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Cover Photograph: Skylark 4 flying from Sutton Bank, home of the Yorkshire Gliding Club. *Photo by Laurence Hill.*

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Slingsby Aircraft Company

Kirkbymoorside, Yorkshire, England

sincerely regret to announce the destruction by fire of their main assembly plant, early in the morning of Monday, 18th November.

The fire destroyed many of the completed orders and all of our main assembly work in progress. In addition our complete store stock was lost.

However, we are proud to announce the recommencement of production within a period of twenty-four hours on an alternative site made available by an Associate Company, and delivery dates are anticipated to be extended by not more than two months from those previously quoted.

Material and parts restocking is immediately being undertaken and normal enquiries may be confidently forwarded to us; in the event of our not being able to supply, the customer will be immediately informed of the expected delay involved.

Work is already being undertaken to completely rebuild and re-equip the assembly plant.

The Directors and the Company wish to make clear their intent to rebuild Slingsby Aircraft Company, to once more manufacture the successful new products we have introduced and to meet the requirements of the gliding world.

We would emphasise our determination in the phrase "Business as usual".

Finally, we wish to thank those many concerned for the heartening messages of confidence in the Company.

THE CHAIRMAN'S CHRISTMAS MESSAGE

What else could your Chairman wish you at this season but a merry Christmas and a happy New Year. He could, and of course does, wish you more specifically good soaring in the winter waves and in the summer thermals thereafter. More specifically still he wishes you good local soaring, good cross-country soaring, good soaring weather, few landings "aux vaches" (and all of them perfect), good progress with the development of your club and its facilities for flying gliders, and all the best things that the sport of gliding can provide. He wishes you more and more flying and less and less frustration.

During this festive season I can assure you that your Chairman is a man of abounding goodwill. At the moment he is preoccupied with cross-country flights of great length — the annual arrival from Siberia of his other friends, the wild Bewick's Swans, at Slimbridge. (They are allowed to flap.)

But with the advance of Spring — if he can get a Permit to Fly — he intends to come back fighting, giving no quarter and expecting none. Meanwhile, though, from Peter Scott —

A Happy Christmas and New Year to One and All

NATIONAL OPEN CLASS CHAMPIONSHIPS

By A. E. SLATER

HUSBANDS BOSWORTH

The notes on each day's weather, printed in italics, are contributed by the chief meteorologist, Ron Cashmore.

APPROPRIATELY, the winner of this year's Sports Class Championships, Ian Strachan, set the tasks for the Open Class, and his wife, Stella, became Operations Controller. Both carried out their duties in style. Whether this will set a precedent for the future, now that the Nationals are divided in two, remains to be seen—if it did, and the Sports Class were won by a bachelor, he would have to do something about it. Anyway, the problem won't arise next year, as the Open Class are having their fling first.

Among other officials, John Large was Championships Director, Shelley Curtis Chief Marshal and Phil Banks Competition Secretary and Treasurer.

Opening Ceremony

This was performed by Mr. James Robertson Justice, the film star, who confessed that he had always been drawn to the sport of ballooning, being so much heavier than air himself. But this ambition never came to pass, and its place had been taken by the sailplane, a kind of artificial eagle without a beak, and infinitely more amenable to the person in charge. However, he had sampled gliding only once, as the chairman's guest, though it was far from reassuring to be winched up like a box kite in a gale, unable to see anything but the cockpit deck and his own flat feet. However, no disaster supervened, a fact which had never ceased to astonish him. Only because he had known Peter Scott for many years did he entrust his carcase to such a frail-looking job. But he found the experience "a lovely impulse of delight", to quote the Irish poet. His own hobby, he said, was falconry.

In declaring the Championships open, Mr. Justice wished good luck to all, with "a special wish for Tom Docherty —yesterday was the anniversary of Wallace's murder: avenge him!"

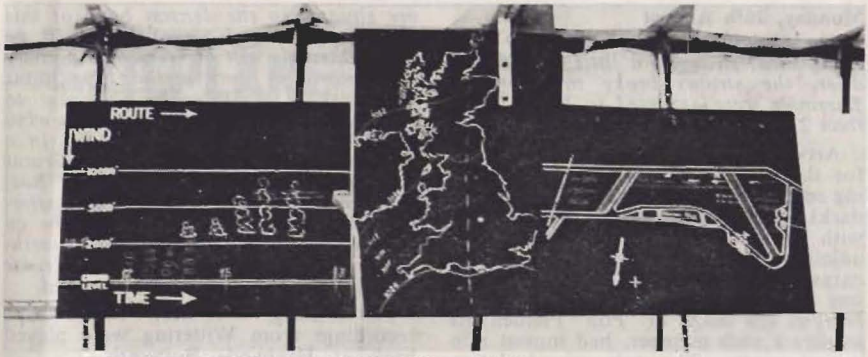
Saturday, 24th August

Quasi-stationary front Scilly-Shawbury-Scarborough, expected to harbour persistent low stratus with thundery outbreaks. To the south-east marked low-level stability in the dry Continental air-mass promised only weak, blue, shallow thermals. The task was selected to give an opportunity of finding thermals of moderate dimensions and strength. Cu developed as forecast and competitors left in good conditions with no relights; but, at about 16.00, *the increasing NE'ly brought in much more stable air from the North Sea, the entry of which caused a sudden reduction of available lift.*

The entry list contained 38 names, but Philip Wills, though out of hospital and able to visit the meeting, was not yet fit to fly his Dart 17R. George Burton turned up each weekend to fly *hors concours*, but Anne Burns broke her Cirrus in a field landing during the first weekend and retired from the contest. Peter Scott, who owns two sailplanes, flew the BS-1 himself and let John Williamson fly the HP-14.

TASK: Out-and-return with a choice of three different turning-points, and make up your mind—or change it—during flight. All were between 59 and 64 miles distant, more or less downwind;

Chris Wills in his Ka-6E.



The daily met. information was well presented. Photo by Anne Ince.

they were Malvern (95 km.), Cheltenham (90.3 km.) and Cirencester (102.8 km.), strung out in that order along a NW-SE line.

Visibility was not too good, though it was better in the valleys than on the hills. Thermals were not too good either, and made it difficult to progress against the wind on the way home, as pilots drifted so far back while climbing. Nevertheless, over a dozen made part of the way home, Ralph Jones doing best with 92 miles altogether.

Although there was no handicapping for the purpose of the competition, handicap marks were nevertheless worked out for use later in compiling the Rating List; when handicaps were applied, Chris Wills came out top on this day.

Leading Results, 24th August

Pilot	*Sailplane*	*Kms.*	*Pts.*
Jones, R.	Cirrus	148.6	1000
Wills	Ka-6E	143.1	954
Delafield	SHK	142.6	949
Gough	SHK	140.1	928
Johnson	SHK	139.6	924
Dimock	Diamant-18	116.6	750

Burgess, Greaves and Smith were equal 7th, and Foot 10th.

Sunday, 25th August

Still the NE'ly; the air now being brought in, having sojourned for some time over the North Sea, was very moist and stable, and thick low stratus produced drizzle until mid-morning. The stratus was forecast to break at 13.00, *producing* 2-3 *kt. narrow, difficult thermals, eroding quickly above* 2,500 *ft. by mid-afternoon. Early drop-outs were all adjacent to Edge Hill, due probably to suspected rotor streaming.*

TASK: Race via Wellesbourne Mountford to Bicester, 92.3 km. (57½ miles).

The track was first downwind to the SW and then across and slightly against the wind to the SE. Humphry Dimock not only won the task at 40.3 m.p.h. but jumped into the overall lead, and Peter Scott was less than a km./h. slower. Most people found it fairly straightforward, and 24 completed the course. David Innes was about to land at an airfield when Vic Carr, in a Dart, came underneath him and began circling, so both got away again.

In the handicapped scores Mike Garrod won and Chris Wills shared the overall lead with Andy Gough.

Leading Results, 25th August

Pilot	*Sailplane*	*Km./h.*	*Pts.*
Dimock	Diamant-18	64.9	1000
Scott	BS-1	64.2	986
James	Diamant-18	61.5	930
Garrod	Dart 17	60.8	917
Innes	Diamant-16.5	56.1	828
Williamson	HP-14	55.9	824

Followed by Withall, Gough, Smith, Delafield.

Leading Overall Placings, 2 Days

1.	Dimock	1750	6.	James	1544
2.	Gough	1698	7.	Wills	1519
3.	Delafield	1692	8.=	Garrod	1449
4.	Johnson	1613	8.=	Smith	1449
5.	Scott	1577	10.	Innes	1427

Monday, 26th August

The Continental airstream, now well established, stronger, a little veered and drier, the stratus broke mid-morning. Thermals were expected to be no more than 2 kt., narrow and distorted.

Arriving to see Husbands Bosworth for the first time in daylight (the opening ceremony in 1965 had been held after dark), I found an excellent organisation with no flying to organise this day. An adjoining field had been hired for a caravan park, and I had the luck to share one with a first-class cook (and raconteur) in the shape of "Pop" Fielden; its owner, a club member, had moved into a tent nearby. The only miscalculation concerned the catering firm which laid on excellent meals in a big marquee; few people turned up to eat them, and most of its income must have come from "elevenses".

Tuesday, 27th August

Still the NE'ly and the steady process of development persists. At medium levels instability is now becoming critical. There will be areas of medium cloud which will delay and reduce the reliability of the time of clearance of the low cloud. Isolated thundery outbreaks will occur later in the day. At low level also the moisture content has increased, the stratus is denser and will in any case be later to clear compared with yesterday. Husbands Bosworth and the Cotswold ridge, especially the southern side, are situated in the densest band of this low cloud; the clearance here will be slow, thermals will be weak and activity confined to a short period. Conditions will improve significantly N'ds, but to progress directly so involves cross-wind flight in thermals of only 2-3 kt. in a wind of 25 kt. at flying level. The stratus is expected to break at Husbands Bosworth about midday and by mid-afternoon will have become 5/8 shallow cu with a base of 1,500 ft., rising northwards to 2,500 ft. Thermals will increase to 4 kt. for a shallow depth in cloud.

At briefing, the Met. Man's tape recordings from Wittering were played back at Husbands Bosworth, together with Ian Strachan's further questions and his replies. This procedure seemed to satisfy everyone, though it prevented anyone cross-questioning Ron Cashmore except when he turned up in person at the weekend.

In view of the uncertain forecast, Ian said he didn't like setting tasks early, especially a "final resort to free distance", so he postponed the briefing to 12.30. A new tape recording from Ron then said: "It's not good where you are yet, but you could almost go in any direction, though the direction I gave (Severn Valley) is best." Another postponement to 13.30 and then a task was set.

TASK: Race to Nympsfield, 117 km. (73 miles). Launches from 14.00 hrs., aerotows to cloudbase, but scrub at

Pilots watch Don Snodgrass selecting his take-off time.

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15.15 if no glider had left the site by then.

Launches, including re-lights, were continuous until 16.30, and still sporadic after that, as several pilots were still hanging around the site. Not till nearly 7 p.m. (19.00) did news come of anyone reaching Nympsfield, where visibility, it was reported, was less than half a mile. Four got there, and at the other extreme, six landed back at HB, one of them because he had no radio, so couldn't get away without going into cloud. All convection had stopped by 18.40 (BST).

John Delafield, who won at 81.82 km./h. (51 m.p.h.), did so by going into a single cloud and gliding it out from 7,000 ft., thus exceeding the next best speed by 13 km./h. Like many others, he found the lift weak below cloud (they said 2 knots), but increasing to 8 knots while climbing inside it.

Andy Gough achieved second best speed by a very different technique; although his flight included a cloud climb to 5,000 ft., he spent much time soaring in bowls along the Cotswolds (the main line of the escarpment didn't face the wind); he was very low at Edgehill, and further along used Birdlip and other bowls. His last bowl, on the Nympsfield ridge, just enabled him to get over the top and reach the airfield. While doing this, he saw John Williamson, who had taken the high road, waving down at him from above, as much as to say, "I'll be in Nympsfield before ye."

Colin Greaves, the only other one to finish, used a cloud to climb to 5,400 ft., experiencing the usual increase of lift from 2 to 8 knots; he saw no one else along the whole route.

Of those who didn't make it, Ralph Jones went furthest with 110 km.; Colin Donald made 106.5; and Bernard Fitchett 97, with the help of a climb to 8,400 ft. near "X", 30 km. out. Riddell, Snodgrass and Warminger failed to get into cloud, yet made 89.5, 55.5 and 43 km. respectively. Brennig James, with 60.5 km., might have done more if he had not been tempted many miles upwind to a likely-looking cloud which failed to work when he reached it.

In the handicapped scores the first five placings were the same, and Delafield likewise took the overall lead.

Leading Results, 27th August

Pilot	*Sailplane*	*Km./h.*	*Pts.*
Delafield	SHK	81.82	846
Gough	SHK	68.82	818
Williamson	HP-14	68.29	816
Greaves	Dart 17R	61.71	804

Followed by Jones, R., Donald, Fitchett, Brownlow, Riddell, Redman.

Leading Overall Placings, 3 Days

1.	Delafield	2538	6.	Greaves	2027
2.	Gough	2516	7.	Wills	1872
3.	Williamson	2159	8.	Innes	1836
			9.	James	1807
4.	Dimock	2118	10.	Jones, R.	1784
5.	Scott	2042			

Wednesday, 28th August

Again similar to the previous day, with the development process more advanced. Unstable medium cloud will be more widespread. Thunderstorms will develop extensively in the west and late in the day areas of thundery rain will move into the country from the east. Low cloud again is denser than yesterday and again Husbands Bosworth is situated in the thickest stream, so that soaring conditions are likely to be weak and confined to a short period mid-afternoon which will remain marginal for launching safety with a maximum visibility of 5 n.m. and 5/8 cu. base 1,500 ft. Although thermals will be generally weak, narrow and shallow, if it proves possible to launch, conditions will improve in any direction downwind of the site.

Although the forecast seemed pretty hopeless, Ian Strachan, remarking "We are here to fly", fixed a second briefing for 14.00 hrs., and meanwhile a Pilots' Meeting was laid on to discuss the future of the Nationals and whether the Standard Class should have a cham-

pionship of their own, making three per year. Views were aired but no decisions taken.

At the second briefing the Met. Man's tape recording was heard to express its view that "I think I would certainly set a task and get them to rig"; but its advice fell on deaf ears and the day was given over to club flying and an evening film show.

Thursday, 29th August

The thundery low over Belgium has now reached its maximum development and will slowly decline, but significant improvement in the present abysmal conditions is not expected during the day. There will be periods of rain and drizzle throughout the day, with cloud-base not rising above 1,000 *ft. and a N'ly wind of* 15 *kt., gusting to* 30 *kt,*

Those who went to briefing found the marquee empty but for a blackboard notice: "SCRUB. Ron says if you want sun go to Cardigan Bay! Next briefing 10.00, 30th."

After a night and morning of continuous rain, the caravan park reminded one of those prehistoric "lake villages".

Chris Simpson decided on a party and filled his spacious Leicester home to near bursting with friends and fellow-pilots, the second category soon becoming merged into the first.

Friday, 30th August

Prelude to change. The thundery low over the Continent is now filling and the associated cloud sheet over East Anglia will move away E'ds. A ridge extends across the area from the south-west but maritime air of a high moisture content will be fed around this as a frontal system approaches the country from the west. Behind the eastern cloud sheet there will be a clear lane in which extremely good conditions will obtain. Alas, the site again is poorly placed; to take advantage of the very good conditions depends on a chance of leaving the site before the Sc can thicken. Convection commenced at 10.00 *but by* 11.00 *was already declining; the thicker Sc was here to stay; this meant delay, waiting for weak thermals to become ample in order to launch, with the promise that once away conditions would improve E'ds, with large gentle* 2-4 *kt thermals reaching* 6-8 *kt. in the occasional cu at* 4,000 *ft.-*6,000 *ft. Visibility excellent.*

A 105-km. triangle race, via Olney Church and Thrapston, was tentatively set at briefing, but throughout the morning the sky was covered by a low-to-medium overcast, and at around 13.00 hrs. the task was changed on the field without further briefing.

TASK: Race to Dunstable (London G.C.) via Caxton Gibbet, 118 km. (73 miles). The Gibbet marked the pre-war site of the Cambridge University G.C. and was just over halfway along the course, which ran first SE by E then SW.

The cloud sheet had now become typical strato-cumulus, but Ron Dunn arrived by road from the south and reported he was in good soaring weather as far as Northampton.

To enable competitors to glide straight off in search of better things, there was no starting line, and aero-towed launches were to 2,500 ft. Though Northampton was south of track, many made for its promised improvement. Several reached it and went on—Carr Withall found a 3-knot

John Cardiff (facing camera) and crew members.

thermal there that took him to 3,700 ft. But not everyone reached it. George Collins had glided down to 500 ft. when he caught a weak thermal that lifted him so slowly to 600 ft. that he calculated it would take another half-hour to get him to 1,000 ft., and when David Innes joined him in it, he decided there wasn't room for two, and landed.

Brennig James had to land beside a burning stubble field because it failed to produce the expected lift. Apparently it took several such fields to make one thermal: Peter Scott saw about four stubble fires at the turning-point, all contributing smoke to a single thermal. He and Delafield nearly reached the goal, landing at Streatley, north of Luton.

Further north of Luton is a village called Barton-le-Clay on the map, but the compiler of the official handout evidently thought he could improve upon that, for he made out Tom Zealley to have landed at Barton-in-Class and Mike Johnson at Barton-in-Clag.

The sole survivor was Bernard Fitchett, the only competitor to reach the goal. He did so at an average of 40.5 km./h. (25.14 m.p.h.), but this availed him no points for speed as no one else finished. His lowest point on the journey was 800 ft. at Wellingborough (where several others landed) and he was saved by a burning field; Gerry Burgess (Dart 15) came in below him but failed to contact. After that he had no further real trouble and reached a maximum of 2,500 ft. a.s.l. On the second leg, under complete cloud cover, he went for wispy pieces of cumulus which gave ½ to 1 knot lift. At Luton he gained 400 ft. in his last thermal and left it, while still climbing, to make his final glide at 80 knots. He arrived at Dunstable with 150 ft. to spare.

For the first time with his Cirrus Bernard Fitchett felt confident of outclimbing Ka-6's and SHK's. He thought its gliding angle only better than the SHK at speeds above 50 or 55 knots, but considered that it climbed better in scratchy thermals than any other machine he knew.

On handicap points Fitchett won the day and Delafield led overall.

Leading Results, 30th August

Pilot	*Sailplane*	*Kms.*	*Pts.*
Fitchett	Cirrus	118.0	870
Delafield	SHK	106.5	736
Scott	BS-1	106.5	736
Johnson	SHK	104.5	717
Zealley	Ka-6E	104.5	717
Greaves	Dart 17R	100.5	678

Followed by Purdie, Kronfeld, Feakes, Withall. Note that Delafield and Scott shared 2nd place, and Johnson and Zealley 4th place.

Leading Overall Placings, 4 Days

1.	Delafield	3274	4.	Greaves	2705
2.	Gough	3079	5.	Dimock	2479
3.	Scott	2778	6.	Innes	2365

Saturday, 31st August

Change taking place. The cold front which has entered Ireland overnight is now delayed by wave development; the wave is forecast to have moved to the

east of Scotland by midday, the front then making steady progress behind it and crossing Husbands Bosworth at that time. Briefing is accordingly delayed until 13.00 to allow the forecaster to enter with a halo of sunshine. By mid-afternoon conditions will become very good, with well-distributed, docile thermals, strength 4-6 kt. below cloud, which will be 4/8 cu, base rising to 4,000 ft., tops at about 8,000 ft., thermals increasing to a maximum in developing clouds of 12 kt. at 8,000 ft., above which level there will be rapid erosion and moderate amplitude waves. Some over-convection will take place from 16.00 and thermals will quickly decline from 17.00, but for one hour conditions should be superb, with unlimited visibility throughout.

To launch before or after the cold front—that was the question, and the Met. Man's tape said conditions were unlikely to be good ahead of it. So briefing was postponed and at 11.30 the opportunity was taken of holding another Pilots' Meeting, this time to discuss the next internationals, with Vic Carr in the chair.

The front arrived about noon, and after a narrow gap was followed by another front-like belt. At the 13.00 hrs. briefing, a flesh-and-blood Ron Cashmore appeared in place of his disembodied voice on tape, and told us that the front had finally left the site 27 minutes before.

TASK: Out-and-return race with a choice of four turning-points, all about 37 miles away, spread over an arc of 45° between N and NE. They were: Bourne, Grantham, Newton Airfield and Sandiacre by a road junction. Total distance assumed the same for all routes —170 km.

Winds at first would be:
3,000 ft., 280°, 20 kt.
6,000 ft., 270°, 25 kt.
9,000 ft., 250°, 35 kt.

But later they would back by 10° at all heights and decrease at the higher levels; thus for the return journey they would be less favourable in direction but more favourable in speed.

Of the 35 who flew, 23 got back to HB. Lift was generally pretty good but some of the downcurrents were very strong — "terrible", said one pilot. Bernard Fitchett, who made second best speed, reported his first thermal as 4-6 knots, and felt confident in leaving it when it dropped to 3 knots. On the outward journey he used cloud streets oriented 45° to his course, meanwhile keeping well upwind of track.

Humphry Dimock arrived at his turning-point at 5,000 ft., then ran into 10 (knots?) sink, but completed the course. More unfortunate was Mike Johnson, who reached 6,000 ft. but then lost so much in the downgoing side of a wave that he failed to get back. Some other pilots reported waves, and it may well be that these were the cause of other encounters with strong sink, though they were too far south to have been set up by the Pennines. Chris Simpson, for instance, in his final glide from 3,000 ft., got patches of sink over Leicester and fell short of HB by 2½ km., though calculation showed he should have had 200 ft. to spare.

At 16.33 the first competitor arrived back, followed shortly by Peter Scott,

Putting the weather on the map.

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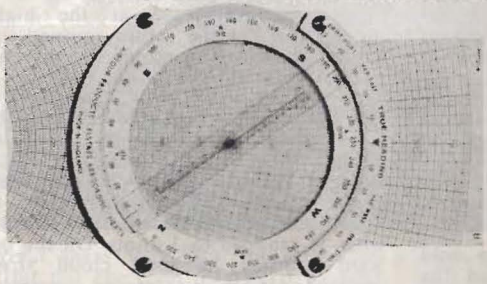

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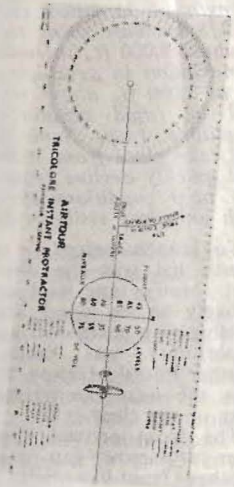

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Bernard Fitchett in the family Cirrus, with Father (right) in attendance.

the day's winner. He was one of those who chose to turn at the road junction, but found no difficulty in recognising it because of the proximity of the motorway. In fact, all but five of the finishers turned at Sandiacre, and the rest at Newton.

On handicap scores, Carr Withall was the day's winner, and John Delafield still led overall.

Leading Results, 31st August

Pilot	*Sailplane*	*Km./h.*	*Pts.*
Scott	BS-1	75.83	1000
Fitchett	Cirrus	73.09	953
Withall	Dart 17R	71.12	921
James	Diamant-18	66.76	852
Smith	Dart 17R	66.70	851
Innes	Diamant 16.5	65.00	826

Followed by Carr, Williamson, Dimock, Donald.

Leading Overall Placings, 5 Days

1.	Delafield	4019	5.	Dimock	3270
2.	Gough	3837	6.	Fitchett	3210
3.	Scott	3778	7.	Innes	3191
4.	Greaves	3366	8.	Smith	3143

Sunday, 1st September

The change has established itself rather too enthusiastically. A trough is developing in the south-west, which is expected to pass through Husbands Bosworth at 15.00. *too late to produce a useful clearance. The air is very unstable and cu will develop quickly, becoming Cb in afternoon, but there will be extensive masses of medium cloud of variable density, so that, although strong thermals to great heights will exist in places, there will also be large areas of negative lift. Rain will be frequent throughout the day, often persistent and sometimes torrential; heavy clear icing will occur in cloud accompanied by sferic illumination. Surface winds will be* 15 *kt., gusting to* 30 *kt., with winds of* 25-30 *kt. at flying level. It is suggested that the expected conditions would not produce fair competition.*

A discussion on possible tasks gave rise to the remark: "Not so much a competition as a teach-in on task-setting." But no task was actually set. However, in view of promised better weather tomorrow and the chance of replacing the prize-giving ceremony by a good long task, nobody went home.

Monday, 2nd September

A good, clean, unstable day, the winds perhaps a little too strong for comfort but not for competition. Cu will develop early and progressively, base rising to 3,500 *ft. by mid-afternoon, with maximum tops generally* 15,000 *ft.. but isolated Cb will occur with tops to* 30,000 *ft., and cloud lowering locally in heavy ppn to* 1,500 *ft. Showers will commence at* 1,300 *and isolated thunderstorms will break out mid-afternoon. Thermals will be strong, but distorted at low level; however, no one should find himself at low level. Thermal strength* 5-6 *kt. below cloud, reaching a maximum of* 16 *kt. in developing cloud at* 8,000 *ft.; above this level there will be heavy clear icing. Surface winds will be* 20 *kt., gusting to* 30 *kt., from* 200 *deg., veering to* 220 *deg. Upper winds as described generally* 220 *deg., veering* 240 *deg.,* 30 *kt. Visibility unlimited.*

Sure enough, the weather improved, and prize-giving was put off till next Saturday at HB.

TASK: Race to Debden, 13 miles SSE of Cambridge. Distance 103 km. (64 miles) in a direction SE by E. The Met. Man promised, among other good things, "odd cu-nim to 30,000 ft., not violent and not more than frightening".

Forecast winds were: 6,000 ft., 230°-240°; 9,000 ft., 230°, 20 kts. However, the wind at HB in the afternoon was noticed to back from SW to SSW, and

this evidently made it awkward for some, as several landings were at Cambridge and other places to leeward of track, but 14 got there.

Colin Donald won by a fair margin at 52.06 km./h. (32.4 m.p.h.). Peter Scott, with 36.68 km./h., calculated that this might just put him in the overall lead, as he heard that John Delafield had landed at Cambridge, too far out for a useful re-light. But Delafield had really only gone a quarter of the way, and got back for a re-light in time to make second best speed to the goal; although launched into apparently dead air, he glided on course to a patch of sunlight, got lift there, and went for a big cloud which took him to 13,000 ft. —enough to reach Debden.

Most of the competitors went on home instead of returning to tell their stories, but news of one incident found its way back to base—a collision in cloud between "Max" Bacon and Alf Warminger. Fortunately neither pilot had to jump out, although both suffered damage to their machines.

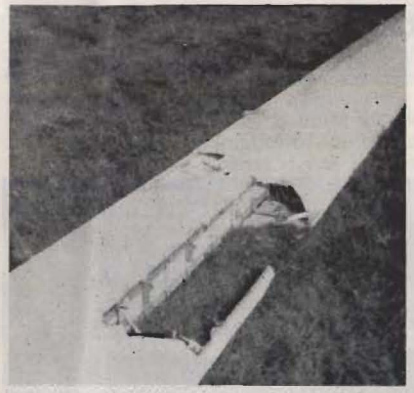
As Max Bacon would have been broadcasting on the RAF frequency, it would seem that neither pilot could have been aware of the other's presence in the cloud.

Alf Warminger entered his cloud about two miles north of St. Neots. Before doing so, he broadcast full particulars of himself on 130.4 (his only frequency), and continued to broadcast his position at every 500 ft. during the climb. Simon Redman, who had been with him in the thermal, waited till Warminger had gained 500 ft. before entering cloud himself. Peter Scott had also come up and waited at cloudbase for Redman to gain height. Max Bacon and another pilot had also been in the thermal but, he said, had gone to another cloud brewing over Bedford.

When Warminger had reached about 6,500 ft. a.s.l. (cloudbase was at 4,500 ft.), and was climbing at 8-10 knots, a

FINAL RESULTS—Open Class (Figures in italics denote handicapped scores.

Pilots	*H'cap %*	*Sailplane*	*Day 1* 1000	*Day 1* 1000	*Day 2* 1000	*Day 2* 1000	*Day* 846
1. J. Delafield	86	SHK	949(3)	*870(2)*	743(10)	*760(12)*	846(1)
2. P. M. Scott	80	BS-1	591(22=)	*495(30)*	986(2)	*918(3)*	465(11=)
3. A. W. Gough	86	SHK	928(4)	*851(4)*	770(8)	*788(10)*	818(2)
4. C. M. Greaves	90	Dart 17R	695(7=)	*682(8=)*	527(23)	*557(24)*	804(4)
5. H. R. Dimock	80	Diam. 18	730(6)	*611(13)*	1000(1)	*931(2)*	388(17)
6. C. L. Withall	90	Dart 17R	591(22=)	*583(20)*	776(7)	*840(7)*	211(23)
7. R. Jones	82	Cirrus	1000(1)	*863(3)*	105(32)	*81(33)*	689(5)
8. M. J. Smith	90	Dart 17R	696(7=)	*682(8=)*	753(9)	*813(9)*	271(20)
9. D. S. Innes	86	Diam. 16.5	599(20)	*555(25)*	828(5)	*848(5)*	409(15)
10. B. Fitchett	82	Cirrus	659(11)	*570(22)*	151(31)	*115(31)*	577(7)
11. J. S. Williamson	86	HP-14	519(27=)	*483(31=)*	824(6)	*844(6)*	816(3)
12. M. P. Garrod	90	Dart 17	532(25=)	*527(26)*	917(4)	*1000(1)*	0(26=)
13. T. S. Zeally	96	Ka-6E	549(24)	*594(18)*	633(16)	*727(15)*	0(26=)
14. C. C. Donald	80	Diam. 18	519(27=)	*435(33)*	239(28)	*175(29)*	659(6)
15. D. B. James	80	Diam. 18	614(14)	*574(29)*	930(3)	*868(4)*	263(21)
16. V. C. Carr	90	Dart 17R	604(15=)	*595(16=)*	688(12)	*739(13)*	431(14)
17. B. Brownlow	96	Oly. 419	601(19)	*646(11)*	589(19)	*669(18)*	521(8)
18. S. J. Redman	86	SHK	656(12)	*606(15)*	286(15)	*359(20)*	491(10)
19. P. G. Burgess	98	Dart 15	696(7=)	*762(6)*	583(20)	*676(17)*	400(16)
20.=C. R. Simpson	90	Dart 17R	593(21)	*585(19)*	254(26)	*231(25)*	465(11=)
20.=R. Foot	100	Skl. 3F	663(10)	*746(7)*	686(13)	*837(8)*	0(26=)
22.=R. Feakes	96	Ka-6E	519(27=)	*564(23=)*	513(24)	*571(22)*	0(26=)
22.=P. G. H. Purdie	100	Ka-6CR	532(25=)	*609(14)*	612(18)	*732(14)*	319(19)
24. N. A. Wilkinson	96	Ka-6E	604(15=)	*649(10)*	678(14)	*785(11)*	9(25)
25. C. Wills	96	Ka-6E	954(2)	*1000(1)*	565(21)	*639(21)*	353(18)
26. A. H. Warminger	90	Dart 17R	369(35)	*374(35)*	625(17)	*667(19)*	112(24)
27. M. W. Johnson	86	SHK	924(5)	*847(5)*	689(11)	*704(16)*	0(26=)
28. J. R. W. Kronfeld	90	Dart 17R	604(15=)	*595(16=)*	168(30)	*152(30)*	0(26=)
29. G. McA. Bacon	96	Ka-6E	519(27=)	*564(23=)*	— (35=)	— *(36)*	465(11=)
30. J. C. Riddell	90	Dart 17R	281(37)	*291(37)*	39(34)	*46(34)*	512(9)
31. L. Frank	98	Skl. 4	519(27=)	*580(21)*	196(29)	*200(28)*	— (26=)
32. D. C. Snodgrass	90	Dart 17	352(36)	*358(36)*	90(33)	*88(32)*	220(22)
33. J. D. Jones	90	Dart 17R	519(27=)	*515(28)*	262(27)	*229(26)*	0(26=)
34. A. J. Stone	86	SHK	519(27=)	*483(31)*	557(22)	*566(23)*	0(26=)
35. T. P. Docherty	90	Dart 17R	645(13)	*635(12)*	4(35)	*17(35)*	0(26=)
36. G. T. Collins	86	Diam. 16.5	424(34)	*397(34)*	272(25)	*222(27)*	0(26=)
37. Anne Burns	82	Cirrus	604(15=)	*523(27)*	(withdrawn)		—



sudden shadow crossed from right to left, followed by a loud report and jarring of the sailplane. Looking to the left, he saw that 3 or 4 ft. of the leading edge back to the main spar was missing, 6 ft. out from the fuselage. He straightened out and found that the controls still functioned satisfactorily, but the drag on the port wing necessitated a certain amount of crossing of the controls. He broke cloud about 7 minutes later and eventually landed in a 40-50 acre field.

Warminger heard no other pilot on the radio but Redman, who was keeping 500 ft. below. Radio traffic was heavy.

Leading Results, 2nd September

Pilot	*Sailplane*	*Km./h.*	*Pts.*
Donald	Diamant-18	52.06	1000
Delafield	SHK	46.19	915
Dimock	Diamant-18	45.71	908
Jones, R.	Cirrus	45.18	901
Withall	Dart 17R	40.23	839
Greaves	Dart 17R		836

Followed by Feakes, Scott, Burgess.

Peter Scott, at the morning's briefing, had expressed the thanks of all to the organisers for their work in making the meeting such a success.

Figures in brackets denote daily placings.)

3	*Day 4*		*Day 5*		*Day 6*		*Total*
897	870	920	1000	1000	1000	1000	*Points*
897(1)	736(2=)	*832(4)*	745(13)	*760(13)*	915(2)	*964(3)*	4934 *5083*
422(16)	736(2=)	*753(9)*	1000(1)	*933(2)*	799(8)	*779(12)*	4577 *4587*
867(2)	563(12)	*641(15)*	758(12)	*774(12)*	395(24=)	*336(26)*	4232 *4257*
859(4)	678(6)	*818(6)*	651(17)	*704(17)*	836(6)	*967(2)*	4202 *4587*
352(19)	351(21)	*369(22)*	791(9=)	*745(14=)*	908(3)	*908(6)*	4178 *3916*
245(22)	582(10)	*707(12)*	921(3)	*1000(1)*	839(5)	*902(7)*	3920 *4277*
647(5)	543(14)	*577(19)*	624(19)	*608(20)*	901(4)	*916(5)*	3862 *3692*
307(20)	572(11)	*696(13)*	851(5)	*921(3)*	493(19)	*445(20)*	3536 *3864*
417(18)	529(16=)	*604(16)*	826(6)	*844(6)*	399(23)	*339(25)*	3590 3607
543(10)	870(1)	*920(1)*	953(2)	*919(4)*	325(27)	*257(29)*	3535 3324
866(3)	0(27=)	*0(29=)*	813(8)	*831(7)*	547(16)	*460(18)*	3519 *3484*
29(27)	481(18)	*591(18)*	765(11)	*823(8)*	774(11)	*820(9)*	3469 *3790*
0(28=)	717(4=)	*919(2)*	684(16)	*784(11)*	748(12)	*813(10=)*	3331 *3837*
598(7)	87(25)	*89(25)*	791(9=)	*745(14=)*	1000(1)	*1000(1)*	3295 *3042*
239(23)	0(27=)	*0(29=)*	852(4)	*800(10)*	530(17)	*402(22)*	3189 *2823*
469(14)	0(27=)	*0(29=)*	823(7)	*889(5)*	522(18)	*469(17)*	3068 *3161*
615(6)	548(13)	*732(11)*	708(15)	*816(9)*	4(32)	*41(32)*	2971 *3519*
497(13)	0(27=)	*0(29=)*	726(14)	*740(16)*	784(10)	*813(10=)*	2943 *3015*
498(12)	197(24)	*314(24)*	175(34)	*186(34)*	794(9)	*891(8)*	2845 *3327*
504(11)	375(20)	*469(20)*	334(24)	*310(25)*	723(13)	*756(13)*	2754 *2855*
39(26)	529(16=)	*750(10)*	313(25)	*330(24)*	563(15)	*581(15)*	2754 *3283*
0(28=)	620(9)	*821(5)*	210(32)	*215(31)*	823(7)	*921(4)*	2585 *3092*
420(17)	659(7)	*917(3)*	136(35)	*152(35)*	427(21=)	*452(19)*	2685 *3282*
56(25)	438(19)	*596(17)*	209(33)	*213(32)*	703(14)	*749(14)*	2641 *3048*
432(15)	0(27=)	*0(29=)*	279(27)	*282(26)*	481(20)	*475(16)*	2532 *2828*
144(24)	534(15)	*651(14)*	648(18)	*690(18)*	296(28)	*276(27)*	2584 *2802*
0(28=)	717(4=)	*810(7)*	246(29=)	*217(29=)*	0(33=)	*0(33=)*	2576 *2578*
0(28=)	654(8)	*790(8)*	288(26)	*269(28)*	395(24=)	*360(23=)*	2109 *2166*
554(8)	226(23)	*337(23)*	274(28)	*277(27)*	427(21=)	*427(21)*	1911 *2159*
553(9)	0(27=)	*0(29=)*	523(23)	*547(23)*	210(30)	*202(30)*	1565 *1639*
— *(28=)*	245(22)	*374(21)*	565(21)	*643(19)*	29(31)	*69(31)*	1554 *1866*
254(21)	0(27=)	*15(27=)*	540(22)	*567(22)*	292(29)	*273(28)*	1494 *1555*
0(28=)	0(27=)	*15(27=)*	219(31)	*206(33)*	395(24=)	*360(23=)*	1395 *1325*
0(28=)	0(27=)	*0(29=)*	246(29=)	*217(29=)*	0(33=)	*0(33=)*	1322 *1266*
0(28=)	19(26)	*59(26)*	576(20)	*607(21)*	0(33=)	*0(33=)*	1245 *1318*
0(28=)	0(27=)	*0(29=)*	—		—		696 *619*
	—		—		—		604 *523*

BEING A PRIVATE OWNER IS DIFFERENT

By RHODA PARTRIDGE

TO start with, it hurts. It hurts all the time like the rheumatics or toothache. I couldn't make out what it was at first. Then I realised that it was caused by being broke. Not the "one of these days I'll have to give up smoking" sort of broke. Debts, and thank heavens they've closed the debtors' jail at Newgate, and a bang on the door, and is it the bums (sorry, bailiffs) come to distrain? (Doesn't it sound uncomfortable?) This pain will only cease with death or selling the glider. "You just have to learn to live with it, dear." It's absolutely fatal to work out what your flying costs you per hour. To stay sane you convince yourself that the longer you stay airborne the cheaper it becomes, even if you've been plugging up and down the ridge for three hours at 500 ft. and your toes have gone dead and nature calls.

Then there's that thing of being hated. When you were a club member you hated private owners and that was fine. It's no use hating club members because you have to ask them to help you rig. When I was a club member I used to be directed to a wing-tip where I'd go up and down and backwards and forwards in obedience to central grunts. Now I'm supposed to do the central grunting and I'm brought face to face with the superiority of men. They have this weird control over Things. Women have soft fingers and Things just won't. After tearing finger-nails and cutting soft, weak fingers for a while, I turn and beg for help from some man who has been watching with a delighted sneer. He puts out a large finger and whatever it was that wouldn't, promptly does.

Why did I buy a glider? By mistake, actually, but let's not go into that. It was partly because for the last three or four years there had been about ten wickedly keen pilots flying the club 463s and we would invent any cut-throat ploy to leave our friends on the ground (and none cutter-throater than I). Most of us have sunk exhausted into syndicates now, and the present 463 pilots can thank their lucky stars that we have. It was also partly because of what Jane said. "The trouble with flying club gliders is that an hour isn't long enough to find out what the sky's doing, and you develop a one-hour stamina." (This one-hour thing isn't a club rule. It's what is laughingly known as a "gentlemen's agreement", but you knew that, if you outstayed your hour, the other "gentlemen" would come thundering across as soon as you touched down and have you out of the cockpit and pegged out on the nearest ant-hill before you could say "Philip Wills".) "Nonsense," I said, "we're jolly lucky to fly from the Mynd where you so often can get an hour, and anyhow I know what the sky's doing after half an hour." She gave me a look and I went away and thought about it and, of course, she's right. After half an hour I think I know what the sky's doing and after another half an hour of flying accordingly I find out just how wrong I was. After an hour in a club glider I'd suddenly feel bored and tired and I'd want my tea. Now, if I'm to be blown to the east coast to achieve a startled 300-km. flight (and I'd dearly love it to happen), it's no good feeling tired and bored and wanting my tea after an hour. As a private owner I can stay airborne for hours and hours, thereby improving my stamina and, in some obscure way, saving money (see above). I suppose I shouldn't want to fly in competitions. But, apart from being alarmingly inept, I'm not competitive by nature. I just want to put an arm down each wing and swan about up there, feeling intrigued and poetic and faintly apprehensive.

After three heady weeks as sole owner of by far the most beautiful Ka-6E the Schleicher works ever turned out ("Just an ordinary production model", my foot), I decided that I'd have to form a syndicate and I read Wally Kahn's screed with great attention. (Thank you, Wally, it's most helpful.) He has this one dread phrase: "Running a syndicate is akin to marriage." Well, everyone knows that this is the most difficult of all human relationships, and anticipating the anguish of divorce and who would be granted custody of the artificial horizon

nearly put me off altogether. I decided to try it the other way and take partners for a year and stand the depreciation myself (just like an extra-marital relationship). As a result we're absolutely charming to each other because it's only for a year and we decided on 1st April, if we want to continue the arrangement and still own the glider (actually the port wing, the canopy and the all-flying tail belong to Martins Bank).

Disadvantages of being a private owner. Penury. Guilt at owning such a useless and expensive toy. The responsibility of looking after the beautiful thing alarms me, but it's fun and one learns a lot (one had a lot to learn). People expect private owners to be classy pilots and this makes me a bit uneasy. I get more bad tempered and frustrated than ever if it's a super day and I can't go and fly. As well as the delight missed, I'm losing money (see above).

Advantages. Just to know she's there. Gleaming in her trailer, everything working. Ready to curl herself snugly into a 6-knot thermal or go whispering dreamily up in wave.

Conclusions? Absolutely none. Crazy, broke, blissful.

Hey, I've just thought. I may be a private owner but I'm still a club member. Now isn't that odd? It feels quite different.

THERMALS

By PETER GOLDNEY

INSPIRED by MacCready's article published in SAILPLANE & GLIDING (1962), I decided to look into the possibility of using an infra-red detector to locate a thermal. To do this, I had to know what I was looking for, and it was this question, and my inability to answer it, that involved me in a study devoted to measuring some of the vital statistics of thermals.

Initially I could find very little factual information. Most of the literature describes thermals in very general or theoretical terms and gives a simple description of how they are thought to behave.

I finally decided to have a go myself, and built a simple thermistor type thermometer which I attached to the wing of a sailplane. I carried out five flights and measured the temperature excess of thermals, together with the vertical temperature structure of the thermals and the environmental air adjacent to them. From these figures several interesting points emerged. Above 1,000 ft. the average excess temperature of all the thermals was only 0.2°C, and this was nearly constant to the top of the thermal. The vertical temperature structure showed that the rising thermal air cools very rapidly in the first 1,000 ft. by between 4.5°-5°C. during the ascent. Thereafter it cools more slowly at less than the dry adiabatic lapse rate closely following the environmental lapse rate. Differences in thermal strength were not detectable by changes in the temperature excess. In fact, I could find no correlation between the temperature increases measured on flying into a thermal, and the lift encountered in it. These facts answered one of my questions—a thermal is just warmer than the surrounding air—but immediately made me ask another. I now wanted to know what determined the strength of a thermal. By this stage I had tracked down two good articles. Grant (1965) and Woodward (1962) described measurements they had made of thermals, and both show that the thermal has a temperature structure such as I have described. However, neither explained what caused a strong or a weak thermal. I then turned to the laboratory—reluctantly! However, I was soon fascinated by the result. I placed a large board in a wind tunnel and heated a small metal plate that was let into the board. By inserting a smoke tracer on to the board, I was able to watch the convective air currents formed over the plate. The results are at present scientifically unproven, but as a gliding man the convective formations I have seen could explain the behaviour of many of the thermals I have battled with. I will battle with science later.

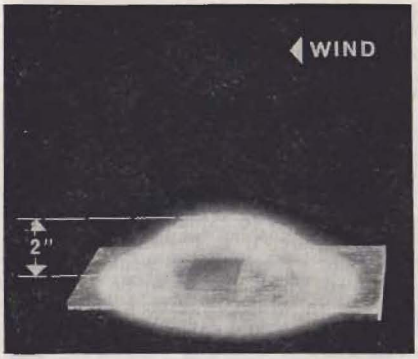


Fig. 1

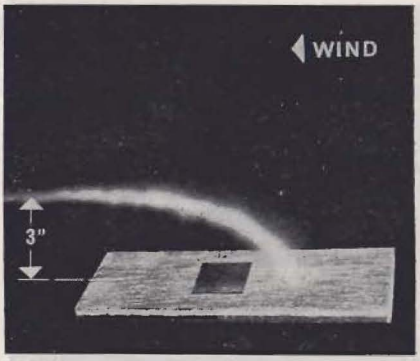


Fig. 2

No two thermals are exactly the same, and it would be wrong to give the impression that the formations in the laboratory were clear-cut and identical. They were not. However, they can be subdivided into five types. The sequence in which they formed was as follows:

As the metal plate was slowly heated, the air over the plate became turbulent and seemed to form into a dome, one or two inches high (Fig. 1).

As the temperature increased, the dome broke up into thin stream (Fig. 2).

Further increases in plate temperature caused the "plume" to stand more upright, but it maintained a smooth flow throughout its length (Fig. 3).

Further increasing the plate temperature caused the "plume" to stand even more upright, but at a critical temperature the tail of the plume began to oscillate (Fig. 4).

As the plate heated up even more, the column became more upright and was capped by a "cumulus-shaped cloud" (Fig. 5).

All these increases in heating created a greater vertical velocity.

At this stage I increased the wind speed and the formation shown in Fig. 6 developed. The individual "puffs" exhibited a vortex ring behaviour and seemed to be caused by the oscillating "tail" of the plume. The area below the puffs showed an irregular vertical motion. Once again, provided the plate temperature was maintained, the plate produced an endless succession of puffs which drifted off down the wind tunnel, looking exactly like a cloud street.

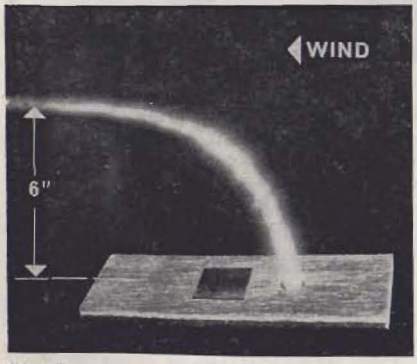


Fig. 3

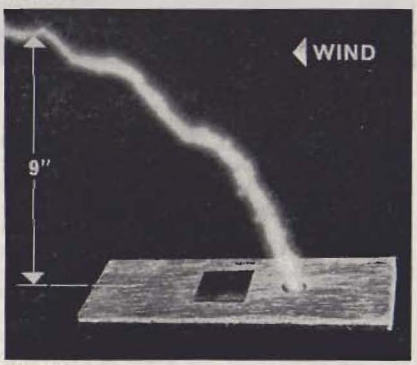


Fig. 4

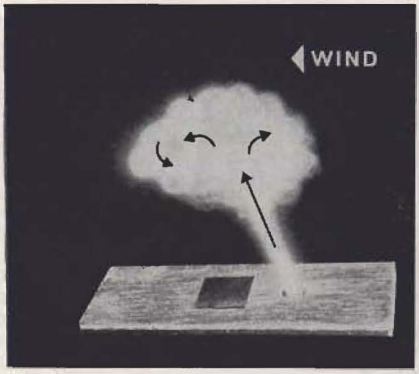


Fig. 5

In an attempt to reproduce more general surface heating, I heated the whole board with an infra-red lamp. This uniform heating over a large surface created "dust devils" which formed in a random fashion over the board and spiralled upwards, twisting at a high rate.

Temperature measurements showed that these models behaved in a similar fashion to real thermals. The air cooled very rapidly until it reached a temperature excess of about 0.2°-0.4°C. and then maintained this value throughout the height of the model. The vertical temperature structure was unaffected by the plate temperature which seemed to control the vertical speed of the air only. The dimensions of the plate appeared to control the diameter of the plume and the height at which this strange figure of 0.2°C. first appeared. The larger the plate the greater the height to which the air rose before its temperature fell to 0.2°C.

There are still lots of ifs and buts, and whys and hows and maybe nonsense, but having seen plumes and vortex rings and twisters and cloud streets, I am prepared to believe that the mechanisms may go part of the way to explain what is occurring in nature. If this is the case, Figs. 1-3 would explain those weak thermals low down which appear to be long and thin and in which it is very difficult to circle. Fig. 5 would explain why, on days when there is a strong wind, there can be a few areas of strong lift—columns?—near the ground which develops into rough scattered lift, which in turn changes, giving a smooth quick ride to cloud base in—a vortex ring?

If nothing else, I hope this article will bring Harold Drew and Frank Irving together in a two seater on a windy convective day. I hope they will share the flying, each demonstrating his special *forte*, showing that both plumes and vortex rings make soaring a most fascinating sport.

Meanwhile, back to the lab.

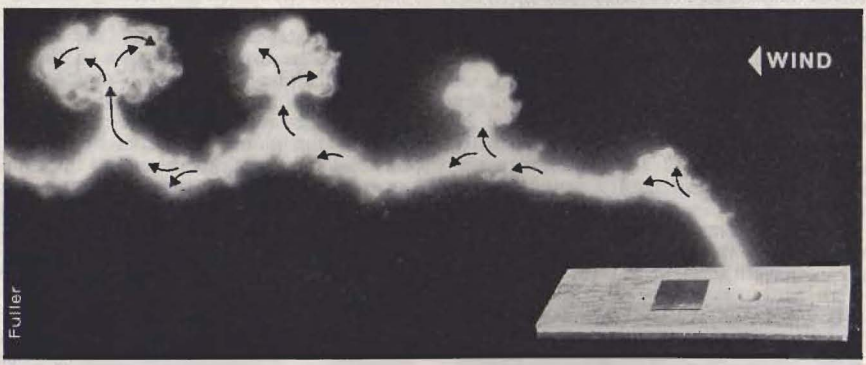


Fig. 6

References

1. D. R. Grant, 1965: *Quart J. R., Met. Soc.* 91, p. 268.
2. P. B. MacCready. 1962: SAILPLANE & GLIDING, Dec. 1962, p. 394.
3. B. Woodward. 1962: *Final Report No. DA*-91-591 *EVC*—1707, London.

MOTOR GLIDERS — Philosophy

By ANN WELCH

THE practical motor glider is now on our doorstep. Whether anyone likes it or not, it is here to stay—like the motor car—and we need to learn to live with it to our advantage.

Not every glider pilot is prepared to accept the motor glider as not everyone accepts, even now, the motor car—so in an attempt to avoid profitless talk, it may be worth having a think about philosophy.

People who want the motor glider do so to reduce the frustration in training, to get more glider-type flying if they are short of time, to go looking for waves, and to retrieve themselves instead of waiting for a trailer. All this adds up, fundamentally, to having more fun for a reduced expenditure of that shrinking commodity, time.

The opponents say that they do not want the purity of gliding ruined by noisy engines, and above all they do not want gliding diluted by hordes of morons, who are not interested in gliding, wanting cheap flying. These people have a point; the attraction of gliding is its quietness, and the inevitability of the challenge in flying without an engine. It is a unique sport combining skill, courage and technology to a sophisticated extent. Nevertheless, many people who have all the qualities, and the desire, to fly pure gliders are at the present time prevented from doing so by shortage of time. Are those people, already in gliding, reasonable in wanting to exclude those who for many good reasons are short of time? The answer is obviously no, and on getting down to a bit of thinking the last thing any pilot wants is to exclude anyone who would enjoy gliding as much as he does himself.

So what is to be done?

To my mind—and I am by no means alone—the number one enemy is noise. The scream of the fast revving little engine which can be heard even before the aircraft heaves over the horizon is *quite unacceptable*. Whether one is in gliding, or a member of the public, the great attraction of our sport is its marvellous quietness. The Volkswagan aero-engine conversion, as in the Scheibe Falke or the RF-4, is quiet, and we should not accept production aircraft which make more noise than this. A single weekend's flying by a high-pitched buzz-box could well put people against, not only the motor glider, but the club from which it is flown.

The number two problem, which I believe to be a fear rather than an enemy, is that gliding will be diluted by hundreds of disinterested motor pilots on the lookout for cheap flying. This possibility obviously requires careful thought. The factors are these: By obtaining legislation for genuine glider pilots to operate gliders (self-launching) as a useful extension of pure gliding, motor gliders can become part of the gliding scene without harming it at all; bringing, in fact, only benefits. But what is to be done about people who buy themselves a motor glider with an ARB C. of A., and fly it on their own PPL—just as they can, and do, now? Should one try to stop them on the argument that they might indulge in low flying and bring discredit to gliding, or is one going to say that they are aeroplane pilots flying under the aegis of the flying clubs, or from their own strips, and good luck to them? To attempt to do the former could result only in undesirably restrictive legislation; anyway, how many of these "outcasts" are there likely to be? If, which is unlikely, some flying club decided to re-equip with two-seat motor gliders in order to reduce the present prohibitive

cost of learning to fly, what is to be done about it? One gets back to the beginning again—the motor glider, which is a type of aircraft anyone is free to develop —is here to stay and we must learn to use it to our advantage.

If we look only at a gliding scene with reasonably quiet motor gliders, and, if we can get it, simple legislation because motor gliders are gliders (self-launching), it is then up to the clubs themselves to ensure that their sport goes the way they want it to go. They have this power now —whether gliding expands or shrinks, gains or loses in quality, changes or becomes moribund, is in the hands of present-day members, all of them. So let us, for the moment, look at motor gliders within the gliding movement, and see how we can benefit. In training there is everything to be gained; fewer people required to hang about, better utilisation, and the ability to tailor the lesson more to the student pilot's needs, because the freedom of height and manoeuvre is greater. Over a period of 6 hours on a recent non-soaring weekend, two-seater car-towed gliders were obtaining a little under two hours' airborne time, while two-seater motor gliders were obtaining between four and four-and-a-half hours. The only essential is that the training motor glider should have similar (or the same) handling characteristics and view so that the student can switch easily from one to the other.

The case for the single-seater provokes some argument, although to consider that motor glider legislation should be obtained for two-seaters but not for single-seaters (as a few people do) does not stand up as a case for more than a minute or so. However, discussion will need to take place as to whether motor gliders should be allowed to compete in gliding championships, as they are in Germany, or used for badge flights if the engine can be restarted to avoid an emergency. Perhaps the pilots who stand to gain most from the motor glider single-seater are those who live and work far from their gliding club, and those who are short of time who want to do more flying in a year than is possible with pure gliding. A motor glider, kept at the nearest airfield or strip, may be the only means by which the exiled pilot can get any regular soaring. He can launch himself, switch off, and have a couple of hours' fun before landing back on the same field. If he lives on the coast he can find himself sea breezes or cliff soaring, without which he would have little flying at all. If the gliding club is within reach, the pilot short of time can search out waves and use them, or soar away on a short period of thermal activity, and fly himself back to base when it fails. These people will have more interesting flying and soaring than would have been otherwise possible—which is surely what all those who are not dedicated competition-mongers want.

Of course, some people will misuse the motor glider, as they misuse gliders, aeroplanes, and in the future will misuse spacecraft, but gliding clubs contain sensible people(!) and integrating the motor glider satisfactorily with our movement should be both straightforward, and a fascinating exercise—provided that we do not lower our standards, under any circumstances, on *noise*. Commerce is a wonderful thing; if we insist on motor gliders of good performance, which are quiet, we will get them.

THE FK-3

(Extracts from a report by Dieter Schmitt in *Flug Revue.* Translated by Rika Harwood)

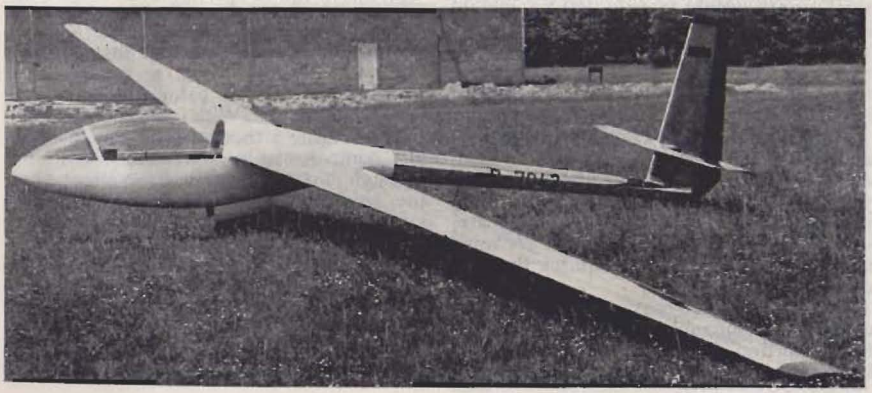
MAN-MADE fibres, in connection with the construction of high-performance sailplanes, have been developed to such an extent over the past few years that the conventional combination of wood and metal has been largely pushed to one side. It is therefore very interesting to see the introduction of this Open Class machine in which metal has been used for its construction, and which by its shape alone gives a very good impression.

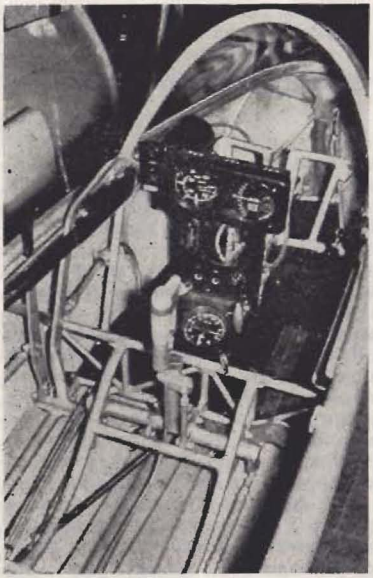
The FK-3, of which at present only the prototype exists, presents an interesting combination of a novel metal construction for the wings and a mixture of metal and fibre for the very slim fuselage. The fore part of this consists of a steel tube covered with a glass-fibre shell to which a riveted light alloy tube is fixed with four bolts. This narrow diameter tube has neither spacers nor ribs and is so slim that it could almost be called a boom not a fuselage.

The Greif 1a and Greif 2, by the same designer, also featured this narrow construction rearward of the wing trailing edge and so there was a precedent and experience available to ensure the necessary rigidity. Due to the limited space available, however, the housing for the retractable sprung wheel, together with connections for control of brakes, flaps and rudder, required considerable ingenuity of design. The lower part of the fuselage incorporates a rubbing strip to minimise damage in the case of field landings.

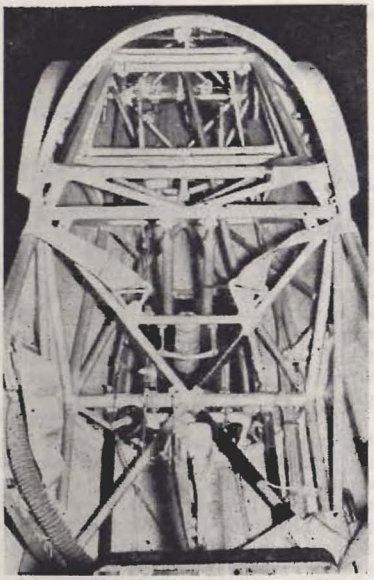
The wing is built in an unusual manner. The bending loads are carried by a single spar. This double T spar tapers into a U profile, the web being only 0.5 mm. thick. Drag and torsion loads are carried by a nose spar of welded steel sheet transmitting these loads into the fuselage fittings. The ribs are a sandwich of light alloy and foam and are spaced at 140 cm. intervals. These support the 0.5 mm. light alloy skin, and between the ribs a foamed honeycomb (Conticell 60) gives additional support to protect the skin from minor damage. The metal parts are proofed against corrosion and should therefore not be painted. The surface finish is superb and should not be confused with an ordinary metal wing.

Differential movement is embodied in the ailerons and flap control circuits. By full downward movement the two-piece flap is depressed 15° for the inner portion and 13° for the outer part while the aileron moves 11°. As the wing is built with no tip twist this differential movement provides a desirable wash-out at high lift coefficient. Similarly, re-





The bare cockpit.



Rearward view.

ducing the flap angles to zero reduces the differential to 0°, while when the flap is raised to −10° the differential is inoperative.

Schempp-Hirth airbrakes are fitted but probably involve a penalty of 1 or 2 points at high speed. Including flaps and airbrakes, the total weight of each wing is 75 kg. which is considered low for an 18-metre class machine. Fuselage and tail unit weigh only 90 kg., thus total empty weight is only 240 kg. which includes the instruments. Space for 50 kg. of waterballast has been provided so that one can still compete on strong thermal days. The never-exceed speed is 270 km./h.

I had a good look round the FK-3 and was briefed on the various technical details, but on account of steady rain it was not until 5 p.m. that flying was possible. Rigging was easy, but there are several loose parts which could get mislaid, while the tailplane requires the use of a spanner.

Getting in is easy, as the large canopy is removable except for a small fixed portion in front. The seat and head-rest give a half lying position, but there is no adjustment except for the rudder pedals which can be adjusted in flight to any of six positions over a range of 30 cm. For a large pilot the cockpit would be cramped, but as the front part of the fuselage is of steel tube this could be altered on the production models, though at shoulder height it would still be rather narrow at 49 cm.

All controls are accessible and full aileron travel can be obtained—which is not the case with some gliders I have flown which had larger cockpits.

I was towed up by a friend in a Morane, the air was calm and there was 8/8 cloud cover. With +3° of flap the FK-3 became airborne at 60 km./h. with all controls fully operative. Visibility through the canopy was excellent, but the roof-mounted compass was an obstruction to the direct forward view. While on tow the draught through the open undercarriage was unpleasant but disappeared at once on retracting the wheel after release. It could, of course, be a way of cooling off after waiting for a launch in hot sunshine on a competition day. Normal ventilation is by a tube

from the nose which is adjustable for flow and can be set in any position.

Tests indicated the following rates of sink—at 0° flap, 87 km./h., 0.60 m./sec. sink; at +3° flap, 65 km./h., 0.50 m./sec. sink. These were steady rates and are quite good. I reduced speed slowly to just below 55 km./h. when a wing tended to drop, which was corrected with rudder. There was no warning of the stall. Spins could be induced with full pro-spin rudder, and recovery was made in a quarter-turn with forward stick and full opposite rudder and a rapid gain of speed.

I found the aircraft surprisingly stable in circling flight. The turn was quite steady with +5° of flap, banked at 30° and flying at 75 km./h.; while with 0° flap, 45° bank and at 85 km./h. the turn was equally steady. It is, of course, necessary to have the flap setting in harmony with the speed in order to achieve the best performance. The rate of roll from 45° to 45° at 90 km./h. was 4 seconds, which is good for a large machine.

The rate of sink in calm air at 160 km./h. was found to be a constant 2 m./sec. and the claimed gliding angle of 1:42 at 88 km./h. is probably not exaggerated. The air brakes are powerful and provide a rate of sink of 9 m./sec. at 90 km./h. and 6-7 m./sec. at 80 km./h. With flaps down the gliding angle can be made extremely steep and landing in very small fields should present no difficulty, especially as the sprung landing wheel gives good ground clearance and the powerful internal-expanding wheel brake will bring the aircraft to rest in a very short distance. The brake is worked by a lever on the control column and requires little pressure to apply it.

The FK-3 will be available for delivery as a production model in the spring of 1969, and the price will be in the neighbourhood of DM 26,000 (about £2,800).

Technical Data
Span, 17.40 metres.
Wing section, Wortmann 62-K-153.
Wing area, 148.54 sq. ft.
Empty weight, 529 lbs.
A.U.W., 815 lbs.
Min. sink at 35 kts., 98 f.p.m.
Glide ratio at 47 kts., 1:42.

THROW AWAY THE COMPUTER

By C. E. WALLINGTON

THE title of my article "Throw away the slide-rule" that appeared in SAILPLANE & GLIDING in the Dec., '64-Jan., '65 issue appears to be out-dated. Electronic computers are now in vogue for World Championship scoring! This is not quite the development I had in mind, although with the old scoring system still in force I don't blame any scorer for demanding a computer facility.

The World Championships at Leszno can be taken as another reminder that the present scoring system should be completely revised. This is not to say that it produced unjust results. In these Championships we were lucky in that each contest day provided practically equal opportunities for all pilots.

The large number of competing gliders posed a serious problem for the organisers. Generally, in a championship both organisers and competitors want to have as many good contest days as possible; less than about four good days is reckoned to be too few for a representative sample of competitive flying. The organisers also want to give all pilots equal opportunities on each contest day, and the modern way of trying to achieve this is to launch all the gliders in one class as quickly as possible at a signal given by the organisers. At Leszno the practice of not opening a starting line until all or most gliders were likely to be airborne was also used to even out soaring opportunities. But, with about 50 gliders in each class, this meant hazardous local congestion in the air unless thermals were plentiful and deep, and at Leszno the organisers delayed launching until they considered soaring conditions good enough to prevent abnormal collision risks. This entailed wasting some soarable weather, and the cancellation of the Open Class contest on what would have been a good day's flying. But the Polish organisers should not be blamed for loss of soaring time; they were trying to steer a sensible course between safety and the concept of starting *en masse*.

If this concept of starting *en masse* is rigidly adhered to, more time and days will be lost in future championships. Although the concept is excellent for good soaring days, we should recognise that on some days competitive soaring will be lost unless there is provision for take-off and starting times to be spread over a longer period either by the organisation or by the unfashionable but nonetheless useful method of pilot-selected launching times. This may well mean that pilots will not have equal soaring opportunities on a contest day, but if it allows more contest days any daily luck factors are more likely to be spread over the championship. If, in addition, we use the place scoring system that automatically minimises luck factors, it will not matter very much whether take-offs are *en masse* or spread out.

The mass start concept is also embodied in the rule that gliders *must* cross a starting line at the beginning of the day's course. At Leszno it was lucky that the last contest day was not lost because of this rule. The task was a 200-km. downwind race. Just before the starting line was open, convection cloud that had developed early started to spread out. For a period of about 20 minutes many pilots who had drifted downwind had difficulty in getting back to the upwind side of the line, and a few even landed for relights. Fortunately, conditions improved and became splendid for the downwind race. But only a very slight difference in the cloud structure could have prolonged the overcast conditions and left many or most pilots unable to cross the starting line, though able to make progress along the course. The margin between a good contest day and a day with either an unsuccessful or unsatisfactory task is often marginal, and this rule that pilots *must* cross a starting line can easily narrow the margin to a razor's edge.

In all championship rules there are clauses for discounting or devaluing days which turn out to be unsatisfactory. At Leszno the criterion for success of a race was that at least three pilots cross the finishing line, while a successful distance task required at least three pilots to

reach a marking distance not less than 30 per cent of the greatest marking distance but in any case not less than 100 km. Formulation of these criteria, however, was a retrograde step from the 1965 World Championships rules. This 1968 formulation brought back the risk that too many points could depend on the flights of a few individuals on an unsatisfactory contest day, and the events in Germany in 1960 should remind us that this is a real risk, not just conjecture.

The Leszno formula for devaluing a day was new and rather peculiar. If a race was not completed by at least three pilots it became a distance task but the winner's points were 1,000 multiplied by the average of the marking distances of the competing pilots divided by the length of the race. This, of course, meant that devaluation was a function not so much of bad weather as of optimism in task-setting. To see the effect let us consider a hypothetical example.

Suppose there were a day which provided each pilot with precisely three hours of good soaring, and suppose the speeds attained by these pilots ranged from 100 km./h. down in uniform steps to 50 km./h. If the task were a distance task, the winner would be awarded 1,000 points, while the last man would get 375; the range would be 625 points. If the task had been a 400-km. race it would have been unsuccessful and devalued such that the winner would have obtained 563 points while the last man would be awarded 211, and the range would be 352 points.

Graphs of these points plotted against distances achieved are shown by the two lines marked "Distance and 400 km. Race" in Fig. 1. The diagram also includes graphs showing points that would be awarded for other tasks that might have been set. The steps in 250 and 200-km. race results, and the flat section at the bottom of the 150-km. race results, arise from the formula for allocation of speed and distance marks. The task that would have been set is very much a matter of conjecture; no doubt all competition pilots remember occasions when tasks turned out to be either much too short or much too long.

These graphs illustrate a strange conflict between the scoring system and task-setting objectives. There is a fairly widespread and reasonable view that, provided it is feasible, a moderately long task provides more representative samples of competitors' skill than a short task. Yet the present scoring system tends to rate short races higher than longer, more testing tasks.

One of the faults of past versions of the points scoring systems is that they fail to take proper account of variations in soaring conditions through weather changes or from one leg of a course to another. But with these 1968 rules even when opportunities are absolutely equal and uniform, the range of points on a contest day can be inadvertently influenced by the task setters. Perhaps this formula was another example of the ingenuity that is used before each World Championship to patch up rather than replace the outdated scoring system, but surely it is a bad and unjustifiable principle. The type or length of a task should, of course, influence flying tactics and have some effect on achieved speeds and marking distances, but points for these speeds and marking distances should not be influenced retrospectively by the name or length of the task. In

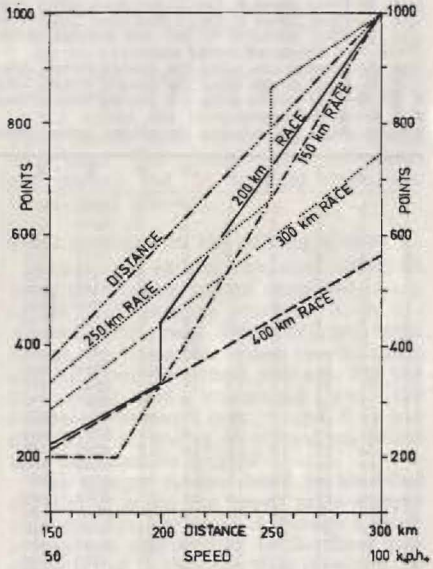


Fig. 1

Poland two tasks (in the Open Class—ED.) turned out to be uncompleted races, and were counted as devalued distance tasks, but they were nonetheless good contest days and did not deserve devaluation. If an organiser were to devalue a day arbitrarily, competing pilots would protest, but arbitrary devaluation is no better by being wrapped up in a formula that does not properly embody good cause for devaluation. In the placing system the points awarded at the end of a day depend only on the speeds and marking distances actually achieved; they do not depend on what the name or length of the task happened to be.

Fortunately, in Poland soaring conditions were such that this potential task-setting influence on the range of marks was not very great. But let's have a look at the slight changes that would have been made in the final placings if some of the tasks had been different.

For this exercise we are not concerned with each pilot's name or number of aircraft, so col. 1 of Table 1 refers to first, second, third, etc., final places in the Open Class. The second contest day at Leszno was an unsuccessful 224-km. race which was marked as a devalued distance task. If a distance task had, in fact, been set on this day the changes in marks would have produced the final placings listed in col. 2 of the Table; several places, including the 2nd and 3rd, would have been changed. The changes would have been mostly slight although we can see that the pilot in 16th place would have dropped to 24th; this is because his achievement on this day was well below the standard he maintained during most other contest days. If the second contest day had been a 300-km. instead of a 224-km. race, it would also have been unsuccessful as a race, but the range of marks would have produced changes which, although slight, would have reversed the first and second final placings. Col. 3 shows the full list of placings if this day had been a 300-km. race. Now the pilot in 16th place would have gained three places in the final results because this second day,

TABLE ONE

Col. 1—Actual final places at Leszno.
Col. 2—Final places if Day 2 had been called a distance task instead of a race.
Col. 3—Final places if Day 2 had been called a 300 km. instead of a 200 km. race.
Col. 4—Final results if 50 per cent (instead of 60 per cent) of the winner's speed had been the zero of the speed marks scale.
Col. 5—Final results using the placing system described in S. & G., August issue, page 296.
Col. 6—Final results using the placing system with a steeper speed marks scale.
Col. 7—Final results using the placing system with a steeper distance marks scale.
Col. 8—Actual final points.
Col. 9—Final points using the placing system corresponding to final placings in col. 5.

1	2	3	4	5	6	7	8	9
1	1	2	1	1	1	1	5730	617
2	3	1	3	2	2	2	5699	602
3	2	3	2	3	3	3	5673	590
4	4	4	4	4	4	4	5525	575
5	5	5	5	5	5	5	5374	560
6	6	6	6	6	7	6	5348	548
7	7	7	8	7	6	7	5263	546
8	8	8	7	8	8	8	5220	534
9	9	9	9	11	10	11	5180	512
10	11	10	10	14	17	14	4981	468
11	10	11	11	12	12	12	4959	496
12	12	12	12	13	15	13	4941	472
13	13	14	16	9	9	9	4887	530
14	14	16	17	16	13	16	4811	460
15	17	15	13	20	20	18	4793	444
16	24	13	15	15	14	15	4790	467
17	15	18	21	10	11	10	4743	518
18	16	19	19	17	16	19	4721	454
19	19	17	14	18	19	17	4718	449
20	20	20	18	19	18	20	4668	444
21	18	25	24	22	22	23	4614	426
22	21	23	20	23	24	22	4605	419
23	23	22	23	21	23	21	4593	430
24	22	24	22	28	28	27	4569	391
continued								
25	25	21	25	24	21	24	4544	416
26	28	26	27	27	27	26	4316	397
27	26	28	26	29	30	28	4264	382
28	30	27	30	30	29	30	4223	375
29	27	30	28	32	31	32	4201	349
30	29	29	29	25	26	25	4184	402
31	31	31	32	26	25	29	3989	398
32	32	33	31	34	34	34	3983	320
33	33	33	33	33	33	33	3879	338
34	35	34	34	36	36	36	3831	302
35	34	35	36	31	32	31	3687	352
36	36	36	35	41	41	40	3554	267
37	38	37	40	35	35	36	3486	315
38	37	40	37	37	37	37	3445	296
39	39	38	38	40	39	41	3425	256
40	41	39	39	38	38	38	3388	279
41	40	41	41	39	40	40	3229	273
42	42	42	42	43	42	43	2419	221
43	43	43	43	42	43	42	2184	225
44	44	44	44	44	44	44	1846	168
45	45	45	45	45	45	45	1722	158
46	46	46	46	47	47	47	839	101
47	47	47	47	46	46	46	703	122

which was a bad one for him, would have been slightly more devalued.

Speed marks at Leszno were on a scale that dropped to zero for pilots who completed a course at 60 per cent, or less, of the winner's speed. At first sight this scale appears to reduce speed marks rather harshly from the top downwards, but statistics of these and previous championships suggest that on a good race day when most pilots complete a course the slowest speed is often about 50 per cent or 60 per cent of the winner's speed. So on such a good day a value of less than about 50 per cent or 60 per cent for the zero of the speed mark scale would virtually devalue the day. However, on days when only a few pilots complete a course it is a matter for speculation what the speed scale should be; too low a value for the speed percentage for zero speed marks gives all pilots who complete the course a bonus; too high a speed percentage for zero speed marks gives a bonus to the slow pilots and to those who fail to complete the course. This is another reason why the present points system should be replaced by the placing system in which the marking scale is automatically adjusted by the results and thereby avoids inadvertent or fortuitous bonuses.

As an exercise I re-calculated the 1968 Open Class championship using 50 per cent instead of 60 per cent for the zero in the speed marks scale. Col. 4 in the Table shows what the final results would have been. The second and third places are among the 28 changes from the actual final placings.

Final results with the placing system

The Leszno results were also computed using the placing system described in my article "Competition scoring", S. & G., August, 1968, page 296. They are listed in col. 5. Naturally, these results differ slightly from the actual placings, but the first eight are unchanged and the difference between cols. 1 and 5 is not significant according to certain statistical tests that can be applied.

The placing system could be modified slightly to make the speed scale steeper than the distance scale. Although I think it unsound and unwise to let these two scales differ, I thought that it would be interesting to see how much some arbi-

trary differences in these scales would affect the results. The speed scale could be steepened by increasing the difference in marks between adjacent places for pilots who complete a task; for example, the difference between the marks of two pilots who complete a course and who are alone in adjacent places in the order of merit could be, say, 2 + S instead of 2, S being a fixed speed bonus. Col. 6 shows the results when S = 1. They are insignificantly different from the normal placing results in col. 5. Results were also calculated for S = 2 and S = 3, but they, too, were not signficantly different from col. 5 and they are not shown in the Table.

The distance scale of marks could be made steeper than the speed scale by increasing the difference in marks awarded to adjacent places by, say, some fixed value D. This gives more weight to distance days, but the completed results for D = 1, 2 and 3 were not markedly different from the normal placing results. Col. 7 shows the results for D = 1.

The placing system could also be modified by changing the criteria for tied places and the maximum number of pilots counted in a tie. The criteria of 30 seconds and 2 km. for ties and four or more pilots to be counted as only three in a tie have been based on trials of the placing system over several years. It was apparent from calculated results, not shown here, that slight variations in these criteria did not produce significant changes in the final placings.

Although the differences between the columns of results are statistically insignificant, a few changes call for more detailed inspection. Table 2 shows the most noticeable differences between the actual and placing system results, together with the actual positions of these pilots on each contest day.

Inspection of this Table suggests that pilots who would have gained by the placing system are those who had one or two bad days compared to their average performance. The pilot in 13th actual place, for example, had a bad Day 1, but did moderately well in the remainder of the championships. The pilot in 17th actual place did well except for a mediocre Day 1 and a disastrously poor Day 5. Lower down the list similar but not so strong characteristics appear for the two pilots who gain five places in the placing system.

The pilots who would have gone down a few places in the placing system are those who appear to have one or two good days compared to their average performance.

It appears that, in the placing system, a pilot must give good performances on at least several days to attain a high position in the final order of merit; one good day will not be enough to raise him far from an otherwise mediocre level. On the other hand he will not be penalised heavily by one bad day in an otherwise good daily record. Thus the placing system demands of the pilot a fairly sustained effort throughout a championships but it is not so harsh on one day's failure.

As the placing system deals in tens rather than hundreds of points per contest day it is pertinent to enquire whether it gives enough resolution for championship scoring. Col. 8 of Table 1 shows the actual points totals for the Open Class at Leszno, while col. 9 lists the total points that would have been awarded with the placing system. Fig. 2 shows these two sets of scores plotted against the corresponding final placings. By comparison with the actual score curve the placings curve traces out a slightly more direct or straighter path from top to bottom. In the actual points curve 50 per cent of the

TABLE TWO

Actual final position Col. 1	Placing system position Col. 5	Change	Actual position on each contest day						
			Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
10	14	−4	17	10	15	34	38	7	13
13	9	+4	47	9	18	1	7	3	11
15	20	−5	10	27	14	35	27	5	29
17	10	+7	26	7	7	9	46	6	1
24	28	−4	22	24	38	32	25	12	21
30	25	+5	28	33	11	13	16	37	20
31	26	+5	40	28	24	8	17	44	10
36	41	−5	31	29	37	38	37	27	38

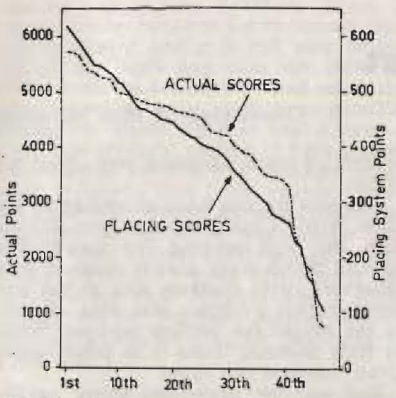


Fig. 2

range spans only 13 per cent of the places—the six lowest places. Thus it appears that the placing system does not need as much resolution as is attempted in the points system.

In the placing results two pilots have 444 points, but their final places can easily be resolved by the method I suggested in "Throw away the slide-rule". In effect this method says: These two pilots were so well matched that the main system did not detect any difference between them; therefore let us re-examine their daily performances to decide (according to the rules) who should be awarded the better final place.

In the actual 1968 results, two pairs of adjacently placed pilots had differences of only three between their total points, and two other pairs were separated by only six and nine points. The present points system says, in effect: Thank goodness enough points have been thrown into the scoring stew to avoid final ties; these are the rules and that is the end of the matter. This is perfectly all right, provided that rules committees do not delude themselves into thinking that the fine-scale resolution in the present points system represents real precision in measuring flying skill.

Conclusions

The Championships at Leszno have provided good material for comparing the present points system with the proposed placings method of scoring. I think that the results substantiate my claim that the placing system produces the type of results that organisers, rules committees and most competing pilots appear to be striving for. It also has several clear advantages over the points system. It needs fewer arbitrary parameters, and the placing results are not so sensitive to slight changes in these parameters. It does not allow points to be influenced retrospectively by the name or length of a task. It does not conflict with the view that feasible but long tasks should have as much weight in the final results as very short one-day failures in an otherwise good record, nor does it over-rate one day's success in an otherwise poor record. Final ties are resolved by re-examination of pilots' daily places rather than by a false resolution in the main system; this gives an additional inducement for a pilot to win on each day and not just be content with a good average position. The placing system is also much easier to understand, use and check.

But by far the most important reason for changing to the placing system is that, as was predictable several years ago, the present marking system is having an increasing and undue influence in the task-setting and launching decisions that have to be made. Organisers and task setters are fearful of producing unfair tasks, and allowing the present scoring system to amplify uneven soaring opportunities. The placing system can cope not only with good soaring conditions, but bad days, too. Even if the weather forecast is wrong, even if the conditions vary considerably from place to place or time to time, even if the launching cannot be completed quickly, and even if the task is poorly chosen, the placing system adjusts the day's points to the actual achievements, thereby allowing the task setters and organisers more freedom to use whatever weather turns up rather than wait for perfect conditions. Such waiting has already led to soaring time and days being lost or marred, and unless the present points scoring system is replaced it will lead to more loss of contest days. Furthermore, international task-setters may well tend to restrict tasks to races in very good conditions only; they will be reluctant to use mediocre or uncertain days (which may nonetheless be good contest days) for fear of inadvertently introducing too much luck into the final results.

ITALIAN NATIONALS
Rieti 2nd to 13th August

By ROLF SPÄNIG (Translated by Rika Harwood)

AUGUST is the national holiday month in Italy, and even the hardest-working business man is forced to partake. While the masses from the towns depart to the coastal resorts, the glider pilots from Varese, Milan, Como, Bergamo, Turin, Bologna, Cremono and Rome meet at Rieti.

Whereas in Germany, during this time of the year, good weather conditions are scarce, the Rieti valley and surroundings are normally blessed with excellent conditions for largish triangles of the order of 300 km. or so, with cloudbase between 2-3.000 m.

This year, however, the gliding weather in this area did not rise above the mediocre conditions which were also prevalent over the rest of Europe. Depression after depression passed over central Italy. The meteorological situations were more miserable than they had been for the previous 12 years; it was the first time that Rieti produced only five contest days.

Thirty-six pilots took part in the Championships. Among these Giorgio Orsi, the driving force of Italian gliding, National Champion, 1966, had entered on a Cirrus. His wife, Adele, also flew a Cirrus; she is the holder of all national feminine records. On the last day of the practice week she flew a new record over a 100-km. triangle at 90 km./h.

Jochen von Kalckreuth flew an SHK; it was he who had flown the first 500-km. goal in Italy and has often set out across the Alps in the direction of Innsbruck, Zell-am-See and Aigen. Roberto Manzoni (SHK) and Attilio Pronzati (Phoebus) had both represented Italy in the recent World Championships at Leszno.

From France came Rantet and Sornin with a M-200; as last year, they showed excellent pilot's performances. The designer of the M-series (M-100, M-200, M-300), Professor Piero Morelli, Technical High School, Turin, flew a Skylark 4.

The German guests were Walter Neubert on a Standard Libelle and myself flying the new FK-3. My experience on this all-metal sailplane was about ten hours.

The scoring was done according to the older World Championships formula, not with the high scoring for speed. The turning points were always manned with observers (with markers and radio) and photographic evidence was also allowed as the height for turning was not fixed. In Italy Summer Time is in force; times given here are sun times.

Bad weather prevented flying on the first two days, and the first task was set on the 4th August.

TASK: 180-km. out-and-return—Cualdo Tadino.

WEATHER: The air was very moist up to 3,000 m., 6/8 cumulus over the mountains with some top cover. The air would dry out towards evening. Base, 1,200 m. Wind NW, 10 knots. Temperature 24°.

The start-line opens at 13.00 hours and

cloudbase is around 1,000 m. There is hardly 200 m. between the mountain tops and cloudbase and it is not easy to get out of the basin and over the plain of Spoleto (40 km.). I have started relatively late and try to keep as high as possible during the whole flight so that I have a good safety-height margin. I have, therefore, to put up with the stronger headwind at height and I am unable to use the good ridge effects. Pronzati (Phoebus) flew the route more expediently (he hardly went above 1,000 m.) and completed the task 15 mins. faster than me, and Giorgio Orsi (Cirrus) was 4 mins. ahead. Walter Neubert, having started very early, lost time at the beginning of the flight.

8TH AUGUST: 170-km. triangle—Meggiano, Mt. Christo, Rieti.

WEATHER: Post-frontal situation after the passage of a cold front from north to south. Conditions along the course very variable, with patches of alto-stratus along the route. Cloudbase 1,500 m. Wind WSW, 10 knots. Temperature 26°.

Yesterday pilots had started without reference to what others were doing; today most of them were lurking behind the start-line, as everyone wanted to cross last. The start-line was open from 13.30 and as the time of the strongest heating had long since gone by, I set course ahead of the previous day's leaders. The critical moment, jumping out of the valley-basin, was just right. Cloudbase at Gran Sasso (which is 3,000 m. high) was 2,000 m., and the turning point, a large car park, was 1,700 m. a.s.l., but the conditions were in my favour and I got home without any complications.

Giorgio Orsi, one of yesterday's leaders, had left his start a bit too late and had been pushing the stick to make good time. He got caught in one of the patches of stratus and had to land out, and in doing so he broke off the tail of his Cirrus.

Having won this day, I was now 38 points overall ahead of Pronzati.

10TH AUGUST: A double out-and-return—Assisi, Rieti, Foligno, Rieti; total distance 265 km.

WEATHER: The airmass around Rieti was again very moist with, at first, very low cloudbase. Also the amount of cloud varied somewhat. Wind NW, backing to West, 10 knots. Temperature 27°.

Again there is reluctance to start until I make a crossing, which seems to set the ball rolling. After a second crossing together with Neubert and Kalckreuth we hit a 4-m. thermal and are climbing quickly out of the valley-basin. Things go well as far as the birthplace of St. Francis, and by the time I am back at Rieti I have a 10 mins. lead. Leaving the basin for the second time, the weather begins to deteriorate, and after turning Foligno I meet up with Kalckreuth again. We climb together high enough to be certain before we start our final glides. The wind has backed to SW and one can expect strong downdraughts on the run-in. To make matters worse, a shower is lying across the course.

Suddenly we see Pronzati about 150 m. below us shooting past at about 150 km./h. in the direction of Rieti. He had started quite a bit later, and by the time he gets back he should have about 18 minutes' lead—a fabulous time! However, 15 km. before the finish he gets, like us, into the lee of the mountains and the rain. Ten metres below a power cable

which hangs across to the last mountain, he has to turn away. Kalckreuth, Neubert and myself reach the finish line with some difficulty and then we wait for the Phoebus, but to no avail.

Kalckreuth wins the day and I am now 100 points ahead in overall position.

11TH AUGUST: The weather is getting worse and the original choice to send us into the mountains is changed to an out-and-return to Foligno, 116 km.

WEATHER: Showery with a lot of cloud and very low base. Wind light and variable. Temperature 25°.

The start-line is open from 13.30. The difficulty is to get out of the valley-basin and over the plain of Spoleto; cloudbase is only 1,200 m. and there are patches of 8/8 cover, while after having rounded Foligno it started to rain.

Manzoni (SHK) wins the day, followed by Kalckreuth, myself and Neubert.

12TH AUGUST: The only possible task under the present weather conditions is another out-and-return to Foligno, 116 km.

The weather is no better than yesterday; unstable with a tendency to over-development and showers. Wind 10-15 knot WSW. Temperature 27°.

The first 15 launches land again in the same order as they took off. The FK-3 is the first machine to stay airborne, and I make for the start-line at once from 800 m. as it is raining over base. I use all the height to reach the ridge, which was lying in the sun, and find some decent lift. But conditions remain very poor over the Spoleto plain, and several have to land near the turning point, including Manzoni and Lamera. Pronzati completed the course, and this was enough to make him the Italian Champion. I was first for the day and overall, followed by Neubert, who won the Standard Class. For his first visit to Rieti he had flown outstandingly well.

Although these championships did not produce long tasks and high cloudbases as in previous years, it left behind a full measure of many unforgettable impressions in hard-fought but friendly competition in the holiday paradise of the Sabine mountains.

Final leading results Open Class		*Pts.*
Spänig (Germ.)	FK-3	4851
Neubert (Germ.	Std. Libelle	4509
Pronzati	Phoebus	4214
v. Kalckreuth	SHK	4191
Manzoni	SHK	4009
Standard Class		*Pts.*
Neubert (Germ.)	Std. Libelle	4509
Pronzati	Phoebus	4214
Zanetti	?	3741

GLASS-FIBRE AND THE PHOEBUS

By PETER HEARNE

DURING a recent visit to Germany, the Bölkow Company were kind enough to allow me to view, in some detail, the manufacture of the Phoebus Standard and Open Class sailplanes and to fly the 15-metre version.

Here in England the glass-fibre sailplane is still viewed with a degree of ignorance, tinged with suspicion. That one can build aircraft structures with no ribs seems, to say the least, to imply blasphemy, the omission of spars is heresy of the very worst kind, and to expect such a structure to withstand the vicissitudes of many years' operation by private owners and gliding clubs seems to imply an alienation of faith from laws of gods and men.

Nevertheless, despite the disbelief in England the undoubted fact is that the German glider manufacturers and the German gliding movement are firmly basing their respective futures upon the construction and operation of glass-fibre structure sailplanes. Not only do such sailplanes offer performance characteristics well in advance of those hitherto achieved by conventional wood construction, but their maintenance, strength and freedom from minor damage appears to offer a welcome relief to the many hours of fettling so dear to the heart of many

Series production in progress at the Bölkow works.

club members.

Today, in 1968, we are at the beginning of an era of sailplane performance which, as Brennig James's recent 500-km. triangle has shown, will be even more rewarding of achievement to keen soaring pilots than anything which has gone before.

The birth of this new era has come about because of the pioneering work carried out by the various German Akafliegs at different technical high schools into the chemistry and mechanics of glass-fibre construction. Over the years the various new problems associated with this construction have been successfully solved until, today, the production of a very large number of new German gliders is based exclusively upon the glass-fibre technology.

That glass-fibre technology and the understanding of its problems is now firmly established is no longer in doubt; the only question in the British gliding movement's mind should be when will it establish itself in Britain?

In an attempt to understand some of the problems and solutions involved, I spent some time on the Phoebus production line. The Phoebus is derived from the earlier Phoenix glider and is the creation of Dipl. Ing. Eppler, Nagle and Lindner. The Phoenix is now a ten-year-old design and was optimised more for thermal climbing performance than high cross-country speeds. It does, however, offer the most convincing proof to the doubting Thomases as to the durability of glass-fibre gliders.

To all my questions, whether to Bölkow or to some German gliding clubs, as to the life and deterioration qualities of glass-fibre gliders, the standard answer was "Look at the Phoenix. It has been flying for ten years and is still as good as new."

The Phoebus first made its appearance in the U.K. at South Cerney in 1965 and this was, in fact, the actual aircraft which formed the subject of the flight test described in this article. Originally a 15-metre Standard Class machine it has since been developed first with a retractable wheel and also as a 17-metre aircraft which has a generally superior performance over the speed range. In passing, it seems that the 15-metre class of glass-fibre aircraft have today reached a plateau of 1:37-38 max. I/D whereas the 17-18-metre aircraft are within the 1:42 and 1:45 plateau. Over 100 Phoebus have been built to date and production is running at some 6 per month, a rate which allows a reasonable delivery lead time of around four to five months at time of writing. At present, 90 per cent or so of deliveries are of the 17-metre type.

How It's Done

The basic ingredients of the Phoebus are simple. Glass-fibre cloth, liberal coats

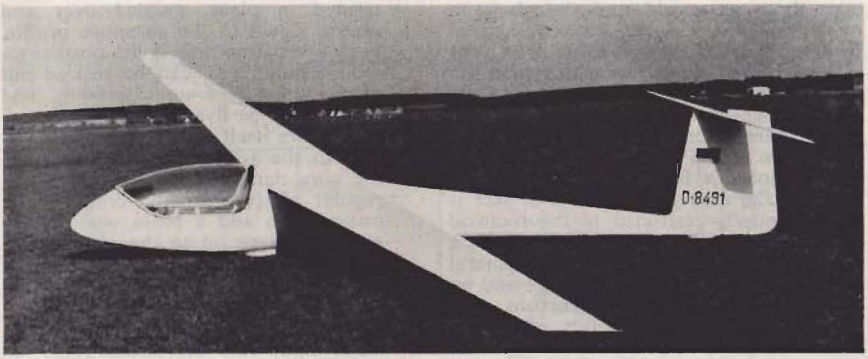
of resin and balsa wood make up the principal structural elements.

Construction starts with the use of a number of female moulds. These moulds can be produced in various methods but the most economical is to manufacture them in glass-fibre using a balsa or hard wood male form of the sailplane as the master.

After putting in a stripping agent to ensure the easy withdrawal of the finished part from the mould, the ingredients of the outer epoxy finish are laid in. Following the epoxy finish the initial layers of glass-fibre cloth are laid in and resin applied. On to this is put the balsa core and the inner layers of glass cloth which are also resinated. The strength and stiffness of the structure is dependent upon the properties of the resinated glass-fibre whose shell thickness and hence stability is augmented with the minimum of weight by the inner balsa core.

This balsa core is made up of 3 in. wide by $\frac{1}{16}$ in. thick balsa strips which are grooved at $\frac{1}{2}$ in. width intervals to make them easy to bend to the aircraft wing and body profiles. The strips are, in fact, glued together to form a large sheet from which the particular outline of wing, tail-plane, etc., is cut out using a basic two-dimensional template. The fuselage structure core is manufactured by using the male fuselage pattern in the same way as a dressmaker uses her dummy figure.

The combination of liberally applied resin together with the glass-fibre and balsa core gives an extremely stiff and strong structure. Each wing, fuselage and tail surface is manufactured in two halves and is then glued together. In the wing the structure is further stiffened by the addition of two span-wise diaphragm webs between top and bottom skins, built up from glass-fibre cloth with balsa core which provide an effective way of maintaining the stability and shape of the wing structure, in which bending is taken in the skin along the length of the span. They also provide a pleasant and efficient sop to traditionalists who believe that a spar of some sort is essential for the pilot's peace of mind. At points of high stress such as aileron hinges, the wing root fittings and the fuselage/wing pick-up points, sub-



stantial pieces of laminated wood with the laminations varying according to the stress are rigidly bonded into the glass-fibre structure and partially or wholly covered with an external layer(s) of glass-fibre cloth. Metal fixtures such as lugs, hinges, etc., are then affixed to this strengthened wood insert using conventional fastening methods such as bolts, etc. Bonds between wood and glass-fibre cloths both of which are cellular types of material seems a more hygienic and compatible method of providing strengthening inserts than the direct metal to glass-fibre bonding used in some other types of glider, but this may, of course, be my old-fashioned engineering conventions showing.

One attractive feature of the Phoebus is the excellent detail design throughout. The control runs consist of quite large diameter push-rods, the push-rods being supported throughout by wooden or fibre fair leads moulded on to the structure at frequent intervals; control hinges use such "goodies" as needle roller bearings. Overall, these design features give the most delightful and light control feel. A further feature which shows the attention to detail is the provision at the optimum locations of moulded mountings for batteries, barographs, radio (including even a loudspeaker), etc.

The club or private owner on buying a Phoebus need not spend an agonising time after delivery racing like mad to build the various bits of equipment into the aircraft so as to get in the air as soon as possible. One afternoon is sufficient to clamp them in place on to the excellent and well thought out fittings.

Can I Bend It?

The three major queries in British clubs' minds are undoubtedly, in ascending order of importance: Strength, Airframe life and Resistance to deterioration and Repairability.

As far as strength goes, the Phoebus wing has been tested at German aeronautical research establishments to a breaking load of 12 g. What is more, these tests were conducted at a temperature of 54°C. since high temperatures have the effect of lowering the strength of glass-fibre structures, although the full strength returns when the temperature is once again lowered. A temperature of 54°C. is approximately 129°F. which is unlikely to be encountered in flights at any time either in the U.K. or the continent of Europe.

Airframe life tests have been carried out on the Phoebus and other glass-fibre gliders and these have shown safe airframe hours well in excess of those normally flown during the total life of British gliders. From the strength point of view, therefore, there seems little to worry about and the Phoebus has held the full German certificate of airworthiness for some time as well as recently obtaining F.A.A. certification. Other glass-fibre machines have experienced the odd and terrifying piece of flutter but this is generally thought by German clubs to have occurred whilst flying above their Vd which is easy to do with the very low drag co-efficients of these machines.

As far as resistance to deterioration goes the Phoebus is the example always quoted. The Phoebus which I flew was

over three years old and though as a works machine was obviously well cared for, its structure showed absolutely none of the skinny horse effect which even the best manufactured wooden aircraft are subject to after a comparable period of time. Indeed, one of the main problems with regard to airframe life is the lack of jobs to find to do at C. of A. time. In the case of the Phoebus one is almost entirely restricted to the removal of the airframe control rods, which is a matter of an hour at the most, general inspection and greasing of fittings and an overall surveillance of the structure.

One German gliding club official to whom I spoke was emphatic that the glass-fibre machines were much less susceptible to ground damage than wooden aircraft and even went so far as to say that landings in crops could generally be carried out without damage to the aircraft, a happening which is further helped by the T-tail. Positive proof of this durability was shown by a Cirrus which had carried out more than one wheel-up landing with minimal damage to the bottom of the fuselage.

It was suggested that it was advantageous to ensure that the structure was dry before storing it in the trailer in order to avoid expansion of moisture in the mircopores in the the skin, caused by heating or freezing. Other than that, routine ventilation of trailers, such as is normal with wooden gliders, was perfectly adequate for storage purposes.

Can I Mend It?

Finally, with regard to repairs, the general opinion both of manufacturers and clubs was that repairs on glass-fibre machines were at least as easy and usually easier than wooden aircraft. Indeed, one club went so far as to say that glass-fibre repairs were now so well established and so simple that they used glass-fibre to repair wooden aircraft as well, including such critical areas as D box repairs, instead of replacing the wooden structure.

Basically, repairs come in three groups as follows:

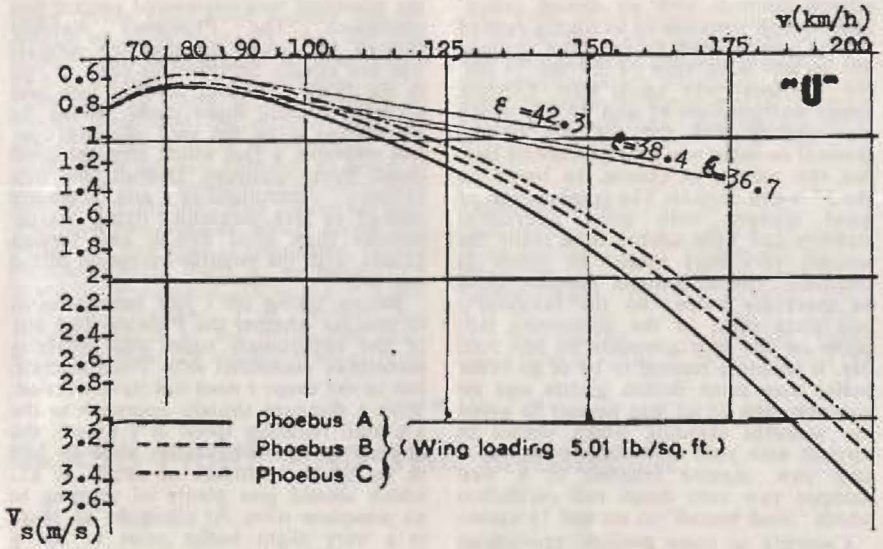
1. When the outer glass-fibre cloth only is punctured the edges of the hole are cut into some symmetric pattern and scarfed down towards the core on a 1:4 angle. A patch corresponding to the hole and similarly scarfed is then resined in place, painted over and sanded down to the structure profile. Such a repair, which is the most common encountered, can be carried out in the course of an afternoon, and the aircraft be flyable the next day.
2. If the core itself is punctured, in addition to the action carried out above, the core damage must be cut into a regular shape corresponding to the outer patch and a balsa wood insert glued in place on to the inner glass-fibre section and also glued in structural contact with the surrounding core material.
3. If there is complete penetration of outer skin, core and inner skin, the following procedure is adopted. First, the shape of the damage is regularised. Secondly, the inner surface of the inner skin is scarfed as above and an inner patch plate with an internal cut-out is inserted from the outside of the structure and held in contact and resined on to the edges of the damaged skin cut-out. After resining the inner patch plate the repair is completed by resining in glass-fibre and balsa wood core material as in 1. and 2.

Matters are helped by the fact that the glass-fibre shell thickness is determined by stability and stiffness criteria rather than strength requirements. Consequently, there is no particular need for doubts or worries about the strength of the repaired unit.

Rigging

The Phoebus literally is one of those aircraft that can be rigged in five minutes with three men, as I found out when I helped two Bölkow men to rig the 15-metre Phoebus A. After removing the fuselage from the trailer one man holds the fuselage upright whilst the other two bring the port wing which has a large forked root fitting. The root fitting extends completely across the fuselage and when slid into the slot in the top of the fuselage is sufficient to prevent the wing twisting, thereby eliminating the need for a trailing edge bod. Prior to sliding the wing right home, the spring-locked ball and socket connections for the brakes and ailerons are connected.

Two of the crew are sufficient to



mount the other wing similarly, whose single root fitting mates into the crutch of the port wing's fork. A single long shear pin locks wings and fuselage together.

Finally, 30 seconds suffices to mount the all-moving tail into a very elegant spring locked fitting.

Cockpit Layout

The Phoebus has a rather more sedentary cockpit than many modern aircraft. The seating position is somewhat like the most upright position on the Skylark though it is itself not adjustable. Rudder pedals and head-rest are, however, and the cockpit dimensions are generous enough to accommodate most large pilots even of Genghis Khan dimensions. There is an efficient ventilation system which is suprisingly noiseless. Controls are in the usual positions with the release lever, not a knob, forward on the port side of the seat. Trimmer is in a ratcheted slot on the starboard side with the undercarriage lever just above it. The canopy, which is very well sealed, detaches.

Take-off

Positive aileron control is established early in the take-off run. Due to the small wing/body incidence a definite pitch rotation is needed to unstick the aircraft which was made at around 37 kt.

Towed Flight

During the tow the very positive control response made station-keeping with the tug aircraft very easy and a great improvement on some of the struggles which sometimes occur with less manoeuvrable breeds. The very low drag of the Phoebus evidenced itself in a slight tendency to catch up on the tug aircraft, a 107, also of Bölkow manufacture and a descendant of the pre-war Klemm Swallow. However, this was easily controlled and as confidence was established tug and sailplane were thermalled up quite tightly to release height, 3,000 ft. above the field, in one of the few blue thermals available.

Thermic conditions for the day were sparse with the occasional blue thermal or stubble fire lifting up to a very tight inversion top at around 3,000 ft. agl.

Free Flight

Release was in a thermal of about 1 to 1½ kt. indicated on one of the most beautifully sensitive barometric variometers I have yet used. The most immediate impression was of delightfully light

aileron controls with an almost instantaneous roll response at as high a rate of roll as one wished to use. The claimed 45° to 45° bank time of 3.5 sec. (4 sec. for 17-metre) was easily met. Circling speed was between 41 and 43 kt., which was slightly high for the size of the thermal on what was a very scratchy day, but this would, of course, be lower on the 17-metre version. The combination of good ailerons with good directional stability and little aileron drag made the aircraft very easy indeed to centre in thermals. The directional stability must be markedly helped by the favourable end plate effect of the all-moving tailplane on the very adequate fin and rudder. It certainly seemed to be of an order better than most British gliders and no concentration at all was needed to avoid the wasteful skidding which occurs in aircraft with poor directional stability. A step yaw impulse resulted in a well damped yaw cum dutch roll oscillation which "dead beated" in around 1½ cycles.

Contrary to some pundits' predictions of frightening pitch over-sensitivity at high speeds due to the all-flying tail, I found the pitch control almost as pleasant as the ailerons. Throughout the speed range the elevator remained pleasantly light without becoming oversensitive or twitchy. The light elevator forces eliminated that bugbear of Skylark pilots, obligatory retrimming on changing speed. Trimming was by means of an adjustable spring force and not terribly precise, but this was of little consequence due to the relatively low stick force/speed gradient. From the limited impressions of the flight both stick free and stick fixed static margins are positive up to the 90 kt. max. speed achieved at a pilot weight of 185 lb.

There appears to be two extremes of gliders; those whose areodynamic stability margins are somewhat reduced but which, in consequence, possess extremely good controllability and those whose excessive stability and correspondingly poor manoeuvrability results in an aircraft which is tiring to fly and whose safety might be compromised by lack of controllability in turbulent conditions. The Phoebus makes neither of these mistakes. Light control forces are achieved by intelligent aerodynamic design of control surfaces coupled with the aforesaid well-engineered control run mechanics. The Phoebus's stability showed up clearly in that the aircraft was not unduly disturbed in pitch or roll in the fairly turbulent thermal tops and accurate circling flight could readily be maintained using the very effective control response, a fact which presages good cloud flying qualities. Overall, the mix between controllability and stability seemed to give pleasanter flying characteristics than most British and foreign gliders, with the possible exception of the Air 102.

Before taking off I had been anxious to enquire whether the Phoebus had any of the unfortunate super stall qualities sometimes associated with T-tail aircraft, but in the event I need not have worried. With a standard straight approach to the 1 g. stall reducing speed at 1 kt/sec. the aircraft is becoming fairly nose-up and in an unusual attitude at about 36 kt., which should give plenty of warning to an adequate pilot. At about 34 kt. there is a very slight buffet prior to the g break which occurred with the stick on the rearstop at 32 kt. at the g break there is a positive pitch rotation to about 25°-30° nose down accompanied by a 30° wing drop in either direction. From a turn a similar nose and inner wing drop occurs. Recovery is immediate on easing the stick forward and preventing further yaw and rudder. Generally, the stalling characteristics are appreciably better than the 15-metre Dart.

Since there was a lot of "down" about it was not possible to make any sensible judgement of performance, but the manufacturers report 1:37 from DVL flight tests for the 15-metre version which I was flying does not seem improbable (1:42 for 17-metre). The Phoebus accelerates rapidly from 44 kt. to 90 kt. which was the fastest speed reached. An inter-thermal speed of 54 kt. seemed an easy natural gait and it was noteworthy that the Phoebus was very quiet throughout this entire speed range.

At 51 kt. the dive brakes, which are mounted around 80% chord to preserve laminor flow, lacked the effectiveness of the barn door devices usual in British gliders. Short landings demand an approach airspeed at the minimum recommended 43 kt. with brakes out, when the aircraft sits down and stops neatly. The

large rudder gives good sideslip controllability on those occasions when the dive brakes need augmenting. A drag 'chute is also available as an optional extra. After landing there is no tendency to ground loop and the aircraft must be slowed by the effective wheel brake.

Summing up, the Phoebus as flown is one of the most pleasant and controllable motorless flying machines I have yet met. The 15-metre version which forms the subject of this note is considered by the German gliding clubs to be more optimised for high speed, whilst the 17-metre with its measured 1:42 performance obviously falls in the super-ship category, although at a markedly lesser price than most of its competitors. At a price of £2,550 for 1:42 glide angle it could well be considered the best buy from the performance pilot's viewpoint. Whilst for sheer pleasure of flying and good aeronautical design and engineering it is second to none.

Technical Data

Span metre	A+B	15	C 17
Wing section	Eppler 403		
Wing area	sq/ft.	141.5	151.7
Empty weight	lb.	485	531
A.U.W.	lb.	772	825
Min. sink at 43 kt.	fpm	128	108
Glide ratio at 49 kt. (C 46 kt.)		1:37	1:42

* * *

GLASS-FIBRE AND THE ENGINEER

By F. G. IRVING

I DO hope that when our German friends read Peter Hearne's article, they will appreciate that the second and third paragraphs are devoted to tilting at windmills. There is, admittedly, a degree of ignorance of glass-fibre gliders in the UK, simply because there are very few of them. But who are these people who are so horrified at the absence of ribs and suchlike? Those concerned with engineering aspects of British gliding are entirely prepared to accept a logically-designed structure—which is, in general, what glass-fibre wings are—and pilots will happily support themselves on any structure which is known to work, often in blissful ignorance of what lies within. Incidentally, it is not entirely true that spars are omitted in glass-fibre wings.

Spar booms are replaced by lengths of "roving" which looks rather like untwisted string made of glass-fibre. This is distributed over a fair width on the upper and lower surfaces of the wing, so that one no longer sees bulky booms. The spanwise diaphragm webs are not just a ". . . sop to traditionalists", they are put there to take some shear.

As Mr. Hearne rightly says, and as the 1968 World Championships demonstrated, we are at the beginning of a new era. Any novelty tends to have teething troubles, and glass-fibre gliders have had their share. It is unfortunate that, at the time of writing, the only glass-fibre gliders in civilian hands in the UK are all of types which have not been certificated in their countries of origin and are currently only granted Permits to Fly. One type has suffered flutter at a speed below Vne (not Vd) in the hands of a British pilot. Another type suffered two flutter incidents in Poland at a speed appreciably below Vne in the hands of an Australian pilot. After modification, it is now said to be satisfactory by the makers. There is no doubt that these troubles can, and will, be overcome by fairly straightforward R. & D., but they exist *in some types*, and I doubt if the pilots who have experienced flutter would dismiss it as lightly as Mr. Hearne's advisors.

As Mr. Hearne observed, all-flying tails with low stick forces can be very pleasant. The trouble starts in a situation he does not mention in his classification of stability characteristics: when the stick force and stick movement per "g" are both very small, and there is a tendency to oscillate in pitch slightly too fast for the human servo to cope. The results can be very alarming. The HP-

14c, before it acquired geared tabs, came well into this category as Nick Goodhart will confirm. It is a pity we haven't got a simulator for this condition. The third type of glass-fibre glider in the UK is about on the verge of this situation at high speeds. This is not essentially associated with glass-fibre or high performance, but rather with a reluctance to make some straightforward modifications.

The preceding remarks, I would emphasise, are based on three uncertificated types. The Phoebus and Libelle are certificated in Germany, and there is no reason to suppose (in the absence of personal experience) that they are other than entirely airworthy and pleasant to fly. Certainly, they are well spoken-of.

Finally, readers should not take Mr. Hearne's "liberal coats of resin" too literally (I, too, have seen Phoebi being rebuilt). The whole object, in laying up structural glass-fibre, is to use the minimum essential amount of resin, and you get a terrible structure if you are "liberal". Bölkow's control and inspection looks very good indeed.

BGA NEWS

National Championships, 1969

(i) The Open Class will be held at Lasham from 17th-26th May (26th May is Spring Holiday Monday) and will be open to all types of glider.

(ii) The Standard-Sport Class will be held at Dunstable from 7th-15th June and will be open to 90% and numerically higher handicap gliders and *all* Standard Class gliders.

(iii) There will be 40 places in each Class, entry to which is via the end-of-1968 National Entry List (Rating List as was). Except where indicated in paragraph (iv) pilots may enter for *one* Nationals Class only.

(iv) There will be *extra* places in the Classes as follows:

Open Class

(a) Top 5 finishers in 1968 Sport Class (handicap placing list).

(b) 1968 British Team pilots.

Standard-Sport Class

(a) Top 5 finishers in 1968 Open Class (handicap placing list).

(b) Top 5 finishers in 1969 Open Class (handicap placing list).

(c) 1968 British Team pilots.

Pilots who enter the 1969 Standard-Sport Class by this rule must fly gliders of 90% and numerically higher handicap or Standard Class gliders. These pilots will count at bona-fide entrants and will have all the privileges of entry accorded to the other 40 entrants.

Entry Forms

OPEN CLASS—Apply to the Manager, Lasham Gliding Society, Lasham Aerodrome, Nr. Alton, Hants.

STANDARD-SPORT CLASS—Apply to the Manager, London Gliding Club, Tring Road, Dunstable Downs, Beds.

Entry forms can also be obtained from the BGA, Artillery Mansions, 75 Victoria Street, London, SW1. Completed entry forms must be returned by 24th January, 1969.

1970 British Team Selection

Immediately following each Nationals Class in 1969 a selection panel consisting of the top 21 finishers on the handicap placing list of the Class will select (in order) 7 pilots for that class as follows:

(i) On 26th May, or as soon after as possible thereafter, the top 21 finishers on the Open Class (handicap list) will *meet* to select the Team pilots and reserves for the Open Class at Marfa. This meeting will be under the Chairmanship of the Chairman of the Flying Committee (who will not have a vote).

(ii) Each member of the panel will be asked to write down the name of his/her choice for the No. 1 Open Seed. A panel member may vote for *any* pilot other than himself/herself.

(iii) The Chairman will count the votes against each name and if one pilot has more than 50% of the votes, he will be announced as the No. 1 Seed.

(iv) If no pilot receives more than 50% of the votes on the first vote, the Chairman will ask panel members to vote on the two (or more if there is a tie) pilots who received most votes in the first vote, voting to continue as necessary until one pilot receives more than 50% of the votes.

(v) This procedure will be continued until seven pilots have been seeded.

(vi) On 15th June, or as soon as possible thereafter, the top 21 finishers in the Standard-Sport Class (handicap list) will *meet* to select the Team pilots and reserves for the Standard Class at Marfa, using the same procedure as detailed above, until seven pilots have been seeded.

(vii) Names of seeded pilots will be announced after each of the two meetings as "subject to confirmation by BGA Council".

NOTE.—The system requires an odd number of selectors: if the number of pilots attending a selection meeting is even, then the lowest finisher present will lose his vote. In the event of a triple tie, etc., the Chairman has discretion to reduce the panel by the minimum amount to eliminate the tie.

* * *

AGM at Harrogate

Following the success of the 1966 meeting, it has been agreed to hold the Association's AGM, including the Dinner & Dance, at the Crown Hotel, Harrogate, Yorkshire, on the weekend of the 25th January, 1969.

It is hoped to run a small Gliding Trade Fair in the hotel over the weekend, while for those ladies who are interested we have accepted an invitation from the Curator of the Leeds Museum to visit Kirkstall Abbey House Museum on Saturday afternoon, 25th January.

As usual the Annual Awards will be presented at the Dinner. Tickets for the Dinner & Dance £2 2s. per person.

Bookings for the weekend and/or Dinner should be made direct to the Crown Hotel for which the following terms have been agreed:

Bed and breakfast per person per night £3.

Saturday Luncheon and Sherry Party £1 15s.

Dinner & Dance per person £2 2s.

* * *

FAI Conference and CVSM Meeting

The FAI Conference which was to have been convened in Prague is being

held in London from 28th-30th November, both days inclusive. The CVSM Meeting, normally held in Paris, will be held the day prior to the FAI Meeting on the 27th November.

* * *

Congratulations

We are sure that readers would like to join us in extending our best wishes to Magazine Assistant Nicky Wilcox (née Stothard) on her marriage to Nigel (London Gliding Club). She has been on the staff of SAILPLANE & GLIDING for the last two years and we are happy that she has agreed to stay on with us.

* * *

National Coach

Ed Meddings, with great reluctance, has decided to leave the BGA to take up a development flying job with a large instrument and autopilot firm, where he will be able to utilise his airline pilot qualifications fully. I am certain you would wish to be associated with the BGA's thanks to Ed for the work he did in the short time he was with us and wish him every success in his new job. He will be difficult to replace.

R. A. NEAVES.

REMINDER: Annual Award Claims must be in before 31st December

THE 1967 AIR TRAFFIC CENSUS

By NICHOLAS GOODHART

IN July last year all conscientious glider owners filled in the Board of Trade air traffic census forms giving details of the flying their gliders had done during the week from the 19th to the 25th of that month. The census aimed to cover all civil aircraft flying in the UK airspace and was the fourth one to be conducted in the summer.

The results of the census have now been published and are analysed below from the gliding point of view.

Co-operation. 83% of glider owners sent in their returns compared with 70% of British registered aircraft. All those who did take the trouble to complete the cards can be happy in the knowledge that their efforts helped to give gliding a good name in the Board of Trade. On the other hand, the 17% who did not bother with the cards . . .

Total traffic. The average occupancy of UK airspace over land during the day was as follows:

	All days	*Week-ends*
Controlled traffic	38	39
Uncontrolled:		
powered fixed wing ...	73	76
gliders	39	71
helicopers	7	3
Total uncontrolled	119	150

Heights feet	A %		B %	C %
0-1500	58	2		44
2000	17			23
2500	8			9
3000-4500	11			15
5000-9500	6		18	6
10000 & above			80	3

Col. A=glider, B=controlled, C=uncontrolled powered fixed wing.

What these figures mean.—In order to derive much value from these figures (and others in the report) it is necessary

to look back at the previous air censuses; some of the results of these were summarised in *S. & G.* October-November, 1965. These figures are requoted in the table below with the 1967 figures added.

	July 1962	July 1963	July 1964	July 1967
Average number of aircraft in controlled airspace plus advisory routes over UK land areas during the period 11.00-20.00 hours:				
All days	22.9	25.6	30.0	37.8
Saturday and Sunday only	27.6	27.7	33.6	39.0
Percentage of total controlled aircraft below 10,000 ft.	48.3	42.5	47.8	19.8
Gliders as percentage of total uncontrolled traffic at weekend	30.2	50.6	41.0	35.3
Number of hourly reports from gliders during the census	1001	2993	1649	2466

With the figures now covering a span of five years it is possible to draw some conclusions:

Controlled traffic is increasing at just over 10% per annum.

Weekend controlled traffic is increasing more slowly (7%) and is not now significantly different from weekdays.

There has been a startling reduction of controlled traffic below 10,000 ft. The figures are not steady enough to determine a trend rate but it is quite clear that there is now *far less* traffic in the control system below 10,000 ft. than there was five years ago.

It is still hard to say how fast gliding is increasing, but taking the 1962 and 1967 figures the answer appears to be 20% per annum. I doubt if the figure is really as high as this, as the weather was not good in the 1962 census.

Despite the increase in gliding, it appears to be decreasing as a percentage of the total uncontrolled traffic. In other words, powered flying in FIR airspace is increasing faster than gliding.

HUSBANDS BOSWORTH — Alias HB

By JOHN DELAFIELD

AS someone who for many years has flown Standard Class, albeit within League 1, I have been accused by some of deserting the cause in flying a 17-metre "hot ship". The truth is, though, that it is high time I had a change, and when the opportunity to fly a SHK in this competition presented itself, I was in no position to refuse! So, with that apology *cum* excuse to my 15-metre friends, I'll launch into this treatise on the first-ever British Open Class Nationals.

The first thing which struck me about the contest, even before it began, was the thoroughness of the organisation. The rather large envelope, sent to each competitor before the contest began, set the scene for the best organised National contest for many years. Because in it one found joining instructions, landing report forms, booking-in forms (which I lost, of course), details of the domestic arrangements, rules, Strachan's interpretation of the rules, spare rules (in case they were needed), and finally a glossy brochure on the local boom town of Market Harborough.

Now on to the contest itself. The task-setting was first class (I'm bound to say that, of course!) and the way in which tasks were altered, owing to the weather not reaching expectations whilst gliders were still on the grid, proved to be entirely satisfactory. The use of a remotely situated Met. man who lived in a tape recorder and responded to the task-setter's grunts, "Ums" and "Ems" also proved highly successful. The innovations, amongst others, were new to most competitors, but I am sure they will become commonplace in the future. Computerised scoring was also new to most of us and once again I'm sure it is here to stay.

DAY 1 (out-and-return to optional turning points — Cheltenham, Malvern and Cirencester) was for the most part a matter of staying airborne until the end of the day. Quite early on during the task I decided that with the thermal and wind strength pertaining, it was most unlikely that anyone would make it back to base. Consequently it seemed like a good idea to turn the furthermost turning point (Cirencester) and gain maximum benefit from the north-east wind and thereby gain as many distance points as possible. It paid off.

DAY 2 (race to Bicester via Wellesbourne Mountford) was relatively straightforward. Andy Gough and I pair-flew on this task and it certainly helped in that we at least had a fairly relaxing journey.

DAY 3 (race to Nympsfield) was most interesting. It was rather a scrape away from HB, but nearing Gaydon one could see big cumulus clouds building to the south-west. I resolved then to get a climb in one of these, and after an incredibly slow climb into cloud and up to 4,000 ft., the lift suddenly shot up to 6-8 knots and took me to 7,000 ft., from where the calculator said I'd make it easily. (I didn't believe it but it was right.) Navigation from Cheltenham onward was exciting, with visibility 1¼ to 2 miles; my ¼-million map proved its worth.

DAY 4 (race to Dunstable via Caxton Gibbet) seemed quite impossible, but Bernard Fitchett made it by first-class flying.

DAY 5 (out-and-return to optional turning points near Nottingham) was flown in very good thermal conditions and was relatively straightforward. However, the late starters had some trouble with medium cloud and wave which

John Delafield at Husbands Bosworth.

Task-board for 31st August.

upset the convection. Very few of them made it back. For me it was an unsatisfactory trip; I was far too aware of my existing lead in the contest and was excessively cautious, and so turned in a mediocre time.

DAY 6 (race to Debden) was The Day. I don't think any of us really wanted a task—the wind was very strong, the BBC forecast large cu-nims with rain and general gloom, and I personally was very happy with my existing lead. Nevertheless Ron the met. (who by now had escaped from the tape recorder to visit us in person) said it would be a good day —and it was. So to Debden we were sent and I was first off at 11.15. I resolved to climb as high as possible in each large cumulus, but in spite of this I fell to earth around Bedford, being unable to cross a large gap between clouds. My crew, Terry Slack, Tony and Kay Hayes, were magnificent and were with me on landing, and even had the tail off before I was out of the cockpit.

To cut a long story short, we had a brisk drive back to HB, a leisurely rig and a short wait for better weather before launching again at 15.15. I was quite happy that the task was still very much "on", but nevertheless it was a horrible scrape to Northampton and it wasn't until there that the weather picked up. However, by this time there was a mammoth rainstorm stretching for miles across track in the Bedford area (doomed again?) and the only way past it was up and through it or to nip round the downwind edge of it clear of the rain. Being disinclined to follow the latter course, as I hate being downwind of track, the only answer was to climb. New cells were building on the north-west edge of the main storm and one of these took me to 10,000 ft. From there a further climb in the main storm to 13,500 ft. gave enough height to reach the goal—unless the excessive quantity of ice the aircraft had collected really ruined the performance. As it turned out, the SHK achieved three miles per thousand feet and once again I had height to spare at the goal.

I can never really describe the thrill of that last glide-out. The air was crystal clear and absolutely smooth, the goal was visible 30 miles ahead and I knew that I'd done it at last . . . it was 13 years since my first-ever glider flight, but at last I'd won a Nationals.

The SHK is certainly a magnificent glider and performed well in comparison with the plastic vultures. Of all these new aircraft the Diamant 18 seemed to be the best performer, with a good rate of climb and excellent glide angle. However, the advantage of flaps only seems to be significant when the lift is strong, and I wonder whether they afford sufficient advantage in our average British conditions to be really worthwhile. Time will tell. To my mind it is most important to be able to achieve a good climb under all conditions; a very good glide angle is no use to you if you are unable to stay up!

Finally, some thoughts on the new competition structure. I'm sure the present concept, Sport and Open Class, is right, but in time I feel it must expand into three or more classes, each containing a maximum performance spread of 10 per cent as measured by our handicapping scale. Perhaps then the time will be right for a super-nationals or British Team Possibles contest (call it what you will) held every two years or so. But there is another subject. Right now we have a highly satisfactory scheme which can be readily modified to suit future requirements. I hope future Nationals will be as well run as this one was.

Thank you, all of you at HB, and those who helped to make it such a success.

Please—when can we come again?

A SELECTION FROM KRONFELD ART EXHIBITION

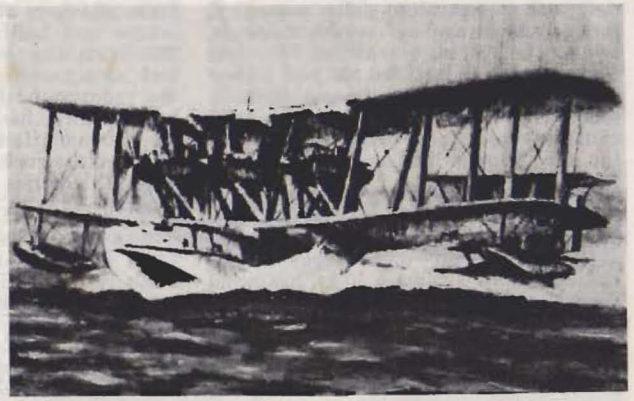
▲ Evening Mist—*Arthur Speechley.*

Sunday Morning—*Gerald Coulson.* ▶

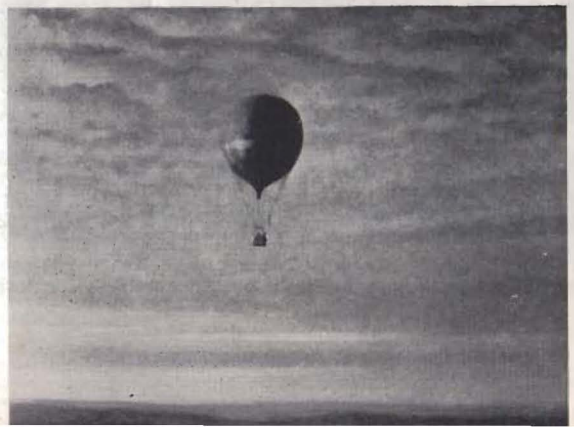
▲ Arrival at Chequers—*M. E. Cole.*

▼ Grounded—*Brian Withams.*

"Jambo"—*Roy Nockolds.* ▶



▲ "Iris"—
Richard Jones.



Photographs by
John Blake

BOOKER REGIONALS

By PETER SCOTT

ALL who took part were agreed that the Regionals held at Wycombe Air Park from 10th to 18th August was outstandingly successful, the more especially as there were not many hours of really good soaring conditions in the whole nine days. Yet we flew on seven of them, producing five contest days. Challenging tasks were set by Arthur Doughty under excellent overall organisation by Roger Neaves as Contest Director, and his splendidly efficient team.

SATURDAY, 10TH AUGUST.—Task: 100-km. Triangle, Hampstead Norris village, Beckley Radio Mast (N.E. of Oxford).

A clearance in the afternoon gave promise that a short task might be possible, but conditions were weak and faded away altogether by 17.30 so that only one competition glider passed Y. After much struggling in weak thermals, a good many pilots rounded the first turning-point and headed out into a clear sky. Thereafter there was some difficulty in finding fields that did not contain cattle or crops, and playing fields were the most popular landing places. No contest.

SUNDAY, 11TH AUGUST.—Task: 122-km. Out-and-Return to Burford Roundabout.

Very weak lift under leggy clouds made progress against a 10-kt. headwind very slow at first. I had not gone far when I became totally detached from the clouds and dived for the Chinnor ridge, 8 miles out. The wind was not strong enough for ridge lift, but small and weak thermals burbled up it at intervals. I arrived just below the top of the Post Office tower, and remained airborne for 1¾ hours, being joined later by others. In the late afternoon conditions substantially improved. Having climbed to 3,000 ft. again, I was able to proceed with the flight, which from then on went quite fast, with a steady 8 knots, peaking to 10, under a gorgeous round cumulus at the turning-point. At Whitney, Ken Wilkinson flashed past in his Skylark 4, still outward bound. Brennig James (*hors concours*, Diamant 18) was back already when I arrived at Booker. No other gliders managed to get home, and only four competition gliders passed Y and they were also the only ones to pass X. They were: Scott (BS-1), maximum 220 points; Barton (Olympia 463), 179; White (Ka-6E), 163; and Wilkinson (Skylark 4), 101 points.

MONDAY, 12TH AUGUST.—Task: 210-km. Race to Swanton Morley via Pitsford Reservoir (N.E. of Northampton).

The clouds were streeting but, surprisingly, across the wind, conforming with crosswind gaps in the cirrus, and most people found the going rather good almost as far as Northampton, where the air mass began to change.

Across the Fens progress was slower, but the higher ground over west Norfolk produced excellent conditions, just as we began our final glides. The BS-1 was first at the goal, but soon seven more came skimming in, including John Jeffries plus navigator in the K-13. Navigational tragedies overtook some of the field. John Barrows took too northerly a course and had to land at Sculthorpe. Bill Wills also got too far to the north and an agonising drama unfolded over the radio as he headed south, against a wind which had progressively backed against him. He landed less than a mile north of the goal. First, Scott, 77.1 km/h. Second, Jeffries, 50.8 km/h. Third, Davies (Ka-6CR), 53.7 k.m.

THURSDAY, 15TH AUGUST.—A warm front had prevented flying on the previous two days. Task: 171.5-km. Race to Ipswich via Begborough brickworks (E. of Woburn).

Cumulus was forming under a thin top cover and thermals were distressingly weak. From my first climb I set off hopefully and found nothing, so that 10 miles out, over a Chiltern valley, I was about to land. At 300 ft., with my hand ready to drop the wheel, I was saved by a tiny thermal, and with the guidance of first one, later three Black-headed Gulls, I crept back to launch height before daring to explore for stronger lift. During the day a few clouds developed quite nicely, but they were mostly useless unless you arrived at precisely the right time. The BS-1 came to rest prematurely at RAF Stradishall (where I was welcomed by George Coatesworth). Ken Wilkinson was the only one to complete the task,

but Astley, making his first cross-country competition flight, narrowly missed Ipswich and landed well beyond it to the north-east to claim second place in a Skylark 3G, and Philippa Buckley (Skylark 4) third. Eight gliders passed Y.

FRIDAY, 16TH AUGUST.—Task: 219-km. —Pitsford Reservoir, Burford Roundabout, Booker.

With a south-west wind which freshened to 30 knots at flying heights it soon became evident that this triangle was going to become a distance task. The Chilterns produced good conditions for the first few miles, but encroaching top cover set the pattern of the day with grey cumulus and weak to moderate lift. In the afternoon, however, some of the clouds were punching up to 10,000 ft. and more, but they were widely spaced, and enormous gaps had to be crossed. One of these brought the BS-1 to earth near the first turning-point. From here I had a grandstand view of the noble efforts being made to get round it and head off into wind on the second leg.

Bill Wills in his Olympia 460 rounded at about 2,500 ft. and headed back to a developing cloud. After three or four turns he disappeared from view, and less than five minutes later he came out near its top, a tiny speck at more than 6,000 ft., plugging into the teeth of a 40-knot gale. Two subsequent cloud climbs against such a wind could get him no more than about eight miles, but he won the day handsomely, followed by Grenet (Skylark 3F) and MacDonald (Dart 17R).

SATURDAY, 17TH AUGUST.—Task: Cat's Cradle with turning-points at Dunstable, Begborough, Bicester, Burford, Didcot and Booker, starting from the Stokenchurch Post Office tower.

It was a day of frequent showers spreading out into big black forbidding clamps which at times seemed to be on all sides.

Because of the strong north-west wind, the dropping zone was eight miles upwind from base. A number of pilots chose as their first leg the Dunstable route, which followed the Chiltern edge with its frequent offer of a banister to hold on to. Most of those who did so arrived at Dunstable at the same time as a heavy shower; ultimately it forced us to land at the London Gliding Club. Steve White (Ka-6E) had initially pushed out to Bicester, returned with the wind to Dunstable and passed over it with enough height to glide out to Begborough brickworks, near which he landed.

L. to R.: Justin Wills, Philip Wills, George Scarborough and Peter Scott. Photograph by John Ellis.

Meanwhile, Ken Wilkinson was going upwind to Burford with dogged pertinacity and eventually he rounded this turning-point. His late evening cloud climb and final glide were listened to with bated breath by disconsolate pilots who had already trailed back to Booker from lesser flights. His arrival out of the sunset, just in time for the barbecue, was dramatic and memorable, and marred only by the failure of the rest of us to make it a contest day.

SUNDAY, 18TH AUGUST.—Task: 124-km. Triangle, Sundon Cement works, Beckley Mast, Booker.

Once more the strong west winds made the Chiltern edge a feature of many flights.

Those who were launched during the passage of a shower rushed for the banister, and found themselves sinking inexorably as the rain killed the wind. With six or seven gliders level with or below the top of Chinnor Ridge, conditions became difficult and some landed. But the sun came out, and the wind picked up just in time to rescue the rest of us.

Ken Wilkinson reported his arrival on the ridge to his crew: "Wendy—197—I am on Chinnor Ridge at 1,400 ft." "Thank you 197."

"197 from Mallard—welcome to Chinnor. I've been here for one-and-a-quarter hours!"

"Mallard from 197—I can only commiserate with you."

A few minutes later, a strong thermal blew up the ridge near the Post Office tower. I climbed to 2,500 ft., nipped round the tower to cross the starting line which stretched down the hill to the Lambert Arms on the A.40, and was off on the race.

Brennig James (*hors concours*, Diamant 18) landed near the first turning-point and was calling his crew. All attempts to relay the message from "Brennig" to "Earth" that Brennig himself had returned to earth were unsuccessful. Last to try was Martin Seth-Smith who could only report back to Brennig "Earth cannot be raised".

On the second leg between Thame and Oakley aerodromes I did a shuttle service for a while, gliding forward to Oakley and drifting back to Thame again.

At last my patience became exhausted. A rainstorm was advancing towards the

turning-point. If I went quickly maybe I could get there first. Beckley Mast stands 500 ft. high, its top 950 ft. a.s.l. As I approached it, I passed through 5 knots sink. The mast thrust upwards menacingly. As I lurched round it, taking my photograph in an untidy side-slip, the altimeter read 1,100 ft. a.s.l.

Hard luck is a good standby when we have to account for our incompetence in gliding. But just occasionally good luck comes into it too. I straightened up heading south of the homeward leg in order to get out into the sunshine. I could not have flown for more than half a mile when I hit the centre of a 5-knot thermal; in a matter of six turns I had enough height to get home.

Unhappily no one else reached Booker, though Ken Wilkinson landed less than 5 miles out. This made him equal first with 702 points for the day.

For everyone progress was desperately slow against the wind, involving much back-sliding. More hard struggling must have been done on this day than on any other in the competition. Equal first, Wilkinson and Scott. Second, Keogh (Skylark 4), and third, Stoddart (Dart 15).

It remains only to record that Bill Wills had to concede the "Pants Prize" to Martin Seth-Smith in their long-standing personal rivalry, and that this was recognised by the presentation of a pair of mini-pants to the winner.

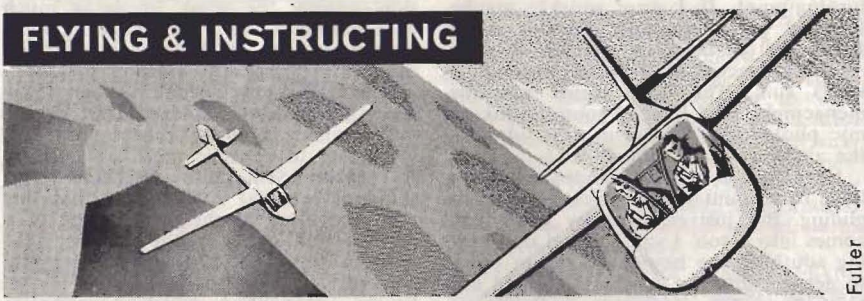
From my angle the handicapping worked very well, as it made a close-fought competition which nevertheless ended in the right way. I should not be surprised to find that others think the present handicaps are too kind to the hot ships. They could be right.

Finally, renewed thanks to all those who made the flying possible for us, and who gave us such a hospitable welcome at Wycombe Air Park.

FINAL RESULTS — Booker Regionals

	Pilot(s)	*H'cap %*	*Sailplane*	1 220	2 1000	3 520	4 390	5 702	*Total Points*
1.	P. M. Scott	80	BS-1	220	1000	248	172	702=	2432
2.	K. G. Wilkinson	98	Skylark 4	101	504	520	183	702=	2010
3.	I. L. A. Eyers,			0	–	–	0	–	
	S. G. Davies,	100	Ka-6CR	–	918	–	–	–	1636
	L. E. Beer			–	–	209	–	509	
4.	B. Keogh	98	Skylark 4	0	452	325	220	578	1575
5.	M. Seth-Smith	96	Ka-6E	0	898	21	64	498	1481
6.	J. R. Jeffries,			0	940	–	–	–	
	L. J. Norman,	110	K-13	–	–	0	–	–	1422
	M. D. N. Till			–	–	–	0	482	
7.	S. B. Wills	106	Olympia 460	0	630	3	390	327	1350
8.	R. C. Stoddart	98	Dart 15	0	828	0	0	520	1348
9.	Philippa Buckley,			0	–	361	–	456	
	A. G. Burne	98	Skylark 4	–	506	–	0	–	1323
10.	E. R. Belbin,			0	–	0	–	120	
	P. Grenet	100	Skylark 3F	–	842	–	275	–	1237
11.	A. J. Burton,			0	–	264	–	–	
	J. Barrows	90	Dart 17R	–	470	–	118	216	1068
12.	F. H. Knipe	96	Ka-6E	0	845	106	0	0	951
13.	R. L. Clarkson,			0	–	–	0	0	
	A. E. Stenhouse	96	Foka 4	–	850	0	–	–	850
14.	A. McDonald	90	Dart 17R	0	477	0	233	0	710
15.	S. A. White	96	Ka-6E	153	36	0	0	412	601
16.	K. Barton,			179	–	0	0	220	
	C. C. Ryan	102	Olympia 463	–	188	–	–	–	587
17.	Vera Wates	108	Skylark 2	0	544	0	0	0	544
18.	J. S. Astley,			0	–	461	–	–	
	A. L. Thurlow	100	Skylark 3G	–	0	–	73	0	534
19.	D. Evans,			0	–	0	–	0	
	J. A. Shenton	90	Dart 17	–	462	–	0	–	462
20.	R. Cousins	90	Dart 17R	0	354	0	0	0	354
21.	D. F. Greaves,			0	–	0	–	0	
	J. Bushnell	100	Skylark 3	–	243	–	0	–	243
22.	R. B. Larkinson,			0	–	143	–	–	
	A. B. Adams	102	Olympia 463	–	98	–	–	–	241
23.	B. H. Latimer,			0	–	0	–	–	
	D. N. J. Wood	100	Skylark 3	–	15	–	0	0	15
24.	H. W. Fletcher,			0	0	0	–	0	
	A. T. C. Gurney	96	Foka 3	–	–	–	0	–	0

FLYING & INSTRUCTING



CFI's CONFERENCE 5th-6th OCT 1968

ONCE again the conference was held at Lasham and provided a useful forum for CFI's and Instructors' Panel members from all over the country.

This year we decided to put the emphasis on flying and great fun was had by all flying K-13s, Blaniks, Bocians, a Capstan and a Bergfalke 3. Two motor gliders, the Motorfalke and Falke, were present and most CFI's were able to begin to realise the benefits and drawbacks of using this kind of tool for training. There is no doubt that the Volkswagen-engined SF-25B Falke is a great advance in powered two-seater technology, the main criticism being in the somewhat old-fashioned handling characteristics. Christian Gad, Scheibe's test pilot, mentioned the possibility of a laminar wing version within two years. The Nelson-powered motor Capstan was available, but unfortunately an unexpected engine defect prevented it flying. It was also unfortunate that the T-53 could not be present at this gathering of CFI's, especially so in view of the preponderance of Continental two-seaters.

The idea of providing mainly flying for CFI's depended, of course, to a great deal, on the weather. We were lucky and even had some soaring, an elusive phenomenon in 1968.

Apart from just flying new types, visitors were able to get up to date on low speed flying training, instrument flying and aerotow training. Fun flying was even available in the form of a Pirat, kindly made available by the Polish AFA.

The programme of lectures contained a dissertation on Slow Flying by the Chairman. Teaching Field Landings by Sq. Ldr. John Delafield, better known as the National Open Class Champion, Frank Irving's incredibly professional lecture on How to Spectacularly Disintegrate Your New Glass-fibre Glider, Motor Glider Developments by Ann Welch, and All Through Aerotow Training by Vic Carr.

During the discussion at the finish of the weekend, several views were put forward as to how to improve the conference. Generally the idea of more flying was approved, but it was felt that more time might have been devoted to the discussion of CFI's problems, of which there seemed to be many. The consensus seemed to be that three days are needed if a full flying and ground programme are to be arranged. This we will try to do next time.

I would like to thank the following people who made the conference a success. Ed Meddings, National Coach, who did all the ground work. Doncaster Sailplanes, London Sailplanes, Peter Clifford, the RAFGSA, Bernard Thomas, Eric Boyle and the Polish AFA for the loan of gliders. Egon Scheibe and Christian Gad, Peter Ross and Peter Jeffers for the Falke and Motorfalke, and Slingsby Aircraft, who had such rotten luck. Special thanks to the Lasham Gliding Society for laying on the facilities that are their speciality. Commiserations, too, to Bill Scull, Lasham CFI, who was overheard trying to find suitable collective nouns for CFI's. They weren't very complimentary!

Finally, thank you, too, all the people who took part, whether talkers or listeners. We hope you learned something (we certainly did) and that you will come again, for we cannot have too many of these sorts of occasions.

Stalling and Spinning (not to mention Autorotation)

One of the points made at the Conference was that people are confused by the difference between the recovery from a straightforward stall, with or without wing drop, and the spin. It was alleged that the recovery, stated in these columns in the August issue, was incorrect in that a wing drop was autorotation, therefore the full spin recovery action should be taken. I sincerely hope that anyone who has tried (and any instructor worth the name should try) large boots full of rudder near the stall will be disabused of this method of recovery from a stall where the wing has dropped.

Before continuing it is probably necessary to define the difference between stalling and autorotation or, to the less sophisticated, spinning. I quote the BLAC "Manual of Flying and Ground Training" (the gliding equivalent of which does not exist, unfortunately).

"Stages of Spin. When an aircraft is in a glide, gliding turn, steep turn or some aerobatic manoeuvre, any condition of stall, whether or not the aircraft is under high wing loading, may be the start from which an aircraft may spin. The aircraft does not go directly from the stall into the spin; there is a transition period the duration of which varies considerably with different types of aircraft, and also, with different conditions of stall in the same type of aircraft. When a wing drops at the stall, the nose begins to yaw towards the lower wing tip, and as the angle of bank steepens, it will drop sharply below the horizon and the aircraft will begin a spiral descent. From the spiral descent the aircraft will, if no preventive action is taken, suddenly pitch downwards, the rate of rotation will increase and increased loading will be felt. The spin has now developed."

From the above, we can see that there is a distinct break between the incipient spin or wing drop and the full spin or autorotation. In the incipient spin stage the recovery action should be to unstall the glider by relaxing back pressure on the stick, or, if there is no back pressure (glider out of trim) easing the stick forward while at the same time applying enough opposite rudder to counteract any yaw that is visible. In many gliders there is a distinct lag between the start of a wing drop and yaw towards the lower tip, and the safest method of recovery under these circumstances is to get the stick coming forward first. This applies whether the glider is flying straight or turning. Another quote from the BLAC Manual:

"Recovery from Wing Drop. In the case of an incipient spin the recovery action may be modified slightly according to the type of aircraft being flown. In most aircraft the use of ailerons to raise the wing will only accentuate the stalled condition, whereas others retain aileron control to below the point of stall. The correct recovery, however, for all aircraft is to apply sufficient opposite rudder to prevent yaw in addition to the normal recovery action. Care should be taken to ensure that the rudder applied is no more than sufficient, because the use of excessive rudder in the incipient spin recovery may cause an unintentional spin in the opposite direction."

One of the reasons for the confusion that has arisen is probably due to excessive practising of the spin off an overruddered turn with cross controls. In this case large amounts of yaw have already been induced before the stall and it is obvious that large amounts of opposite rudder have to be used to counteract. It must be stressed that this is only one way of entering a spin and that there are many other types. The fact remains, that we are trying to recover with minimum loss of height and to do this we must get the glider unstalled as a prime consideration. There will be plenty of time to level the wings with aileron and rudder, after the glider is flying properly again.

ROGER NEAVES.

FIFTH GERMAN MOTOR GLIDER RALLY

Burg Feuerstein — 7th to 13th September

By PETER ROSS

THERE was a sense of purpose at the Scheibe factory at Dachau on the Saturday morning we arrived; three customers were taking delivery of their new gliders and they represented a good example of the current Scheibe production. One was a Bergfalke 3 tandem two-seat glider, which is now produced with Schempp-Hirth dive brakes in place of the rather ineffective DFS type; another, the 20th SF-25B Falke to be built—this uses the same basic wing as the Bergfalke 3 but has a 45-h.p. VW-based Stamo engine and side-by-side seating and has replaced the Motorfalke in production; and finally the SF-27M high-performance Standard Class single-seater with fully retractable Hirth two-stroke engine.

After helping to rig three Falkes, we took off in formation from Scheibe's bumpy little airstrip (which seemed even shorter and bumpier on a downwind take-off), being waved on our way by Chris Wills and David Innes, who had met by accident in the Hofbrauhaus in nearby Munich the night before. David decided that his RAF Britannia would be ineligible for the rally, and Chris had a date with a rescue party removing a stranded German and a Ka-8 from a mountain treetop at Unterwössen, but that is another story . . .

The approach to Burg Feuerstein aerodrome is from the valley towards a vertical cliff edge which marks the start of the runway. There is simply no margin for undershooting. The view from the air was made more impressive by the number of gliders to be seen. Motor gliders continued to arrive both by air and on trailers until there were 36, a new record and more than twice the number at any previous rally. They were made up of nine of the new Falkes, seven Motorfalkes, six RF-3's and 4's, three Krähes, two Ka-8's—one with a Wankel engine and the other with two Stihl 10-h.p. single-cylinder engines which took off under its own power—two K-12's and one each of RF-5, Spatz (fitted with one Stihl engine), Motorspatz and RW-36, the latter being the oldest and the only one not to have the registration starting with the letter K denoting that it was registered after 1959, when the preliminary motor glider regulations

The SF-27M, engine retracted. (Photographs by P. Jeffers)

The SF-25 two-seater in flight.

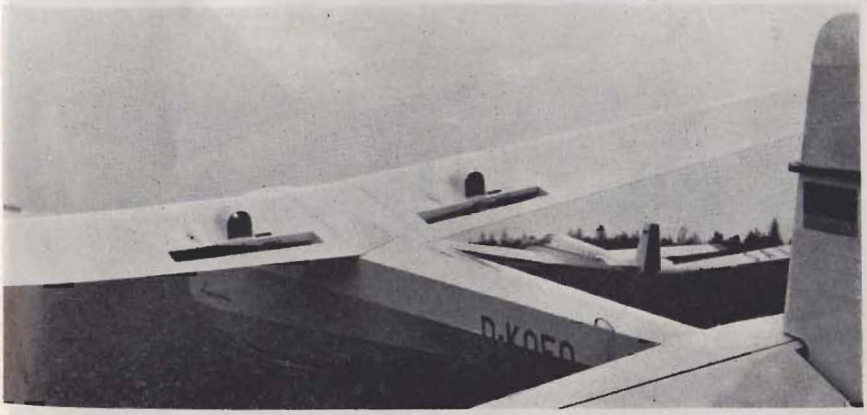
were published. Now, after nine years of practical experience, they have been confirmed.

The only really new production aircraft was the Sportavia RF-5, big brother of the little RF-4 and looking quite a size compared with the others. The very simple wing-folding mechanism allows the span to be reduced in seconds from 45 ft. to 29 ft. for parking. The engine is 1700 c.c. and gives 68 h.p. at 3,600 r.p.m. It is based on the Volkswagen and is being built by Sportavia themselves. On the RF-5 it is fitted with an electric starter and alternator, but a 1600-c.c. version with mechanical starter will be available for smaller motor gliders. Production of the RF-5 is starting now and deliveries are expected when certification is complete after Christmas.

New to the rally was the Schleicher K-12. These were pre-production models of the ASK-14 now in series production, and differ mainly in having a fixed air cowling. Rudolf Kaiser had tried many different shapes in an attempt to get rid of a peculiar and annoying whistle. It was finally cured by taping over the hinge on the wing spoilers!

The feathering propeller was much admired, but its soaring performance could not be judged as it had to return to the factory on Sunday, and someone managed to bend the other one just before my turn to fly it.

The first morning was spent measuring



The Ka-8 with two Stihl 10-h.p. single-cylinder engines

▲ *The Blanik with detachable engine pod.*

◀ *Shown on left, the JAWA 42-h.p. motor unit mounted on Blanik.*

▼ *The two-seater RF-5 with Volkswagen engine.*

time and fuel consumption to height and sinking speed, but as there were good thermals about the figures may not have meant a lot. In the afternoon the performance was measured power-on round an 80-km. triangle, the RF-5 being easily the fastest. The SF-27M demonstrated its climb-glide cruise technique, with 87 m.p.h. glide engine-retracted after climbing power-on at 50 m.p.h.

On Monday morning the weather looked much better for soaring and the organisers set a 56-km. out-and-return, in which I was to share an SF-25B Falke with Christian Gad, Scheibe's demonstration pilot and son-in-law.

After accounts of the internationals, a 56-km. task must sound quite pathetically easy, but when the outward leg is set into a 15-knot wind and most of the competitors have a gliding angle no better than 1:25, the story becomes quite different. We were both determined to stick to the rules, which said we must fly there and back without engine, land and take off again and repeat the task without power. Engine start was to mean the equivalent of a landing.

We spent some time circling to gain height without the engine (fuel to height was also to be marked), crossed the line at the compulsory 800 metres, and were soon in a large thermal giving 1½-2 m. lift with a gaggle of others. I was surprised to see an RF-3 circling happily above us with engine off, and although we were catching him slowly, he reached cloudbase before us and was away. We set off behind an SF-27M, which flew straight ahead, scorning to do any more than reduce speed in thermals, and was soon lost to sight. We had almost been blown back to the start line by now, and our next glide took us over the town of Ebermannstadt, where a very blue swimming pool seemed to remain for hours in the same place below us.

The cross-country speed of a two-seater glider when the flying is shared between both pilots relates to the lowest level of confidence of the two. When there was any doubt whether we should go straight or deviate from course to a likely cloud, we deviated; when it was a question of a few more turns in weak lift to reach cloudbase or to press on, we always took the few more. After one hour we had gone halfway—there were no other gliders in sight and conditions were getting worse. Morale was low.

Suddenly we ran into 3 metres lift and the autobahn marking the turning point was in sight. We daringly flew straight ahead along a cloud street and there was strong lift all the way. On rounding we were heartened to see other gliders *behind* us. Little did we know that they were on their second trip!

Morale now high, we topped up with some more height and still more daringly set off to see if we could reach base in a straight glide. Having no calculator, but with a 15-knot wind behind us, it was clear long before the sum had been worked out that we would get back easily. Somehow it seemed wrong to have fought for 1 hr. 42 min. to do 28 km. and then be able to get back without effort. The speed went up to 60 knots, then on to 70, 80 and finally, with Christian pulling hard on the propeller brake, we were doing 100 knots—actually keeping up with an SF-27M on his final glide. This was it! We were really in the race.

All of a sudden the wire broke and the propeller spun madly. I had to reduce speed rapidly to keep engine revs within limits. At a subdued speed we completed our circuit and landed. The return trip had taken 23 min. We shouted a greeting to the SF-27M pilot. A shock for us—he had done two trips to our one, 45 min. for the first and 42 min. for the second.

Our second attempt got us to the other side of the valley before thermals stopped for the day, and we retrieved ourselves by air from 300 ft. over a wood.

The RF-5 flew back to Cologne on Monday morning. A Czech delegation showed pictures of a powered version of the Blanik with pylon-mounted 3-cylinder JAWA two-stroke engine. This will be available as an add-on to existing Blaniks.

The main impression we brought back is that motor gliders in Germany and Austria are now accepted by both authorities and pilots, and that their numbers will now rapidly increase. As reported in the October issue of S. & G., a 537-km. flight on a SF-27M has been accepted for a Diamond badge, and three motor gliders flew in the German Nationals (one *hors concours*), one SF-27M finishing 21st out of 44 Standard Class gliders.

NATIONAL ENTRY LIST FOR 1969

THERE will be a total of 80 places in National Competitions in 1969, 40 places in the Open (Lasham, 17th-26th May) and 40 places in the Standard-Sport (Dunstable, 7th-15th June). If either of these competitions is over-subscribed, entry will be controlled by the 1969 Nationals Entry List, rules for the compilation of which were published in SAILPLANE & GLIDING, August-September, 1968. The first 158 names on this list are given below: pilots who believe their rating scores to be wrong should write to the Flying Committee, British Gliding Association, Artillery Mansions, 75 Victoria Street, London, S.W.1, giving details of competition flown in, in 1967 and 1968.

In the following list, column 1 gives pilots' order of ranking for entry into 1969 Nationals, column 3 gives pilots' end-of-1968 rating points and column 4 gives details of the 1968 competitions which have been used to arrive at these points. The key to the symbols in column 4 is as follows (1968 competitions throughout):

O—Open
S—Sport
A—Bicester, Heat Size 38
B—Nympsfield, Heat Size 23
C—Wycombe, Heat Size 22.9
D—Lasham, Heat Size 21
E—Dart Comps., Heat Size 17.57
F—Northerns, Heat Size 13
X indicates that the pilot flew in a competition in 1967 but did not compete in Nationals in 1968 nor improved his position by competing in a Heat in 1968 (hence points remain the same as at the end of 1967).

Numbers after the above letters in column 4 indicate pilot's final placing in the relevant competition *after* the operation of Rule 3(a)(v) of the Entry Selection System if applicable.

"Heat Sizes" have been adjusted in accordance with Rules 3(a)(v) and 3(b)(ii) of the Entry Selection System.

Pos.	*Name*	*Points*	1968 *Comp.*
1.	Burton, G. E.	835.0	X
2.	Delafield, J.	804.0	O.1
3.=	Cardiff, J. D.	763.9	S.3
3.=	Strachan, I. W.	763.9	S.1
5.	Goodhart, H. C. N.	762.0	X
6.	Burns, Anne	738.0	O.
7.	Tanner, L. E. N.	719.0	S.2
8.	Deane-Drummond, A. J.	715.0	S.5
9.	Gough, A. W.	714.0	O.5
10.	Wheeler, J. H.	704.0	S.4
11.	Greaves, C. M.	703.6	O.2
12.	Hanneman, P.	695.0	X
13.	Carrow, D. D.	690.0	X
14.	Garrod, M. P.	674.0	O.9
15.	Williamson, J. S.	653.0	O.13
16.	Scott, P. M.	641.0	O.3
17.	Withall, C. L.	630.0	O.4
18.	Slater, T. W.	618.7	O.11
19.	Atkinson, G. B.	618.1	S.8
20.	Innes, D. S.	618.0	S.13
21.	Watson, C. W. D.	615.2	A.1
22.	Bentson, C. W.	612.4	S.7
23.	Goldsborough, J. B.	612.3	B.1
24.	Shephard, E. G.	612.2	S.6
25.	Wilkinson, K. G.	612.1	C.1
26.	Dimock, H. R.	612.0	O.6
27.	Foot, R. A.	611.9	D.1
28.	Smith, N. W.	611.8	S.10
29.	Plumb, F. A.	607.9	A.2
30.	Jones, R.	604.0	O.10
31.	Bird, M.	600.8	E.1
32.	Zotov, D. V.	597.6	S.14
33.	Blake, K. W.	596.5	F.1
34.	Harrison, K.	595.3	S.9
35.	Stanley, J. H.	595.2	A.3
36.	Hood, L. S.	595.0	S.11
37.	James, P. W.	594.9	B.2
38.	Smith, M. J.	594.8	O.7
39.	Davies, S.	593.9	C.2
40.	Ellis, J. J.	593.0	S.21
41.	Ince, D. H. G.	590.8	D.2
42.	Kahn, W. A. H.	589.0	X
43.	Livesay, M. H.	587.0	A.4
44.	Donald, C. C.	585.0	O.21
45.	Watson, A. J.	584.0	B.3
46.	Goldney, P.	583.0	S.12
47.	Keogh, B.	576.0	C.3
48.	Lovell, C. D.	569.0	X
49.	Orme, H.	567.0	A.5
50.	Wills, T. J.	565.0	X
51.	Brisbourne, R.	563.0	D.3
52.	Fitchett, B.	561.0	O.15
53.	Cousins, R.	556.7	F.2
54.	Burgess, P. G.	552.4	O.14
55.	St. Pierre, A. H. G.	550.1	A.6
56.	Williams, P. W.	547.8	S.18
57.	Day, C. G.	547.7	E.3
58.	Lilburn, D. W.	547.6	S.19
59.	Pennycuick, C.	546.0	B.4
60.	Fielden, J. S.	544.4	S.15
61.	Seth-Smith, M. P.	539.2	C.4
62.	Wills, P. A.	534.0	X
63.	Hanson, D. F.	532.3	A.7
64.	Zealley, T. S.	530.6	O.8
65.	Jerzycki, E.	530.3	D.4
66.	Newall, R. W. B.	530.0	S.24
67.	Morrison, S. A. J	528.5	A.8
68.	Kearon, N. W.	527.0	X
69.	Smoker, J. L.	526.5	B.5
70.	Robinson, E. J.	526.0	S.16
71.	Jeffries, J. R.	525.2	C.5
72.	Dunn, R. A. E.	524.3	S.25
73.	Stevenson, J. N	524.1	F.3
74.	Hale, R. J.	528.3	S.23
75.	Waller, F. F.	520.9	A.9
76.	Willson, B. J.	518.0	X
77.	Watson, B. B. C.	517.8	D.5
78.	Pozerskis, P.	517.6	S.17
79.	McMullin, T. A.	517.1	B.6
80.	Somerville, A.	516.6	S.21

81.	Wills, S. B.	514.8	C.6
82.	Redman, S. J.	513.0	O.22
83.	Staines, R.	511.0	A.10
84.	Lane, P. D.	509.0	X
85.	Warminger, A. H	508.5	E.5
86.	Carr, V. C.	508.0	O.18
87.	Paddick, G. R.	500.5	D.6
88.	Brownlow, B.	493.0	O.12
89.	Welsh, J. H.	491.0	A.11
90.	Bridson, D. S.	489.0	X
91.	Findon, J. A.	487.5	B.7
92.	Wilkinson, N. A.	486.0	O.20
93.	Brook, G. F.	479.8	F.4
94.	Johnson, M. W.	473.6	O.27
95.	Stoddart, R. C.	473.4	C.7
96.	Feakes, R.	473.2	O.19
97.	Evans, J. A.	473.1	A.12
98.=	Scarborough, G.	473.0	X
98.=	Przewlocki, J. K.	473.0	E.6
98.=	Barrell, G.	473.0	X
101.	Marriott, S. H.	469.5	A.13
102.	Simpson, C. R.	466.0	0.23
103.	Marlow, T. W.	459.5	B.8
104.	Neilson, P. J.	453.0	X
105.	Buckley, Phillipa	452.6	C.8
106.	Ellis, C. A. P.	452.2	S.26
107.	Hogg, H. J.	450.6	A.14
108.	Purdie, P. G. H	449.0	O.17
109.	Stark, E.	446.3	D.8
110.	Shepard, F. W. L.	443.6	S.30
111.	Tull, V. F.	443.3	F.5
112.	Neaves, R. A.	443.0	X
113.	Smith, R. J.	442.1	B.9
114.	Austin, D. G.	441.2	S.31
115.	Grenet, P.	441.1	C.9
116.	Wills, C.	441.0	O.24
117.	Medland, M. R.	440.0	A.15
118.	Morgan, K. C.	439.0	S.36
119.	Kerridge, D. C.	431.5	E.7
120.	Frank, L.	424.0	O.—
121.	Lyndon, R. J.	421.0	A.16
122.	James, D. B.	418.0	O.25
123.	Cole, R. T.	416.7	D.9
124.	Riddell, D. M. R.	415.4	S.—
125.	Pope, M. H. B.	413.7	B.10
126.	Bacon, G. McA.	412.0	O.—
127.	Barrows, J.	408.6	C.10
128.	Dobson, B. F.	405.2	S.28
129.	Bobbin, T. G.	404.1	A.17
130.	Meddings, E. J.	403.0	X
131.	Prestwich, R. H.	398.0	E.8
132.	Neumann, G. S.	393.0	X
133.	Honey, M.	392.9	F.6
134.	Paul, I.	392.8	S.33
135.	Bowley, D.	391.9	A.18
136.	Kronfeld, J. R. W.	391.0	0.28
137.	Gee, M. I.	382.2	D.10
138.	Watson, Patricia	373.4	S.37
139.	Hill, M. B.	369.4	B.11
140.	Whiffen, A. H.	365.4	S.35
141.	Knipe, F.	365.2	C.11
142.	Simons, M.	365.0	X
143.	Maltby, H. W.	364.0	A.19
144.	Ismail, A. D.	363.0	X
145.	Aldridge, K. R.	361.0	E.9
146.	Stone, A. J.	359.0	O.35
147.	McBroom, G. P.	357.0	B.12
148.	Scallon, D. P. L.	355.0	X
149.	Stenhouse, A.	352.0	C.12
150.	Wills, S. F. E.	349.0	X
151.	Shipton, Pamela	348.5	A.20
152.=	Stafford Allen, R. C.	348.0	X
152.=	Hatch, D.	348.0	F.7
152.=	Bailey, N. L.	348.0	X
155.	North, E. A.	347.5	A.21
156.	Corbett, T. W. E.	347.0	X
157.	Macdonald, A.	346.5	C.13
158.	Purnell, A. D.	346.0	X

POLISH GLIDERS

FOR HAPPIER, SAFER GLIDING

HERE ARE JUST TWO GLIDERS—BOTH DESIGNED FOR PERFORMANCE FLIGHTS UNDER VARIOUS ATMOSPHERIC CONDITIONS.

SINGLE-SEATER, FOKA 4 is built to conform with the standard class of OSTIV, and is designed for performance flights under any atmospheric conditions.

Wing span: 15 metres. Aspect ratio: 18.5. Best gliding ratio: 34

Never exceed speed: 260 kilometres per hour. Flying weight: 386 kilogrammes.

TWO-SEATER, BOCIAN

Due to its many flight qualities under varying thermic conditions, Bocien is suitable for all types of performance flights. The pilots' seats are in tandem, and there are coupled control columns, which make the glider ideal for basic training.

Wing span: 18 metres. Aspect ratio: 16.5. Best gliding ratio: 26

Never exceed speed: 200 kilometres per hour. Flying weight: 525 kilogrammes.

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COMPETITION SCORING AND HANDICAPPING

By GERRY BURGESS

THE welcome introduction of handicapping to all British competitions has virtually put paid to any possibility of introducing a Wallington type of method of scoring our future competitions; our refined handicap percentages cannot be applied to placings.

The particular advantages claimed for a placing system were its simplicity and its tendency to produce a final placing list which was similar to that provided by conventional scoring methods. Having had a hand in scoring two competitions this season (and having given up at an early stage trying to check scores when competing in two others), I can well understand the search for a simpler system. Few would argue with the suggestion that our scoring system is complicated, but most would agree that it is reasonably fair in its results.

How can our scoring system be simplified and yet be acceptable to competition pilots (and perhaps even professional statisticians)? With the possible exception that we might consider dropping X from *all* tasks, the present method of scoring distance tasks can hardly be improved, but this is not so in the case of speed tasks, the scoring for which is tedious and complicated. The following simplifying changes are therefore suggested:

(a) Let us stop squaring the speed.
(b) Use elapsed time in minutes and decimals for calculating finishers' speed marks.
(c) Let maximum speed marks awarded to the winner always be 1000.
(d) Distance marks to be scored by non-finishers only.
(e) Distance marks for the whole course (L—X) to be equal to the marks scored by the slowest finisher.
(f) Retain Y for purposes of determining maximum daily points.

The suggested formulae would then be:

For gliders which complete the course,

$$\text{marks} = \frac{1000\ E}{e}$$

For gliders which do not complete,

$$\text{marks} = \frac{Z(L-R-X)}{L-X}$$

Where E is elapsed time of fastest glider
e is elapsed time of glider considered
Z is the lowest value of $\frac{1000\ E}{e}$
L, R, X have the same meaning as given in the BGA Competition Handbook.

If the above method is applied to the 1968 Open Nationals at Husbands Bosworth, the final unhandicapped placing list is substantially the same as that obtained by the present BGA system.

Present BGA system:
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14.
Proposed system:
1, 2, 3, 5, 4, 6, 7, 9, 10, 11, 13, 8, 14, 12.

The worst anomaly (if it is an anomaly) which arises using this speed scoring system would occur when very

few gliders finish a race in vastly different elapsed times. For instance, if only two gliders finished, one taking twice as long as the other, and the nearest non-finisher landed just short of the goal, scores would be (40 competitors, 1000 points day):

	1st	2nd	3rd
Present BGA system	1000	963	949
Proposed system	1000	500	499

In practice, this sort of thing does not seem to occur. A check of races in League 1 since 1961 in which between two and ten gliders finished shows that on average the slowest finisher took 1¼ times as long as the fastest (range: 1.33 to 1.67, seven races relevant).

Actual differences in scores would thus more typically be:

(a) Husbands Bosworth, Open 1968, race to Nympsfield (four finished):

	1st	2nd	3rd	4th	5th
Present system	846	818	816	804	689
Proposed system	846	710	706	638	586
Speed (km.h.)	81.8	68.8	68.2	61.7	(—)

(b) Husbands Bosworth, Open 1968, race to Sandiacre, etc., and return (23 finished):

	1st	12th	23rd	24th
Present system	1000	758	523	334
Proposed system	1000	795	524	510
Speed (km./h.)	75.8	60.3	39.6	(—)

(c) League 1, 1963, race to Chivenor (28 finished):

	1st	7th	14th	21st	28th	29th
Present system	1000	850	756	713	629	252
Proposed system	1000	887	806	769	685	582
Speed (m.p.h.)	71.1	63.0	57.3	54.6	48.7	(—)

These three sets of results demonstrate the comparatively little difference which dropping speed-squaring makes, and also give an indication of the improved continuity in points scored by the nearest non-finisher relative to the slowest finisher if distance marks are scored in the manner proposed.

All the foregoing has referred to unhandicapped scoring. Our present method of applying handicap percentages is built into the scoring system in such a way that it can often be unfair. Take the following cases:

(1) Two gliders out of 40 complete a race in the same elapsed time, one glider has a 90% handicap, the other 100%. Under the present handicap scoring system the 100% glider scores 1000 marks, the 90% glider scores 990 marks, an effective handicap ratio of 100 to 99 instead of the 100 to 90 which one might expect.

(2) As (1) but a further 20 gliders complete the race at slower speeds: the scores of the 100% and 90% gliders first considered now become 1000 and 896 marks respectively, i.e., much closer to the result which might be expected.

(3) Assume eight out of 40 gliders, each with 80% handicaps, have completed a race and that 31 others have landed short. One glider, handicap 100%, is still airborne within gliding distance of the goal. The pilot knows he has taken about twice as long as the winner and that therefore if he lands at the goal he will score about 860 marks (he always carries a slide-rule in the cockpit and his crew work in Intelligence). Being a clued-up pilot, he also knows that the absurdities of our handicap system are such that if he lands just short of the goal he will score 999 marks instead of the 860 marks for finishing . . . ridiculous!

There seems to be a very simple answer to all this (provided we stop squaring the speed) and this is to work out scores *unhandicapped* and then simply apply the relevant handicap per-

centages to produce handicap scores. There is only one snag about this: we still have a system of Rating points governing entry into Nationals and so, for National Competitions only, it would be necessary to apply the handicap percentages in such a way that parity is maintained between the Open and Sport Classes. The following method is suggested:

1. Open Class Nationals

(i) Let 80% be taken as a "handicap factor" of 1000 (ie., BS-1, Diamant 18, etc.).

(ii) Other gliders in the Open Nationals would be given "handicap factors" in proportion, e.g., Dart 17 at 90% handicap would be given a "handicap factor" of $90\% \div 80\% = 1.125$. Ka-6E at 96% handicap would be given a "handicap factor" of $96\% \div 80\% = 1.200$. And so on for all gliders in the competition.

2. Sport Class Nationals

(i) Let 90% be taken as a "handicap factor" of 1000 (i.e., Dart 17).

(ii) Other gliders would be given "handicap factors" in proportion, e.g., Ka-6E would be given a "handicap factor of $96\% \div 90\% = 1.067$. And so on for all gliders in the competition.

3. Method of applying Handicap Factors

(i) Calculate unhandicapped scores using the method suggested in this article.

(ii) To calculate handicap score for a particular glider, simply multiply unhandicapped scores by the glider's "handicap factor". Occasionally, scores of over 1000 will result, but this is not the end of the world.

If this method of applying handicap percentages is used in conjunction with the scoring system suggested in this article for arriving at the handicap placing list for the 1968 Open Nationals at Husbands Bosworth, the final placing list is substantially the same as that produced by present scoring and handicapping methods:

Present BGA methods:
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
Proposed methods:
1, 2, 4, 5, 3, 6, 8, 9, 7, 10, 12, 11.

At the beginning of this article I suggested that we might consider eliminating X from our scoring system. We are all aware that X is supposed to represent the glide distance which can be achieved

from the competition launch height of (normally) 2,000 ft. I should like to suggest that we drop X altogether: the adoption of the following would help to reduce the necessity for retaining X:

(a) Launch height should *generally* be 1,600 ft. instead of 2,000 ft. (Added advantages: quicker turn-round of tugs, safer in many weather conditions such as 2,000 ft. cloudbase or 1,600 ft. inversion; cheaper.)

(b) No relight permitted after a second outlanding.

(c) Last launch to be set at, say, 4 p.m. instead of the 6 p.m. normally adopted. (Added advantages: less frustration for start-line and finish-line observers and competition organisers in general; some pilots other than John D. (perhaps!) and some crews would welcome this change also.) Actual time of last launch would, of course, be at the discretion of the Competition Director and would depend on weather of the day, etc.

(d) All pilots having a contest launch who do not exceed 20 km. along the course will be assumed to have landed at a point 20 km. along the course (i.e., the minimum value of L—R will be 20 km. and the length of the course for scoring purposes will be L and not L—X).

If simplification of scoring methods on the lines suggested above is adopted, the end results will be much the same as those obtained by our present complicated methods, and the necessity for competition computer time will also diminish.

And a good thing too!

A STANDARD CLASS CIRRUS

MARTIN SCHEMPP sends news of a 15-metre version of the Cirrus being produced by the Schempp-Hirth firm.

It is of glass-fibre and plastic foam sandwich construction, as the present Cirrus. The wing, though similar in plan, has a slightly more noticeable dihedral angle, and other obvious differences are a slight sweepback of tail surfaces and rudder, and, above all, a T-tail (the Cirrus started with a V-tail, which was soon changed to the conventional type).

The machine will be supplied with either fixed wheel or retractable wheel.

Martin Schempp writes that the prototype is expected to fly in February, 1969, and that the firm hopes to start series production in the middle of next year.

Technical Data

Span, metres	15
Wing section	Wortmann
Wing area	sq./ft. 109
Empty weight	lbs. 419
A.U.W.	lbs. 728
Glide ratio at 48½ kt.	1:37
Never-exceed speed, kt.	119
Min. sink at 38 kt., ft./sec.	1:87

FINAL RESULTS: RAFGSA Bicester 4th-13th September
Open Class

Pilot	*H'cap %*	*Sailplane*	1 1000	2 860	3 1000	4 1000	5 1000	6 1000	7 1000	*Total Points*
1. C. W. D. Watson	100	Ka-6CR	1000	485	931	859	1000	556	1000	5831
2. F. A. Plumb	96	Ka-6E	957	154	1000	927	837	908	860	5643
3. J. H. Stanley	98	Skylark 4	817	714	888	931	644	583	801	5378
4. M. H. Livesay	100	Skylark 3	724	650	812	923	617	981	649	5356
5. H. Orme	96	Ka-6E	882	73	951	785	765	740	891	5087
6. A. H. G. St. Pierre	96	Ka-6E	124	596	951	1000	483	926	922	5002
7. D. F. Hanson	96	Ka-6E	747	294	973	745	483	766	794	4802
8. S. A. J. Morrison	96	Ka-6E	271	596	900	64	881	1000	870	4582
9. F. F. Waller	100	Ka-6CR	127	860	893	690	550	583	796	4499
10. R. Staines	96	Olympia 419	572	222	951	899	580	380	780	4384
11. J. H. Welsh	96	Ka-6E	808	341	951	870	580	730	0	4280
12. J. A. Evans	96	Olympia 419	705	749	750	870	798	–	–	3872
13. S. H. L. Marriott	80	SHK	624	137	660	912	518	163	586	3600
14. H. J. Orme	96	Olympia 419	220	514	900	490	726	0	662	3512
15. M. R. Medland	96	Ka-6E	69	111	896	747	0	582	649	3054
16. R. J. Lyndon	100	Ka-6CR	102	135	327	901	577	731	254	3027
17. T. G. Bobbin	100	Ka-6CR	306	135	712	318	604	592	295	2962
18. D. Bowley	100	MD-1	945	160	910	170	631	0	0	2816
19. H. W. Maltby	100	Ka-6CR	77	80	743	74	584	731	319	2608
20. Pamela Shipton	100	Ka-6CR	682	70	83	244	248	352	590	2269
21. E. A. North	96	Ka-6E	367	0	299	531	348	438	0	1983
22. T. J. Slack	100	M-100	0	265	118	117	517	46	27	1090
23. C. A. Hayes	100	Javelot	191	30	24	424	0	0	0	669

TASKS: Day 1—90-km. Goal race to Henlow via M1/A45 junction. Day 2—98-km. Out-and-Return via Long Marston sheds. Day 3—316-km. Out-and-Return via Mendlesham A/F. Day 4—79-km. Out-and-Return via Olney Church. Day 5—127-km. Out-and-Return via Cheltenham Racecourse. Day 6—141-km. Out-and-Return via M5/M50 junction. Day 7—95-km. Goal race to Husbands Bosworth via Chipping Norton.

Club Class

Pilot	*H'cap %*	*Sailplane*	1000	1000	1000	280	1000	1000	952	*Total Points*
1. P. J. Kelly	112	Ka-8	840	655	984	157	403	1000	684	4703
2. R. Wishart	112	Ka-8	4	592	966	96	715	1000	858	4231
3. C. J. N. Waller	112	Ka-8	904	602	594	134	992	0	864	4090
4. J. D. Benoist	125	Olympia 2	824	485	251	265	384	927	939	4075
5. M. Wilton-Jones	125	Olympia 2	839	134	493	280	512	860	915	4033
6. L. Barnes	125	Olympia 2	1000	1000	63	153	576	809	13	3614
7. J. Pignot	112	SF-20	4	500	171	200	480	1000	952	3307
8. A. T. Farmer	125	Olympia 2	845	475	317	243	433	305	609	3227
9. J. A. Bennett	125	Olympia 2	850	475	349	169	499	809	12	3163
10. T. R. F. Grant	125	Olympia 2	878	587	1000	164	412	0	1	3042
11. C. Slack	125	Olympia 2	224	885	73	0	1000	–	–	2182
12. J. A. Ellerbeck, Sarah Wilson	125	Olympia 2	521	216	496	74	192	305	7	1811
13. T. R. Cawthorne	125	Olympia 2	54	134	349	10	419	809	7	1782
14. T. J. Thomas	108	Skylark 2	107	93	259	126	423	728	13	1749
15. I. L. Smith	108	Skylark 2	523	138	0	79	80	423	1	1244
below 15 (H.C.) R. C. Stafford Allen	114	T-49	566	0	0	3	486	167	0	1222

TASKS: Day 1—58-km. Goal race to Henlow. Day 2—Free Distance. Day 3—134-km. Out-and-Return via St. Neots Cooling Towers. Day 4—60-km. Out-and-Return via Edgehill. Day 5—77-km. Out-and-Return via Moreton-in-Marsh A/F. Day 6—88.5-km. Triangle Silverstone-Edgehill-Enstone-Bicester. Day 7—58-km. Goal race to Husbands Bosworth.

AWARDS—The Geoffrey de Havilland Flying Foundation grants awards every six months to recommended applicants between 17 and 24 years. Latest recipients include Andrew Baker, Wycombe Air Park; Angela Smith, London Gliding Club; and Elizabeth Douglas (second daughter of Ann Welch). The first two are awarded £50 each for a PPL course, and Elizabeth £50 for a Gliding Instructor's course.

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Diamant 18.	£3,050 approx.	Glide angle 1.45 at 55 kts.

The superb finish and camber changing flaps give the highest inter-thermal speeds plus the ability to climb with the best.

We were so sure of the superiority of DIAMANTS that we reserved last year a large quota for delivery in January 1969.

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KRONFELD DIARY

First Wednesday each month at 8 p.m.

Dec. 4 Ken Owen will talk Around Computers
„ 18 CHRISTMAS PARTY
Jan. 1 The Battle of Britain film—in the making. By John Blake.

AVIATION ART SOCIETY

THE ninth Aviation Art Exhibition was held in the Kronfeld Club from 6th-19th November, when over 80 paintings on all aviation subjects were exhibited. The special section this year was for the best painting of a Tiger Moth, and the Harry Cooper Memorial Trophy awarded for the first time went to Gerald Coulson as winner of this section. Winners are as follows:

The "Flight" Tankard — for the best overall exhibit by a professional artist, to Michael Turner; 2nd, Roy Nockolds; 3rd, Roger Steel.

COMMENDED—Gerald Coulson.

The Kronfeld Challenge Trophy—for the best overall exhibit by a non-professional artist, to Norman Hoad; 2nd, Edmund Miller; 3rd, Brian Withams.

The Gliding Prize—for the best painting of a gliding subject by a professional or non-professional artist, to Brian Withams.

The Water Colour Prize—for the best water-colour by a professional or non-professional artist, to Kenneth McDonough.

COMMENDED—John Palmer.

Best First Entry—Edmund Miller.

Among the photographs on the centre pages are the winning paintings by Roy Nockolds, Gerald Coulson and Brian Withams.

If you did not have a chance to get along to see this exhibition, many of the paintings are still on view at the Kronfeld Club and the Society is, of course, always prepared to arrange special commissions by its members at roughly catalogue prices, which range from ten guineas upwards.

All enquiries should be addressed to the Hon. Secretary, Mrs. Y. Bonham, 11 Great Spilmans, Dulwich, London, S.E.22. Telephone 01-693 3033.

GLIDING CERTIFICATES

DIAMOND GOAL

No.	Name	Club	1968
2/269	A. R. B. Hyde	Cornish	30.12.67
2/270	K. G. Wilkinson	Airways	12.4
2/271	T. J. Thomas	Heron	5.5
2/272	B. F. Dobson	Bicester	5.5
2/273	R. Bradley	S. Command	12.4
2/274	D. C. Stevens	Surrey & Hants	28.7
2/275	R. L. Fortescue	Cambridge	19.6
2/276	M. I. Gee	Surrey & Hants	9.6
2/277	J. H. Blackmore	NAE AC	28.7

GOLD C COMPLETE

No.	Name	Club	1968
207	M. I. Gee	Surrey & Hants	9.6
212	A. R. B. Hyde	Cornish	30.12.67
213	K. G. Wilkinson	Airways	12.4
214	B. F. Dobson	Bicester	5.5
215	D. Innes	Moonrakers	5.5
216	J. H. Blackmore	NAE AC	28.7

GOLD C HEIGHT

Name	Club	1968
P. H. Guest	London/Essex	24.1
N. J. Paine	Thames Valley	9.3
J. E. Rouse	Thames Valley	11.3

GOLD C DISTANCE

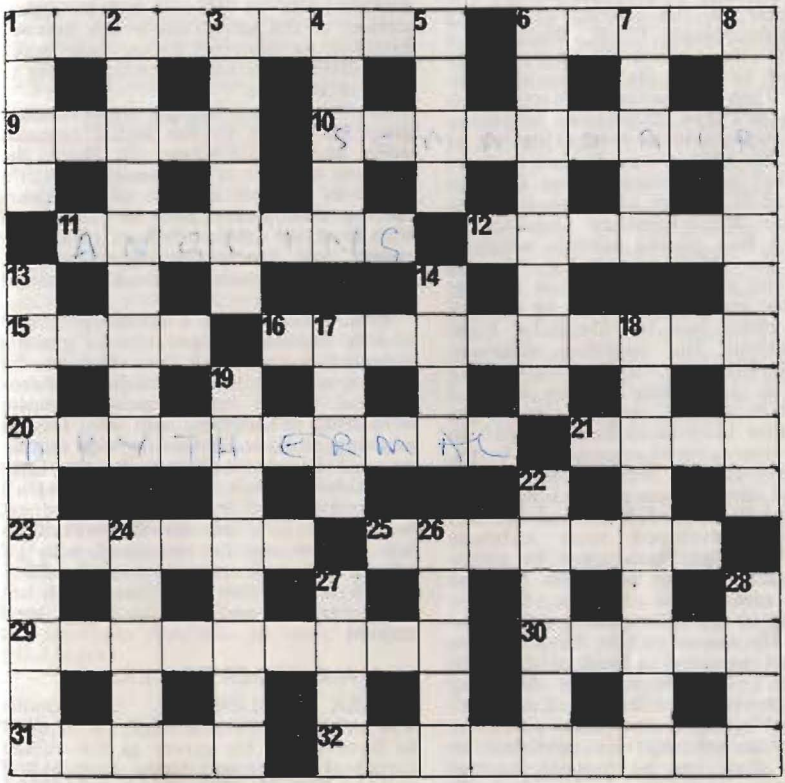
Name	Club	1968
T. J. Thomas	Heron	5.5
R. Bradley	S. Command	12.5
D. C. Stevens	Surrey & Hants	28.7

SILVER C COMPLETE

No.	Name	Club	1968
2274	F. Bell	Devon & Somerset	12.5
2275	A. Fidler	Perkins	5.7
2276	Miss M. Paul	Burton & Derby	5.7
2277	G. J. Knight	London	6.7
2278	P. A. G. Leach	London	5.7
2279	N. Hook	Eagle	23.6
2280	D. J. Robertson	Bicester	9.6
2281	J. M. George	Cambridge Univ.	4.7
2282	R. R. Hawkes	Lakes	7.7
2283	D. A. Pretlove	Two Rivers	12.4
2284	A. Twigg	Fenland	2.6
2285	A. N. McPhaden	Surrey & Hants	19.6
2286	J. P. Martin	USA	21.6
2287	D. J. Edwards	Mendips	26.7
2288	A. C. Parrott	Dorset	28.7
2289	D. Richardson	Coll. of Aero.	28.7
2290	N. Rabouhans	Cotswolds	27.7
2291	A. L. Thurlow	Thames Valley	28.7
2292	M. Gay	Cotswolds	28.7
2293	M. J. Conway	Bristol	2.8
2294	A. E. Carr	Kent	21.7
2295	D. M. Ward	Clevelands	7.4
2296	E. Drummond	Eagle	28.7
2297	Z. B. Czarnecki	Moonrakers	23.7
2298	Miss E. Wiltshire	Bath & Wilts	28.7
2299	K. G. Counsell	634 G.S.	7.8
2300	E. A. Perry	Bicester	12.8
2301	J. H. Tucker	Southdown	13.4
2302	G. P. Copping	London	6.5
2303	W. J. White	RAE	5.7
2304	M. B. Stevens	Coll. of Aero.	12.8
2305	M. R. Shelton	Burton & Derby	18.8
2306	J. H. Ellis	Coventry	18.8
2307	I. Hammond	Portsmouth Naval	18.8
2308	T. Heaslip	Ulster & Shorts	10.8
2309	G. H. Bennett	Coventry	18.8
2310	M. J. Bell	Phoenix	20.4
2311	J. R. R. Brewer	Cornish	18.8
2312	D. Murcott	2 G.S.	24.4
2313	R. Barnes	Anglia	25.8
2314	V. Lawson	Northumbria	20.8
2315	I. A. Ronald	Imperial College Newcastle & Teesside	22.8
2316	D. Harker	SGU	18.8
2317	A. Shelton	SGU	18.8
2318	J. H. Bryson	Ulster & Shorts	5.8
2319	N. A. J. Antrobus	Surrey & Hants	6.7
2320	F. A. Woods	London	21.8
2321	A. Abbs	Imperial College	9.9
2322	C. J. Gowthorpe	Yorkshire	18.8
2323	R. A. Huck	Surrey & Hants	3.9
2324	L. Dawson	Dorset Flying	11.9
2325	P. A. Jones	Moonrakers	5.7
2326	R. C. M. Collinson	Bicester	22.9

CHRISTMAS CROSSWORD

By PHILIP and JUSTIN WILLS



ACROSS

1. Test-team finds these means of transport disturbing. (5-4)
6. Elemental groan. (5)
9. Rerig Derig (5)
10. Two of the three means of transport. (3-3-3)
11. Not a straight sport. (7)
12. Associate editor! Come to my bathroom! (6)
15. Milton said 22 served like this. (4)
16. Lightning conductor, or rate-fixer. (6-4)
20. Tonic for pilots. (3-7)
21. See 13 and 19. (4)
23. Get that extra energy! (6)
25. Non-U to smoke in Havana with this. (7)
29. Many think gliders aren't, but airships are. (9)
30. Dangerous low seat. (5)
31. Result. (5)
32. Return the maid and steer off. (9)

DOWN

1. Is the Post Office putting its head in the clouds? (4)
2. On side in a mix-up. (9)
3. A horse in a hurricane is not alone. (6)
4. Thermal creation. (5)
5. Knocks up. (4)
6. Declare with some weight. (8)
7. Serious excavation. (5)
8. It took one to beat us. (6-4)
13. Stringy 21. (4-6)
14. A beam. (4)
17. Everyone's Aunt Sally. (4)
18. Release latent heat. (9)
19. Alphabetical 21. (8)
22. Exhortation to waiters. (3-3)
24. Nagging instruments. (5)
26. Town which clearly doesn't take the pill. (5)
27. Insert the fifth letter in place of the third, and drop off. (4)
28. The Prince warns against flying into the unknown. (4)

OBITUARY

WALTER GEORGII

PROFESSOR GEORGII was the pioneer of the science of soaring flight meteorology—C. E. Wallington's book on the subject is appropriately dedicated to him. He got involved in gliding when the series of meetings on the Wasserkuppe mountain, beginning in 1920, were held to develop the art of soaring. By 1924 it was decided to form a national organisation to run German gliding, with Georgii at its head; it was called the Rhön-Rossitten Gesellschaft, after the two gliding schools which it ran in the Rhön Mountains (Wasserkuppe) and at Rossitten in East Prussia.

Another institution headed by Georgii in the 1930s was the Deutsche Forschungsinstitut für Segelflug (German Research Institute for Soaring Flight), housed in a building on the edge of Darsmstadt airfield, and he lent some of its office accommodation and staff to run the international organisation ISTUS, forerunner of the present OSTIV. This DFS did much meterological research, especially into thermals around the airfield, and developed some sailplane types. When the Nazis came to power and expected every institution to send them a message of welcome, Georgii, according to my information, refused to do so. He ceased to be head of the RRG but remained as head of the DFS.

Georgii's first book, "Der Segelflug und seine Kraftquellen im Luftmeer" (Soaring Flight and its Sources of Power in the Atmosphere), was published in 1922; at that time he thought thermal soaring was impracticable (see *S. & G.* February, 1964, p. 15). A few years ago he published a much more comprehensive book on Meteoroligy for Soaring Pilots, in which he said that all the sources of lift have now been discovered (though curiously he omitted the seabreeze front).

For those curious to know what Georgii did before gliding "got" him, there is his autobiography, "Forschen und Fliegen", published in 1954. He was a meteorologist in the German Air Force during the first world war, where they dubbed him "ii' (pronounced "eeee"). He describes a situation in the Middle East where German and British air bases were not far apart and their pilots observed the utmost chivalry towards each other (the German C.O. suggested a social meeting on neutral ground but the British C.O. turned it down). Later he became meteorological adviser to the squadrons which bombed London; he describes an occasion when they disregarded his advice and came to grief in a storm.

In this book, Georgii unfortunately gives no details of the actual research done at the DFS, nor is there the slightest mention of his family, though a photo of himself and his wife appears on the dust jacket, and he has a son who took up another branch of meteorology and recently attended a symposium at Imperial College on cloud physics.

Prof. Georgii was a strong promoter of international co-operation in gliding. Soon after the BGA was formed, he came over to lecture to the Royal Aeronautical Society on the past ten years of soaring in Germany, and went around advising on sites—it was he who recommended Dunstable Downs to the London Gliding Club. He turned up at all the international meetings he could get to, and if you introduced yourself to him, you would be welcomed with an affectionate arm round your shoulder. But in the last few years his health became variable and he was rarely seen around.

ALEXANDER SCHLEICHER

ALEX SCHLEICHER, the famous sailplane manufacturer, is reputed to have begun his career as the village carpenter of Poppenhausen, down in the valley below the Wasserkuppe. When he looked up and saw gliders floating around the skyline, he knew what he had to do with his life. There is a story of a very rough ride he had in the front seat of one of his machines, the first Rhönadler, when Groenhoff, in the back seat, suddenly saw the centre of the wing part company from the four upright struts which supported it above the cockpit, so that it was only held on by the diagonal struts on either side. Meanwhile a happy Schleicher was making entertaining comments on his native landscape below, all oblivious of the ghastly sight just behind his head, where the wing was bobbing up and down in response to every gust.

But Schleicher survived to continue his useful career. His series of machines with names beginning with "Rhön-", which he produced during the 1930's to the designs of Hans Jakobs, became popular throughout the world of gliding, and the post-war "Ka-" series to Kaiser's design had an even greater sale. Gliding has lost a great character.

EDMUND SCHNEIDER

WHEN the popular Grunau Baby first appeared in 1931, it was known as the Schneider Baby. But the improved Mark II, produced the next year, was named after Wolf Hirth's well-known gliding school, near which it was built, and it became almost certainly the most numerous and long-lasting sailplane type ever known—Slingsby made and marketed it, and Elliotts were still turning out virtually the same machine when the design was nearly 20 years old.

After the war, Schneider was persuaded by the Australian gliding people to set up a factory there. In addition to variants of the Grunau, he produced a number of new types designated by local names like "Kookaburra" and "Boomerang", always with type designations "ES" followed by a number. But he became homesick and left to join Wolf Hirth's factory in Germany, leaving his son Harry in Australia to carry on the good work.

A. E. SLATER.

THIRTY YEARS AGO

IN April, 1938, British glider pilots put up 2,046 miles of cross-country soaring within a month—easily a record. It started on Sunday the 3rd, when Philip Wills was trying out his new Minimoa, acquired from Wolf Hirth. Outstanding contributions to this total were made from the Cambridge Club's camp at Huish and Inkpen, south of Marlborough, and an Easter aerotowing meeting at Ratcliffe aerodrome near Leicester. From Leicester, Wills beat his previous record with 110 miles into Gloucestershire, and on the same day Kit Nicholson went 118 miles from Huish to Bigbury-on-Sea. Next day (18th) John Fox flew his Rhönadler 144 miles from Inkpen to Fowey, and on the last day of the month Wills capped this with 209 miles from Heston to St. Austell, thus becoming the third Gold C pilot in the world. Wills put up a new British height record of 10,080 ft. on 5th June.

The Nationals were held that year at Dunstable. One difficulty was to get money from the public who had a free view from the Downs. Ashwell-Cooke, a founder of L.G.C., got some firms to buy the sole rights for selling various commodities on the Downs, which we did not own. On the opening day, Bill Murray and John Sproule set up a world's two-seater duration record of 22 hrs. 13 mins. in a Falcon 3. Cross-country flights included one by "Willie" Watt to the Cazalet family's country seat in Kent; they were out, but the butler took charge of the situation and he was well fed. The longest flight was 106 miles by Kit Nicholson.

* * *

FORTY YEARS AGO

The 1928 German National meeting on the Wasserkuppe, the first one which the writer attended, was notable for the first cross-country flight to be made in lift under cumulus clouds. Robert Kronfeld, in his Rhöngeist (prototype of the Professor, the first quantity-produced high-performance sailplane), went downwind to the Himmeldankberg and then worked his way back under a line of clouds to the Wasserkuppe—the first known use of a cloud street.

A.E.S.

BOOK REVIEW

Sir George Cayley (1773-1857). By C. H. GIBBS-SMITH. A Science Museum booklet. Published by H.M. Stationery Office, London, 1968. Price 3s.

THIS short biography of the inventor of the world's first man-carrying glider is well illustrated with Cayley's own drawings of proposed aircraft—helicopters, rockets and streamlined airships as well as gliders, and "whirling arms" for aerodynamic research. Many of them were rediscovered by the author.

From the facts that Cayley built a 300-sq. ft. glider in 1809 in which a man could do short hops, and yet it was not till 1853 (when he was aged 80) that he produced the machine which first carried a man on a prolonged glide, it seems evident that Cayley would have got much further with aviation if he had not spread his inventive activities over so many other fields in engineering—and also taken up politics. A recent biography (reviewed here in August 1966, p. 309) suggested as a cause that his wife's difficult behaviour towards others distracted him and drove him to much travelling; Mr. Gibbs-Smith, on the other hand, writes that his "happy and lifelong marriage added further security and stability to a background already conducive to contemplation and research."

Oddly enough, Cayley seems never to have conceived the possibility of soaring flight, although he watched the birds assiduously. He realised that a fixed wing was more practical than a flapping wing, but his gliders never had an aspect ratio greater than one, as he considered large-span wings, even if braced, to be "structurally dangerous".

An outstanding feature of this book is the author's meticulous historical accuracy.

A. E. SLATER.

CORRESPONDENCE

PARACHUTE TALK

Dear Sir,

Whilst still on my back in hospital, I wrote you an illegible note to preface Mr. Eastley's excellent article "Parachute Talk" in your last issue.

So I am now on record as believing that an accident caused by inadequate airspeed to cope with unexpected air conditions, leading to a stall, gave me new knowledge. Actually, I knew even before 1st July, 1968, that if you stall your glider low down for any reason, you are in dead trouble! For the word "me" substitute the word "no". Ouch!

It is interesting to note that in the picture in Irving's advertisement published on the same page as their article (p. 372) the pilot's glider harness is fastened over the metal clip of the parachute harness. If the pilot was in his shirtsleeves (which he isn't in this picture), quite a minor accident involving otherwise acceptable deceleration is going to drive the central metal clip of the parachute harness through his chest. I know, because it did—two cracked ribs. Moral, as Mr. Eastley says: a protective pack behind the chest hook.

*E.C.*1.

PHILIP WILLS.

RADIO PROCEDURE

Dear Sir,

As I may have been instrumental in some degree for rule N.M. 7.9 regarding radio procedure during competitions, I feel I must explain the main reasons why the pilot should initiate radio calls (ref. Oct.-Nov. *S. & G.* under "Radio Procedure").

(1) The primary purpose of radio is to advise crews of position and progress.

Only in exceptional circumstances will the crew require to send a message to the pilot (a road accident, for example). To a very large extent, therefore, information is passed from air to ground.

(2) Chatter by pilots is bad enough, but crews are even worse. This was patently obvious during the 1964 Nationals. Undoubtedly there has been some improvement since then, but the proportion of inexperienced radio operators will be far higher amongst crews than pilots.

(3) A pilot has more than enough to do during a cross-country flight, and it could be extremely annoying to have one's concentration broken by a crew pestering for information. The pilot must choose his time to work out his position, decide what he is going to say, and then say it when it's convenient to do so.

(4) The best way to keep radio chatter to a minimum is to transmit "blind". I instruct my crew to reply "Roger Green Flash" if I've been read, and nothing else at all. If I don't get this reply, then I know I'm out of contact and don't attempt a repeat unless the situation is desperate. This should only be necessary once, perhaps twice, during a single flight.

(5) It is the crew's responsibility to keep a constant listening watch, and to position themselves as often as possible in favourable reception areas. I fail to see what use it is to the pilot to know whether his crew is in a favourable spot or not, as if he is faced with an out landing he'll transmit "blind" (if he has any sense) regardless of the circumstances of the crew. I would suggest that the need to call again and again is nearly always unnecessary.

(6) Finally, rule N.M. 7.9 does not categorically ban the initiation of calls by crews. It implies that calls will be made by the pilots, the reverse applying in "abnormal" circumstances.

Hillingdon, Middx. MICHAEL GARROD.

THE REACTIONS OF TOTAL ENERGY SYSTEMS

Dear Sir,

Looking through back copies of *S. & G.* I came across something I must have missed the first time. The article in question is "The Reactions of Total Energy Systems", by E. Dommisse (*S. & G.*, Feb.-Mar., 1968), and the passage I take exception with is the following: "The reaction of the compensator diaphragm must be a function of V^2 if it is to work correctly. This function is obtained from pitot pressure. Unfortunately the expansion of the diaphragm is a function of the square of its elastic resistance, and on test it is found that the diaphragm reaction to pitot pressure is linear and not according to a function of V^2. In this respect we have all slipped up badly, and all systems, including . . ."

Now, I do not pretend to be an expert in board instruments—I only sell and service the things. According to calibration tables, it appears that you are indeed right in stating that the diaphragm deflection is proportional to the pitot pressure change. Taking the case of a compensator for a 425 cc. flask, the figures are 0.7 c.c. deflection for a pressure of 20 mm. water, 1.4 cc. for 40 mm., 2.8 c.c. for 80 mm., and so on to 7.0 c.c. deflection for a pressure of 200 mm. water. Now, surely, Mr. Dommisse, pitot pressure is proportional to the square of airspeed, or am I slipping up badly?

Also, the sailplane at 120 kts. has exactly twice the kinetic energy, and will climb twice as much if pulled up to zero airspeed, as one at 60 kts. Should the compensation be proportional to the square of airspeed, whilst the kinetic energy is proportional to the speed directly?

As regards your statement that the compensated vario reads climb during an abrupt pull-up from 120 m.p.h., something I have observed myself, perhaps this is due simply to the diaphragm having bottomed out at some 80 m.p.h., as you state. If this happens, you have no further compensation effect for the portion between 80 and 120 and if you pull up to a speed of 40, the uncompensated portion accounts for exactly half your gain.

From my point of claiming that kinetic energy is directly proportional to airspeed, it follows that diaphragm deflection should be proportional to that same air-

speed, not to its square, as it appears according to our $P=V^2$ piece. In that case, what happens to the unusable portion of speed below our minimum sink, and what happens to our zero reading system? It would call for a very complicated system of calibrated leaks, or perhaps for an electronic system, such as the one described in a later issue of *S. & G.* We'll soon be devoting more time flying the instruments than flying the sailplane.

As the song says, it's all a compromise.

Toronto, Ontario. V. A. BUDACHS.

POWERED GLIDING—The "Open Sesame"

Dear Sir,

I agree completely with Mr. Warren's letter in S. & G., August issue. Our magazines echo his sentiments also. I recently joined the London Gliding Club and have experienced the conditions he describes. As a guest in your country, I would not criticise your methods.

In America our commercial operators are making progress. The August, 1968, issue of *Soaring* has an article on Holiday Soaring School. I have had considerable experience with the Sky Sailing School in Northern California. We impatient Americans have a small soaring movement basically because we cannot soar instantly. Sky Sailing attempts to solve this as a full-time commercial operation. For an American their prices are very reasonable, $8 for single-seater, $12 for two-seater, and $15 for a three-seater (2-32) plus two charges $3 to $5.

Les Arnold would be glad to use a *licensed* power glider but there aren't any in existence. The other route is club or syndicate operation by amateurs. This has the problems you describe. In addition, Americans do not co-operate as readily as the British do, so we have instability and factionalism in these clubs.

Still another route is a cheap, safe, home-built glider which may have the best hope here for the individualistic Americans. We have another serious long-range problem. How are the glider fields to support themselves? There is not enough income now to do this. We will be moved further and further into the boondocks. Instead of waiting for a glider flight for hours, we will have to drive for hours.

Saratoga, California. EMIL KISSEL.

POWERED GLIDING

Dear Sir,

Recently published letters in SAILPLANE & GLIDING have suggested that:

(a) Too many pundits are trying to keep gliding clean by not accepting the need for a self-launching powered sailplane.

(b) Hanging sundry engines on gliders is the thin edge of the wedge.

Meanwhile, the BGA Motor Glider Committee has come up with its definition of the Purpose of the Motor Glider, the first sentence of which reads: "The motor glider is an aircraft which extends and improves the sport of gliding and does not detract from it."

As an erstwhile gliding instructor and a presently active competition pilot, may I please make the following points:

(a) I whole-heartedly agree with the employment of two-seater motor gliders for training purposes. It makes sense.

(b) I would object strongly to any move to introduce motor gliders into our normal *competitive* gliding. The sport of "motor gliding" is not, and never will be, the same thing as the sport of pure motorless gliding, and I cannot accept the suggestion that having a motor on board would not detract from our competition sport as we know it today.

It is possible that the BGA Committee has not so far considered motor gliders from the point of view of their use in competitions. It is also possible that mine is a minority view. Whatever the case, I hope the BGA will make a thorough sounding of the gliding movement generally before taking under its wing any more than powered glider training.

Marlow, Bucks. GERRY BURGESS.

Advertisements with remittance, should be sent to Cheiron Press Ltd., 5 Crawford Street, London, W.1 (01-935 2814). Rate 1/6 a word. Minimum 21/-. Box numbers 6/- extra. Replies to Box numbers should be sent to the same address.

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GLIDER TRAILER, ex-Ministry, 2-wheeled, internal measurements L. 28 ft. W. 6 ft. 4 in., H. 6 ft. 10 in. plus tailplane additional height. Beautiful condition, £265. Details from: Agricultural Vehicles, Boars Hill, Oxford. Tel. Oxford 39600. Depot: Stanton Harcourt Road, Eynsham, Oxon. Tel. Eynsham 559.

OLYMPIA 2B. Extended canopy, wing roots faired. Much improved performance. Trailer, instruments, barograph, new parachute. £800 o.n.o. Wright, Overton (Hants) 296.

SKYLARK 3B in immaculate condition and not requiring wing modification. Has always been treated with care and affection by owners. Price, together with well-built trailer, £1,250. Walker, "Touchdown", Crescent Close, Olivers Battery, Winchester, Hants. Tel. 4715.

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WEIHE (Bent) Bubble canopy and control cables intact. Synthetic glue. Offers. Wright, Overton (Hants) 296.

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T.21B with C. of A. and nose ballast mod. New fabric. £850 o.n.o. Swallow with C. of A. and complete new fabric. £875 o.n.o. A.F.C., Gliding Section, Booker Airfield, Marlow, Bucks.

BS-1 Glide Ratio 1:45, competition machine, in first-class condition, price DM 29.000 at Ulm. No instruments, no trailer. Offers to Dr. H. Breitenbach, 79 Ulm, Neutorstr. 26, Germany.

SKYLARK 4 No. 30, based at Lasham, 3rd share including trailer, parachute, barograph, oxygen. Wing mod. completed. £425 o.n.o. P. A. Hearne, The Limes, Wateringbury, Kent. Tel. 385.

WEIHE Sailplane for sale. C. of A. to February, 1970. Complete with instruments, parachute and trailer. £495. Horne, Greensleeves, Bramley Corner, Basingstoke, Hants. Bramley Green 420.

Ka-6CR with hinged canopy, fin aerial and canopy port. £1,150. Competition instruments and self-loading trailer also available. To inspect at Dunstable ring 01-950 3824.

LONDON GLIDING CLUB has the following gliders for sale. Capstan £1,150; T-21B, £900; Olympia 2B £580. All machines with basic instruments, current C.'s of A. and in very good order throughout. Details from the Manager, London Gliding Club, Dunstable Downs, Beds. Tel. Duns. 63419.

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1963 SKYLARK 4 in excellent condition, complete with instruments and trailer with wing modifications. £1,400. P. Pozerskis, 22 Kettering Road, Isham, Northants. Tel. day time: Kettering 5552. After 6 p.m. Burton Latimer 2963.

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1969 CALENDARS, featuring 12 full-colour photos of sailplanes by Alex Aldott. $1.50 U.S. Pay by international money order; send address separately. Soaring Society of America, Box 66071, Los Angeles, Calif. 90066, U.S.A.

SKYLARK 3F, Competition No. 180. C. of A. Excellent condition, maintained by B.G.A. senior inspector. No prangs. Birch spar inserts. 650 hours, 350 launches. Fully equipped including transistorised horizon, PZL and audio Crossfell, barograph, oxygen and trailer £1,250. Doug Jones, 24a Goldney Road, Clifton, Bristol 8.

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WANTED: copies of "Flight International" for the whole of 1967. A. E. Slater, 9 Fitzwilliam Road, Cambridge.

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MANAGER, C.F.I.
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Qualifications: Proven management capability, B.G.A. full rating, P.P.L. Salary will be in the range of £1,700 to £2,000 per annum.

Apply to Chairman,
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SURVEY YOUR LIFE ASSURANCE Glider pilot—Life Assurance Consultant will gladly advise pundits. Tel. Wilcox at London NATional 4811.

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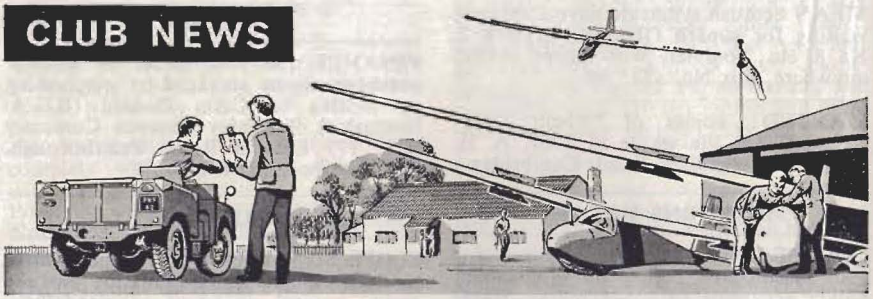
"SOARING"—official organ of the Soaring Society of America. Edited by Bennett Muir Rogers. Address: Box 66071, Los Angeles, California 90066, USA. Subscription: $5.00 outside USA; apply to your post office for a form.

NEW ZEALAND: "Gliding Kiwi" Official Gliding Magazine of the N.Z. Gliding Association. Printed October and alternate months. Write N.Z. Gliding Kiwi, P.O. Box 487, Tauranga, New Zealand. £1-4-0 sterling for year's subscription (inclusive of postage).

CLUB NEWS



REPORTS from those of you living in the extreme west and north of the country indicate a not too bad season, but for the rest of us it has been rather disappointing. We look forward to a brighter 1969 and I take this opportunity of wishing all contributors a Very Merry Christmas.

Copy and photographs for inclusion in the February-March, 1969, issue should reach me, typed double spaced, by the 4th December, and for the April-May issue by the 12th February, to my new address: 11 Great Spilmans, Dulwich, London, S.E.22. Telephone 01-693 3033.

23rd October, 1968.

YVONNE BONHAM (MRS.)
Club News Editor.

BATH AND WILTS

GENERALLY it appeared that this year's thermal season was going to depart without a single good day to gladden the Keevil scene. We were saved from the "slough of despond", however, by the last of our soaring weeks turning out to be the best of the three which we have held this year.

Ron Lynch, who has just been confirmed as our new CFI, declared an out-and-return Gold C attempt to Dartmoor Prison. He didn't make the distance but he did make Gold C height with a climb to 13,000 ft. as a consolation.

Geof. Bailey also thought he had completed his Gold with a good climb but when it was checked against the calibration chart he was just 200 ft. short.

Every one of the four Olympia 463 syndicate members climbed to between 8,000-10,000 ft. on consecutive days.

With the combined Services using our site more and more frequently our feeling of insecurity grows. Committee members have been dashing off to survey various previously unheard of parts of the locale in an attempt to find a suitable site to make our permanent home. So far without success.

K.N.S.

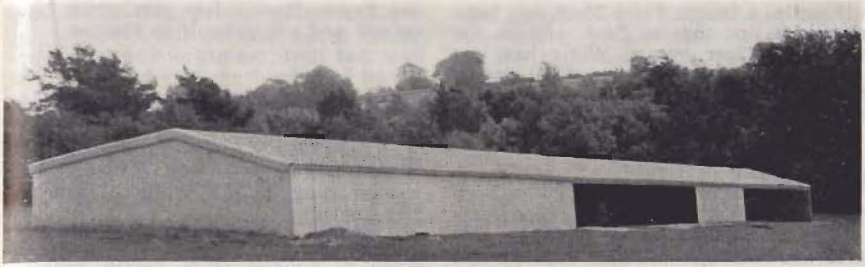
BLACKPOOL AND FYLDE

THE thermals were consistently good this summer, even at weekends, so we have had more long flights than before. Roy Greason got both Bronze legs on one day, within two months of his first solo. Two Silver heights have been confirmed; Tony Kemsley explored what must have been a sea breeze front, while Dick Seed hung on to zero sink at 700 ft. for 20 minutes, when out of it came a strong core which took him into cloud in ten minutes. Dick has just married another club member, Lena Redmayne, and we wish them happiness. Several members have taken gliding holidays and courses at other clubs; Harry Hargreaves flew his Silver distance from Compton Abbas. Back at home Rob Booth, Harold Turner and Eric Ripley have gone solo. Training launches were increased 10%, and at less total cost, due to the use of a diesel van for cable retrieving. This runs well on central heating fuel, at about a penny a launch, and has set us thinking about a diesel winch.

K.E.

BRISTOL

AS the photograph shows, we have completed our new hangar, of which



The Bristol Club's new hangar.

we are very proud. Tony Pentelow and his many willing helpers have given us a fine addition, and our thanks are due to all of them.

The weather at Nympsfield has been very reasonable this season and produced 14 solos, 10 C's, 7 Bronze C's and 17 Silver legs; alas, no Gold or Diamonds but not for the want of trying.

In addition to the club's Tiger Moth and Auster, Tony Gaze frequently uses his fine Rallye Commodore to give aerotours to willing customers. Joe Grimes and Ray Jefferies hope to provide us with a fixed winch to help our launch rate.

Two new sailplanes based at the club include Peter Scott's BS-1 and my Diamant 16.5 to replace the Olympia 463.

We have lost Colin Pennycuick and his wife to darkest Africa and hope they will return in the not too distant future.

B.F.W.

CORNISH

ALTHOUGH we have had fewer launches this year than last, we have had more aerotows than ever. Nearly half of the club's flying hours came from aerotows in spite of the fact that we have a cliff which is soarable from wire launches. We feel that, though we have not increased the quantity of launches this year, the quality of our flights is increasing and next year some of our courses will be by aerotow. If this proves popular, the majority of the courses will be changed to the aerotow method by 1970.

This year has also seen an increase in cross-country mileage by club aircraft, a fair proportion of it done on the Blanik, giving pupils an introduction to cloud flying and field landings. We have had several sessions of field landing practice at Newlyn Downs, which is five miles further inland than Perranporth, and we are grateful to the friendly farmer for his permission to use his land for this purpose.

Right now the days are getting shorter and our thoughts are returning to cliff soaring, fireworks and Annual Dinners. A happy Christmas to you all.

J.E.K.

COVENTRY

THE bad weather has continued and our Treasurer has been going round with a very long face. It is reckoned that the poor summer has cost us a loss of one-third of our customary takings. Despite this, however, we refuse to get depressed, and in October about a dozen club members, with six gliders, made the long overland trek to Portmoak, complete with passports, in search of the elusive Wave.

Lou Frank and Claude Woodhouse have now made the grade to Instructor, and the CFI is constantly pressurising senior non-rated instructors to get their categories.

As part of our fleet rationalisation programme it has been decided to dispose of the Olympia and the Swallow, and to do our first solos on either the Ka-2 or the Skylark 3, which move will, we hope, cause our bank manager to smile at us benignly, and also enable us to purchase a further two-seater next year.

On the catering side we anticipate great things. Those two club stalwarts Bill and Elsie May have kindly agreed to take on a franchise for the catering and we are confident, knowing this couple, that within 12 months we shall be making a take-over bid for Fortes!

Finally, a fourth Tiger Moth has been added to our tugging fleet, and in the event, as Tiger Weary Willie has just given up the ghost with a £350 engine failure, the purchase would appear to have been timely.

B.F.

CUMBERNAULD

THE summer season has veen very good for training in the Glasgow area and although on many days we had winds from the east, our launch rate is up for this period. Also membership has increased and many A and B certificates have been gained, Carol Meiklejohn being the club's first lady to solo.

Clubs who use T-21B's and especially those who have to rig and de-rig each day may like to know that special main and strut pins are obtainable from the manufacturers to ease this task. These pins have larger heads than normal and a hole has been drilled in each to take a T-bar with a hooked end; they can thus be inserted and extracted very easily. No more hammering, with the resultant damaged pin-ends, and no more cut fingers from safety pins which have turned and are difficult to remove.

T.J.G.

DERBYSHIRE AND LANCS.

FRED COLEMAN'S Harbinger is back on site after a short absence, and should being doing a "vulture frightener" trip any time.

The new building extensions are progressing nicely through the paperwork stages, and we await the forming of an Elsan Preservation Society.

Our German Tost winch broke down yet again, and has been out of use for a month now, spitting oil everywhere. A new large tractor has been acquired for cable towing, as we tow out four cables at a time on a spreader trailer. On the short west wind run, when pushed, we can achieve a launch a minute.

Tremendous interest is being shown by the Scout movement and we seem to get visits every other week organised by Don Harris, i/c Educational Liaison.

After a long period without frivolities we have just had a fancy dress party.

Initially there appeared to be a credibility gap on this venture, but it turned out to be well organised, well fed, well decorated and very much enjoyed by the bizarre multitude who attended (three vicars?). Credit must go to Margaret Hare and Ann Melville and their helpers.

The new Ka-8 has arrived and is being C. of A.'d and instrumented.

Faint rumours are afoot that T-53's are being considered as T-49 replacements instead of K 13's. It would be nice to buy British if it seemed a viable proposition.

R.H.

DEVON AND SOMERSET

IT seems strange, reading through club notes in the last issue, that our summer weather should invoke such varying adjectives depending apparently in which part of the country one happens to be located. This was also evidenced by the move from Lasham to Compton Abbas in the course of the Regionals which may prove to be a worthwhile precedent.

We cannot complain about our corner of the island, as this season has produced some good soaring albeit local rather than cross-country. Two Silver distance legs can, however, be recorded for Pete Stanley and Arthur Clapp respectively. Barbara Fairclough upheld the honour of the fair sex by really assiduous practice following her first solo. One member, who shall be nameless, whilst endeavouring to climb to Gold height and taking two and a half hours and 5,000 ft. in the Ka-6E was a bit chagrined to find that in the meantime the two-seater had nipped up to 9,000 ft. and back in half an hour!

A great deal of work has been put in both on club trailers, to make them weatherproof for the coming winter, and on those which will house two additional syndicate Ka-6E's now being "retrieved" from Germany. On a fine day the line-up of aircraft is now quite impressive and attracts many visitors to the site. The control bubble, a picture of which appeared in an earlier edition of S. & G., is also an attraction besides being eminently practical.

At last the fruits of the labouring builders are becoming manifest in the visible form of rafters and purlins for the workshop and hangar, and negotiations are in progress for the acquisition of the clubhouse. The technical arguments on the relative merits of different types of flooring vie even with the mathematics of handicapping!

A.E.R.H.

DUMFRIES AND DISTRICT

EASTERLY winds have curtailed our flying during September but even so we are just ahead on last year's launches. The best news for our solo members is that we have a T-31 in the air again and we are still trying to get a Prefect or similar aircraft around the £300 mark.

By the time you read this we will have held the Arts Ball, our biggest money-raising effort this year.

J.P.

EAST ANGLIA UNIVERSITY

THE UEA Gliding Club is now building up its membership list again following the arrival of the new intake of students. Recruiting is going well, and we are lucky in having two new members who have flown at other clubs. The old hands have, for the most part, come back looking very rusty (!). However, our president, John Wood, has taken advantage of the summer vacation to go solo. Congratulations to yet another intrepid Tutor pilot! Mike Cleaver brought back a Bronze, and Steve Oakley is now the holder of an RAF Commission.

Unfortunately the Norfolk Club have been beset by bad weather and the only cross-country flights from Tibenham were in April and May. However, several Bronze legs and first solos have been achieved.

We are now all set for a good year ahead, and have contacted Glasgow and Strathclyde Universities; other university gliding clubs can contact us at: Students' Union, Wilberforce Road, Norwich, NOR 88C.

M.JC.

KENT

IF we were an aqua club we would have had a good season. With rain, rain and more rain, not to mention low cloud, strong winds, no wind or cross-winds. To cap it all our first-ever "At

Home" day on 15th September was the "day of the floods", which literally made it a "wash-out" and quite a number of members had some interesting stories to tell of their road journey to and from Challock.

It's also been a record non-event season—hardly any first solos, hardly any Silver C legs and hardly any cross-countries. Surely next year must be a good one?

However, Sunday, 7th September, had its moments and Dick de Las Casas took the opportunity to fly to Redhill in his Skylark 4 for Silver distance; a good effort considering the poor visibility and indifferent cloudbase, which was never more than 3,000 ft.

We now have a concrete floor in the hangar, thanks to our "resident" tug pilot Stefan Kleczkowski and a few club members, who spent the first week in October laying it. This was paid for entirely by club members, each contributing a donation of £4 minimum, after much chasing by Geoff Avis.

The long-awaited new aircraft workshop is almost complete and our ground engineer, Peter Kingsford, will be moving in by the end of October, no doubt very relieved at having a much increased working area.

On the social side, our barbeque on Saturday, 7th September, provided an enjoyable evening, although not so well attended as usual—and it didn't rain!

M.H.

LONDON

WE have had a somewhat poor summer season, but this seems to have been universal. No spectacular flights have been achieved, the longest this year being by Bob Smith to Port Isaac, Cornwall. The best day of the year occurred during the Sports Class contest, most contestants completing a 300-km. triangle.

Weekends in particular seem to have been ill favoured, and as a result flying hours are well down on last year. In consequence, the financial situation is anything but rosy. In conjunction with considerable capital outlays, some belt tightening has been found necessary. The committee have been looking very hard at the club operations to see where losses can be cut back, and some reduction in course activities has been approved for 1969. Previous holiday courses have not resulted in an increase in flying members, and it was felt there was a great deal of wasted effort. It is hoped to improve facilities for mid-week flying members, especially during the summer.

Keith Chard, who has been on the staff for two years, left us in October to start a new job. We wish him well, and will miss his booming voice and infectious laughter. He will, however, remain a member of the club and manage to fly his Ka-6E once in a while.

Although fewer members flew in this year's Nationals, results were up to the standard of previous years. John Cardiff excelled himself in the Sports Class flying a Ka-8 and it will be interesting to see how well he does next year flying an ASW-12! Carr Withall, in his first major contest, came sixth in the Open flying a Dart, closely supported by Mike Garrod and Tom Zealley in 12th and 13th places.

A gradual change is taking place to the club fleet, and within two years we expect to have three types only, all of these Schleicher aircraft. Our Prefects, Olympia and T-21's will be gradually phased out. Our tug fleet is getting somewhat ancient, but at the moment finances virtually bar any improvement in this field.

As Christmas is almost upon us again, may we wish all clubs happy soaring during 1969 and a hope that we shall have more, not less, freedom in the air.

M.P.G.

MIDLAND

WE held our AGM on Sunday, 6th October. This day marked Bob Neill's retirement from the committee on which he has served for more than 30 years. Last year he was vice-chairman and was chairman for the 14 years prior to that. Past, present and future glider pilots owe him very considerable thanks for his long service to our sport.

John Jefferson was elected as vice-chairman and Gerry Roberts, John Rickett and Paul Stevenson as general committee members.

On the following Sunday we enjoyed good hill and thermal soaring with moderate wave conditions developing in the afternoon. Several pilots reached 13,000 ft. a.s.l. including Ken Rylands, who thereby achieved his Gold height.

The season, although not outstanding,

has improved from its very slow start in March following the four months curtailment of our activities due to the foot and mouth epidemic. The experiment of staffing our courses entirely with professionals has proved successful. Our two new Ka-13 two-seaters have met with all-round approval. Eight of our members have attended instructors' courses—all successfully.

Now for some winter wave soaring.

K.R.M.

NEWCASTLE AND TEESSIDE

WITH the arrival of the K-13 the flying list has suddenly become formidable with everyone trying to sample the delights of the new aircraft. With the coming winter we will be able to soar the north ridge in comfort in this machine.

Our clubhouse is nearing completion and a series of indoor meetings are being arranged for the longer winter evenings.

Anyone arriving at the top of Carlton Bank one Sunday at the end of September, was immediately pounced upon by the North Riding police force, to be asked if he had seen two gliders colliding in the area. Happily this was a false alarm started by a bird watcher. As a result we had a ringside seat to watch how a search, culminating in the use of a helicopter, was organised by the police. It is certainly very reassuring to know what can be done should the occasion rise. We only hope that the bird watcher was not psychic.

N.M.J.

NORTHUMBRIA

IF any of our members have caused consternation at your club with their heel to toe "standard foot" measurement around your hangar all will now be explained. They were just seeing how much bigger our hangar would be. Our grant chasing efforts have at last come to fruition and we have got a 50 per cent grant from the Department of Science & Education and a 25 per grant from Northumberland County Council. The hangar, with Town and Country Planning-approved sky-blue roof and grey brick walls, should be erected by the end of the year.

Plans are being made to form a large membership tug syndicate to offer aerotow facilities which the club, because of the hangar project, could not at this moment afford.

Sutton Bank has been reinvaded by our Silver hunters. This time Ray Robson and Vic Lawson attained their five-hour durations. A few weeks later, Ray's wife, Sarah, became the second woman in the club's history to gain an A and B. She indulged in a little cloud flying in the process.

The collection of the Wills Trophy from the Newcastle and Teesside Club defies all our attempts. Our nearest miss was when Fred Hinchley headed SE to Carlton Moor. He won through to their last line of defence; low cloud obscured their site and he had to fly on to land on lower ground at Northallerton.

J.R.G.

OUSE

WE nearly did it last year, and we nearly did it again this year. And, though we did not bring back with us a beautiful blue and white Ka-6E, we had the consolation of knowing that two years running we had a chap in the Lasham finals of the Wills competition. We were sorry for Bob Bowhill, who had tried so hard, and for Wilf Coulsey, our indefatigable CFI, who, as last year, put so much of his time and effort into the training. But we at Rufforth are not selfish, or greedy; we are proud to play our part in the wider team effort of national gliding. The object of the exercise was achieved. Although Bob was pipped on his meterology and navigation, he had the highest marks of all for his flying.

It was stimulating to see 11 members of the Ouse G.C., wearing their OGC ties, down at Lasham in support of Bob. They all had a wonderful time.

Despite mixed weather, we have done a lot of flying this summer, and there have been several individual achievements.

Work is going full speed ahead on our new clubhouse. It will look very smart when finished. We have in the club a wide range of talent—men who can do, as amateurs, highly-professional carpentry, bricklaying, etc. We owe much to key men like Brett Atkinson, Stan Park,

Barry Crocker and Les Powell. Even the ladies have been seen mixing cement—and making a jolly good job of it, too.

Visitors are impressed by the airfield, the clubhouse, the fleet of gliders and the happy, friendly atmosphere among members. In seven years we have achieved much.

A.H.S.

PERKINS

BAD weather prevented Ray Stafford Allen from carrying out the necessary aerotow checks, which had been scheduled for the end of August, for those pilots otherwise qualified. However, thank you Ray for the time you spent with us—we enjoyed your company, even though we didn't fly!

Owing to the difficulty of obtaining spare parts our winch was u/s for weeks but luckily aerotows were available. John Hulme brought his canopied, trimmed T-21B for this as it is easier to handle on aerotows than ours. We hope to arrange to use aerotows during the winter months as well. Not having the winch has meant that the EoN Baby has been non-operational, although we have several pilots about ready for their solo flights.

J.V.L.

STAFFORDSHIRE

OUR existence latterly has become finely balanced between the precarious and the down-right disastrous.

The Tiger was flown to Wolverhampton for a quarterly and its engine seized up as soon as it landed there. Now that it is back the tug pilots still seem happy to fly it and club members to have a tow behind it.

Minor trenches are being dug across part of our airfield in preparation for the foundations of an industrial estate, but our continuing search for a new site seems to be nearing the brink of success.

The club Capstan suffered rather badly during an outlandish outlanding but fortunately was repaired in time to return to the club just after the departure of our hired Capstan, so the ab-initios have been kept reasonably happy.

We have at present four lady members who are qualified solo pilots: Sheila Wood, Julie Ratcliffe, Judy Graham and Marion Aranyos.

R.B.L.

TRENT VALLEY

SINCE our AGM our social secretary, Pat Harris, has done wonderful work organising dances and social evenings. Her latest money-spinner is a weekly "Accumulator Tote Double". Half the proceeds go to prize money and the other half to the Glider Hangar Project.

Our flying field at Sturgate has three concrete runways of different compass directions. The fleet consists of a T-31, Grunau and two Olympia's. During a course in September several A and B certificates were gained.

E.H.W.

WESTCOTT (R.P.E.)

WE begin on a note of sadness as, with deep regret, we announce the death of one of our original members, Eric Robertson, after a short illness. He was the first member to solo after the club's formation and always led the way when gliders needed pushing. Our sincere sympathies to his wife, Margaret, and his four daughters.

Stirling work is still being done by our Kranich and recently it was to be seen doing some pretty strange things, with Roger Neaves in the front seat, as he tested John Berryman for his full instructors' rating. Congratulations to John on passing the test. Our thanks to Roger Neaves for giving us a day of his valuable time to make this possible.

Although the weather has been unkind to Westcott this year, a few things have been achieved. Trevor Stevenson, Alan I'Anson, Barry Croxton and Malcolm Lassan gained their C's, several Bronze C legs were recorded and one Bronze completed by Roy Exell.

Site difficulties make our present launch system and rate less than ideal but plans are in hand to introduce the reverse pulley method of launching.

After returning the borrowed Olympia to Farnborough we acquired a modified Swallow and finances have been stretched to a parachute and barograph but, as yet, no trailer. Inevitably we were caught out, in mid-August by a couldn't-quite-make-it-back landing in a distant field full of bullocks! Our grateful thanks to Oxford G.C. who kindly came to our rescue with a trailer at a very late hour.

D.R.G.

A summer course at the Yorkshire Club, with Instructor David Peitch (from Australia) second left. Photograph P. Warren.

YORKSHIRE

WE'RE now at the end of a pretty good year, despite a lack of westerly winds this summer, which cut our ridge soaring days to less than usual.

About 20 successful courses have been run at the club this year, including three for instructors.

Our tug has now got its well-deserved new engine; and two new syndicates have been formed, one with the K-13 and the other with the Olympia 463. These, of course, lessen the pressure on the club Swallows.

David Lilburn, in his Skylark 4, flew his Gold distance, 314 km., from Sutton Bank to Clacton on the 11th August.

The club is open all the year round and visitors will always be made welcome.

P.M.

* * *

SERVICE NEWS

BANNERDOWN

THE £10,000 prize for the first (figure-eight) man-powered flight is still to be won and an ingenious way of increasing wing area in the interests of low flying speed has been adopted by a BAC team at Weybridge. Quite simply the idea is to do without ailerons by making the whole wing change its angle of attack differentially for control in roll, by pivoting it at the root. This avoids giving the wing a high degree of torsional stiffness. The team found they could have pivot hinges at the same cost in weight as conventional aileron hinges, and thus a much lighter wing structure is possible.

In the meantime, if anyone feels like castigating Weather Willie for this season's execrable performance let them read *London Weather* by J. H. Brazell, where one learns of years with no summer, snow in June, record floods and fogs and the performance of a whole heaven-full of saints alongside Swithin, cluding St. Benoit for France, Bartholomew for Italy, St. Luke and St. Martin for UK and the Seven Sleepers for Germany.

For us the last period has been one more of consolidation than performance, although Pat Gibson has secured A and B certificates. Ian Smith flew his Skylark in the Junior Inter-services, Terry Carpenter crewed in the Nationals and Gus Paterson and Mike Williams returned from Bicester with furrowed brows, assistant categories and unanimous appreciation of the extent and responsibilities of instructor duties.

P.H.

EAST MIDLANDS

THIS season has brought the worst gliding weather for many years, but strangely enough the club has done more flying and gained more certificates than ever before. We have flown well over 1,100 hours, from our site at Swinderby, from 6,000 launches and sent nearly 40 members on their first solos.

Dick Feakes, who has been our CFI and is posted shortly, pushed through many radical improvements in club organisation and has also found time to do more than his fair share of general fettling. The club will miss him.

In the competition field, East Midlands has done very well; both Ian Strachan and John Delafield winning the Sport and Open Class Nationals respectively. Also, Jack Harrison and Dick Feakes were placed near the top in these championships. We will be pushed to repeat this success next year!

Stella Benton, one of our WRAF members, flew her Silver distance on the 6th October from Swinderby to Boston. This is certainly the latest in the year that we have had a successful cross-country. Perhaps the next cross-country season will start correspondingly early.

J.D.

WREKIN

CONGRATULATIONS to Simon Morrison on gaining eighth place in the Open Class in the Inter-service competition at Bicester, and to Kev Kiely and Chas. Nightingale who both flew their five hours at the Mynd.

John Ansley and Dave Greig have taken over as aircraft and MT member respectively. Harry Oxer resumes his post as secretary on his return to the club.

The bus is being given a refit before the cold weather starts and should be back on the line, providing hot drink and food, before very long.

C.B.B. and P.H.

CRUSADERS (Cyprus)

THE occasional winter Low is sweeping across Cyprus now, changing our soaring pattern a little. During the summer, members have often gone inland with the sea-breeze front which passes over our site in the mornings. Cross-countries have been restricted to the area north and east of the site though, away from the Nicosia Zone. We should have radios very shortly, and by the time this goes to print we hope to have established cross-country procedures with Nicosia ATC/ATCC. Our aim is to fly westward, along the edge of the central plain to the high convection of the Troodos range.

Our present cross-country area has provided the club with good training and several Silver C legs. John Scott and Gerry Cooper completed their Silvers and Dave Sillet and Bob McMasters have gained the latest legs. John has been re-elected to another hard term as treasurer, Dave has spent long hours on our Swallow after it had a very heavy landing (from a winch failure), and Bob went solo, did his two Bronze flights and got his Silver height in four weeks.

The days when club members had to rig and de-rig the 'craft every weekend are long past as we are allowed to use the hangar which was built beside the airstrip earlier this year.

After our 43 per cent increase in flying time last year we are rather struggling to reach our target of 1,000 hours (a further 12 per cent growth) this year. The exigencies of the Service have denied us the use of the airstrip a few times and have currently scattered many of our RAF members, including the CFI, Tim Oulds. Bill Dickson, who is doing an excellent job as Deputy CFI, stoutly maintains we will reach our target.

The Committee is investigating the possibility of acquiring a K-13 early next year. In these days so far removed from the old ground-slide training, ab-initios can join the club in a three-year tour progress to dizzy heights without ever leaving Cyprus: this makes an advanced dual-trainer most necessary for us to offer full and balanced training.

M.I.O.

LAHR (Germany)
(Canada Armed Forces)

SHORTLY after 1 Wing, RCAF, moved from its base at Marville, France, to its present location at Lahr, Germany, a sport aviation club was formed to promote all types of sport flying, and the Lahr Gliding Club is one result of this organisation.

Permission to start a club was con-

firmed in the summer and flying commenced in mid-September. Our equipment consists at the moment of a Ka-7, a Rhönlerche and a privately owned Olympia Meise (ex-RAF Laarbruch). A privately owned Pirat is expected any day. Launching is by winch, which we expect to augment by car-tows.

Lahr is the European terminus for transport aircraft, and on a normal gliding day we may get four or five Hercules or Dakota movements, with probably a gaggle of Starfighters to boot! Although we are grounded during these movements, surprisingly little time is lost.

Apart from the CFI, only four out of a total membership of 38 have previous gliding experience; however, they include four Starfighter pilots, two transport pilots and about a dozen light aircraft pilots. Nearly all aircraft and allied flying trades are represented, so that maintenance and ground school should present no problems.

Gliding has been carried out at some military flying clubs in Canada, but the Lahr Gliding Club is the first to affiliate with the Soaring Association of Canada. Canadian Forces HQ in Ottawa recently announced that gliding and soaring has been officially approved as a military sport. The order requires all clubs to affiliate with SAC and approves assistance from non-public funds (i.e., profits from canteens, etc.). It also approves the use of military equipment for "special events" such as international military competitions, although as far as I know we have no military competition pilots, and in Canada, at any rate, no one to compete against!

The acceptance of soaring by CFHQ should prove a tremendous boost for the sport in Canada, although it may be faced with a severe problem of instructor shortage in its initial stages.

Perhaps the answer to this particular problem has already been found by the Air Cadet League of Canada, who have recently added gliding training to their activities. Their solution was to select personnel with extensive power experience and send them on a three-week instructors' course; all candidates passed and the Air Cadets now have their own nucleus of instructors.

ARTHUR KLINGE.

OVERSEAS NEWS

We would be pleased to receive news for this section from every country in the world where soaring is done—A. E. SLATER, *Overseas News Editor.*

CANADA

THIS is written as the season gradually draws to a close, and what a season it has been! Not from the contest-flying standpoint, but we certainly have seen considerable development behind the scenes, a substantial increase in the number of adherents and several new clubs established.

We should not really complain about our contest side, either. Full credits to Chas. Yeates, of Beaconsfield, near Montreal, for placing ninth in the World Contest—a place he seems to have reserved for himself! He claims he's getting bored with coming ninth, but surely it is better than tenth. Never mind, perhaps someone will unseat you next time, push you up to, perhaps, sixth. One of

these days we may be able to give our team the support they really deserve, including transporting their sailplanes to the contest.

The National Contest report appears to have gone the way of all flesh. This writer was hoping someone else would write it, perhaps a competitor, but it was not to be. The event took place at Rockton Gliderport, Ontario, under the management of Sosa Gliding Club. Longest flights earned Diamonds for two competitors, and the eventual winner was Peter Trounce, of Beaconsfield (that place again), flying a Phoebus 17. Some canny work there, even though he is no Scotsman.

On the subject of new sailplanes, several home-built HP-14's have had their first flights this year, as have one or two BG-12's and at least one Tern. New factory-built sailplanes include a couple of Phoebi (is that correct?), a Pirat, which arrived too late to take part in the Nationals, an ASK-13 and one or two more orthodox types such as 1-26 and 2-22. A T-53 has been on order since last year, but has so far failed to materialise—how about it, Slingsby's?

The fall will see some traditional wave-flying, and most likely the fall of some altitude records. What goes up, must come down—except the Russian rockets, and the prices.

ONTAERO.

FINLAND

THE gliding season for 1968 is now over here and people are sticking to their clubhouses, talking and thinking big for the next season. The summer of 1968 will go down in history as the one which saw the first 500-km. triangles flown in Finland by Matias Wiitanen in Utu and Juhani Horma in SHK; saw Seppo Hamalainen raise the Finnish and Scandinavian out-and-return record beyond the 600 km. mark; and also saw the first motor-gliders in Finland, the kind of aeroplanes which evidently are here to stay.

The first motor-glider, which flew in from Germany at the beginning of July, was at least to our understanding one of the nicest of its kind, the Fournier RF4D, known here as the Tuulia. The excellent workmanship and very good handling characteristics of the Tuulia caused considerable interest also here, and at the time of writing there are three motor-gliders of the same type flying in Finnish gliding clubs.

But also the Finnish aviation authorities, i.e., Ministry of Communications and Public Works, Department of Civil Aviation, took quick notice of the new kind of aeroplane and laid down rules governing flying in motor-gliders.

The motor-gliders are classified as gliders and so Finnish glider pilots can fly them without power pilot's licence. Before getting the motor-glider rating to his licence, the glider pilot has to make two half-hour flights in an aeroplane with an instructor to get acquainted with the behaviour of an aeroplane with an engine. After these two flights, one half-hour flight in a motor-glider and the pilot is ready to get the motor-glider rating to his licence. The holder of a power pilot's licence has to make at least five flights in a two-seater glider before converting to motor-gliders.

After experience gained during the first summer of motor-gliders, it would be too much to say that they have brought a revolution to the Finnish gliding scene, but the extra colour they bring to it cannot be ignored.

J. RAIVIO

FRANCE

Mini-Contest at Angers

A HARD runway is under construction at Angers airfield; the ensuing chaos forced the Aeroclub to abandon plans for a full-scale contest (like the Huit Jours d'Angers) and a last-minute Mini-Contest was organised instead.

In theory it was going to be an all French-speaking Franco-Belgian affair until a lonely Dutchman (Aart Dekkers) turned up to ruin things. He would have won, too, had he not been persuaded to share a little too fully in the celebrations on the eve of the first contest day. Next morning his crew waited in vain, but he did not turn up that day.

The 23 pilots taking part were of high calibre; mostly members or reserves of their National Teams. Dekkers, Zegels, Penaud, Mercier and Gavillet actually flew at Leszno.

There was no handicapping, and pilots flying a Ka-6 or Edelweiss found it

rather discouraging to fly against the Diamant, Libelle, etc.

Day 1.—172-km. triangle. The met. failed to forecast a trough which affected the course and forced everyone down "aux vaches", the winner landing at the second turning-point.

Day 2.—Aart Dekkers (Holland) won the 302-km. triangle set with an average speed of 74 km./h. on his Diamant 18.

Day 3.—169-km. triangle. Everyone went round at least once; pilots who tried again found the conditions much improved later in the day. Best speeds approx. 80 km./h.

Day 4.—203-km. triangle. All pilots finished the task; the French team flew at 180 km./h. along the second leg.

Day 5.—242-km. triangle. Conditions were rather more difficult and about a quarter of the pilots landed out. Others, like Labar and Dekkers, had some rather low scratches—50 metres!

Day 6.—160-km. triangle. Dry thermals, not rising above 1,100 m. or so; 6 pilots did not complete the task.

Day 7.—156-km. out-and-return. A day with a great deal of strato-cu spread out. Penaud got caught and had to land at the turning-point.

Final leading results		*Pts.*
Zegels (Belgium)	Libelle Std.	5767
Dekkers (Holland)	Diamant 18	5753
Labar (France)	Libelle	5676
Girard (France)	Edelweiss	5177
Mercier (France)	Edelweiss 4	5110
Penaud (France)	Edelweiss	5016

The ASW-12 flown by de Dorlodot of Belgium was unfortunately broken by a fellow-pilot to whom he lent it one evening; de Dorlodot had to continue on a Ka-6E.

M. MERCIER.

HAWAII

SITUATED at Dillingham A.F.B., a 900-ft. strip some 40 miles N.W. of Honolulu on the island of Oahu, this club is fast becoming a popular venue for visiting pilots. With a 1,000-ft. ridge flanking the runway and an almost constant 10-15-knot trade wind, the ridge-soaring is very good indeed. This has been well proven by the CFI Tom Winkler, who, on five separate occasions, has exceeded 40 hours airborne—his last endurance flight being in excess of 57 hours.

The equipment consists of a 1-22, 1-32 and two 1-33's, with a Stintson L5 as tug. Plans are in hand to operate from Bellows AFB, on Windward Oahu; this has a 2,000-ft. 28-mile ridge at right angles to the prevailing trade winds, and what must be the most consistent ridge-soaring anywhere in the world—an added attraction being that it is only nine miles from the centre of Honolulu.

If passing through, contact Tom Winkler, P.O. Box 2776, Honolulu (telephone 634938), and you will be assured of a warm welcome.

PETE HANNEMAN.

SOVIET UNION

THE Russians have attributed their lack of success in the World Championships to their using old machines. Among the pilots, Zaitsev received criticism. Neither Kunetsov nor Zaitsev had ever been in an international contest before. It is hoped that new machines will be produced for next time.

Three Blaniks and one A-15 attempted a group flight round a 500-km. triangle from the Central Gliding Club. In spite of weak conditions, Anatoly Koval and passenger Yevgeny Kretov completed the task at 72 km./hr. The flight took about eight hours and is a National record as the first two-seater 500-km. triangle ever done in Russia.

ANOTHER FAMILY FLIGHT.—On 29th May, Tamara Zagainova and passenger Nina Tolmachenova, in a Blanik, achieved a 500-km. triangle at 69 km./hr. —a new world record for women. On the same day, her husband beat the National record by flying round the 500 triangle in an A-15 at 80 km./hr. This is 9 km./hr. better than the previous record set up by Rudyenski. It will be remembered that Valery and Tamara Zagainov flew 732 km. in two different machines together from Orel to Volgograd two years ago.

First place among the women of the North-East Zone Russian Federation Championships was taken by Tamara Posheonova, a student.

UKRAINE CHAMPIONSHIPS.—The 16th Ukrainian Championships took place on the Dnepropetrovsk airfield. There were 41 competitors in teams from Karkhov, Odessa, Kiev, Simferopol, Vinnitsa, Lvov and Rovno. Tasks were:

(1) 104-km. triangle in good conditions.

1st was Karl Liebknecht with 1 hr. 22 mins.; 2nd was Pilipchuk (Dnepro--petrovsk); 3rd, Mikhailov (Odessa).

(2) 310-km. triangle in poor conditions. Leonid Yerishko (Dnepropetrovsk) alone got round, taking about seven hours.

(3) On the next day, the 310-km. triangle was set again. This time there were 4-5-m. thermals, with clouds going to 2,300 m. 33 out of 41 pilots finished: 1st, Pilipchuk; 2nd, Yerishko; 3rd, Vachasov.

(4) 206-km. triangle. Storms and rain hindered pilots. Best results were achieved by: 1st, Vachasov; 2nd, Pilipchuk; 3rd, Ludmilla Kozyenko.

(5) Twice round a 104-km. triangle. 1st, Vachasov; 2nd, Litvin; 3rd, Saraev.

Overall 1st and new Champion of the Ukraine is Pilipchuk, 4,864 pts.; 2nd, Yerishko, 4,809; 3rd, Strelnikov, 4,586. Of the women, Ludmilla Kozyenko was first.

Each pilot flew between 20-25 hrs. and covered 1,000-1,100 kms. The Organising Committee, which contributed much to the success of the competition, included Yevgeny Rudyenski of the National Team.

Y. SYTNIK.

Translated and condensed from Krilya Rodiny by C. WILLS.

SWITZERLAND

Diamant Flutter Problem Solved

AFTER thorough research and numerous tests, we can say that the flutter problem on the Diamants has been licked.

The observation most frequently encountered in the 16.5 and 18 metre models, which in many cases was apparent more as a vibration, has been identified as wing-camber flap oscillations, which, incidentally, occurred similarly on other fibre-glass sailplanes. As a result of our flight test programme, the cause of this trouble was isolated as the torsional flexibility of the long, narrow wing-camber flaps, in several cases aggravated by a slight looseness of the wing-fuselage connection of this flap drive mechanism. This looseness has already been corrected in all cases we are aware of. As a result of engineering analysis, and proved in our flight test programme, three solutions have been found for remedy: (a) the installation of counter-balancing weights on the flaps, (b) a new flap design with greater torsional stiffness, and (c) the installation of a more complex flap-drive mechanism inside of the wing structure to restrain and operate the flaps from both the inside and outside ends.

We also received a couple of complaints of a vibration in the rear end of Diamant sailplanes. Our flight test investigations have shown this to be a case of rudder flutter, occurring on only a limited number of airframes. Apparently, this flutter was an unwanted by-product of some of our attempts to make the Diamant series better sailplanes. Our investigations showed: (a) this rudder flutter could occur only in Diamant sailplanes with very low friction in the rudder control system; (b) it would only occur under certain conditions and when at very high airspeeds; (c) it would usually not occur at all unless initiated by the pilot or a peculiar type of a gust; and (d) it could be prevented if the pilot's feet were kept firmly on the rudder pedals, and usually be stopped in the same way even after it had started.

Although our findings indicate that the possibility of this rudder flutter is relatively remote, we have developed a rudder damper to absolutely prevent it.

According to the general practice in the aviation industry, and our own General Conditions of Guarantee, we are liable to provide modification kits for these two items to all owners. We feel that this minimal policy would leave many of our clients dissatisfied, and it is not in keeping with our policy of trying to produce the best possible product, and then stand behind it. We have therefore decided to undertake the above two complete modifications of all existing Diamant sailplanes *by our own staff and at our own expense*. For this reason, we are recalling all Diamant sailplanes located in and around Switzerland to our factory for these modifications. For the others at a greater distance from Switzerland, we are sending members of our staff to accomplish and/or oversee the necessary work, in some cases as far as California and possibly Australia.

The Diamant 16.5 has now received its Swiss type certificate, and that for the Diamant 18 is under way.

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