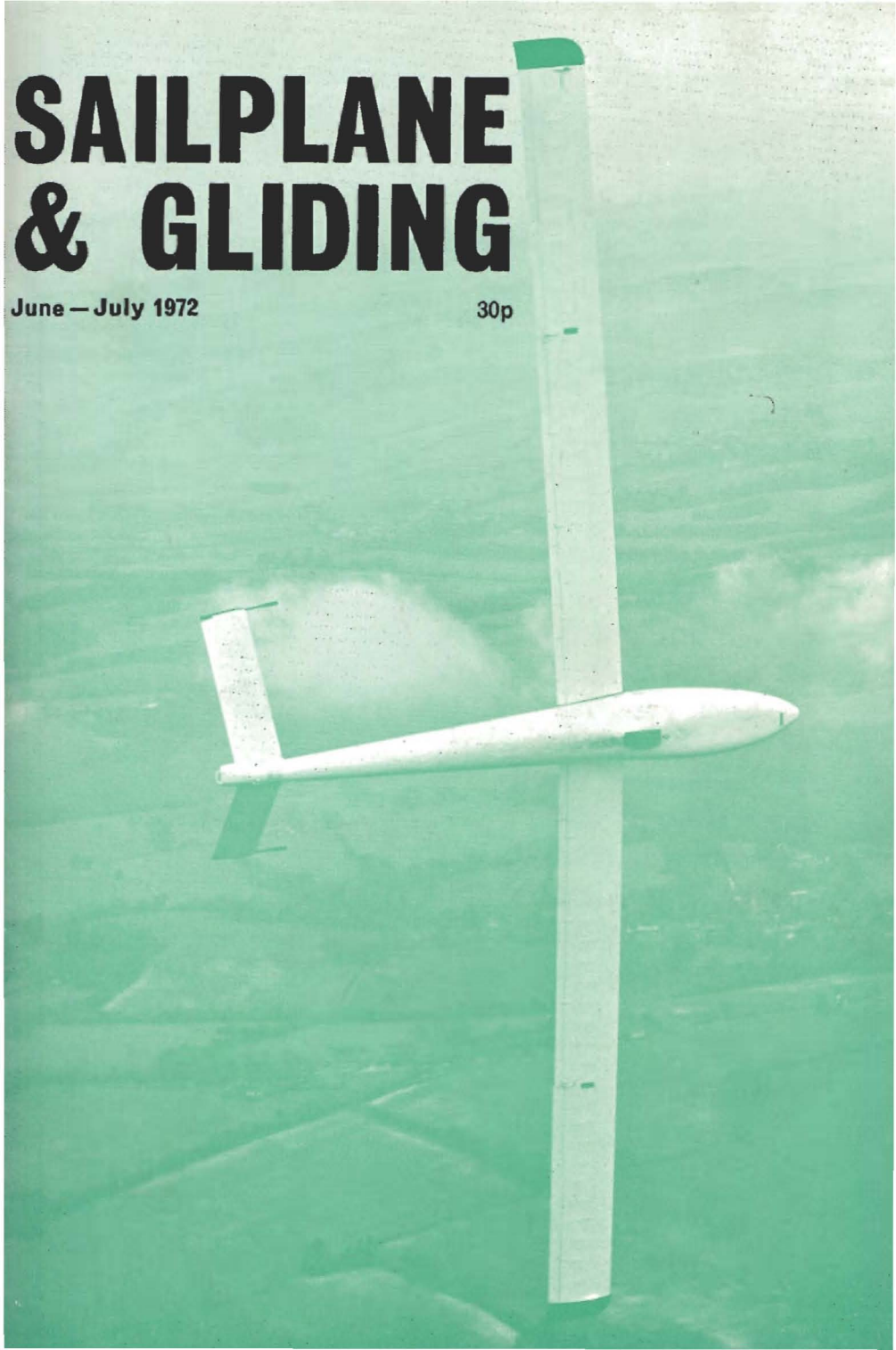
SAILPLANE & GLIDING

June — July 1972

30p



Becker AR 7 portable version

Ruggedly constructed, and housed in a handy leather case the Becker AR 7 portable is the ideal radio for recovery crews. Using the same components as the airborne version, the Becker AR 7 portable provides seven channels in the range 118-136 MHz, a sensitive receiver, a powerful transmitter, and battery capacity for many hours of operation. Avionics made in Germany



For full details contact
becker flugfunkwerk gmbh
west-germany
757 baden-oos

SAILPLANE & GLIDING

OFFICIAL ORGAN OF THE BRITISH GLIDING ASSOCIATION

Editor: George Locke

Consultant Editors: Alan Slater — Rika Harwood

Subscriptions: Frances Tanner

Committee: A. W. F. Edwards, Chairman — R. Q. Barrett — M. Bird J. E. G. Harwood — P. A. Wills

Advertisement Manager: Peggy Miéville, Cheiron Press, 5 Crawford St., London, W.1 Tel. 01-935 2814

CONTENTS

Public Opinion		W. A. H. Kahn	179
Field Landings—the Pilot and the Farmer			180
Animal, Vegetable and Mineral			180
Code of Conduct for Glider Pilots			181
Vrsac 1972—World Championships Preview			182
Of Men and Machines			182
Weather		M. P. Garrod	185
OSTIV Congress			186
Entry List and Previous Placings			186
Self-launch Sailplanes		L. P. Moore	188
Morgantown '72		Erica Scurr	189
A Note on "Flight Levels"		J. J. Ellis	190
House Fly-ing		B. Wordsworth	191
A Model Glider from 2,500BC		A. Yates	194
Hi and Dri in Western Skies		Platypus	197
UK and USA Costs Compared			199
Wave Flying at the Lakes Club		L. Redshaw	201
Wave Flights			203
To See How They Build Glass Ships		Rhoda Partridge	204
Flying & Instructing			206
Navigation Training in the Falke		Ann Welch	206
The Prang That Got Away		Dunstablighter	208
"Substantial" Accidents Back to 1968/69 Level			210
General & BGA News			213
Summary of BGA Annual Reports and AGM			213
Brize Norton & Lyneham SRZ's Implemented May 25			216
Eight Miles High over England			218
Gliding Certificates			220
Overseas News			223
Europe Breaks Two 1000km World Records			223
World Record Puts Kenya on Soaring Map			225
Sailplane & Motor Glider News			229
The KH-1		K. Holmes	229
Flying the BG-135		R. Procter	235
Completion of the Programme		L. P. Moore	237
Equipment News			240
Kittiwake and Petrel Projects Progress			240
Obituaries—Gottlob Espenlaub: Jacques Cochemé		A. E. Slater	243
Correspondence		N. Goodhart; R. Barrett; D. Eisenbeiss; W. Kahn	243
Club News			248
Service News			259

Cover Photograph: The BG-135 steeply banked during its test flying. *Photo Lorna Minton*

Published by the British Gliding Association, 75 Victoria Street, London, SW1H OJB Tel. 01-799 7548/9

Printed by Hampshire Printers Limited, Rankine Road, Basingstoke, Hants.

Some days not even the sky's the limit.



Anything could happen at The Daily Telegraph's European Gliding Competition. When top British pilots take on some of Europe's best.

And on 'Sunday and Bank Holiday Monday' (27th/28th August) everything's taking to the air. Starting with 'Tiger' aerobatics all the way through to parachuting and ballooning—weather permitting.

It's up, up and away from 19th to 28th August at the London Gliding Club, Dunstable Downs, Beds.

The Daily Telegraph

PUBLIC OPINION

By WALLY KAHN

THE Concise Oxford Dictionary defines "Public" as the members of the community in general and "opinion" as judgment or belief based on grounds short of proof.

If a census were taken of the general public and the question posed "What do you think of glider pilots?", you can imagine the sort of answers that might well be given: "Foolhardy." "Fun." "Shouldn't be allowed in our crowded skies." "Brave young men." "Wouldn't go up myself without an engine." Etc.

If we are to go on enjoying adequate freedom, we must help to shape public opinion, to win support in time of need.

Now help is at hand — the mighty national newspaper *The Daily Telegraph* no less. Its management has taken a real interest in our activities and is sponsoring three European gliding competitions to be held in this country over the next three years. The object of these is to help train and select future British pilots for the world contests. The pilots will be given subsidies in the shape of vastly reduced entry fees, superb prizes and first class competition flying against the top European pilots.

In August this year, the 11 pilots from seven different countries include Helmut Reichmann, the current World Standard Class Champion, Hans-Werner Grosse and Klaus Tesch, who have just broken the world free distance and goal records respectively (see p223) and Franciszek Kepka, the Polish ace.

Our gliding movement will receive the greatest amount of newspaper coverage we have ever enjoyed. Newspaper coverage, column inches, the new media, newspapers, readers—public opinion. To reap you must sow, to sow you must till. Thus, we need help. We need people—for one, two, three days. For the whole week if possible. We need help on the ground. Interpreters, assistants, cable hookers-on, dogsbodies, start and finish line eyes, charming and beautiful girls to man telephones, crowd controllers, etc, etc. Possibly crews for the visiting pilots and our own 17 British entries. Help, help, help. Tony Deane-Drummond is contest director and John Jeffries is his deputy. The site is Dunstable, the dates August 19 to 28. Write to them soon with your offers of help. It will be fun, fascinating and highly instructive—a mini World Champs without the sweat and tears. Do come.

British pilots—if you can't fly in the Nationals at Shobdon or Dunstable but want your name to go forward for possible selection, send your name to the chairman of the Flying Committee of the BGA at the BGA office without delay. Don't be shy—if the Nationals pilots rate you as a possible future World Champion, they might select you as one of the lucky 17.



PILATUS B-4 demonstration-tour throughout England in August 1972 (for further details please contact PILATUS AIRCRAFT LTD., CH-6370 STANS/SWITZERLAND)

ANIMAL, VEGETABLE AND MINERAL

FOR many years, the British gliding movement has enjoyed a generally satisfactory relationship with the farming community, into whose property pilots are forced sometimes to intrude.

Broadly speaking, a field which is ideal for a safe landing is unlikely to sustain any damage to its crops. Conversely, a field whose crop may be damaged significantly by the glider is likely to damage it in return.

Therefore, pilots generally have been careful when forced to land away from an airfield to select fields to which a minimum of damage is caused—to crops, the tranquillity of livestock and the structural well-being of their machines. And after landing, pilots generally are scrupulously careful to contact the farmer and apologise courteously to him for landing in his field.

In the early days of aviation, it was quite a common occurrence for a flying machine's engine to go wrong, precipitating itself into the nearest field.

But when aircraft became more reliable, it remained for gliders to make the vast majority of aerial intrusions into farmers' property.

Until recently. Until the revival in the past five or 10 years of ballooning as a sport. Gliders are slim and sleek, with a fine degree of control over their landings. Balloons are fat and clumsy and can only go whither the wind taketh them.

They have by no means the fine degree of control over their landings (or take-offs, for that matter) that gliders have. Consequently, anything less than the greatest degree of pilot skill combined with ideal (less than 5kts or so of wind) weather conditions makes a balloon likely to cause considerable damage to a farmer's property. Instances have even occurred when power lines have been broken, and a farmer intensively breeding chickens might get a sudden loss of his power supply, endangering the brood.

As a result, the National Farmers Union has been very disturbed at the increased number of balloon air movements—hot air movements in the main—which have taken place in Britain over the past few years. This has led to a code of conduct for its pilots being produced by the British Balloon and Airship Club.

The BGA has, in the context of this situation, also issued a code of conduct for its pilots (see next page).

Meanwhile, we take this opportunity to remind pilots of a few of the agricultural aspects of cross-country flying. The subject is a vast one, which could fill this entire magazine. We do not have the space to say much about the non-grass and cereal crops, save to treat them with extreme caution and, if forced to land, to land along the lines and furrows, even if a cross-wind landing results.

This remark can be applied to the most commonly encountered crops—cereals and grass. After landing, it is better to walk between the rows and the edge of the field than across them.

Landings in cereal (six inches or less in height) in the early part of the year do not cause much damage.

At one time, a landing in grass would not have been regarded by the glider pilot as landing in crop at all. But this is incorrect; grass is cultivated to a far greater extent than is sometimes realised, and tall grass should be regarded with just the same respect as wheat and barley. The cost of damage to the farmer may be the same for grass or cereal. The difference is that the grass is at its maximum height earlier in the season than the cereals. Early in the season it may be better to land in young cereal than grass.

All pilots should make a habit while driving to the club of studying the fields on their way, as well as while local soaring. In hazy or overcast weather, differentiation between the contents of fields is particularly difficult.

The animals most frequently found in fields are cattle, sheep and horses. The counsel of perfection is never to land in a field containing any of these; if it is necessary, then land as far from the herd as possible. Cattle usually tend to graze in groups, but sheep can be scattered uniformly over the entire field. If cattle are frightened, a claim for loss of milk production may ensue.

Sheep are also likely to notice the glider on the approach, and scatter in all

directions, so it would be extremely unwise to land among them.

Horses are very likely to panic, gallop about and hurt themselves as a result. It should also be borne in mind that in the south of England in particular there are quite a number of stud farms, and that owners of these are particularly sensitive about trespassing gliders. Often a field used for exercising horses will have a trodden track around its edge.

Electric fences, used to keep cattle confined to one particular part of a field, are usually invisible and constitute a genuine hazard. If one is broken, the farmer must be informed at once as stock may not have learnt as yet to keep away from them.

It must be emphasised that these are but a few of the points to bear in mind when selecting a field in which to land. Gliders pilots must always remember that, to be blunt, they are trespassing, and to take the greatest care when forced to land in a field not to damage the land-owner's property.

CODE OF CONDUCT FOR GLIDER PILOTS WHEN LANDING IN FIELDS

INTRODUCTION

IF glider pilots are to continue to enjoy their sport it is vital that the goodwill of farmers and landowners is retained. A great deal is owed to the many farmers who have given help and consideration to pilots who have arrived in a field as an uninvited guest.

GENERAL

Most cross-country flights in gliders are planned to end on an airfield; however, the British Gliding Association wishes to emphasise to every pilot that should he fail to reach his destination and have to make a forced landing in a field he incurs certain responsibilities.

The following Code is intended to be a reminder of the conduct expected of all pilots by the National Farmers Union and the British Gliding Association. It is essential that all pilots should be aware of this code before they are first cleared for cross-country flying, and are reminded of it from time to time.

All Competition Organisers should include a reference to it in Competition Regulations.

THE CODE

1) Select a field that is not only safe to land in but one which should cause the least possible inconvenience to the farmer.

2) Particular care should be taken when standing grass and cereal crops cover large areas of the countryside, for a landing in these will damage the crops as well as the glider.

3) Care should be taken to land as far away from livestock as possible.

4) Immediately after landing and securing the glider endeavour to discourage onlookers from coming into the field. For this reason it is preferable not to land in a field adjoining a housing estate.

5) Contact the farmer, or his representative and explain the circumstances of the forced landing. Pay for any telephone calls. If unable to find him at the time obtain his name and address and telephone number and contact him without fail as soon as possible.

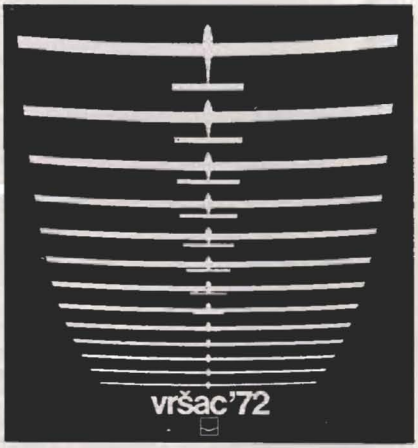
6) Keep the retrieve vehicle off the field if it is likely to do any damage, or until permission is obtained, and manhandle the glider to the vehicle.

7) Ensure that no animals escape while a gate is open and that all gates opened are properly closed before leaving.

8) If any damage has been done exchange names and addresses with the farmer as well as the address of the insurers covering the glider.

9) In accordance with BGA Laws and Rules for Glider Pilots all gliders are required to be adequately insured against Third Party risks.

OF MEN AND MACHINES



THE ultimate question that one asks when discussing the World Gliding Championships this July is, of course, the one that can only be answered when the last distance has been measured or the last speed calculated—who will win?

One can chat about the type of country the contestants will be flying over—the plain west of Vrsac, the tremor-torn mountains to the south, the historied Danube river flowing past. One can talk about the rules. One can prognosticate about the weather (as Mike Garrod does on p185); but there experience tells us to rely more on the hands of the gods than on the records of the meteorologists.

But the real nitty-gritty is still—who will win? And this a matter of men and machines.

According to an entry list published on April 30, there will be 33 Open Class contestants (against 39 at Marfa) and 42 Standard (40 at Marfa). A total of 22 nations is entered, according to the list. We were surprised to note that France was absent from the list; other sources tell us that France is sending a team. We understand also that the USSR and Brazil had planned to enter, and it would also seem likely that Hungary would participate.

Thus, the final entry list may well differ significantly from that published on p186.

THE STANDARD CLASS

Both defending world champions, George Moffat and Helmut Reichmann, are competing in the Standard Class, Moffat in a Std Cirrus and Reichmann in a modified LS-1. Three other ex-world champions are also represented: Harro Wödl of Austria, Jan Wroblewski of Poland and Per-Axel Persson of Sweden (winner of the first post-war internationals, held in 1948).

Persson, who is flying a Std Cirrus, is surely the Grand Old Man of world championships, having competed seven times. His most successful tilts at the title have occured every 10 years—1948, 1958 and 1968. Those contestants who place reliance on such patterns may be inclined to breathe easily; but patterns have a habit of breaking.

Harro Wödl of Austria, flying an ASW-15, won the Open in 1968, after good performances in the Standard in 1963 and 1965. Although he only finished 21st in the Open at Marfa, it should be remembered that he had been ditched in a flooded area after landing out on the first day and spent the entire second day getting out. Wödl is in charge of the Alpine Soaring School at Aigen.

Jan Wroblewski of Poland won the Open in 1965. Although he slipped up a bit on his own patch in 1968, he stormed back to the front-runners at Marfa, coming second to Reichmann. He will be flying a new Polish Standard Class glider, the Orion. Its wings are similar structurally to those of the Cobra 15 but are of a better design, aerodynamically. The fin is upright, it has a T-tail and a retractable wheel. Performance details were not available.

Orion is, in fact, the only unfamiliar glider entered in the Standard, and thus provides the greatest uncertainty. Wrob-

lewski's team-mate, Franciszek Kepka (with two world champs third placings to his credit) will also be flying Orion, and past performances of both these contestants must surely make them formidable opposition indeed, especially when one considers their highly developed pairs-flying technique.

Generally speaking, the Standard Class will very much be a contest between pilots. The machines entered (save perhaps Orion) are generally considered to be much of a muchness performance-wise. The strongest, numerically, is the Std Cirrus, with 15 pilots flying it. It replaces the Std Libelle as the most popular Standard machine at Marfa. It is accepted that the Std Cirrus, which came out more recently, has a marginally better performance. The ASW-15 and LS-1 will also be represented by about half a dozen machines each.

Helmut Reichmann will, of course, be flying hard to defend his title and try to become the first, since his redoubtable compatriot Heinz Huth, to win two world champs in a row. But not if George Moffat, the American "speed king" and holder of the Open title, can help it. Although he had a rough passage in last year's US Open, coming 17th in the Std Cirrus, he is unlikely to be out of the front runners at Vrsac. And Reichmann's victory at Marfa on his first appearance was no flash in the pan, as his winning the German Standard Nationals last year will testify.

Both Reichmann and Moffat have as team-mates newcomers to world champs flying: Hans Glöckl and Ben Greene, both of whom will fly the LS-1. Although the Standard has the most ex-world champions, it also has more newcomers to world contests than the Open—21 of the pilots listed have not entered before. Of these, Ingo Renner (Std Cirrus) could well surprise everybody by taking the trophy to Australia for the first time. Renner, a German who is now a naturalised Australian, won every contest day he flew in the Open Australian Nationals last year with his Kestrel 19.

And one must not forget Britain's entries—John Cardiff (Std Libelle) and Bernard Fitchett (Std Cirrus). Although the British soaring weather has left much to be desired in recent months, they, like many of the competitors, will be sharply fettled by the Nationals, taking place about a month before the contest.

THE OPEN CLASS

And now for the Open Class, where the issue, so far as machines are concerned, is far from clear-cut.

To start with, four or five gliders will be flying which have not competed in world champs before: Nimbus 2, the two-seater Calif A-21, Poland's first glass-fibre machine, the 19m Jantar and the long-heralded ASW-17. Britain's Sigma will not be ready in time.

Secondly, as expected with any Open Class, the performance spectrum is very much wider than with the Standard. This year, the highest performance machine is, according to the BGA handicapping list, Nimbus 2. The Kestrel 604 and ASW-17 would probably have a similar handicap, at 72. The other end of the spectrum lies at about 84, represented by the SHK, Cirrus and 17m Phoebus. The spread is 12 points.

Although it is possible that one of the lower performance machines could surprise everybody and win the Open, the evidence suggests that that would be highly unlikely.

The Open is likely to be a struggle for supremacy not only of pilots and countries but of the three major German manufacturers — Schleicher, Schempp-Hirth and Glasflügel. Six Schempp-Hirth Nimbus 2s are entered, three or four ASW-17s and two ASW-12s and eight or nine of the Kestrel variants.

The Nimbus 2 is entered by Dick Johnson and A. J. Smith of USA, the Swedes Göran Ax and Ake Pettersson, Peter Heginbotham of New Zealand and Klaus Holighaus of West Germany. Holighaus, the Nimbus designer and winner of both the German Open Class and Hahnweide competitions last year, must surely be favourite to head the Nimbus contenders, although A. J. Smith (Standard world champion in 1968 and last year's USA Open winner) must be close on the heels of the German. Johnson, who has flown in five world champs since 1952 (best position 4th), will also be extremely hard to beat.

Pilots flying the Schleicher machines

included in the list are R. Mamini of Canada and Ian Pryde of New Zealand (ASW-17) with Louis de Dorlodot (Belgium) and Rudi Wetli (Switzerland) flying the ASW-12. Mamini, Pryde and Wetli are newcomers to world champs, and the others have only flown once, putting in average performances. An old campaigner, Wiitanen of Finland, may possibly fly an ASW-17.

On the face of it, the omens do not look good for Schleicher, especially since two of the top pilots who habitually fly the firm's gliders (Grosse and Waibel) are not included in this year's line-up.

The Kestrels have numerically the strongest field, and are probably in a better position than the Nimbus 2s. An intriguing sub-contest could develop between Glasflügel (which produces the 17m Kestrel and the 22m 604) and Slingsby Sailplanes, which has developed the 19m Kestrel.

On the Glasflügel side, favourite must surely be Walter Neubert, who many think would have won at Marfa had he not lost virtually the entire second day of the contest through retrieve problems. He has since been flying the same machine, the Kestrel 604, brilliantly, and recently broke the world 300km record in Kenya (see p225). Alf Schubert of Austria (who came 4th in 1968) is also flying the 604, and cannot be easily discounted, while a third is piloted by Serra of Italy. Bert Zegels of Belgium is also entered with a Kestrel, and he put up a tremendous performance last year to win the Open Class of the Coupe d'Europe.

Slingsby's interests are represented by at least four Kestrel 19s. Malcolm Jinks of Australia is acknowledged to be one of the country's most consistently brilliant pilots, and his undistinguished performances in his three world champs so far must be to some extent a measure of the paucity of high-grade competitors in Australia. (Regrettably, the same remark applies to New Zealand). Fijikura of Japan is also flying a Kestrel 19.

But Slingsby's main hope lies with the two British entries. George Burton will be flying his special carbon-fibre spar Kestrel 19. He has flown in the last three world champs and has performed consistently well. Nick Goodhart, now that Sigma is unable to compete, will also probably fly a Kestrel built by Slingsby.

He is one of the most experienced men flying in the Open, having competed in six world champs and winning (with the late Frank Foster) the two-seater class in 1956. He is still a superb pilot, and won the British Standard Nationals last year.

Who do we choose, therefore, from Schempp-Hirth, Schleicher and Glasflügel/Slingsby? Holighaus or Neubert, with Johnson, Smith. Schubert, Zegels, Goodhart and Burton all likely to run them very close.

A major imponderable lies with Poland (as usual, one is tempted to add). The newly developed Jantar is Poland's first major excursion into glass-fibre; the 19m flapped wings, tailplane and cockpit being made out of the material. The aft fuselage, however, is of metal. The tail is upright, as in the Orion. Have we, then, seen in Cobra the last of the characteristic swept-back tail configurations of the Polish competition machines?

Stanislaw Kluk won the Polish Nationals last year and will be flying a Jantar in his first world champs; his team-mate, also in a Jantar, is Henrik Muszcynski, who has flown once before, in 1968.

TOUGH AT THE TOP

Half of the pilots who placed in the top 10 in the Open Class at Marfa and four of the top 10 finishers in the Standard are not among the entries. This indicates just how keen competition is for places in the world championships, particularly among the leading countries.

Hans-Werner Grosse, for example, was Open runner-up at Marfa and only missed getting into the West German team by the skin of his teeth (and, some suggest, the odd metre of the ASW-12). He is still a formidable pilot, as shown by his recent smashing of the world free distance record (see p223). Edward Makula of Poland is another familiar figure at world championships. An ex-world champion, he flew to 5th place in the Open at Marfa.

Alan Cameron (New Z), 5th in the Standard Class at Marfa, is another notable absentee, as is Gerhard Waibel, who came 6th. Other Marfa top-tenners

who are not flying are Britain's John Delafield (Open, 7th), Labar of France (Open, 8th), Wally Scott of USA (Open, 9th), Johannessen of Norway (Standard 8th) and Petroczy of Hungary (Standard 9th).

France, according to *Aviasport*, was sending a team of four—Ragot, Cartry, Mercier and Geskis. If that country's omission from the list is a clerical error, then Mercier, who came 3rd at Marfa, must be reckoned among the favourites.

But, France aside, who will win? Dare we stick our necks out? No further than, perhaps, to suggest that the Standard winner will most probably come from Poland, USA and West Germany, and that among the top 10 pilots will be Renner, Wödl, Reichmann, Fitchett or Cardiff, Wroblewski, Kepka, Moffat and Hans Nietlispach, the perennial winner of the Swiss Nationals.

And the Open winner will probably come from West Germany, Poland, USA or Great Britain, with the top 10 from a more open field of Holighaus, Neubert, Johnson, Smith, Schubert, Zegels, Burton, Kluk, Muszcynski, Goodhart and Ax.

One must not forget the FAI 19m Gold Cup. This eliminates the pilots flying the Nimbus 2, ASW-17 and the Kestre 604, and leaves our by now bloodshot crystal ball to gaze upon Burton, Kluk, Muszcynski, Goodhart and, depending on which Kestrel he flies, Zegels to be the major contestants for that prize.

But we'll probably prove wide of the mark. A statistician could no doubt write down everything quantifiable about each of the contestants, translate it into computor language, stuff it into the machine and come out with a list from 1 to 42 or 33. But what is far more likely to happen is that the computor would emit a rude red slip saying "Insufficient data". For gliding is much like any other out-door sport. It depends not only on the man and the equipment, but on variables such as the weather, conditions which suit one pilot's temperament more than another's, retrieve difficulties or some unfortunate out-landing damage. These and other factors cannot be quantified, and will throw any number of spanners into the smoothly oiled bearings of the prognosticator.

WEATHER

By M. P. GARROD

ALTHOUGH not as spectacular as that normally experienced in Texas, the weather during the summer months in Yugoslavia is excellent for soaring on most days.

Vrsac, situated in the northeastern sector of Yugoslavia, is largely protected from the effects of frontal systems from the Atlantic, and it has been confidently stated by the gliding fraternity there that soaring can be expected on almost every day. Indeed, last year's National contests achieved thirteen contest days out of fourteen.

Anticyclonic weather is the predominant feature, though brief outbreaks of colder air can bring about widespread thundery activity and some short spells of rain. Prolonged rain is extremely rare for the month of July. The average for July is just over two inches at Vrsac, but with frequent daytime temperatures in the mid-eighties, sometimes well into the nineties, the area is largely dry and dusty. When the famous Kosava wind blows (an easterly) the Belgrade region suffers from dust storms, and this wind has been known to reach as high as 40mph.

Thundery weather can be expected on one day in three, though cumulonimbus clouds are more likely to develop to the west and south of Vrsac over higher hills and mountains.

During quieter, anticyclonic spells, the Vrsac region is typified by "blue thermal" weather, but the high lapse rate at low levels during the afternoons will give a greater depth of soaring than one would usually get in the British Isles under similar conditions.

The average thermal strength quoted is 2m/sec, but "above places where corn is mown or when straw is burnt", 7m/sec can be achieved.

The duration of the thermal day averages about eight hours, but can be as much as 11 hours.

A high proportion of the tasks set will be triangular courses between 200 and 400km, but on the good days it is possible to set courses of up to 600km (from *Bulletin* 03, 13th World Gliding Championships, Vrsac 1972, Yugoslavia).

33 Entries Open Class (as at April 30th)

Comp. No.	Pilot	Country	Sailplane	Previous Placings 1970	1968	1965	1963	1960	1958	1956
UA	Urbancic, A.	Argentina	Cirrus	16-S	26-S					
AA	Araoz, A.	,,	Cirrus	39-S						
XC	Tabart, A.	Australia	Kestrel 17							
SY	Jinks, M.	,,	Kestrel 19	16-O	32-O	29-S				
DN	Schubert, A.	Austria	Kestrel 604	18-O	4-O					
RO	Rizzi, O.	,,	Diamant 18							
BZ	Zegels, B.	Belgium	Kestrel ?	13-S	10-O					
BD	de Dorlodot, L.	,,	ASW-12	19-O						
FJ	Firth, J.	Canada	Kestrel 19	30-O						
MR	Mamini, R.	,,	ASW-17							
TN	Taarnoj, N.	Denmark	SHK-1							
WM	Wiitanen, M.	Finland	ASW-17/ Phoebus 17	10-O	24-S	13-S	14-S			
AM	Asikainen, M.	,,	Phoebus 17							
XX	Holighaus, K.	W. Germany	Nimbus 2							
WN	Neubert, W.	,,	Kestrel ?	6-O						
GB	Burton, G. E.	Gt. Britain	Kestrel 19	4-O	7-O	5-S				
BP	Goodhart, N.	,,	Kestrel ?	—	16-O	7-O	11-O	4-O	2-O	T-1
MD	v.Steinfoorn, J.	Holland	Cirrus	20-O						
ZA	Zoli, A.	Italy	Calif A-21	12-O						
SS	Serra, S.	,,	Kestrel 604							
FS	Fijikura, S.	Japan	Kestrel 19	38-O	53-S					
HK	Heginbotham, P	N. Zealand	Nimbus 2	—	40-O					
PM	Pryde, I. M.	,,	ASW-17							
KS	Kluk, S.	Poland	Jantar							
MH	Muszczynski, H.	,,	Jantar	—	16-S					
ES	Ax, G.	Sweden	Nimbus 2	15-O	2-O					
PA	Pettersson, A.	,,	Nimbus 2	13-O						
IB	Wetli, R.	Switzerland	ASW-12							
LE	Hauenstein, G.	,,	AN-66							
AJ	Smith, A. J.	USA	Nimbus 2	7-S	1-S	19-O				
RJ	Johnson, R. H.	,,	Nimbus 2	—	8-O	18-O	4-O	15-O	(1952 Ss-24)	
VS	Stepanovic, V.	Yugoslavia	Cirrus	—	48-S	37-S				
PF	Peperko, F.	,,	Cirrus							

O=Open Class; S=Standard Class; Ss=Single-seater; T=Two-seater. According to the rules changes in glider and pilot will be permitted up to 1200 hours local time on July 8. This entry list differs slightly from that published on April 30 by the organisers. **Previous placings compiled by Rika Harwood**

13th OSTIV CONGRESS

THE 13th OSTIV Congress will be held in the City Theatre in Vrsac town from July 13 to 21. The programme has been designed so that sessions will be held in the morning and in the evening, leaving the afternoons free. Buses will be available between the congress hall and the airfield.

Programme: July 13, opening ceremony (by mayor of Vrsac), 11.00; July 14 and 15, technical sessions 9.30 to 12.00 and 17.15 to 19.45; July 16, free; July 17, 18 and 20, technical session 9.00 to 11.00, meteorological sessions 11.00 to 13.00 and 17.15 to 19.45; July 19, excursion; July 21, general conference 10.00, extra meteorological session if necessary 12.00 to 14.00, closing banquet 20.30.

OSTIV diplomas are being presented to D. A. Konovalov (USSR), Paul F. Bikle (USA) and Dr G. R. Whitfield (UK).

YUGOSLAVIA, VRSAC JULY 9th – 23rd

42 Entries Standard Class (as at April 30th)

Comp. No.	Pilot	Country	Sailplane	Previous Placings 1970	1968	1965	1963	1960	1958	1956
10	Rizzi, R.	Argentina	Std Cirrus	17-O						
12	Mattano, A.	,,	Std Cirrus							
19	Renner, I.	Australia	Std Cirrus							
20	Bradney, M.	,,	Std Libelle							
15	Wödl, H.	Austria	ASW-15	21-O	1-O	12-S	5-S			
18	Walsberger, J.	,,	ASW-15							
78	Stouffs, H.	Belgium	LS-1c	37-S	5-S	11-O	27-S			
77	Pissoort, J.	,,	Std Libelle							
84	Webb, D. B.	Canada	Std Cirrus	28-O	13-O	20-O	9-O			
28	Mix, W.	,,	Std Cirrus	4-S	—	—	21-S			
49	Oye, S.	Denmark	Std Cirrus							
70	Sejstrup, N.	,,	Std Libelle	29-S	—	—	10-S	4-S	17-S	
90	Horma, J.	Finland	ASW-15	—	12-O	24-S				
91	Liljamo, L.	,,	ASW-15							
29	Voss, H-W.	E. Germany	Cobra 15							
30	Nolte, B.	,,	Cobra 15	—	20-S					
99	Reichmann, H.	W. Germany	LS-1	1-S						
58	Glöckl, H.	,,	LS-1							
40	Fitchett, B.	Gt. Britain	Std Cirrus							
11	Cardiff, J.	,,	Std Libelle							
53	Innes, D.	Guernsey	LS-1	—	30-S					
37	Réparon, E. T.	Holland	ASW-15	10-O	14-S	21-S				
47	Teuling, D. J.	,,	LS-1							
22	Pronzati, A.	Italy	Std Libelle	—	12-S	23-S	37-S			
23	Perotti, N.	,,	ASW-15	36-S	7-S					
24	Timmermans, A.	N. Zealand	Std Cirrus							
16	Yarrall, D. O.	,,	Std Cirrus							
27	Bulukin, B. W.	Norway	Phoebus A	—	37-S					
26	Ronnestad, E.	,,	Phoebus B							
31	Wroblewski, J.	Poland	Orion	2-O	14-O	1-O				
32	Kepka, F.	,,	Orion	3-S	—	3-S				
34	(not known)	Roumania								
35	(not known)	,,								
36	Orleans Borbon, A.	Spain	ASW-15							
80	Karlsson, G.	Sweden	Std Cirrus							
88	Persson, P-A.	,,	Std Cirrus	—	2-S	17-S	—	22-S	2-S	Ss-12 (1950 6,1948 1)
61	Nietlispach, H.	Switzerland	Std Libelle	12-S	9-S	20-O	19-O	—	—	Ss-4 (1954 T-4)
33	Ruch, T.	,,	Std Cirrus							
17	Moffat, G.	USA	Std Cirrus	1-O	4-S					
21	Greene, B.	,,	LS-1c							
14	Gatolin, M.	Yugoslavia	Std Cirrus	—	27-O					
13	Frenc, Z.	,,	Std Cirrus	—	37-S					

SELF-LAUNCH SAILPLANES

By L. P. MOORE

TRULY mini self-launch sailplanes have been the dream and study of a half-lifetime. It is exciting to see the present resurgence of this old theme at a time when soaring has become so sophisticated and expensive and all too frequently hardly recognisable as a sport. A reaction is evidently setting in, as history repeats itself. History teaches us, however, to beware.

Are we quite sure of what we are seeking? If we are concerned with aerial tobogganing closely over the surface of a gentle slope in near-windless and gustless conditions, there is little problem. But my guess is that such limited interest would last no time at all, even if in fact it now exists. Those with enterprise would surely soon be striking out over the valley in search of soarable winds or thermals and, in short time, ambition would be leading us into serious accidents. Then in would step officialdom and that would be the end of that.

The power boys were once going to solve their frustrations in the form of the DIY "Flying Flea", of which ever simpler versions cascaded off the drawing boards, often heedless of the original designer's conception. "Latest! Latest! Read all about it! . . ."

If on the other hand popular aspiration is—as I believe it is—to be able to soar from a self-launch, in light wind and fair weather, our problem is quite another thing, for we just have to design for gusts, as they are inseparable from soaring conditions.

Moreover, we now need to be able to make fair headway in a 20kt wind and to have a minimum sink of about 3ft/sec and yet be able to trundle safely off the hill under leg power in a slope-wind of not less than say 15kts. All this calls for a measure of sophistication. Let us face up to this.

HANG GLIDERS & INFLATABLES

If by these are meant machines controlled by body movement, then they can probably be ruled out for all but no-wind toboggans. *G* forces from gusts and manoeuvres could and would sooner or later take charge of human muscular power; nor would the drag permit the requisite soaring performance. In no time, drift landings on human legs would lead to broken limbs. Nor could an empty weight of more than about 80lbs be handled and this would limit strength too far for soaring purposes.

The inflatable is one of the first potential solutions to appeal to most of us. I have spent years on a design study of this and I was fortunate to be an associate of Dan Perkins during the development of his tailless Delta, to which Brennig James refers in the last issue of S&G.

At the outset you do indeed visualise yourself getting on the bus with your glider folded into a kit bag, but by the time your glider is sorted out, it weighs a good 100lbs. It is either a thick-winged, low-pressure Delta with the pilot inside of a fairly orthodox, low-pressure, medium aspect ratio wing, wire-braced like a birdcage or the same at lethal pressure but without most of the wires. Then there remain the problems of altitude "breathing", of seam strength and of puncture liabilities.

With the insertion of wood battens, one begins to find happier solutions and enthusiasm soars until suddenly one realises how much better and safer it would be to fill the wing with rigid foam instead of compressed air. Before you know where you are, you are designing Gipsy, the original of the BG-135.

Now Gipsy began life with all the best intentions in the world. Carved out of polystyrene foam; plywood "D" skin; fabric skin aft with no more stiffening than its glue; plank planform of course; Scud-type fuselage; no wheel; no bonding problem as with metal skins

Marching alongside Gipsy was a pilot-enveloping Delta, with plank wing extensions. Both were going to cost nothing and to weigh nothing. But when it came to engaging design partners and manufacturer, I was soon to realise that all this dreaming must cease and

give way to something orthodox and which everybody could understand!

Looking back with hindsight and the great deal of experience since gained, I feel confident that a "light-wind soarer", as pre-war Germany used to call them, could be produced inexpensively with every chance of success. What follows is a general idea of what I have in mind.

GENERAL DESIGN

The wing section would be a thick one having a reflexed trailing edge, with a view to reducing torque and hence to reducing tail volume and weight, as well as that of the wing itself. Exceptionally low weight would be required to make up for the reduced "power factor" of the reflexed section, as much as for the benefit of self-launching. Span, 36ft; chord 3ft.

Despite the weight-saving to be had by planform taper, one's choice would be for the plank because of its marked structural control, and cost virtues.

The main spars would be metal; the subsidiary spars, ribs and skins in plywood; stabilisation by solid, rigid foam cores; ailerons in metal and an area-controlled para-brake. There would be a landing skid—the machine would be trundled over the hill with the skid down by the pilot's legs; these would be retracted into the cockpit nacelle on take-off, and the landing would be made on the skid.

There would be much more positive stability than usual; cable controls (having a longer stroke than usual); wing tip spoiler/rudders; weight of the order of 150lbs; two instruments (variometer and angle-of-attack); no parachute; T or V-tail on a short fuselage; no cloud-flying, no aerobatics and stressed to the BGA's specifications accordingly.

A light-wind soarer on these lines would be no toy and no hazard. It could have a very fair cross-country performance, with outstandingly good thermal ability by virtue of its small circling radius. Flown in a responsible manner in the conditions for which designed, it could provide a very sporting class.

Once the possibilities of this type had been demonstrated, I feel sure that there would be a lively demand for production from those of us (the majority of the British gliding movement) who haven't quite enough money during our youth and our early career and family-making years, to become syndicate members of a modern existing type.

MORGANTOWN '72

By ERICA SCURR

THE panel of experts at the 1972 Symposium on Competitive Soaring, held at Morgantown, West Virginia, from February 11 to 12, included the United States International team, Ben Greene, Dick Johnson, George Moffat and A. J. Smith. The theme of the meeting was, therefore, competition flying at the highest level, and the four pilots destined to explore Yugoslavia later this year provided an interesting preview to the 1972 World Championships. Discussion ranged from gliders, their selection and preparation, to the expected weather conditions at Vrsac and the type of tasks and soaring to be used.

The instruction sessions included valuable information on how and what to practise in competition flying and how to get the best possible performance out of your particular sailplane.

Dick Johnson, a self-confessed soulmate of Philip Wills and supporter of distance tasks, expressed his own contest philosophy with an emphasis on speeds to fly. Using explanatory graphs, he showed convincingly that while MacCready was right, a conservative approach to MacCready speeds would cost little in terms of average cross-country speed and could well make the difference between finishing and landing out. (See also letter, p245.)

The lecture the following morning, entitled "The price you pay not flying MacCready speeds", was therefore expected to provoke controversy. However, Will Schuemann, a noted eastern US pilot capable of moving a ballasted Libelle H-301B along at impressive speeds, carried the mathematical analysis even further and suggested that it was impossible to maximise the MacCready system because of instrument lag and human responses, and that there was no advantage to be gained by flying a

current Standard Class glass ship at greater than 75mph even in strong downdraught. In a second presentation, Will Schuemann described the tools he had used to determine where he was losing performance in an H-301B and how, by a series of relatively simple non-structural modifications he had improved the performance to equal that of an ASW-12 in the higher speed range.

While the flying talk continued upstairs, the pilots' wives retired to the recreation room and silk-screened tie fabric with glider designs to make gifts for their husbands, under the direction of Betsy Byars. The ladies shared their space with the Concept 70, assembled by Wolfgang Schaer and Art Zimmerman for all those interested in flying "made in the USA" to see. George Moffat described the performance of the C-70 as equal to any of the present production Standard Class gliders and stated that the highly effective landing flaps permitted off-field landings in small spaces at much slower speeds than was possible with any of these.

After another successful dinner and an encouraging speech from Gren Siebels on the essential growth and development of American gliding, the draw on Sunday morning was how to set World records. Karl Striedieck gave a colourful account of his November 1971 ASW-15 flight which earned the world out-and-return record of 569 miles and the Lilienthal Medal. After describing the terrain, weather conditions and type of flying used, he lamented the fact that 1½ hours of daylight had remained unused and suggested a 760 mile flight.

The meeting ended with a promise from the Byars-Holbrook team that the proceedings would be published later in 1972, but with no commitment to a publication date.

A NOTE ON "FLIGHT LEVELS"

By JOHN ELLIS

GLIDER pilots about to take off either set zero on the altimeter or the known height above sea level of their take-off point.

The first method will subsequently read, directly, height above the take-off point and the second will give height above sea level and (using a map) the amount of terrain clearance. This is of course subject to individual altimeter error and is only valid providing the environmental atmospheric pressure does not change.

Commercial pilots on the ground before take-off also use either system except that they obtain the environmental pressure reading by radio and set this on the altimeter subscale. A reading other than zero or airfield height is then a measure of the amount of altimeter instrument error at that particular height (always assuming that the pressure reading obtained is correct).

The first "millibar" reading is known as the QFE and the second as QNH. Which system individuals use is dependent on the particular operator's policy.

Remember that the correct readings are dependent on the environmental atmospheric pressure remaining the same. Of course, it doesn't—it changes both with time and with distance.

Thus, since it is not possible continuously to update the altimeter subscale setting once an aircraft has left its original setting point either in time or distance, or both, there is only an *indicated* reading on the altimeter which is therefore an *approximation* of the true height above take-off or sea level.

Since 1 millibar equals 30ft, a change of, say, 30mb would give an error—up or down—of 900ft. This is not particularly important in gliding but it *is* important when considering aircraft in airways separated for control purposes by 1,000ft. Aircraft originating from different places using out of date altimeter settings could easily have their controlled separation degraded by 1,000ft or more and not in fact be separated at all—big bangs all over the sky!

To ensure that this does not happen, all aircraft flying above a certain level in controlled airspace set a theoretical datum on the sub-scale (1013.2). All aircraft at the same point in space will then be flying at particular heights, known to

control, above this theoretical datum and they can therefore be separated.

The climb or descent height at which they change altimeter settings to 1013.2 depends mostly on terrain clearance considerations, but is locally defined. Aircraft flying with 1013.2 set are flying "Flight Levels" (marked as "FL" on maps). It is emphasised that this will only be true height if the environmental pressure happens to be 1013.2; for control purposes this is obviously immaterial.

Airway bases can be, and are, defined as Flight Levels. It should be clear by now that the true height of such an airway base will rise or descend dependent on the environmental pressure. This is important to a glider pilot flying near the base. The only safe way to avoid an infringement is to set 1013.2 on the glider altimeter, fly on FL while in the vicinity, and return afterwards to the original subscale setting for approximate height above ground or take-off point.

To summarise, a "Flight Level" is a height with reference to a theoretical datum point for control separation purposes only.



HOUSE FLY-ING

by Basil Wordsworth

AN airforce prisoner of war camp was not everybody's idea of the ideal venue for spending the beautiful summer of 1943, but some of us just had no option and had to make the best of a boring existence. Conversational subjects usually ranged from food to escape, home, more food, flying, women, any-



thing else in that order of preference. But after a time even conversation became boring and the next best thing was to get out and bash in a few circuits by walking round and round the compound for exercise.

It was on these circuits that we first began to notice the storks, floating lazily round, flaunting their freedom in front of us earthbound "kriegies". It was while discussing them and their flying habits that a few of us first heard about "thermals" from a knowledgeable member of our particular "combine", as he explained how the clever storks stayed up without flapping. We were fascinated by the whole subject and when he got on to explaining how even "gliders" could utilise this "free" lift, the idea was suddenly born among us that we should use some of our enforced leisure and construct a model glider.

At first some of the combine were not very impressed, saying that everybody sometime or another seemed to be hacking away at bits of wood, carving out Spitfires, Hurricanes, Halifaxes, Lancasters, etc, but the rest of us got round them by saying we would build a "flying" model, a glider, with no engine, that we could fly round the compound.

Interest was aroused and boredom was dispelled by putting our minds to the project and using our wits to scrounge the necessary materials.



Wood. Red Cross parcels from Canada came in three-ply boxes and if carefully opened up, each layer of ply was just the thing for cutting out ribs and bulkheads. For spars and longerons a good straight-grained bed-board was ideal, and though as many of these as possible had already been scrounged by the Escape Committee for tunnel linings, one more wouldn't make all that difference to our already uncomfortable beds.

Glue, Red Cross cigarettes came in cardboard cartons sealed with gummed paper, and when soaked the gum could be carefully scraped off and collected.

Fabric, Germany, being abundantly blessed with huge forest areas, could make as much paper as they wanted, and one thing the Germans didn't ration was rather good quality tissue paper in toilet rolls.

Dope, the best we could do was to collect the waxed-paper wrappings from Red Cross army biscuits, heat it, and gently scrape off the wax which made rather a heavy sort of dope when melted and brushed on with a shaving brush. This was almost wanton waste, as a couple of month's hoarding by the combine would just make one small candle.

Drawings were started and interest grew, not only in our hut but all over the camp. Outsiders would gather round to stare and butt in on our arguments about design, wing sections, structure, etc. Some of the advice and suggestions couldn't very well be ignored as they came from qualified engineers, designers, and even one who had been engaged on aerodynamic research in wind tunnels before joining up and being shot down.



With all this brain power contributing towards her design, we were more than keen to get on with construction and it wasn't long before the little 2ft 6in 'plane was dominating our every day, and had even sparked off a craze. Rival glider manufacturing groups were springing up all over the camp and helping grown men dispel their boredom.

The great day finally arrived and never had such a little plane had such an audience for her first trials. She was the centre of attraction and during her flight trials her "crew" were inundated with advice, hints, and suggestions by literally dozens and dozens of professional pilots and flying types.

In a few days other gliders began to appear and from the beginning even the guards were so interested in the flying that they readily allowed themselves to be "volunteered" into "retrieve crews" whenever one of the planes did a cross-country and lobbed down somewhere outside the barbed wire. Sometimes retrieves weren't all that easy either, and on being chided for his lateness, a guard would apologetically explain that he'd had to climb to the top of a fir tree, or wade into a pond, or climb through a few fences, in order to restore the all important glider.

It had to happen sooner or later though: the summer wore on, thermals got better and better and the models got bigger and bigger till finally a big four-foot job was caught up in a thermal and last seen heading for the Russian Front



complete with the hopeful owner's name and address printed on the fuselage.

Some clod of an un-airminded guard told the Camp Commandant he'd seen a message written on that particular machine, with the inevitable result that all gliders were forbidden and confiscated. That oaf of a tale-telling German certainly wasn't top of the popularity poll.

Life for the flying types had become dull and monotonous once again. Fellows were apt to brood over the loss of their kites and get niggled easily, especially with the flies which, at that time of the year, were a persistent nuisance with their everlasting buzzing around and settling on everything when a bloke was trying to eat, talk, or even just brood.

Somebody eventually caught one alive and as a lesson to its mates still buzzing around, tethered it to the table with a couple of feet of thin cotton. Interest picked up, and soon the little fly had an enthusiastic audience watching its antics and severely criticising its flying, turns, stalls, landings, etc. Then someone (pro-

bably an air gunner) had the bright idea of catching another and attaching a minute tissue paper drogue for it to tow around, with the inevitable result that other gunners formed an Ack Ack section, and guns (pea shooters) were manufactured from rolled up cardboard.

Unfortunates who knew nothing of the latest development in the flying world were rather startled when they wandered



into our hut and little target drogues went floating past their eyes, and were more flabbergasted when range, deflection and elevation orders rang out from the now enthusiastic gunners!

If flies could be used for towing drogues, couldn't they also be used as power units for little tissue-paper aircraft? Why not indeed? Previously bored pilots were now busily catching flies and experimenting. Tying the "engines" on with cotton proved too much of a finicky business. Glue would be a much better idea, so in the early stages we tried what was readily to hand—awful, gooey, German jam, or *Marmelade*, but though many aircraft were constructed in this manner, relatively few were really successful.

Mostly they were dismal failures, till the brains figured out that the *Marmelade* was the snag. It didn't dry out properly, and consequently the power unit slipped about on the airframe severely upsetting the trim and CG settings! What about our home-made glue? Took too long to dry out. Our wax then? Yes, that could be heated and would set in a few moments.

Production techniques were altered immediately but unfortunately we still met with very little success because covering their sumps with hot wax seemed to have an adverse effect on our power plants, some of them packing up immediately, and others lasting but a short flight before they too seized up. Glue, then, it had to be, and production lines were set up for this slow hardening process, with threats of dire punishment issued to anyone who might be tempted to tamper with the aircraft during this drying out period.

However, even using the harmless glue, too many failures were being produced. A few machines would fly after a fashion, others wouldn't even take off, despite the fact that their engines were hale-hearty and of the best quality. Something was wrong somewhere, but what?

Then some long forgotten genius observed that difficult as they were to produce, aircraft with engines attached by cotton gave about 90% success, whereas glued types were mostly failures. From these observations he made the most amazing deduction that if a fly's



legs were gummed up, it severely affected his wing muscles, and he couldn't produce maximum revs! Even one leg free on each side would make all the necessary difference.

Once again, production methods were altered. Protective paper was inserted between legs and glue during the drying out time, and at last—success! Fully efficient machines were rolling off the production lines one after the other.

Experiments continued however, with ambitious types trying out twin-engined ships, but here they met with another stumbling block. Despite the inexhaustable supply of raw material it was most difficult to single out two flies of even temperament, power out-put, and weight. Sooner or later on a twin engined crate one fly would get lazy, tired, sick or even plain crafty and stop flying. The net result was that the kite would go into a spin and the good fly, doing its best to take recovery action, would flap harder thus aggravating the position till finally the whole set-up spun into the deck.

Helicopters were next on the list with four-bladed rotors and a fly attached to

each tip, the whole thing pivoted on a small pin stuck into a piece of cork. Here again the idea was eventually shelved because of the unequal thrust on each blade and the difficulty of persuading flies to fly round and round.

Gliding types probably won't believe me, but I have actually seen a twin-engined fly-plane towing the dinkiest glider round.

Bigger power units such as blow-flies, bees, and wasps were tried, but as far as I can remember the conclusions reached were that their increased horsepower was out of proportion to the increase in weight and an aircraft with a wing area sufficient to carry their weight was grossly underpowered. Furthermore, supplies were not as readily available as house-flies, stings created an occupational hazard and holding down for the glueing



or tying period was rather more difficult because of their frisky dispositions.

These days it seems hard to imagine grown men messing about with such ridiculous things as fly-aeroplanes, but who knows, in their small way they might have helped quite a bit to preserve sanity and prevent us going really nuts during captivity.

Reprinted from *Salisbury Gliding Club Newsletter*, April 1972.

A MODEL GLIDER FROM 2500 BC

By ALAN YATES

DURING their recent meeting in Cairo, the delegates of the FAI Aerospace Education Committee were taken to Cairo museum to see a recently discovered model glider of span about 12in and apparently made of beech wood. It had been found in 1898 in a pyramid near Cairo and was transferred to a store at Cairo museum. It has been dated 2500 BC. In 1898 few people would know anything about gliding experiments and it may well have been thought to be another carved bird. Recent researchers found it in the store and realised that it may have been an attempt to see if a piece of wood shaped like a soaring bird would fly.

The sight of birds soaring with apparently fixed wings must have been as common 4,000 years ago as it is now. Yet man had persisted until very recently in paying more attention to flapping flight. Daedalus's wings for Icarus and Leonardo's flapping mechanisms were all devoted to imitating the bird's flapping, feathered wing. Not until Cayley was there much evidence of interest in a rigid wing and it was Lilienthal, about 1880, who built himself a pyramid to jump from with fixed wings on his back.

With pyramids much bigger than Lilienthal's and with wood, fabric and craftsmen readily available, the Egyptians might well have been first by four thousand years! The newly discovered Cairo model has a wing of birdlike planform, roughly elliptical, and a wing section also slender and elliptical. The wing sits on the fuselage in a high wing position. The fuselage tapers in an excellent streamlined shape to end in a vertical tail surface. The only fault we can point out with hindsight is the lack of a horizontal tail without which the model would have been longitudinally unstable. A real, soaring bird can trim by minute shoulder movements of the wing forward and backwards but our ancient Egyptian could not be blamed for failing to detect this. (Perhaps he did and made an improved glider and cast this one away for us to discover?)

Many other winged carvings have been found in excavations in Egypt and most are fully detailed with carved feathers, eyes, beaks and feet. They are also beautifully painted. What called attention to the present model was a complete lack of these details and it now seems possible that this was a deliberate attempt to make a model bird that would glide well even if it did not look an authentic bird.

SOUTHERN SAILPLANES

Schempp-Hirth machines continue to lead the way in International competitions

Latest victories are in the South African Nationals where Andy Gough and Con Greaves "cleaned up" the Standard and Competition classes. The Open Class was won by a Nimbus 2.

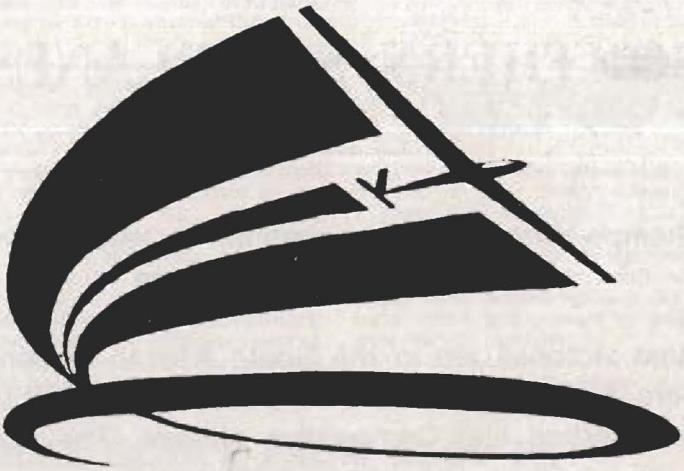
Contact us for more details of these top performance sailplanes

Our repair organisation is always at your service should you be unfortunate enough to require it!

Second-hand sailplanes : Spares : Instruments

Southern Sailplanes,
Membury Airfield, Lambourn, Berks.

Tel: Lambourn 774 **evenings: Hungerford 2058**



FLY COLORADO at Black Forest

Internationally known for wave and cross-country diamond flights • Over 750 F.A.I. badge legs earned since 1965 • Training for beginners and power pilots • Dual instruction in thermaling techniques, dual off-field landings, dual out-and-return x-country and wave flying • Our combined staff represents over 100 years and thousands of hours of soaring experience • Schweizer equipment with radios, oxygen, barographs and parachutes is for rent by the hour, day or week, or bring your own ship • Motel, men's dormitory, club house, do-it-yourself kitchen, camp sites and hangars at the field • The place for recreation and family vacation • For more details contact:

Wave Flights, Inc., 9990 Glider Port Rd., Colorado Springs, Colorado 80908 or call (303) 495-4144

HI AND DRI IN WESTERN SKIES

By PLATYPUS

WE shouldn't be doing a plug for "Teeny-Weeny" Airlines, but the TWA Ambassador service really is the way to see America, especially when you do it on the See-America-at-half-price ticket which you can buy in Britain. (No, we didn't get a free ticket for that ad.)

Having been poured gently off the plane at Denver, we found we then had the choice of getting to Colorado Springs (which is the nearest town to the Black Forest Gliderport) by bus or by Frontier Airlines, all of 60 miles. Naturally, we chose Frontier Airlines, imagining that it would run Ford Tri-motors with a grizzled prospector riding shotgun. In reality the vehicle turned out to be a smart 737, which was barely off the ground before it was back on it again with stewardesses calling out "Colorado Springs passengers please disembark, next stop Phoenix, Arizona. . . ." Like a bus, in fact. Very casual and very professional.

Mark Wild, who runs Wave Flights Inc, had kindly arranged for me to be picked up and driven the 15 miles to the gliderport. Denver is the mile-high city; Colorado Springs is 6,000ft asl and the Black Forest Gliderport higher still at nearly 7,000ft. At that height, twice the highest peak in England or Wales, the sky is a deeper blue than one ever sees it over here. Locals say that it's rather a misty day when you can just see the outline of a mountain range 100 miles away; on a decent day you can see yet another ridge 200 miles distant. It's hardly surprising that in the 1965 World Championships at South Cerney at least one US pilot groped his way round Britain with the aid of direction-finding radio.

That's not to say you can't get lost in America. One arrow-straight road or one 100,000-acre ranch looks much like any other and in brilliant sunshine, cloud-shadows are black enough to hide a town. (Talking about sunshine, it is worth remembering that photographs are likely to turn out *under*exposed because the light meter goes mad. Our pictures turned out like astronauts' photographs of the moon. Sincere apologies: No pix.)

Wave Flights Inc is what it sounds—a business, not a club. There is also a club at the gliderport but it is rather like a large private-owner syndicate; visiting pilots either bring their own gliders or fly the Wave Flights aircraft. All the informality and friendliness of a club, however, is there, combined with the hospitality you find everywhere in America and especially in the West. But there are more professional services and correspondingly higher prices than are normal for Britain. The visitor should budget for about £7-£8 an hour plus tows. This sounds steep, but Colorado Springs offers more height Diamonds per acre than maybe anywhere else in the gliding world.

The wave blows best from November to April, with occasional good days in the summer. Shortly before my arrival in early September 30,000ft had been reached.

Apart from the spectacular mass of the Rocky Mountains rising sheer out of the mile-high plateau to 12,000ft and more, the most striking feature of the landscape to the Englishman is the absence of green fields. In late summer the whole plateau is a parched yellow-brown. (In California it is considered polite to say "golden", but it is army-style khaki to me.) Not much of it looks cultivated and so it is pretty uneven. The wind seems to change direction quite a lot during the day and there are few indicators of wind direction at ground level; I would not be keen on an outlanding in a modern hot ship, as it could be fast and rough.

This seemed just an academic problem until I took a Schweizer 1-34 on an extended local soaring trip of 100km (a 1-34 is pretty much like a tin Dart 15).

After being checked out in the 2-32, I had enthusiastically rushed into the air, not troubling to take the oxygen mask, and was bundled up to 14,000ft asl in about six minutes. I had to break off when base reminded me that the no-oxygen ceiling was 13,000ft. Not to worry, I thought. With over 6,000ft

above ground, I could easily make it back to base from any point around a 100km triangle. It looked so easy. (You can see around a *three*-hundred km triangle in those parts.)

Then, on the second leg, a great invisible hole opened up in the deep blue sky and we started downwards at 1,200ft/min. Now I realised what water ballast was for and why the competition fliers line their cockpits with bags of lead: the less time you spend in that kind of sink the better. I mentally took off my hat to the pilot I met that day who was determined to complete 500km in a 1-26 and so become the fifth man in the world to get three Diamonds in that very basic little glider. It takes nerve and skill to set off in a low-penetration training ship across rugged country with downdraughts of 20ft/sec that are miles and miles across. I thought American pilots had it easy and was now regretting the thought.

With only a thousand feet under the keel I was glumly scanning the scenery for somewhere to make my embarrassing and unauthorised landing when a brutal upward surge put us back in business, spiralling up to the oxygen ceiling again. On the homeward leg we attempted a more or less calculated final glide, but instead of losing 2,000ft over the last 10 miles we gained 1,500 in a relentless blue thermal street that refused to let us come down.

It is not surprising that for final glides a high maximum permitted rough-air speed is desired in competition gliders in the USA. I did see some John Willy-type final glide calculators around but they can only be used to give a rough idea of where you will get to from any height, whereas in Britain they are a pretty reliable guide.

Another place where you will get a kind welcome and giant-size thermals is El Mirage, home of the Gus Briegleb Soaring School in California. Here the dust devils stride across the desert floor in lines like drunken telegraph poles. We imagined dust devils to be isolated phenomena like tornadoes, but they are as much part of the scenery as clouds are. You can soar a street of these fierce thermals keeping an eye on their shadows on the ground, which are the best indicators of their position once you get close to them.

El Mirage is on the edge of a dry lake bed 90 miles from Los Angeles; the 3,000ft high plateau is not, however, immune either to sea breeze fronts or to the notorious LA smog, which in mid-afternoon begins to spill through a gap in the earthquake-torn mountains (among which lie the recent 'quake wreckage of roads and bridges) clearly outlining the convergence zone. For a really fast triangle you time your first leg so as to make the smog-line lie along the second leg.

It is hot there. In LA (or Beautiful Downtown Burbank, to be exact) the temperature hits 116° in the shade in mid-September.

The desert itself was mercifully higher, breezier and a cool 100°F or so. In your car you take a little expanded-polystyrene icebox full of Coke cans and ice which, amazingly, lasts all day.

Someone came up with an interesting puzzle question the other day: If you were in a hot ship with water ballast struggling low over the desert miles from any road, would you jettison the water in the hope of going up or would you keep the water, bearing in mind that if

A COLOUR GUIDE TO CLOUDS

A limited number of these beautiful and instructive books by Scorer and Wexler (retail at 75p) are available at **60p** including postage and packing

LAWS AND RULES

The sixth edition of Laws and Rules for Glider Pilots is now available at **25p** (plus 5p for postage and packing)

Apply now to:

BRITISH GLIDING ASSOCIATION,
Artillery Mansions,
75 Victoria Street,
London, S.W.1
01-799 7548

you do land, you're going to need the water to stay alive? Personally, I would keep the water, but I could be wrong.

Apart from thanking Mark Wild, George Kern and Mr and Mrs Lloyd Licher (Mrs Licher was in training, by the way, to pedal a woman-powered aircraft; I hope she will keep us posted on the project) I would like to emphasise that flying to America and around America is cheaper now than it ever has been. It is certainly not a rich man's holiday anymore. What I would like to see is some enterprising individual or club organising a package trip for umpteen gliders and their pilots.

Any takers?

UK & USA COSTS COMPARED

Some of the charges for the two American operations are summarised below, and compared with those of two British clubs. It must be noted that the buying power of the dollar in America is considerably less than its exact sterling equivalent is in Britain, and that there are no subscription charges in the American operations.

Since the Platyputian article was written, the Brieglebs have retired, and a new group called El Mirage Soaring Centre has taken over the operation of Briegleb Soaring School and the entire El Mirage operations. It must be noted that the charges for El Mirage were those of the Briegleb Soaring School.

WAVE FLIGHTS INC

Hourly rates:	
2-33 (med performance)	£5.30
2-32 (high performance)	£7.60
1-34 (med performance)	£6.45
1-26 (high performance)	£5.30
Instructor	£3.45
Daily hire rates:	
2-33	£21.00
1-34	£23.00
1-26	£18.20
2-32	£28.75
Aerotow: First 1,000ft	£1.35
each extra 100ft	£0.08

Other charges:
Aerotow retrieve £9.15 per hour
Car retrieve 11p per mile
Barograph rental 20p per hour
Processing of barogram for FAI badges £1.90.

BRIEGLEB SOARING SCHOOL

Hourly rates:	
2-33	£4.60
2-32	£5.75
1-34	£4.60
1-26	£3.08
Instructor	£3.08
Aerotow: First 1,000ft	£1.54
each extra 100ft	0.11

LASHAM AND SURREY & HANTS

Rates K-13, K-7, K-8, Skylark 4, K-6E, Dart 17R, Phoebus C: First hour, 6p/2min; second and third hours, 6p/3min; 4th, 5th & 6th hours, 6p/4min; over 6 hours, 6p/5min. (ie, £1.80, £1.20, £0.90 and £0.60 per hour respectively).

Falke motor glider trainer 10p/min engine time plus 5p/min gliding time.

Daily hire, Surrey & Hants:	
K-8 and Skylark 4	£3.00
K-6E and Dart 17R	£3.50
Phoebus C	£4.00
Aerotow, up to 2,000ft	£1.50
each extra 500ft	£0.30

Aerotow retrieve: tug airtime at £6.00 per hour plus glider time at normal charges.
Landrover retrieve, 5p per mile
Wire launch, 45p.

LONDON GLIDING CLUB

Rates:	
K-13	6p/min (£3.60/hour)
K-8B	4p/min (£2.40/hour)

Daily hire: K-8 booked in advance £6.00; not booked in advance, £9.00.
Winch launch: 60p.
Aerotow: 10p per 100ft (£2.00 for 2,000ft), minimum 60p
Aerotow retrieve at tug hourly hire rate (£8 or £10).

STORCOMM

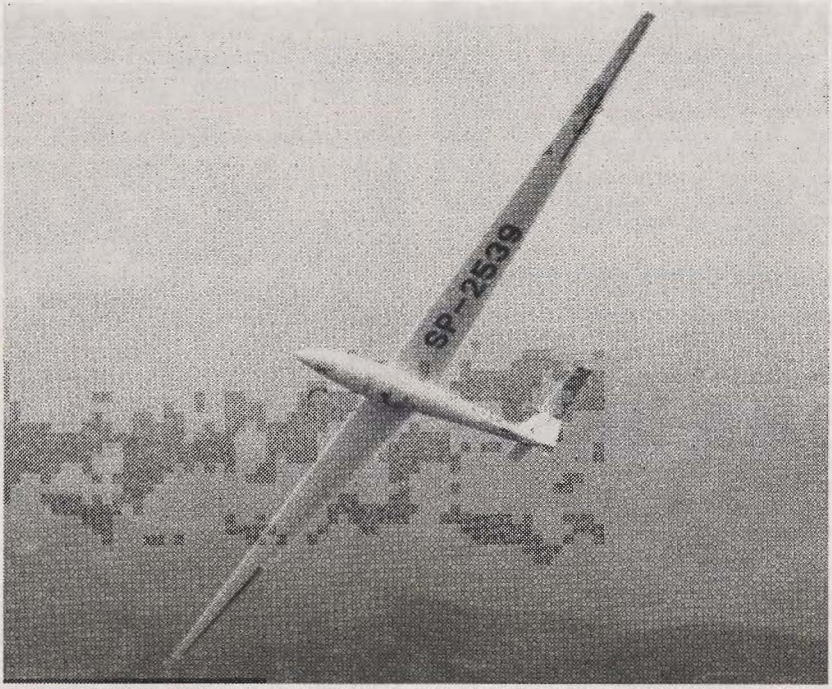
The POWERFUL glider radio
- 1-8 watt transmitter
- sensitive, muted receiver
- prices from £69

Send for details of model TR6701-S

G. E. STOREY & CO.
P.O. Box 4,
SUNBURY-ON-THAMES, Middx.
Telephone 84422

COBRA 15

Order now for 1972



COBRA 15 15M Sailplane 2nd and 3rd in World Championships 1970 1:38 glide angle. Price, delivered Booker Airfield, Marlow, Bucks., with full set of instruments excluding altimeter, £2,915. Without instruments, £2,715. Delivery 6-7 weeks. Demonstrations now available. Write for details.

Also available:

PIRAT 15M Sailplane 1:33.2 glide angle. Price (delivered Booker Airfield) £2,030.

BOCIAN IE Two-seater. Price (delivered Booker Airfield) £2,260.

All prices include full set of instruments, excluding altimeter. Delivery 5-7 weeks.

Polish Tug Aircraft **WILGA 35.** Very short take-off and landing capabilities. Price Ex works £8,320. Delivery 4 weeks.

Full range of PZL instruments in stock

For full details contact John Strugnell at:

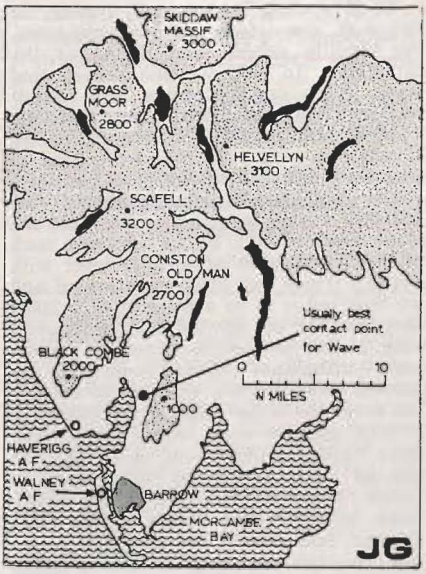
Daltrade Ltd., 110, Cannon Street, London, E.C.4

Telephone 01-623 5464 or evenings Bourne End 23458

Sole exporters—Pezetel, ul. Przemyslowa 26, Warsaw. Poland

WAVE FLYING AT THE LAKES CLUB

By L. REDSHAW



THIS article is in the first part an apology to Mr T. A. M. Bradbury for not making it possible to add a little extra depth to the excellent article on "British Wave Flying 1971". This was due to the failure of the Lakes Gliding Club (a site from NW England) to report its wave flying. In the second part, it is to seek opinions and comments on the type of wave flying we have been enjoying.

First, a brief description of the operating area. Walney Airfield at Barrow-in-Furness, owned by Vickers Limited, is operated as a PPO airfield and made available to the club together with half of a good weathertight hangar and the major part of the control tower as a club house. The club members took the virtually gutted part of the tower and turned it into an adequate club house.

The airfield is equal to the width of Walney Island and being so close to the sea, thermals only develop over or near the airfield with offshore winds. With the prevailing wind from the west and north-west, thermals can only be found some five miles to the north in the Duddon valley. The Black Combe soaring ridge forms the seaward west face of the Duddon Valley and has an average height of 1,500ft (with Black Combe at 2,000ft being the southern bastion) and an operating face of 3 to 4 miles working best with a westerly wind.

Ridge soaring heights of 6,000ft have been achieved. An abandoned airfield (Haverigg) at the southern foot of Black Combe upon which the club has permission to operate is a useful temporary home for pilots when the Combe ridge is working. Autotows from these runways can, with a 600ft launch, allow machines to ride the 600ft knob to the south and move across on to the main ridge.

Heights of up to 8,000ft have been obtained on this ridge. This, we believe, occurs with wave boost; the average height is 4,000ft. This ridge is some 10 miles from the club airfield.

The other main ridge is at Ireleth, this facing north-west and five miles long, with an average height of 800ft. This ridge is five miles from the airfield and is usually reached by aerotow. It can be reached by winch launch, but failure to contact lift means an outlanding. Being roughly parallel to the Black Combe Ridge and 4½ miles to the east, its lift varies due to phasing between the two ridges, but can give climbs up to 6,000ft. The safe return height from the Black Combe ridge to the airfield is 2,500 to 3,000ft and 2,000ft from Ireleth.

It is in this Duddon valley estuary area we have usually found wave flying, up to 18,000ft. Likewise, in this valley one can on a summer evening enjoy katabatic flying in beautifully smooth air as the colder air on the fells and mountain top slides down into the estuary.

To give some background, I must, of necessity, draw from my own logbook, but usually others were flying at the same time. In 1965 we first proved that wave flying could develop with winds straight from the Irish sea reaching, 11,000ft and 10,500ft on two occasions. It was not until 1968 that we started to seek wave lift with northerly and easterly winds and soon established in the autumn, winter and early spring, that the wave operated 50% of the time with such winds. Turbulence at ground level with easterly winds was often experienced and we believed it to be a product of a 200ft slag bank on the upwind inshore channel side. It was proved, however, to be the wave turbulence (down sometimes to ground level) from a wave pattern starting from the Lake District mountains.

With easterly wind waves, we usually have beautiful clear blue skies with no marker clouds indicating wave peaks or rotors. These are beautiful flying conditions, with the whole vista of the Lake District laid out before one and seemingly no risk of being cut off by lower cloud cover. Late 1968 and early 1969 saw our first real coming to grips with these easterly wave patterns, 15,200ft maximum on November 11, 1968, 7,300ft on December 26, 10,500ft on December 28 (this was a northerly wave pattern), 5,000ft on April 6 and 10,500ft on April 26, 1969.

Moving a little more up to date and keeping to easterly wave patterns, we had 13,500ft on February 21, 1971, with 7,000ft on December 28. Three machines reached 18,700ft, 16,500ft and 15,700ft on March 12, 1972.

A description of this last day brings out the typical but rather unusual wave patterns we experience with easterly winds. The wave was possibly much stronger on the Saturday, the day before, but nobody flew. I live in the Duddon valley and experienced on the ground the frequent variations of the wind strength as the base of the wave or the invisible roller supporting it in some odd way oscillated backwards and forwards about every half hour.

By the time I was launched on Sunday, at about noon, Peter Redshaw was wave flying at 8,000ft in the downwind third of the valley abreast Black Combe. I was towed to 4,000ft two miles upwind and dropped in turbulent air. I made the wrong decision, basing my judgment on the relative position of Peter's glider and turned downwind into strong, ever-increasing downdraught. It took 4,000ft and all the virtues of a Kestrel 17 to reach the old airfield, only three miles away on the south end of Black Combe, with a landing in very turbulent air. Average rate of sink 8kts.

Towed off again, upwind, I was this time dumped half a mile further to the east than previously and in smooth air and was soon climbing steadily at 3-4kts. When approaching 9,000ft Peter Redshaw radioed from 8,000ft that he was in a strong downdraught. He was forced to land on the abandoned airfield and had needed 8,000ft to cover four miles. He had made the same fatal mistake of drifting back in the waves.

Relaunched, Peter succeeded in making Gold C height. Another went to David Millet at 16,500ft flying five miles further upwind in the next wave. I also reconfirmed my Gold height. The best height achieved was 18,700ft and still climbing, but oxygen shortage ended the flight. The average wind was 50kts true at 15,000ft with 15kts on the ground. It seemed that the wave was relatively thin, supported on or creating a rotor below it and to slide back was to guarantee trouble; the lower you were the worse it was.

I tried to push five miles upwind to the next wave pattern at 12,000ft, but the sink was too discouraging. I should have tried it at my maximum height, but as stated earlier we have no marker clouds with these usually dry easterly winds and therefore lack guidance as to what is really happening.

I suspect that the Duddon valley and

CHILTERN SAILPLANES LTD.

For C's of A, wood, glassfibre, steeltube repairs

Instrumenting, resprays, trailers, etc.

Dave Paton
300 Luton Road
Dunstable LU5 4LF

Senior Inspection Approval
Tel: Dunstable 64472
(0582-64472)

estuary by coming into phase with the Pennine and/or Lakeland Mountain wave pattern either creates or augments a rotor in the valley and, at the same time, thins the wave. Undoubtedly this rotor reached down almost to ground level. We need to make a more determined attempt to move forward into the upwind areas by pressing forward at maximum height, or as suggested in the wave flying article by Alcide Santilli in *Soaring* (January, 1972) find the end and then go forward. This should allow us to establish whether the rotor is just a special feature of the Duddon valley and estuary or common to the other waves further upwind. On the basis of published literature we should be able to make much greater heights in the waves further upwind.

With the northerly winds we have experienced marker clouds to a pattern well established by published literature. On December 28, 1968, a rotor had developed some three miles north of the airfield with a base at about 3,000ft and a top of 10,000ft and strong smooth lift on what seems an almost vertical face. That night I learnt the danger of going over the top to the rear face as a means of quick return to the ground. Do not do it unless you are directly above the desired landing place. We suspect the wave conditions with northerly winds are triggered off by the Lake District hills and particularly Scafell and its adjoining mountain group and, alternatively, the Skiddaw massiff, with the other mountain groups to the south phasing in and augmenting the lift. The most surprising thing is that given less than half cloud cover during the autumn, winter and spring wave conditions operate on 50% of all north ranging to east winds, even when the ground wind strength is as low as 10kts.

Returning to the easterly wind waves: While reference is made to the rotor below the wave, in view of the intense downdraught just below the relatively thin skin of the upwind wave face, it is difficult to understand how this rotor is of the shape usually indicated in published articles. If it was below the wave the air in the front third would be turbulent but still rising. Experience has shown that once below the wave layer, whether directly under the crest or near the hollow, all the air is turbulent with strong sink. Is this in some way a function of the main air stream passing below the wave hollow and then moving into a much bigger space under the crest? I appreciate that in theory a reducing horizontal mean velocity should deal with this position adequately, but why does nature have to make it operate with such a widespread sink content?

Solid State Glider Radio Telephones, single channel, 130.4 MHZ. **£49.50**

Also Car Radio Telephones, single channel, 130.4 MHZ. Available shortly.

Send for details
Electechniques, Selsley, Stroud, Glos.
Tel. 045-36-3129

WAVE FLIGHTS

THE period for S&G's wave survey ended on February 29. The first part of the report appeared in the April issue, p85, and we hope to publish the final part later this year. Meanwhile, we print below the final batch of wave reports for the period, and take this opportunity to thank everybody for their co-operation in helping to put UK wave flying well and truly on the map.

Date	*Name of pilot*	*Height wave contacted (ft)*	*Height reached (ft)*
Aboyne (Deeside)			
17-4-71	J. R. Jaffray	4000	9200
17-4-71	J. R. Jaffray	3000	3700
8-8-71	J. R. Jaffray	3500	11200
10-8-71	J. R. Jaffray	4000	4000
9-10-71	J. R. Jaffray	3470	3870
13-2-72	J. R. Jaffray	2875	8775
28-2-72	R. H. Cooper & D. N. Charles-Dunne	3500	7300
29-2-72	N. S. Cataudella	3500	7300
Camphill			
11-12-71	D. A. Salmon	1100	5500
11-12-71	D. A. Salmon & J. Cooke	700	2500
22-1-72	D. A. Salmon	800	2500
Kingussie (Cairngorms)			
14-7-71	R. A. Snow	2600	9600
17-7-71	R. A. Snow	3000	8500
26-2-72	W. R. Longstaff	1800	4450
Usk (South Wales)			
12-12-71	L. Chirnside	1800	3500

TO SEE HOW THEY BUILD GLASS SHIPS

By RHODA PARTRIDGE

I HAD wanted to see the Schempp-Hirth works where my Glass Broomstick would be built, and in March I had the good luck to be shown their works, and the Glasflügel works too. Now, if you have technical knowledge in depth about glass-fibre construction, do please go away and read something else. My only experience has been helping my sons to build plastic models (now I come to think of it, I realise that I wasn't helping at all; they were just being kind and letting me play with their toys).

I visited Schempp-Hirth first and Mr Klaus Holighaus showed me round. To start with we sat in his office and talked about Glass Broomstick (she will, of course, be the most beautiful Std Cirrus the Schempp-Hirth works have ever turned out). Then I asked him about the type. The first one flew in January 1969 and production started that August. They have built 200 so far and are working up to a production of 100 a year plus about 25 Nimbus 2s.

The waiting list is 19 months. That waiting list must be a nightmare for Mr Holighaus. He has a very stressful life, I think. Partner in the firm, brilliant designer and brilliant pilot, and being endlessly confronted by characterful and determined pilots who passionately want their gliders now, at once, and give vital and convincing reasons why he should shuffle the delivery list around. I wanted my Glass Broomstick at once, now. But I know a blank wall when I see one. It was nice to meet a man who has had so much success and is still so young.

The works are in a tall old building, very light and airy. First I was shown the wing moulds with wings in various stages of finish. First the white paint, then resin, then glass-fibre, then foam, then more glass-fibre, then controls and brake box and spar. The glass-fibre all mint-fondant green. I was especially fascinated by the spar, made from ribbons of glass-fibre about an inch wide that are fed from a bunch of reels high up. They come together and are led through a bath of resin, then separate and are cut in lengths and laid along the spar. Two lines of them, thin at the wing tip and built up, one on top of another, to come thick at the wing root where they can take a 50 ton strain. It all looks so absurdly simple. But highly skilled. Can you picture the pandemonium if one got in a muddle with those sticky resin-soaked ribbons?

The final stage in producing a wing is laying the top section mould on the bottom section mould and sticking the two sections of wing together. The whole process takes about a week and opening the moulds must be delightful, like opening a horse chestnut. The fuselage works on the same principle and takes about three days.

"What about designing a fuselage?" I asked Mr Holighaus. "Do you use a wind tunnel?"

"It's not really satisfactory," he said, "we don't have one big enough to put a full-size fuselage in, only one-fifth, and in any case the reaction, once the wings are on, is quite different. To design a good fuselage you need experience, flair (you could almost say, the artist's eye) and a nice slice of luck."

I asked him about his workers. He employs around 60 and it takes from six months to two years to train a man, depending on his ability and the job he is doing. He told me that to make a good worker in this type of production a man needs good hands, intelligence and "a certain idealism". The fact that 20% of the labour force are glider pilots helps with the idealism. They run their own gliding group.

The components come out of the moulds with what I, in my innocence, thought was a beautiful glossy white finish, but with the joins showing. "The finishing is the most tiresome job," he told me. "It takes 25% of the total time needed to produce the sailplane and is done entirely by hand, using finer and finer glass paper." I can see that I shall have to be much more careful with my Glass Broomstick than I ever was in the past. After all the care that has been

lovingly taken to give her a superb finish I should be ashamed to scratch her.

After lunch in Kirchheim-unter-Teck I visited the Glasflügel works (Glasflügel means "glass wing"). About 10 miles up a beautiful valley and through neat villages of steep roofed houses. The works are housed in a fine new modern building and I was shown round by Mr Dieter Fuerst. It was really nice of him to give me so much of his time. He knew I wasn't a customer and I'd not have been a bit surprised if he'd said he was too busy.

A few figures. In the four years since the Std Libelle came out they have built 300 and also about 100 with flaps. At the moment they are producing eight Std Libelles and two Kestrels a month and delivery is 12 months for a Libelle or for a Kestrel. They would like to increase production but their hang-up is recruiting suitable labour in such a rural area; they employ 70. They also have the problem of providing a C of A and repair service for Glasflügel owners. In the autumn, Mr Fuerst told me (he speaks excellent English with a rather seductive American accent), the gliders come in for C of A and they are just getting shot of that lot when, in the early spring, pilots who are out of practice start sending broken gliders in for repairs. It all holds up production, and there was a sad banana-shaped Kestrel fuselage reclining on old mattresses to make his point. This problem of servicing is being sorted out. The very day I visited them they opened a new hangar at Saulgau, 120km away, to be used for repairs and Cs of A. Labour should be easier to recruit there. For finishing, their Libelles are shipped all the way to France where they have a firm working for them under contract. The C of A and test flight is done when they get back.

The chief difference I noticed in the way that Schempp-Hirth and Glasflügel build gliders is that where Schempp uses tubular metal in the fuselage, Glasflügel uses all moulded glass-fibre.

Mr Fuerst showed me the fascinating foam sandwich technique. It works like this. White paint, resin, glass-fibre, preshaped foam and roving spar glued to outer skin. The wing wrapped in a socking great polythene bag, hoses inserted, compressor attached and all air sucked out. Result? An extremely strong light wing.

We came round a corner and there was this great white thing. "Crumbs!" I said. "What's that?"

"You must write nothing about that."

"Absolutely nothing?"

"Absolutely nothing."

"Look, suppose I write something and you censor it or approve it?"

"All right, you do that."

So here is what he approved: "It is a meaningless male mould of a glass side-by-side high performance two-seater, three section wing, T-tail. Flaps, retractable undercarriage. To be produced first in a 19m model and then a 22 or 23."

It was terribly impressive, the Glasflügel set up. The care and the skill and all those "Lovely Libelles". So why aren't I buying one? I can't really offer a sensible explanation. One reason is that I had flown and loved the 17m Cirrus and couldn't believe that anyone who designed that glider could design a mean one. The other unreasonable reason is that, as we say of pedigree cattle, the Std Cirrus—"She fills my eye".

SAILPLANE AND ENGINEERING SERVICES LIMITED

Holmfield Road, Buxton

Derbyshire

Adjoining A53

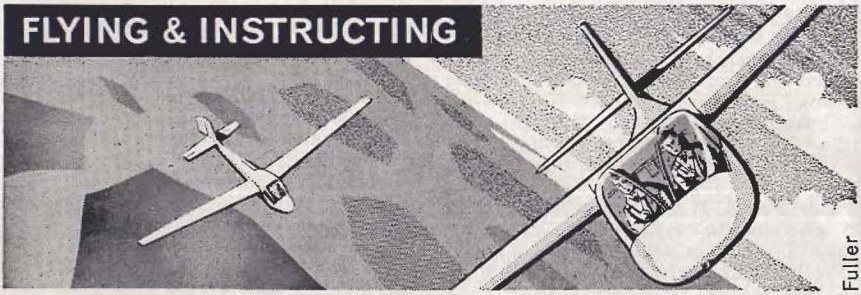
Ring Buxton 4365 NOW

C's of A REPAIRS
REFINISHING

LIBELLE TRAILERS, FUSELAGE TROLLEYS, RUDDER LOCKS, WING COVERS

ALUMINIUM STEEL TUBE TRAILERS FOR ALL TYPES

FIRST CLASS WORK AT THE RIGHT PRICE



Fuller

NAVIGATION TRAINING IN THE FALKE

By ANN WELCH

IT IS traditional that a glider pilot learns navigation only as a result of any cross-country flying that he may do. Inevitably, the consequence of trying to learn the double job of cross-country soaring and navigation at the same time is sometimes too much—and staying up is more important.

Having said this, it is remarkable how seldom, in fact, the tyro soaring pilot gets really lost. Careful selection of weather and direction by the instructor for early cross-countries, combined with slow speed and good pilot view from the glider help to ease the location problem; no one is bothered if the pilot lands at Parva Magna instead of Magna Parva, provided that the field is good.

But what everyone does mind about is that the pilot does not wander witlessly into controlled airspace. With, now, so much of this around the teaching of simple navigation that works has become an essential part of gliding instruction, the only difficulty being the impracticability of using a glider for the purpose since it cannot teach anything much when sitting in a field of daisies. Fortunately the Falke provides the almost perfect tool for teaching navigation to glider pilots—and not only for the reason that it need not land out.

There are obviously many ways in which navigation can be taught, but for the glider pilot the basic need is to learn to map-read reliably while continually having his attention distracted, and his direction altered, by the need to stay up. So the most useful training will be to give the student help and practice in doing just this. In the Falke a surprisingly realistic exercise can be carried out by setting a task, such as a 100km triangle, which the student tries to fly, while the instructor provides the thermals with the throttle.

The exercise comes in three parts; briefing, the flight, and de-briefing.

BRIEFING

The instructor should work on the basis that this one flight could be the only formal navigational training the pilot will get before going off on his own, so he needs to be highly selective in what he teaches and to get the emphasis right. Until the student understands the practical problem it is probably a waste of time becoming involved in vector triangles or even, at this stage, our old compass friends, "Magnetic" and "Deviation".

Briefing will be of more use if the time is spent marking the flight lines on the map and then trying to get across how to look for landmarks, and which are the best ones to look for. Important also are how to use angles—converging railway lines, diverging roads, and lines of hills and valleys in relation to the flight path—the effect of wind on each

leg of the flight, and how to obtain the true heading in degrees for each leg. As far as the compass is concerned (and it will more than likely be a small bubble type with faded, rapidly rotating figures) the essential point to get over is that the student should endeavour to set off pointing in the right direction. He then takes and memorises the compass reading, which is unlikely to be exactly what he worked out in advance. After any circling he should turn again on to his compass heading and check visually whether it is taking him in the right direction, or whether he needs to correct that heading to make good the line on his map. On any subsequent leg of the flight he should turn on to his estimated heading, check again that he is going in the right direction, and at the same time try to build in a correct allowance for the wind.

The most important part of the briefing is to put over the need for honesty in map reading. A position should never be assumed unless the pilot has checked it against at least two other features or landmarks. Finally, the student should be told how to fold his map so that he will not get it spread upside down all over the cockpit.

THE FLIGHT

The purpose of the flight is to see how the student carries out the exercise for which he has been briefed. The instructor should, therefore, keep quiet and prompt or teach only if this will be useful to the student in improving his performance during the same flight. If he gets lost he should be allowed to try to find himself without help.

This is important because each individual works out his own salvation in the way best suited to himself—some will sort out their problem entirely by recognition of features on the ground, whereas others will try to work back mentally over the errors they could have made.

Only if the student is lost to the extent that subsequent wandering will be profitless should the instructor tell the student where he is. This is one advantage of a triangular flight. If a nonsense is made of one leg, a fresh start can be made at a turning point.

If the flight is carried out purely as an "aeroplane navigation" exercise, and the student completes the course without much difficulty not a great deal will have been accomplished. The student will think he can navigate, and the instructor will not know how he will react if lost. Fortunately on the Falke the instructor can simulate with some realism a soaring cross-country situation. Before take-off the student should be told that after the initial climb and setting course at, say, 2,000ft, the engine will be throttled back and the instructor will thereafter control it to provide "thermals". The student can use the thermals or not as he wishes, but if he flies straight on the thermal will disappear. If he circles, the thermal may, or may not, remain. From time to time there may be no thermals at all. If this happens it is up to the student to select a field, or fields, and if no thermals turn up to make an approach into the field of his choice. No landing, of course, takes place; the instructor takes over at a suitable point and climbs to a height at which the student can restart the navigation exercise.

Since the instructor is able to be less random than real thermals, the ease or difficulty of the flight can be adjusted to the student's developing skill. On the first leg of the flight it will probably pay to give a number of good steady thermals so that the aircraft stays high (2,500-3,500ft) to give the student a chance to settle down, orientate himself properly, get an idea of any drift, and check on a few distant landmarks to keep in reserve. Before reaching the first turning point, the student, beginning to understand the problem, will be looking out along the line of the second leg to work out the landmarks towards which he will turn, such as "a bit to the left of that village on the hilltop". If he is still coping well on the second leg the thermals could become rather more scarce so that flying height is considerably different from that on the first leg.

The field selection exercise can be given over whatever country the instructor thinks will be most useful to the student. The one who is inclined to leave too much to chance, for instance, could be "left" over more difficult country than the underconfident pilot who needs to be guided along in easier

stages. If the navigation itself is consuming full concentration it may be more sensible to forget the field landing diversion, or continue it only to the extent that the student is conscious of the need to keep over landable country. On the third leg a final glide can be carried out, with or without thermals, or the aircraft can be brought home on scarce thermals at a lowish height to give practice in really accurate map reading. The engine should be stopped prior to reaching home so that the student is faced with having to organise a proper approach with no second chance.

DE-BRIEFING

For best value this navigational exercise will be expensive in instructor time, since the whole flight should be gone through again in the clubhouse. If the student got lost he should be asked how he thought this happened, where he got to, and how he found himself again—if he did. He should be encouraged to ask questions, and the instructor should also ask the student about things that he could have noticed, such as landmarks far from the triangular course, or nearby airfield signals squares. If done conscientiously the Falke exercise will take a good three hours, of which approximately 1½ hours is the actual flying. Obviously such a flight only touches the fringe of navigation, but if done thoroughly in suitable weather—fine winter days are excellent—with clear briefing and good analytical de-briefing, the flight can be a most valuable contribution to a pilot's training.

THE PRANG THAT GOT AWAY

By DUNSTABLIGHTER

IF I were a Roman Catholic, I would have gone to confessional on Monday morning. Perhaps the CFI on Sunday evening would have been a reasonable substitute. But he'd been up flying when it happened, and somehow one is sometimes reticent about confessing one's sins to the CFI. Perhaps it was fear of excommunication (grounding) or having to undergo realignment with the correct principles ("back on the two-seater!") inherited from one's early solo days. That is by the way.

This public pouring of the ashes complements to some extent the account by Roy Cross of his spin-in from a cable-break (S&G August 1971, p303). Among the contributory causes of that accident were general tiredness and lack of recent experience of winch launches.

I'm a fully paid-up member of what I suspect is a very large club of glider pilots—those with a background of experience, but who have done relatively little flying in recent years. Just keeping their hands in, in fact. Up to 1969 I'd been fairly active with a share in a K-6, about 350 hours, average performance in a few shared regionals and a Gold height gained frantically trying to get out of cloud.

In 1970, the syndicate replaced the K-6 with an SHK. At the same time, my flying was reduced by various circumstances to a minimal level—less than 20 hours a year. The SHK part of this gliding consisted of some local soaring flights and a few bashes along the hill. I got on well with the machine, and neither take-offs and landings, nor its general flying presented any problems.

This year I decided that enough was enough—I was either going to have to get back into the groove of active soaring again, or else give up completely. So I stuck my neck out and placed an entry in a regionals, resolving to get plenty of practice in before so that I wouldn't finish last. My three-month check passed without incident, and my first 1972 SHK flight was fine—Good Friday, hill soaring, tantalising bits of lift which got us up out of the rest of the traffic on the hill a couple of times, normal landing. All quite satisfactory.

On Sunday, April 9, I was my usual mournful self as I got up, had breakfast, and drove the 40 miles to Dunstable. No

illnesses—either in the incipient stage, full-blown or tailing off. No hangover or other effects of riotous living—no riotous living in fact. However, at the risk of sounding like a third-rate stand-in writer for *Coronation Street*, I have to confess that I was not as fit as a youth of 35 should be. I was a lazy slob, and I guess I was to some extent run-down. Also, the job had been getting me down over the previous two or three weeks.

It was a nice day—light wind, cumuli popping, partners absent save for one absorbed with repairing his car. What more could I want? I set about rigging the machine, and eventually got the wings on (it's amazing how one loses one's friends when one has an SHK!). All that remained was to put the bits and pieces together.

I had evolved a routine for the combined bits-on and DI-ing chore, like all private owners. On the SHK, there are relatively few items to check. The first is to ensure that the main pin had been fully screwed home (one dislikes the sort of launches one gets when the wings come apart suddenly). Then one goes methodically from one job to the next, always in the same order, making sure that nothing gets missed out—you know the drill.

This Sunday, I checked the pin. Okay. I wandered back to the trailer to get the first tailplane-cum-rudder thing, and carted it to the rear of the fuselage where it goes. It took me three times as long as usual to put it on. I shrugged. Damned fiddly thing anyway, I thought.

Then I remembered that I normally put the safety pins in the wing locating pins before ever touching the tailplane-cum-rudder thing. I went off to do this, achieved my goal satisfactorily, fastened the fairings on (from behind the wing) and returned to the cockpit to replace the special screwdriver into its pocket. While I was conveniently there, I thought I'd check the instruments. The battery appeared to work and the turn-and-slip made a burring noise when I switched it on. The electric vario read 4kts up, however, which didn't seem right. I contemplated the three knobs it has, couldn't remember which one did what, decided that the non electric one would suffice anyway, and switched it off again.

While I was at the cockpit, I thought it would be a good time to check the controls, that the correct aileron went up when I moved the stick to one side. Then I remembered that it was bit pointless doing this until I had fixed the second tailplane-cum-rudder thing. As I did this, I remember saying to myself that I wasn't acting in a very switched-on manner today. But it didn't cause me any great concern, except that I went over a second time what I'd already done to the machine to make sure I hadn't forgotten something.

By the time we got to the launch point, my motor-absorbed partner had twiddled the right knob on the electric vario to set it at zero, and I was ready to go. He suggested I do a 100km triangle. I vetoed the idea, but thought I might do a few specific exercises like cloudflying.

The day was still eminently soarable. We were using the west run, the most straightforward of all the aero-tow runs at Dunstable. The wind was light, south-west—pretty well dead across, actually. As I waited, tucked comfortably into the cockpit and my new gliding anorak, I wondered which tug I would get—the new Commodore with its rocket-like take-off, or the Condor, with its long, slow trundle along the ground before unsticking somewhere over the horizon.

It proved to be the Condor, driven by ex-partner Tony. Somebody put the canopy on, I checked the release mechanism and that the airbrakes were closed and was hooked on. The Condor trundled off, and the SHK started to roll.

A moment later I realised that for some reason I was moving about 15 degrees to the left of the tug's track. I tried to rudder the machine into the cor-

VHF RADIO-TELEPHONES

for 129.9 and 130.4 mhz.

Models from £40 to £160

New magnetic based aerials £8.50

RADIO COMMUNICATIONS LTD.

Rue des Monts, St. Sampsons, Guernsey, C.I.

rect position. I don't remember consciously trying to raise the tail wheel off the ground to make this easier.

Then I must have unstuck. Suddenly, instead of being off to the left of the tug, I was a long way off to the right and climbing like a winch-launch. I was looking down at the tug, now well below me on the left and still on the deck.

Poor Tony! I'll dig him in, I thought, and slammed the machine hard towards the tug, with handsful and bootsful of various controls. In the middle of this it occurred to me to pull the release, and I fumbled for it.

But my dive—and I shudder every time I think of how close my left wing came to the ground—must have slackened the rope and allowed Tony (who I understand was on the point of working *his* release) to unstick the Condor. A few milliseconds later, we were both airborne, at reasonable altitudes and attitudes, and the rest of the tow was uneventful.

The lesson, I think, is clear. Everybody, I believe, has off-days, brought about by no accountable reason or combination of reasons. I've suggested a couple of reasons which might have contributed to my not firing on all cylinders that Sunday, but I think there was probably an additional, undefinable "off-day" parameter to be taken into account.

A pilot who is constantly in a high state of practice, with regular hours, summer and winter, under his belt, probably doesn't suffer much harm when he has an off-day. His thermalling may be scruffy. He may have to land out when he should have completed the task.

Pilots flying in the spring after a relatively inactive winter are acknowledged to be rusty, and usually they are well aware of this.

But what about the pilots who put in a steady 10-20 hours a year over a period of several years. What happens to them when they have an off-day?

See above.

"SUBSTANTIAL" ACCIDENTS BACK TO 1968/1969 LEVEL

ALTHOUGH the total number of accidents reported during the year ending September 30, 1971 was only four more than in the 1970 period (with the average per 1,000 launches marginally better at 0.43), the number of substantial accidents (51) was back to the levels reported for 1968 and 1969. In 1970, they had dropped to 34.

About 50% of the 1971 accidents fell under the headings "circuit planning", "field selection" and "failed launches".

The Safety Panel commented that two of the circuit planning accidents occured to pilots with less than one hour's solo experience, and five to *ab-initio* pupils undergoing dual instruction, in some cases with very experienced instructors.

A point which should be watched in the future is the tendency for some pilots of very high performance sailplanes to adopt the view that their shallower glide angles justified final turns at too low a height. Those pilots should recall that on the T-21B the spoilers were very effective at the correct approach speed but lost their effectiveness if the speed was too high. Similarly, on high performance machines (particularly those with top brakes only) the speed control on approach was vital. In no case did those characteristics justify low turns. They should be made at a safe height and at a suitable horizontal distance behind the landing threshold to allow for adjustments should a change in conditions of sink be encountered.

All the field selection accidents (save one, where a wing tip struck a tree on approach) could be attributed to either late or undersized field selection. Flying experience had little bearing on the matter, for both pilots on their first cross-country and competition pundits were involved.

Examination of the minor accidents in the field selection category highlights two types of accident which could easily have caused substantial damage.

One was failure to identify slope. "This

Accidents	*Substantial*	*Minor*
Circuit planning	10	13
Field Selection	8	11
Failed launch	7	6
Spin in*	4	—
Supervision	4	2
Ground loop after wing drop on launch	2	1
Mid air-collision (number of gliders)	2	—
Airbrakes open on launch	1	—
Blow over on ground	1	—
Others	15	20

*Three were from failed launches and are referred to twice.

is where motor glider training for cross-country field selection has such a distinct advantage. It might be worthwhile for clubs without a motor glider to consider an arrangement with a club with motor glider facilities to provide their members with some training in cross-country field selection," the report said.

The other was running into the upwind boundary due to excessive landing speed. "In this particular case it was considered to be due to the pilot flying cross-country in a glider with which he was unfamiliar. From the training aspect, this opens up a new area for consideration with respect to airspeeds on the final approach. There is a definite tendency for instructors to accept that providing a pilot is achieving at least a safe minimum speed on the approach, a satisfactory level of competence has been demonstrated. With the modern generation of very high performance gliders potentially at every pilot's disposal, this type of accident emphasises the need to ensure that pupils are capable of making approaches at constant airspeeds down to the point of commencement of the round-out."

Where failed launches were concerned, indications were that much more attention needed to be given to training in this area. Most pilots appeared to be able to cope with failure involving an instantaneous loss of power—the cable break. The problems seemed to arise when the loss of power was gradual or fluctuating. "There is, therefore, scope for simulated gradual power failures during both pre-solo and post-solo training time".

Fatalities and injuries

	1968	*1969*	*1970*	*1971*	*Average*
Fatal	5	2	3	2	3.00
Serious	6	3	3	6	4.50
Minor	1	4	15	9	7.25

THE A-Z OF GLIDERS

Look at the name and address of Alexander Schleicher below and you will find only four letters of the alphabet missing.

Look at the list of Schleicher gliders below and you will find it equally comprehensive. From initial training to world class competition flying there is a Schleicher glider for every facet of your sport.

ASK-13 Well tried, robust and docile performance two-seater.

K-8B Follow-on training single seater with crisp handling and excellent soaring capability.

ASW-15 'Glass' standard class competitive single-seater of proven top performance.

ASW-17 20 metre 'glass' super high performance competition glider for those who only want to win.

ASK-16 The new side-by-side performance motorized two-seater for training or cross-country flying.

Hire purchase and personal loan schemes may be arranged. Or why not let us quote a very attractive leasing system for your Schleicher glider or fleet, enabling you to keep right up to date.

Write for further details without obligation to:

LONDON SAILPLANES LIMITED
c/o J. Jeffries, Dunstable Downs, Bedfordshire

Sole agents for:

ALEXANDER SCHLEICHER
SEGELFLUGZEUGBAU
D-6416 Poppenhausen an der Wasserkuppe, West Germany

SPEEDWELL SAILPLANES

SHEPLEY LANE,
HAWK GREEN,
MARPLE,
CHESHIRE.
Postcode: SK6 7JW

A.R.B., B.G.A., P.F.A. Approved

ALL METAL TRAILERS FOR
ALL TYPES

Telephone: 061-427 2488

AIRCRAFT INSURANCE

Phone, Call or Write

J. A. HARRISON (BROKERS) LTD.
"SECURITY HOUSE"
160-161 BROMSGROVE STREET.
BIRMINGHAM B5 6NY

Telephone 021-692-1245 (10 lines)

FOR KEENEST RATES,
SERVICE AND SECURITY

SOARING IS FUN

For the **holiday of your life** combine the joys of a gliding course with beautiful scenery and interesting activities at the

SOUTHERN SOARING CENTRE

We CUT the frustration out of launching which means

MORE FLYING
MORE INSTRUCTION
MORE FUN
FOR YOU

This is achieved by an all aero-tow system and your instruction is handled by two resident fully rated B.G.A. instructors. Courses are restricted to five persons per 2 str. thereby ensuring maximum flying — **for you**

Between flights, you may care to relax and watch (or join in) the thrills of parachuting and pleasures of power flying. Our modern restaurant is open daily, and comfortable accommodation can be arranged nearby if desired

So for the **holiday of your life** why not drop us a line for further details at
THE SOUTHERN SOARING CENTRE (Dorset Flying Club)
COMPTON ABBAS AIRFIELD
SHAFTESBURY
DORSET

Tel: FONTMELL MAGNA 328

THE ASSOCIATION SHOULD LOOK INTO HANG GLIDERS — CHAIRMAN

THE British Gliding Association should take an interest in and look after "hang gliders" in Britain, Ken Wilkinson, retiring chairman of the BGA, said at the Annual General Meeting, held at the Palace Hotel, Buxton, Derbyshire on March 25. He thought that the hang glider movement, already popular in the United States, had a great potential in Britain, especially as conventional gliding was fast becoming an expensive sport.

The Chairman's report for the year ending September 30, 1971, was published in S&G, April 1972, p83.

CLUB GRANTS — AID FROM REGIONAL AUTHORITIES

Joan Cloke, chairman of the Development Committee, wrote in her report that gliding clubs may be exempt from the recent changes in government policy which said that local sport and local clubs would be the responsibility of local Government. It had been decided that grants to clubs with a "regional significance (or 'larger than local') would continue as usual to receive aid from central funds".

A number of clubs had been asked to analyse their membership by local Government areas, and the results showed that very wide areas were covered. One typical club covered 80 local authority areas and the highest percentage of members in any one area was 12.5%. There seemed to be little doubt that gliding clubs were anything but "local", and Miss Cloke recommended that clubs should apply for grant aid in the usual way to Regional Sports Councils. When applying, they should strongly emphasise their case that they were serving a "larger than local area".

The reorganised Sports Council became an executive body on April 1.

The report also said that during the year 15 enquiries and requests for advice on forming a gliding club had been dealt with. "A few of these requests may result in new clubs or groups being set up, but most will be defeated by difficulties".

Security and use of sites continued to be a major source of anxiety. Only eight out of 41 open civilian clubs owned their sites and a further six had reasonable security of tenure.

More clubs were reporting that they had waiting lists for membership; it was clear that many people who would like to take up gliding were unable to do so because facilities were not available within reach of their homes. Travelling time to a club with good facilities which people were willing to undertake was generally accepted to be 1½ hours, but the survey had shown that in some well established clubs as much as 23% of the membership came from well over 100 miles away.

The Philip Wills Reserve Fund had been able to lend money to four clubs to assist them to buy or improve sites.

"We have continued to work closely with the Sports Councils, the CCPR and the Department of the Environment during the year. Our Development Officer prepared a paper for the West Midlands Sports Council making a case for the establishment of a gliding centre in the Nottingham area and has researched and prepared a case for grant aid for a second National Coach. Other projects are in the pipe-line."

Lt Col Christy, the Development Officer, had also been deeply involved in negotiations with the Department of Trade and Industry, MATO and with the Services over the threat of air traffic control and intensive power flying activities to clubs. "In many cases talks are still going on in an attempt to raise restrictions which in our view have been unreasonably imposed upon clubs."

RECORD YEAR FOR RECORDS

The number of "national and UK local" records homologated during the year (14 against a total of four for the previous year) reflected the generally good level of soaring conditions during the year and the increasing number of glass-fibre gliders in Britain. There were 79 competitors in the Nationals against 73 for the previous year, and 139 gliders competing in six regionals against 127 in five.

The Flying Committee report said that the committee had been called upon to adjudicate on a very large number of "doubtful" badge claims. It was expected that the forthcoming year would see some move to tighten up the Official Observer scheme. Tom Zealley, chairman of the Committee, added at the meeting that it had been decided to continue the Senior Official Observer scheme.

The four class Nationals structure was being retained for 1972, but there were likely to be changes for the future, he said.

George Burton, managing director of Slingsby Sailplanes, expressed concern about the CIVV Standard Class flaps situation—it seemed that CIVV was trying to design gliders. Moreover, one particular series of sections would not be usable on Standard Class gliders under the present system.

Tom Zealley replied that the British "majority view" on flaps in the Standard Class had been represented to CIVV. He agreed that CIVV had seemed to have gone towards rigid classes as in yachting. Philip Wills called for a paper on the subject for publication in S&G.

INSTRUCTOR COURSE OVERLOAD ALLEVIATED

From the point of view of instructor training, the most exciting feature of the year had been the decision to recruit a second National Coach, the Instructors' Committee report said.

The calculated demand for trainee instructors for 1972 was 240, of which 115 would have been unable to obtain a course. The arrival of the second coach would reduce the deficit by 55 in the first year. Of the 185 places now available, 75 would be on courses run locally by approved CFI's and examiners.

Another useful feature of the new coach structure would be the holding of courses at a few geographically suitable centres which had the right sort of accommodation and equipment. "When will clubs realise that a small briefing room and blackboard and chalk are as essential as a winch?"

Roger Neaves, committee chairman, added that people were starting instructor training with a Silver C and 100 hours. In answer to a question as to whether the minimum standard of 35 hours should be upgraded, he replied that that figure still permitted some of the smaller clubs to obtain instructors.

BRITISH SAILPLANE DEVELOPMENTS PROGRESSING

A total of 43 new Cs of A were issued by the BGA in the year ending September 30, 1971, against 39 for the previous year, stated the Technical Committee report. Renewals totalled 515 against 495. No new types were certificated, however, opposed to four types in the 1970 period.

A gratifying feature of the last year was the activity associated with British-built sailplanes, the report continued. The most note-worthy occurrence was the maiden flight of Sigma on September 12. Technical Committee activities also included Torva, Ken Holmes's KH-1 (see p229), the BG-135 (p235), Slingsby Kestrels and the Manuel Hawk.

An inspectors' conference was held at Husbands Bosworth on October 30 and 31, 1971, attended by 27 inspectors. Three talks were given on glass-fibre repairs and construction. Slingsby Sailplanes has offered to provide a course on glass-fibre, and it is hoped that Bert Page will run more engine courses.

The Chief Technical Officer, Ray Stafford Allen, is collecting material for a glass-fibre section in the standard repairs manual, and has recently published a new section on motor gliders.

Frank Irving announced that he was retiring, after 21 years as chairman of the committee. He is succeeded by Roy Tetlow.

SUMMARY OF BGA ACTIVITIES

The membership structure of the BGA was made up of 68 Full Members and

105 Associate Members, the annual report said. The 68 full members included three with affiliated clubs as follows: Army Gliding Association, 2 clubs; RAF Gliding and Soaring Association, 13 and Royal Naval Gliding and Soaring Association, 4.

OPERATIONS

During the year ending September 30, 1971 (1970 figures in brackets), civilian clubs flew a total of 62,007 (58,936) hours from club sites from 249,958 (241,070) launches.

Club-owned gliders totalled 258 (250) and privately-owned machines 371 (329).

The combined services flew 19,271 (19,342) hours from 88,320 (88,515) launches.

John Large reported that the accounts for the year ending September 30, 1971, showed an operating profit of £3,368, against £1,353 for the previous year. Gross profit on sales was a record, at £5,258.

Mr Large added that the headquarters accommodation situation was still very fluid, and that an operating surplus was needed over the next couple of years.

ELECTION OF OFFICERS

Ken Wilkinson retired as BGA chairman at the AGM, and vice-chairman Chris Simpson, the only nominee for the post, was elected. Frank Irving was elected as vice-chairman, Tom Zealley re-elected to the executive committee and Val Cockle (Dorset club), John Brownlow (RAFGSA), Philip King (Cambridge University club) and Keith Mansell (Midland club) were elected.

Philip Wills was re-elected president of the BGA, Ken Wilkinson was elected as an additional vice-president, and Basil Meads, Air Chief Marshal Sir Theodore McEvoy, John Furlong, Peter Scott and Alan Slater re-elected as vice-presidents.

BGA DIPLOMA

It was announced that a BGA Diploma for "services to British gliding" had been introduced, as the Executive Committee considered that the scope of existing international awards was not broad enough to cover recognition of some of the services to British gliding. Two awards were announced for 1972—to Fred Slingsby and C. E. "Wally" Wallington.

DINNER/DANCE AND VISIT TO CAMPHILL

The annual dinner, ball and presentation of trophies, held at the Palace Hotel in the evening, was an outstanding success. The Guest of Honour was Sir Jack Longland, an Everest mountaineer and member of the Sports Council. Referring to his attempt on the peak in 1933, he remarked that not many people could claim their Diamond height without even bothering to get into a glider.

A larger number of people visited the Derbyshire and Lancashire club, who had organised the event, at its site at Camphill on the Sunday. They were greeted by robust conditions (in which a few bungey launches were essayed) and an excellent buffet lunch.

ACKNOWLEDGEMENTS

The organisers of the BGA annual dinner and ball wish to thank the over 40 individuals and the following firms and clubs who contributed generously to the very successful Tombola stall and helped in other ways to make the function an enjoyable one:

Firms: Boneham & Turner Ltd, Doncaster Sailplane Services Ltd, Irvin G. B. Ltd, London Sailplanes Ltd, Padley Factors Ltd, Paraglide Ltd, RFD GQ Ltd, Sailplane & Engineering Services Ltd, Sharp & Scott Ltd, Speedwell Sailplanes Ltd, Sportair Aviation Ltd, Torva Sailplanes Ltd.

Gliding clubs: Cornish, Deeside, Derbyshire & Lancashire, Devon & Somerset, Highland, Kent, Lakes, Leeds, Ouse, RAFGSA, Rotherham, Swindon, Trent Valley, Vale of Neath.

MOTOR GLIDER SYMPOSIUM IN SEPTEMBER

A MOTOR glider symposium was being planned for one weekend in 1972, Ann Welch, chairman of the Motor Glider Committee, reported at the BGA AGM on March 25.

The venue has been fixed for Lasham, September 23-24. The provisional programme includes a session on technical

and airworthiness aspects, a session on training and a discussion on motor glider competitions. Flying on motor gliders is also planned, and it is hoped that one or two new foreign machines will be available.

Suggestions for discussion by either the Technical or Instructors' committees should be sent to the BGA General Secretary, from whom further information will be available.

PENETRATION OF EDINBURGH SRZ

THE Edinburgh Control Zone became a Special Rules Zone from May 25. Gliders may not penetrate the area either VMC or IMC, except that penetration *will* be allowed on 130.4MHz provided that Edinburgh ATC is first notified by telephone in order that the frequency can be activated.

John Ellis, chairman of the Airspace committee, adds that the frequency may not have been installed by May 25, but that the Civil Aviation Authority has promised that it will be delayed for no more than a few weeks. "Information can no doubt be obtained from Turnhouse tower," he adds. "I would like to see this facility used as much as possible, using of course proper R/T procedures, in order that we maintain our good relations with CAA and Turnhouse. I would also like reports on its success or otherwise, since this sort of arrangement could be one for use elsewhere."

A small relaxation in size of the Scottish TMA has also been made, which should improve the position as regards wave flying in the Dollar area.

'AIRSPACE AND RESPONSIBILITY'

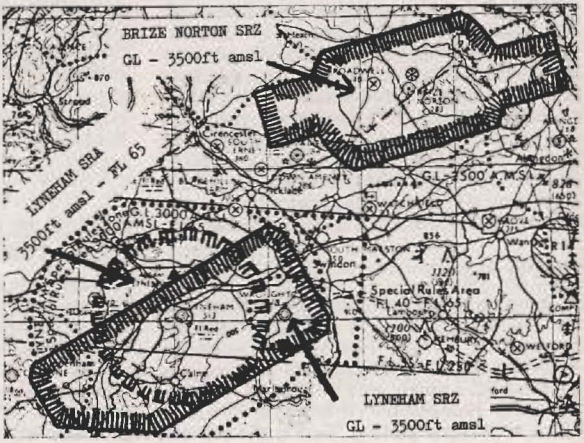
The following corrections to John Ellis's article on "Airspace and responsibility" (S&G April 1972, p116) should be noted:

Under "gliders excluded" (p118): Gatwick Control Zone (at and above Flight Level 5.0)" should read Gatwick Control Zone (at and above Flight Level 50.)"

Under sub-heading "IFR, IMC, VFR, VMC": The article said that gliders may not fly IFR outside controlled airspace because they cannot comply with the quadrantal rules. Because the quadrantal rules only apply in *level flight*, and a glider is never in level flight, it is incorrect to say that gliders may not fly IFR outside controlled airspace—there *are* no applicable rules.

GLIDER-MAIL DELIVERY

A GLIDER-MAIL delivery—the first in Britain since 1964—was made from West Malling to Biggin Hill on April 13, a distance of about 15 nautical miles. Organised on behalf of the RAF Museum, 17,000 cover envelopes were flown by



The Brize Norton SRZ, which must not be penetrated by gliders, came into effect on May 25. The former Lyneham zone has been revised, becoming the Lyneham SRZ and SRA; these may be penetrated by gliders in VMC conditions.

the 1971 Club Class champion, Don Hanson, in two shuttles in an RAFGSA Blanik.

On both occasions, the Blanik was towed to within gliding distance of Biggin Hill; the pilot released at 1,500ft on the first occasion and 1,000ft the second time. He reports that visibility was about four miles and cloudbase 2,000ft with 6/8 cloud cover. Unfortunately, lack of time prevented an attempt to soar on either occasion. It would have been possible to soar on the first flight but overconvection had set in for the second.

THE NEW BGA CHAIRMAN

CHRIS SIMPSON, the new BGA chairman, is a solicitor by profession. He was a founder member of the Leicestershire club, and was on its committee from the beginning, subsequently becoming chairman. He has been on the BGA Council and the Executive Committee for some years, and was vice-chairman under Ken Wilkinson. He was assistant team manager to Gerry Burgess (and crew member) at the Marfa World Championships and is acting in that capacity again at Vrsac in July.

He is an active competition pilot, and is flying his new Kestrel 19 at the Open Class Nationals at Shobdon.

'LAWS AND RULES'—NEW EDITION

A NEW (the 6th) edition of *Laws and Rules for glider pilots* has been published and contains a number of additions and amendments. It is available from the BGA, Artillery Mansions, 75 Victoria Street, London, SW1, price 25p plus 5p postage.

OIL PAINTINGS FOR GLIDER PILOTS

GEOFF NAYLOR is undertaking commissions for paintings of both gliders and powered aircraft in oils. He obtained an award for the best first entry at the Kronfeld Aviation Art Exhibition Competition 1971 (S&G February, p51). For details write to G. Naylor, c/o London Gliding Club, Tring Road, Dunstable, Beds.

CIVIL AVIATION AUTHORITY Cs OF A

CERTIFICATES of airworthiness issued by the former Air Registration Board will now be issued by the recently constituted Civil Aviation Authority, Airworthiness Division, Brabazon House, Redhill, Surrey.

WORLD CHAMPIONSHIPS APPEAL FUND

DONATIONS and loan of equipment to the British Team World Championships Fund from March 16 to May 5 from the following are gratefully acknowledged. The target was set at £2,000 and we are therefore still short by £641.10.

Anonymous (3 individuals)
Armstrong, M.
Armstrong, S.
Atkinson, G. B.
Bennett, J. A.
Birch, D.
Blake, K.
Blundell, K. M.
Cochran, J.
Collins, J. L.
Davies, J. T.
Doughty, A.
Evans, D. W.
Fitchett, F. L. (contractors)
Garwick, K. D.
Gray, J. D. D.
Hare, R. A.
Hayes, N. M.
Haynes, L. C. A.
Hill, G. M.
Hughes, T.
Lane, D. W.
Lucksford, R. J.
Paul, I.
Ratcliffe, C. J.
Rotter, L. E. & Co.
Soc. of British Aerospace Companies Ltd
Seth-Smith, M.
Stafford Allen, R. C.
Thomas, B.
Upson, G. H.
Williams, A. J. H.
Wood, A.

Total received so far, £1,358.90

EIGHT MILES HIGH OVER ENGLAND

ON Tuesday, May 9, Mike Field soared a Skylark 4 to over 40,000ft to obtain his Diamond height in the area between Swindon and Oxford.

A cold statement of fact. It hardly does justice to what must be perhaps the most important, not to mention exciting, flight carried out in Britain for many years.

It started in the morning when Mike Field contacted Bracknell for a weather forecast. He is a very experienced glider pilot (with about 700 hours) and had obtained a Gold C height in August, 1971. Although now working with computors with BEA, he has had RAF training and was experienced in dead reckoning navigation.

He learned from Bracknell (at about 10am) that cu-nim conditions were expected, but that the air was only unstable to about 30,000ft. The tephigram figures also indicated that the lift would not accelerate greatly within the cu-nims, so he thought that his passage if he contacted a cloud would be relatively sedate. It was on for a Diamond height attempt.

Taking two barographs (10km and 12km) and a full supply of oxygen (a 230l portable Walter Kidde set) he dressed for the occasion (thick gloves, Austin Reed sweater, etc) and was launched from Booker in a Skylark 4. He was towed to west of Chalgrove, in free airspace, released, and worked his way into the 25kt south-westerly wind towards Swindon. In the process, he achieved a low point of 900ft above Booker height.

Near there, he found a large cumulus (base about 3,200ft) and worked it to about 11,000ft. Rate of climb was about 8kts, and there was some icing. He straightened out into wind and bored towards Swindon in clear air. He saw a cu-nim ahead and went into its side at about 4,500ft. He found the core, which was rising smoothly at about 5kts; the best rate of climb he achieved within the cu-nim was 7-8kts.

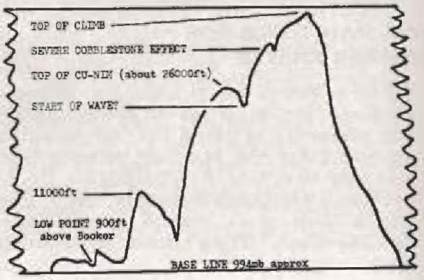
Icing was now severe, both outside the cockpit and within. During the climb, he exercised the controls to prevent the control surfaces from icing over, cracking open the brakes every now and then. He thought that the elevator trimmer eventually froze, but this was no problem.

A more severe problem was the icing within the cockpit. Very quickly, the faces of the instruments were frozen over, and he was eventually reduced to flying by sole reference to the artificial horizon (which he kept clear by constant scraping with his thumb) and the audio of his electric variometer.

The lift continued to be very smooth. He went onto oxygen at about 10,000ft, using a medium flow at first, and changing to full flow at about 15,000ft. During the climb, which started at about 2pm, he didn't notice any particular electrical effects, but after landing found that his thumb was burnt. This may have been caused by static, but was more likely to have been caused by the cold and scraping at the face of the horizon.

Occasionally, he was able to clear the face of the altimeter, and decided that he would try and make 20,000ft. When this height registered, he scratched around in the top of the cloud for a time. Then he realised that he had mis-read the altimeter and that his real height had been about 25-28,000ft. He immediately set course (260°) to fly out of the cloud and get down. It was now about 3pm.

The cockpit became lighter at last, but he could not see through the canopy for ice. He found some weak, very smooth lift which picked up to about 3kts. This took him to about 33,000ft. It had all the feel of wave lift, and for the most part he flew straight and level, slap into wind at about 65/70kts. He had previously done some wave flying at Portmoak, and had also reached 18,000ft in wave from a 7,000ft tow from Booker.



He concludes that this part of the flight was probably done in clear air, although he was completely unable to see out and continued to fly with sole reference to the artificial horizon and the audio.

He used dead reckoning procedures to navigate, and to ensure that he was not drifted by the 45kt wind into the airways east of Oxford. At what proved to be about 33,000ft, he lost the smooth lift and several thousand feet finding it again.

During this, he encountered rough air; a severe cobblestone effect. When he located the smooth wave again, using DR procedures to help, the lift was a little stronger than before—an estimated 4kts according to the audio. But he had a nagging feeling in the back of his mind that the instrument had gone wrong and that he wasn't climbing at all. He managed to clear the altimeter briefly shortly after starting the new climb. It told him that he was at 35,000ft, and confirmed that the variometer was still behaving and that he was indeed climbing.

After this, he estimated his rate of climb from the audio, and timed the remainder of the climb in order to obtain his heights. Again, for the most part, he flew on 260°.

He was now starting to feel the effects of low pressure; at this kind of height he was approaching the limit for non-pressurised flight. His eyes felt as though they were trying to pop out; he felt pain in his ears and other parts of his body. He began to feel slightly anoxic.

The canopy started to make loud cracking noises, and he expected it to disappear at any moment.

And his oxygen was down to about a quarter full.

At about 40,000ft, the lift started to peter out. That was enough, he decided. He let out the brakes and began the long, excruciatingly slow descent—about 50 minutes in all. The canopy partially cleared at about 2,000ft, when he was near the Chinnor ridge on the Chilterns. As his visibility was still restricted, he decided not to fly back to Booker under the TMA, but selected a large field in which to land. He was subsequently aero-towed back to Booker.

The 10km barograph failed to work, but the 12km Winter barograph showed a trace which reached to within about $\frac{1}{16}$in from the top. When compared against a calibration chart, his absolute height was calculated to be 42,520ft asl and his gain to be 41,100ft. His flight thus beats both the United Kingdom and British National records for both absolute altitude and gain of height.

Mike Field (26) is only the fourth glider pilot in the world to have soared above 42,000ft, the first outside the USA and the first to do so from a cu-nim into wave climb. His gain was only 1,200ft short of the world gain of height record.

We hope to publish a detailed meteorological comment on this flight in our next issue. It seems probable, however, that this was an occasion when a high level wave was brought into being by cu-nim activity, and that a trough which moved ENE across the north of England (and which reached down to the south Midlands) contributed. Observers on the ground during the day had noted the presence of lenticulars associated with the cu-nim tops.

The temperature above 25,000ft was between –40°C and –50°C.

JOHN HULME
Tunbridge Lane, Bottisham
Cambridge CB5 9DU
Telephone: Bottisham 323

Wood, Metal and
Fibreglass Repairs

•

Spares and Materials

•

Trailers

UK Repair Agent for Diamant and Phoebus Sailplanes

KEN WILKINSON NEW RAeS PRESIDENT

KEN WILKINSON, managing director of BEA and ex-chairman of the BGA, is the new President of the Royal Aeronautical Society. An engineer, he has been a Fellow of the Society since 1956 (see S&G, June 1970, p179).

RECORDS HOMOLOGATED BY EXECUTIVE COMMITTEE

THE following records were homologated by the BGA Executive Committee at its meeting on May 3:

British National 300km triangle speed, E. Pearson, Std Cirrus, 130.9km/h, 1.1.72 (in South Africa).

British National 500km triangle speed, C. Greaves, Std Cirrus, 112.4km/h, 1.1.72 (in South Africa).

MET MAN HEADS NATIONAL LADDER

MIKE GARROD, meteorologist for the British Team at Vrsac, was at the head of the national ladder at May 3. Entries for further listings in 1972 should be sent to him as National Ladder Steward, 71 Corwell Lane, Hillingdon, Middlesex, to reach him on June 6, June 28 and August 1.

Leading pilot	*Club*	*Pts*	*Flts*
1 M. P. Garrod	London	2743	4
2 C. Lovell	Surrey & Hants	1958	2
3 R. J. Smith	London	1607	3
4 P. Lazenby	Yorkshire	1473	4

GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	*Name*	*Club*	*1972*
24	B. F. Dobson	Four Counties	23-3

DIAMOND HEIGHT

No.	*Name*	*Club*	*1972*
3/136	A. J. Middleton	Deeside	22-3
3/137	R. H. Traves	Southdown	21-3
3/138	R. J. Smith	London	23-3
3/139	B. F. Dobson	Four Counties	23-3
3/140	D. K. Allen	Anglia	22-3
3/141	G. H. Upson	Bristol/Glos	28-3
3/142	J. D. Pickett-Heaps	USA	28-3

DIAMOND GOAL

No.	*Name*	*Club*	*1972*
2/417	A. W. Maitland	Latrobe Valley	16-1
2/418	M. G. Waller	Nakuru, Kenya	28-2
2/419	L. A. Boyer	Benalla, Australia	8-12-71
2/420	L. E. Beer	Thames Valley	25-4

GOLD C COMPLETE

No.	*Name*	*Club*	*1972*
316	M. G. Waller	Nakuru, Kenya	9-2
317	R. H. Traves	Southdown	21-3
318	A. C. Stuart	Finnish A.A.	26-3
319	C. Hughes	Bristol/Glos	28-3
320	A. G. Burne	Kent	28-3
321	I. L. Napier	Kent	23-3

GOLD C HEIGHT

Name	*Club*	*1972*
R. H. Traves	Southdown	21-3
G. P. Saw	Thames Valley	23-3
K. B. Stedman	Anglia	23-3
D. K. Allen	Anglia	22-3
A. C. Stuart	Finnish A.A.	26-3
W. A. O'Waugh	Ontario	11-11-71
A. K. Mitchell	Southdown	22-3
E. J. Winning	Swindon	19-3
C. Hughes	Bristol/Glos	28-3
P. M. Cooper	Devon/Somerset	28-3
A. G. Burne	Kent	28-3
I. M. Dunn	SGU	3-4
P. Redshaw	Lakes	12-3
I. L. Napier	Kent	23-3
G. Leat	Devon/Somerset	28-3
D. H. Millett	Lakes	12-3
M. J. Smith	Coventry	3-4
M. Gay	Cotswold	19-3

GOLD C DISTANCE

Name	*Club*	*1972*
M. G. Waller	Nakuru, Kenya	9-2
A. C. Stuart	Finnish A.A.	10-7-71

SILVER C

No.	*Name*	*Club*	*1972*
3098	A. W. Maitland	Latrobe Valley	16-1
3099	A. P. Curry	Surrey/Hants	21-3
3100	T. J. O'Donovan	Clevelands	3-4
3101	T. G. Barnes	Humber	26-3
3102	A. V. Lacey	Anglia	29-3
3103	A. K. Mitchell	Southdown	22-3
3104	D. B. Eastell	Southdown	22-3
3105	P. M. Cooper	Devon/Somerset	28-3
3106	P. C. Wilcockson	London	5-4
3107	A. R. Nicholas	Swindon	9-4
3108	R. J. Sheffield	Chilterns	9-4
3109	I. M. Dunn	SGU	3-4
3110	M. A. Clarke	Eagle	8-4
3111	E. T. C. Pearce	Southdown	15-4
3112	J. A. Fraser	Highland	9-4
3113	P. G. Bower	Univ Glasgow	15-4
3114	M. J. Cleaver	Bristol/Glos	12-4
3115	W. M. Haley	Northumbria	15-4
3116	R. H. Hunt	Bicester	9-4
3117	C. I. Joslin	Wrekin	5-4
3118	W. J. Tolley	Midland	15-4
3119	M. Burlock	Thames Valley	9-4
3120	R. Jones	Worcester	9-4
3121	N. D. Harkness	Four Counties	15-4
3122	P. G. Howard	Bicester	15-4
3123	J. E. F. Porter	Airways	15-4
3124	F. C. Porton	Bannerdown	23-4
3125	Daphne Poynter	Surrey/Hants	16-4
3126	R. I. Lloyd	Fulmar	22-4
3127	M. Parkin	Phoenix	23-4
3128	C. D. Berry	Southdown	16-4

READERS PLEASE NOTE

IN order to publish news of the winners of the World Championships, the next, August, issue of S&G will be published a week late, on August 8.

Gliding provides so many fine picture taking opportunities. But there's rarely time to fiddle with camera settings and film loading. Even more so in competition gliding when photographic evidence may be required. That's when a Kodak 'Instamatic' Camera comes into its own. With drop-in film cartridge loading, minimal adjustment, big clear viewfinder and compact shape it's made for shooting fast and sure.

That's why they're recommended by the B.G.A.

(You'll find them quite at home on ground level too!)

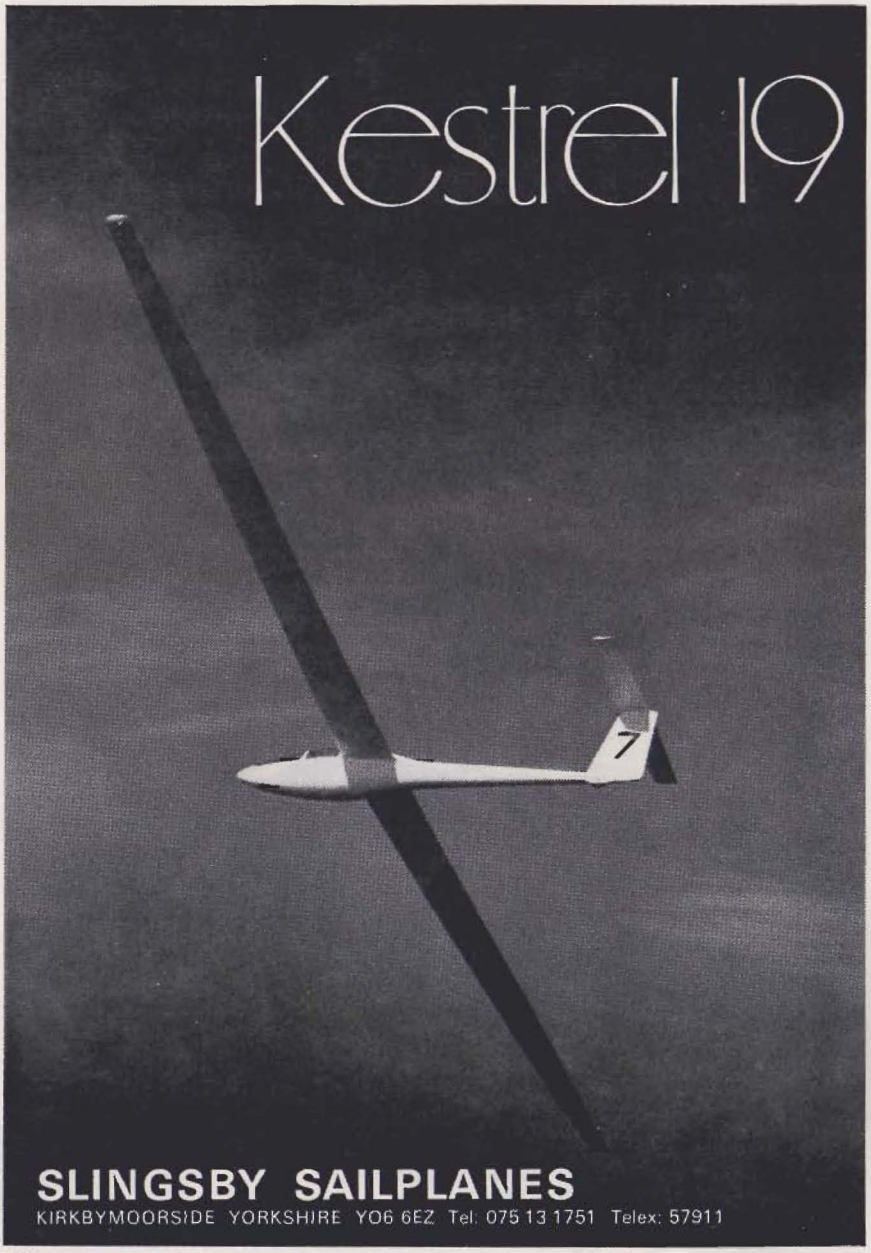
The cockpit camera

Look one over soon at your Kodak Dealer.



Kodak

Kodak and Instamatic are trade marks


Kestrel 19
SLINGSBY SAILPLANES
KIRKBYMOORSIDE YORKSHIRE YO6 6EZ Tel: 075 13 1751 Telex: 57911

OVERSEAS NEWS



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

EUROPE BREAKS TWO 1000km WORLD RECORDS

On April 25, Hans-Werner Grosse (ASW-12) well and truly smashed the world distance record by flying about 1,440km from Lübeck (NE of Hamburg) across France to Biarritz. He beat the existing record by nearly 300km, and was aloft almost 12 hours. Klaus Tesch (LS-1) flew about 1,050km. from Boberg, near Hamburg, to a goal, Ancenis, near Nantes, to beat Grosse's world goal record. The world two-seater distance record also tumbled on what must have been one of Western Europe's best ever days. Even in England, much closer to the more stable centre of the anti-cyclone over NW Scotland, conditions were good, but some attempts at 500km triangles were terminated by thermal activity stopping at about 4pm. All records subject to homologation. Grosse has since been made an honorary citizen of Biarritz.

THE weather situation at Lübeck, northeast of Hamburg, on Monday, April 24, was such that Hans-Werner Grosse and his unballasted 19m ASW-12 were at the ready to try to improve on their own 1,032km world single-seater goal record.

Conditions were, however, too showery for the attempt to be made. He decided to stand by for the following day, as the air was forecast to be drying out rapidly. So on Tuesday, April 25, he had everything organised at a very early hour and took off at 8.20am having declared Nantes, France, as his goal. This is about 80km west from Angers, his previous goal, and would, if successful, increase his own record to well over 1,100km.

Meanwhile, at Boberg (near Hamburg, about 50km SW of Lübeck) Klaus Tesch had had the same idea. He took off in his LS-1 at 8.30am, having declared Ancenis (lying between Angers and Nantes), about 1,050km distance.

About 15 minutes later they were surprised to hear each other on the radio; and still more so to find that they had made similar plans and had similar hopes. Grosse was not concerned, his goal being well beyond the distance declared by Tesch. But the latter must have been somewhat chagrined to realise that should Hans-Werner succeed then he himself would have nothing to claim —except the satisfaction of having made an outstanding flight and joining the 1,000km club.

According to Grosse there was about 4/8 cumulus at around 2,400ft during the early part of the flight with an 8-10kt wind from the north. There were a few

light snow showers in the vicinity but these caused no real problems and merely showed how cold it was.

In the Rhineland area cloudbase rose to about 5,000ft while the cloud decreased to 1/8. The wind here was 60°, 15-20kts. By the time northern France was reached the thermals tended mainly to be blue and gave lift to about 7,000ft, while the wind had backed to 30° and strengthened to 25-35kts.

The two pilots were keeping in radio contact, although they had only seen each other for about five minutes when the ASW-12 overtook the LS-1. It was in the Le Mans area that Klaus Tesch confirmed that he could make his goal at Ancenis. Here now was a golden opportunity to achieve two world records—Klaus Tesch to claim the goal and Grosse himself to change course to the south and go for the free distance world record.

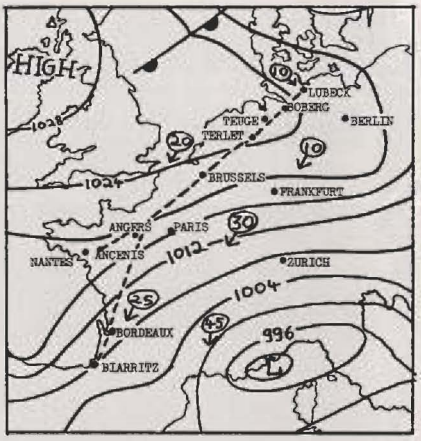
This they agreed on and it paid off handsomely. By the time the ASW-12 had reached Bordeaux, the LS-1 was reported landing at 18.30 at its goal. By this time 2/8 cumulus were to be seen over southern France with cloudbase just over 7,000ft.

The only problem henceforth was to keep far enough inland to avoid getting too near the coast. When he picked up a thermal as late as 19.45, Grosse knew that he could reach the airport at Biarritz. When he arrived there he still had over 2,000ft in hand. He toyed with the idea of trying to make Spain but decided against it. Sunset was at 19.57, his time in the air was almost 12 hours, and the fact that the airport had many advantages over a possible field landing were compelling factors. He called it a day and landed at 20.13, about 1,440km away from Lübeck.

The flight had, he said during a telephone conversation with S&G, been in general terms fairly easy as the weather had improved throughout and his average rates of climb had been from four to six knots.

Hans-Werner Grosse thus becomes the only pilot so far to have exceeded the magic figure of 1,000km on two occasions and so earns the congratulations of glider pilots the world over.

The people at Biarritz, after initial disbelief, put themselves out tremendously



to help him and placed an interpreter at his disposal as well as giving him a room for the night.

His wife Karin, who had left Lübeck in the late morning to retrieve him, lost radio contact when her husband was only about 80km on course. She had to keep phoning back but still covered the road distance of 2,250km in about 30 hours, arriving at Biarritz at 5 o'clock in the evening. As Hans-Werner said, "What would pilots do without the tremendous support of a wife, or a crew? The medals should really go to them!"

WORLD TWO-SEATER GOAL RECORD

On the same day, April 25, S. Baumgartner and V. Scheewe flew a K-13 from Dorsten to Angers to claim a new world two-seater goal record of about 730km.

They took off from their club at Dinslaken at 10am and were towed some distance upwind to release over Dorsten, thus giving them the necessary extra distance to enable them to claim the record.

THREE DUTCH NATIONAL RECORDS

Terlet in Holland was the starting point for several 500km claims and three Dutch records. Henk Frohwein, one of the Terlet instructors, flew a club K-6CR about 795km to a point south of Nantes. Daan Paré, a KLM pilot, took a busman's holiday, and declared Terlet

to Issoire, 740km. He flew the first Std Cirrus to have a Dutch C of A and arrived at Issoire at 18.15 with 6,100ft to spare! Dick Teuling broke the Dutch 100km triangle. In the morning he flew the unballasted Cirrus at 87.5km/h while in the afternoon he flew the same triangle, this time carrying waterballast, at 90km/h.

J. van 't Rood started from Teuge in the northeast of Holland and landed some 650km away near Tours. Joop van Leeuwen landed 40km east of Angers, having covered about 670km. Jan Veenhoven did a distance flight of about 700km. These three pilots all had K-6CRS for mounts.

WEATHER REPORT

Mike Garrod, the British Team's meteorologist for Vrsac, reported that the weather pattern on occasions of long distance flights in northern Europe has invariably shown common factors. Firstly, a cold air mass originating from Scandinavia (basically dry) and a ridge of high pressure extending eastwards from a high pressure area somewhere between Scotland and Iceland. These features were very much in evidence for April 25, 1972, as shown on the map.

The entire route was typified by cold unstable dry air up to 6,000 or 7,000ft, giving strong, uninterrupted thermal activity with small, shallow cumuli. The wind, apart from the initial part of the flight, was north-easterly, 20 to 30kts, permitting a high average cross-country speed *en route* to Biarritz.

For comparison with the occasion of 500km flights in the UK last year on April 28 and the weekend of July 17/18, see maps in S&G, June 1971, p171, and October 1971, p364.

WORLD RECORD PUTS KENYA ON SOARING MAP

WALTER NEUBERT of West Germany put Kenya on the soaring map when he broke the world record for the 300km triangle in the Kestrel 604 on March 3. He flew the 309km course Nakuru, Baringo, Hulmes Bridge, Nakuru in a minute over two hours at a speed of 153km/h.

He was participating in a German record-seeking expedition in Kenya. The "day of days", however, was March 2 when, unfortunately, the expedition was unable to fly because of social commitments.

Nakuru airfield, the base, is about 6,000ft asl. With airspace restrictions in the Nairobi area (about 100 miles southeast of the base), tasks could only be flown to the west and north. Owing to these restrictions and a tendency for overdevelopment to occur in the evening, it was decided to abandon the plan to attack the current world out-and-return record.

On March 3, cirrus cover arrived at 10 am. However, Neubert decided to make an attempt on the 300km record after reports from a pilot already airborne that rates of climb of 4-5kts were being experienced. He released at less than a thousand feet in a 6kt thermal, and after crossing the start-line encountered a 7kt thermal from an extinct volcano crater and climbed to about 7,000ft agl. This made him decide to press on up the first leg, slightly west of north to Baringo. Conditions were so good that he did not have to circle until just before Baringo, flying dolphin-style.

Just before the turn at about 4,500ft something showered against the canopy. At first, he did not know what it could be, then realised it was sand coming from a dust-devil.

Along the second leg, south-east to Hulmes Bridge there was a mountain range to cross, the Aberdares, which produced very good thermals. But he had to take care not to approach the range at too low a height as the north-easterly wind produced lee downdrafts before reaching it. A height climb to over 9,000ft agl took care of at least two-thirds of the second leg, the latter part of which was not affected by the cirrus cover. Before the second turn point, Neubert realised that a shower was

approaching from Mount Kenya, further off to the south-east, but it was still far off. Several large cumuli were forming near Hulmes Bridge, and they enabled him to reach it while still flying straight and climbing continuously, achieving nearly 11,000ft. After turning, he accelerated and was still climbing with an airspeed of nearly 100kts.

He kept that pace up until he reached the Aberdares again, which straddled the third leg, and a perfect cloud street parallel with the track made him cross the finishing line at a high altitude. He found throughout the flight that height loss between thermals was not as great as it had been on other days.

Reinhold Stuhr tried the same triangle in the opposite direction, but his first leg was flown into wind across the Aberdares, and this was very time-consuming. Then, at the second turning point, he was caught out by heavy rain and had to land. (Report from *Aerokurier*.)

SEFF KUNZ RETIRES FROM GERMAN GLIDING COMMISSION

AT a meeting held in Frankfurt-am-Main on March 19, long-standing differences between the German Aero Club and its Gliding Flight Commission came to a head, according to *Aerokurier*, with the result that Seff Kunz has retired from his post as chairman of the Commission. His place has been taken by Fred Weinholtz.

Seff Kunz has been active in German Gliding since 1925, and established his talent for organisation at an early stage, starting with the German Nationals of 1930 and including both occasions when the Internationals were held in Germany; he was also in charge of the German team at most World Championships from 1952 to 1968. As Vice-chairman of the FAI Gliding Commission and honorary President of the German Commission, he will still find scope for his talents in the gliding world—A.E.S.

TECHNOLOGICAL SYMPOSIUM AT M.I.T.

A SYMPOSIUM on "The technology and science of motorless flight" will be held at Massachusetts Institute of Technology from October 18 to 20, 1972. The six sessions cover aerodynamics and design, structural concepts and materials, soaring meteorology, instrumentation, self-launching sailplanes and performance testing, and chairmen will include Dr Bernard Paiewonsky, Dr Joachim P. Kuettner and A. J. Smith. Further details from "Symposium", M.I.T. Soaring Association Inc, Building N52-395, 265 Massachusetts Avenue, Cambridge, Mass 02139, USA.

OERLINGHAUSEN'S AMBITIONS

OERLINGHAUSEN, in NW Germany, the site of an RAF gliding club just after the war, and of the German Nationals in 1955, claims 50,463 flights in the past year, of which 38,660 were by gliders. This is claimed to be a record for any site in the western world and unlikely to have been exceeded in the east. With the completion of a 5th hangar this year, the Oerlinghauseners claim to possess a suitable site for (a) the 1973 German Nationals, (b) the 1976 European Club Class Contest, and (c) the 1978 World Championships (*Luftsport*).

USA "DERBY"—FIRST LEGS

THE Smirnoff Derby (S&G April, p136) got off to a good start but bogged down in Texas.

May 1. LA to Phoenix, 356.5mls, 3 made it Ryan, Nimbus 2, 64.2mph, Scott, ASW-12, 57.2, and Briegleb, Kestrel 17, 57.1mph. May 2, Phoenix to Las Cruces 313.5mls. All made it, best speed Ryan 67.6mph. May 3, Las Cruces to Odessa 267mls, 5 made it, "AJ" landing out 237mls; best speed Scott 77.4mph. Poor weather stopped tasks to May 9; gliders trailered to Tulsa. Results so far: Ryan, 2975, Scott 2950, Briegleb, 2750, Enevoldson, Diam 18, 2592, Bikle, HP-14, 2585 and A. J. Smith, Calif A-21, 2522 points.

VICTOR BOIN CONTEST

THIS year's Victor Boin one-day contest was held at Eindhoven, Holland, on May 7. The task set, a Cat's Cradle, was flown for the first time by an all-Dutch entry of 28 pilots. Dick Réparon, last year's winner, turned up trumps again with the best distance of 356km in his ASW-15. Runners up were Langelaan, K-6E, 281 and Musters, K-6CR, 274km.

GLIDER RE-PAINTS

First-class workmanship
Reasonable prices
Seven day service

Contact:—

Southward Garage (Retford) Ltd.
Nottinghamshire
Telephone: Retford 2841

Gliderwork

C of A OVERHAULS and REPAIRS
by L. Glover, senior inspector

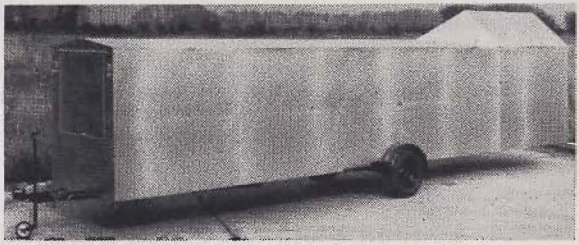


Husbands Bosworth Airfield, Near Rugby
Tel: Husbands Bosworth 375

TRAILERS

8m. Shell £356

Fittings £55-£70



LANDSMAN'S (CO-OWNERSHIP) **LTD.**

Buckden, Huntingdon
Tel. Buckden 287

COBB-SLATER INSTRUMENT CO. LTD.

Write for details of Introductory Offer

Sole Manufacturers of:

Cook Compasses
and
Electric Variometers
with Audio Unit

Barographs Calibrated

Cosim Variometers

Irving Venturies

Water Traps

Total Energy Units

New Cosim Audio Unit works with PZL, Cosim or Electric Varios

Leaflets from:

'COSIM' WORKS · DARLEY DALE · MATLOCK
Derbyshire DE4 2GG **Telephone: Darley Dale 2344/5**

London Sailplanes Ltd.,

U.K. Agents for R. Tost and A. Schleicher, have a large range of spares and exchange service items

Our stock includes metric and A.G.S. parts, repair materials for steel tube, wooden and glass fibre sailplanes. Fabric, Dopes (Titanine, Cellon and Rhodius). P.Z.L., A.S.I.'s and Variometers in stock, also comprehensive range of glider instruments and accessories

A.R.B. approved welding facilities

Plus a large range of aero tyres and tubes—English and Metric sizes

G.L.I. Birch Plywood—sheets approx. 50" × 50"; 3, 2.5, 2 and 1.5 mm in 5 laminate. 1.5, 1.2, 1.0 and 0.8 mm in 3 laminate. Pre-formed leading edge diagonal Ply in stock or made up to order

Barograph and A.S.I. calibration

Telephone: Dunstable 62068

London Sailplanes Ltd., Dunstable Downs, Dunstable, Beds.



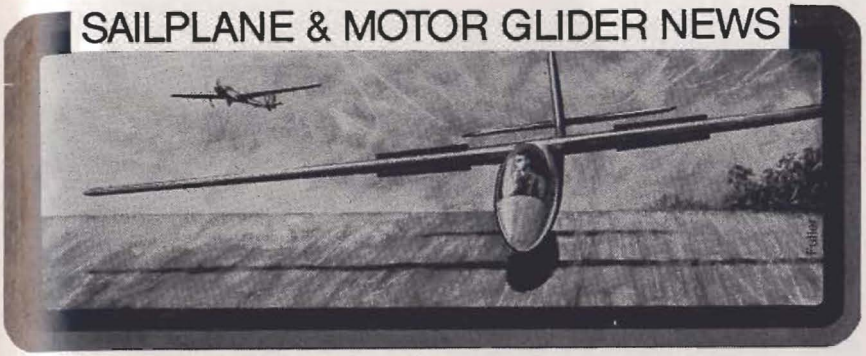
ROBIN'S NEW TUG—THE DR 300/180 "REMORQUEUR"

180 h.p. rugged, full 4-seater with touring capability.
Typical towing performance—fully laden K.13 to 2000' in less than 3 mins.

SPORTAIR AVIATION LIMITED

BIGGIN HILL AIRFIELD, KENT — Biggin Hill 3110 and 4717

Also agents for SFS 31 'MILAN' and FOURNIER range



THE KH-1

By KEN HOLMES

The last year has been notable for several developments in British sailplane design and production—Sigma (currently undergoing its flight testing), Torva (the prototype of which was very successful in the Nationals last year), and the BG-135 (which has just finished its BGA certification, see p 235). But eclipsing in many ways all these efforts, noteworthy as they are, is the unheralded, completely Do-It-Yourself KH-1 of Ken Holmes. For how often does one meet a person from outside the aviation milieu and with limited facilities not just building a glider from a kit but designing it from scratch?

SOME three years ago, while feeling rather fed-up with the job I had at the time, I finally decided to start on the design for the sailplane I'd been thinking of for a long time. After about six months' study I began to get an insight into the mysteries of BCAR Section E and started the detail design and strength calculations for the machine. About 2½ years ago, I started the actual construction.

The basic aim of the design was simplicity of construction combined with very high performance. It had long been my belief that the two were not altogether incompatible (as Richard Schreder in America has been showing for years). For instance, a slim, narrow fuselage necessitates fairly thick, highly curved skins which in turn means less internal stiffening and complication. Similarly, a narrow chord, high aspect ratio wing means that the ribs can simply be cut from thick sheets of plywood without any weight penalty. Also there is a tendency on high performance sailplanes to reduce the wetted surface area to a minimum so that it is now possible to build an 18 or 19m glider with the same weight and amount of constructional work as, for example, a K-6.

I decided to build a sailplane with a span of 18.6m, a very high aspect ratio wing (31) and to use an unflapped Wortmann wing section. Other things being equal, high aspect ratios tend to give a higher performance, particularly at the low speed end, and quite apart from that look far more elegant than short stubby wings. An unflapped section was chosen to keep the wing simple to construct.

If the aircraft was to be suitable for British conditions then the maximum loaded weight with such a small area wing could not be more than about 700lbs, to give a wing loading of 6lb/ft^2 and a stalling speed of about 35-36kts. Furthermore, the wing had to be so designed that the glider was controllable right down to the stall and that the stall was very gentle so that the glider could be circled comfortably in a thermal at about 42kts.

Therefore, a wing planform was chosen with a constant chord out to two-thirds semi-span and then a straight taper to

the tip with a moderate root to tip chord ratio of 0.4. With this planform the wing stalls first at the root, even without any tip washout, thus preventing any violent wing-drop at the stall. The wing section used is the Wortmann 61-184 from the root to the beginning of the planform taper, then changes through the 61 series to the 60-126 at the tip. This series of aerofoils have very gentle stall characteristics in that the lift curve slopes simply flatten out at the top, and, in practice, the aircraft just has an increased sink rate at the stall instead of a well-defined stall with nose-drop, etc. The 60-126, specially designed for use at the tip, has a higher maximum lift coefficient than the inboard aerofoils, even at the much lower Reynolds Number, and thus further ensures that the tip stalls last.

The fuselage was designed as slim as possible with the pilot in a supine position and the fuselage tapering aft of the cockpit to a moderately slim, round section rear fuselage. The retractable undercarriage drops down 15 inches below the fuselage to give adequate ground clearance to the wing tips and also allowing the wings to be set on the fuselage at a small incidence for low drag at high speed, while at the same time giving a suitable ground angle for low take-off speed.

An all-moving tailplane, pivoted at its aerodynamic centre, with anti-balance tabs to give feel and a spring trimmer in the cockpit, was chosen for its combination of low drag and simplicity. Also, this arrangement has great flexibility once built, it being a simple matter to alter the stick force per *g* by altering the tab/tailplane gear ratio.

A healthy sized fin and rudder was designed to give good directional stability and spin recovery characteristics. The tailplane is mounted part way up the fin to give it good ground clearance and also ensure that a large part of the rudder is unshielded during a spin.

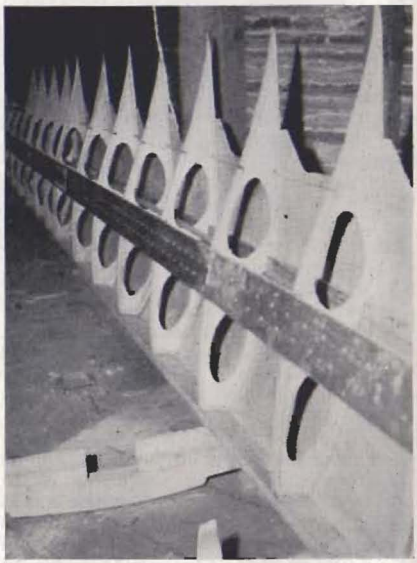
Small span drag-flaps and a tail parachute are fitted for approach control, the tail parachute also being intended for speed limiting purposes.

CONSTRUCTION

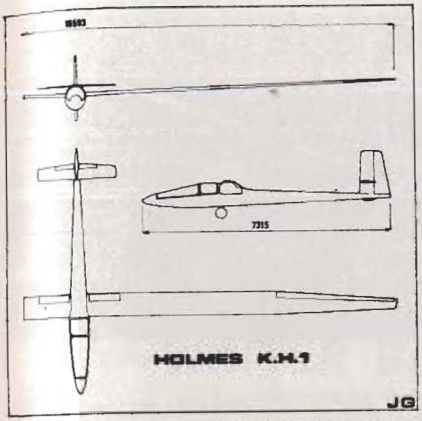
One of the biggest constructional difficulties was clearly going to be getting a main spar that was both strong enough and stiff enough into the high aspect ratio wings (depth at root 4.5in). Wood was clearly out of the question and a glass-fibre spar would not have been stiff enough without designing a great excess of bending strength into it, thereby making it heavy and inefficient. Thus the choice for a spar fell on aluminium alloy and I decided to make the rest of the glider of wood. This material, although currently unfashionable, is still probably the best for a one-off job, requiring far less work than glass-fibre, in which the effort needed to produce the moulds is an important consideration if only one aircraft is to be produced. There is certainly no weight penalty compared with either glass-fibre or metal; indeed, it probably tends to lead to lighter structures (the empty weight of the KH-1 is about 100lb less than any glider with a comparable span).

WINGS

These are constructed with an "I" section spar at 40% chord. The booms are of aluminium alloy and are joined to plywood webs by Araldite bonding and



KH-1 wing being built *Photo Tom Bradbury*



pop-rivets on the belt-and-braces principle. Ribs cut from thick ply are glued to the spar webs at one foot intervals and the first 50% of the chord is covered with a ply/balsa sandwich, pre-moulded to the exact contour. Aft of this there is a 2mm ply covering back to 70% chord and the last 30% is fabric covered.

FUSELAGE

The fuselage structure is fairly conventional, with four hefty spruce longerons and plywood frames at two foot intervals covered with 2mm birch ply. The tailplane is in one piece, the spar being placed forward of the hinge point and no extra mass balance weights are necessary. All the fittings apart from those at the spar root were designed so that they could be made in any small workshop using simple hand tools.

The aircraft took me about two years to build in various attics and barns scattered throughout the country, notably at Bracknell (Berkshire) and Digby (Lincolnshire). The BGA Technical Committee proved very co-operative throughout the project and Ray Stafford Allen and Bert Page inspected the machine at various stages of construction. Eventually, I brought the glider down to the Cranfield Gliding Club where I received much help in preparing it for flight, in particular from Howard Torode, the CFI, and Roy Tetlow, who checked the calculations.

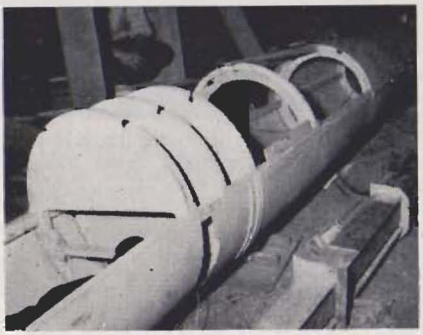
Ground tests revealed a rather low torsional stiffness in the wing which necessitated imposing a VNE of 85kts, and it was also found that I'd been a bit over-enthusiastic with the slim fuselage. In fact, it needed considerable modification before we could fit Peter Bisgood, who was going to do the first flight, into the cockpit.

FLYING

The glider finally took to the air for the first time last November and since then has done about 15 hours flying, the testing being done by Peter Bisgood and Howard Torode. The biggest problem has been the ailerons. These were rather ineffective in the early flights due to insufficient movement, but they have since been modified so that they now provide a satisfactory rate of roll. Otherwise the flying has gone quite well.

The tailplane has come through without modification, combining adequate static and stick-free stability with fairly light stick forces (3lb per *g*) and no tendencies towards pilot-induced oscillation. It has an extremely gentle stall, which occurs at 36kts with tail buffet starting two or three knots before this. Spinning also presented no problems, the powerful rudder bringing it out of five-turn spins with the CG extended aft.

One other rather unsatisfactory feature of the machine is the drag flaps. These bring the glider down at an angle of about 1:15 and if used on their own would make field landings rather tricky. However, the tail parachute has been working quite reliably so this shouldn't be too much of a problem.



KH-1 fuselage *Photo Tom Bradbury*



KH-1 awaiting launch at Cranfield *Photo Ken Holmes*

From the four soaring flights made so far (during February and March) it would seem that the thermalling performance is well up to expectations. With its gentle stalling behaviour it can be circled comfortably at about 42kts and this combined with the low rate of sink due to large span and high aspect ratio gives the machine a good rate of climb, verified by comparison in the air with the Bocian, Olympia 463 and Skylark 4. The machine is rather roughly finished off at the moment but it is expected that the high speed performance should be the equal of the Cirrus when the undercarriage doors are fitted and the wings microballooned, etc.

It is expected that the aircraft will get its C of A soon but this will have to be in the non-cloudflying category for now because of its low VNE. However, at some stage in the future (next winter) I intend stiffening the wing torsionally so that the aircraft can be flown at a much higher VNE and obtain a full cloudflying C of A. But in the meantime, with summer fast approaching, I'm more interested in flying it after the long years of constructional work.

Howard Torode is flying the KH-1 in the Wycombe Regionals, being held at Booker from May 13 to 21.

TECHNICAL DATA

Span (m)	18.56
Wing section, Wortmann 61 series	
Wing area (m^2)	11.7
Aspect ratio	31
Max wing loading (kg/m^2)	27.8
Empty weight (kg)	226
All-up weight (kg)	325

RAY STAFFORD ALLEN COMMENTS

SOME three or more years ago I was asked to go and have a look at a glider that was being built by an amateur glider builder—and that was my first meeting with Ken Holmes, a meteorologist in his early twenties.

I found that not only was Ken building his own glider, but that he had done all the design work himself. I asked him where he had learned his engineering, and was rather staggered when he told me that he had never done any, but had read the stuff up from books!

I was further staggered when he told me that he had never had any instruction on how to splice cables, but had read this up in the *Glider Maintenance Manual*! I have spent hours teaching people to splice cables in the workshop, but never before have I met anyone who could teach himself from a book, and Ken's splices are good.

I have inspected the machine on a number of occasions during the construction and I have always found that Ken's workmanship is good, even if the glider does not have a showroom finish.

I think that Ken is one of the very few people who can say that they have designed and built their own glider, and as far as I am aware he is the only man who has ever done the job single-handed. He has had to work in the most difficult surroundings at times, but it must be a source of great satisfaction to see the job finished now, and to have the delight of flying in one's *own* sailplane.

FLY WITH ICL

Complete PPL Courses for only £200

We can offer dual flying instruction in a Piper Colt for as little as £5 an hour, or a Piper Cherokee from £7.50

Please contact us for further details

ICL FLYING SERVICES

Blackbushe Airport, Camberley, Surrey

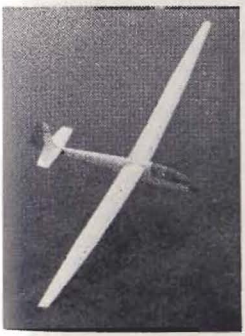
Yateley (02517) 83055 or 3121 Newbury 2271

WINTER BAROGRAPHS

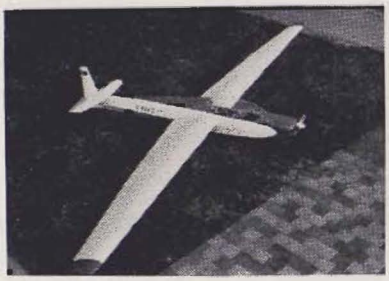
Order now for that Gold 'C' or Diamond Task. Height range to choice, 6, 8, 10 or 12 km. **£59.00** complete with 50 aluminium foils, packing and postage 63p. Motor Glider model, to record engine on/off. **£68.00** complete with 50 aluminium foils or paper charts, packing and postage 63p.

THERMAL EQUIPMENT LIMITED

Lasham Airfield, Alton, Hampshire. Tel: Herriard 359 or 0256-83 359



SCHEIBE MOTORGLIDERS



Motor Cirrus high performance 18 metre sailplane. Retractable engine 1 in 38 glide angle.

The Tandem two seater L/D 27 to 1. VW motor with electric starter. Feathering propeller.

CRYSTAL ENGINEERING LTD., 13 Pound Crescent, Marlow, Bucks. Telephone Marlow 5740 (automatic answering service)

PETER JEFFERS BERT PAGE PETER ROSS

THE BIRMINGHAM GUILD LIMITED

WOULD LIKE TO THANK

THE BRITISH GLIDING ASSOCIATION

for the assistance they have given towards the completion of proto-typing and official flying tests of general purpose sailplane BG 135.

Enquiries for brochures are invited from:

THE BIRMINGHAM GUILD LIMITED
Grosvenor Street, West,
Birmingham B16 8HL



FLYING THE *BG 135*

By ROY PROCTER

IT has been my pleasure to have done the majority of the test and development flying on the BG-135. The machine at once strikes one as a small, though very business-like affair. Like all prototypes, it has a number of minor confusions, which, with hindsight, make one wonder how they got there. Since this is what prototypes are all about, and the manufacturers are well aware of what is required for production aircraft, it will be more profitable to concentrate on the good things, of which there are many.

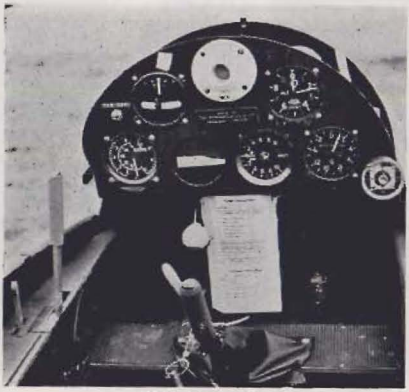
This glider has wheels: A sensible big one with brake for take-off and landing; a decent sprung tail wheel so that you don't *always* have to carry the tail; and wing tip wheels so that you can wheel it in and out of the hangar all by yourself. It has a good sensible handle at the extreme end of the rear fuselage. It can be pulled and pushed from there while one can see *all* of the glider in front. One can even lift the tail high enough to avoid breaking one's back. Think of all those super gliders you can't move because you can't find anything to get hold of (or because you've left the carrying rig at the other end of the field!).

Getting in is fairly straightforward, and this will be easier with the new instrument panel which will give more clearance for the shins. The rudder pedals are adjustable (on the ground) as are the seatpan position and the back rest. Once in, the pilot is very comfortable and semi-supine in the modern way. The small stick (with wheelbrake lever) is well placed. A lever for trim and a bigger one for airbrakes stick up through the coaming on the left. Both appear to be in the right place. The coaming on the right seems just the job for maps and sandwiches. However, one should beware a smart lowering of the nose to whizz through the dreaded sink, because lunch then becomes conveniently placed for those with their mouths in their feet!

The most prominent instrument turns out to be a ball type air outlet connected to a nose intake. The air duct has a little branch to puff air at the extreme front of the canopy and has proved very useful to keep the tug in sight in some of the recent humid weather.

On take-off one is immediately struck by the elevator power which comes as a bit of a surprise. A bit later one finds the other controls powerful as well so the elevator is in context. The rate of roll from 45° to 45° at 50kts is 3½ seconds, which is pretty crisp. Minimum speed for a thermalling turn depends on what the thermal is like and how clever you are. I found 40-42kts about right. The trimmer is positive and enables one to trim throughout the speed and CG range. I've got a "thing" about trimmers; so many gliders seem to have incompetent trimmers which just makes flying more difficult. What a pleasure to find a trimmer that really works. The lever varies the tab datum, so it isn't one of those spring tensioning affairs which leave you wondering if you are trimmed or not.

The BG-135 is a small glider with a



BG-135 cockpit

narrow wing. On the basis that there is no substitute for wing area if you want to fly, one wonders if it has enough to give a reasonable soaring performance, particularly since the wing section is a sharp-nosed Wortmann rather than one of those good old thick ones. In fact the BG-135 thermals very well. During the course of the test flying we have shared thermals with the K-13, K-8, Std Libelle, Skylark 3 and 4 and didn't get left behind by any of them. Visibility while thermalling is good. Taller pilots would find visibility very much improved if the canopy perspex was extended rearwards further. It is understood that this is being considered for production machines.

The stall occurs at 35kts with brakes open or closed. There is not much pre-stall buffet, but one can hear the airflow pattern change just behind one's head about 3-4kts before stall occurs. The controls remain effective right through the stall. Some V-tail machines have developed a reputation for tricky spinning. This certainly can't be said about the BG-135. The spin is steep and there is a bit of pitching. By about 2¼ turns the pitching stops and the rate of rotation increases. However, recovery was accomplished every time within a quarter of a turn by using the standard recovery of opposite rudder and easing the stick forward. If you are a bit quick with the stick it will stop dead and start a bunt whether you remembered the opposite rudder or not! Although a bit alarming, it's much better than wondering if it will stop spinning! Even at extended aft CG position spin recovery was always very positive. Aft CG is limited by longitudinal stability rather than spin recovery.

The airbrakes are of the rotating trailing-edge type. As far as I know they have not been used on a glider before. They look like flaps but aren't! In practice they give a progressive increase in drag as they are opened, not like the rather "all or nothing" effect of the DFS type of brake. They have the great advantage that if you take off with them unlocked they blow shut rather than suck open. This should do something to reduce the accident rate. The brakes are powerful enough for a good steep approach as well as being speed limiting (105kts in a vertical dive). Since they only affect drag, not lift, then opening (or shutting) them very near the ground can be done with gay abandon. No more smashed in wheelboxes!

So here at last is a new British intermediate glider. Being of all-metal construction, it will stand up to the knocking about a club glider gets. If it suffers a minor prang it won't need to spend weeks in a temperature controlled repair shop. Its handling characteristics are right up to the best modern standards and its performance shows great promise



The ease of groundhandling the BG-135 *Photos by Lorna Minton*

too. The new type of airbrake would seem to be a significant technical advance which will make a positive contribution to accident reduction. A machine to satisfy many private owners, yet one in which to let loose your early solo pupils with confidence.

COMPLETION OF THE PROGRAMME

By L. P. MOORE

EASTER marked the end of the official C of A flight trials of the BG-135. It was thus the culmination of a development programme which included not only a new type of sailplane but also a unique form of wing construction and airbrake.

The main aim of the design and manufacturing teams was to produce a miniature general purpose sailplane, suitable both for the club fleet and for the small syndicate, having a performance of the order of the best of the outgoing wooden Standard Class machines but including improved facilities, at a cost and size and weight appreciably below that of the current production Standard Class contest sailplanes.

WING DESIGN

The design of the BG-135 has been a compromise in balancing cost, performance and good handling qualities and the wing is a particularly good example of this process.

The untapered planform and constant Wortmann profile ensures a gentle, balanced and heralded stall under safe control. No tendency to drop a wing in either straight or circling flight was found, and this has been made possible without resorting to washout—the ruination of high-speed performance.

At the same time it has been possible to adopt the maximum standardisation and economy in wing components.

What little the untapered planform loses, in the form of slightly increased induced drag (compared with the optimum elliptical form), it gains from the higher Reynolds Number and lower local lift co-efficients towards the tips.

MATERIALS

The more highly stressed components are in metal, to provide a fully-tested and safely consistent low-cost medium, for which repair facilities and skills are universally available. Where particular resilience to handling shock on the ground is desirable (eg, wing tips and cockpit shell), laminated glass-fibre has been employed.

TAIL DESIGN

A V-tail was chosen for the virtues it was believed could be obtained from proper attention to its design. Special features are:

(1) All-moving empennage with geared anti-balance tabs. This achieves high pitch and yaw stability, "stick-free" because the control surfaces are not blown about by changes of incidence or by sideslip. Lift effectiveness is almost constant up to the tailplane stall, so that rudder movements with the stick well back do not introduce pitching effects. Control power is further improved by the tabs.

(2) A 15% thick section. This achieves the highest possible lift coefficient to give plenty to spare for combined pitch and yaw control. This is particularly important at the low Reynolds Number at which the tailplane operates.

(3) Aspect ratio of nearly eight. This is high for a tailplane and exceptionally so for a fin, despite any effective reduction of aspect ratio produced by a sideslip. For a given surface area, the lifting effectiveness decreases very rapidly as the aspect ratio is reduced much below eight. Hence it has been possible to achieve good pitch and yaw stability from a considerably smaller surface area than is fashionable.

(4) Pitch/yaw control mixing. By eliminating mechanical interference, full pitch and yaw control can be applied simultaneously. Rigging adjustment is straight-forward if carried out methodically.

(5) Finally, only two surfaces are required and their ground clearance is a boon to outlandings. The effectiveness

of the BG-135's tail is clearly demonstrated in the flight test report.

AIRBRAKES

Our trailing-edge wing flap, with its near centre-chord pivot, is unique to British sailplanes and hence had to be developed from scratch. We feel that the time, blood, sweat and expense of pioneering has justified our initiative in that it has led to one of the most effective brakes ever produced. It does not interfere with the aerodynamics of the main wing surfaces, nor with the strength and stiffness of the main structure. It will not snatch open in flight but has a constant closing moment which increases progressively and smoothly with the degree of opening and with speed, to give just the right self-evident feel. Nor can it be left open inadvertently.

It does not kill or increase lift for the landing, so that this can be made at the minimum speed without risk of a sudden stall from an abrupt release of the lever. Glide control is smooth and progressive, down to a glide angle of about 5:1 and the maximum speed in a dive was demonstrably contained within the statutory limit. I do not know of any other airbrakes which combine all of these features. They will be a great boon to club pilots in training and to those faced with away landings in dicey fields.

PRODUCTION, ETC

Additionally, I should mention that the fuselage and empennage have been specially designed to take an alternative range of high-performance wings, up to about 17m.

This first, 13.5m, version is, we believe, a sailplane for which there will be a big demand. The aim is to be in limited production before the end of this year, at a very competitive price compared with any other machine of its class.

TECHNICAL DATA

Span (m)	13.46
Wing section, Wortmann FX61—168	
Wing area (m^2)	9.4
Aspect ratio	19.3
Max wing loading (kg/m^2)	30
Empty equipped weight (kg)	168
All-up weight (kg)	282
Glide ratio at 84km/h	33.5
Minimum sink at 73km/h (m/sec)	0.67

RF-5B SPERBER IN SERIES PRODUCTION

THE RF-5B Sperber motor glider (S&G August 1971, p310, and December, p501) is now in series production. A new Hoffman three-speed adjustable pitch propeller has recently been tested on the machine, and has both increased its speed and improved its climbing performance as well as being capable of being feathered.

If proved acceptable to the authorities, fitting of the new propeller will add about £280 to the present ex-factory cost of the Sperber, about £5,650 (£5,960 in UK).

Details from the UK agent, Sportair Aviation Ltd, Biggin Hill Airfield, Kent.

PROMETHEUS-1

SEVERAL members of Swiss Academic Flying groups have joined forces under the name of EFF (Entwicklungsgemeinschaft für Flugzeugbau) to develop a high-performance two-seater motor glider. The first project they undertook to achieve this end was to fit a micro turbo-jet engine to a high-performance single-seater.

The selection of a turbo-jet power unit enables flying at greater heights; it has less aerodynamic drag than a piston engine, and its performance/weight ratio and lack of vibration permits a lighter structure of the aircraft.

The EFF decided to fit the power unit on top of the fuselage between the wings, not only because it is simple and economical but also because it allows the unit to be fitted to various aircraft which in turn helps to reduce costs when a group or club wish to motorize their sailplanes.

The Prometheus-1 consists of a Diamant 18 (unpolished). The performance of the unpolished Diamant 18 equals that of a Diamant 16.5 and only one performance point is lost at 80km/h or about four points at 150km/h. Thus the Prometheus is better in straight glides and only slightly worse in circling flight than current Standard Class sailplanes.

Special attention has been given to noise problems as the industry obviously will only be interested when

this problem has been solved beforehand. The first flights with a micro turbo Eclair 2 power unit were a pleasant surprise in this respect (*Aerokurier*, April 1972).

TECHNICAL DATA

Span (m)	18
Wing area (m²)	14.28
Aspect ratio	22.7
Wing loading (kg/m²)	36.4
Glide angle at 110/120km/h	40:1
Minimum sink at 80km/h (m/sec)	0.62
Stalling speed (km/h)	70
Power unit: Micro turbo Eclair 2	
Power (kp)	80
Cruising speed (km/h)	240
Rate of climb (m/sec)	3.7
Take off run (m)	300

DUTCH MILESTONE

THURSDAY, March 30 was a great occasion for the gliding movement as the very first Dutch certificate of airworthiness for a glass-fibre glider was handed over to the owner of a Std Cirrus, the Amsterdam gliding club, Ary Ceelen reports.

As this is possibly the beginning of a Dutch fleet of man-made fibre machines this event, in the presence of the Press, was given the necessary publicity. Although other countries have been flying "plastic" for years the requirements of the Dutch equivalent of the ARB have been so stringent that hitherto German manufacturers had to incorporate specific requirements to satisfy the Board. As this was not always possible some Dutch pilots had to fly their German made machines under German registration, in order to be able to fly them in Holland. Although not all machines have been cleared yet at least it is a step in the right direction and holds out hope for the future.

KORA-1 WITH PUSH-PROPELLER

THE firm of Kortenbach & Rauh, Solingen, W Germany, is currently working on the prototype Kora-1, which it hopes will be starting its test flying programme later this year.

This side-by-side two-seater has as its power unit a Limbach 1700 and the (adjustable to three positions) Hoffmann propeller fitted aft of the cockpit. Having decided on a push-propeller, the machine is fitted with two booms to carry the tail unit.

The undercarriage—two wheels and a nose wheel—are retractable. According to calculations this motor glider is expected to have a good rate of climb and especially good cross-country performance in the engine-off configuration (*Aerokurier*, April 1972).

TECHNICAL DATA

Span (m)	18
Wing area (m²)	19.44
Aspect ratio	16.70
Wing loading (kg/m²)	36
Glide angle at 100km/h	31.4:1
Minimum sink at 80km/h (m/sec)	0.76
Empty weight (kg)	470
Pay load (kg)	230
All-up weight (kg)	700
Power unit: Limbach 1700	
Power (hp)	68

OPERATION SIGMA LTD

THE Board of Operation Sigma announces, with regret, that the Sigma sailplane will not be entered for the 1972 World Gliding Championships in which it was to have been flown by Rear-Admiral H. C. N. Goodhart.

Sigma is an exceptionally complicated machine with many novel features. In the course of the test flying and development most of the inevitable problems have been overcome, with one major exception; the profile drag is appreciably higher than predicted. Despite the devoted efforts of all concerned, it now seems that the excess drag cannot be investigated and rectified in time for Yugoslavia.

The members of the Sigma Board appreciate that their many friends and helpers will share their disappointment at this decision. However, we will continue to investigate means of achieving the expected performance.

H. C. N. GODHART, *Chairman,*
May 9, 1972 *Operation Sigma Ltd.*

ELLIOTTS DRAWINGS AVAILABLE

A NUMBER of drawings for the Eon Baby and Olympia 2 gliders, built by Elliotts of Newbury, are available on request from Norman Ellison, c/o Torva Sailplanes, 13 Pavillion Square, Scarborough, Yorkshire.

TWO-ENGINED BLANIK

DEVELOPMENT of a self-launching power unit (to be used in pairs) carried out by Alfred Vogt, Villingen, W Germany, gives another possibility to use the well-known Blanik two-seater in a motor glider capacity.

The firm Sigmund Flugtechnik in Mosbach-Lohrbach, W Germany, decided to try this new development on a Blanik and since September, 1971, Alfred Vogt has been evaluating the Motor Blanik 2M. The excellent results obtained so far justify the experiment completely, athough the prototype suffers from the usual quota of compromises *(Aerokurier,* April 1972).

TECHNICAL DATA

Span (m)	18
Wing area (m^2)	19.15
Aspect ratio	13.70
Wing loading (kg/m^2)	31.3
Empty weight (kg)	388
Pay load (kg)	212
All-up weight (kg)	600
Power unit: Lloyd LS400	
Power, 2 x 22hp = 44hp	
Maximum speed (km/h)	155
Cruising speed (km/h)	145
Rate of climb (m/sec)	1.6

EQUIPMENT NEWS

KITTIWAKE AND PETREL PROJECTS PROGRESS

PROCTER Aircraft Associates Ltd, designer of the single-seat Kittiwake and two-seat Petrel metal light aircraft for glider towing, is now working in close association with Phoenix Aircraft of Shoreham Airport.

Phoenix has dealt for many years in plans and components for homebuilt aeroplanes, to date only wooden ones. Procter's inclusion of its metal designs into the joint enterprise has also led to an agreement with Southborough Engineering of West Byfleet to complete Petrel shortly. If all goes well, Southborough will make components for homebuilders of both Kittiwake 1 and Petrel for marketing by Phoenix. Procter Aircraft Associates Ltd maintains design responsibility and will carry out testing and certification of Petrel and provide technical advice to Kittiwake and Petrel builders.

Petrel's prototype is at the moment about 70% complete. Some design improvements are being incorporated. Petrel's span is 30ft, length 20ft 8in, height 7ft 8in, wing area 135ft^2, empty weight 1,137lbs, all-up weight 1,680lbs, engine Rolls Royce Continental 0-240 (4-cylinder, 130hp). It has a tricycle landing gear. Estimated performance: 1,000ft/min climb at sea level, maximum level speed 113kts, cruising speed, 104kts.

Details from Phoenix Aircraft Ltd, Shoreham Airport, Shoreham, Sussex, England.

BRIAN WEARE

Clapper Lane, Honiton
Devon EX14 8QQ
Phone: Honiton 2940

Glider · Motor Glider · C of A's and repairs
TRAILERS

DEMONSTRATION POLISH TUG IN BRITAIN

A POLISH tug, the Wilga 35, will be in Britain for about a month for demonstration, and will be towing at the Open/Standard Class nationals at Shobdon. It has a short take-off run and the time to tow a glider to 1,000m (3,300ft) is claimed to be four minutes. The ex-works price is £8,320; but this, it is emphasised, includes spares to the value of £1,500. Details from John Strugnell, Daltrade Ltd, 110 Cannon Street, London, EC4.

CLOTHING RANGE

A RANGE of clothing for extreme weather conditions is available from Functional Clothing Ltd, 20 Chepstow Street, Manchester M1 5JF, telephone 061-236 2606, or 9 Alfred Place, London, WC1E 7EB, telephone 01-580 4906.

LASHAM 1972

GLIDING COMPETITION

B.G.A. Regionals — enter now

22 — 30 July

★

Task setting by:—
Derek Piggott

For details write:
Secretary
Regionals
Lasham Gliding Society
Near Alton, Hants.

YORKSHIRE SAILPLANES LTD.

North's Leading Glider Repairers

(JUST OFF THE A1)

Increased workshop facilities now available

Large stocks of glider spares and instruments

Gliders collected and delivered free of charge within 30 miles radius

Major and minor repairs

Rebuilds a speciality

C of A inspections

Resprays

Gliders bought and sold

For all your gliding club requirements contact:

Gerry Kemp, Bondgate, Ripon

Telephone 3360

(or Barry Goldsborough, Ripon 3784)



IRVIN TYPE EB.69 LIGHTWEIGHT PARACHUTE ASSEMBLY

A compact parachute designed for low-profile gliders fitted with moulded reclining seats.

The EB.69 is suitable for Libelle, AS-W.15, Phoebus, Standard Cirrus, Kestrel and Nimbus sailplanes, and certain light aircraft.

For full details write to SERVICE MANAGER:

IRVIN Great Britain Limited
Letchworth
Herts.
Tel. 6262
Telex 82198

IRVIN

CROSSFELL ELECTRIC AUDIO VARIOMETERS

FAST

COMPACT

EFFICIENT

Electric Variometers proved over ten years. Available with or without Audio.

Agents throughout the World.

Crossfell Variometers
8 Fraser Close,
Malvern, Worcs.,
England.

FLYING ON A BUDGET?

Our credit terms for insurance need cost you nothing

"Don't Delay — Ask Today"

Trafford Facilities Ltd.
Associated Insurance Brokers
(Dept SG)

151 HATFIELD ROAD,
ST. ALBANS, HERTS.
Telephone Nos.: 54967 & 52396

SOUTHDOWN AERO SERVICES LIMITED

offers YOU a complete gliding service whether your sailplane is made of wood, metal or glass-fibre.

Big stock of aircraft ply, instruments, aero-tow rope, etc etc.

Send s.a.e. for price list.

Call in, write or phone—

KEN FRIPP,
SOUTHDOWN AERO SERVICES LIMITED,
LASHAM AIRFIELD, ALTON, HAMPSHIRE.
Telephone: Herriard 359 or 025 683 359

Stockists for all PZL Instruments and Equipment

Agents for Slingsby Sailplanes Ltd.

OBITUARIES

GOTTLOB ESPENLAUB

ONE of the most colourful figures in German gliding history, Gottlob Espenlaub, died in January in Wuppertal, aged 71. "Espe" was present at nearly every important gliding function in the twenties and, being a joiner by profession, was soon building gliders of his own design—often experimental, as with his 24m span machine, which demonstrated that wings could sag alarmingly on the ground yet be quite safe in the air.

In 1927, at Kessel, he was the first to be aero-towed in a glider (I got there by bicycle only in time to see it being dismantled for the last time). He built, flew and crashed a tailless rocket-propelled aircraft in 1930. When the Germans resumed gliding in 1951, he was first to get airborne, and recently he produced a twin-engined motor-glider, the 37-T.

Espenlaub's exploits would fill a book —and, in fact, have already done so in "Gottlob Espenlaub: ein Fliegerleben", by F. W. Radenbach, published by K. Thienemann's Verlag, Stuttgart, in 1942.

I never saw him close to; his appearance would have been unmistakable, with his swarthy complexion and immense mop of curly dark hair.

JACQUES COCHEME

IN 1950 Jacques Cochemé produced the first issue of *Gliding*, one of the components of the present *Sailplane & Gliding*. Now information of his death has regrettably reached us. He was in the RAF during the war as a meteorologist, and after its end had a job in the Forecasting Centre at Dunstable. Of course he was soon gliding, and acquired an Olympia which he fitted out with extra instruments for meteorological research.

He was soon writing for *Flight*, and covered the 1949 Nationals for that paper while I did so for *The Aeroplane*; being both devoted to getting the maximum publicity for gliding, we took turns at driving each other down to Hathersage to catch the post with our reports, such was the spirit of those days. His subsequent activities included meteorology in an Arab country, and later he worked for NATO, first in Paris and latterly in Rome.

A. E. SLATER

CORRESPONDENCE

CLOUD FLYING

Dear Sir,

The two letters in the April 1972 issue of *Sailplane & Gliding* about cloud flying are fundamental to the sport of gliding as we currently know it. Every young pilot who looks forward to taking part in the sport over the next couple of decades or more should think very hard about what he expects the sport to provide, the way it is currently going, and what he ought to do about it.

Because gliders do not fit conveniently into Air Traffic Control systems as they have evolved, it has been easiest for Governments simply to apply increasing restrictions to gliding. Here in Britain we, and particularly Philip Wills, have worked very hard to stop the Government applying restrictions just because it is the easiest thing to do, but instead have tried to reach sensible arrangements based on assessment of real risk. This has been partially successful, and in particular, cloud flying is not prohibited.

As I read Seff Kunz's letter, what he is really saying is that efforts to achieve the same result in Germany have been unsuccessful. Unsuccessful, not because there are any valid arguments against cloud flying, but apparently due to the complexities

of internal politics in Germany. It is certainly not for me to say whether the failure in Germany was inevitable, but what is really worrying is that, having failed, there should then be any move to impose the results of failure on the rest of the world; at least that is how it appears. For, if cloud flying is prohibited in World Championships, what argument is there against general prohibition?

If the cloud flying problem is analysed objectively, it can easily be shown that, as far as other powered aircraft are concerned, the collision risk due to gliders in cloud (outside controlled airspace) is negligible. After all, there never has been such a collision. (The glider *v* glider collision risk is not negligible but we have other ways of easing that problem, and in any case, experience shows that this is one of the lesser hazards in gliding. Collisions in clear air are more frequent, and loss of flying speed is the severest problem of all.)

As far as I am concerned, gliding has evolved as a sport which is unique in always providing another challenge as each goal is reached. We start with first solo, then there is the first cross-country; badges and records follow, and for those who like it, competition flying presents an enormous challenge. Wave flying, mountain soaring, hill soaring, aerobatics, cloud flying—all add their own special fascination and achievement. But once let creeping bureaucracy in for reasons of administrative convenience, and very soon gliding will wither progressively as limits are imposed. Impose an arbitrary ceiling, as is being done in USA, prohibit cloud flying as in Germany, put up barriers in the form of controlled airspace with a low base, as is being done in many parts of the world, and the damage done to gliding will be out of all proportion to the apparent significance of the constraint imposed.

The magic of gliding lies in the wide range of goals and challenges it offers. Very few pilots will actually reach these goals, but it is the mere existence of them which fires the imagination. I believe the future of gliding depends on our success in achieving sensible airspace arrangements, and this is not only a problem for individual countries, but one which requires a concerted world-wide attack.

Bagshot, Surrey. H. C. N. GOODHART

DONCASTER SAILPLANE SERVICES

The Powered Glider Specialists

UK AGENTS FOR TOST AND WINTER EQUIPMENT

Sailplane Sales & Exchanges

Present Stock Includes:
T21B

Trailers Built to Order
in all Fibreglass Construction

New & Used Instruments

ALTIMETERS ASI's
HORIZONS INVERTERS
VARIO's BAROGRAPHS

OTTFUR & TOST HOOKS
RECONDITIONED BY POST

STEEL TUBE WELDING

GLASS-FIBRE REPAIRS

'Winter' Instrument Stockists
BAROGRAPHS 10 km
VARIOMETERS ± 10 kts
COMPASSES
A.S.I.'s 0-140 kts

'Danum' Transistor Inverters
Small Size, 12v. Input, Fused
Matched to all types of horizon
(State type when ordering)

Large stocks of Ply, Fabric, Tyres, Dope, etc.
The new "Supersafe" Tost Europa Hook now in stock

YORK ROAD, DONCASTER. **Phone 0302-65381**

GLIDING AND RED TAPE

Dear Sir,

I really thought Johnny Morris was being serious when I read today his piece on motor gliding instructing (page 111 in your last issue). Then I realized. This was the April S&G and it is April 1. I wonder how many other readers he fooled!

But he wants to be careful. Those he caught out might think gliding is in danger of being suffocated by red tape and take up tiddly-winks—or even ballooning.

London Balloon Club. ROGER BARRETT

ARE WE FLYING TOO FAST?

Dear Sir,

I would like to try and answer George Burton's question "Are We All Flying Too Fast?" (S&G February p27). He proposes that we may be flying too fast because of true airspeed consideration at altitude. However, he is basing his analysis only on a speed ring developed for sea level air density. He should, in fact, also be using a speed ring developed from a polar curve for the assumed altitude. Also, variometers do not read "sea level" values regardless of altitude. They read "true sink speed" for the altitude being considered. If a sailplane gliding at a certain L/D ratio at sea level is moved to a higher altitude the L/D ratio will remain the same but the true airspeed and true sink rate will be increased by the square root of the density ratio.

During the past winter I happen to have performed the same analysis for my Std Cirrus. I found that for flying at an assumed altitude with the ASI reading matched to a speed ring developed for sea level the resulting true airspeed will be too high, just as George Burton has predicted. However, this true airspeed should not be compared with the speed to fly at sea level. Rather it should be compared with the speed to fly as given by a speed ring developed from a polar curve for the assumed altitude. If this is accomplished the airspeed will be found to be very close to the proper speed to fly for the assumed altitude.

I did this analysis for several rates of climb at different altitudes and was amazed to find that by flying an indicated airspeed given by a sea level speed ring you can automatically correct for the shift of the polar curve due to the lower density at altitude.

During my "flying" of the Std Cirrus by slide-rule I found another interesting point which comes under this same subject. We all assume that by flying the speed ring between thermals we will make the fastest average cross-country speed. I became curious as to the effect of flying slightly faster or slower than the speed ring value. By cruising faster than the speed ring value the average cross-country speed decreases immediately. For the Std Cirrus, flying 1-2kts faster than called for reduces the average cross-country speed about ½kt. It was found, however, that the Std Cirrus could be flown between thermals about 10kts slower than the speed ring value with no change in the average cross-country speed.

It is recognised that these calculations are based on idealised conditions that may never be encountered in flight but they do indicate some clear trends. In answer to George Burton's question "Are we all flying too fast?" I would say: "No. However, perhaps we could fly a little slower and do just as well".

Mt. Prospect, Illinois. DUANE EISENBEISS

INFORMATION PLEASE

Dear glider pilot,

Do you find Polaroid sunglasses useful when thermal seeking? If so, how does it work? Does the degree of tint or colouring matter? Do you find that the size of sunglasses is important? One ex-World Champion is said to buy 50 pairs and after flight trials, select the most effective set.

I am in contact with Polaroid (UK) Ltd, who have offered to make the most suitable sunglasses available through the BGA if we tell them what we want.

Please send me your opinions, facts and lore as soon as possible, care of *Sailplane & Gliding.* WALLY KAHN

Advertisements, with remittance, should be sent to Cheiron Press Ltd., 5 Crawford Street, London, W1 (01-935 2814). Rate 10p a word. Minimum £1.30. Box numbers 40p extra. Replies to Box numbers should be sent to the same address

FOR SALE

DIAMANT 18. 4 years old. In good condition. Instruments include AS1, Altimeter, PZL Vario, Audio Vario. AH and T.S. Also separate T.S. Cook Compass. 12 volt Nicad battery. Undercarriage warning. All weather trailer. Complete glider mounted on separate trolley for easy rigging. £2,850. P. S. Wybrow, 5 Boscawen, Cliff Road, Falmouth, Cornwall (Phone Falmouth 311077).

AUSTER. Towing hook. Full panel. Wings recovered. £1,000 ono. Tel. Ludgershall 320.

DART 15M, excellent condition, recent C of A. Basic instruments. Price £1,550. Box No. SG 382.

OPPORTUNITY KNOCKS, Kent based Oly 463, Syndicate membership for sale. Phone Worthing 206208.

PYE CAMBRIDGE £70, Bantam £80, Transistor Ranger £35. All two channels, 129.9 and 130.4. Cottesmore 360.

TWO Bendix Aerovane Systems for wind speed and direction, each with duplicate indicators. Original price £686.2.6 for each system. Open to offers. Please write: Miss Medus, 120 Cheapside, London, EC2.

DART 15 (404) Metal Spar. Fully instrumented, trailer, parachute, C of A. Available end September £2,200. Phone: Laurie Beer, Amersham 4819 day. Great Missenden 3384 evening.

* **1001 Genuine Bargains interest everyone!** *

Huge stocks **GOVERNMENT SURPLUS CLOTHING AND EQUIPMENT,** inc. flying suits from £3.36, p&p 32p; anoraks, outdoor clothing, camping, immense variety of miscellaneous ex-Government equipment. Send TODAY for our 30-page CATALOGUE—Now includes fascinating broadsheet from the Laurence Corner Him and Her boutique, fashion leisure/sportswear and jean centre, few doors from the main store. 10p post free or please call at **LAURENCE CORNER,** 62-64 Hampstead Rd., London, N.W.1. 2 mins. Euston, Warren St. All goods backed by our refund guarantee. Dept SG.

K-6E GOOD condition, 160 launches, no prangs, with well built, well maintained, easy-stow trailer. £2,200 with basic instruments including ADC. Available mid-August. Tom Zealley, 14 Langbridge Close, Hitchin.

PREFECT. Second to last built, 1958. Privately owned, in excellent condition. Owner posted abroad. With full and half canopies, basic instruments and closed trailer. £490. Box SG 383.

PYE CAMBRIDGE for sale £75. Ring Kirkburton 2668.

OLY 463 in mint condition, prang-free, with PZL and automatic loading trailer. C of A from May. Price £1,450. Available July, view any weekend at Nympsfield. Ring Mike Harper, Cheltenham 29258 (office) or Winchcombe 602848 (home).

SHK, T/Chute Trailer, full competition instruments, including ADC, new C of A. Price £2,950. Ring Davis, 01-574 1603.

GENUINE reconditioned steel grey ex R.A.F. Flying Overalls. £4 each + 20p postage & packing.



Ex Met. Office, Air metre, ideal for measuring air movement in feet per minute. Complete with carrying case. Instrument size approximately 3⅜" x 3". Price £5 each p & p 23p.

Ex R.A.F. Safety harnesses, known as "Z" harnesses, 1½" Blue Nylon adjustable webbing with instant quick release, used but in good condition. Ideal for your glider or car, £6.30 each, p & p 17p. NEW "Z" harnesses, £10.50 each, p & p 17p.

1971 Catalogue 48 pages of Bargains, Camping, Ex W.D. Marquees, Canteen Furniture, Cooking units etc., 10p including p & p.

Tarpaulin & Tent Manufacturing Co.
101/3 Brixton Hill London S.W.2. 01-674 0121/3

MOST back nos S&G from 1956. Offers Hutchings, White House, Seend Cleeve, Wilts.

THE only sailplane which has flown two 1,000km flights (1,032 and 1,440km, see p223), can be yours straight away. Hans-Werner Grosse is selling his immaculate 19M ASW-12 with trailer for DM35,000 ex-Lübeck. Apply Hans-Werner Grosse, Lübeck. Triftstrasse, 27 Lübeck, W. Germany.

2 PLACES are available in a K-6E syndicate operating at the new aerotowing site at Sleap, Wem., Shropshire. Fully instrumented with good audio-variometer, radio, etc. Adams, Astbury, Congleton, Cheshire. 026 02-3525.

HORIZONS. Ferranti MK5 miniature horizons in mint condition £75, packing & postage 63p. P.A.J. Controller/inverter with built in 18 pin socket for Ferranti Horizon. "Just plug in and you're in business". £24 packing & postage 25p. Sperry Horizons MK3C £35 packing & postage 63p. P.A.J. Inverters for Sperry MK3 or Bendix J8 Horizons £16.50, packing & postage 13p. Please specify which type when ordering. Apply: Southdown Aero Services Ltd., Lasham Airfield, nr. Alton. Hants. Tel: Herriard 359.

CONVERT that T-31 into excellent Cadet Mk3 motor glider, uses Volkswagen car engine, prototype conversion G-AYAN already flown 188 hours. Details 50p, Drawings £6.50. Martin, 104 Greenview Drive, Kingsley, Northampton.

WANTED

PYE Bantam 3 channels good condition, Hirst, 24 Pine View Close, Haslemere, Surrey.

CAPSTAN. Please apply Peter White, 69 Beacon Park Rd., Upton, Poole, Dorset.

T-31 or similar required, details to 59 Cody Road, Clapham, Beds.

10 or 12K Barograph. Contact R. Pearson, 16 Main St., Dairse, KY15 4SS, Scotland. Tel. 0382-88371 9am to 5pm.

SITES

SHROPSHIRE Soaring Group, Sleap airfield. All aerotow launching; adjacent to Llangollen Wave. Membership details from Ian Paul, Fairfields, Cross Lane, Oscroft, Tarvin, Chester, CH2 8NQ. Tel. Tarvin 40787 evenings.

INSURANCE

We are experts in glider and aircraft insurance. Let us quote you the lowest rates with the most reliable companies. Write to Brian Gudgin,

Marlow, Gardner & Cooke,
254 Lincoln Road,
Peterborough

Telephone 68543

SITUATIONS VACANT

THE position of DEPUTY CFI for London Gliding Club has become vacant. A replacement is sought immediately. Applicants must have full B.G.A. Cat. and P.P.L. Permanent position with accommodation is offered to the successful applicant. Salary to be negotiated in accordance with experience. Apply: The Manager, London Gliding Club, Dunstable Downs, Beds.

FINANCE

FINANCE for your glider purchases. Advances made on your present glider. Peterborough & Fenlands Finance Limited, 15 Broadway, Peterborough. Telephone 66191.

PUBLICATIONS

AUSTRALIAN GLIDING Monthly, publication of the Gliding Federation of Australia. Prepare yourself for the 1974 World Championships! A complete coverage of Australian soaring and exclusive features of international interest. Subscription £3 or $7.50 U.S. to Box 1650 M, G.P.O. Adelaide, South Australia 5001.

It will, of course, be understood that the British Gliding Association cannot accept responsibility for the claims made by advertisers in "Sailplane and Gliding".

CLUB NEWS



In general terms the soaring season has not yet come up to scratch—literally! The southern half of England especially seems to have had little flying so far and few cross-countries have been recorded. We have in this issue reports from 39 clubs, nearly half our total number. We welcome the Inkpen Gliding Club, recently accepted as a BGA member club, as our newcomer in this issue

Copy and photographs for the August/September issue should reach the Editor, S&G, British Gliding Association, Artillery Mansions, 75 Victoria Street, London SW1, telephone 01-799 7548, not later than June 14.

Copy and photographs for the October/November issue should be sent to the Editor not later than August 16.

April 26, 1972

BLACKPOOL & FYLDE — CFI retires after 22 years

JACK AKED, our CFI for 22 years, has been forced to retire for health reasons. To him we owe the foundation of our club with a Dagling and a bar for refreshments. He had been CO of an ATC gliding school until it was closed down in 1949. In 1954 the T-21, now fitted with a closed canopy, was bought.

Jack gradually allowed more of us to help him with the instructing, but he still took full responsibility for all check flights and first solos. His own flying was an example for all, his instructional dogma being aimed at insuring safe flying habits for his pupils. Show-off aerobatics and beat-ups were anathema.

Derek Sandford is Jack's successor as CFI. He joined us last year from Burton & Derby. He has had plenty of hill-soaring experience with the Lakes club and elsewhere which will be most useful in connection with our move to Cook Hill Farm, since most of our members and many of our instructors are flat-earthers.

K.E.

BRISTOL & GLOUCESTERSHIRE — Nympsfield is ours!

WE have now, 15 years after the club moved to Nympsfield, paid off the last instalment of our mortgage and joined the select band of clubs who are sole owners of their sites. Nympsfield is ours!

At the AGM on April 6, the agenda, including a complete revision of club rules and the election of officers, was completed in under two hours. Officers elected were: Mike Harper, chairman; Doug Jones, vice-chairman; Delwyn Farrell, secretary; and Norman Harris, treasurer.

Spring has brought some magnificent soaring weather to us, and the Severn skies were full of happily thermalling gliders at weekends. On April 9, Ron Sandford took his Std Cirrus round a 250km triangle at 60km/h while Roger Jefferies flew to Burford on his first cross-country.

April 15 was a record day for the club —four pilots completed their five-hours, two of these in the club Olympia, and wave to about 8,000ft was found by many. The best height, 10,300ft, was

achieved by Joe Grimes. Total hours for the day exceeded 100 for the first time on record. Also, our launch rate is improving and we are very close to the 100-a-day mark.

Gordon Mealing and the Lynch family, ex-Keevil, have just joined the club with a Cirrus, and the "Harpic" syndicate has a Std Libelle on order.

M.J.C.

BURTON & DERBYSHIRE — youngest solo pilot

WAVE has at last been located from the Church Broughton site. Last December three pilots showed a gain of height from around 2,000 to over 4,000ft, the wind being strong NNW. The last flying day of 1971, December 28, resulted in a good turnout, the most notable event being the appearance of the Sky since its last airing in September, and the eviction of two mice comfortably bedded down for the winter in the barograph compartment!

Monday, March 20, saw a gathering of members rushing to the field after work, in order to get the T-21 and equipment ready so that Peter Cooper could be sent solo on his 16th birthday.

The cross-country season was touched off by Robin Skinner with a flight to Henlow in the Skylark 3 and by John Hicking and John Ekman to Husbands Bosworth in the club K-13.



John Ekman (CFI) and Peter Cooper, who soloed on his 16th birthday

It was recalled at the AGM on April 12 that the 1971 target of 1,000 miles cross-country was handsomely exceeded. This year's target is 1,600 miles.

P.A.W.

CAMBRIDGE UNIVERSITY — new bungey site

CAMBRIDGE University members have been clearing the old bungey site at Dunstable Downs. The usual Easter Sunday crowds were thus able to watch the gliding from rather closer quarters than has been possible for some years. Three Olympia 463's and a Std Libelle were taken to the bungey site and duly launched into a strong south-westerly wind. The so-called "landing strip" on the top of the hill was thought just usable, so some landings were made on it, and the gliders re-launched after changing pilots.

We were also visited by a T-21B from the local club, and this was bungied off again. A total of seven launches was carried out during the afternoon, and gave some ridge soaring in the rather rough conditions. Our thanks go to Tom Zealley for all his work on the launching and landing strips, and we hope to give him a launch next time.

Back at our usual sites, the cross-country season started well, and one of our instructors now has the rather dubious distinction of having made over half of all our outlandings from Duxford.

P.L.S.

CORNISH — landing on the beach

NINETEEN seventy-one ended happily with the annual dinner, the guests of honour being Bernard and Mrs Warmington. A few years back, Bernard was an active instructor and is the club's only vice-president.

The year opened quietly with a new plan of club renovations being put forward by Brian Stanton. On March 5 the ridge was working as well as the thermals. Heavy squalls were also building up and Pat Wybrow in the Diamant and Ernie Hayman in the Skylark were faced with a return to base through an exciting hailstorm. Both decided to land on the

firm sand of the beach, which gave the locals an interesting break on a Sunday afternoon.

At the AGM in February our popular chairman, Harry Hooper, was unanimously re-elected.

G.T.C.

COTSWOLD — vintage section

THE last 12 months have seen a great deal of action. Our fleet now consists of three K-7s, one Skylark 2, one K-6E and numerous vintage contrivances. We seem to be growing a vintage section with two Tutors, one Rhönbuzzard and a microscopic Hütter. The syndicate boys, however, also boast a Phoebus.

Last year our task week with the Worcestershire club ended with their victory for the first time. However, during the next few weeks we are returning once more with a strong team to try and put matters right.

Our CFI, Roger Bunker, retired during the year and was presented with a barograph by the club members. Another great club man, Percy Martin, has taken his place and started in fine style with a very good and well attended series of winter lectures.

Malcolm Gay tamed an early thermal for his Gold height. This was a just reward, for late last season Malcolm made two attempts on his Gold triangle in one weekend, on each day landing about 10km short. For this he won the Harry Daniels trophy for the most meritorious distance flight from Aston Down.

COVENTRY — down in the jungle

FOLLOWING a dismal winter, spring brought forth not only thermals but new gliders and, at last, the welcome possibility of even further expansion of the premises. The Government has been very charitable in allowing us a grant to build a flashy new bunkhouse. In order to shield the caravans and buildings from the road, several trees and bushes have been planted. Apart from those consumed by the resident sheep, they should create a jungle-type atmosphere and HB should be completely unrecognisable from the air in years to come.

The club is now flying the new Bocian, which has survived two minor incidents already. Other new gliders include a syndicate Kestrel 19, three Std Libelles and a good old Grunau Baby. Lou Frank, our new chairman, made his presence felt by completing the first cross-country flight to Ipswich in mid-March, a down-wind dash more than a thermalling exercise.

V.G.

DEESIDE — Falke take-off warning

THE club height record has been broken, again by a visitor. At the end of March Mike Garrod, from Dunstable, rode our energetic wave to 23,000ft asl. In addition, the first few months of 1972 produced one Gold, three Diamond and five Silver height claims.

Our chairman's Falke has been called sundry uncomplimentary names by those who prefer the handling qualities of the Skylark 4, but there is no denying its usefulness as a teaching machine. Other operators are urged to heed the warnings about the flow characteristics of the Falke's wing—ours refused to become airborne after a few drops of rain froze on the wings during the take-off run.

The surrounding terrain makes us a little shy of cross-country flying but on Saturday, April 9, Bob Kerr flew his newly-acquired Dart to Fife (didn't quite make Portmoak) in thermal conditions. If that doesn't sound impressive, consult your map and see all those mountains in between.

J.M.S.

DERBYSHIRE & LANCASHIRE — entertaining the masses

A PARTY from Lasham arrived to bash our circuits in March. We laid on astonishingly good weather for them, providing NW to SW winds for the first few days, and NE to SE winds later in the week, enabling them to sample both our ridges, They soon learned not to trust their usual long flat approaches over our tiny outlying fields, and went home wiser men at the end of the week. We hope to take three or four aircraft down to Lasham to return the compliment.

You are never too old to glide. One of our members turned up with his grandmother in tow. She had a trip in

THREE COUNTIES AERO CLUB LIMITED

Blackbushe Airport, Camberley, Surrey
(ON A30 TRUNK ROAD — 45 MINS. FROM LONDON)
Special Courses for Glider Pilots to obtain Private Pilot's Licence
Silver C conversion from £62
Normal Courses for Private Pilot's Licence
Night Flying — Instrument Flying — R/T
Frasca Flight Simulator
Board of Trade Approved Courses 35 hours
Residential Courses available
Licensed Bar. Diners Club Credit Cards accepted
Barclaycards accepted

C.F.I. Derek Johnson
YATELEY 3747 (Management) 2152 (Operations)

the K-13 at the ripe old age of 92. Her first flight. Can anyone beat that?

A successful weekend was enjoyed by the visitors to the BGA AGM held at Buxton. On the Sunday we acted as hosts to the large numbers that descended on Camphill, providing a mouth-watering buffet lunch and sherry party. Although the wind was decidedly strong we bungey-launched five gliders off the west edge. Chris Simpson (BGA chairman) and Naomi Christy (development officer) were two prominent members who had joy rides. The assembled throng was then entertained by CFI Eric Boyle, mounted in the K-13, and Alan Beckett (deputy CFI), astride his Dart, beating up the edge for the benefit of a BBC television film unit that turned up to cover the occasion.

Our collection of club history has started to take shape. Phil Chapman has managed to acquire a cine film taken in 1936 of gliding at Camphill.

Mark Milton bent the Super Javalot and his insurance company are now having to toss up to decide if it is repairable. Meanwhile he is busy attacking the club fleet. Our other notably clumsy member, Tony Vermot, broke the Talurit (cable splicer) then he ran over the coffee container with the winch, then he tried to break his ankle rigging his Oly. As long as he doesn't bend that; he shares it with me!

P.H.

DEVON & SOMERSET — wave at North Hill

FOUR club members including the CFI went to Portmoak during the week preceding Easter and did very well. Gerry Leat (K-6E) and Peter Cooper (Olympia 463) both obtained Gold height with 12,500ft, Peter also completing his Silver C with his duration leg. Bill Nill also got his duration while Ken Jenkins missed his Gold height by only 200ft.

Wave was also experienced at North Hill on Saturday, April 15 and was exploited by a number of club pilots.

The K-6CR syndicate sold their aircraft to two other club members and have now acquired a Dart 17R which brings the private owner fleet to: Std Cirrus, Dart 17R, Dart 15, two K-6ES, K-6CR, Olympia 463, Skylark 4, Olympia 2B, an Eagle and two immaculate Grunaus. The

club aircraft remain at Capstan, Bergfalke and Swallow.

A more sophisticated machine, to satisfy the pilots who have outgrown the Swallow, is being considered. Aerotow requirements are still adequately supplied by the Husky tug.

A.E.R.H.

DORSET — successful year

OUR AGM was held on April 21. The club had a full-flying membership of 144, of whom about 100 had already rejoined. There were 12 fully-rated and 15 assistant instructors as well as 13 tug pilots. Of these Harry Wolf carried out 364 tows during the year followed by Peter White (215) and Allen Palmer (226).

Eighteen members had got their A and B certificates and nine completed their Bronze C. Six members had flown their Silver distance, eight heights and five their durations, which resulted in six Silver Cs.

Ray Witheridge was elected the club's new chairman, while Ken Besent and Derick Cracknell are the two newcomers to the committee. Trophies for the various annual awards were presented as follows:

Allen Palmer, for a Diamond goal flight; Roger Morris, for his Silver C in a club glider; Tony Bessant, for aircraft maintenance on the club's behalf; Tom Groome, for his Silver C in one flight; Graeme Morris, for a gain of 9,000ft; and Harry Wolf, for the largest number of tows by a tug pilot.

Our treasurer reported a profit of £331 as well as substantial profits from our catering activities.

M.L.B.

ENSTONE EAGLES — new arrivals

THREE new aircraft have recently arrived at the site; an SHK, a Foka 5 owned by CFI John Thorne, and the club T-21. We now have 11 different types of glider operating from Enstone ranging from an immaculate 1930's Kite to the brand-new Foka. We have said goodbye to the privately owned Capstan, which has gone to Swindon, but the CFI's old Skylark 3 has been acquired by a syndicate and will remain on the site.

The T-21 has already started circuit bashing and we would be very pleased to welcome more *ab-initio* members now that we have full training facilities. We have also taken delivery of a Humber Super Snipe, so we are able to offer auto, winch and aero-towing.

C.E.H.

ESSEX — late evening solo



Photo by D. G. Beazley

ESSEX & SUFFOLK — frustrating weather

BOTH our AGM and annual dinner-dance were held during March. At the AGM the committee was re-elected without change but with the addition of Bill Williams to look after the social activities of the club.

So far the season has been mainly hampered by the terrible weekend weather, with many frustrated pilots waiting for the gales or rain to stop, or both! The influx of new members has been most encouraging and we are glad to welcome back to gliding Tony Sutton as a willing tug pilot.

On the last weekend in May, including the Bank Holiday Monday, we are again looking forward to a visit from our friends at North Weald. We hope to hold a joint task weekend at Whatfield.

M.L.

INKPEN — gliding club opens

INKPEN ridge has played an important part in the gliding scene for many years, and it has now become possible to form a permanent club at this well-known site. A T-21 is our first club aircraft, and thanks to the efforts of our MT members, we have a diesel winch which was formerly owned by the Bath club.

For the first year Peter Purdie, who was elected as the club's CFI, will have the difficult task of keeping an eye on our first 30 pupils. We have also seven private machines flying from the site, ranging from an Olympia 463 to a Nimbus, and we are very fortunate in being able to use Ralph Jones' Jackaroo for aerotows.

If you happen to find yourself in the area, the club is situated at the top of the ridge; just locate the village of Shalbourne, and bear left at the top of the hill.

I.R.C.

KENT — genuine out-landing training

THE club is delighted to have George Hinchliffe back as resident cook. George, who was with us a couple of years ago, not only prepares marvellous meals but has the happy knack of making the food look attractive.

Congratulations are due to Phil Willcocks. In a competition run by the magazine *Pilot* for £300 worth of power flying, Phil shared first place with two others and won £100.

Tug Burnes' recent trip to Portmoak was rewarded with his second Gold leg with a climb in wave to 13,000ft in his Dart.

Our AGM was held on April 8 and Ron Cousins remains as club chairman. Roger Neame and David Stacey were once again voted to be treasurer and club secretary, jobs they have been doing so well for so long that we tend to take them for granted—the very last thing we should do, we owe them so much.

The syndicate T-21 is now flying and certainly outshines the two club-owned examples, with its beautiful red and yellow finish, a rising sun pattern on the wing and padded leather seat.

Pre-cross-country pilots are having to do a genuine out-landing as part of their training. This is to overcome the dangerous instinct of trying to get back to the field when caught out too low on the ridge, etc, on Bronze and Silver duration attempts. These out-landing exercises are made possible by the generosity of local farmers, particularly Mr Ford and Mr Lawrence.

R.J.H.

LAKES — concealed cocktail cabinet

HIGH waves, at last, on March 12 (see p201). Two complete Bronzes were achieved a fortnight later, on our "gritty little slag bank". These may appear anticlimactic, but not to the brothers Wearing who flew them.

On another day in February, winter thermals were experienced. At a time when three disgruntled members sat in the clubhouse bemoaning the lack of soaring on our site, other members were at 3-4,000ft, south of the field, happily screwing up under the clouds.

A Std Libelle is now "at home" on the field, and the proud syndicate members are busy finding out how it flies, and adding those little touches—concealed cocktail cabinet, cigar lighter and plush velvet curtains, which brings comfort to one's soaring hours. Of course, no one envies them—we all prefer the T-21, don't we, chaps!

R.R H.

LONDON — hot seats now cold

WESTERLY winds were frequent during the spring, and permitted a good deal of flying at weekends, especially over Easter. The Cambridge club visited us for bungeying during that week-

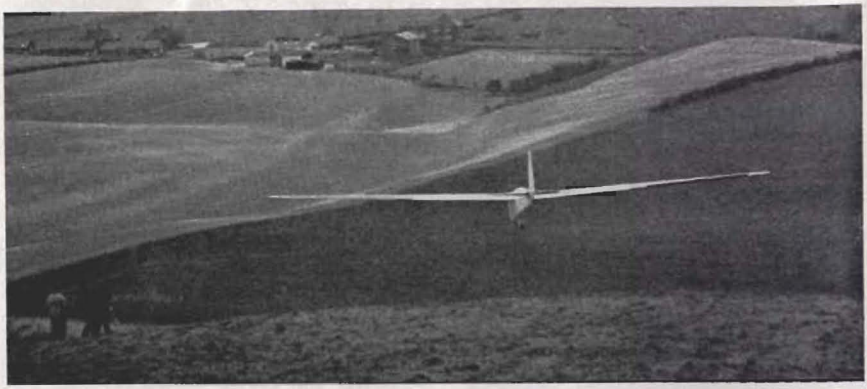
Quite simply . . . .

J S W CALCULATORS

Quote glider type: knots or metric

from F/Lt. J. S. Williamson,
RAF Thorney Island,
Hants, PO10 8BG.

. . . . the best!



The Cambridge University club Olympia 463 "Rudolph" being bungey launched from Dunstable Downs
Photo John Kirsch

end. Cross-countries have been few so far, with a number of outlandings, including one by a newly acquired Std Cirrus, the pilot having rather overestimated its performance.

Various members have visited other sites recently, notably Portmoak and Aboyne. The latter site proved most cooperative, and Bob Smith got his second Diamond with a climb to 19,500ft, while Mike Garrod climbed to almost 23,000ft.

The club buildings have had a major facelift in readiness for a busy summer, especially with two contests scheduled for August. It was during this overhaul that the plumbers discovered the ladies' loos were connected to the hot water supply, and had been for many years!

There have been some staff changes in recent months. Mike Till has finally departed and has been replaced by Derek Sear as a resident instructor. Geoff Naylor will be leaving us later in the summer. Don Gerrard was taken ill, and is unlikely to return for some time. In his absence aerotowing has been the primary means of launching, Dick Sherwin staying with us for a further summer as resident tug pilot.

M.P.G.

MIDLAND — beer tray still here

TROPHIES were presented at the annual dinner-dance in March. The Hardwick (best out-and-return) and Ladder went to John Brenner. The Sheffield (best gain of height) was won by Don Brown, and the Siam (best distance) by Bob Scarborough. The Maxam (club effort) went to John Ricketts to mark his unstinted work in connection with the clubhouse improvements.

We had a good start to the soaring season—plenty of thermals, occasional wave, and a marked increase in the number of bungey launches. John Brenner had climbs to 11,000 and 14,500ft. Philip Mawhood flew his five hours, and Norman Kimberley soloed. Pam Roberts took time from A-levels revision to fly Bronze legs in the K-8.

The Camphill/Mynd beer tray is still here, and we wonder if it will be claimed this season? It takes up hardly any room in a trailer.

W.J.T.

NEWCASTLE & TEESSIDE — new tug

SINCE November last we have been negotiating for a tug and have been in the lucky position of being able to use the aircraft on a month's trial basis. This was carried out at Sunderland airport and after a few teething troubles we made successful tows at the airport and later at Carlton. Since then, negotiations have been completed.

Several of our members have taken this opportunity to do a PPL course at Teesside airport, thus giving Ray Coates a chance to reorganise the club premises at Carlton. The largest project is the fitting of false ceilings throughout.

We welcome anyone who wishes to visit us and sample Carlton soaring and hospitality.

N. McL.J.

NORFOLK — waiting list in operation

THE club fleet now consists of five aircraft: T-21, K-13, Tutor, Swallow, and the Falke finding its place in a capacity both complementary and supplementary. Syndicate groups, mainly formed from club members, operate two Olympias, Skylark 4, K-6E and a Std Libelle.

We fly from the ex-USAF airfield at Tibenham, generally from the 2,000yd runway using Jaguar and Westminster towcars providing average 1,000ft launches.

We have recently found it necessary to limit membership at present to 140 flying members, and for the first time have a waiting list of prospective pilots.

At the end of May we invited the Kent club to share our thermals and plans are being made to hold Falke courses during July and August.

C.E.H.

NORTHUMBRIA — cross-countries well under way

DAVID PATTISON, Al Ivory and Don Ingle have joined the instructor rota, bringing our total to 13. They all did the course at Challock, and came back with copies of the Kent club's new flying-progress book which we have introduced in a slightly modified form to suit our local conditions.

Seven days a week operation is promoting a rapid expansion of the club as approximately half of the course members have subsequently joined as full flying members. Bronze C flights are, at two or three a week, becoming commonplace and we had an early start to the Silver season.

On March 31, Don Ingle in a Skylark 2 flew for five hours at almost Gold C height, and a fortnight later his syndicate partner Malcolm Haley landed at Sutton Bank for Silver distance. Other syndicates have flown several out-and-returns of about 100kms.

J.R.G.

OUSE — expanding

OUR moderate winter weather has enabled us to fly most weekends. Our early pupils have packed in the training circuits, and four have gone solo. Our team of instructors has been increased by two with the successful completion of a course by John Cheeseborough and Bob Bowhill.

March 12 saw all the club mechanics make lengthy flights. The private owners' fleet is also expanding. John Mawson, our chairman, recently flew his new Std Libelle, and we expect to see Bob Mersey with his Cobra 15, which should arrive soon. A welcome to Roger Mortimer and his Pirat, another glider to squeeze into the hangar.

Peter Ramsden, with the help of members, has just put the finishing touches to the newly-constructed fuel store. Talking of fuel, we shall have a brand new Condor tug and hope it will entice new members and gliders. All will be most welcome to our fast expanding club.

R.W.B.

PETERBOROUGH & SPALDING — social development of the club

THE club's Skylark 2 is back in the fold, the wings having been completely re-covered. A Skylark 4 canopy was also fettled and the aircraft, resplendent in its new colour scheme, is already busily soaring our skies. Another addition to our family, in the form of a completely re-covered, privately owned Tutor, brings the total on our site to two tugs and seven gliders.

The clubhouse is finally reaching completion and we have already been given essential articles of furniture such as a stove, sink unit, and two lounge suites, etc. This 32 x 22ft building including kitchen and bar will provide an important feature to social development of the club.

At our April AGM, Gordon Figg retired as treasurer due to business commitments and we welcomed aboard Pete Clarke, who started off with an advantage—he works for NCR.

Soaring started on March 15, while on April 15 thermal activity took the Capstan to over 7,000ft.

J.V.L.

SCOTTISH GLIDING UNION — badge flights galore

OUR spring visitor season has just ended, and those who were here at the right time (end of March, beginning of April) had the wave conditions that our visitors come for, and many flights to over 10,000ft were recorded. Three Diamonds and at least 11 Gold C flights are to be claimed. There have also been seven duration and three Silver C distance flights recently.

During March, Portmoak was host to another assistant instructors' course, which was taken by three of our own members, as well as one member each from the Cairngorm, Aboyne and Millfield clubs.

The SGU has recently added a Falke to its club fleet. There are now two Falkes based at Portmoak. Some of the *ab-initio* summer courses will be training in the Falke.

By the time this appears in print, our present deputy CFI, Jim O'Donnell, will have taken over as CFI.

K.E.B.

SOUTHDOWN — easterly wave

AT the AGM held on February 26 the club trophies were presented by our president, John Furlong. Jim Cornish won both the John Lawford Challenge Cup, for gain of height in a club glider, and the Yorke Cup, for the most meritorious flight. The Southdown Distance Cup went to Gordon Newberry.

March 12 began as a north-east ridge soaring day, with several out-and-returns to Eastbourne. At mid-day Brian Wheeler, in the Pirat, contacted easterly wave over the beacon and was soon joined by Peter Gellett in his Skylark 4, George Constable and John Lovell in the K-13, and Derek Eastell in his 460. Peter reached 7,150ft, while the others climbed to 6,000ft.

The club expedition to Portmoak was a great success for those who went the second week. Robin Traves gained his Diamond height (the first in the club), Keith Mitchell completed Silver C with a Gold height climb, while Derek Eastell flew to Fordoun to complete his. Fred Head did his Silver duration and Peter Wildbur attained 15,000ft. Alan Curry, formerly a Southdowner, completed his Silver C in the Pirat. Two days later he landed after a climb to 14,000ft only to discover that the barograph needle had lifted off at 8,000ft, cheating him of a Gold height claim.

K.P.M.

SOUTH WALES — elusive wave

THE soaring season started with a C flight by Gill Roberts, our budding lady pundit. Peter Trivett and Brian Edwards completed their Cs on the same day. The Swallow also clocked up a Silver height at the hands of Mike Gould, with Norman Evans following suit in his K-6E.

The wave has proved elusive of late, but visitor Eric Giles took 7kts of it to 7,000ft during our latest Wave Week and Ivor Shattock took an evening constitutional ride to 5,500ft over the Sugar Loaf in the Black Mountains.

KEN TAYLOR

Club members were very shocked to learn of the sudden demise of Ken Taylor on April 10. Ken was a founder member of the club and served for many years as treasurer. Our deepest sympathies go out to his wife, Jean, and daughter Karen.

S.P.P.T.

STAFFORDSHIRE — owners of new site

OUR AGM was held on February 11 and was well attended. The mood was cheerful, no doubt because we now own a new site and our future is thus secure.

The past year was down in both launches and hours. This was mainly because many members had spent so much time working on projects associated with the new site. However, it is hoped that following the move later this year, the amount of flying will increase rapidly.

Barry Gilman announced his retirement as chairman due to pressure of work. The meeting recorded a vote of thanks for the fine job of work that he had done during a very difficult period.

Colin Ratcliffe was elected chairman, John Graham treasurer and Laurie Birch

and Judy Graham re-elected vice-chairman and secretary respectively.

The Ken Sherriff Memorial Trophy was presented to Alan Cliff for the most outstanding flight of the season and the Instructors' Challenge Trophy to Ken Whitton.

C.J.R.

SURREY & HANTS — poor start to season

THIS has probably been the worst start to a season we've ever had. Day after day of gales, rain or anticyclonic gloom. Nobody has done a flight yet worthy of a Ladder claim, but there have been many away landings resulting from cross-country attempts.

Our weekend comps have begun rather shakily with all participants groping along in mostly very poor conditions.

Plans for fleet improvements and equipment modifications are in the pipeline, but the primary object now is just to *fly!*

C.L.

THAMES VALLEY — disappointing Easter

TROPHIES were presented to Thames Valley members at our AGM on March 18. Ian Hobday, our retiring chairman, was awarded two (for the longest flight of the year and for exceptional work on behalf of the club).

Ken Harris, who retires after a long spell as secretary, earned further recognition (together with Vic Minot) as instructors—pots for the mantlepiece. One of our founder members, Eric "Bungey" Baker, has stood down as membership secretary, having been in the seat since the club's inception; he deserves a well-earned rest. Ken Winfield is the new membership secretary and Philip Whiteman the new secretary. Tim Chapman was elected chairman and continues to hold overall responsibility as treasurer, but will be helped by Colin Hill, our flying bank manager.

Easter was rather disappointing except for Monday when most of the fleet was airborne and thermals quite strong.

Arthur Doughty trailed his Dart to Portmoak on his annual mission but the weather turned foul on him—you can't win all the time, Arthur! Graham Saw had better luck a few days later and made sure of Gold height by doing it three times and only missed Diamond height because of barograph problems.

K.W.W.

TRENT VALLEY — new CFI

RAY PARKIN has accepted the position of CFI, following the resignation of Jack Tarr. Jack will be missed by the club, and our best wishes and thanks go with him.

The soaring season started on February 14 at Sturgate, thanks to the output of the local power station and the assistance of Roy Andrews in the Auster tug. Easter was a washout, but subsequent soaring flights have revived flagging enthusiasm.

The fleet of syndicate aircraft has been joined by a new Pirat, and a Skylark 3F. There is every indication that 1972 will be a good year for the club. There is now a strong core of new Bronze C pilots.

The diesel launch car built by J. Rice has seen 12 months' service and over 5,000 launches. A second car is being built along the same lines to improve launch facilities.

R.G.B.

YORKSHIRE — full-time groundsman appointed

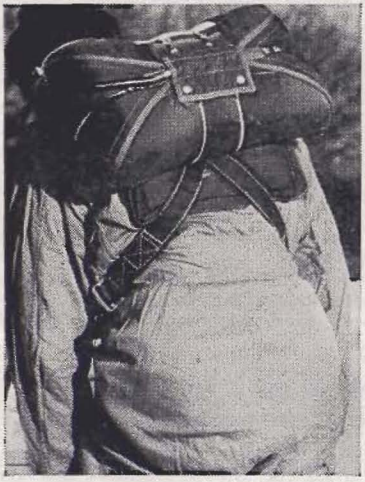
OUR chairman, Fred Knipe, was returned for another term at the AGM in April. The trophies for 1971 were presented by Harold Salisbury, Chief Constable of the North and East Ridings, and a respected club member of long standing. (He has left to further his career in Australia and our best wishes go with him.)

The distance cup was won by David Lilburn, the height cup and club ladder trophy went to Barrie Goldsbrough and the award for the best novice went to Chris George.

On the first Gold C attempt of the year Phil Lazenby turned Husbands Bosworth and landed at Kettering—a noble effort in gusty conditions. On the same day—April 15—Dick Stoddart and a visitor in an Olympia 2 flew to Doncaster, and we were visited at the Bank by the Skylark 2 from the Northumbria

TWO FROM GQ

LIGHTWEIGHT GLIDER PARACHUTES



TYPE 737 A special Shoulder Pack Parachute assembly for those sailplanes which allow only this type to be worn. This assembly uses the same 3 point Harness as on our other Glider Parachute range which this company designed specially for comfort during long flights.



TYPE 758 This assembly is 3" shorter than the Type 719 announced last year. This reduction in height counters problems arising from canopy stiffener bars on Ka 13 sailplanes and the seat harness arrangement in many sailplanes.

YOUR CONTACT: R. N. V. CHERRETT

RFD-GQ LIMITED.

Parachute Sales Division, Godalming, Surrey, England

Tel: Godalming 4122 Telex: 85233

RFD GQ

club, flown by Malcolm Haley for his Silver C.

A large section of Four Counties club was here for a fortnight and we were also visited by Glasgow and Strathclyde UGC members.

Bill Scull and John Heath, assisted by Johnny Morris, ran an instructors' course here in February, and in spite of the appalling weather, the eight members who attended had a most interesting and informative week.

We now have a full-time groundsman to keep the airfield in trim.

The Northern Competitions are to be held here commencing June 24, and with our much improved airfield should be a great success. Further entries for this comp are welcome.

S.V.G.

SERVICE NEWS

CHILTERNS (RAF Abingdon) — our ab-initio syllabus

AB-INITIOS are helping the club to go from strength to strength. All are hard workers and have fitted in with our club atmosphere as if they had been with us for ages.

A major C of A was carried out by Brian Cogger and CFI Jock Manson, who spent most of February slaving to produce what must now be the best K-4 in the country. "Pundit's Pride" at the moment, however, is our brand new K-13. Pupils receive an air experience flight in the K-13 and are then trained and soloed on the K-4. After three hours P1 on the K-4 they convert on to the K-8 via the K-13 for progress checks, etc. After 35 hours total and one Silver leg they progress to the K-6CR. The final step is on to the K-6E for advanced cross-country flying. The K-13 will, we hope, be used for cross-country training much as the Bocian was last year, flying minimum tasks of 100km.

In March the club had a trip to Sutton Bank, but the wind, what little there was, remained firmly from the east. On the first weekend, however, members descended on Dishforth. The wind was still in the east, but suddenly the cry of "easterly wave" was heard, and very soon Chilterns pilot Bob Sharman was passing 13,000ft. We understand that this was the best easterly wave that Dishforth has had. Contact height was about 3,000ft.

The second week was spent helping Clevelands with an *ab-initio* week. On the Friday we gave up waiting for westerlies and set off for Abingdon. But there, to date, we have had only two good days. One provided Malcolm Harris with a duration, and the other was a good ridging day at Chinnor.

A quick postscript to say that a wonderful day was had on April 9—three Bronze legs, one Silver height, several local cross-countries and three Silver legs completed in one epic flight by Bob Sheffield.

G.M.

CLEVELANDS (RAFGSA) & HAMBLETON (BGA) — televised first solo

THE clamp associated with the unusually wet and mild start to 1972 cut our flying somewhat, and produced only spasmodic wave. Four pilots had wave flights in westerlies on January 23. On March 11/12 easterly winds gave us some less usual wave off the Hambleton hills, to the delight of the visiting Chilterns members who had been waiting for some such manifestation; several of them climbed 10,000ft and the Cirrus was taken to 13,600ft.

The usual group of hard working members did a lot of "fettling" during the wet weather. Our K-6E has reappeared absolutely gleaming; the K-8 and a T-21 are now undergoing "majors"; trailers have been built for the Cirrus and K-6.

March 5 was a good soaring day; it was an enjoyable prelude to an *ab-initio* course led by CFI Barry Nowell. There were 10 first solos in March, mainly as a result of the course. One of the soloists was Stephen Olender who soloed on his 16th birthday. We were treated to the sudden arrival of a camera team from Yorkshire Television, ostensibly to record general gliding scenes. The result, seen on TV on March 30, was an excellent record of a first solo.

M.I.O.

EAST MIDLANDS (RAF Swinderby) — back from Bicester

THE AGM was held on February 19 when Flt Lt R. H. Moxon took over as secretary. Four trophies were also presented: The Founders trophy jointly to Dave Cockburn and Keith France; Ab-initio trophy to Nigel Howard-Jones; CFI's trophy to Dave Cockburn and the Williams trophy to Terry Evans.

Pete Hatton completed his instructors' course at Bicester in February, and a special welcome is given to Chris Watson who is back from Germany.

Two solo efforts were made by 16-year-old boys from Scampton, Keith Earnden and Jeremy Newton, both of whom have been waiting for their great day for a year. Two other solos were achieved by John Brown and Alan Fordham.

Our K-4 is back from Bicester in exchange for the T-21, and is soaring better than ever, showing the K-8 pilots the way.

The spring dinner and dance was held on April 8 at the Forge Restaurant in Lincoln; it was well attended and it was a pleasant change to have a social function outside the club.

THE BARON

FENLAND — successful expeditions

THE clubs' two expeditions (to Portmoak in November, and to Aboyne in February) were highly successful, yielding a total of 10 Silver C legs and a Gold C height. The Aboyne trip gave many members their first experience of wave soaring. On his first solo "Charlie" Charles-Dunne gained a Bronze leg and Silver height. Although the wave is strongest in a westerly wind, we had southerlies throughout our second week, and these produced lift adequate for at least Gold height.

Two new assistant instructors have joined the ranks, Mick Middleton and Frank Cairns—and the spring crop of *ab-initios* is now being gathered. When the Olympia (which suffered an unfortunate accident on the way to Scotland) and "Cat" Cataudella's Grunau are back on the line, we should have nine aircraft in service.

Jim Pignot's well-known caravan has been in productive service for some time now, and Margaret Drake has been preparing meals in something approaching comfort.

J.M.B.

FOUR COUNTIES — canopy disentegrates

THE dangers of high altitude flying were brought home to Barrie Dobson with a bang when his canopy disintegrated at over 20,000ft at Aboyne. The local Met office estimated the temperature at that height to have been –27°C. Fortunately he managed to make a safe landing but celebration of his second Diamond climb in two days must have been tempered by shock. Several club members immediately went out shopping for goggles.

This exceptional week at Deeside followed a disappointing expedition to Portmoak during which the wind blew persistently from the east. On the first day back at Spitalgate Ian Pritchard made a Gold climb in cloud. But the ice was really broken on April 9 when 40 hours were flown.

May should be, we hope, an interesting month. No less than seven club pilots are flying in the inter-services competitions at Cosford; a further five club pilots are flying in the Nationals.

R.T.D.

HUMBER (RAF Lindholme) — expedition to Long Mynd

FOR the first time, the club went *en masse* to the Long Mynd in February, but bad weather curtailed flying to two days during the fortnight. The club still has memories of the wonderful hospitality provided by the Midland club.

The club fleet includes a K-7, K-8, K-6CR, T-21, Grunau Baby 2 and a privately-owned Olympia 2B. We have just obtained an open trailer for the K-8 so cross-countries can be attempted this summer.

Deryk Butler, our CFI, has left us to return to a flying job, and his successor is Tom Barnes, a founder member of the club and the first one to rise from *ab-initio* to a full category instructor. We welcome back Yorky Kitchener and his wife Diane, who have moved back into our area.

P.E.M.

RAFGSA CENTRE (Bicester) — Executive Council changes

WG CDR Don Hanson, our deputy chairman for a number of years, has retired from the RAF and at the same time given up the post of vice-chairman on the RAFGSA Executive Council. Don is going to remain a member of the GSA, however, and will continue to fly with us.

Gp Capt B. Brownlow has joined the Executive Council as deputy chairman after an overseas appointment and marked his return to gliding with a flight of over five hours on March 20. Just prior to this we had the first really good soaring days and on March 26 Dave Robertson in the Dart went to 11,500ft in wave and Boycott Beale did his duration on the ridge at Chinnor.

Our expedition to Nympsfield provided valuable experience in operating from a hill site and although the ridge wind was absent on most days we had some weak thermals and Paul Bolton achieved a Bronze C leg. Our thanks to the CFI and members of the Bristol club for making the visit so enjoyable.

Ralph Hunt completed his Silver C with a cross-country on April 9, and on the same day Boycott added a cross-country leg to his five hours. Conditions on April 17 were favourable for downwind cross-country flying and Jim Oxberry and Pete Howard did Silver distance, and in respect of Pete, a complete Silver C.

The second instructor and *ab-initio* courses had much kinder weather and during the latter six pilots went solo. It is encouraging to see that a number of club members who turned up consistently during the winter progressed to solo aerotows in time for the soaring season. Jim Oxberry and George Young have joined the centre for mechanical transport and aircraft servicing duties, and as both are assistant instructors they will be valuable additions to the staff.

Recent changes to the fleet includes the sale of Dart 85 and the transfer of Dart 329 to a syndicate of six.

A.E.B.

618 GLIDING SCHOOL (ATC) — most successful year

EQUIPMENT-WISE, 618 ATC Gliding School, based at West Malling, near Maidstone, Kent, is the largest school in the ATC movement and utilises three doubledrum winches and eight aircraft (six T-31s and two T-21s) with an occasional Prefect or Swallow for a few months.

Last year, our most successful, we managed a total of just under 15,000 launches and obtained 167 A&B certificates plus numerous Cs, and Bronze and Silver legs. We even made three attempts on five hours in one day, two in T-21s and one in a T-31. Unfortunately, none were successful but two of the aircraft did manage to stay airborne for nearly four hours and all exceeded Silver height.

Our operating times are Thursday and Friday evenings during the summer, as well as weekends, together with three week courses during July and August and one at Easter. It is extraordinary to note that nearly half of our flying is done during these four weeks.

Finally, a welcome is extended to anyone visiting us either by road or preferably by glider during the season.

R.J.B.

We offer excellent thermal, hill and wave soaring at our site on the western edge of the Cotswolds, near Stroud. Fleet includes Ka8, Skylark 2, Olympia, Swallow, Prefect and dual Training machines.

Aerotowing available 7 days a week. Visitors always welcome.

Comfortable Clubhouse, excellent canteen, bunkhouse and bar.

Summer Gliding Holidays for non-members with accommodation at local inn.

Write to Course Secretary, Department C, Bristol & Gloucestershire Gliding Club, Nympsfield, Stonehouse, Glos.

CORNISH GLIDING & FLYING CLUB

Gliding courses in modern fleet from MAY 11th — B.G.A. categorised instructors — fine soaring — lovely coastal airfield — ideal for a different family holiday.

AERO-TOW COURSES AVAILABLE

Details with pleasure from: **The Course Secretary, Cornish Gliding & Flying Club, Trevellas Airfield, Perranporth, Cornwall.** Tel. Devoran 862518

DEESIDE GLIDING CLUB
(Aberdeenshire) LTD.

WAVE SOARING

Club gliders equipped with oxygen
Aerotow facilities 7 days per week

Details from: A. J. Middleton,
56 St. Ronan's Drive, Peterculter,
Aberdeenshire
Tel. Culter 2043

ESSEX AND SUFFOLK GLIDING CLUB

All Aerotow gliding courses at
Ipswich Airfield
August 7-11, 14-18, 21-25

Caravan & camping facilities available

Details from THE COURSE SECRETARY
ESSEX & SUFFOLK GLIDING CLUB
PEAKES, ALDHAM, COLCHESTER
Tel. Colchester 210528

At the
KENT GLIDING CLUB
We welcome any glider pilot . . . .
prospective or pundit

Learn to fly on a week's holiday course, with professional instruction. April — November or— bring your glider to fly our thermals, or ridge soar the Kent Downs.
Facilities: Winch or aero-tow launches
Residential Clubhouse with licensed bar
Apply to: The Secretary,
KENT GLIDING CLUB,
Challock, Nr. Ashford, Kent.
Telephone: Challock 307 or 274

Northumbria Gliding Club

Currock Hill

The English Wave Site

Situated ten miles west of Newcastle upon Tyne. Learn to glide on a week's holiday course from £18 to £22 per week, or bring your own glider for a winch or aerotow launch into the Pennine Lee Wave and do Silver C Duaration at Gold C Height

Details from: D. Wilson,
Aken House, 6 Kepwell Bank, Prudhoe on Tyne

LASHAM GLIDING SOCIETY

★ BASIC TRAINING COURSES — motor glider

★ GLIDER COURSES — ASK 13 Ka 7

★ TRAINING FOR CROSS COUNTRY — Falke

★ CONCENTRATED COURSES — for beginners with limited time

★ AEROTOW AND CAR LAUNCHES — every flyable day — over 30,000 last year

★ DEREK PIGGOTT CFI — PROFESSIONAL INSTRUCTORS

The Secretary will gladly send details of
COURSES — MEMBERSHIP — FACILITIES

LASHAM AIRFIELD, Nr. ALTON, HANTS. Tel. Herriard 270



LONDON GLIDING CLUB

Dunstable Downs, Bedfordshire
Telephone: OLU 2 63419

Situated at the foot of the Chiltern hills, and within easy reach of London and the Midlands by road (just off the M1). The Club has a comprehensive fleet of dual and solo aircraft, reliable launching equipment including tug aircraft. This famous site has plentiful thermals in summer and hill soaring with favourable winds throughout the year. Resident instructors, catering every day (weekends only in winter), licensed bar, accommodation and other facilities. Visitors welcome.

Write for 1972 course brochure or club membership details to the Manager or ring 0582-63419.

There is no better place to fly from than

THE LONG MYND

home of the

Midland Gliding Club Limited

WHY NOT COME AND SEE FOR YOURSELF?

Private Owners welcome
(Advance booking necessary)

Holiday courses April-October

All Enquiries:

Course Secretary
Tel. Shrewsbury 4131
(24 hour answering service)

Or if you have time to write(!)
256 Crowmere Road, Shrewsbury, SY2 5LF

SCOTTISH GLIDING UNION

PORTMOAK, SCOTLANDWELL, BY KINROSS
Telephone: Scotlandwell 243

THE WAVE SITE

Excellent Hill, Thermal and Wave Soaring in beautiful surroundings

Comfortable Clubrooms, excellent bedroom accommodation, full catering and bar

Seven days per week

Balanced Club Fleet

Resident Instructor

Aero Tow Facilities

COURSES FOR BEGINNERS AND OTHERS
EASTER TO SEPTEMBER

Visitors and visiting aircraft welcome

Write to the Secretary for further details

ADVANCED BOOKINGS NECESSARY IN WRITING

HOLIDAY GLIDING COURSES

APRIL TO OCTOBER

For the beginner, a week's course is the practical way of learning the rudiments of gliding. We can offer you a choice of holiday courses with full board and accommodation and expert tuition in our modern club fleet. Winch, aerotow, and Motor Falke courses from £26 to £36 per week.

To find out more send for our free brochure

WORCESTERSHIRE GLIDING CLUB

Bidford on Avon, Worcestershire

Telephone No. Bidford 2296

Midway between Stratford-upon-Avon and Evesham

All visitors welcome

INDEX TO ADVERTISERS

Becker Flugfunkwerk GmbH	Inside front cover
Birmingham Guild Ltd	234
Bristol & Gloucestershire Gliding Club	261
British Gliding Association	198
Chiltern Sailplanes Ltd	202
Classifieds	246-247
Peter Clifford Aviation Ltd	Inside back cover
Cobb-Slater Instrument Co Ltd	227
Cornish Gliding & Flying Club	261
Crossfell Variometers	242
Crystal Engineering Ltd	233
The Daily Telegraph	178
Daltrade Ltd	200
Deeside Gliding Club (Aberdeenshire) Ltd	262
Doncaster Sailplane Services	244
Dorset Flying & Gliding Club	212
Electechniques	203
Essex & Suffolk Gliding Club	262
Gliderwork	227
J. A. Harrison (Brokers) Ltd	212
J. Hulme	219
ICL Flying Services Ltd	233
Irvin Great Britain Ltd	241
Kent Gliding Club	262
Kodak Ltd	221
Landsman's (Co-ownership) Ltd	227
Lasham Gliding Society	241, 262
Victor Laurence (Merchants) Ltd	246
London Gliding Club	263
London Sailplanes Ltd	228
Marlow Gardner & Cooke	247
Midland Gliding Club	263
Northumbria Gliding Club	262
Pilatus Aircraft Ltd	179
Radio Communications Co	209
RFD-GQ Ltd	258
Sailplane & Engineering Services Ltd	205
Alexander Schleicher Segelflugzeugbau	211
Scottish Gliding Union	263
Slingsby Sailplanes	222
Southdown Aero Services Ltd	242
Southern Sailplanes	195
Southward Garage (Retford) Ltd	227
Speedwell Sailplanes	212
Sportair Aviation Ltd	228
G. E. Storey & Co	199
Tarpaulin & Tent Manufacturing Co	246
Three Counties Aero Club Ltd	251
Thermal Equipment Ltd	233
Torva Ltd	Back cover
Trafford Facilities Ltd	242
Brian Weare	240
Wave Flights Inc	196
West Wales Gliding Club	264
J. S. Williamson	253
Worcestershire Gliding Club	263
Wycombe Gliding School	264
Yorkshire Gliding Club	264
Yorkshire Sailplanes Ltd	241

WEST WALES GLIDING CLUB
HAVERFORDWEST

Withybush Airfield is centrally situated for over 70 miles of National Park coastline and unspoilt beaches for your family holidays.

Ab-initio courses on Falke, Capstan and T21B. May to October.

Camping and caravan facilities available.

Brochure & fuller information from Gliding Secretary:
136 HAVEN RD., HAVERFORDWEST
Tel. Haverfordwest 3156

Wycombe Gliding School
Airways Flying Club
(Gliding Section)
Thames Valley Gliding Club

HOLIDAYS & ADVANCED GLIDING COURSES

Book now for the Summer season

Thermal & hill soaring throughout the year

Training Gliders include Scheibe Falke motor glider, K-13, K-7 & Skylarks

Professional management and instructors. Licensed Club. Accommodation and food available

Club Soaring Gliders include 4 Skylarks, 2 K-6E's, K-13 and a Dart-17

Write or phone:
The Manager, Wycombe Gliding School (SG)
Wycombe Air Park, Booker, Marlow, Bucks.
Tel: High Wycombe 29263

NORTHERN REGIONAL CHAMPIONSHIPS

24th June—2nd July

AT THE YORKSHIRE GLIDING CLUB

For full details, telephone or write:
THE SECRETARY, YORKSHIRE GLIDING CLUB, SUTTON BANK, THIRSK, YORKS
STD Telephone No. 084 56237

GLIDE AHEAD WITH A 'BLANIK'

HOLDER OF THE WORLD 2-SEAT DISTANCE RECORD AND MANY U.K. RECORDS

Unsurpassed in Performance and Reliability
Fully Aerobatic



Delivered U.K. £2,325 (including instruments)

Now fifteen years in production and 1500 manufactured

A World Champion that cannot be beaten

Get with it—join the 'BLANIK' set and progress in the '70's

Distributor for U.K., Eire and Canada:

Peter Clifford Aviation Limited, Oxford Airport, Kidlington, Oxford.

Tel. Kidlington 4262 Cables: Cliffair, Oxford

Sole Exporter for Czechoslovak Aviation Products:

Omnipol Limited, Washingtonova 11, Prague 1, Czechoslovakia

TORVA SAILPLANES LTD.

are pleased to announce that they can now offer a wide range of additional equipment for your sailplanes including

Radio Bayside 2 channels

Oxygen systems

Water Ballast systems

Remote reading compass

★

Torva 15m Sprite

Torva 15m Sprint

★

Torva GRP Trailers for all types of single seater sailplanes