and check for Sutton Bank would, therefore, include the following points:

Launch

(a) Frequently crosswind and of such short duration as to allow little time for correction.

(b) Turbulent, often requiring the pilot to climb initially at a lowish speed.

(c) The visitor may be inclined to treat any launch of less than 500ft as an emergency and act hurriedly. It should be stressed that 300ft is good and quite adequate to establish one in the hill lift. This will help put him at his ease.

(d) In the event of a launch failure, the pilot should be aware that a real alternative is a landing at the bottom of the hill, especially if hill soaring experience low down is limited. The location of a suitable landing field should be indicated.

Hill lift

(a) The extent of the usable hill lift should be made clear to the visitor before take-off, even if this requires the instructor to walk the length of the ridge with him. When low, it will be better to start a turn to reverse the beat before flying out of the lift.

(b) The speed to fly should be adequate for the turbulent conditions. In a stressed state, however, the pilot may fly too fast to actually climb.

(c) If the band of lift is narrow, then the turns at the end of the beat will almost certainly pass out of it (the lift) which may encourage the pilot to tighten his turn too much, with attendant hazards.

(d) Due to the cliff, there is a marked cut-off to the lift if the glider is flown too far back. If a pilot does drift too far back at, say, 400ft, then he may lose 100-150ft quite quickly and rush to make a landing when all he really has to do is move forward into wind.

(e) Pilots who are orientated towards

thermal soaring are keen to effect the transition from hill to thermal as quickly as possible and may start to circle too low down. They should be reminded that the cut-off of the hill lift behind the ridge frequently applies to the thermals and that it will be better to S-turn until above ridge traffic and then try to find a thermal upwind of the ridge in lift which will generally be less broken.

(f) Gaps in the ridge lift exist due to the different directions in which the slopes face. Before crossing such a gap, there should be sufficient height to return in case the next section fails to work.

(g) The psychological problem of being beyond gliding range is of some significance to the pilot with limited hill soaring experience. Only when he has gained confidence in his own ability to stay up in the lift will he start to overcome this problem. As, frequently, the hill will only be used as a stepping stone to other types of lift, then the pilot must be competent at coming back to the hill at low level and re-establishing in the lift.

Approach and landing

(a) The circuit may be carried out at a much lower height than usual. It should be pointed out that there is not only a smaller circuit, but that a good part of it may be flown in ridge lift and, therefore, the height is quite adequate.

(b) In changing conditions the circuit may be quite different to that anticipated (or briefed for!) at take-off. If the wind is stronger, the approach will be steeper; if lighter, then the landing area may have to be a different one (ie, the S run instead of SW).

Summarising, it is important for the local instructor to realise that the difficulties of his site which have been forgotten by him will be the ones most critical to the visitor. The visitor must be briefed for the conditions that exist at the time and for all foreseeable changes that may possibly occur during the flight itself. This briefing must be given as clearly as possible and summarised in a way that the pilot will remember. For example:

Launch: Drift. Turbulence. Poor height compared with home site, but adequate.

Launch failure: Can land at the bottom of the hill as an alternative (indicate location of a suitable field).

Hill soaring: Fly faster lower down, especially if turbulent (say 45-50kts). If not climbing and hill known to be working, try reducing speed a little. Extent of hill lift indicated by reference to known landmarks. Marked cut-off of lift behind cliff edge. When more height is lost in the turns than is regained on the beat, *anticipate landing.*

Circuit: Try to avoid having a preconceived idea of the circuit; you may have to make a different one. Do you know the other alternatives and their problems? BILL SCULL

RADIO BUYER'S GUIDE FOR GLIDER GUIDERS

By JOHN FIRTH

THERE are a number of VHF aircraft radios which are moderately suitable for use in gliders, and many which are not. The average pilot is unable to assess them technically, since he often does not know what to look for. While a review of individual sets is out of the question at this time—and indeed would get me into hot water with various vendors who are touting their wares as being the answer to the glider pilot's prayers—these notes may help the understanding of which specifications are really important. A suitable radio should be able to meet the specifications given below easily. The items are listed in order of importance, and do not cover requirements of the licencing regulations.

RECEIVER

Sensitivity 1μv for 10db S/N for 50% modulation at 1KHz. This determines the performance at extreme range. Many multi-channel sets are not usable at 1μv. A very good receiver will give 10db S/N at 0.3μv which, in a low noise

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receiving location, is equivalent to 10 times the transmitter power at the other end.

Automatic gain control Audio output should vary less than 6db from signals of 2μv to 10mv. This minimises volume twiddling for transmitters at various ranges, and the effects of fading while circling.

Squelch This should be continuously adjustable; it should be possible to suppress all except very strong signals. Squelch action should be abrupt, a 50% change in signal at any setting should be sufficient. A squelch on/off switch may only be suitable for local communications.

Audio output All sets normally meet this requirement easily, for the quiet environment of a glider. Car sets should provide at least ½w. Modern sets should produce very little distortion. Test with a known good transmitter.

Noise limiter This is essential for use in a car to minimise ignition noise; do not confuse this with squelch, which merely suppresses background noise in the absence of signal.

Drift Most sets these days are fixed tuned to the channel selected. For those which have continuous tuning, check the amount of retuning necessary after warming up, and with changes in ambient temperature, if possible.

Power consumption Less than 100ma at 12v. Sets taking much in excess of this (and there are several) will need proportionately bigger batteries, if they are not to need recharging after every time you fly.

TRANSMITTER

Modulation A listening test on another good set is the crucial test; the transmitter should run into a representative antenna and the monitoring receiver be without one, or sufficiently far away to prevent overload. A person's voice should be easily recognisable. Full modulation should be reached when talking in a normal tone of voice one inch from the microphone. Individual sets of the same model vary quite widely in their transmission quality. It is no good having 10 watts output if the signal is badly distorted.

Power output Notice that I have put this second. More than 200mw is adequate for most purposes; a lower power transmitter does ensure that you do not occupy the channel for several hundred miles around. However, if you are a cross-country pilot who likes to leave his crew at home on 500km triangles, a fair amount of power is a help. Beware of Specmanship; some brochures quote PEP (peak effective power) which is four times the mean carrier power.

Power consumption This is not normally a serious problem, except for those with severe cases of verbal diarrhoea. However, bear in mind that though the average power drain may be insignificant, the load during transmitting will be heavy, if the transmitter puts out more than one watt; the battery must be able to supply this without serious voltage drop, or the paper power figure will not be achieved, and the modulation quality may suffer.

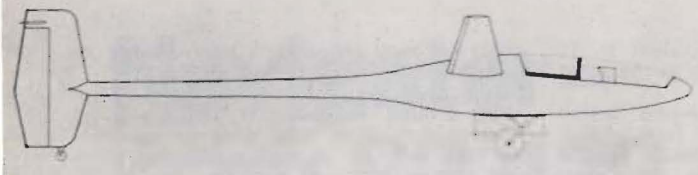
TIPS FOR OPTIMUM PERFORMANCE

The antenna should be properly connected and matched. It should be clear of metal objects except for its own ground plane. Mounted on the gear door, it can be arranged to stick straight down with the undercarriage up. The location over the wing, which is often seen, is poor. Car antennae should be on the roof, and the coaxial cables should be carefully checked for faults; failure at the connectors is common.

Power connections These should be twisted together and go directly to the car battery. Use heavy gauge wire to avoid voltage loss. The car ignition system should be in good condition; corona discharge from dirty wiring can cause a big rise in background hiss.

Maximum range Both car and glider will have peaks in their antenna patterns; experiments will show the best orientations for each. The car should be positioned as high as possible, away from buildings and overhead wires, with an unobstructed view towards the glider. Switching off the engine removes ignition noise and helps enormously at extreme range. The pilot should transmit at the top of his thermal a brief message while in the optimum orientation. If there is no acknowledgement repeat this once or twice; it is common for the crew to hear the glider without the converse.

SIGMA





—THE SAILPLANE OF TOMORROW?

S & G recently visited Britain's variable geometry sailplane at Heathrow, as a result of an invitation from the Sigma team. The following article is compiled from observations made during the visit, and from a lecture given by Nick Goodhart recently to the South East panel of the Greater London branch of the Institution of Mechanical Engineers.

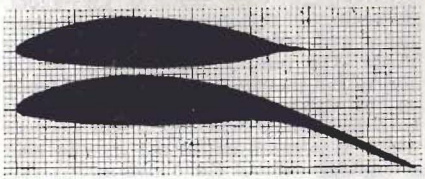
THE IDEAL glider, if Father Christmas was to pop one into your stocking, would have two sets of wings. The first set would be designed purely for climbing in thermals, optimised for squeezing the best out of all thermals, and particularly the last wisp of lift out of a dying summer's day. The radius of turn would be small, and by shutting one's eyes one could imagine the machine climbing a thread-like core inside a seagull's turn.

The glider with this pair of wings would have a large span, large wing area, high lift co-efficient, low weight and low drag.

The other set of wings would, by waggling a magic wand, replace the first set at the top of the thermal and whisk the machine across country at a high air speed and a low rate of sink. To achieve this, low drag and the highest possible wing loading are necessary.

Sigma is, in effect, a glider with two sets of wings and a very complex magic wand to achieve the transition from one to the other in flight.

The two wing sections (illustrated) were designed for Operation Sigma Ltd by Professor F. X. Wortmann (see S & G, April 1969, p134). The upper section, for cruising, has low drag in a range of C_L from 0.1 - 0.8. The lower, for thermalling, is produced by the extrusion of a flap (which increases the wing area by 35%) and has low drag in the C_L range from 1.3 - 1.8. The lower section is identical to the upper save for the extruded flap and the movement of a relatively narrow flexible plate on the under-surface.



The Sigma project has been in the pipeline since about 1966, and has survived a major catastrophe—the fire at Slingsbys on November 18, 1968, which destroyed drawings and the partly completed glider. The current prototype is progressing steadily towards an inaugural flight date, set tentatively for July.

It must be emphasised that Sigma is a research aircraft whose main object is to prove the aerodynamic validity of the variable geometry concept.

In its present form, Sigma makes no pretense to being a suitable glider for the club glider pilot to fly. His feelings on stepping from a Skylark 3 into Sigma would compare with those of a Viscount pilot taking the controls of Concorde. The analogy between Sigma and Concorde can be extended. Both machines represent significant advances in their particular spheres, and both involve breaking new ground mechanically as well as aerodynamically.

All development work is subject to an undefinable but omnipresent law which states that a system which should work

on paper does not necessarily work perfectly in practice—in glass-fibre or in metal. Modifications have to be made, modifications which take time and cost money. The inaugural flight dates of Concorde were postponed and several pauses introduced into its test flying programme to enable modifications to be carried out. It would be unreasonable to suggest that Sigma is immune to the same facts of life. Consequently, it would be unreasonable to suppose that when Sigma flexes its wings in the air, all the mechanical systems adopted will be ideal. Redesign of a particular system cannot always be undertaken once construction has reached a particular stage, and one is then committed to making the best of what one started out with.

The proof of the Sigma pudding will lie in its performance. Once the validity of its concepts has been proved, a production aircraft would start with the benefit of the Sigma team's long experience.

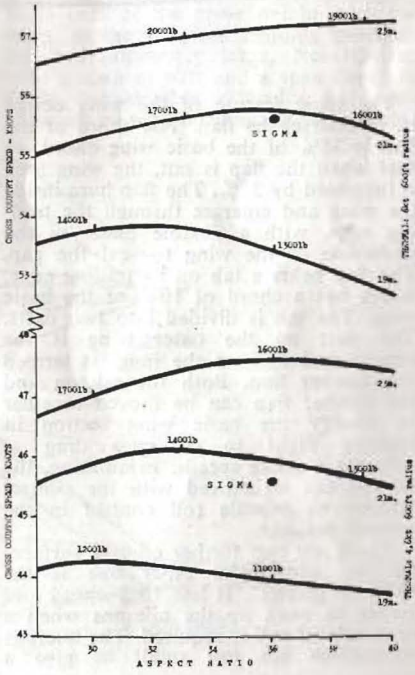
Meanwhile, how has the embryo been developing, in its eggshell at Heathrow?

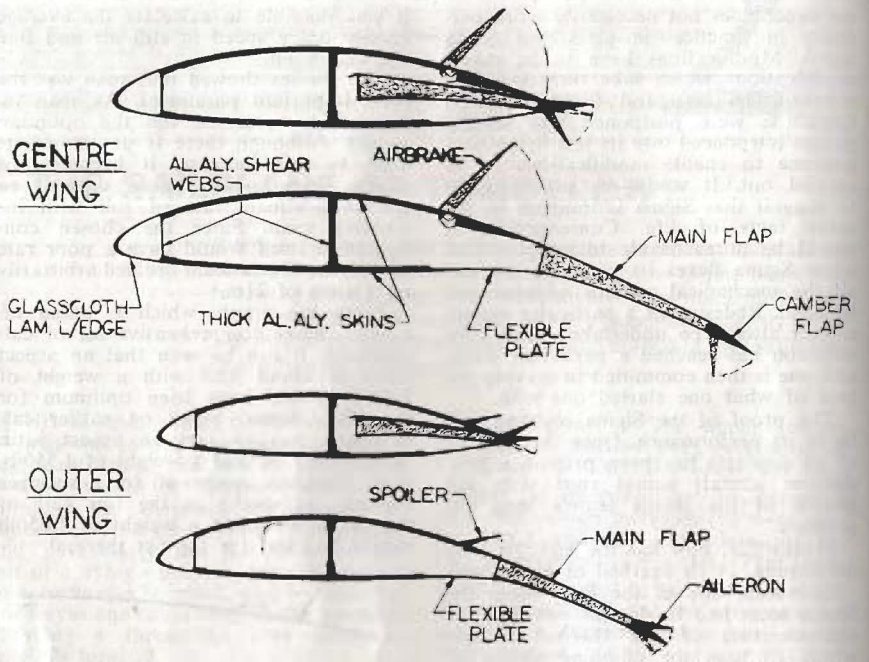
To recap, one of the first things the Sigma team had to do was establish the characteristics of the thermal around which to base the climbing ability of the sailplane. A rather weak thermal was picked and dubbed the British Standard Thermal. It had a core which rose at 4.6kts and a radius of 600ft. From this, the team was able to carry out performance studies on a range of possible designs having varying span, wing area and weight in order to discover the combination which would achieve the best performance.

The calculation of performance of a glider is more difficult than for a conventional aircraft due to the rapid variation of drag co-efficient in the Reynolds number regime in which gliders operate. However, by digitising the wing section wind tunnel results supplied by Professor Wortmann and putting them into a computer store, it was relatively easy to write a programme which looked up and interpolated the results for each performance point. The programme then had to calculate the circling performance and compare this with the assumed distribution of lift in the British Standard Thermal. This gave an achieved rate of climb. Once this figure was established, it was possible to calculate the average cross-country speed in still air and find the maximum.

The studies showed that span was the most important parameter. As span increased, however, so did the optimum weight. Although there is no immediate limit to this increase, it becomes, of course, progressively more difficult to get an adequate rate of roll with increasing span. Since the chosen configuration itself would have a poor rate of roll, the Sigma team decided arbitrarily on a span of 21m.

From the graph, which is based on a later, more comprehensive set of calculations, it can be seen that an aspect ratio of about 32.5 with a weight of 1,400lb would have been optimum for the BST. Sigma, based on earlier calculations, has in fact an aspect ratio of just over 36 and a weight of 1,550lb. It is, therefore, optimised for a stronger thermal, as shown in the top half of the graph, although a weight of 1,650lb would be ideal for the 6kt thermal.





The basic feature of the wing design is, of course, the flap. The chord of the flap is 35% of the basic wing chord, so that when the flap is out, the wing area is increased by 35%. The flap lives inside the wing and emerges through the trailing edge, with a flexible plate on the underside of the wing to seal the gap. The flap bears a tab on its trailing edge, which has a chord of 10% of the basic wing. The tab is divided into two parts. The part on the outer wing is the aileron and that on the inner is termed the camber flap. Both the aileron and the camber flap can be moved together to modify the basic wing section in cruising flight to minimise drag at different cruising speeds. In addition, the aileron can be moved with the control column to provide roll control in the normal manner.

There are two further control surfaces on the wing. The outer one is the "aileron spoiler". It has 10% chord and serves to back up the ailerons when a high rate of roll is required. The ailerons themselves are too small to give a sufficient rate of roll alone. The aileron spoiler comes into operation on the downgoing wing when more than half stick movement is used.

The spoiler on the inboard part of the wing has 20% chord and is used as an airbrake. In order to increase its effectiveness, the camber flap goes down at the same time that the airbrake spoiler goes up. This has the added advantage of avoiding a nose-up pitching movement.

Aerodynamically, the fuselage aims simply to provide the necessary cockpit volume and tail lever for the minimum drag penalty. The front part is a Young's body slightly modified, which hopes to maintain laminar flow back to maximum thickness. It then tapers in as quickly as possible to cut down the wetted surface exposed to turbulent flow. The problem of the wing-fuselage joint has proved to be a difficult one, and despite wind tunnel tests, the team is not confident that it will be aerodynamically satisfactory.

A long undercarriage extension has been used to facilitate field landings.

This, coupled with the fact that putting out the flap effectively increases wing incidence by 8° so that the landing attitude is the same as the flight attitude, made it necessary to raise the tail. This was achieved by putting part of the fin under the fuselage, as shown.

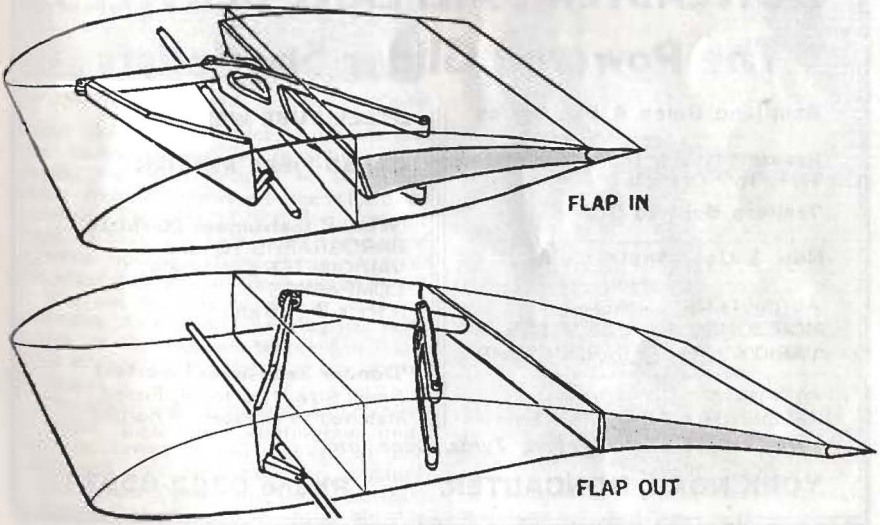
Achieving such a sophisticated aerodynamic set-up has meant that the Sigma team has had to accept mechanical complexity and solve many difficult problems in the pursuit of minimum drag. The team expects a minimum drag from all sources of only 31 or 32lb at about 100ft/sec. As an indication of the difficulty of achieving this level of drag, the team has even had to give serious thought to the ventilation of the cabin. If the machine took in four square inches of ambient air and substantially brought it to rest in the cockpit, this would reduce the performance by 1%.

MECHANICAL ASPECTS

The major design feature is the flap, and after considering various methods of operating it, the team eventually decided to go for a swinging lever system. In retrospect, at least some members of the team feel that a rail system such as that used in the South African BJ sailplanes would probably have been preferable.

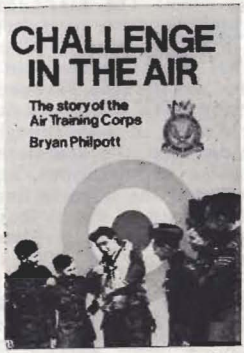
The big problem with the swinging levers was getting the two axes angled to the exact degree required. Unless these are right, the "in" and "out" positions of the flap cannot both be right, and since the exact wing sections have to be achieved in both cases, it was necessary to solve this problem. The kinematics of the linkage and the drive to it were straightforward on the parallel chord centre section, but on the tapered outer section the reverse was the case. However, as the flap is strictly a two-position device (either "in" or "out"), it was thought possible to arrange that the kinematics are correct in those two positions, and the team believes that the imperfections in between will not lead to excess loads in the operating system. Other problems include friction and getting 30ft of hinges in line.

The swinging levers occupy a large part of the volume of the wing, and, therefore, play a significant part in the design of the wing structure. The glider is designed to 5*g* proof, with a factor of 1.5 to give 7.5*g* ultimate. Fortunately, a large part of the gross weight is in the wing, so the wingroot bending moments are not impossibly large. Nevertheless, with a span of 69ft and a span depth of 4.6in, considerable difficulty has been experienced with introducing the required



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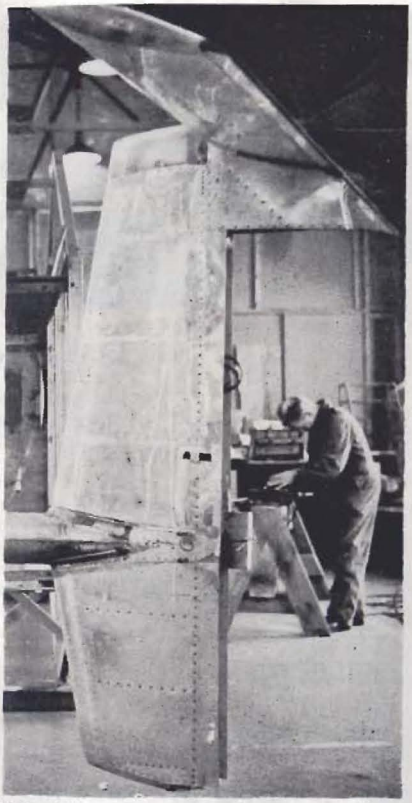
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Tail, with rudder removed. Photo: A. Coates

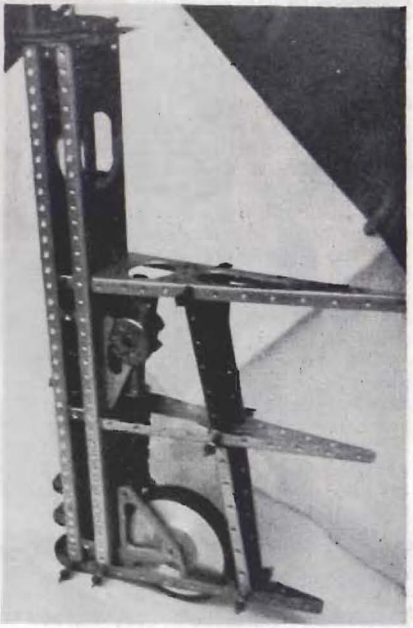
boom material. In order to concentrate the boom material at maximum spar depth, the team decided to use thick skins over as much of the chord as possible. The size of the flap and the need to keep the shear web forward of it when housed defined the position of the shear web. Due to the swinging levers, it was not possible to put in spanwise stiffeners. As a result, the wing has skins which, at the root, are about $\frac{5}{16}$in thick. This thickness steps down as one moves outboard.

The shear web is made out of a piece of thick plate with appropriate holes for the levers milled out of it and additional holes to lighten the structure.

On a high aspect ratio wing (the team believes that Sigma's is probably the highest aspect ratio cantilever wing ever built) there is usually a problem of torsional stiffness. Calculations have showed that in Sigma's case, the unique structure provides an extremely stiff wing, and the team does not expect to be in any difficulty with regard to flutter within the flight envelope.

The next major problem to be overcome was the need for transport joints between the centre and outer wing sections. The high bending moment and the small spar depth led to the use of the tongue-and-fork type of joint in which the spars are overlapped and the load is transferred by horizontally displaced shear pins. It was a heavy, expensive joint to build, but the team could see no feasible way of joining the curved upper and lower skins to transfer the compression and tension loads directly.

It was, of course, very important to ensure that when building the wing and the transport joint no twist creeps in. At first sight, this meant a full span jig, which was fairly impracticable in any reasonable working space. The jig made



Retractable tail wheel shown in the up position.



Centre section, showing bolted straps and swinging lever. Photo: A. Coates.

is, in fact, a reversible one capable of building port or starboard wings complete. As a result, the centre section was built in two halves which required joining on the centre line. At first glance, the problem there would be even more severe than the transport joint since the bending moments are higher, There are, however, major easements. First, the joint is a permanent one, and, second, it is buried in the fuselage and can, therefore, be external to the wing surface. It was, therefore, simple to complete the joint by means of a series of external bolted straps, as shown.

The drives for the aileron and the camber flap consist of torsion rods running inside the flap with an arrangement of universal joints at the root end to maintain the drive in both flap positions. The team would have preferred to use a push-pull drive system but, without putting horns to operate the surfaces out into the airflow, this was impossible to achieve. Even fitting the torsion bar drive was difficult as the thickness of the aileron was about ¼in and nothing should stick out from its line.

Two torsion drives to the airbrake and aileron spoilers were also designed. Despite the fact that they are on the fixed part of the wing, they were equally difficult to introduce, and the team has had to replace the torque tubes for the aileron spoiler by a cable-operated mechanism.

Having got drives to those four surfaces and the main flap, the next problem was connecting the pilot to them.

There are four pilot controls to operate the five surfaces. Each control operates two surfaces, save the flap control, which operates three. The effects are shown in the table opposite.

A mixing box of considerable ingenuity was required to achieve the desired control movements. It is mounted over the centre of the wing, and resembles an enormous parasitic metal spider. It will, of course, be faired over with the rest of the wingroot/fuselage ensemble.

Power for operating the flap mechanism is provided hydraulically. Maintenance of the necessary hydraulic pressure is

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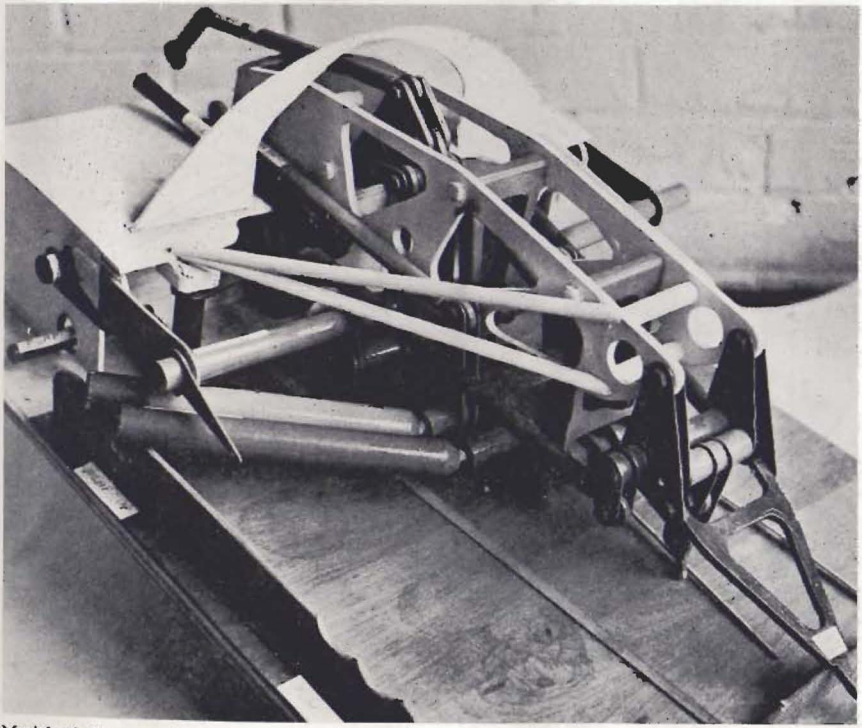
SURFACES	PILOT'S CONTROLS			
	Flaps	Camber	Airbrake	Aileron
Flap	in out			
Camber flap	0 +10°	+10° − 3°	0 +45°	
Airbrake			0 −45°	
Aileron	0 +10°	+10° − 3°		+25° −30°
Aileron spoiler				0 −30°

achieved by joining the hydraulic pump to the rudder adjustment mechanism. The pilot pushes both rudder pedals back and forth with both feet together to build up pressure. It is still possible to operate the rudder while pumping, in the normal manner. About a dozen pumps every now and then is all that is required to maintain pressure. A warning light or buzzer will be installed to indicate when pressure gets too low.

An oxygen cylinder is installed in the nose of the glider, together with a battery rack. There is also a battery rack installed further back. The glider will carry four batteries weighing a total of 14lb. They can be arranged to adjust the centre of gravity: All four can be installed in the forward or the rear positions or, alternatively, two can be placed in each position, enabling the C of G to be adjusted to the same point regardless of pilot weight.

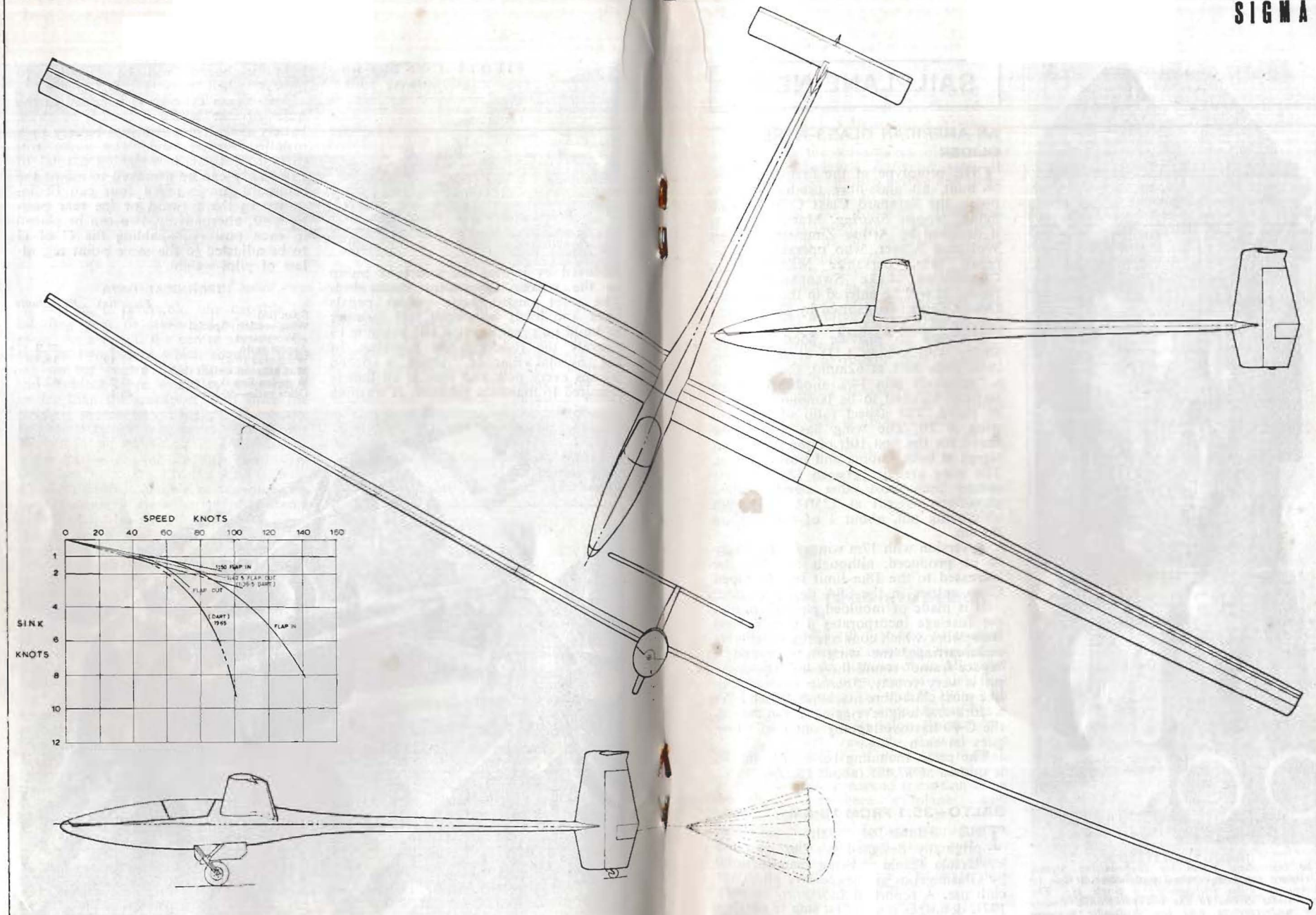
TECHNICAL DATA

	Flaps (in)	*Flaps (out)*
Span (m)	21	
Wing section, Special Wortmann		
Aspect ratio	32.6	26.8
Wing area (m^2)	12.19	16.45
Max take-off weight (kg)	703	
Wing loading (km/m^2)	47.7	42.7
Glide ratio—60 kts	49:1	



Model of the control mixer. Photo: A. Coates.

GA drawing see centre pages.


SPEED KNOTS
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2
4
6
8
10
12
SINK
KNOTS
1250 FLAP IN
FLAP OUT
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FLAP IN



The instrument panel for flight-testing Sigma. Designed for easy removal and access, it can be disconnected by withdrawing a single pin. The two white circles in the left foreground denote the undercarriage and low hydraulic pressure warning buzzers. Photo: A. Coates.

SAILPLANE NEWS

AN AMERICAN GLASS-FIBRE GLIDER

THE prototype of the first American-built, all glass-fibre production sailplane, the Standard Class C-70, is now flying, reports *Soaring*, March 1971. It is designed by Arthur Zimmermann and Wolfgang Schaer, who operate a glider repair firm, Berkshire Manufacturing Corporation, Lake Swannanoa, New Jersey. It will be entered in the Sailplane Design Contest organised by the Soaring Society of America.

Designed to provide good climbing ability with a high L/D at fast speeds (best glide 39:1 at 62mph), the airfoil is a "relatively thin 14% modified Eppler section" claimed to be laminar for 65% of chord. The aspect ratio of the 15m wing is 20. The wing has a constant chord for the first 10ft of the span, then tapers at both leading and trailing edges. The wing area is between 12 and 20ft² greater than most other standard class glass-fibre aircraft at 125ft². It has an all-moving tail, about ⅓ of the way up the fin.

A version with 17m wings is also likely to be produced, although this may be increased to the 18m limit for the Open Class entries in the SSA design contest.

It is made of moulded glass-fibre, and the fuselage incorporates a tubular-steel framework which connects the retractable undercarriage, the wing fittings and a "space frame" round the pilot. The cockpit is very roomy, *Soaring* reports. Unlike most glass-fibre machines, which have a fork-and-tongue rigging arrangement, the C-70 has overlapping single-spar tongues on each wing.

The price, including basic instruments, is quoted as $7,495 (about £3,120).

SALTO—35:1 FROM 13·6M

THE Hütter-101 Salto sailplane, originally designed for her own use by Ursula Hänle is being manufactured by Glasflügel as an inexpensive glider for club use. A report in *Luftsport*, January 1971, describes it as a first step to employ the new glassfibre techniques to obtain

a price reduction rather than performance increase.

It has a Std Libelle wing shortened to 13.6m and the glide angle is claimed to be 34.5 to 35:1. Fitted with a V-tail, it is robustly constructed, easily maintained and has all the advantages of modern glass-fibre sailplanes, *Luftsport* says. It is "easily rigged" by two people and there are no loose fittings to get lost.

There are no problems flyingwise, although it is better not to let beginners practise on it as the sensitive controls are extremely quick and the outstanding speed characteristics require some experience. Landing in small fields is easy, as the Salto has large flaps, good slip qualities and a large fixed wheel.

During test flying, Salto reached 330km/h without difficulty, and Glasflügel intends to obtain fully aerobatic approval for it.

The first batch should be available by August, 1971, and the price (without value added tax) is about £2,000.

TECHNICAL DATA

Span (m)	13.60
Wing Section as for Std. Libelle	
Wing area (m^2)	8.50
Aspect ratio	22
Wingloading (kg/m^2)	29.4
Empty weight (kg)	170
Pay load (kg)	80
AUW (kg)	250
Glide ratio at (km/h)	35:1/65
Maximum speed (km/h)	250

PILATUS B-4 TO GO INTO SERIES PRODUCTION

THE Swiss Pilatus firm has, after careful world market research, decided to go into series production of an all-metal single-seater, the prototype of which flew for the first time at the end of 1966. The prototype was built by Jugo Herbst, Manfred Küppers and Rudolph Reinke.

The market research showed that Germany would be a promising market, which surprised the firm not a little, as there had been a marked transition from wood to glass-fibre sailplanes, says *Aerokurier*, April 1971.

Before the work for series production started, steps had been taken with the help of Jugo Herbst to get the glider approved, and its type certificate was issued in November 1970.

Pilatus is at present working on redesigning the prototype so that the pro-

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duction machine will be improved. The airbrakes, ailerons, wingtips and fittings, as well as the transition of the wingroot to fuselage, will receive special attention. Also, the cockpit will be redesigned.

When all this has been carried out, the B-4 will again be test-flown before production starts. The first delivery is scheduled for November.

Details from Pilatus Flugzeugwerke AG, CH-6370 Stans, Switzerland.

TECHNICAL DATA

	Prototype	*Production*
Span (m)	14.8	15.0
Wing section, NACA 64,618		
Wing area (m²)	13.95	14.04
Aspect ratio	15.7	16
Wing loading (kg/m²)	25.1	25.0
Empty weight (kg)	240	230
Pay load (kg)	110	120
All up weight	350	350
Glide ratio at (km/h)	34:1/85	35:1/85
Minimum sink (m/sec)	0.65	0.64
at (km/h)	72	72
Maximum speed (km/h)	180	240

AN-66C—THE SWISS SIGMA

SINCE our last report (S & G, December 1969, p466) the completion of this advanced machine with a variable area wing has been delayed. This was partly due to development work on the Elfe S-4 and AN-17 (S & G, December 1969), but in general the lack of staff and insecurity of workshop space have made things very difficult for Albert Neukom, who at present is working entirely on his own. It is noteworthy that this man, with very modest means, produces such high-quality aircraft where many large firms invest many millions, states *Aero Revue*, March 1971, reviewing its progress.

The variable area wing produced many headaches for its designer, but these and other problems have been solved, some with the help of Professor Eppler. The AN-66C "should be ready to fly shortly".

Although the height of the fuselage is only 76cm (about 30in) and the width 60cm (about 24 in), the pilot should have sufficient room, in a semi-supine position, to manouevre himself even though the cockpit is laid out to save space where ever possible.

The instrument panel is in two parts. The lower is fixed and houses the radio equipment, while the upper half can be swung to the right. This facilitates getting in, and would also be of advantage in the event of having to bale out.

Fitted on the left hand side of the cockpit is a lever for the Schempp-Hirth airbrakes as well as the crank handle for the chain-operated variable wing area flaps. It is possible to change to the optimum flap setting at any time.

The undercarriage lever is situated on the right hand side. The pilot should, however, never forget to let the very large wheel down, as failure to do so would almost certainly lead to damage or even a write-off as the wheel-up clearance is only 42cm (about 17in).

The three-piece wing is constructed with a rivetted light-alloy double-T spar with a vacuum-pressed plywood-sandwich outer shell.

The combination of "Wölb" (camber) and Fowler flaps are described by *Aero Revue* as "sensational". When the camber flaps are fully extended the wing area increases by 20%.

Water tanks which can hold 120 litres are housed in the 6.5m long centre-section. Thus, the wing loading can range from 27.6kg/m² without ballast and with extended flaps to 40.6kg/m² with full ballast and flaps retracted.

Minimum sink is estimated to be below 0.45m/sec and the glide angle around 50:1.

Two 60cm (about 24in) cylindrical bolts fix the 120kg centre-section to the fuselage. The ailerons and brakes are push-rod operated. The outer wing panels (each 8.25m long) are fitted to the centre-section with a single pin.

TECHNICAL DATA

	Flaps (in)	*Flaps (out)*
Span (m)	23	23
Wing section, Eppler		
Wing area (m²)	16	19.2
Aspect ratio	33.1	27.6
Wing loading (kg/m²)	33.1	27.6
Ballast (kg)	120	120
AUW with ballast (kg)	650	650
Wing loading with ballast (kg/m²)	40.6	33.8
Empty weight (kg)	420	420
Pay load (kg)	110	110
All up weight (kg)	530	530
Maximum speed (km/h)	200	

BOOKLET OF SAILPLANES

"FUNFZIG Moderne Segelflugzeuge," published by Walter Zuerl, 8031 Steinebach/Wörthsee, W. Germany, gives

whole-page photos of 50 modern sailplanes—many of them in flight—each facing a page of data, including materials of construction, with names of designer and constructor. Among the more interesting ones are:

Finnish 15m PIK-17B Tintti, derived from the 12-metre 17A Tumppi built of wood; gliding ratio 34; sink 0.59m/s; a conventional design by Kurt Hedström.

Italian 17.64m Crib EC.41, developed from Uribel-C; gliding ratio 38; sink 0.8m/s; built of wood; designer Edgardo Ciani.

Polish 14m Kobuz 3, SZD 21-2B midwing; shell-type fuselage covered by plywood and GfK (glass-fibre).

Swiss 15m Alfred Schiller design FS-1; aspect ratio 20; Wing GfK sandwich; T-tail; gliding ratio 40; min sink 0.57m/s; max speed 225km/h.

Hungarian 15m Esztergom E-21 designed by Eno Rubrik. Wing all-metal; fuselage metal with fabric covering; max speed 250km/h. Intended for training.

United States 18.29m Tern II, designed by Terry Miller of Warminster, Pa. Shoulder-wing, two-spar, plywood-covered; fuselage of wood, half-shell; conventional tail. Gliding ratio 38 at 93km/h; min sink 0.63m/s at 75km/h; max speed 190km/h.

FALKES—20 ORDERED IN UK FOR 1971

ABOUT 20 of the 36 motor Falkes scheduled to be produced by Slingsby Sailplanes in 1971 have been ordered by customers in the UK. Bill Slater, general manager, told S & G at an Open Day on April 3 that there was a good export potential for the Falke. Scheibe had its hands full producing nine Falkes a month for the German market and was leaving the rest to Slingsbys.

If the UK Market tapered off, he said, Slingsby would have to look into producing a suitable engine design for the United States market, where (since most training was professional) there was a big potential for motor gliders. The present VW engine was unacceptable to the United States.

Both the Falke and the Kestrel 17 were demonstrated at the Open Day, attended by about 150 people. A special coach from London had been organised by Slingsbys and picked up passengers at the different M1 service stations.

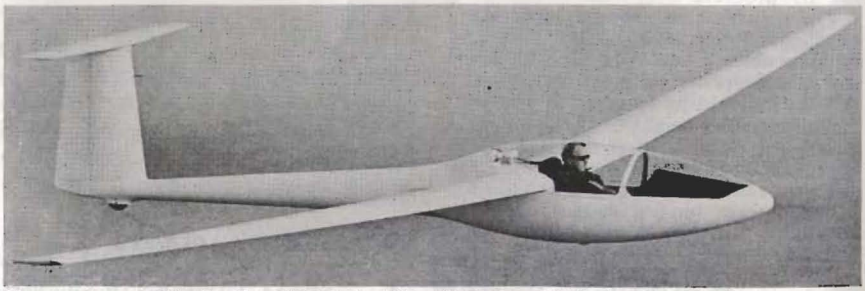
TORVA FLIES

THE prototype Torva Sport 15m glider had a successful maiden flight on Saturday, May 8. It was launched from RAF Driffield, and piloted by Chris Riddell, director of Torva Ltd. Derek Piggott will be carrying out the test-flying programme. See back cover for photographs.

FOUR NIMBUS 2 FOR UK

FOUR Nimbus 2 sailplanes, manufactured by Schempp-Hirth (UK agent, Southern Sailplanes, Thruxton airfield, Andover, Hants, telephone Weyhill 373), have so far been sold in Britain. Purchasers include David Innes (delivery February/March, 1972), Alan Purnell (March, 1972) and Anne Burns (May, 1972), the agent says.

CORRECTIONS: S & G Feb-Mar, pages 19 and 21. S & G Apr-May, 1971, page 91. Technical data tables for ASW-17, Calif. series and Torva should read—wingloading at max. L/D and not Max. L/D as stated.



The experimental Slingsby Kestrel 19 with carbon-fibre spar, which flew for the first time about May 4. Pilot: George Burton. Photo: courtesy 'Daily Express'.

BGA AND GENERAL NEWS

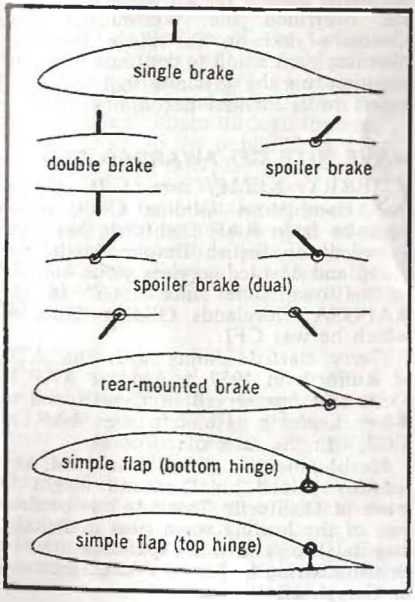
FLAPS FOR STANDARD CLASS

STANDARD Class machines for the 1974 World Championships, and subsequently, may now have as approach-control devices, airbrakes or fixed-hinge flaps, but not both. Any method of changing the wing profile other than by the use of fixed-hinge flaps and the normal use of ailerons is, however, prohibited. There is now no speed-limiting or minimum opening time requirement.

Details: The glider must be fitted with airbrakes or simple fixed-hinge flaps. The single device shall comprise an arrangement of movable surfaces on each wing, operated by direct linkage, and the design and construction of the device must be such that it is capable of continuous and full movement by manual operation of a single control lever.

Airbrakes may be fitted to project above the wing surface, or above and below the surface.

The simple fixed-hinge flap is defined as a rigid auxiliary surface directly attached to the wing structure by hinges immovably fixed thereto. The hinge line must run spanwise and be a single (projected, if multi-segment) line concurrent with the airfoil exterior surface with the flaps in any position. The flap shall comprise only a single element in any chordwise section, but may be divided into two or more sections spanwise. There may be no other moving/rotating bearings/cams or any such device. The hinge line must be on the flap surface, ie, no extended hinge line outside the flap, but on/in the wing.



The term "fixed-hinge" means that the hinge line cannot move and there cannot be movement on the hinge line other than rotational about the axis of the hinge.

There can be no connection between the flap and the aileron.

The drawings shown illustrate acceptable systems. All flap designs must be submitted, for approval by the CIVV, eight months before a World Standard Class Championships. Gliders which flew in the Standard Class before January 1, 1971, are exempt from this requirement.

Drop parachutes and/or any other methods of approach control are prohibited.

BRITISH TEAM FOR YUGOSLAVIA —POSTAL SELECTION

A SINGLE list of pilots in overall order of merit, rather than the former two lists (for Open and Standard classes), will be compiled by postal vote by the pilots coming in the top quarter of each of the four Nationals classes in 1971, rounded to the nearest greater whole number. Any pilot in the top 20 places in the 1971 Nationals Entry list (S & G, December 1970, p459) not included above and the four 1970 British team pilots will be added to the selectors. However, any pilot included above who has not competed in at least two British National Championships will be excluded.

The following information will be sent to each selector together with voting

papers one week after the conclusion of the Sport/Club class at Husbands Bosworth—ie, on June 26: The names and placings of pilots who were placed in the top eight positions of each Nationals class in 1969, 1970 and 1971 and, if applicable, the position he achieved in the World Championships in 1968 and 1970.

Selectors will be free to vote for any British glider pilot. Each selector will write down a single list of pilots' names in what he considers to be merit order, down to 10. He may not include his own name on his own list. Voting papers will not be signed, and will be sealed inside an inner envelope opened only by the scrutineers, who will be three members of the Executive Committee, including the chairman of the Flying Committee (unless he is a selector). Correlation of envelope numbers with selectors' names will be known only to the BGA secretary.

The preparation of an overall merit order list will be carried out by the scrutineers from the selectors' voting papers by an agreed method which follows the principles used for the selection of British team pilots carried out in person in 1969.

BGA FLYING TROPHIES—DETAILS

SEVERAL of the BGA annual award trophies for flights in 1970 were not claimed, repeating a situation which has occurred in past years. Pilots are urged to notify the BGA of any suitable flights and not, as the *BGA Newsletter*, October 1970, says, "leave them to someone else or shrug it off with the thought that somebody else has probably done a better flight".

Flights made between October 1, 1970, and September 30, 1971, will qualify for the 1971 awards. The awards are as follows:

Wakefield Trophy for the longest flight; Volk Cup for the longest closed circuit flight; Frank Foster Trophy for the fastest speed round a 100km triangle; Manio Cup for the fastest speed round a 300km triangle; De Havilland Cup for the greatest gain of height; Seager Cup for the best closed circuit in a two-seater; California in England Trophy for the longest flight by a woman; Douglas Trophy to the club aggregating the longest distance from three flights and the Robert Perfect Trophy to the club with most fully rated instructors per member.

There are also two National Ladder trophies, the L. du Garde Peach Trophy for the best performance in club gliders and the Enigma Trophy for the best performance in privately owned gliders.

NOTE: Triangle flights for the Frank Foster Trophy and Manio Cup must comply with the 28% rule.

BRITISH NATIONAL AND UK RECORDS HOMOLOGATED

British National Multi-seaters: Gain of height, L. S. Hood and M. V. Slater (in France), 3.2.1970, 6,300m, K-7.

United Kingdom Multi-seaters: 200km Goal speed, B. J. Willson and G. H. Daniels, 11.7.1970, 77.8km/h, Blanik.

ENVIRONMENT MINISTER REPRIEVES KRONFELD CLUB

MR PETER WALKER, Environment Minister, has given permission for the Kronfeld Club to remain at 74 Eccleston Square for a further five years. He overruled the Westminster City Council's decision to refuse the club planning permission to continue using the premises on the grounds that it should revert to residential accommodation.

WAVE SITE CFI AWARDED BEM

GERRY KEMP, now CFI of the Hambletons Gliding Club, which operates from RAF Dishforth, has been awarded the British Empire Medal for "long and devoted services given entirely in his own time since 1966" to the RAFGSA Clevelands Gliding Club, of which he was CFI.

Gerry started gliding with the ATC at Rufforth in 1957, joined the RAF in 1958, and has served in Cyprus and at RAF Leeming. He left the RAF in 1970 with the rank of corporal.

He obtained his Silver C in 1964, and recently gained his Diamond height in wave at Dishforth. This site has become one of the leading wave sites in Britain, and its success in this expanding area of British soaring is due in a large measure to Gerry's efforts.

He is now associated with Barrie Goldsborough at Yorkshire Sailplanes, and glides at Dishforth and Sutton Bank. The investiture, by the Commander in Chief, Training Command, was held on April 26.

THIRD LONDON AIRPORT TO BE AT FOULNESS

THE Government announcement that the third London airport would be sited at Foulness, on the Essex coast northeast of Southend, has alleviated a severe long-term airspace threat to gliding in Britain.

The British Gliding Association has firmly supported the selection of Foulness for the third London airport if one was to be built at all. The Roskill Commission in its report had recommended Cublington, near Aylesbury, Bucks. If that had been accepted by the government, it would have meant the curtailing of the activities of several clubs to the northwest of London and severely restricting cross-country activities in the southern half of England.

AVIATION ART EXHIBITION

THE first exhibition of the Guild of Aviation Artists will be held at the Royal Aeronautical Society, 4 Hamilton Place, Piccadilly, London W1, from July 1 to 7. Entitled "Flight through the ages", it will be open to the public from 11am to 5pm, including Saturday (until 8pm on Monday, July 5 and Wednesday, July 7). Admission will be by catalogue, price 15p. Enquiries regarding membership of the Guild or the exhibition should be sent to Mrs Yvonne Bonham, 11 Great Spilman, London, SE22, telephone 01-693 3033.

REARSBY CLOSED

REARSBY airfield, home of the Leicestershire Gliding Club, closed entirely (for both powered aircraft and gliders) from Monday, May 3. It is understood that the field, which is to be used for farming purposes, is likely to be strip-grazed, with electric fences.

The future of the Leicestershire Gliding Club was uncertain at the time of going to Press.

FILM ABOUT MARFA 1970

A COPY of "Where no birds fly", a 55 minute, 61mm colour film with sound of the 1970 World Championships, has been purchased by the BGA. It is available for hire, at £5 per showing (plus postage) to member clubs and £7 to others, from the BGA.

The film follows the course of the championships from the trailers being hauled out of the ship's hold (a harrowing sequence) to the final prize-giving. Although intended for lay audiences (it was made by a commercial firm based in Texas), many of the flying sequences are very fine—GL.

BGA ELECTIONS

F. J. BUSTARD was elected and the following members re-elected to the Executive Committee of Management at the Annual General Meeting on March 27: C. R. Simpson (vice-chairman), Joan Cloke, Ann Welch, J. C. Riddell and J. C. Large. P. A. Wills was re-elected President of the BGA, and Air Marshal Sir Theodore McEvoy, E. J. Furlong, B. A. G. Meads and P. M. Scott re-elected Vice-Presidents. Dr. A. E. Slater was elected a Vice-President of the Association.

Inge Deen, our previous general secretary, was given a silver salver inscribed with the signatures of Council members during her term of office in recognition of her work for the Association.

NEW AIRSPACE CHAIRMAN

DAVID INCE, chairman of the Airspace Committee, has been forced to resign because of a change of jobs, and John Ellis has agreed to succeed him.

RADIO CALL SIGNS—RECOMMENDATION

A MEETING of the BGA Executive Committee decided on April 14 to recommend that competition numbers should be used as identification of both parties to a radio conversation. This change in the use of Radio Call Signs was suggested by the Flying Committee, in the interest of safety, to ease communication with, and identification of, other airborne gliders within visual range.

OVERSEAS NEWS



Please send news and exchange copies of journals to the Overseas News Editor's new address: A. E. SLATER, 7 Highworth Avenue, Cambridge CB4 2BQ, England.

SOARING IN SPAIN

By ANGEL ANGLADA

TWO civil gliding clubs were started in Spain in 1965 and are still operating after much fighting and little flying. Madrid's club is 103km from the city in the small village of Mora de Toledo, and our Barcelona activities are at the town of Igualada, 60km to the northwest of the city.

In Mora they have two Swallows, one Pirat, and two Blaniks on order which were due to arrive from Czechoslovakia this spring. A winch is used, on one or other of two crossed, mile-long runways. The site is 740m above sea level in northern La Mancha, which to my understanding is one of the best soaring places we have in Europe for closed circuit flights (500km of course, although none have been achieved yet due to our lack of up-to-date penetrating birds). To give the English reader an idea of the possibilities in central Spain, 300km triangle flights have been achieved with modest L-Spatz-55's during the month of July. A 300km goal-and-return flight was done in mid-May, this time with a Foka 4. Exceptional days in summer may push the ceiling to over 3,500m above the ground, making it possible to obtain Gold C heights. Ceilings of 2,500m are standard. It is very dry, and shade temperatures are well in the 35 to 40°C bracket. Clouds are scarce and dry thermals are what one finds most often. These are very strong indeed (2 to 4m/sec is common on a good day, although I have been lifted several times at a steady 5 to 7m/sec.). Downdrafts are also remarkable and sometimes you may not find a thermal for 15 to 20km.

Last July, two German gliding clubs sent 25 members with four sailplanes. Some camped on the airfield and others used Mora's marginal hotel facilities. At the end of their stay, results were quite interesting: Two complete Silver C's, seven Gold C heights and several 300 and 500km triangle attempts. They could have been better had it not been for the bullfights, sightseeing, cheap wine and late nights.

In Barcelona we have nine gliders and a 150HP Piper PA-18 towplane. The runway is only 650 metres long with a difference in height of 14m between ends, which requires precise tugging. Some 3km east, there is a 300m ridge which is very handy, as it has two slopes, north and south. Thermals occur mainly in spring and summer, although last February we had a wonderful Sunday with thermals of 2 to 3m/sec. We try to fly sea breeze fronts, which are very common (the sea is only 40km away), but we truly need a lot of teaching and we always end up at the ridge. In winter, some wave appears over Igualada, but only up to 2,500m. More is to be found further east, in the Pyrenees, where huge wave clouds appear when the north wind blows.

We only fly at weekends and as it seldom rains here, we are grounded very rarely, being able to fly all the year round. Soaring weather is not as good

as in the centre of Spain, but nevertheless very good by European standards. This spring we started to make 300km goal-and-return flights northwest to the Monegros desert, where conditions are supposed to be excellent, although return is difficult due to the persistent sea breeze which can be very strong sometimes.

Let me answer some questions which will inevitably be put forward: The place to go is Mora de Toledo, where the really good soaring weather is. There will be winch facilities all through July. No sailplanes can be hired there, however, so that if you want to make your stay profitable, bring your machine with you. The ferry from Southampton to Bilbao takes 36 hours and you can drive in a day down to Mora. Camping is better than staying in the hotel, as this is noisy and hot, while under canvass you will thank the freshness of the La Mancha nights after a hot and strenuous day.

It will be hard-going if you plan to fly long distances, as facilities are practically non-existent. It is good to have radios installed in both glider and car. Navigation is straight forward using Firestone 1:500,000 road maps, since villages are very far apart and roads and railway tracks are good aids. If you do not want to walk for hours alone under the sizzling sun avoid landing in the open country. Do it always near a village or, better still, near a petrol station on a main road (phoning the airfield will take you several hours). People will help you very much (sometimes too much), but be very patient, and when your crew has come to put the ship on the trailer, pay your helpers something for a drink or the petrol cost if transportation has been involved. The inevitable Guardia Civil will come up taking note of the whole incident; it is their duty and again be patient. If crop has been damaged, offer to compensate, but do not be overgenerous.

Always carry a pullover with you in the ship, as nights can get very fresh sometimes. While flying, a hat is necessary, and wear long trousers as well as long sleeved shirts so as to expose as little as possible of your skin to the strong sun. There is a modern and big swimming pool in Mora, which will be a relief to crew members. You will discover that soaring is scarcely known here but, nevertheless, I bet this will be one of the most memorable flying holidays you have had for many years. With a good ship and fair training, you may go back with a thrilling 500km triangle in your logbook.

Anybody from the UK wishing to spend a soaring holiday in Spain can contact me and I shall try to help as best I can. The address is Angel Anglada, Layetana 12, Barcelona, telephone 310.46.10.

CAMERON RETAINS NZ OPEN TITLE

ALAN Cameron, flying a Std Libelle, successfully defended his Open class title at the 8th Rothman's Gliding Championships New Zealand, held at Waipukurai in the North Island, from January 2 to 15. Bruce Drake, a newcomer from Christchurch, came second in the field of 10, flying an SHK. Several well-known pilots fared none too well in a weather-marred contest in which there were only seven contest days.

For the first time, the Standard class was run separately, and had different tasks to the Open class; pilots could not enter both classes. Entries for the Standard and Sports classes numbered 26. Tony Timmermans of Auckland, flying a Std Cirrus, won the Standard class, with Doug Yarrall (Std Cirrus) second, while Peter Lyons of Hawkes Bay (K-6CR) won the Sports class, scored on handicap, with John Sheppard of Auckland (K-6CR) second.

The first contest day featured a 168km triangle for the Open class and a 135km out-and-return for the Standard and Sports classes. Only four completed the Open task, with Alan Cameron making the fastest time at 68.66km/hr, while Doug Yarrall won the Standard class (launched after the Open class into stronger conditions) at 77.09km/hr. Dave



Alan Cameron (L) and Bruce Drake, Open class winner and runner-up. Photo: R. A. MacIntyre

Wright won the Sports class with a K-6E.

All classes had the same task on the second day, January 3, twice round a 72km triangle. Alan Cameron made the fastest time, 87.3km/hr, while Tony Timmermanns won the Standard class with the second fastest time, 84.32km/hr. John Sheppard won the Sports class.

Cyclone Rosie brought flying to a halt for the next six days, and the third contest task was on January 10 with a 167km triangle for the Open class. Nobody got round due to cloud cover at Woodville, the second TP; Peter Heginbotham made the best distance, 117km. The Standard and Sports classes were set a 146km triangle with turning points north of those for the Open class, and were launched earlier, into better conditions. Five Standard class pilots completed the triangle, and the winner was Tony Fowke (ASW-15) at a speed of 58.06 km/hr. Peter Lyons made the best distance in the Sports class, 95km.

For the fourth contest day, on January 11, a task consisting of two consecutive triangles was set for all classes: Waipukurau - Otamauri - Takapau - Waipukurau - Kereru - Takapau - Waipukurau. Conditions were much weaker than forecast, and the leading pilots in each class made only about 150 to 157km. A K-6E made the best distance, 157km, piloted by Dave Wright, who won the Standard class, but only came second in the Sports class, John Sheppard winning on handicap.

The fifth day, on January 13, was a 202km out-and-return race to Eketahuana for all competitors. Doug Yarrall made by far the fastest time (75.69km/hr) to win the Standard class, while R. Carmichael (Libelle 301) won the Open class with 68.6km/hr. A. Stougie, in a K-6BR, won the Sports class. He was flying the oldest machine and was competing for the first time.

The sixth day was a cat's cradle task, with turning points at Takakau, Tikokine, Maraekakahoe, Bridge Pa, Pukahu, Te Aute and Waipukurau. P. Gatland, flying a Cirrus in the Open class, made the best distance, 181km, while Tony Timmermans won the Standard class with 115km and A. Stougie the Sports.

The seventh day, on January 15, featured a short, 87km out-and-return for all classes. Fastest times: Alan Cameron, 79.82km/hr, to gain 1,000 points in the Open class and Tony Fowke (ASW-15), 78.97km/hr, to do the same in the Standard class. Peter Lyons won the Sports class, to make him overall winner in the class and win for his club the Rothman's prize of a $2,500 interest-free loan.

Final results

OPEN CLASS: 1, Alan Cameron, Std Libelle, 5,048; 2, Bruce Drake, SHK, 4,559; 3, Ross Carmichael and R. Gordon, Libelle 301, 4,167.

STANDARD CLASS: 1, Tony Timmermans, Std Cirrus, 5,878; 2, Doug Yarrall, Std Cirrus, 5,716; 3, Tony Fowke, ASW-15, 5,501.

SPORTS CLASS: 1, Peter Lyons, K-6CR, 5,003; 2, John Sheppard K-6CR, 4,939; 3, J. and G. White, K-6E, 4,761.

Footnote: The weather improved after the championships, and on January 17, Frank Gatland flew his Cirrus 275 miles from Ardmore to Masterton, almost the length of North Island—the first time this flight has been done. He won a special prize of $600 from Rothmans for his club and a gold cup.

R. A. MACINTYRE

ARCTIC WAVE CAMP

THE annual wave camp of the Kiruna Flying Club in Arctic Sweden over Easter produced a superb mixture of tourist sunshine and good wave flying conditions. Seventeen gliders from Sweden and Finland took part, flying a total of 540 hours from 610 launches. On six of the 16 flying days, every single flight contacted wave of some kind and resulted in a flight of at least an hour. The best height was to 7,500m (24,600ft) by Robin King, an Englishman living in Finland, and there were 19 other flights above 5,000m (16,400ft), 20 between 4,000 and 5,000m, and 37 between 3,000 and 4,000.

Among the 5,000m flights was one of 5,300m in the Kiruna Club's two-seater Bergfalke by Anita Fransson and Kerstin Ericsson. This is being submitted for the woman's Swedish two-seater altitude record.

For his part, your correspondent took off for a quick evening flight an hour and a quarter before the airfield was due to close, made it up to 5,600m above the field and back again with a couple of minutes to spare and a barograph trace that looks like a fake.

Most of the high flights came on three days when the north-west wind rolled over the 2,000m summit of Kebnekaise, the highest mountain in Sweden; but on the other days also, the gentlest zephyrs over the north and south ridges near the aifield seemed capable of producing wave conditions sufficient for endless gentlemanly beats along the valleys at one or two thousand metres. When this palled, we went ski-ing in the hills, or skated along the club's unique ice airstrip.

Less fortunately, because of the mild weather and lack of snow this year, the runway was so slippery that it caused the meeting's only mishap. The best towplane at the camp, a PIK 15 "Hinu", owned by the Technical University of Helsinki, was taking off with a glider belonging to the same University, which had not been properly aligned on the runway. The glider pulled the tug's tail round on the slippery surface so that it dug its nose into the piled snow at the side of the runway. The glider, quite unable to stop or turn, then cannoned into the Hinu and tipped it on its back with lots of expensive tinkles. No human damage, other than the pride of the World War II pilot of the tug.

But that sort of damage was bad luck and is vary rare. For the rest, the camp was an unusual and unforgettable experience. Why not try it? There's diamonds in them thar hills.

A. C. STUART.

MOTOR GLIDERS — TECHNICAL CONTEST AT BURG FEUERSTEIN

A RECENT conference of the Technical Committee of the German Aero Club showed the rapid development of the motor glider. The 1970 figures showed 356 currently certificated in West Germany (see p214).

The manufacturers want to bring to the fore this "typical German postwar development" with a trade fair to be held in conjunction with the motor glider competitions at Burg Feuerstein, from June 6 to 13, where they intend to show empanages, engines, propellers, accessories, etc.

At the conference, the criteria for performance assessment were discussed so that it will be possible to get an unequivocal level of evaluation.

A technical contest will be organised under Hans Zacher. The object is to increase, through technical measures, the operational use of the motor glider as a training, performance and cross-country machine as well as to increase flying safety.

There will be two classes: one for private builders and the other for the industry. Evaluation will be given to constructive ideas, which should be presented together with practical technical solutions. These will be divided into groups as follows;

1. Noise level damping; both inside and outside noise will be measured.

2. Improving starter characteristics, especially taking into account the operational reliability with a cold and a warm engine.

3. Improvement of the power unit *vis a vis* operational safety, to reduce costs and maintenance, and to increase the power performance with the propeller (with reference to the aerodynamic situation both with motor on and off).

4. Convenience of rigging and de-rigging, to reduce hangar space and for ease of retrieves.

5. Improvements to one-off types to increase operational safety, management, performance and efficiency.

6. Improvement and simplification of fuel storage indications and fuel level presentation both in the air and on the ground.

7. Improvement of the registry of exact and reliable engine-on time. The on/off time together with related height. Suitability as standard equipment for competition purposes is to be borne in mind, together with cost and space saving.

The three or four judges will be invited by the Chairman of the Technical Committee, and their decisions will be final. Apart from special prizes, there will be money prizes depending on how much is raised from donations.

All members of the German Aero Club and those associated with it are eligible for entry, as are all German manufacturers and development firms. Guests may be invited in special cases by the Technical Committee.

GERMAN MOTOR GLIDERS—44% INCREASE

THERE were 356 motor gliders in West Germany as at the end of last year, compared with 247 a year earlier. Of these, 132 are single-seaters and 224 two-seaters. But these figures include the Fournier RF types 3, 4D and 5, numbering 35 single-seaters and 53 two-seaters (it is noteworthy that the Fournier two-seaters have increased by 34 a year, but their single-seaters by only one).

A table published by the German Aero club shows 17 different types: their horse powers range from 8 for the K-6CR and 8B to 40 for the SF-25B Falke and 68 for the RF-5, both two-seaters. Only the K-6 and K-8 motors cannot be self-started.

Total motor-driven aircraft in West Germany number 3,793, including the above plus 126 helicopters and one airship. There were 2,703 gliders in 1969, the latest figure available.

Daily weather forecasts for German sailplane pilots started as usual on April 1, given out by Südfunk 2, but this year they will be broadcast at 7.30am instead of 8.30 as hitherto.

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The decrease in winch launching in favour of self-launching is shown clearly in the statistics for the Bayern Region where winch launches decreased from 57,000 (1969) to 51,000 (1970). Motor glider launches trebled over the same period from 4,000 (1969) to 12,400 (1970). If one assumes that the same has happened in other regions the motor glider has proved itself as a training device and is here to stay.

Der Adler and *Aerokurier*

AWARDS FOR SOUTH AFRICANS

HUGH Keartland, manager of the South African team at last year's World Championships in Texas, has been awarded the Paul Tissandier Diploma of the Fédération Aéronautique Internationale. Owner of a printing business group with a R10m turnover, he financed the building of the BJ-4 and also bought the Standard Cirrus and ASW-15 which the South African team took to Texas. Now aged 52, he started gliding in 1936, joined the RAF in the war and was early shot down over Düsseldorf. He took up gliding again in the 1960's.

Another award for services to gliding is the South African Aero Club's Gold Medal to Leopold "Ted" Rudnick, of Johannesburg, chairman of the Club's gliding sub-committee. He was manager of the South African team at the 1965 World Championships in Britain.

Eastern Provinces Sailplane Club at Uitenhage has now completely recovered from the disaster a year ago when "an intruder went berserk with a truck in the club hangar" and badly damaged all the aircraft. There are now five club-owned sailplanes (two of them two-seaters) and two privately owned machines.—*Wings over Africa.*

CANADIAN'S 24,000ft IN TERTIARY WAVE

RON Helm, a former employee of Slingsby's and now with Canadair in Montreal, describes in *Free Flight* how, after repeated expeditions over the Border in attempts to get his Diamond height in the Mount Washington wave in New Hampshire (150 miles north of Boston), he finally succeeded last October without using the primary wave.

Towed off in his SHK from North Conway airfield, which is just south of the mountain massif and level with the secondary wave, he encountered turbulence at 100ft which got worse until at 4,500ft he got out of position and had to cast off. He climbed to 6,500ft in the secondary wave, but became disorientated among the newly-forming clouds at its windward border, so made off down wind to the tertiary wave, in which he climbed from 4,200 to 22,000ft at a rate which increased from 400 to 800ft/min. Then he fell out of the lift but, being uncertain whether he had achieved a 16,404ft Diamond climb, went back to the secondary wave, this time far above its cloud. Here, having reached 24,000ft, still climbing, he decided to land and give his partner, Kurt Kovacs, a chance to get his Diamond, which he did. On the same day, Bob Gairns reached 22,000ft in his Libelle H-301, but had a faulty barograph.

Canada's National Championships will be held at Pendleton from July 6 to 16, the hosts being Gatineau Gliding Club.

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Canada, with a population of just over 20 million, has 36 gliding clubs—*Free Flight.*

RIZZI WINS AGAIN IN ARGENTINA

THE 1971 Argentine National Championships were held during the last fortnight of January at Pehuajo, 250 miles west of Buenos Aires, to avoid the aerial congestion nearer the capital. Jean Dazin of France, who took part with a K-6 which he managed to borrow two days before the meeting, describes it in *Aviasport.*

About 50 pilots took part with a great variety of sailplanes, but poor weather allowed only three successful tasks to be flown, so no National Champion could be declared.

The first task was set on Wednesday, January 21: a 181km out-and-return to the north west, but an increasingly strong north wind forced pilots to land between six and 30km south of course on the outward leg.

Next day, a 115km triangle to the west proved too difficult, with a ceiling at 2,500ft and thermals at 1 to 1½m/sec. The day after, a 150km triangle proved even more difficult, with a lower ceiling though with 2 to 2½m/sec thermals; most people came down on the first leg.

More strong winds, low ceilings and feeble thermals prevented any more tasks being given until the final day, January 30, when a 115km triangle was set, with a ceiling at 4,300ft. thermals of 1½ to 3m/sec, and a 19mph north east wind against the competitors on the last leg. Jean Dazin landed only one kilometre short of the airfield.

At a late banquet and prizegiving that night, Roberto Rizzi, who won the previous Nationals, was again declared the winner—*Aviasport.*

FRENCH WAVE ANALYSIS

AN ANALYSIS by J. C. Bisconte of 99 occurrences of lee waves at Pezenas, of which 67 were actually used by the Beziers and Pezenas clubs, and 32 certainly usable, during the year November 1969 to October 1970, showed that February was by far the most favourable month with 24 occurrences. December came next with 13. The worst months were September with two and November with three; other months varied between four and nine. Another analysis over a five-year period showed December to April as the best period of the year, with December and February again outstanding.

Attained altitudes between 2 and 6km (6,600 to 19,700ft) were much the most frequent. Above that height band, occurrences dropped off sharply up to 11km (36,100ft). Most of the altitudes above 7km were attained more than 50km from the site.

An analysis of the frequency of consecutive wave days shows that 15% occurred on single days, 18% on two consecutive days, 9% on three days, and 26% on four, five and six consecutive days, while 20% of wave days were in groups of two, three or four separated by a single non-wave day—*Aviasport.*

NEWS FROM SWEDEN

A TOTAL of 28,468 hours were flown in Sweden in 65,854 flights in 1970—a decrease on 1969 due to poor weather. One Diamond badge, two Gold badges, 40 Silver badges, 321 private pilot glider licenses and 620 C-badges were obtained. The sailplane fleet now numbers about 250 (all built after 1955), 120 of which are two-seaters. Only about 10% are owned by individuals.

Three new national records were set up in 1970: Speed over 100km triangle, June 18, Göran Andersson, 101.30km/hr, Phoebus C; speed over 300km triangle, June 24, Göran Andersson, 92.54km/hr, Phoebus C; speed over 500km triangle, Björn Carlsson, June 14, 80.46km/hr, Std Cirrus.

Friedhelm Stüven won the decentralised competition, similar to the National Ladder, which has been operated by the Swedish Aero Club since 1946. The winning club was Västeras Flygklubb.

The Open and Standard classes of the Swedish National Championships will be held in Eskilstuna in June. A "Sports" class championships will be introduced in the 1972 Nationals, in which gliders with a performance up to and including the K-6CR will be be permitted. None of these competitions will be handicapped.

AKE PETTERSSON

WORLD CHAMPION FOR ALPINE SCHOOL

HARRO Wödl, Open Class Champion in 1968, is to move from his job as high-performance instructor at the Great Western Soaring School at Pearblossom, California, back to his native Austria to take over the newly established "Alpine Soaring School" at Aigen in Ennstal, where special attention will be given to distance flying technique over the Alps. The gliding pioneer Peter Van Husen (Silver C No 13 in the international list, dated July 17, 1933), who has been in charge at Aigen and is specially interested in Alpine soaring, will remain at the school—*Luftsport.*

YUGOSLAV CHAMPIONSHIPS

VRSAC, the site of next year's World Championships, was also the site of last year's Yugoslav Nationals, held from August 22 to September 5. Five tasks were flown: two triangles of 100-plus km and 198.5km, two out-and-returns of 120 and 159km, and one distance flight along a prescribed course. Ivanus Dusan won with 4,843 points and became Yugoslav Champion; next came two Polish visitors, Stanislav Kluk with 4,294 and Rajmund Jakob with 3,960 points.

Types flown by the 27 participants included several examples of the Delfin, Trener and Weihe, one each of Foka, Mucha and Phoebus, and a Cirrus flown *hors concours* by Klaus Holighaus from West Germany—*Der Flieger.*

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GERMAN GLIDING COURSES FOR YOUNG PEOPLE

GLIDING courses for young Europeans (aged 16 to 25) are being held at the European Youth Centre at Hirzenhain, 12km from Dillenburg and 35km from Marburg. The courses, lasting two weeks, comprise theoretical and practical training in gliding, flight security regulations, meteorology, maintaining and servicing sailplanes and material, with the possibility of obtaining the A, B and C gliding certificates.

Dates are: June 1 to 18; June 21 to July 8; July 12 to 29; August 2 to 19; August 23 to September 9; September 13 to 30 and October 4 to 21. Course fee, DM 290 (about £33). Details from Jugendausbildungstelle der Luftsportjugend, Fritz Stamer Hous, D-6341 Hirzenhain/Dillkreis, West Germany.

ELEVEN POLISH HEIGHT DIAMONDS IN JANUARY

WITHIN a single month, January 1971, at three different mountain sites in Poland, 11 Diamond heights in waves were achieved.

At Jesow Sudecki, on the 12th, 14th and 15th, five pilots flew 66 hours and fulfilled conditions for Gold and/or height Diamonds. Then, on the 26th, six pilots all earned height Diamonds, and two of them also completed their Gold C's at Jelenia Gora (formerly Grunau). On the 27th, Boguslaw Haman achieved the greatest height—7,340m (24,081ft).

At Nowy Targ in the High Tatra, on the 27th, two pilots earned height Diamonds and one finished his Gold C; Andrzej Steifko achieved 9,300m (30,512ft)—*Ostflug-Kurier.*

MOTOR GLIDER RALLY IN AUSTRIA

THE 3rd International Motor Glider Rally will be held from Sunday, September 5, to Saturday, September 11, 1971, at Mariazell, Austria. The purpose of the rally is to create interest in, and to popularise, the motor glider movement in the mountain regions. Application forms, programmes, etc, are obtainable from Union Fliegerclub, A8630 Mariazell, Steiermark, Austria.

BRAZILIAN NEWS

EKKEHARD SCHUBERT won the 13th Brazilian Nationals for the third time, flying a Urupema against a field of 14 other pilots. The championships were held in January at Prassununga, Sao Paulo state, and the machines ranged from the Urupema to a Grunau Baby. *Luftsport*, reporting the event, does not say how many tasks were flown.

The longest flight was made by Schubert, 404km. This is the longest distance flight ever carried out in Brazil and is, owing to the country's geography and the mental outlook of the people, an exceptional achievement.

NORDIC RECORDS

THE Scandinavian countries have not only their own championships, but recognise their own records, the latest of which is a speed of 92.54km/h round a 300km triangle by Göran Andersson of Sweden in a Phoebus C. Finland holds four of these records, Sweden three, and Denmark one, the oldest, 525km by Kaeld Wiehe.

This year's Nordic Championships are in Finland, from June 6 to 20. Denmark's Nationals are at Arnborg: Open Class ending on May 31, and Club Class from June 5 to 13—*Flyv*.

LILIENTHAL MEDAL FOR GROSSE

THE FAI has announced that the Lilienthal Medal for 1970 has been awarded to Hans-Werner Grosse of Germany, who made the first 1,000km flight in Europe in his ASW-12, in June 1970.

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OBITUARIES

ALAN SIMPSON, MBE

IT IS with deep regret that we have to announce the death of our recently retired club chairman, Major Alan Simpson, MBE. Alan, who was one of the founder members of the Ouse Gliding Club, has been very active in the club affairs since our beginnings in 1960. He has taken a keen interest in flying for many years, holding a power licence in the 1930's and gliding up to his retirement just before Christmas. He has helped the gliding movement in many ways, his last contribution being Public Relations Officer to the 1970 Doncaster Nationals. A man of outstanding personality, he had a most friendly dispositon with a cheery word for everyone. Alan will be sadly missed by all members. May we take this opportunity through the medium of this journal to convey our deepest sympathy to his family and in particular his wife Bunty.

R.W.B.



Major Alan Simpson, MBE, who died in January. Photo: R. W. Bowhill

ALAN GOODFELLOW

ALAN Goodfellow died on March 19, 1971. He gained his wings with the Royal Flying Corps in the 1914-18 war and served in France. In the early '20's, he was a founder member of the Lancashire Aero Club, and his interest in gliding resulted from attendance at the Itford meeting. By his persuasion a Prüfling glider was purchased by the Lancashire Aero Club, and the gliding section of the club was created. Alan was a member of the Lancashire team on the occasion of the historic Prüfling competition with the London Gliding Club at Ivinghoe Beacon in 1930. The Aero Club's interest in gliding was short-lived, but this inspiration of Alan's was a contribution to the eventual coming into being of the Derbyshire and Lancashire Gliding Club at Camphill. He was a founder member and as a member of the committee his wisdom and sound reasoning did much to sort out teething troubles associated with the extraordinarily rapid growth and development of Camphill. His move to London was a loss both to the Lancashire Aero Club and to Derby and Lancs, but once in London he interested himself in the activities of the British Gliding Association and took a leading part in persuading the Government of the day into the initial gliding subsidy scheme. Alan joined the Fleet Air Arm at the outbreak of war for flying duties and was later posted to executive duties rising to the rank of Commander.

The end of the war found him still interested in gliding and busy with the reconstitution of the British Gliding Association. That massive and weighty document, The Memorandum and Articles of Association of the BGA, exists as a monument to his work. With the creation of the Kemsley Flying Trust, Alan was made a trustee as representing the gliding movement. With his deep faith and understanding of the problems involved with the working of the gliding clubs, he leant favourably toward the most marginal of applications for help, and such was his good judgement the Trust was never let down.

Those of us who remain in knowledge of his early work for gliding say—thank you, Alan.

B.A.G.M.

Slow tow "And some soloists have been known to make one tow last for five, even six, hours." (Feature on gliding in *Daily Mail*, April 5.)

GLIDING CERTIFICATES

DIAMOND DISTANCE

No.	*Name*	*Club*	*Date*
1/30	M. Simons	Waikerie	6.2.70

DIAMOND HEIGHT

3/125	R. W. Clemo	Kestrel	24.1.71
3/126	H. R. Jarvis	Kestrel	24.1.71
3/127	J. J. Ellis	Airways	9.3.71
3/128	D. W. Evans	Cambridge	9.3.71
3/129	P. D. Boyer	London	9.3.71
3/130	P. Young	Clevelands	18.4.71

GOAL DIAMOND

2/358	W. Pattison	Moonrakers	14.8.70
2/359	K. Kieley	Wrekin	14.8.70
2/360	M. Simons	Waikerie	4.11.68
2/361	F. J. Foord	Adelaide	7.2.71
2/362	G. D. Butler-Madden	Surrey & Hants	20.4.71
2/363	B. Docker	Surrey & Hants	20.4.71

GOLD C COMPLETE

279	B. Kirby	RNAS Portsmouth	9.3.71
280	H. R. Jarvis	Kestrel	14.1.71
281	N. P. Elliott	Surrey & Hants	1.10.70
282	D. W. Evans	Cambridge	9.3.71
283	I. H. Hobday	Thames Valley	10.3.71
284	M. Simons	Waikerie	22.12.68
285	J. S. Thorne	Dorset FC	23.2.71
286	F. J. Foord	Adelaide	7.2.71
287	G. D. Butler-Madden	Surrey & Hants	20.4.71

GOLD C HEIGHT

M. Simons	Waikerie	22.12.68
N. P. Elliot	Surrey & Hants	1.10.70
F. J. Foord	Adelaide	2.12.70
I. G. Ross	Scottish GU	5.12.70
D. J. Osborne	Northumbria	19.12.70
N. C. Stagg	Clevelands	20.12.70
R. C. Sharman	Chilterns	21.1.71
R. W. Clemo	Kestrel	24.1.71
H. R. Jarvis	Kestrel	24.1.71
B. G. Nicholls	Phoenix	15.2.71
J. S. Thorne	Dorset FC	23.2.71
M. Elsom	Bannerdown	2.3.71
K. B. Keeble	Bannerdown	2.3.71
P. C. Wilcockson	London	2.3.71
P. D. Boyer	London	2.3.71
H. B. Walrond	London	2.3.71
A. Long	Mendips	2.3.71
B. Kirby	RNAS Portsmouth	9.3.71
D. W. Evans	Cambridge	9.3.71
N. W. Fox	Cambridge	9.3.71
I. H. Hobday	Thames Valley	10.3.71
C. Timothy	Essex	13.3.71
R. J. Lyndon	Fenland	26.3.71

GOLD C DISTANCE

W. Pattison	Moonrakers	14.8.70
K. Kieley	Wrekin	14.8.71
C. J. Ridley	Victoria	6.1.71
F. J. Foord	Adelaide	7.2.71
G. D. Butler-Madden	Surrey & Hants	20.4.71
B. Docker	Surrey & Hants	20.4.71

SILVER C

No.	*Name*	*Club*	*Date*
2790	P. Sturgess	Wrekin	26.8.70
2791	G. Cox	Two Rivers	1.11.70
2792	D. F. Ballinger	Four Counties	24.10.70
2793	R. Sedgewick-Rough	London	18.10.70
2794	R. F. Aldous	Airways	22.2.71
2795	W. R. Longstaff	Cairngorm	21.2.71
2796	I. G. Johnston	Yorkshire	19.12.70
2797	I. G. Ross	Scottish GU	10.3.71
2798	E. E. Puckett	Anglia	20.3.71
2799	P. D. Bragg	Waikerie	22.2.71
2800	G. P. Saw	Thames Valley	15.3.71
2801	R. Robson	Northumbria	27.3.71
2802	C. C. Rollings	Airways	30.3.71
2803	W. Taylor	Ouse	29.10.70
2804	R. W. Biggs	Surrey & Hants	17.4.71
2805	D. Bryan	S. Wales	13.4.71
2806	B. Rush	Coventry	13.4.71
2807	I. McLean	East Midlands	17.4.71
2808	D. F. Munday	Bannerdown	17.5.70
2809	D. D. Denton	Four Counties	17.4.71
2810	A. R. Dingwall	Essex	17.4.71
2811	B. E. Pell	Doncaster	18.4.71
2812	C. Beer	Kent	17.4.71
2813	N. T. Read	Kent	17.4.71
2814	F. J. Foord	Adelaide	7.2.71

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BOOK REVIEW

Aeromedicine for Aviators. By KEITH E. E. READ. Published by Pitman, 1971. Price, £1.00. Obtainable from BGA, add 10p post.

THE author, an authorised medical examiner for civil aviation, says he has written this book "primarily for private pilots and glider pilots", and he is obviously well qualified to do so. In his opening chapter he points out that man, in order to fly like birds, must not only "surround himself with an aerofoil" but with instruments too, "since all his sensors, except vision, are unreliable in the air". Each of five of man's principal physiological systems has a chapter to itself, and here we find that even vision can be unreliable too.

The first, on the atmosphere and respiration, has a very clear exposition of oxygen systems, in which he recommends the "demand" system for glider pilots, because the "economiser" can fail in freezing temperatures and is, therefore, only suitable for heated cabins. In this chapter he treats decompression sickness (due to rapid fall of atmospheric pressure while climbing) as a serious hazard for both kinds of pilot, though the reviewer has never heard of glider pilots being affected. For instance: "Go to bed early the night before you intend to gain the World Height Record in a glider." And: "If soaring in mountain wave conditions, it is wise to pre-breathe pure oxygen from take-off level in order to wash out as much nitrogen as possible from the blood."

The eye can play tricks in an empty sky at high altitudes; one is due to the horizon being below the horizontal, and if the moon is near it, a "pilot soaring to very high altitudes in mountain wave formation at night" could imagine himself to be upside down.

The chapter on the ear, after dealing with ear-drum trouble in quick changes of height, moves on to the balancing organs in the inner ear, of which most people have only heard of the semicircular canals, which register angular accelerations. But the otolith organs, which register linear accelerations, can also produce illusions: sudden accelerations or decelerations can deceive the pilot into thinking his nose has gone up or down respectively. A glider would be little affected, but one may guess that the decelerating effect of a gust from in front, by producing an illusion that the nose had dropped, would cause the pilot to pull back and thus unknowingly obtain dynamic lift from the gust. But deceleration due to airbrakes could likewise persuade you that your nose had gone down when it hadn't, so beware.

A chapter on "Diseases, Drugs and Drink" should benefit those whom it may concern. Its final paragraph, "Don't let age persuade you to quit", declares that, statistically, the over-sixties are as safe in the air as, or even safer than, any other age group; the author knows a doctor aged 93 who still flies with a valid Medical Certificate.

The final chapter on "Survival" could save your life: he even tells you how to collect water from a desert!

This pocket-sized book is clearly written, interesting throughout, and seems to have omitted nothing; it is highly recommended.

A. E. SLATER

Challenge in the air. By BRYAN PHILPOTT. Published by Model & Allied Publications Ltd, Hemel Hempstead. Price, £1.75. Obtainable from the BGA (postage and packing, 15p).

THIS fact-filled, profusely illustrated book describes the story of the Air Training Corps from its prewar beginnings as the Air Defence Cadet Corps. Its mutation into the ATC in 1941, its "finest hours" during the war and its adaptation to peace-time conditions are meticulously detailed.

Gliding is featured in its pages as an activity of the ATC from the very beginning. Derek Piggott's memorable record-breaking height climb in a T-21 inside a cloud of some significant dimension is described, as is the early arrangement with Slingsbys to supply the Cadet glider. Some indication is also given of the type of gliding training given to cadets.

But the book's main appeal will probably be to those glider pilots whose first tastes of gliding were with a cadet force, and would like to know more about an organisation whose documentation has been none too thorough up to now.

G.L.

CORRESPONDENCE

THE MOTOR GLIDER CLASS

Dear Sir,

As a long-standing advocate of separate classes for gliding competitions I find myself, somewhat paradoxically, disappointed that the CIVV has recommended that the 1974 World Championships, to be held almost in my own backyard at Waikerie, should include motor gliders as a separate class. This, although in many respects an excellent thing (in that it will stimulate the development of high performance self-launching sailplanes) may do little to convince the die-hard glider pilot that motor gliders are basically no different from sailplanes. Much will depend on the form that the rules for the 1974 meeting finally take, but it is next to certain that the motorised machines will be treated as sailplanes: the tasks they will be set will surely be sailplane tasks and any use of the motor whatever, after crossing the start line, will invalidate the subsequent flight completely.

There will, if the competition is to retain the spirit of a true soaring contest, be no bumbling round Australia with engines popping out whenever the going gets tough. It is not impossible, in the writer's view, that the self-launching sailplanes will be set the same tasks as the Standard Class—if different tasks are set it will probably be to reduce congestion rather than to make any special conditions for the motorised aircraft. It is, therefore, rather a pity that the motor gliders will be in a class on their own, since in Australian summer conditions and under the new Standard Class rules, almost everyone will be carrying ballast and the extra weight of the launching motors will be an altogether negligible factor. If designers knew they would be up against ordinary sailplanes in competitions they would strive to refine the aerodynamics and improve the structures of the motor gliders so that they could compete on equal terms, at least in good weather. As long as the SLS is regarded as a different kind of animal, pilots will probably have to accept poorer gliding performance.

Nonetheless, the decision is a good one, and can only accelerate the development of the self-launching movement. Perhaps, eventually, the self-launching class will be the only one surviving.

Rostrevor, S Australia. MARTIN SIMONS

TURNING POINT PHOTOGRAPHY

Dear Sir,

Laurence Hill, in his article on turning point photography published in the February edition of S & G, expressed some comments on the turning point photographic system used at Marfa. As one of the fortunates who flew in that event I feel I can usefully comment on one of his views.

He stated that he saw little need to have the glider wing-tip (at Marfa, the left tip) showing in the turning point photograph as this would, perforce, reduce the available downwards deflection of the camera axis. Moreover, he felt that the resultant 45-50° of bank needed to get a photograph would be excessive.

From my experience these bank angles posed no problem, even with a big ship like the ASW-12. There was no difficulty in taking photos from high altitude and close to the turning point. On the contrary, the knowledge of the precise position of the wing tip in relation to each frame made it very easy to "aim" and, having a precise aiming reference, helped to overcome blurring due to camera (or rather, "glider") movement.

I would strongly support a move to make fixed camera mounts, and the depiction of a wingtip in turning-point photographs, mandatory in British competitions. It makes photography much easier!

Temporarily in Toronto. J. DELAFIELD

CLEAR-AIR TURBULENCE

Dear Sir,

News of the "mysterious" disintegration of a glider while flying in wave in Nevada a few weeks ago, and re-reading Chris Lovell's account of Ken Riley's unfortunate experience last year (S & G, December 1970, p484), prompts me to report an observation of possible relevance. This concerns an encounter with CAT in the region of 18,000ft while flying in the lee of the Ochils (from Portmoak) on March 9 of this year. I did not report this previously because I had virtually no previous experience of flying in big waves and thought such happenings might be usual and therefore unremarkable.

The turbulence I met was moderately severe and very localised. It was encountered quite unexpectedly while beating along the wave and climbing steadily in smooth lift. Full control deflections were required in an attempt to retain an even keel, my impression being that the "463" banked about 45° either way before stability was regained. The turbulence was associated with greatly augmented lift, and I looked for it on the next five or six beats, hitting it three or four times. I thought the "misses" reflected my inability to exactly repeat the beat due to inaccurate flying. Somewhere above 20,000ft, I lost it altogether.

In trying to locate the CAT thus, I noticed that the beat before the "point" of turbulence and increased lift differed by a few degrees from that required after it. This difference appeared to be consistent and I wonder if the CAT was due to some form of summation effect at the inter-section of two more or less in-phase wave systems meeting at a shallow angle. I would be very interested to read the experts' comments on this suggestion.

Cambridge. DAVID W. EVANS

INSTRUCTORS' ATTITUDES

Dear Sir,

I have read with interest Mr Neaves's admirable article (S & G, February 1971) on the important subjects of instructors.

During the past six years, I have flown as an *ab initio* with three gliding clubs in England and at Fayence in France. I flew solo in October 1969, at the age of 78, although I flew the Capstan in a winch launch solo circuit in 1966 successfully. May I be permitted therefore, with a small measure of justification and without undue impertinence, to submit the following impressions to Mr Neaves?

The training of new members in a gliding club depends not only on the flying ability and knowledge, but also on the dedication of the club instructors. Too often I have noticed that the waiting lists of *ab initios* are treated arbitrarily so that certain members appear to miss a fair share of the opportunities for flying. This, I know, will not be popular, as all clubs like to think there is nothing wrong with their field discipline or administration. Nevertheless, it is too easily overlooked that these waiting lists contain full flying members who have paid a substantial entrance fee as well as their subscriptions and should be entitled to share equally in the flying facilities afforded.

The natural instinct of many instructors is to give more attention to pupils who

reward their efforts through being quick to learn and whose progress is rapid. Unless this is watched and controlled, a kind of second-class membership begins to be created, the successful and the unwanted, in other words the "also-rans". A feeling of neglect and frustration sets in and valuable membership becomes lost through needless disillusion. I have known this create friction and ill-feeling to the extent that full enjoyment of the sport is missed through the failure of social goodwill and friendship. If one compares the club records of flights and time in the air with the flying log sheets, one sees that the bulk of this is taken up by the usual forty to fifty members who attend regularly while the small balance is shared among the remainder, usually two-thirds to three-quarters of the full flying membership.

This reflection will not be popular. It will be resented and presented as unfair in that full advantage is taken of the facilities for flying by those who are present. These things are seldom written about but are talked about by the "also-rans", who it is as well to remember provide a considerable portion of the club funds. We all know these irritating side lights occur in a lesser or greater degree almost everywhere.

This brings me to the point I am striving to make. The rating of "Instructor" demands a strength of character and a spirit of dedication which in addition to imparting a proficiency in skill can also command patience, encouragement and a willingness to endure the frequent monotonous and boring sequences in *ab initio* instruction. An instructor who is inclined to prejudice or favouritism should be made aware of this from the start, otherwise the confidence and respect of pupils may be lost; the good example of the instructor's own self respect may also be affected. A trained glider pilot who accepts the rating of instructor should be ready to accept the dedication required in dealing impartially with both the good and the indifferent, the success with frustrating non-success, the pleasure with the monotony, so that the spirit of goodwill, mutual help and shared enjoyment pervades the social atmosphere of the flying field.

In one particular club, in which I have many friends, I noticed that during some mid-week flying when the CFI was absent, a small group of instructors degenerated into a collection of imitation James Bond playboys, with, of course, the inevitable one or two James Bond playgirls, and monopolised the flying facilities for their own advantage. This occurred in a club with a fine reputation, and in which the great majority of members would not tolerate this conduct. This is just one of the many incidents I have noted during my six years in gliding, although, by and large, the standard of instruction is of a very high excellence both here and in France.

It is the importance of these attitudes to character and dedication which I wish to emphasise and which should form part of an instructor's training from the start. These important considerations I feel should share in a not too minor manner with the other points in Mr Neaves's excellent article on instructors.

Hythe, Kent. MAJOR H. EDMONDS (RET)

DANGERS IN WAVE FLYING

Dear Sir,

The articles on wave flying by Jack Harrison were very good and indicate, I feel, that an awareness of wave is now apparent much more generally throughout the movement.

Purely from the flight safety point of view, however, he did not include two points which the less experienced wave flyer may not know about. At Camphill, where wave has been used since pilots called it the "evening thermal", we have learnt the hard way, with many sadder but wiser pilots.

1. In many wave systems, the gaps between clouds tend to close leaving only an undulating "ridge and furrow" type of effect when looking down on the cloud from above. Although sometimes one can sit there, over the home furrow for hours, waiting for it to open up again, at other times one cannot. It may not in fact open up again. Some instruction should, therefore, be given to inexperienced wave soarers in case they find themselves in this position. A compass course to steer downwind to the best landing area is our answer to this problem because:

2. The term "standing waves" is a misnomer. In fact, they do anything but stand, in our part of the country. As the wind strength increases or decreases, the wavelength alters and the clouds move up or downwind. Two very nasty things can happen at this point.

One may be soaring well above the slot through which one popped, confident that home is still right below. When descending back down through the gap, one realises all too late that the ground below is perhaps five miles downwind, with the "down" of the next wave to get through to return home.

Worse still, if one is soaring the leading edge of wave, perhaps just having fun, or still climbing, it is not unusual to find oneself instantly in cloud, as the cloud moves forward. By the time it is realised what has happened, the glider is now in the wave sink, and dropping like a stone. When cloud is finally broken, again it is almost always downwind and very much lower, with sink to get through to get home. Pilots rarely seem to remember that wind strength increases with height.

I have only visited three other wave sites apart from my own, but not once have any of these points been included in the advice given. In fact, all one reads about waves is how wonderful it is, and I must say I agree; there is nothing else quite like it.

However, let us also put on record the other side of the coin, and at least let pilots know of the practical hazards as well.

Camphill.

ERIC R. BOYLE,
CFI, Derby and Lancs.

WASHOUT

Dear Sir,

"Platypus", in his contribution to the April S & G, rightly points out that he should not have left the ground. He may not realise it, but the damage caused by his incident was more than that to his Dart, the cricket club's fence and his pride. In contrast to the usual standard of aviation reporting in the national Press, the *Cambridge Evening News* carried an excellent report which matched the pilot's own (though, if my memory is correct, it stated that the Dart emerged from cloud at 300ft). The report was read by professional aviators and air traffic controllers in this area and, as revealed in subsequent conversation, reinforced their antipathy to gliders and the gliding movement. This is particularly unfortunate at a time when the Cambridge University Gliding Club, like others, is facing possible airspace and operating restrictions.

Similarly, on a national scale, reports of new special rules zones in the same issue of S & G indicate that, if the gliding movement is to argue against them from a position of reasonable strength, it cannot afford "Platypus" type incidents. Duty instructors should be aware of this extra responsibility when authorising flights from their sites.

Cambridge.

J. DEAKIN

NEW BRONZE C REQUIREMENTS

Dear Sir,

The original Bronze C fulfilled a very useful function as a target badge between first solo and the Silver C. It became a positive check on the safety and accuracy of the pilot and an incentive to him to read and learn about the more technical aspects of gliding. It involved no disruption to the training programme and all the tests could be done on any type of glider and at any gliding site. For most pilots it came at a stage when they had been flying solo without dual instruction for a period of some months so that it came at an ideal time. It was a requirement towards going cross-country, but left the training and cross-country clearance for the individual club or instructor and in no way inferred that the holder of a Bronze C was entitled to attempt Silver C distance.

The new requirements will be a real embarrassment to instructors and CFI's and a frustration to club members. They infer that the BGA considers that every student at the 50 solo launches stage should have a full and comprehensive briefing on cross-country flying. The majority of students on the satisfactory completion of the field landing tests for the new Bronze C will ask why they cannot go cross-

country. They will ask what is the point in an elaborate briefing and flying test if, as at most clubs, the pilot will be kept on local soaring for at least another 50 flights or four to six months flying? They will also ask who is being reasonable, the BGA or their instructor? The inference is likely to be that their instructor or their club is holding everyone up from going cross-country.

This is not a satisfactory situation. For most pilots, 50 solo launches is nowhere near enough experience for safe cross-country flying. This means that the field landing tests and briefings will need to be repeated at a much later date. With modern gliders, most pilots get their Bronze C duration flights long before the required 50 flights.

It is unrealistic to suggest that the field landing tests can be quickly and easily carried out at the majority of sites. The time involved in doing them for every pilot at Bronze C stage will prove very frustrating to the *ab initio* pilots—particularly if they are to be repeated for cross-country clearance at a later date. (Two actual field landings take up to three or four hours of two-seater time at most sites, and this could only be justified as a genuine field landing check.)

I believe, therefore, that there is a very real danger that those new requirements may actually lower the standards for the first cross-country and this is not desirable. First, pilots of a much lesser experience will have a better chance of talking instructors into letting them go because of a satisfactory field landing test. Secondly, the Bronze C tests, if carried out conscientiously, will be so time consuming that in many cases no further training may be done just before the first cross-country, which may be months or even years afterwards.

In my opinion, it is most undesirable that this badge should be or appear to be *the* qualification for cross-country flying. If the idea is to ensure that proper training and briefings are carried out before the first cross-country, a simple inexpensive certificate (nothing to do with the Bronze C) is all that is required. This could give the pilots experience and be signed by the CFI or rated instructor certifying that tests and briefings have been carried out. It could be lodged with the BGA prior to the first cross-country flight. This would also be useful statistical evidence for the Safety Officer about variations between clubs and also towards accident analysis.

We, at Lasham, together with a number of other clubs, will find the new Bronze C requirements quite incompatible with our training syllabus and flying card system.

At most, we would be prepared to give some field landing training in order to reduce the risks involved if the pilots get lost or caught out during local soaring. But on no account would I encourage my instructors to give full and thorough briefing on cross-country flying to anyone and everyone applying for a Bronze C. This could only encourage unauthorised away landings and undermine the instructors' authority and discretionary powers.

I hope this matter will be discussed at the forthcoming CFI's Conference and reconsidered by the Instructors' Committee and the BGA at the first possible moment.

In the meantime we will probably hold up all future Bronze C applicants until they reach our Yellow Card stage which is normally at 100 solo launches and 35 solo hours when we consider they should be at cross-country standard.

Alternative solutions:—

1. Delete cross-country briefings. This, however, would still leave time-consuming field-landing tests which many clubs will find difficult to complete and repeat at a later date, before the first cross-country. This would be satisfactory to Lasham and other clubs with the Falke, but would not be desirable for many clubs.
2. Increase the number of launches for the Bronze C to, say, 100. This would, however, defeat the object of the Bronze C as a badge between the A & B and the Silver. It is not desirable to infer that a certain minimum of experience is sufficient for the cross-country, and is unsatisfactory as inexperienced pilots need a target within reasonable reach.

3. Return to original requirements and introduce a pre-cross-country certificate laying down minimum training and briefing. This would be the ideal solution.

Lasham, Hants. DEREK PIGGOTT, CFI.

ROGER NEAVES, CHAIRMAN OF THE INSTRUCTORS' COMMITTEE, COMMENTS:—Derek seems to have missed the point of the Bronze C. It is a fact that, pilot may not go cross-country without it, but the converse, ie, that as soon as the badge is obtained a pilot will be allowed or ask to be allowed to go away, cannot be valid. It is emphasised that the CFI has (and I hope always will have) the responsibility for sending people on cross-countries, providing they have the minimum qualifications.

Cross-country briefings at many clubs are, unfortunately, not well organised, and the Instructors' Committee feels that someone should be made to sign that one has been given. Likewise, with the practice field landings. If these are done twice, once for the Bronze C and once as a pre-cross-country check, can this be bad?

At some hill sites or mainly aerotowing clubs, it is possible for the pilot to be almost ready for cross-country at the Bronze C stage anyway.

With regard to the field landings, there is the waiver that they may be done in a suitable bit of the airfield and also (although this was, unfortunately, not included in the first batch of forms) they may be done in a representative single-seater suitably observed. Furthermore, if a motor two-seater is used it is child's play to arrange field selection and practice landings. That is one of the beauties of the machine.

Derek agrees that some training is required to reduce the risk of pilots being caught out. The answer—the revised Bronze C. If he feels he must hold up Bronze C tests then he is using the normal prerogative of the CFI. Don't all CFI's use this prerogative in some way or other?

As for a pre-cross-country certificate, do we really need another piece of paper? In sporting gliding we have (or should have) only one aim, successful and safe cross-countries. The Bronze C positively helps to achieve this aim.

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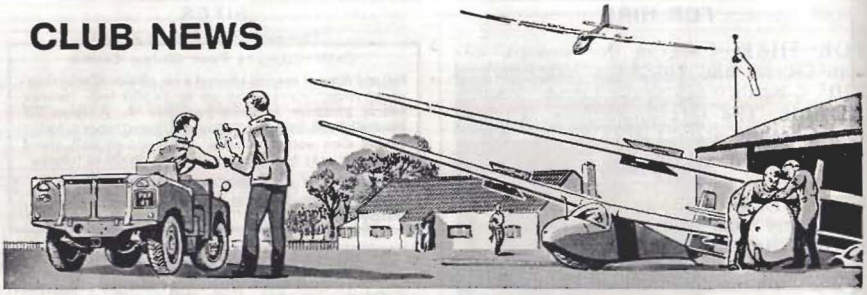
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CLUB NEWS



MOST clubs seem to have made up for the absence of news in the last issue, but unfortunately, the Easter period doesn't seem to have been as good for flying as it might have been.

We welcome for the first time in this column two new clubs, The Borders Gliding Club, operating from Milfield, and the Enstone Eagles Gliding Club, who have started flying at Enstone, Oxfordshire.

We are very sorry to read John Williamson's report of the demise of RAFGSA Moonrakers Gliding Club, which had a remarkable record over many years. Rearsby airfield closed on May 3 (see p209), and at the time of going to press the precise future of the Leicestershire Gliding Club has not been settled.

Copy and photographs for the August/September issue should reach me, typed double-spaced on foolscap, not later than June 9, at 11 Great Spilmans, London, SE22, telephone 01-693 3033.

NOTE: Copy for the October/November issue should be sent to the Editor, S & G, British Gliding Association, Artillery Mansions, 75 Victoria Street, London, SW1, telephone 01-799 7548, not later than August 18.

April 23.

YVONNE BONHAM (Mrs),
Club News Editor.

BRISTOL & GLOUCESTERSHIRE

ALTHOUGH we have officially been a wave-soaring site for a good number of years, we have not paid enough attention to this aspect of our site in the past. Recently, however, there has been a revival of interest, coinciding with several weekend days of suitable weather. Back in December, for example, several pilots reached 10,000ft, while Ralph Hindle flew to Ledbury and back in wave. Hardly an issue of the club newsletter passes without an article on wave soaring. Peter Philpot contributed to this interest in wave by flying a Diamond height while on a visit to Portmoak.

We have seen a few changes in aircraft this winter: "257" syndicate has sold its Dart, and flew its Std Cirrus for the first time on February 27; the Eagle has been sold to a group up the road at the Worcester club, and may be replaced by a K-13; and the club has ordered a K-8 to extend its fleet in the medium performance bracket.

The club dinner/dance was held at the Hare and Hounds hotel on Friday, March 5. The trophies for 1970 were presented by John Cochrane, a former club chairman, and were as follows: Evening World Trophy for gain of height, Peter Philpot; Shaun de Salis Trophy for the best closed circuit flight from Nympsfield, Tom Bradbury; Guinness Trophy for the best flight in a club glider, Mike Cleaver; Cyril Uwins Trophy for the longest distance and the Ladder Pot, Stuart Waller; and the Rex Young Trophy for the best *ab initio*, John Mast.

The annual general meeting was held at the club on April 3, and resulted in some major committee changes. After 10 years, Dennis Corrick was replaced as chairman by Mike Harper, and Eric

Martin handed over the secretary's job to Brian Mumford. One of the most encouraging aspects of this meeting was the interest shown by members in the club's affairs.

Summer courses began just after Easter, and once again Tim Bradbury took on the burden of course instructor. We wish him, and his pupils, plenty of soaring in the coming months, but hope that they don't frighten away the thermals at weekends.

M.J.C.

THE BORDERS

SOUTH of the Borders down Milfield way, a new gliding club has been born. The site is that of the war-time aerodrome of Milfield. Situated half-a-mile from the small village of Milfield, it lies where the rounded Cheviot foothills meet the Milfield plain, a one-time glacial lake. Five miles to the south is the market town of Wooler, 14 miles north, the historic walled town of Berwick-upon-Tweed and 10 miles to the east are the beautiful unspoiled beaches of the Northumberland coast.

The club fills a gap of 160 miles between the Northumbria club at Hedley, and the Scottish Gliding Union Club at Portmoak. Should you be driving to the latter by the A697 to Coldstream and Edinburgh you will pass the site.

Born out of two years' hard labour by a handful of enthusiasts, the site is now free from obstacles, the three runways having been cleared of twenty years of growth. There is a clubhouse with lounge, office and attached building which houses our present T-21B and Tutor. The canteen is so popular that the powered boys make a flight here as part of their Sunday ritual.

Living as we do in a rural area, and CFI's being very rare creatures, it was only with the advent of Colin Golding and the advice of the BGA that we became Associate Members and we were able to take to the air. Colin helps us when he can spare the time from his instructing with the ATC at Ouston and a monthly duty at Portmoak, and sometimes he is able to find us other instructors. Until we can find a CFI of our own we fly on an average on alternate Sundays.

If any fully qualified instructor wishes to take a part-working holiday in this peaceful setting of lovely hills, trout rivers and golden beaches, we can offer among other attractions, caravan space and fishing.

G.W.

CAMBRIDGE UNIVERSITY

OUR Skylark 4 stayed at the Long Mynd until early December, long enough for Paul Sears and Paul Loewenstein to gain their Gold C heights on December 5, completing the former's Gold C badge.

At the annual club dinner, held on February 20, our principal guests were Philip and Kitty Wills. Trophies were awarded to Tony Maitland, Sigfrid Neumann, Paul Loewenstein, Anthony Edwards and, lastly, to David Evans and Paul Sears, who both flew on the same day from the Long Mynd to Great Yarmouth, a distance of 313km. A few weeks later the Midland club's dinner saw this same flight gaining them a Mynd trophy.

This year sees two notable 21st's. Our CFI, Ted Warner, was presented at the dinner with a memento of his 21 years (at least) with the club, and Bluebell, our venerable T-21B, came of age on May 6. She continues to fly at Duxford, where a new diesel powered winch, organised by John Scott, is proving a great help to the increasingly popular activities there.

Members have already had notable wave flights this year. David Evans climbed to 22,000ft and Norman Fox to 10,000 during a visit to Portmoak in March. And over Cambridge one afternoon in March, Paul Loewenstein contacted wave and climbed from 2,800ft to 4,200ft, a rare occurrence in this area. Let us hope that this heralds the start of a good soaring season.

V.N.

COVENTRY

WE very much regret to record the death in March of Doug Findon, the victim of a sudden and tragically unexpected heart attack. Doug joined the Coventry Gliding Club as a result of seeing how much obvious pleasure his nephew Alwyn got out of gliding and at an age when most men would have

been content to put their feet up by the fire at home. Despite the competition of younger men in the Club, he was a very determined man and pressed on to become a very enthusiastic instructor and a syndicate shareholder in an Olympia 2B. Our deepest sympathies are extended to Mrs. Findon and his family.

On Sunday, March 14, our Capstan unfortunately took off with the air-brakes open and after aborting the aero-tow launch it came to rest with its canopy through the fence at the far end of the field. By nothing short of a miracle the two pilots escaped practically unscratched, although the cockpit was virtually destroyed and the main spar very badly damaged. In the meantime we have been fortunate enough to do an exchange with the Rearsby club, who have lent us a Capstan against the loan of our Swallow for the summer season.

F.W.F.

DERBYSHIRE & LANCASHIRE

THE first three months of the year did not produce good gliding weather at Camphill, but after the slow start we are again happily soaring the skies over the Peak District, exploring thermal and wave. Easter saw the real start of thermals for us. Two members attained their C certificates over the holiday period; one of them staying aloft over an hour on his first solo soaring flight. Tony Padgett, Tony Vermont and Derek Fellows have all gone solo.

The Libelle syndicate began flying in early March and has already totted up a handsome number of hours.

At the annual general meeting, in March, Alan Beckett was awarded the Camphill Trophy for his cross-country and gains-of-height achievements. This is the fourth time he has won the trophy.

Trevor Appleby, Andy Miller and Peter Wheatland have joined the instructors rota; Andy feels that flying gliders at Camphill is more civilised than flying Gnats with the RAF over Anglesea.

A Dart syndicate visited Portmoak and the Super Javelot syndicate recently dropped in at Dishforth where they were very well treated. One or two members were invited to Slingsby's Open Day, where they were entertained and provided with an interesting day. We have in turn had visitors from Lasham and Four Counties, and Val Rowell has been over from Blackpool once or twice with her guitar to sing to us. She has even written a song about us.

John Collins has taken over as social secretary and is organising a wine and cheese party, a social evening (including a talk by the police) and a Scots evening.

Eric Boyle, our CFI, is busy arranging the hire of a motor glider to do a training course here at Camphill. Our normal summer courses are becoming booked up after a slow initial response caused mainly by the postal strike. If any of you find yourselves in the vicinity to Camphill, give us a ring and come over and join us. You are assured of a warm welcome.

P.H.

DEVON & SOMERSET

HAVING missed an issue due to postal inactivity, it needs a little research in order to continue where we left off so to speak. There is little doubt that a westerly wind on our site at North Hill offers the best chances for soaring and cross-country flying. The persistent east winds since Christmas have slightly curtailed these activities, but there have been days when even under these conditions it has been possible for quite a number of pilots to exceed one hour. There are usually six or seven aircraft lined up at the launch point on club days and the Tiger has also been kept busy with aerotows. Since last writing, the club diary records one new solo and two Bronze C flights, and also that Nigel Hatton has completed his 35 hours for helicopter PPL. We look forward to Bill Scull's visit at the end of April with the Falke, which coincides with a meeting of West region instructors.

Whit-week will be a task week, during which we shall welcome some visitors from the Kent club. Perhaps the most important change is that Gerry Leat has been appointed CFI, replacing Mike Dixon who had to relinquish his post due to business commitments. We all thank Mike for his authoritative support during a difficult period, and wish Gerry success in his new role. Dave Bindon will assist him as deputy CFI.

A.E.R.H.

DONCASTER & DISTRICT

Obituary: BRIAN DALBY

BRIAN Dalby was a man who loved flying. At no time was he happier than when he was in the air. Those of us who flew with him could see this clearly. He worked hard for the gliding movement, training ATC cadets before joining the Doncaster Club about two years ago. With us he was Operations Controller for the Nationals, did much to organise the tugging, and was also helping with Doncaster Gliding Club Aviation Services. He was killed on February 25 while flying a Condor from Redhill to Doncaster. We shall miss him, and our deep sympathy goes to his wife and children.

* * *

GLIDING over the last six or seven weeks has been severely hampered at Doncaster, because of the Condor accident in February. Having recently sold our Auster tug, this has meant that we have been flying with the use of only one single drum winch, which has meant a consequent drop in the number of flying hours logged. We are, however, now back in business again with the arrival of another Condor tug on April 11. Despite this severe handicap, we have coped well, on some days carrying out more than 60 launches. The thermals are beginning to pop now, circuits are developing into soaring flights, and two short out-and-returns have been carried out on thermals only.

Over the last month, wave has been clearly present on many days, but the absence of a tug has meant that we have been unable to contact it.

Friday, March 26, saw the arrival of our brand new Falke, which has up to now provided a new novelty for members on the field. Its operations at the moment are restricted by the fact that it has not got a full C of A, and its present weight restrictions mean that several members cannot fly it.

Bob McLean is progressing well in hospital and hopes to be flying again in the near future. Despite his absence the workshop has kept going, mainly due to the efforts of Les Welburn, who has spent much of his spare time working or supervising others working on the gliders.

We still have a caravan left here since the Nationals. Any claims to ownership? If not claimed within 48 hours of publication it will be auctioned to cover the cost of the parking fee!

P.G.T.

DORSET

IN the five years that we have been at Tarrant Rushton, we have made steady progress. Although we fly at weekends only, a glance at the annual statistics will show that we are a very active club with a large and enthusiastic membership which currently keeps instructors and aircraft busy in all but the worst of weathers. The club is now better organised and equipped to cater for all classes of membership than ever before. Last year's total of 4,902 launches was a record which we have every intention of beating in 1971.

The club has at the moment two Swallows, a T-21, a K-13 and an Auster for aerotows. Autotows are by pulley with an F-100 Ford, and when conditions are especially favourable (as they have been during one or two days in March) launches of up to 2,000ft are possible with this set-up at Tarrant Rushton. Some of our Swallow pilots have been known to complain if they do not get 1,500ft, which for 40p must be as good value as any club can offer.

As a result of training courses run during 1970 by Allen Palmer (our CFI for the past three years), the club now has 16 assistant instructors, nine fully rated instructors and 12 tug pilots among its members. A tribute to Allen's skill and hard work is the fact that all nine pilots who completed the assistant instructors' course last autumn passed their tests, and the four new fully-rated instructors, who include our chairman, Val Cockle, also represent a 100% pass rate. The others were Harry Wolf, Arthur Parrott and Ted Andrews. This advanced training programme was carried on side by side with the normal club flying, helped by the use of a privately owned Eagle, loaned for the purpose.

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tic supervision of Peter White. The scheme met a certain amount of opposition when first put forward in committee, but this has melted away in the cosy comfort and *haute cuisine* now at hand at the launch-point. A continuous and expanding service of refreshments provided by some of our lady members is filling a long-felt need, and the cold spring days of 1971 seem to have fully justified the project already.

Another series of monthly lectures has been arranged for 1971 to keep members' theory in step with their practice of flying, and if it is as interesting and stimulating as last year's series, members will have no cause for complaint. The lectures are given at the Clubhouse on the first Tuesday evening of each month.

On Saturday, 27th March, we achieved 98 launches—a record number so far this year, and even so, at times, all our gliders were airborne at once, so there were some good soaring flights made that day. This seems a good augury for the summer season and we are hoping for a fair crop of Bronze and Silver C's before the year is out. Task weeks are planned for May 22-31 and for August 21-30.

M.B.

DUMFRIES & DISTRICT

THE club is excited with the flying at its new site. It has been the best year since the club was reformed in 1963—580 launches with an average time of 18 minutes. Three Silver legs (duration) and six Bronze certificates were gained during the last 12 months.

We now have a five-year lease and plans for a hangar. The chairman, Ian Slack, reported that he felt reasonably happy with the position of the club at the AGM, which was held in February.

He extended a welcome to each member to bring along a friend to the new site. It lies approximately 10 miles southwest of Dumfries, at the Glaister's Farm, and 1971 promises to be even better than 1970.

The cups and prizes for 1970 were presented at a function on March 13. We were delighted to welcome a deputation from the gliding club at Strathaven, and hope it will be the first of many exchanges to come.

G.P.

ENSTONE EAGLES

HAVING been accepted as a BGA full member club during last year, we are now looking forward to our first full season as such. We have been flying throughout the winter and now have eight gliders operating from the site. Visiting gliders and their crews will be most welcome during the season, when we hope to have full Clubhouse facilities.

M.M.

ESSEX

SINCE our last report, much has happened at North Weald. Early in December we had our AGM, which turned out to be one of the liveliest and best attended for years. Later in December and in early January we had a crop of most successful parties organised by our new clubhouse manager, John Critch.

Unfortunately the January weather decided that we would all be better off grounded, and it was early in February before most of us flew.

It was also early in February that we welcomed George Burton to our annual dinner and dance, and during his after-dinner speech he told us of the rebirth of British sailplane manufacture at Slingsby Sailplanes. Our chairman's trophy was presented this year to vice-chairman, Mike Audritt, for the greatest number of miles flown during the season.

The mild February weather permitted plenty of pre-season practice flying, which was just as well, because this year we had a very early start with thermal soaring during the first weekend in March. The early start to the season also gave us a new crop of solo pilots to join the queue for our fleet, recently increased to five aircraft following the long-awaited maiden flight of our Blanik.

The Easter holiday weekend was chosen for our task-competition, and although the weather put paid to the first two days, our enthusiasm was in no way dampened and several members did very well on the Sunday and Monday. The tankard for the best flight was awarded to Martin Southwood, who flew his Skylark 4 to Frome in Somerset. This was our first successful task-competition weekend, with eleven entrants. No doubt its success will encourage us to

hold similar events in the futurre.

Remember, we are based at North Weald, just northeast of Epping, in Essex. We fly every weekend, weather permitting, and all visitors who drop in are made very welcome. However, please do not forget we are right under "Red One".

P.McE.

KENT

ON March 7 a large crowd received a lecture on aerobatics by James Black of the British Aerobatic Team. This was illustrated by a very interesting film and the effects of *g* as described by our lecturer and shown in the film were certainly "eye-openers".

The following week we were shown the gliding film made at the club by the Canterbury Cine Club, and we were all delighted with the result. The most popular shot was of the star of the film making what was supposed to be his first out-landing. This was made in the nicest looking aircraft in the club, a syndicate Skylark 4 borrowed for the occasion. The result was a most vicious ground loop which was greeted with a tremendous cheer from the huge audience.

This same day was the first of a week's course for instructors which we were able to hold as planned due to the generosity of Mr Cressfield of the Southdown club who lent us a K-13. During the first day the instructors had lectures by Derek Piggott and Ray Stafford Allen which were very well received.

By the time this is printed the rebuilding of our hangar should be complete, the only delay being due to the fact that the covering sheets arrived rolled to a 61ft diameter instead of radius and had to go back. Apart from this the reconstruction has gone very much to schedule with a good crowd of regulars working hard all through a winter which was, fortunately, fairly mild.

R.H.J.

LAKES

WE now have first-hand experience of the Falke motor glider, by courtesy of Slingsby Sailplanes, who loaned us the first off the production line for small-club evaluation. We endorse all the remarks made in Bill Scull's excellent article in the last S & G, to which little can be added.

However, in addition to the primary training and operational aspects which Bill covers, this machine opens up much wider horizons for clubs in our situation (well removed from our soaring areas and thermal sources) in that these areas can be reached and members instructed on these sites, on occasions when their use would be precluded by the impossibility of return. Field landings and practical navigation exercises for those with cross-country aspirations, are an insurance for the future. Certainly the machine has left many converts to motor gliders. Whether the club decides to include a motor-glider in future plans is still a matter for consideration, but the machine made sufficient impact to ensure some hard thinking at the next committee meeting. Your scribe enjoyed flying this machine even when lumbago made climbing in an experience normally to be avoided! The fact that two people can open the hangar doors and fly without further effort increased utilisation by about 40%.

Two Silver height gains terminating at 11,000ft and other notable climbs to a maximum of 14,300ft occurred on a glorious wave day about the end of February. On one tow to 4,000ft, the whole combination soared so successfully that petrol consumption was about half normal.

Wave often appears during Easter, but failed us this time. However, work continued, and another of our air-scout colleagues achieved his A and B at the ripe old age of seventeen.

R.R.H.

LONDON

GLASS-FIBRE sailplanes are now becoming commonplace at Dunstable, and the appearance of a pre-war, vintage glider arouses as much interest as an ASW-12. Such was the case on March 27 when a Minimoa once more flew over the Downs. The last time we had one of these was in the early fifties, and the arrival of this historic glider would have brought tears to the eyes of Philip Wills. The new owners are Ted Hull and Les

Moulster, who can well be proud of this immaculate specimen.

The club's annual dinner was graced by the presence of the BGA chairman and his wife, and we heard of the proposed "takeover" of the club by BEA. The new company, known as the Lonestar Gliding Corporation, is to operate between the Hebrides and Iceland with a winch at mid-point in the Faeroes, and would fly Lockheed Tri-stars *sans* RB211 engines. The proceedings ended with the annual trophies presentation. Peter Fletcher was awarded the Desoutter Cup for work on the Short's Nimbus, and Barbara Deans was given the Derry Trophy for her work on the club gazette. On the flying side, the Dent Cup was awarded to John Cardiff for the longest flight, the Foster Boomerang for the furthest out-and-return to Mike Garrod, and the Cellon Cup to David Adams for being the most outstanding *ab initio*.

As usual, expeditions to the north have resulted in some badge claiming. Pete Boyer gained Diamond height at Portmoak in a K-8, while Gold height was gained by Bill Walrond and Phil Wilkinson. There were some unusually good thermals during February and March at Dunstable, but the first significant away flight was by Frank Pozerskis to collect the Lasham-Dunstable Plate.

The BGA national coach held a successful course during March, resulting in five new assistant instructors. Another motorised aircraft has been operating here too—an ASK-14 owned by Letts and partners. A Condor has joined our depleted tug fleet, which should improve our launch rate markedly.

1969 was a somewhat disastrous year financially, but the general committee greeted the annual accounts for 1970 with a sigh of relief, and we are well on the way to redressing our losses. Next year will see the final payments on land bought five years ago, so the future is looking much brighter.

M.P.G.

MIDLAND

WE now have our two winches, each fitted with a 3.8 litre Jaguar engine, and these are proving themselves by giving excellent launches. Heights of 2,000ft have been attained in the K-13's and on one occasion 2,350ft by the CFI. This gives our P2's more time in a circuit for tuition and, of course, more chance of finding a thermal or wave. On several occasions recently wave has been contacted immediately after releasing, and climbs to 4,000 and 5,000ft done.

Congratulations to Mike Horan, who has won the De Havilland Cup for 1970 for his climb to over 22,700ft. This wave flight was done on May 2, and we hope to have some more excellent waves this year.

John Brenner started where he had left off last year by doing the first cross-country of this season, with a short triangle, and it is hoped that more club members will do more cross-country flights this year.

During March, G. Courtney went solo, Don Luff gained his Silver C, and our new K-8 arrived, and is now flying.

The annual dinner dance at the Long Mynd hotel was a great success once again, thanks to Marjorie Hobby. The trophies were awarded during the evening, and members of the Cambridge club were awarded the Siam Trophy for their flights to Great Yarmouth. Last year it was also won by a non-Midland Gliding Club member. Is there no one in our club who can bring it back this year?

P.M.S.

NORTHUMBRIA

OUR flying this year is off to a good start, and this may end up a record year for badge claims. Already we have had four solos, three C's, and five Bronze C's completed. Ray Robson scraped into Catterick airfield in a Skylark 2 for Silver distance and on the same day Jimmy McBeth landed at Carlton Moor in his Olympia 2B to claim Silver distance and the Wills Collectors Plate. To top off the list there are two more Gold C height claims: Dave Osborne climbed to 16,500 feet in the Vasama and Vic Lawson to 15,000 feet in the K-7.

Easter weekend was disappointing as we had planned to hold a dress rehearsal for our members-only Comps Week in July. The high pressure system and its associated inversion limited thermal activity and only one task was



John Young (Ouse Gliding Club) with his new, single-drum winch. Photo: Robert Bowhill

set, though several members managed local soaring flights of two or three hours duration. The best lift of the weekend was encountered on Sunday when a very strong sea breeze front crossed over the site and whisked all those airborne to 3-4,000ft at more than 10kts.

While we continue to search for a full time instructor, plans to expand our flying activities have not come to a full stop. We now operate on Tuesday, Wednesday and Friday evenings, and three *ab initio* members courses have been arranged for June and July.

To look after the inner man, a single deck bus has been converted into a canteen. To the rear is a stove, storage and serving area, and to the front the seats are arranged in groups of four around tables. We must thank Bill Williams for the idea and much of the work of conversion.

J.R.G.

OUSE

OVER the past two months we have been very active. A team lead by John Young and helped by Les Hey, Geoff Cline, Norman Richardson and Stan Park have made the club a new single drum winch. John took the first launch in our Capstan and was rewarded with a flight of an hour.

"Chalky" John Cheesborough gained his Gold height at Dishforth late in 1970 with a climb to 13,400ft. Our Swallow has been kept very busy with first solo flights; Jim Wood is our latest solo pilot. Cyril Hutley got his Silver C distance on March 27 by flying to Sturgate. Many thanks to Jack Tarr and Fluff at Trent Valley for their help; we hope to call again soon.

Our clubhouse will soon have its new bar, and a party has been called for the end of May to christen it. We are now awaiting the arrival of our new tug, and Bob Bowhill and Duncan Russell are busy gaining PPL's. The hangar is almost full, the latest arrival being a Blanik formerly owned by the Cornish club. Alan Park and syndicate are the new owners.

Steven Hunt has been busy down at the Hamble Air Training College. Con-

gratulations also to Kevin Atkinson, for he too should be descending on Hamble. Steven and Kevin are the third and fourth members from our club to gain a place at Hamble. We are all looking forward to a bumper year, and with a bit of luck we should have one.

R.W.B.

PERKINS

OUR annual dinner and dance was held at the Windmill at Orton Waterville on Friday, January 22. Thanks to Terry Sismore and his helpers, the evening was very enjoyable. Doug Pythian, one of our hardest-working members (he is in the process of building a dual purpose trailer to hold either the Bocian or Olympia) received from Mr and Mrs W. Gould of Midhurst, Sussex, a trophy presented to the club in memory of their son Ronald, a former Perkins employee who was killed in a road accident last year. Although not a club member, Ronald Gould was very interested in flying. Mr and Mrs Gould also presented Doug with a pair of silver cuff-links as a memento.

A tankard was presented to Fred Pell to mark his six-hour flight in the club's Olympia. Our chairman, Gordon Linford, presented our former CFI John Hulme with an honorary life membership of the Perkins Gliding Club for the 13 years that he has been CFI. Thank you, John, and we hope to see you gliding with us from time to time.

Gordon Linford and helpers are in the process of building a new two-drum winch, while Terry Sismore and Ken Tinker have been overhauling our old winch ready for the coming season.

J.C.B.

SOUTHDOWN

OUR AGM was held on Saturday, March 6, in Selmeston village hall. It was, as usual, a good soaring day and it was with reluctance that we stowed the gliders away early in the hangar. The Committee was re-elected and club trophies were presented, but the drawing of the raffle was postponed as many of the tickets had not been returned due to the postal strike.

April flying got off to a good start. We arrived on the field on Saturday, April 3, to find good northerly winds and were able to use the bungey. Many members had their first experience of this type of launch and all had good soaring. Peter Gellett having 7¼ hours in his Skylark. On Sunday the wind was again of good strength and from the right direction, but cloudbase was only a couple of hundred feet above the hill. However, we launched Chris Berry in the club Olympia 460, to attempt his five hours. After some time, the murk lifted and the bungey was in business again, with easy ridge soaring until the weather again clamped down and everyone landed at once, including Chris, who had completed the necessary time.

We hope to have additional members' courses this year, including an advanced one for pilots with at least 25 Swallow launches. Syndicates are planning their trips to other sites, and we also hope to have more aerotowing expeditions this summer.

K.I.P.M.

SOUTH WALES

THE concrete structure of our hangar has appeared on the field, soon to be covered with the approved shade of corrugated sheets. To fill it, we have added a resplendent new K-13, thanks to the Philip Wills Trust and the efforts of the committee.

Our fleet now comprises the K-13, a T-21, two K-6's, a Swallow, a Skylark 3 and a Kite 2. The Swallow pilots have increased by six since the autumn, showing the results of the hard work by everyone concerned with winter flying.

A tug syndicate is trying hard to form itself. Anyone interested in helping to fill this, our greatest need, should write to 250, City Road, Cardiff.

In the meantime, we welcome any combination party of tug and gliders to the most southerly wave site in Great Britain.

I.H.S.

SURREY & HANTS

IN any gliding club it is not possible to do much less than not fly at all, and that is what it's been like nearly all the time. The odd cross-country was done a Saturday or two ago, up to Banbury and back (200km), but much of

the time there has been eight octas at 800ft. Only at the end of the Easter holiday did the sun come out, but this only produced two gaggles of about 20 gliders each, in the few available blue thermals.

The club Dart went to Portmoak in March and managed 23 hours of thermal soaring in six days.

Our illustrious treasurer, Bill Dean, has become engaged to Christine Graham White, Margaret Kahn's daughter. There are rumours of honeymoons at Portmoak . . . Congratulations, Bill.

Wally himself is at the head of a vast money-making campaign to equal the £3,000 we have just won from the Sports Council for new towcars, another Falke and assorted improvements in facilities and buildings.

C.L.

SWINDON

OUR dinner and dance went off with its usual finesse with more people than ever attending. The raffle was a great success, in spite of the fact that the CFI, tug pilot and chairman's daughter-in-law took the first three prizes. Some merriment occurred during the flying achievements awards. A special award for the "most publicised" flight was made to Bernie Keogh for landing at the Duke of Bedford's estate rather close to the animals.

We have had a poor start to the year because of the weather. Our launch rate so far is down on last year, but we hope that our two "flying weeks" and a really old-fashioned summer (with sun and not just warm rain) will put this right. Bob Cunningham and a friend of his brought their SHK from Keevil (their runway was being re-surfaced) and spent two enjoyable weekends with us. Bob brought his dog on the second visit. It was a Great Dane, with the emphasis on *great*, and proceeded to eat my lunch. Bob commented on how friendly we all were and how willing we were to rig the SHK (little did he know we wanted to fly it ourselves).

On behalf of the club, I would like to say a heart-felt thank you to our retiring tow-car syndicate, David and Eric, for all the time and effort they have put in the job. The new team Alec and Godfrey are fired with enthusiasm, and have already ripped out, repaired and replaced the engine of the Yellow Peril inside one morning.

C.R.E.

THAMES VALLEY

THE season seems to have started unusually early at Booker. On Friday, February 19, Chris Rolling managed his Silver distance to Lasham. It was a bit of a struggle, he tells us, but as in most Februaries it would have been downright impossible, we believe him. Graham Saw and Bob Pettifer have sat out their Silver durations on Chinnor Ridge. It was one of the best days we have had on the ridge, with the wind square on the hills and splendid cloud streets running away upwind for the venturesome. Altogether, we feel, a most promising start to the year.

P.D.W.

ULSTER & SHORTS

SECRETARY Jeremy Bryson returned from a visit to Australia in March as a member of a trade mission with the club's first complete Gold C and its first Diamond. Flying a Schneider Boomerang and carrying standard outback landing survival kit (a waterbottle and a pair of stout walking shoes) he flew a 311km triangle from Benalla, north of Melbourne, in a little over six hours. Two local pilots attempting the same route landed out after the 10kt thermals weakened, so there is obviously something to be said for long experience at playing the whims of what pass for thermals here.

After a remarkable winter, we've had a good start to the season with the first thermal soaring in March followed by a glorious Easter only slightly marred by a persistent inversion. Unfortunately, our Army landlords at Long Kesh became pre-occupied with the first skirmishes in the tribal warfare season, which led to a spate of helicopter movements grounding us for some hours on the last of four Easter flying days.

We narrowly missed our aim of getting our Auster 6 airworthy in time for Easter after its full C of A and total re-covering by a small team of members in a private garage. It flew again on April 14, and we doubt there is a smarter tug, or even a smarter Auster, anywhere.

As in her Withybush and Lasham days, "India Hotel" is still the "Yellow Peril", but in a lighter, unsullied, yellow with blue cheat lines and graphics, light grey lift struts, flaps, window-surrounds and intake cowl and new, polished, cowlings. The structure was sprayed, the cabin has been relined and a new stove-enamelled panel now houses a fine array of instruments and a radio. The aircraft weighed-in 33 pounds lighter than it did early in February, when the whole sweat began. If virtue brings its own reward, CFI Grenville Hill and instructor Joe Taggart, who gave most to this major effort, should not have to buy their own club-night beer for years.

To get the dormant Londonderry-based North-West Soaring Association going again, a nucleus of enthusiasts there, grounded by a lack of instructors, is joining forces with us for the season. Their Skylark 2 will have its C of A done by us in the next few weeks and then based at Long Kesh for the use of both their members and ours, while a new group of north-west pilots, it is hoped, will emerge from our training programme to set up shop again in Londonderry. The effect of this move will be to add temporarily, a second Skylark 2 to the Long Kesh fleet, to the delight of pilots on the now substantial Skylark list.

Our K-6E is expected to see increased use this season over last year's modest figure, while the Blanik will be used for dual and solo soaring as well as training. In May we expect delivery of the Falke, on which our future training programme will be based. R.R.R.

WEST WALES

OUR best Christmas present for some time was the offer of a grant towards the purchase of a new Scheibe Falke. The order was soon placed and later confirmed, and we now look forward to delivery in September.

The annual dinner and dance, held at the Masonic Hall, Haverfordwest, was another great success. Many former members and friends turned up to celebrate the tenth anniversary of the formation of the club, and on this happy occasion we were delighted to have the BGA Development Officer, Naomi Christy, as our guest of honour.

The winter and spring week-ends provided some very good flying weather. Several flights of over an hour's duration were made in early February by those fortunate ones who contacted weak wave in the north-westerly air stream. We suspect that it may be possible to carry out a good deal of wave flying from our site, and we are eagerly awaiting the arrival of the Falke in order to explore this possibility. R.E.

YORKSHIRE

THANKS to the tireless efforts of our directors we can report another highly successful year both financially and in terms of flying achievements. A total of 5,000 hours were flown off 8,700 launches in 1970, and a greater number of pilots were flying cross-country.

Our fees remain unchanged for 1971, yet flying facilities are much improved, and we are aiming for increased efficiency on the field. Our operations area has been considerably extended by further draining, levelling and re-seeding and virtually all of the field can now be used in safety; the days of bogs, dust, ruts and rocks are gone. The new rigging area should shortly be surfaced and gliders can then be pushed straight out to the launch points with no detours.

The Piper tug is back from its C of A and overhaul and the Motor Falke has arrived at last. This can be booked in advance, so we hope for maximum utilisation. New arrivals amongst the private owners are a Diamant 18, Std Libelle and K-7.

Visitors have been coming and going all winter; workable thermal activity was reported as late as December and wave has been constantly in evidence. John Thorne from Compton Abbas achieved a height of 12,800ft over Thirsk in his SHK in February, and several heights of over 7,000ft have been reported since. The first cross-country flight of the year (a 70km triangle) was made by Dick Stoddart in March, and so far five pilots have gained their five hours.

The young trees bordering the caravan and car parks appear to be well established, flowers bloom in tubs around the clubhouse doors, members have given the bedrooms a fresh coat of paint and new furniture is on order for the lounge and bar.

Congratulations to Joanna Hibbert and Bob Fort, married on March 13, and to Susan Blight and Mike Howe, married on March 15.

Finally, the Northern Regional competition is to be held here in August and we are hoping for a full entry list.

S.V.G. & P.M.

SERVICE NEWS

BANNERDOWN (RAF Colerne)

THE season started off in fine form early in March with three members, Ken Keeble, Mick Elsom and Brian Sowerby, taking the K-6 to Portmoak. Each returned another step up the ladder, with Gold heights for Ken and Mick and a Silver duration for Brian. We still cannot forget an unusual association we found up there: Gliding and three cooked meals a day. We extend our thanks to the staff at Portmoak and only regret that such regular culinary events are unlikely down here.

At the club, things are progressing favourably. The steady output of certificate legs, combined with the arrival of new members, is causing Bruce Coutts, our CFI, to mutter under his breath about more gliders. Tom Bobbin's Sky has finished its C of A and we are expecting a K-4 as another addition to the fleet.

B.S.

CHILTERNS (RAF Abingdon)

THINGS have progressed splendidly since our disastrous fire at Benson. Our first concern was to get flying as soon as possible and Moonrakers came to our aid with the loan of a K-4 two-seater. This trainer enabled us to re-start operations at Benson in the first week of December.

Unfortunately, the lack of hangar space forced us to rig and de-rig every flying day, not a very satisfactory system, but by the end of January we could rig the K-4 in ten minutes. The "hangarage" consisted of part of the old station pig farm, with two makeshift doors, resembling an immovable concrete trailer!

In February we took delivery of a K-6CR, in superb condition, from the RAFGSA Centre at Bicester. This gave the pundits, who had been muttering about "aerodynamic bricks", something to fly. By this time we had decided that due to lack of hangar space and other service reasons we should try to move the club to a more suitable site, and Abingdon, ten miles to the northwest of Benson, was the most favourable site. Indeed, everyone there seemed most enthusiastic about having their own gliding club. So, with official blessing, the move took place in the first weeks of March.

Installed in a wonderful heated hangar, with lights and electrical doors, we were able to get our second K-4 up to scratch and to take delivery of the ex-Moonrakers Bocian 1E, a magnificent machine guaranteed to light up any pilot's eyes. The first week of April saw the arrival of our K-8B, again from Moonrakers, who by this time had ceased to operate. It is a great pity to see one of the GSA's founder members close down, but any of the Moonrakers will be made very welcome with us.

Finally, on re-equipment, our K-6CR should be replaced by a K-6E in the near future.

Operation at Abingdon is not without its problems at the moment. We have a direct telephone link with Brize Norton to try and avoid any conflict with their MATZ. We are also short of a suitable club room; perhaps something may be available in the future.

The AGM held at Benson on March 14 was well attended, the main points involved being the move and re-election of committee members. The committee is now as follows:

Chairman, Wing Commander H.

JOHN HULME
Swaffham Road, Bottisham,
Cambridge. CB5 9DU
Telephone Bottisham 323
Wood, Metal and Fibreglass Repairs
Glider Hire C's of A
Spares and Materials
U.K. Repair Agent for
Diamant and Phoebus Sailplanes

Armitage: CFI, Doug Bridson; Deputy CFI's, "Jock" Manson and Tony Morris; MT Member, John Butler; Aircraft Member, Brian Cogger; Treasurer, John Husband; Secretary, "Ginge" Lewis and Membership Secretary, Dick Amor. Bob Sharman was bullied into the new post of Trailer Member, which was just as well, because he had just spent days re-wiring them all.

Bob joined the Kestrel club for a short winter trip to Issoire early this year and climbed to Gold C height three times—his site check went to 21,000ft. The rest of the club, who can't afford the luxury of continental holidays, are determined to show him how to do it in the UK when we get to Sutton Bank for our expeditions.

G.M.

CRUSADERS (Cyprus)

SADLY, we have bid farewell to Chief Flying Instructor George Ross, and to Deputy CFI Chris Waller. They have been pillars of strength over the last two years, and done much to steer the club through some difficult crises. A particular debt is owed to Chris for his work as Aircraft Member, bringing all five gliders to the highest standard of integrity. Full credit is due to George, in that no flying accidents occurred during his reign; he also pioneered the summer satellite strip at Prastio, which must surely rank amongst the world's best soaring sites. Regrettably the gastronomic needs of a thousand sheep have denied us the use of the original Prastio common; but we have opened up a new 5,000ft launch run at the neighbouring village of Gaidhouras.

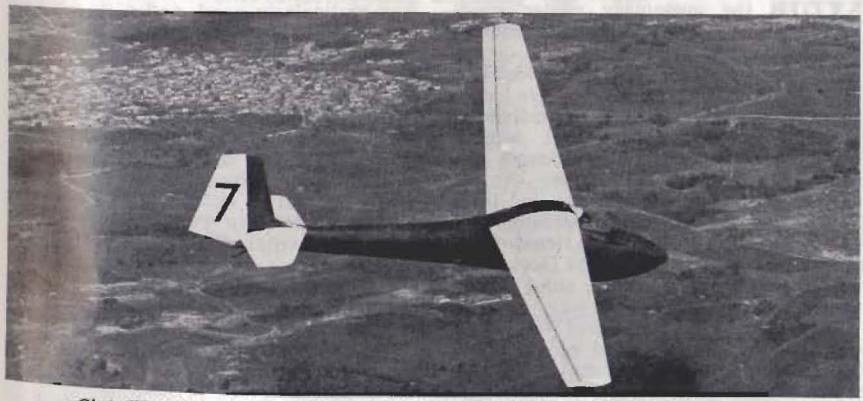
Our new CFI is Len Barnes, whose versatility as instructor, BGA technical inspector, and competition pilot is most welcomed. He is a past member of Crusaders, where he first started gliding six years ago. His remaining instructors are Roy Heslop, David Edwards, Gordon Camp, Vernon Bradbrook, and another past member, Ron Young, who has returned for a six-month tour as a United Nations helicopter pilot.

Howard Jarvis of the Kestrel club visited us during March and ran a successful *ab initio* course for some of his fellow soldiers. Bronze C's have been won by Chuck Hill and Kevin Allen. Kevin's father, Phil, is among recent first solos, together with Colin Brock, Dick Bealer, Malcolm Austin and Trevor Rousseau.

G.W.G.C.

FOUR COUNTIES (RAF Spitalgate)

THE club report prepared for the April issue began: "Some time has lapsed since our last write up . . ." Unfortunately, the postal strike intervened and it never went to press. It has now been so long since we appeared in these pages that to fill in all the missing news would be to re-write the club history.



Chris Waller(Crusaders) soaring an Olympia 401 over Cyprus. Photo: Gordon Camp

Suffice to say that 1970 was a very successful year for the club. We flew 1,700 hours from 6,500 launches, and after putting the gliders away still found time to make over £350 in bar profits! Who said drinking and flying don't mix?

Enough of past achievements. We are now well prepared for the new soaring season with two new shops on the site and plenty of ideas as to what should be done with them. Our resident syndicate has sold its smooth Olympia 2B (No 157), and invested in a Skylark 3F. Rumour has it they will be looking out for a cheap Phoebus next year! Meanwhile, the club pundits are gaining experience with their new toy, the Std Libelle. The private Cirrus is still operating from Spitalgate, so we have both Britain's World Gliding Championships Standard class aircraft on the site.

Of course "slippery ships" and "pundits" make the news, but the training programme continues as strong as ever.

A few adventurous souls have just returned from a week's expedition to Sutton Bank. The weather was very disappointing, but several members were checked out for aerotows, and on the one good day a Silver height was gained in thermals.

Next time you are passing through Grantham don't spare us a thought; pay us a visit!

R.T.D.

HERON (RNAS Yeovilton)

WITH the customary winter maintenance and a drop off in soaring activity, news is pretty scarce.

The third week of March provided our first real thermal activity. We were cautious about committing ourselves to ambitious cross-countries, but successfully completed one out-and-return and some respectable local soaring. At the time of writing we have completed three Silver distances out of five attempts. One of the misfires toured the local racecourses, made a round trip of Dorset and landed at Compton Abbas, some 25kms away.

We started our traditional task week on April 17 and renewed old acquaintances from other Naval clubs. We will report on the week in our next notes.

The Heron Flying Group has taken delivery of the Beagle Terrier, which provides the club with aerotows and an additional facility as a power trainer. Ray Smith is our CFI Power, and is doing a sterling job in training budding tug pilots. Other additions to the fleet include the Blanik, a new Capstan and a syndicate Skylark 4.

Our reverse pulley prototype Mk 2 is proving to be a great asset and has doubled our launch rate. I should like to thank those who responded to my appeal for information about the reverse pulley system; we have managed to avoid many hidden snags by virtue of their advice and would be delighted to pass on our findings to any potential pulley users.

The runways at Yeovilton would rival a grindstone, and consequently cable repairs, by virtue of their profile, take the brunt of the wear. We would like to try electrically welding cable breaks and would be very grateful for any information regarding the manufacture and operation of a cable welder.

D.B.

(See "Resistance welding solid wire" by K. Nurcombe, S & G February 1967, p 19—ED.)

HUMBER (RAF Lindholme)

FOLLOWING a very good year, in which the club came out very well under the points subsidy scheme, the RAF GSA has allocated us a K-6CR, with a K-8B and a refurbished "Wild" winch to follow. We felt our launch rate was particularly good, and with the new aircraft and winch we are obviously looking forward to doing better still.

This year is already off to a good start. In January and February alone we achieved 80 hours from 600 launches with three aircraft. Thirty hours of these were produced in two days with the help of a little wave at the Sutton Bank hill site where we had an expedition in February. Congratulations to Paul Goddard, who achieved two half-hour legs for his Bronze on this occasion, and only missed his five hours duration by 50 minutes when he was recalled following a snowstorm warning. Congratulations also to Terry Worrell and Dereck Howdle of our Rotherham syndicate. Both recently went solo and are looking forward to getting into their Oly as soon as possible.

LASHAM

(National Gliding Centre)

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From our own ranks, Terry Condliff and Nobby Clarke of RAF Finningley are now flying solo—well done both of you.

A special thank you now to Gordon Jones, who has recently had to leave the club on posting. Gordon has given three and a half years of dedicated service to a club not yet four years old. Many of the older hands remember when Gordon was the only instructor, and it was literally his hours of effort that kept the club flying. Our sincere thanks to Gordon, good luck in your posting and good gliding at your next club.

Numerically, our instructor situation has improved a lot since then, and Yorky Kitchener, our CFI, is now ably assisted by Deryk Butler with his brand new "full cat", Tom Barnes, Chris Anderson, John Davies, and soon, we hope, Paul Miller. In fact, everything is looking good for the coming season. Meanwhile, we are all looking forward to celebrating the club's fourth birthday with a dinner and dance at the end of April, and who knows what else there might be to celebrate by then, given good weather and a little luck.

J.R.L.

MENDIPS (RAF Locking)

THE end of November saw the AGM and dinner. Both were well attended and enjoyed by all. December and January were spent overhauling trailers and completing C's of A in readiness for Portmoak in February.

An advance party of seven left with the Bocian and K-6 for a week's advanced ridge and wave flying at Dishforth. Four more left for Portmoak five days later, and were joined by the rest of the party there. Unfortunately, only two days out of the week were soarable. Alan Long and Mike Laundy got their Gold and Silver heights respectively. Sandy Bryce had the great misfortune to reach 12,800ft without a barograph. On the next good day, the cold frustrated a five-hour attempt, but the pilot completed his Bronze C certificate.

F.P.G.

MOONRAKERS (RAF Upavon)

THIS is the last Moonrakers newsletter. The club closed down on March 31, victim of the trend that has dispersed most of the Royal Air Force into the Midland and Northern counties.

Formed at Lyneham in the early 1950's, the club has moved to Keevil and then to Upavon, where it thrived with membership drawn from the hutted camps of Yatesbury, Compton Bassett and Melksham. The last of those camps closed five years ago and the thousands of young trainees moved north. Starved of members, Moonrakers has gradually run down to the point where the RAFGSA has regretfully decided to redeploy the equipment based there.

At its peak, the club was among the best in Britain. Many of the BGA trophies have been won by its members. Four times, national champions have come from the Wiltshire site. Records have been set. Diamonds won. Half of Britain's Team in Poland in 1968 were Moonrakers.

But sheer performance has not been the club's only contribution to the gliding scene. It is in the nature of Service gliding that the membership changes every few years, so that the influence of a club may be felt far and wide. So it has been with Moonrakers. The stalwarts of many a club, Service and civilian, first got "hooked" in the Upavon circuit. And many will recall the instant expeditions to the nearby hills. Most popular of these was Huish, a site that has known gliders for 40 years or more. Those gentle south-facing slopes have fostered generations of soaring pilots; their memory of the place will usually be associated with warm fronts, a certain degree of mud, and very damp retrieves!

One such expedition, with three gliders, marked the closure of the club. During a fortnight at Shobdon, led by Jack Harrison, 125 hours were flown. Most members reached seven or eight thousand feet in the plentiful wave, and Roy Gaunt got a Gold height. The latter was especially well deserved, for Roy had done more than anyone over the last difficult two years to keep the club going.

The club is closed—a page is turned. Already the gliders are flying from their new home at Abingdon, where the Chilterns have reformed after their fire last year. The members have dispersed. The hangar is empty. The rolling chalk uplands of Salisbury Plain are once more left to the skylarks and the bumble bees.

J.S.W.

WREKIN (RAF Cosford)

IN SPITE of winter weather the club has managed to fly most weekends—mainly circuit bashing and some Mynd soaring, with everyone getting their full dose of fresh air. We started this season very successfully with an *ab initio* course, in February, on which all nine pupils gained their A and B certificates. The weather was very kind to us that week, since, on the 23rd, wave was contacted over Cosford. Several people went to 6,000ft. Wave flying was an exciting experience for our club and everybody zoomed up to have a try. N. Gregory and I. Cummings gained Bronze legs then, with Cummings completing his in March.

Later that month J. Griffin joined the instructors, having gained his assistant category.

The more experienced pilots have been soaring on Wenlock Edge and the Wrekin with several out-and-returns to Chetwynd and Much Wenlock.

C.P.

OVERSEAS NEWS—See page 210

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