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AUGUST-SEPTEMBER 1978 65p

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SAILPLANE & GLIDING

Magazine of the BRITISH GLIDING ASSOCIATION

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Cover: Prince Charles prepares for his first flight in a glider, a Twin Astir, at RAF Bicester with George Lee at the controls. The picture was taken by an official photographer of the RAF.

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FIRST GLIDER FLIGHT FOR PRINCE CHARLES

George Lee passes on some of his expertise.

On Thursday June 8 HRH The Prince of Wales made his first ever flight in a glider at RAF Bicester. He was flown by George Lee in a Twin Astir, had four aerotows and was airborne for about two hours in all.

When he presented the 1976 British Team with the Prince of Wales Cup at the Royal Aero Club's annual prizegiving last year Prince Charles said he would like to fly a glider and the BGA made arrangements for him to go on a 100km triangle flight with George Lee. The NOTAM issued for the occasion was perhaps something of a hostage to fortune as it gave precise times for departure, arrival at the two turning points and return to Bicester! As we might have expected the weather turned out to be unsuitable for a cross-country flight. However, it was good enough for local soaring and at one stage George Lee was able to pick up one thermal at about 600ft and then hand over to Prince Charles who took it up to nearly 3000ft.

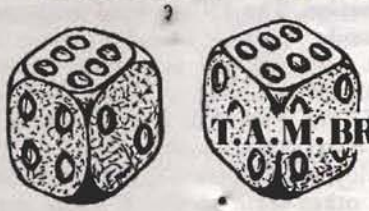
The Prince talking to the lunch party guests, l to r: George Lee, Don Spottiswood, Roger Barrett, Pete Saundby and Andy Gough.

After an informal lunch with Don Spottiswood (who had made the detailed arrangements for the royal visit), Roger Barrett (BGA Chairman), George Lee, Peter Saundby, Don Hanson (tug pilot) and Andy Gough (CFI and Manager of the RAFGSA Centre at Bicester), Prince Charles did some aerobatics in the Twin Astir and then watched Andy Gough do some of a rather more advanced nature in a Blanik.

The visit to Bicester ended when Prince Charles met Dickie Feakes (Team Manager), the British pilots who are competing at Chateauroux and most of the GSA staff who work at the Centre.

The occasion was a private one for Prince Charles and he said he had thoroughly enjoyed his first day's gliding. We hope he may be able to spare the time to get a little more instruction so that he can make his first solo before too long.

A GOOD SOARING GUIDE



SOME CROSS-COUNTRY SOARING STATISTICS

T.A.M. BRADBURY

There are so few days in the year when it is possible to complete a 500km closed circuit flight over England that it seemed a useful exercise to examine the Met features which distinguished these rare occasions. A list of dates was taken from the Lasham cross-country log and the annual summaries made by Paul Thompson. The dates were divided into two classes: first the days when one or more pilots exceeded 400km (referred to as 400km + days) and second all other days when flights exceeded 200km. It was not possible to find a large enough sample of 500km days in the ten years from 1968 to 1977 and 400km was chosen to represent the best indication of a good soaring day. During the period of this sample the performance of sailplanes has improved considerably and 500km can be covered in conditions which were barely adequate for 400km flights some years ago. It was only necessary to go back three years (1975 to 1977) to obtain an equal number of days in the 200 to 400km range.

The monthly distribution of 400km + days was as follows:

April	May	June	July	August	September	Total
13	16	16	24	13	5	87

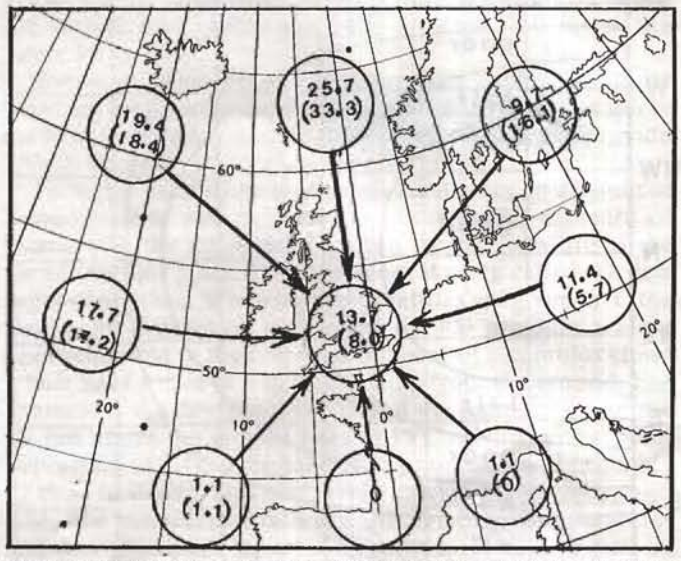
The earliest date was April 8 and the latest September 9. Up to 1977 Lasham had no recorded flight for 400km + in March but such a flight has been reported from Dunstable.

Essential conditions. The three most important requirements for long closed circuit flights were:

(a) Several hours of moderate to strong thermals with no large gaps between them.
(b) Wind speeds not exceeding 20kt at flying levels.
(c) A cloudbase of more than 3000ft above the general ground level.

A few pilots have been able to make long flights in apparently unfavourable conditions by climbing high in cloud in order to cross wide gaps or by using long streets to travel fast into wind. The logbook showed that only a very small proportion of club pilots were able to make long flights on such days. When all three essential conditions were satisfied many more pilots were able to complete their declared tasks.

Fig 1 AIR TRAJECTORIES PRECEDING CROSS-COUNTRY DAYS



Directions from which the air approached England on cross-country days. The figures show the frequency of each trajectory expressed as percentages. The upper figures are for flights of less than 400km, the lower figures (in brackets) are 400km + days. Numbers in the central circle show the percentage of occasions when the air had remained almost stationary over England for more than 24hrs.

Thermal activity and the air trajectory. The path taken by the air may be termed its trajectory. When this shows that the air has reached the country from a colder region it is noticeable that thermals develop earlier in the day, become stronger and continue later than on days when the air has come from a warmer region. Fig 1 shows the frequency of different trajectories on all cross-country days. The figures are given as percentages. The upper figures refer to the shorter flights while the lower figures (in brackets) are for the 400km + days. The numbers in the central circle show the occasions when the air had remained almost stationary over England for more than 24 hrs.

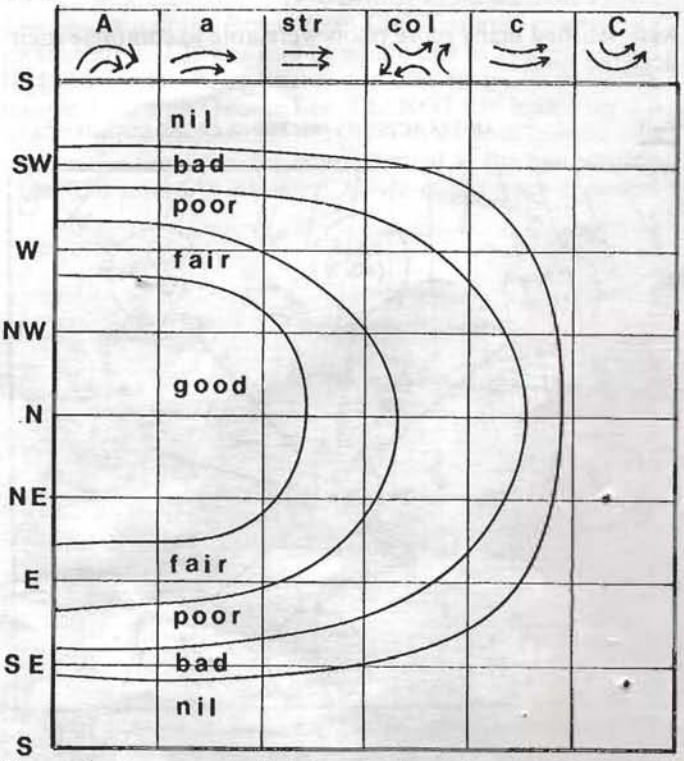
The figure shows that trajectories from a northerly direction were most common, especially before a 400km + day. These trajectories do not necessarily coincide with the wind direction over England on the day of each flight because the approaching air often follows a curved path.

Cumulus development and the curvature of isobars. The curvature of the isobars often gives an indication of the large scale vertical motion of the air above the surface. Where there is a ridge or centre of high pressure the air aloft has probably subsided making the stability greater and restricting the growth of cumulus clouds. Conversely where there is a trough the air aloft is usually less stable and

cumulus clouds may grow very large resulting in showers or even thunderstorms.

Since many charts showed a gradual curvature of the isobars with no well defined troughs or ridges it was found best to classify them by curvature of the isobars. This curvature is said to be anticyclonic round a ridge or centre of high pressure and cyclonic round a trough or centre of low pressure. Most of the good cross-country days were associated with anticyclonic curvature of the isobars.

Fig 2



Prospects for long cross-country flights based on the previous air trajectory and the predicted curvature of the isobaric Isobar's curvature is shown along the upper side with small arrows to symbolise the various patterns.

Trajectory and curvature combined. Trajectories from a northerly direction seldom preceded good soaring days unless the isobars over England developed anticyclonic curvature. Fig 2 shows the prospects of long soaring flights based on this combination of trajectory and curvature. The boundaries of the sectors marked "good", "fair" and "poor" enclose 65%, 80% and 95% of the days. Only one day in 20 fell outside the "poor" boundary.

This diagram may be used as a preliminary guide after viewing the TV charts for "actual" and forecast patterns which are broadcast each evening.

Wind speed and direction. The 850mb wind measured at midday by the radiosonde station at Crawley (about 50km east of Lasham) was used for this summary. 850mb is equivalent to an altimeter reading of 4781ft when the subscale is set to 1013.2mb. Thermals extended at least as high as this on almost every 400km + day.

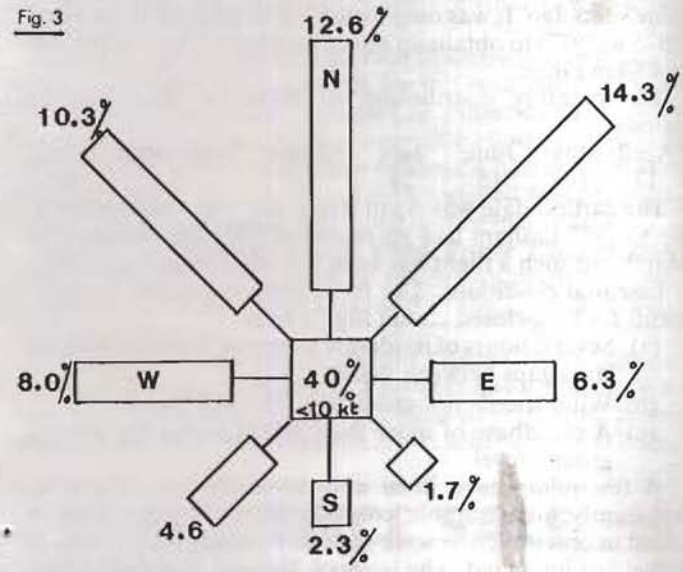
Although the Crawley winds were not always representative there were no other stations which made regular soundings nearer the routes. The results are shown in the following table.

Table 1. Wind speeds on cross-country days

	Speed range (kt)								
	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	total
400km + days	11	33	25	12	5	1	0	0	87
All flights	28	58	47	36	13	2	0	1*	175

The very high value marked with an asterisk was reported on a day when the cloudbase rose to 6000ft in the afternoon and the lift under cumulus streets was strong enough to enable a pilot to fly more than 50km into wind without needing to circle. Although an out-and-return flight of 300km was successful a triangular flight would have been very difficult.

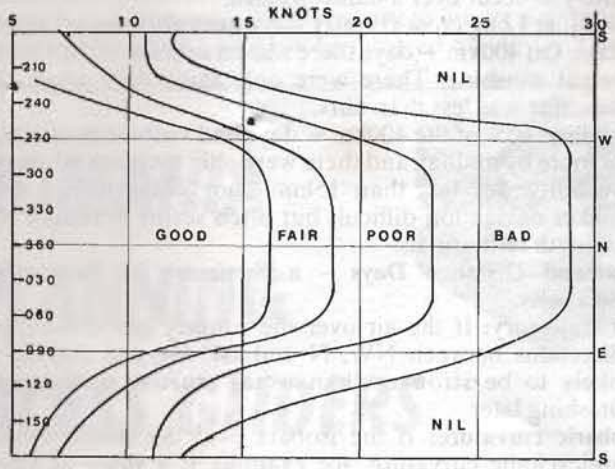
Fig. 3



Distribution of 850mb wind directions at 12.00GMT on cross-country days. Figures in the centre show the number of days when the wind speed was less than 10kt.

Fig 3 shows the distribution of wind directions when the speed was 10kt or more. The figure in the centre shows the percentage of occasions when the speed was less than 10kt.

Fig 4



Prospects for closed circuit flights based on the 850mb wind speed and direction.

Fig 4 was drawn to show how the wind speed and direction combine to affect the prospects of long closed circuit flights. When thermals were weak the adverse effect of a headwind became a serious handicap. This is shown in Fig 4 by the marked deterioration in the prospects as the wind direction changes from the northerly semicircle to the southerly. When the wind direction lay in the sector 290° through 360° to about 070°, thermals were usually strong enough for pilots to make progress against winds of about 15kt without serious loss of time.

One can make a rough estimate of the wind speed and direction from the forecast charts shown on TV or published in some newspapers, but if the speed or direction is likely to be critical the most recent forecast should be obtained from a Met office. 850mb is one of the levels for which forecasts are available as routine. The predictions are usually updated every six hours.

Temperature and humidity. Good thermals are unlikely unless the temperature falls at more than 3°C/1000ft over a depth of at least 3000ft and the humidity is not high. If the air is too humid the level at which cumulus forms will be low and the cloud amount may become excessive.

For many years the Americans have used an indicator called the "Thermal Index" as a guide to thermal strength. This index is simply a figure showing the change in potential temperature between the surface and a standard level such as 850mb. If the air rising from the surface cools off at the dry adiabatic lapse rate (almost exactly 3°C/1000ft) the change in potential temperature is zero. Table 2 shows the potential temperature between the surface and 850mb (approx 5000ft) at the time of maximum temperature on 400km+ days.

Table 2. Surface potential temperature minus 850mb potential temperature on 400km+ days (in units of °C)

	-4.5	-3.5	-2.5	-1.5	-0.5	+1.5	+1.5	+2.5	+3.5	+4.5	+5.5	+6.5
No. of days	1*	0	0	0	5	8	10	22	18	12	8	3

Positive values show that the lapse rate was greater (more unstable) than the dry adiabatic lapse rate. The solitary day marked with an asterisk represents a day with a low inversion. It seems very rare for a pilot to complete a long closed circuit flight unless the inversion is above the 850mb level. The average value of this Thermal Index was 2.8°C on 400km+ days and 2.2°C on the 200-400km days.

Unfortunately this Thermal Index is not convenient for use by pilots who have no access to aerological diagrams such as the tephigram. A simpler but less accurate guide can be used over a relatively flat area such as England where (excluding the Pennines and Lakeland hills) most of the ground is well below 1000ft. This makes use of the actual temperature difference between the surface and 850mb. The results are shown in Table 3.

Table 3. Max surface temperature minus 850mb temperature on 400km+ days

	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°C
No. of days	1	0	5	4	11	26	14	15	6	5

On 93% of occasions the drop in temperature between the surface and 850mb was 14°C or more; 75% lay in the range 15° to 18°C.

Although Table 3 is less accurate than Table 2 it is more practical for general use because almost all forecasts quote the Max temperatures and nearly all Met offices can provide 850mb temperatures without special effort.

Table 3 is insufficient alone because it takes no account of humidity. For our purpose the most useful measure of humidity is the difference between the temperature of the air and its dew point. This difference is often called the dew point depression. When the temperatures are given in °C the dew point depression multiplied by 400 provides a close approximation to the height of the base of a cumulus cloud which has formed in a thermal rising from the ground. For example if the dew point is 5°C and the temperature of the air just above the ground rises to 15°C (giving a dew point depression of 10°C), the base of any cumulus will probably be close to 4000ft. This useful relationship ceases to be valid when the temperature falls towards evening. Temperatures and dew points are reported by most airfields and may be heard on VOLMET broadcasts. Table 4 shows the values observed on cross-country days.

Table 4. Dew point depression at the time of Max temperature

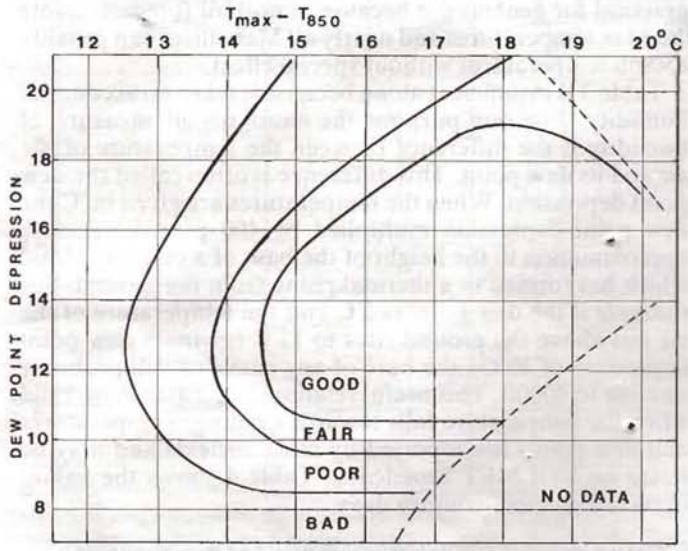
	Temperature range (°C)								
400km+ days	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	Total
all flights	1	7	29	19	21	6	3	1	87
	6	15	50	44	30	18	7	5	175

This table shows that on 400km+ days the dew point depression was more than 10°C on just over 90% of occasions and suggests that the cloudbase rose to above 4000ft on the majority of good days. If the dew point depression is

very great the air may be too dry for cloud to form. There were occasions in 1976 when the base of cumulus was about 10 000ft, but in normal years large dew point depressions indicate a cloudless day.

The results of Table 3 and 4 have been combined in Fig 5. The fall in temperature between the surface and 850mb is shown along the top of the diagram. The dew point depression at the surface appears at the side of the diagram. The various sectors show the prospects of good soaring. To use this diagram one needs three sets of values: the 850mb temperature, the forecast surface Max temperature and the expected dew point at that time. For example if the 850 mb temp is +04°C, the Max surface temperature 20°C and the dew point 8°C, then the value $T_{max} - T_{850}$ will be 16° and the dew point depression 12°. Follow the 16° line from the top of the diagram until it crosses the 12° line from the side of the diagram. This occurs in the "good" sector.

Fig. 5



Prospects for cross-country flights based on: (a) the drop in temperature between the surface and 850mb (shown at the top of the diagram), (b) the dew point depression at the surface at the time of Max temperature. (Usually mid-afternoon)

Additional indicators.

Pressure: On 400km+ days the mean sea level pressure at midday had an arithmetic mean of 1022mb, but the actual distribution of pressure showed a peak near 1025mb with a sharp cut off above 1033mb and a more gradual decrease towards the lower end of the scale. Nearly 80% of days had pressure in the range 1016 to 1030mb.

Pressure changes: A feature of nearly all good soaring days was a fairly steady barometer reading. There is usually a small variation or pressure throughout the 24hrs with maxima at 10.00hrs and 22.00hrs local time and minima at 04.00hrs and 16.00hrs. On a day when pressure changes are negligible one would expect to find a small drop in pressure between 09.00 and 12.00GMT: this was the case on most 400km+ days when the mean pressure change was -0.5mb. The pressure change rarely exceeded 1.2mb on cross-country days.

Rainfall: If the ground is very moist or covered with well irrigated vegetation, a large proportion of the sun's energy is converted into latent heat for evaporating water from the surface and growing plants. This reduces the energy available for producing thermals. On 400km+ days there was no measurable rain during the previous night on 97% of occasions and the state of ground was reported as dry on 76% of occasions. Dry ground is not essential for thermals, the oceans are frequently covered with cumulus clouds, but strong thermals with a high cloudbase are less likely to occur over a damp surface.

Sunshine: Long cross-country days were also mainly sunny days. On 400km+ days there was an average of 11.4hrs of bright sunshine. There were only three days when the sunshine was less than 6hrs.

Visibility: 65% of the 400km+ days had visibilities of 30km or more by midday and there were only two days when the visibility was less than 15km. Poor visibility not only makes navigation difficult but often seems to reduce the strength of thermals.

Diamond Distance Days - a Summary of Favourable Indications.

Air trajectory: If the air over the country has come from directions between NW, N and NE thermal activity is likely to be stronger than usual, starting earlier and finishing later.

Isobaric curvature: If the isobars over the country show anticyclonic curvature, for example if a ridge or small anticyclone covers the cross-country area, cumulus clouds are unlikely to grow large enough to produce showers and the cloud will probably remain well broken.

Fig 2 combines these two features and shows that the best conditions occur with relatively cold air from a northerly region provided that the subsidence usually associated with anticyclonic curvature of the isobars is sufficient to prevent cumulus clouds becoming too big or too extensive.

Wind speed and direction: If the wind speed at levels up to 850mb (about 5000ft) averages about 11kt and does not exceed 20kt over any part of the route and the wind direction is not from a southerly point, conditions should remain favourable.

Fig 4 should be used after Fig 2, both should show that the prospect is in the "good" or "fair" sectors.

Temperature and humidity: If there is enough sunshine to raise the surface temperature 15 to 18°C above the 850mb temperature by mid-afternoon and the difference between the surface temperature and dew point at that time lies in the range 11 to 18°C (*not* less than 10°C), soaring conditions should be good. Fig 5 shows the favourable combinations.

MSL pressure: If the 12.00GMT msl pressure lies in the range 1016 to 1030mb (especially if it is close to 1025mb) soaring conditions should be good provided that Fig 2, 4 and 5 also show favourable prospects.

Overnight weather: The prospect of good cross-country weather is reduced if there is measurable rain the previous night or the ground is still wet.

Visibility: It is rare to encounter very good cross-country weather unless the visibility is good. Early morning mist or fog which disperses soon after sunrise may precede a fine day but if there is thick haze extending above 2000ft the conditions may never be good enough for long flights.

Combined marks. The results from diagrams 2, 4 and 5 may be combined by allotting marks as follows: 3 for "good", 2 for "fair", 1 for "poor" and 0 for "bad". If a point falls in the "NIL" sector of a diagram the day will probably prove to be unsatisfactory.

Add the marks obtained from the three diagrams and add one if the pressure lies in the favourable range between 1016 and 1030mb. Each day can score a Max of 10 marks.

More than half the 400km+ days scored 9 or more and

over 80% scored 7 or above. It appears that the prospects of a long closed circuit flight are not good if the total mark falls below 7. If the lower mark is due to a strong wind the day may still be excellent for a long downwind flight.

Conclusion. In order to make this marking system simple enough for general use it was necessary to ignore a number of Met factors which could not be resolved quickly and use only the details which were readily available. If a high mark is obtained from this system the day will probably provide good cross-country conditions but high marks cannot guarantee a successful flight. Even when conditions prove to be excellent over nearly all the country there is always a risk that some distant turning point will be out of reach at the critical time.

ROMANIA PLANNING GLASS GLIDERS

The tandem-seat IS-28M1, which is Romania's latest motor glider.

a report from Hanover by BOB RODWELL

Having successfully penetrated the western-world sailplane market with all-metal designs in the past four years, Romania's IAR factory at Brosov may soon be taking on the Germans, Finns and Poles wth a range of glass-fibre gliders.

"We are examining new technologies all the time and we intend to add GRP techniques to our capabilities," the sales manager for Romanian sailplanes, Mr Iosif Zelenac, told me at the big international aerospace exhibition at Hanover in May. "We have structural specimens on test and no one should be surprised if we turn up at an international show quite soon with glass-fibre aircraft in tow." When I pressed him for a time scale, Mr Zelenac said that such a development could occur within two years.

Immediate priority is being given, however, to broadening the existing all-metal range to encompass eight types of sailplane and motor glider, both one and two-seaters. More than 300 Romanian sailplanes have been exported to western countries since sales began four years ago and the first shipments of motor gliders were made in April. Surprisingly, all the Romanian aircraft exported have gone to western countries and none to the Eastern European bloc. Mr Zelenac said that although they were used domestically, the IAR designs were not being marketed at present in neighbouring Comecon countries. He left no doubt, however, that Romania would be happy to displace the Czechs as sailplane suppliers to the USSR when the vast DOSAAF Blanik fleet becomes due for replacement.

At Hanover, Tehnoimportexport, which handles overseas marketing for IAR, was showing the prototype of its latest motor glider, the IS-28M1 tandem-seater. Despite a 1m increase in span, fuselage changes and a single mainwheel, it is to be built on the same assembly line as the side-by-side IS-28M2. The first export models have now reached Vickers-Slingsby for sale in the UK. With a slightly better gliding performance, the tandem-seater was near the end of its certification trials in May; the first pre-series batch was in the Brasov shops and first deliveries were scheduled for the first quarter of 1979.

Also displayed at Hanover were two two-seaters, the IS-28B well known in Britain, and the advanced, waterballasted 20m development, the IS-32, the prototype of which was exhibited at last year's Paris show after only its maiden flight. With a claimed glide ratio of 46:1 at 98km/h (53kt), the IS-32 has now completed its certification and gone into production.

A third two-seater design, the IS-30, is now being test flown. This is basically the IS-28B with a new 18m wing and the new empennage developed for the IS-32, but without the latter's waterballast.

For the single-seater market, the basic IS-29 15m Standard Class design, the first Romanian sailplane internationally marketed, has now been developed by designer Iosif Silimon and his team into the new CIVV 15m and Open Class variants.

A development of the IS-29D2

Designated IS-33 and developed from the IS-29D2, the 15m Class variant was still in flight test in May. Fully flapped, with a 150kg (330lb) waterballast system, the IS-33 is claimed to have a max L/D of 45:1 at 114km/h (61.5kt) and a VNE of 240km/h (129kt).

The Open Class varient, the IS-29E3, was certificated in the spring for first deliveries this autumn. With a 20m span and, of course, waterballast, the performance is claimed to be 47:1 at 97km/h (52kt) and a minimum sink rate of 0.45m/sec at 80km/h (43kt).

At Hanover Tehnoimportexport were offering potential buyers a particularly tempting deal. The IAR factory is within sight of the lovely Carpathian mountains, which have a number of ski resorts. Mr Zelenac said that any western customer buying a Romanian sailplane was very welcome to drive to Brasov to collect it personally. "They can stay at one of the nearby ski resorts for a week, while flying our entire range at Brasov, free of charge. They can watch their aircraft being prepared for delivery and at the end of a splendid holiday start the drive home with their new sailplane, in one of our new glass-fibre trailers, hitched on behind," he said.

Tehnoimportexport and IAR had rivals at Hanover in promoting sailplanes, for Germany's Burkhart Grob Flugzeugbau had one of the largest stands of any general aviation manufacturer, with a fully rigged Twin Astir and one each of the three single-seat Astir variants displayed. According to sales manager Ernst Grob, a total of 540 sailplanes will be delivered this year from the company's plant at Mindelheim, where production is now running at the rate of two aircraft every working day – one a Twin Astir and the other one of the single-seat variants. More than 130 Twin Astirs had been delivered by May, only a few months after its introduction and of a free-world sailplane market, worth about DM30mln (£7.8mln) this year, Grob expected to capture a DM17mln (£4.36mln) share.

Arousing most interest from thousands of soaring enthusiasts, who were evident at the Hanover show, was the prototype of the Speed Astir, the company's contender in the new 15m Class. The Speed Astir features the Grob-developed "elastic flap", with all the operating mechanism contained entirely within the wing, which has a completely smooth, continuous top surface, including the flap/aileron hinge line. The prototype Speed Astir wings were then flown mounted to a Std Astir fuselage; the new waisted fuselage, similar to that of the Kestrel, had not been completed but was expected to be finished later in May.

Ernst Grob claimed to have booked more than 50 orders for Speed Astirs and has scheduled the first deliveries for January 1979, permitting the first owners plenty of time for fettling before the competition season begins. Backlog of orders for the Twin Astir stood at 150, with 160 Club and Std Astirs also ordered but not yet delivered, he said.

Despite the high tempo at Mindelheim, achieved with a shopfloor workforce of 190 backed by 20 technical and sales personnel, Grob does not yet consider its range complete. Design work is in hand on an Open Class machine of about 20m span. It should fly in prototype form next year in time for early production models to become contenders at the 1981 World Championships.

He emphasised that the design was still fluid but that it would certainly feature a waisted fuselage and the elastic flap and probably resemble the 15m Astir, but that no decision had been made on whether it should have a two or three-piece wing.

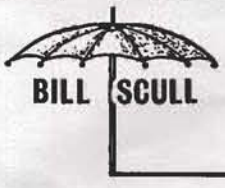
Hanna Reitsch autographing her book. Photo: Bob Rodwell.

Also much in evidence at the Hanover show was famous German test pilot and soaring pioneer Hanna Reitsch. Seemingly inexhaustible and very vivacious, despite her 66 years, Frl Reitsch spent long hours every day autographing copies of her book **Flying is my Life** on the German Women Pilot's Association stand. A new book, called (in German) **Heights and Depths – 1945 until the present** was about to be published in Germany and an English translation was planned, she said.

Flying now mainly from Timmersdorf and Aigen, in Austria, Hanna Reitsch keeps her Std Cirrus as busy as any pilot half her age might do. Last year she broke two national and international women's out-and-return records, of 640 and 680km, on flights over the Alps. "I am the only sportsperson in the world still to be setting records after 47 years and if the conditions are right this year, I will have some further tries" she told me. (See German Records, p188).

Her Alpine experiences were being written into a paper which she looked forward to presenting at Chateauroux during the World Championships, she said. And on the increasing participation of women in the sport, she commented "I am awfully proud of the wonderful young generation of women pilots we now have here in Germany – they display a wonderful spirit. There are now 3000 active women soaring pilots here, against about 30 000 men, but the percentage of women will constantly increase."

ACCIDENT PREVENTION



BILL SCULL
Senior National Coach,
focuses on –

TUG ACCIDENTS

In the course of one week two tugs were written-off – both pilots and one passenger being killed – and a third tug was badly damaged. The fatal accidents involved an Auster J1N at Enstone and a BA 4 at the Southdown GC, the latter being due to engine failure. The Auster accident and the third incident to a Chipmunk at Dunstable had two things in common – gliders with CG hooks getting out of position. It is these factors and others which may be relevant that I want to examine.

Tug accidents have certainly increased in number during the last year or so to an extent which warrants an examination of operational standards to see whether there are any trends or practices which may have contributed to some of these accidents. Accidents to tugs can be divided into three broad categories; it is perhaps the accidents which start with the glider still attached to the tug which should be of most concern but the others are worth a mention.

Poor aircraft handling and airmanship. In this category one must include ineptitudes such as the misuse of flaps (see accidents to tug aircraft in **Accidents to Gliders 1977**), difficulties in converting to tailwheel types and occasional accidents due to carburettor icing. One of the more common causes of accident is flying outside limits in terms of wind strength, crosswind component and turbulence. Occasionally a lack of performance to clear obstructions due to taking-off with a slight downwind component or from rough or unsuitable ground may be the cause of the accident (if only to the glider). Running out of fuel, too, is not unknown and is perhaps the least forgivable.

Information on many accidents is scant unless they are reported to or investigated by AIB (always the case for fatal accidents) so it isn't possible to work out a rate for tug accidents, but a sample of accidents over the years shows the nature of the problem.

Fatal

Auster; descended off tow with the flaps extended – wings failed in torsion.

Tiger Moth; making steep turns at 800ft – aircraft spun but hit the ground in recovery dive.

Tiger Moth; collided with glider in descent from tow.

Substantial damage

Super Cub; Carburettor icing caused the engine to stop; delay in releasing the rope from either end may have contributed to the accident.

Super Cub; landed in part of the airfield given over to cultivation (corn) and turned over. Airfield unfamiliar to the pilot who had not been briefed.

Another rather special category is when aeroplanes get mixed up with cables and these may be grouped under the heading of airfield management.

Airfield Management. The common denominator in all accidents involving cables is mixed operations. The alternatives are taking-off over cables and picking them up, or flying into them, either because different take-off directions are being used or the aeroplane pilots don't understand gliding operations, or of course both – incidents in this category nearly always have serious or fatal consequences.

"Combination Accidents." It is rare for the glider still to be attached to the tug when the accident actually happens, but there are a number of factors which may contribute to create a critical situation and ultimately cause an accident. Some of these factors, such as rope length, are ones over which we have direct control and others we can't influence at all – such things as the position of the towing hook on the glider, the adequacy of the trimmer and the elevator power to stop the nose from rising during the initial acceleration. The more unfavourable factors there are the greater the risk.

The critical combination appears to be a short rope, a CG hook on the glider and a "twitched" glider pilot. Even this combination may not be critical if the weak link breaks as the glider goes quickly out of position. That final protection is not afforded if the weak link has been removed.

There are possible safeguards to minimise the risks so a look at each will be worthwhile.

The CG hook. The significance of a CG hook is most obvious when compared with a nose hook which, whatever the glider's displacement relative to the tug – up, down or to one side-there is a force tending to pull the glider back into position. With a CG hook the reverse is true – except perhaps when the glider gets low. The only thing that can be done is to make pilots aware of the inherent risks by discussing them and perhaps by giving a dual check using the belly hook. Incidentally it is interesting to note that some clubs regard their K-13s as u/s for aerotow if the nose hook cannot be used.

Rope length. Over the years the length of tow ropes has gradually reduced – discovery of the fact that a competent pilot finds little difficulty on a short rope and custom and practice seem to have brought this about. A new rope frequently gets shortened because knots which were not noticed have to be cut out or more usually, the end of the rope cut off as an eye splice is easier than an end splice.

Spot checks show that ropes less than 100ft are commonly used. The disadvantages are obvious; the extent to which the glider can be allowed to get out of position depends substantially on the rope length – ask any instructor. For a glider going quickly out of position the time for the situation to become dangerous depends on the length of the rope.

Short rope and CG hook = potential hazard

Weak links. The practice regarding weak links varies somewhat as there is nothing specific in the design requirements, Operational Regulations or the Recommended

practices. However there is some evidence to suggest they constitute a safeguard when extremes of position and suddenly-tightening ropes occur.

In the past the subject has been much debated as to where, or whether, to fit a link. The need for a link at all can be obviated by using a rope of 1000lb nominal strength. Where to fit a weak link if a stronger rope is used depends on the nature of the protection to be afforded; if at the tug end there is a risk that when it breaks – especially if the glider is low at the time – the rope could end up over the glider and possibly foul the controls. However the tug is protected against the rope "snagging" the fence on approach. For the best protection of both parties a weak link at both ends might be desirable.

In Conclusion. The remaining things to be learnt from recent experiences concern the training and checking of glider pilots and perhaps tug pilots, which warrants an article in itself and a couple of messages for tug pilots.

Signalling to the glider; it is standard practice, if the tug pilot wants the glider to release, to rock the wings of the tug. Consider though a genuine emergency – partial or total loss of power; rocking the wings will almost certainly mean a loss of speed, height or both which one can ill-afford. **Better in such circumstances to drop the glider without a signal.** In a recent accident the tug spun in after the engine failed. The pilot was observed to rock his wings.

Carrying of passengers; when pilot and passenger are killed there is inevitably some soul searching regarding the practice of carrying passengers. While one cannot conclude that aerotowing is a high risk operation, it is true to say that there are additional risks when compared with an ordinary flight. **Is it right to expose an "innocent" to these risks?** Be that as it may, the other considerations are practical – with extra weight the take-off and climb performance are reduced with obvious implications in marginal circumstances.

Flying the DG-200

DEREK PIGGOTT

There are now at least seven 15m flapped gliders for potential buyers to choose from and there must be many pilots wondering how the DG-200 compares with the others. Glaser-Dirks is a relatively small manufacturer so that we are unlikely to see many DG-200s.

In appearance it is rather like a miniature Kestrel (see S & G, December 1977, p253, for photographs and technical data) and in many ways the similarity extends to the cockpit. The layout is quite conventional with the flap operating lever and airbrake control on the left. The ailerons and flaps move in harmony as the flap lever is adjusted, giving additional camber for thermalling and a high speed, low drag aerofoil for cruising. A further movement of the flap lowers it still more to give an even lower stalling speed and higher drag.

Sitting in the cockpit, the forward view is improved by the compact instrument panel and the way in which the perspex canopy extends lower than on most other types. The forward portion of the canopy is fixed and a certain amount of care is needed to avoid scraping the perspex with your toecaps if you are endowed with big feet. The rear portion hinges back for access. There is a nose ballast stowage point let into the cockpit floor to allow ballast to be added for lightweight pilots or taken out between flights when not required. In common with many other machines, the DG-200 has a somewhat limited cockpit size. Don Austin, the UK agent, manages in reasonable comfort (6ft 3in I think) with the seat back removed, but taller or heavily built pilots should check for themselves.

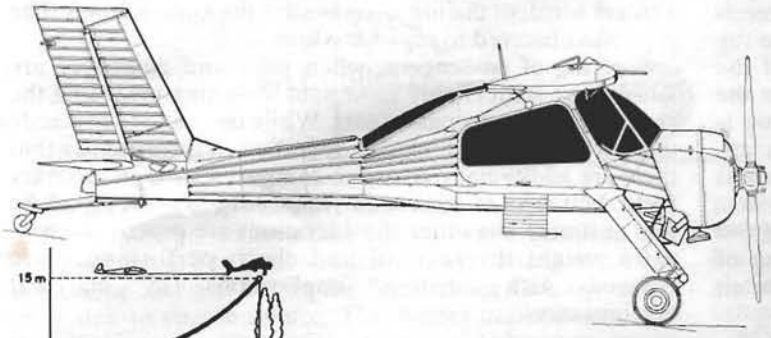
I suppose there must be some slight bonus in performance in exchange for the slim cockpit, but I doubt if it offsets the loss of sales caused by the predominance of non-standard sized pilots. There were justifiable criticisms of the detailed finish of the early DG-100 but the DG-200 shows many improvements with a good external finish. In the air it is a very nice machine. The handling is simple and straightforward and the stall is extremely docile. Close to the stall it tends to oscillate gently in a Dutch roll with good aileron and rudder control to the last moment. The recovery from a spin is immediate and it is only with the C of G on the aft limit that it will spin fully.

Laterally the handling is excellent with low aileron drag and a very high rate of roll. There is no excuse for ground loops or wingtips touching the ground on take-off or landing and the tail wheel ensures no swinging.

The conventional tailplane and elevator and the parallelogram-type stick unit ensure good firm handling at high speeds with no twitchiness in rough air. Most impressive is the approach control with the flaps lowered to the landing position and the use of the large and very powerful top surface airbrakes. It requires a certain amount of courage to complete a full flap, full airbrake approach and landing and it is not difficult to end up too slow – what a pleasure this is after flying so many machines with poor airbrakes.

With up to half the rudder deflection, sideslipping is quite normal but the rudder overbalances badly in a full sideslip and the angle of yaw is awe-inspiring. I cannot conceive anyone needing a full sideslip with full flap and airbrake, but it would be wise to explore the sideslipping before using it near the ground. For the competitive pilot the DG-200 offers a wide range of wing loadings, good handling and really excellent and easy approach control and field landing capability. I am told that delivery is less than the usual 18 months, so if you are considering this class of glider add this one to your list of possibles.

300 feet to freedom



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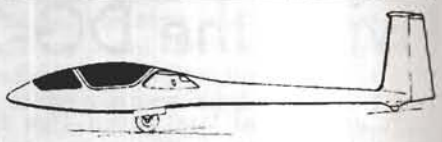

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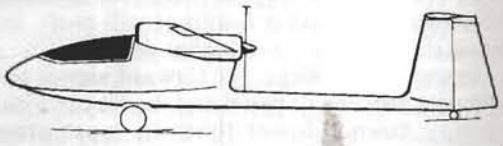

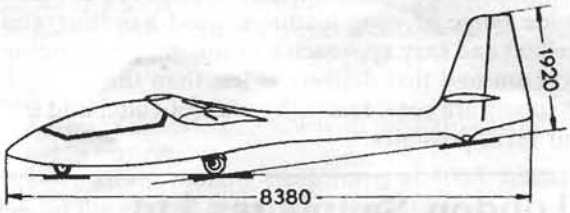

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DEREK ROPER, a former member and instructor of the Derby & Lancs GC who is in the Engineering Department of the Electricity Council, points out a grim hazard.

KITING ON WINCH LAUNCHES

Never attempt to retrieve a broken cable without ensuring it has not fouled an overhead line.

There seems to be a growing trend in the UK towards using the technique of kiting on the winch wire to gain additional height from the launch under suitable wind conditions. This of course is not a new technique. Experiments in 1938 and 1939 showed that heights of up to 2700ft could be achieved in this manner, but that a considerable degree of co-operation between the winch driver and the pilot was required. In those days there was comparatively little gliding activity in this country, radio-links between pilot and ground were non-existent and the consequences of the odd broken winch cable more of a nuisance than a danger.

During the last year there have been at least seven occasions when, as a result of winch cables being broken or winches failed while launching, strong winds acting on the released cable parachutes have caused lengths of steel cable to be carried downwind to fall on to Electricity Boards' high voltage overhead lines, thus causing a shut down of electricity supplies over wide areas. These accidents have occurred in places as far apart as airfields in the south and the hills of north Scotland.

So far no one has been hurt, but after one of the accidents, on November 19, 1977, some 2000-3000ft of cable fell across an 11000v overhead line. The local Electricity Board patrolled the line and discovered a number of gliding club personnel retrieving the cable and running a serious risk of mass electrocution had the line been re-energised.

It is inevitable that the heavy stresses imposed on launch cables by kiting, the effect of the strong winds coupled with the usual cable parachute, makes such accidents a serious possibility if practised upwind of high voltage overhead lines. The trend towards using single-strand instead of multi-strand cables must be a contributory factor to cable breakages whether or not kiting is in progress.

The Chief Safety Officer at the Electricity Council, his colleagues in the Scottish Boards and the Central Electricity Generating Board together with the Chief Engineering Inspector at the Department of Energy, are seriously concerned about the increasing danger to lives, both human and animal, brought about by such accidents.

It is strongly suggested that the following three basic safety rules should be observed by everyone involved in winch launching and cable retrieval (and that covers a very large proportion of the gliding population):

1. **Know the location of all overhead electricity lines in the neighbourhood of your launching site.** If necessary, ask for information from your local Electricity Board who will be pleased to help and advise you.
2. **Never attempt kiting in strong winds, upwind of any overhead electricity line.** For this purpose, estimate wind-drift, the maximum possible length of winch cable drawn out and assume breaking at the winch.
3. **Never attempt to retrieve a broken winch cable without ensuring it has not fouled an overhead line.** If this is the case, immediately contact your local Electricity Board and keep all personnel and animals well clear of the whole length of winch cable until the situation has been made safe.

In addition it is recommended that the winch should be earthed; your local Electricity Board will be pleased to advise you.

LIGHTNING AND YOUR GLIDER

J.S. ARMSTRONG

The soaring season is now well under way and many pilots will be dreaming of high climbs in cu-nims, perhaps of Diamond heights and the incredible experience of emerging from the top of a cloud into a fantastic skyscape of brilliant blue sky, dazzling white towering clouds, hot sunshine and occasional glimpses of the green earth below – all this in total silence. There is no other experience quite like it and to fly around and in and out of these beautiful and ever changing cloud masses is one of the "musts" of gliding – but only on the right day, in the right conditions and in the right glider!

What are the right conditions, if any? What are the dangers of big cumulus and cumulo-nimbus clouds? Well, they are many and the BGA quite rightly insists that all big clouds must be treated with the utmost respect. In this article I want to deal only with lightning and its causes and to remind pilots of the already well known dangers of lightning strikes on gliders.

The General Electric Company in America has established an Environmental Electro-Magnetics Unit and Mr J. A. Plumer, the unit manager, is a recognised authority on lightning and lightning strikes on aircraft. I am indebted to him for much of the following information. Pilots who would like more detailed information can also refer to the CAA where special studies have been made and to a paper published at the VIIth OSTIV Congress, 1958 by Mr Zielinski.

What causes lightning

First let us try to understand what causes lightning. When large clouds of the cumulus type are forming there is usually a high lapse rate and the temperature falls rapidly with altitude. The moisture rising inside a cloud condenses into water droplets at the dew point and as it goes on rising will eventually be completely frozen into ice crystals at temperatures below minus 40°C. Some of these ice crystals will coalesce into hailstones which are heavy enough to fall through the cloud and gather super-cooled water droplets on their way.

According to present theory these super-cooled droplets freeze into ice splinters on the hailstones forming an electric charge on impact and split off, carrying away with them a positive electrical charge.

The hailstones remain negatively charged and continue falling, while the positively charged ice particles are carried upward by the air currents in the cloud, leaving a net negative charge at the base of the cloud and a positive charge higher up. This constitutes a charged cell and there may be several such cells in a large cloud – it depends on how the air currents are distributed inside the cloud. Temperature differential in the cloud is likely to be from about minus 5°C near the base to minus 20°C in the positive portion. These are the temperatures between which lightning is most likely to occur.

The actual discharge is thought to be caused in the following manner. The charged cloud cell forms an electric field extending well beyond the cloud but it can be very intense at its centre. If it is intense enough to ionise the air (*ie* detach electrons from their atoms), the ionisation forms a conducting path along which the preponderant negative charge will travel in the form of a luminous spark towards an uncharged or opposite charged (positive) area. This spark travels at over 50miles/sec and creates a charged path about one meter in diameter which in turn intensifies the field ahead of the spark, which again ionises the air and gives fresh impetus to the spark. The spark progresses in jerks or zig-zags about 50m long on average, pausing for a tiny fraction of a second at each step to be recharged from the original cloud cell. This is the familiar zig-zag streak of lightning and is known as the "stepped leader".

The stepped leader may of course have several branches or forks causing "forked lightning", but there is usually a main one which will generally approach the earth on a downward path. As it approaches earth it attracts the opposite (positive) polarity in the earth and produces ionisation at whatever object it reaches first – church steeples, tall trees, buildings etc. Short streamers will rise up from these objects and meet the stepped leader, thereby forming a conducting ionised path **up** which the positive charge from earth flows, neutralising the negative charge in the stepped leader. This positive discharge is called the "return stroke" and is responsible for the loud noise and flash we associate with lightning. It travels at about one-third the speed of light, some 60 000miles/sec and generates currents up to 200 000 amperes with intense local heating.

However the discharge need not always be to earth and a similar discharge and return stroke can take place between a charged cell and any oppositely charged cloud, or even an area in the same cloud. Cloud to cloud discharges are generally less severe and less noisy than cloud to earth and usually only occur at high altitudes.

The return stroke will die out when it reaches the original cloud cell, but the path will remain for a fraction of a second and the remaining charge in the cloud will drain off to earth (reversing direction yet again) and form a continuous current, albeit only a few thousandths of a second duration. It may even generate a new strike from other charged portions of the cloud and a new return stroke over the same path. These restrikes are much less intense than the original, only a few hundred amperes, but may last in total up to one second duration and give a characteristic flickering effect of a prolonged lightning flash.

Aircraft do not themselves trigger off lightning strikes but a metal aircraft may attract or deflect through itself a stepped leader which is about to occur anyway. The so-called St Elmo's fire is not a static charge in the aircraft but is ionisation at the extremities of an aircraft, occuring when you are flying close to a highly charged cell in the intense electric field. It may be visible inside a dark cloud as a bluish glow around you and is a sure sign that you are in a hazardous situation. Nothing may happen but on the other hand if the field is very intense, streamers may propogate from the aircraft to the advancing stepped leader and a path be established through the aircraft to the positive field which the leader is seeking. This is not particularly harmful in itself but once the path is established there is no escaping the return stroke of high intensity current which will be evidence by a bang or "whoosh" and a bright flash. This may be thought by the pilot to be a discharge of static from the airframe, but is in fact a genuine lightning strike and merits a very thorough post-flight examination.

Makes a strike more likely

Still referring to metal gliders, it is possible for some static to build up on the aircraft skin in rain at temperatures around zero or below. This helps the ionisation at wingtips, etc and makes a strike more likely.

Lightning strikes are not confined to the interior of clouds and have been known over a radius of more than 25 miles from a big cloud. Therefore really active clouds which appear likely to propagate lightning should not be approached closely, let alone entered.

Now what happens if your aircraft suffers a strike? Contrary to popular belief a wooden or glass-fibre glider is much more dangerous to the pilot than a metal one. With a metal skin the strike is diffused over the whole surface, usually entering and leaving *via* the extremities, wingtips, nose, rudder etc. Because the strike is of such short duration it is unlikely that it will spread into spars, control cables etc and any damage may well be limited to small melted holes at points of attachment of the strike and at trailing edges etc where the strike may hang on momentarily as it leaves the aircraft. The electric field may of course upset electrically operated instruments and radios and they should be treated with suspicion after a strike. The bodily effect on the pilot of a metal aircraft is usually minimal as he is flying inside a conducting enclosure with all parts at roughly the same potential, even during the strike. There may be slight shock from the field penetrating the perspex of the cockpit cover and causing "streamers" of minute current through his body, but there is no danger of electrocution. The danger is if the charge passes through control cables, hinges etc and fuses them.

In a glider with a non-conducting skin the metal parts which will attract the strike are unfortunately the control cables, pulleys, hinges etc and the pilot is also in the control circuit by virtue of a metal stick. Even with an insulated grip, lightning is so unpredictable that a fatal shock could easily occur. Even if the pilot escapes direct injury a severe shock may well render the controls useless. Bonding, which the BGA made mandatory for cloud-flying aircraft many years ago, is some help but does not afford complete protection. The only real safeguard is not to fly into potential danger areas.

Frank Irving pointed out in S & G articles more than 15 years ago that bonding in wooden gliders (and this applies also to modern glass-fibre machines) may prevent the pilot receiving shocks due to varying potential in different parts of the aircraft, perhaps caused by nearby lightning strikes, but is unlikely to provide protection against a direct strike. Strikes which have occurred on bonded machines have not only severely damaged control cables and other metal parts, but have in some cases reduced pieces of timber, such as spar booms, to the strength and consistency of balsa. This emphasises the necessity of a very thorough and searching examination of all components after any actual or suspected strike. Frank also pointed out that although it is undoubtedly a safeguard, bonding may prevent the pilot sensing smaller potential differences by tingling sensations and thus being forwarned of a possible danger.

It is difficult to define dangerous clouds as so many factors affect the propagation or otherwise of electrical charges in clouds. According to Mr Plumer's researches (limited to powered aircraft) most strikes have occurred between 10 000 and 15 000ft at temperatures at or below 0°C with rain or hail and usually fairly severe turbulence. This is not to say that strikes will not occur under other conditions, but they are perhaps less likely. If, therefore, you enter cloud and experience very strong lift to high altitudes with turbulence, rain or hail and sub-zero temperatures, you are more than likely to be in the middle of a huge electrical generator which may well decide to punish you for your temerity. The best course is to exit smartly before Thor wakes up and hurls his bolts at your puny craft.

Diamonds are forever but so is death and it can easily be lurking inside that soft inviting woolly looking mass that gives you such exhilarating lift.

Sailplane building made easy

KEN HYNES wants to build his own glider and suggests a scheme which may appeal to others with a similar ambition

While possible to build a sailplane from a set of plans and raw materials it is an undertaking few people can complete successfully. It certainly takes more time and skill than I have available. An easier way is to build from a kit, but all current kits are still very hard work. In general they are not a great advance over building a prototype and that is something I want to get away from.

I want a good sailplane in an easy to build kit. It must be buildable by someone no more than reasonably competent with his hands and critical things like the contour of the wings must not depend on the skill of the builder. The kit should include everything so that days are not wasted looking for some minor component. Where parts of the design require special and expensive equipment for their manufacture they should be provided ready made. Examples are glass-fibre mouldings and welded components. The design and the end product should be good. A kit as good and as easy to build as I want does not exist, but it can be created.

The problem with producing such a kit is that the necessary investment is high and profitability is uncertain because it is hard to tell how many people would buy it. It is a financial proposition outside the spectrum of conventional capitalism.

The way out of this impasse is to reverse the process. If enough of us who want this kind of kit form a super syndicate and place deposits on it before it exists, we can produce it. If there are not enough of us to go ahead, then we can have our deposits back and we will have lost nothing but the use of the money for a short period, since it will still be earning interest for us. This is far better than market research; we are certain of our market before we produce. Then, when we are ready to go into production, we must all be prepared to pay the balance of the cost in advance.

An easy to build kit

In this way we can avoid the cost and scarcity of risk capital and obtain purchasing muscle and economies of scale. This alone will make the product much cheaper. We can produce it on the basis of paying the cost to cover the expenditure rather than cost plus profit. Our combined deposits can be used to produce a kit which is well designed for the home-builder and which can be cheaper to build than a plans and raw materials sailplane. This financial structure does what a design competition can not do; it lets us actually *produce* an easy to build kit. In the end we should have good sailplanes at a low price which we have built without heroic labour or great skill.

We can choose our materials from wood, metal and glass-fibre and we can use capital intensive methods of component production. Wood is too skilled labour intensive. Metal is good for structures. It can be cut, shaped, drilled and welded in a factory at reasonable cost in quantity to provide the components for assembly. It is poor for surfaces like wing skins which need to be accurate to the order of one unit of vertical variation in a thousand of length over two inches. Glass-fibre is good for surfaces and if shrinkage creates ripples it can be re-finished with reasonable ease. It is also good for structures though in many ways not as good as metal. It has the great advantage that mouldings can be made to fit together in only one way so that assembly can be almost entirely by means of bonding under pressure applied by large plastic bags and a vacuum cleaner. Thus we can make our kit with a glass-fibre skin and with a choice of metal or glass-fibre structure from components which are self jigging for easy and cheap assembly. The required qualities, from the builder are then reasonable intelligence, diligence and preparation. These are reasonable things to expect of an amateur.

The performance of the sailplane is the next question. I do not want to consider the possibilities of the gap between hang gliders and conventional sailplanes in this article. It is a new movement that has not yet reached actuality and I think that what I am proposing is a sufficiently large step with a conventional, 400 to 600lb 15m sailplane. A home-built K-8 does not make sense within this scheme. In general the K-8 is an early trainer, rather than private owner machine, and can not be the basis of this kind of development. With the flexibility of design allowed by the decision to use glass-fibre I see no point in aiming at less than Astir standard. Features intended to reduce cost below this level reduce value far more rapidly than cost. The cost of glass-fibre Club Class sailplanes illustrates this. Incidentally the design problem of sailplanes is no longer a mystery at this level. Gone are the days where the shape of the wing root spelt success or failure without anyone knowing why. All the latest 15m sailplanes have done what their manufacturers claimed for them before birth. Not easy but not mystical.

The cost of this kind of kit splits into two parts. The first is the total set up cost; design, development and manufacturing equipment. The percentage difference in this cost between different designs of sailplane in the same span and the same construction is relatively slight. The quality of the designer is far more significant. Within this scheme these expenses are divided equally between the members. The more people who join the less each one pays. The second cost area is the marginal cost of production and mainly consists of cost of materials and fabrication. A poor performance sailplane certainly is not likely to weigh less than a better one and fabrication costs come down with volume of production, greater production investment and reduced numbers of operations. In short the most significant factor for us is the number of members. The more the better.

There is an argument to be made for better than Astir performance with respect to one design in particular. It is the work of Professor D. J. Marsden of Alberta who originally wanted to build a high-performance side-by-side two-seater. He decided to use the mechanically simple slotted flap system, as used on the Blanik, to give a high wing loading in the cruise configuration and a high coefficient of lift in the climb. He built it, called it the Gemini and holds the Canadian 100km and 300km triangle records with it. It can climb when Blaniks fall down and it will stay with an Open Cirrus on the glide. He has now produced a design for a 15m single-seater. According to calculation, both weak and strong condition performance is exceptionally good. With a ballast range able to increase the wing loading by 50 per cent and a conservative view of Min sink, the British handicapping system would give it a score of 120, which is Nimbus 2 level. If we are less conservative the score comes to 130. British handicapping is based on fairly weak conditions with achieved climbs in the 2 to 2.7kt range depending on the sailplane characteristics.

Based on facts as well as theory

If we plot the calculated polar against Dick Johnson's measurement of ASW-17 serial number N1UJ as tested in February 1976, then the two polars are within a tenth of a knot from 70 to 110kt. The ASW is better below 100kt and the Marsden is better above. Then with flaps extended the Marsden's Min sink is slightly better, but at some 10kt less airspeed. This is exceptionally valuable in narrow thermals, where a slightly narrower circle gives significantly better climb and 10kt is much narrower. For these polars a difference in achieved climb of 0.2kt, going from 2.5 to 2.7kt, makes a difference of about 2.5kt to cross-country average. In pure climb and glide flight in "standard British thermals" the Marsden will be between 3 and 5kt faster across country. This is not the best ASW-17 that Johnson has tested. N44JD had an L/D of 47:4, as opposed to 43:1 for N1UJ, and had a better Min sink at a speed comparable to the Marsden, though N1UJ was better above 100kt. I am merely taking it as an example of many actual ASW-17s. The figures for the Marsden are, of course, calculation. But Professor Marsden's calculative method gives results very close to measured polars for existing sailplanes. The wing section, which he thinks can be improved, has been tested in the University of Alberta wind tunnel. The flap mechanism, in relation to a high-performance sailplane, has been tested for several years in Gemini. So the 15m calculations are based on facts as well as theory. At the other end of the scale, touchdown speed should be about 25kt.

Now you know what I would like to build. Although the design exists in a form suitable for a one-off it needs a lot more design work for the kind of kit I have been talking about. On the other hand I will settle for a Standard Class ship if that is what a majority want. The Marsden will probably cost 20

per cent more and that seems worth it to me. Besides its outstanding performance it has two major advantages. It already exists in an advanced state of design and Professor Marsden has agreed to develop a prototype for us. He must obviously be the best person to do this and using his design will speed our progress and save development costs.

Costs are a vital question but it costs money to find out. I am thinking in terms of £3000 to £4000 for a comprehensive kit with high accuracy surfaces as supplied. Construction time should be about 200 man hours. To do this we need something like 100 deposits of £750 each. Until we have the 100 deposits no real expenditure will be started; the capital will sit in a bank, expenses will be paid for from the interest and the remainder of the interest will be held in the account and paid out on a pro rata basis from time to time. When we have our £75 000 work will start. This size of project can not be handled on a part-time basis and we must employ full-time staff. We must produce our kit fairly quickly, say two years from start of work. We should also have the capability to supply fully built up sailplanes in small numbers. No organisation should produce kits without habitually assembling some of them. The first kits to be produced should be put together in the factory by the staff and in particular the designer. We will then be in a position to make minor changes to simplify construction and to write a better manual. So if you want to join the scheme but do not want to build your own sailplane, it can be provided at a suitable extra price. Once the first batch of kits has been produced the organisation should continue on a commercial basis in order to provide a viable supply of spares.

Please offer your talents!

Although the scheme must have full-time staff there will also be a need for part-time unpaid knowledge in the early stages while a design direction is chosen and approximate costings are done. Please do not hesitate to offer your talents! If we discover that the project is not feasible then we pay back the remaining money to the depositors and they share the costs equally. When we are ready to go into production we all pay the remaining amount in full and receive our kits in order of payment of deposits.

What I am talking about has never been done before. No easy to build sailplane kit of this type has ever been produced and neither has this kind of organisation been tried for the purpose. But that is where the real innovation stops. I am not proposing great engineering developments. Even Professor Marsden's design is no longer innovative; he has already done that part with the Gemini. What he has really given us is the opportunity to build a sailplane of a significantly higher order of performance than anything now available and we can do it as a kit. But the association I am proposing goes further than producing an easy to build kit. We can produce a design which is good in depth. Once the design is done it carries no overhead. If you are sharing the cost with 99 others then every £1000 of design and development costs you £10. That must be a good buy. If we get 200 members instead of 100 that is even better.

If you want to join my "super syndicate" I want a cheque for £750 from you as soon as I can set up an account with well-known and obviously trustworthy co-signatories to prevent me running off with your money! For the time being your money will just sit there and earn you interest. You will be notified before expenditure starts. If you change your mind before then you can have it back, but we must have a lot of money in that bank account before anything else can happen. I would also like to hear about the kind of sailplane you want and the features you would like incorporated, so contact me at 81a Anson Road, London N7 0AS, telephone 01-609 2524.

Hang Gliding and Aerodrome Traffic Zones

LIONEL ALEXANDER

I must thank Eric Wilks again. My last article "What Price the Blood-Chit?" S&G February 1978, p28 was asked for by him. On this occasion, he has made representations about the bothersome interaction of gliding and hang gliding. I hope that what follows will assist.

It is not within the limits of this article to discuss how a gliding club ought to go about dealing with an approach from a hang gliding organisation to share the gliding club's site. There can be no general rule. Everything depends on the local situation. What I can perhaps do is to summarise the relevant law and to put the problem in its context.

Hang gliding is at present associated exclusively with hill sites and there have been surprisingly few practical difficulties. Late last year, the BGA circulated clubs with inquiries about hang gliding. Eleven replies were received. Two were entirely negative (no hang gliding). In one case, hang gliding on site had been tried, found to be incompatible with gliding and had ceased. In two cases hang gliding on or near the site had begun but (for reasons unconnected with gliding) had come to an end, not without regret by the gliding clubs concerned (hang gliding was a source of recruitment). In four cases hang gliding takes place well away from the gliding site and out of any conceivable control by the gliding club. A potential hazard is seen to exist. Finally, in two cases, there is a real and continuing problem because the two forms of aviation habitually use the same airspace.

It seems, then, that some kind of problem exists in six cases. That is not to suggest that it is unimportant. Gliding clubs after all have already enough to put up with in the shape of competing interests.

What is a hang glider?

It is an aircraft just like an ordinary glider. It is also a glider (if it has no motor). The distinguishing feature (not however relevant for the purposes of aviation legislation) is that it is capable of being launched and landed on the pilot's feet. One day, I fear, the distinction may become blurred. It may be a flight of fancy to postulate some Atlas-like character cutting a hole in the bottom of his Kestrel, heaving it on to his shoulders and jumping off the top of the Mynd in a sufficiently strong gale. But suppose it were a Scud? Be that as it may, hang gliders are, as I have said, aircraft and so within the legislation.

The Order

The main subordinate legislation is now embodied in the Air Navigation Order 1976 SI No. 1783 ("The Order"). This has been amended from time to time. Under the Order there is power to make Regulations. This power has been exercised. Finding all the Regulations could be a headache but fortunately the Civil Aviation Authority issue the Order and the Regulations collected in a loose-leaf volume (CAP 393, price £8.00).

The Problem

An established gliding club has a site on a ridge. A mile or two away a hang gliding club starts operations – or hang gliding just starts. Can it be stopped or controlled? Can the hang gliding organisation, contrariwise, control or restrict gliding? What happens in the event of a dispute? The general rule of course is that the air is free to all and no prior rights exist. But this general rule is subject to much qualification and I discuss below some of the special rules that qualify the general.

Planning

A hang gliding club that sets up operations on, so to speak, virgin ground would probably need planning permission. To this a neighbouring gliding club could quite properly object. It is important to remember that planning has nothing whatever to do with aviation questions. It would, for instance, be perfectly possible to set up an aerodrome (see below) while being in breach of planning legislation and *vice versa*.

Aerodrome Traffic Zones

Every "aerodrome" has an "aerodrome traffic Zone". Both expressions are defined in Art. 90(1) of the Order, as follows:

"Aerodrome" means any area of land . . . design, equipped, set apart or commonly used for affording facilities for the landing and departure of aircraft . . .

"Aerodrome Traffic Zone" ("ATZ" hereafter) in relation to any aerodrome means the airspace extending from the surface to a height of 2000ft above the level of the aerodrome and within a distance of 1½nm of its boundaries except any part of that airspace which is within the aerodrome traffic zone of another aerodrome which is notified for the purposes of this Order as being the controlling aerodrome.

The definitions thus plainly envisage that there may be overlapping ATZ's; and that if there are, the CAA may give precedence to one of them. But one looks in vain elsewhere in the Order for anything else about notification other than the cryptic reference in the definition.

The control of its own ATZ is afforded to an aerodrome (such as a gliding site) not by the Order itself but by the Rules of the Air and Air Traffic Regulations 1976, made under Art. 60(1) of the Order. By Regulation 34(1)(a), no aircraft may, without permission, enter the ATZ of an uncontrolled aerodrome except for the purpose of . . . landing there.

There is no doubt that a hang gliding organisation may set up an aerodrome, complete with ATZ. Casual or sporadic use would not do; but habitual use, coupled probably though not necessarily with some kind of ground equipment, could satisfy the words ". . . commonly used for affording facilities . . ." I must emphasise that it is a question of fact in each case. There are no rules of thumb. To give two examples on either side of the line.

a) A gliding club has a time-honoured bottom landing field – marked, perhaps – outside its normal ATZ (unlikely, but conceivable). Reading "and" in "landing and departure" in Art. 90(1) as "or", which I think one can, then the field is probably an aerodrome. If of course the field is within the existing ATZ, its existence will extend the boundaries.

b) Hang gliders come to a site in twos and threes once a month. After flying, they go away again. Nothing remains to show that they have been or will return. The site is not an aerodrome.

In general, I think that it would be unusual for hang gliding to constitute an aerodrome, short of some kind of permanent organisation or building or equipment on the ground. When nothing is to be seen except grass between flying days, where, one asks rhetorically, are the *facilities*? But it would be undesirable, not to say expensive, to resort to litigation to find out.

The Solutions

I am looking at the problems entirely from the point of view of an established gliding club and I am not to be taken to be advocating any of the legalistic solutions as a means of making friends and influencing people. You do not need me to tell you that any hard attitude you may adopt would be deplored by you were the boot on the other foot, such as a conflict with a power flying interest. On the other hand, you have certain legal rights and I summarise them below. They should be regarded, at best, as a last resort.

1) It is possible to object to an application for planning permission, or to point out to the planning authority that such permission may be needed.
2) Hang gliders may be forbidden entry into the gliding club's ATZ. Disobedience is then an offence under the Order.
3) Where the hang gliding club has set up its own ATZ which overlaps with the existing ATZ, the CAA can be requested to notify the gliding club's aerodrome under Art. 90(1) of the Order. No one has yet tried this, but as a doomsday weapon it appears to exist.

Finally, the BGA always encourages member clubs to involve the BGA in the club's problems. In the case of hang gliding, there is a special importance in avoiding clashes between two related forms of aviation. The BGA has increasingly close contacts with the British Hang Gliding Association which, in turn, is keenly interested in the orderly and peaceful development of the sport which it controls. So the best solution of all (if the problems will not yield to local negotiation, or even before they become intractable) may well be to call in the BGA to help.

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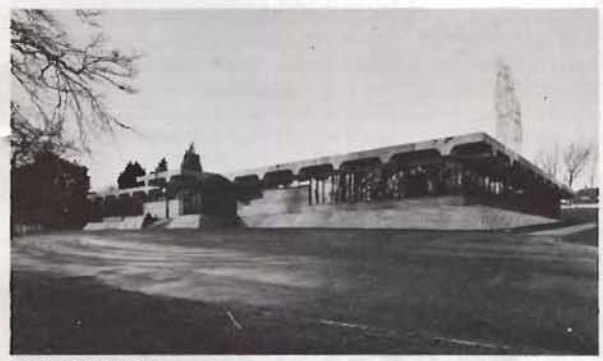

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Peter Light being pushed into position by Richard Walker.

Ivor Shattock sheds a layer.

Justin Wills fettling. Photos: Anne Walker.

COMPETITION ENTERPRISE 1978 — North Hill, June 17-25

ANNE WALKER

We gathered at North Hill on Saturday, June 17, to be greeted by the usual duff British summer day. Kitty Wills opened the Competition and there was a minute's silence in memory of Philip, the inspiration behind Enterprise which was launched in 1974. As it was a dry day it was an excellent appartunity for last minute fettling and getting to know everyone – and there were 34 entries with John Fielden again as task setter.

Day 1, June 18, being Sunday briefing started with a service of thanksgiving at St Enterprise in the Mud conducted by the Rt Irreverent Bishop Grope assisted by the Epistles of Ottery. Two "hymns" and a "prayer" were sung by the "congregation" and the chair sang "O Glide with me towards the turning point" to the tune of "Abide with me." The music was beautifully played by John Fielden's family on fiddle, flute, guitar and two trombones. The collection amounted to £45 for the Philip Wills Memorial Fund.

Task for this day was a pilot selected turning point upwind (don't decide what to photograph until you get there) and free distance from then on downwind. Roger Harding (Std Cirrus) won with an out-and-return to Devizes but the most enterprising flight was by Tony Maitland (Diamant 18) who turned at Somerton and used sea breeze convergence to fly all down the peninsula, to Land's End.

Day 2, Monday, June 19, dawned bright and clear and 760km and 500km triangles were set as well as a 300km out-and-return.

Justin Wills (Mosquito) and Tony Maitland both completed the 500km round Halfpenny Green and Lasham, having to take high cloud climbs to get back to North Hill as the sea breeze always comes in across the peninsula and cuts off convection. Justin did a 50 mile final glide from Shaftesbury. The Gull 1 flown by Tony Smallwood covered about 250km going round Lasham – what a flight that would have been if done when the Gull was new!

Day 3, Tuesday, June 20, was bright and clear again and three different out-and-returns were set – pilots to select their turning points after getting there! Here there was a deliberate attempt to score for correct judgement.

Task 1 to Newbury (305km) was 1pt/km + 20 × speed/scratch, speed.

Task 2 to Frome (160km) was 1pt/km + 15 × speed/scratch.

Task 3 to Glastonbury (105km) was 1pt/km + 12 × speed/scratch.

So a pilot going fast round the shortest task could earn more points than someone not quite completing the longest task. Justin Wills and Tony Maitland were again the winners by completing the longest task.

The following day was wet and soggy so briefing consisted of a lecture on how the sink occurs round a sea breeze front. (This was ably demonstrated using a sink of water and a cold bottle of milk). This turned out to be very useful as we all had been falling out of the sky as sea breezes cut in from both the north and south coasts, in effect joining up to completely blot out convection to the western end of Somerset.

Cloud climbs and wet wings

Day 4, Thursday, June 22, was interesting for as a front cleared the site a huge, towering cumulus built up creating a beautiful cloudscape of blue and white with shades of red and grey. No one got back from the polygon task set around the site as cloud climbs and wet wings were the order of the day. Crews derigged in storms and cloudbursts. Ivor Shattock (Club Libelle) won with the longest flight by going far off towards the north coast of Devon and hill soaring the rest of the way.

Day 5, Friday, June 23, was race course day. An out-and-return to any race course with 1pt/km out and 1pt/km back, the race course to be chosen when airborne. Justin again won by returning from Wincanton, probably not getting above about 2000ft until taking a cloud climb to make North Hill. Gillian Howe, his crew, got a pot next briefing for driving under him all the time and telling him where to go.

Mike Carlton (Mosquito) went one better and flew all the way to Kent – he'd forgotten something he'd left at home. He was of course *en route* for a race course – one in Kentucky – so got full "out" points.

Day 6, Saturday, June 24, again showed very unstable weather continuing so race courses were set again – but this time with 4pts/km on the way back to get everyone on time for prizegiving. Hardly anyone actually got back but Ken Wilkinson (Kestrel 19) did a 305km out-and-return in a 25kt wind!

The results were as follows: 1, Justin Wills; 2, Ken Wilkinsan; 3,and best wooden ship, Dave Roberts and John Williams (K-6E); 4, and best two-seater, Mike Osborn (Blanik). The Enterprise trophy went to Tom Docherty (Kestrel 19) for his flight from Portmoak to Cambridgeshire on September 29, 1977, in an attempt to cross the Channel and his British record flight of 1976. The green flag went to Brian Booth (the Met) for seeing which way the wind blew.

* * *

Sadly there were two prangs: Anne Walker (Std Libelle) and Tony Maitland both landed in standing corn, Anne on the Tuesday and Tony on Friday causing considerable damage to the gliders. Ed.


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THE 1978 NATIONALS

LASHAM
May 22 - May 29

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The Site

Lasham has amongst its assets a large clubhouse and bar, excellent catering facilities, almost enough washing accommodation and the famous "Brown Elephant" for briefings.

The airfield is big enough for camping and can accept the whole competition for an emergency landing. Rough grass fields bring the danger of undercarriage failure during take-off for Open ships with a full load of water. This is averted by the use of the long east-west paved runway. The runway has no obstructions to its thresholds. Indeed if future Nationals are again to contain three Classes of nearly 70 gliders, Lasham is now the only suitable civilian club site.

Visitors are made most welcome by the Secretary, Derek Davis, and his staff. During the Nationals he kept the jets of our neighbours Dan-Air at bay with the skill of a lion-tamer.

The Team

Formed for the 1977 Regionals, it re-appeared *en masse*. It, of course, contained Tim Newport-Peace, supplier of PA Systems to the "Crowned Heads of Europe". Christine Dean and her startline crew again directed competitors with calmness, clarity and a total lack of fuss.

Ken Simpson, the only "same day" scorer in captivity, re-adapted well to his nocturnal life. The tug pilots led by Dave Oliver launched club gliders all day and switched, without pause, to dispatch competitors to the dropping zones.

Weatherman, Tom Bradbury, brought along his best seaweed and together with joint Directors Paul Thompson and Wally Kahn, made a very successful combination of Diamond badge pilots for task setting. Paul and Wally, perhaps the best front men in the business made briefing both fun and efficient. Of Wally it must be further said that he acquired so many prizes by charm, seduction or blackmail, that the daily winners had to be given plastic carriers to take away their "loot".

The Entry

Standard Class – This Class contained seven Cirri, two DG-100, two ASW-19, two Jantors, one Astir, strangely only one Std Libelle, one Dart 17, one Open Cirrus and one Skylark 3. The results showed no clear superiority, only the best pilot/glider combination.

15m Class – At last a full-house field of these exciting ships. Of the six Mosquitos, two were lightweights with the latest flap mods and small tailplanes. There were four each of Pik 20D, Mini-Nimbus and ASW-20. A single LS-3, DG-200 and IS-290 completed the field. The glass ships were well matched and beautifully designed and finished.

Open Class – of the ten Kestrels entered only Mike Randle's had the Delafield modification to 20m. Nimbus 2s were strongly represented with five. Of these three had extended wings and Ralph Jones "King" Nimbus with its legendary capacity for water now has Mini-Nimbus flap seals. The Nimbus 2B flown by Rex Pilcher had similar flap seals and a tailplane with elevators. Rex was most impressed with its performance and stability. British Team men, Lee and Fitchett flew two of the three ASW-17s entered. Two Jantars were entered and one of them was the impressive new 2A.

Equipment

The trend in variometry is still for a PZL or Winter invariably with a "Dolphin" netto system. This is supported by an electric vario for quick response. Only 13 gliders had "flight directors" and perhaps their usefulness is limited by the low altitudes at which competitions are often flown in the UK. Already 18 Irving total energy tubes have appeared amid the sea of Brunswicks.

A survey of radios shows that the ageing, but excellent, Pye Bantam is alive, well and living in 22 gliders. The TM6 is taking over the market because of its low price, small size and quality. Alas, compass duplication indicates that, although men have walked on the moon, an accurate, reliable all purpose gliding compass has yet to be invented.

Day 1, Saturday, May 20 – all Classes

FORECAST: A ridge (1030mb) near Norway is feeding north-easterly air across the country. Convection will start about 13.00hrs and by mid-afternoon may produce 2/3kt thermals up to 5000ft. Wind 030° and 7/10kt. Hazy vis everywhere.

TASK: Open Class, a 220km Δ, Blakehill Farm A/F, Moreton in the Marsh. 15m and Standard Class, a 171km Δ, Blakehill Farm A/F, Didcot.

The day started earlier and was better than predicted with clouds and 3/4kt thermals.

The winners and runners-up with the Punt e Mes hostess, Diana Boult. From l to r: Brian Spreckley, Andrew Dovis, Chris Garton, Steve White, Bernard Fitchett, George Lee, John Delafield, Leigh Hood with Derek Piggott behind.

Andrew Davis, 15m Class Champion and youngest pilot at 21 years of age to have won a national event.

The Open Class was won by Bernie Fitchett at 107.79km/h. He felt he had flown badly on what was only his second flight since September, 1977. The conditions were indifferent on the first leg, good on the second leg and poor on the third. Most clouds produced weak lift and he sometimes took a couple of turns in 2kt in order to keep alive for better things further on. His best height was 3900ft above Lasham.

In the 15m Class, Brian Spreckley repeated a win from the 1976 Nationals, over the same course. His 93.66km/h was not without its anxious moments as he rejected cloud after cloud. He reached Swindon at 1600ft where 5kt took him to cloudbase and then home in improving conditions.

Leigh Hood won the Standard Class at 82.6km/h. Like the other two winners, he suggested luck had played a large part in the flight. The speeds suggested that they were all being modest.

Everyone got back.

Day 2, Sunday, May 21 – Standard Class

FORECAST: A low from Germany has moved westward and Lasham is under a lip of clag with better conditions to the west. Hazy visibility with 1/2kt thermals under the clag. Wind 360° 15/20kt.

TASK: Open and 15m Classes were scrubbed on the grid. Standard Class, a 166.48km out and return to Shaftesbury roundabout.

Briefing. Photo: Rob Johnson.

The lip of clag moved further west than anticipated. With thermals hard to find the day became one of distance. Only five gliders rounded the turning point. One landed near Wilton and two near Salisbury.

Winner John Delafield went furthest and started a formidable run of success in the ASW-19 he is to fly in the World Championships. Cloud climbs at Whitchurch and Salisbury on the way out took him to the better weather at the turning point. The northerly wind enabled him to ridge soar, to Stockbridge, on the way back. However it must have required "The True Spirit of Bushido" to cross Salisbury in this manner.

Day 2, Monday, May 22 – Open and 15m Classes

FORECAST: A thin layer of yesterday's clag has now reached the Welsh border. It is unlikely to burn-off. Weak thermals under the cover may go up to 3000ft. Wind 360° and 5/10kt. Visibility poor.

TASK: Open and 15m Classes, a 148km△, Farringdon, Marlborough College.
The Standard Class was scrubbed.

The day was as predicted with some sun near the second turning point. It emphasised the advantages of Open gliders in weak conditions. Only George Lee (ASW-17), Chris Garton and Rex Pilcher (Nimbii), finished. Bernie Fitchett (ASW-17) landed 2km short of Lasham.

George Lee won the Open Class by 16sec after a 3½hr flight. He took an early start, climbed slowly and drifted down the first leg. He found the first decent thermal at Wantage, rounded Farringdon at 1500ft and flew out into the sun, finally picking up a thermal at 700ft. Struggling on to Marlborough he found 4kt to 3500ft for a final glide home.

Winner of the 15m Class, Andrew Davis, had a similar experience. He also got to 3500ft at Marlborough but 15m wings left him 17km short on a final glide in dead air.

Frank Pozerskis was the first to wear the "infringement hat" awarded to anyone caught in restricted airspace. It is complete with built-in illumination, with the threat it will be passed on to each Regionals and Nationals in turn. Photo: Ray Brown.

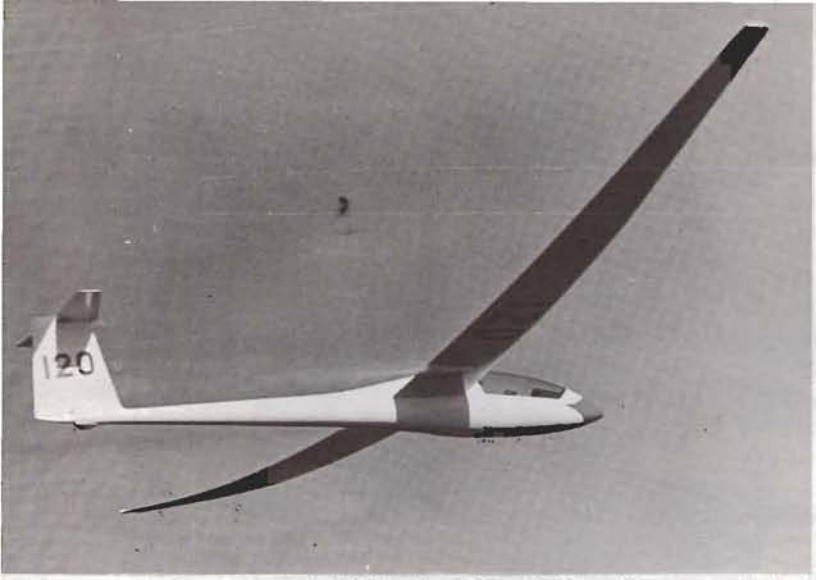
Day 3, Tuesday, May 23 – all Classes

FORECAST: A high building to the west of Ireland has driven the clag back to its low in Germany. Cloudbase 4000ft by mid-afternoon with 4/6kt thermals. Wind 270/015° and 12/17kt.

TASK: Open and 15m Classes, a 309km△, Birdlip roundabout, Watford Gap service station M1.
Standard Class, a 247km△, Shaftesbury, Tetbury.

A successful task for the Open and 15m Classes. The Open Class had 20 finishers from 21 and the 15m Class 15 from 21.

The Standard Class weather was flawed by "murk", formed from a patch of damp Welsh air. It sat in the area of Shaftesbury



Ted Lysakowski (4th in the Open Class) bending the wings of his Nimbus 2 in a spectacular finish. Photo: Ray Brown.

and sank five at the first turning point and a further ten on the second leg. Only John Delafield eluded its grip.

Open Class winner Chris Garton at 92.8km/h found the first leg difficult due to overdevelopment. He took a cloud climb and emerged iced up into rain losing most of the advantage. Conditions improved after Birdlip and the second and third legs were flown in normal racing manner.

Whilst his crew relined the brakes on the retrieve car, Steve White, full of confidence, won the 15m Class at 80.2km/h.

John Delafield, winner and sole finisher in the Standard Class, dolphined along the first leg to Shaftesbury. With 3000ft at the first turning point he saw his way blocked by the weather. He ridge-soared back to Salisbury and went north-west around the patch of bad air using cloud climbs. A 1kt climb near the second turning point went to 5000ft and onto the third leg. Lift encountered as he skirted thunderstorms, took him to 9000ft on the way home.

Wednesday, May 24. The ridge building over Ireland is pushing a cold front through. The sky has 8/8 strato cu and the wind is 360° and 25kt. After a rebriefing at 11.00hrs the day was scrubbed.

Day 4, Thursday, May 25 – All Classes

FORECAST: A rapid build up of high pressure behind the cold front flattened the unstable air. Blue thermals of 2/3kt by mid-afternoon under a 5000ft lid. Wind 030° and 25kts. Visibility good.

TASKS: Open and 15m Classes, a 242km△, Marlborough College, Silverstone.
Standard Class, a 214km△, Marlborough College, Calvert Brickworks.

Colder than anticipated air appeared giving 3/8cu 2/7kt thermals and a 4000ft base. This, together with a moderating wind, gave excellent racing with only two outlandings.

George Lee won the Open Class at 104.52km/h. He started at 13.45hrs with good thermals along the first leg. The second leg was difficult in the Thames Valley but improved north of Oxford where dolphinning was possible to Silverstone and back to Lasham.

Richard Aldous averaged 92km/h to win the 15m Class. He enjoyed the excellent visibility and took only two thermals to reach the first turning point. He had trouble at Grove but reached the second turning point and better conditions. It was then dolphin flying to Chalgrove, a 7kt climb to 4000ft and a final glide.

Although dissatisfied with his flight, John Delafield won the Standard Class at 80.35km/h. He said his experiences were similar to the others except he got low and grovelled more often.

Day 5, Friday, May 26 – All Classes

FORECAST: Blue day with 4000ft inversion, 2/3kt thermals. Hazy visibility and wind light to variable.

TASK: All Classes, a 223km quadrilateral, Cirencester, Enstone, Chalgrove.

A day of gaggling and some landing out.

Bernie Fitchett's 83.30km/h won the Open Class and took a 38pt lead in the Class overall. He thought about a restart, on a bad blue first leg, but did not. There was some cu on the second leg, but climbing was always difficult. He was still undecided about dumping his ballast when he found he was round and final gliding.

Andrew Davis, 15m Class, won the day at 17.74km/h and also took the lead in his Class. He worked hard in the blue on the first leg. The gaggles impeded climbing so he avoided them, found his own lift and climbed well on the rest of the flight.

A speed of 62.90km/h produced another John Delafield benefit in the Standard Class. He described it as "plodding from puddle to puddle".

Day 6, Saturday, May 27 – All Classes

FORECAST: The 1030mb high in the North Sea gave another blue day with a 3000ft inversion, weak thermals and hazy visibility. Winds 090°/10kt.

TASK: Open and 15m Classes, a 181km△, Devizes Castle, Didcot.
Standard Class, a 152km△, Pewsey, Didcot.

Near misses in the pre-start line gaggles caused so much adrenalin to flow that Chris Rollings said he was exhausted before he started.

Dead air in the Thames Valley proved to be a graveyard for those without the height to fly through or round it. There were

Dave Oliver, Tug Master. Photo: Rob Johnson.

Tim Newport-Peace, Spike Morris and Kathy Burton – Control. Photo: Rob Johnson.

Dave Roberts, 7th in Open Class. Photo: Ray Brown.

John Delafield, the Standard Class Champion. Photo: Ray Brown.

Wally Kahn, joint Director with Paul Thompson. Photo: Rob Johnson.

nine Open Class, ten 15m Class and four Standard Class finishers.

Bernie Fitchett was top groveller in the Open Class with 59.4km/h. He was troubled by the gaggles in what was one long scrape with some daunting low points.

Steve White won the 15m Class with 51.98km/h and faced the "ultimate Booker nightmare" of no lift from Didcot cooling towers. He found weak lift in his landing circuit and struggled up for a final glide.

Again John Delafield won the Standard Class with 41km/h. He started late using the Open Class as thermal markers. A good climb of 4kt at Goring gave him enough height for a final glide.

Day 7, Sunday, May 28 – Open and 15m Class

FORECAST: Similar high pressure system (1030mb) to yesterday. Blue with 4/6kt thermals to 4000ft. Wind 4/8kt variable. Visibility improving.

TASK: Open and 15m Classes, a 150km△, Marlborough College, Salisbury Race Course.
Standard Class was scrubbed on the grid.

Conditions indicated that the Standard Class would have to be launched before it was soarable in order to get around. The Class was therefore scrubbed. However, the incorrigible Tony Burton embarrassed the Directors by proving this to be untrue.

It was another day of gaggling and grovelling. A huge gaggle near Winchester elected John Williamson (JWS Calculators) by radio to decide the final glide height. It says much for his product that they all made it.

George Lee won the Open Class at 65.66km/h. He said that if you started to circle in sight of another gaggle, the sky suddenly filled with great white wings. He now understood how the fox felt.

Brian Spreckly, at 59.88km/h was the 15m Class winner. He started with the Open Class using George and Bernie to find the thermals. He arrived at Winchester low but in time to take part in the great migration.

Day 8, Monday, May 29 – Open and 15m Classes
Day 7, – Standard Class

FORECAST: High (1030mb) still over the North Sea. Blue with 2/3kt thermals up to 4000ft. Wind 045°/12kt. Visibility good.

TASK: Open and 15m Classes, a 153km△, Marlborough, Old Sarum.
Standard Class, a 124km△, Membury, Stockbridge.

Cooler air made the day better than anticipated with cu and 4/6kt thermals up to 5000ft. The short "final day" task was devoured by the late starters.

In the Open Class, Chris Garton hit the thermals just right. He described it as a pleasant afternoon's "local soaring" finished off by a short task. George Lee was less fortunate with his timing and met decaying lift around the course. It affected his final placing.

John Cardiff won the 15m Class in his ASW-20.

The Standard Class were plotting to send J**n D********d on holiday to Chateauroux or anywhere. However Leigh Hood's win at 70.2km/h gave him a reprieve until July.

As Ken Simpson's computer stopped crunching and twinkling the results were ready for a 7.30 pm prizegiving. Bernie Fitchett was a convincing Open Class Champion. Andrew Davis was 15m Class Champion and at the age of 21 the youngest ever in a national event. John Delafield was Standard Class Champion by a staggering margin.

The Brown Elephant bulged and groaned under the weight of even more Wally prizes and prizegiving commenced. Everyone got something and the Champions had to be assisted by their crews.

The British Team came away with two 1sts, a 2nd and a 3rd, which bodes well for Chateauroux.

For once the weather had been good to us and there had been plenty of flying and fun. No official protests were made and this is a record in itself.

After all the speculation, since its introduction, the performance of the 15m Class was established as mid-way between the Open Class and the Standard Class.

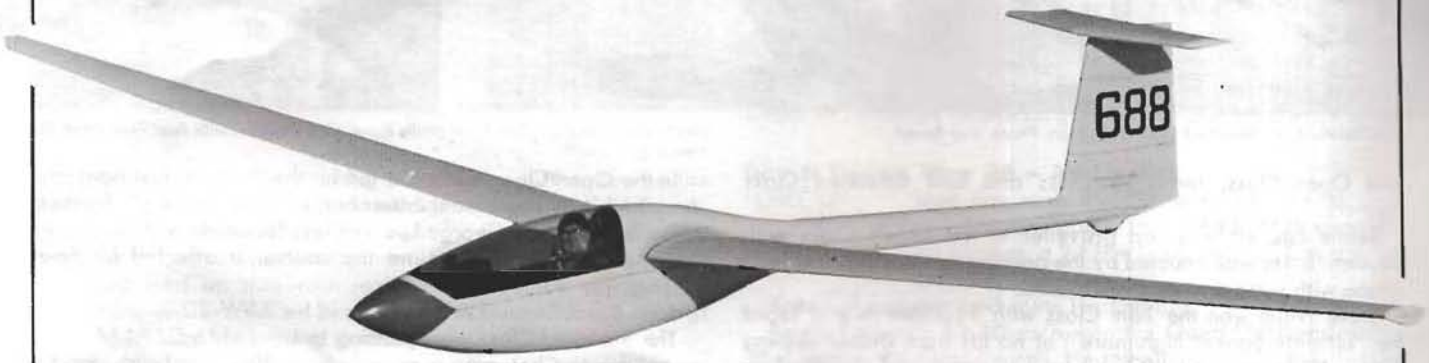
Footnote. Booker as a club has immense strength in competitions. It contains an exceptional group of pilots and they practise racing whenever they fly.

Bernard Fitchett, Open Class Champion, with his crew. Photo: Rob Johnson.

JOHN HULME

BOTTISHAM · CAMBRIDGE

Telephone Cambridge 811323



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FINAL RESULTS – OPEN CLASS

		Day 1 20.5 220.1Km ▲ Blakehill Farm a/f Marton in Marsh r/s		Day 2 22.5 148.08Km ▲ Farringdon Mari-borough College		Day 3 23.5 312.99Km ▲ Birdlip roundabout, Watford Gap s/s		Day 4 25.5 242.65Km ▲ Mari-borough College, Silverstone		Day 5 26.5 223.61Km ■ Cirencester, Enstone a/f Chalgrove a/f		Day 6 27.5 179.01Km ▲ Devizes Castle Didcot r/s		Day 7 28.5 156.65Km ▲ Mari-borough College Salisbury race course		Day 8 29.5 153.38Km ▲ Mari-borough College, Old Sarum a/f			
Pilot	Glider	Pts	Pos	Pts	Pos	Pts	Pos	Pts	Pos	Pts	Pos	Pts	Pos	Pts	Pos	Pts	Pos	Tot Pts	Final Pos
Fitchett, B.	ASW-17	1000	1	305	4	966	3	879	4	1000	1	1000	1	990	2	798	2	6938	1
Gartan, C.	Nimbus 2	826	5	357	2	1000	1	951	2	809	3	960	3	971	3	832	1	6706	2
Lee, D. G.	ASW-17	922	2	357	1	906	5	1000	1	927	2	899	7	1000	1	663	7	6674	3
Lysakowski, E. R.	Nimbus 2	897	3	63	9	806	9	747	13	907	3	976	2	950	4	736	4	6082	4
Pilcher, R. R.	Nimbus 2B	498	18	354	3	901	6	839	6	813	4	663	10	912	8	745	3	5725	5
Randle, M.	Kestrel 20	690	6	87	8	882	7	803	10	697	14	949	5	880	9	623	9	5611	6
Roberts, D. G.	Kestrel 19	601	12	36	12	734	12	758	11	790	6	946	6	926	5	567	14	5358	7
Kay, A.	Jantar 2	597	13	95	7	796	10	752	12	756	8	951	4	720	11	630	8	5297	8
Glossop, J. D. J.	Kestrel 19	649	9	0	=15	810	8	813	9	779	7	547	=11	920	7	715	5	5233	9
Camp, G. W. G.	Nimbus 2	578	=15	117	5	620	14	842	5	701	13	871	8	710	12	617	11	5056	10
Jones, R.	Nimbus 2	884	4	105	=6	986	2	880	3	632	16	496	14	175	18	669	6	4827	11
Brown, H. F.	Kestrel	689	7	105	=6	615	15	824	7	731	10	262	20	700	13	619	10	4545	12
Robertson, D. J.	Kestrel 19	614	10	0	=15	630	13	600	19	728	11	302	19	922	6	550	16	4346	13
Tull, V. F. G.	Kestrel 19	581	14	51	10	588	17	704	17	707	12	823	9	563	14	217	21	4334	14
Lilburn, D. W.	Kestrel 19	578	=15	0	=15	914	4	817	8	*695	15	443	17	132	19	596	13	4175	15
Foat, R. A.	Nimbus 2	670	8	0	=15	581	18	738	15	266	20	536	13	816	10	554	15	4161	16
Pozerskis, P.	ASW-17	613	11	9	14	747	11	742	15	750	9	547	=11	0	21	546	17	3954	17
Zealley, T. S.	Kestrel 19	483	20	48	11	550	19	728	16	537	18	492	15	259	16	604	12	3701	18
Herringshaw, G. H.	Kestrel 19	538	17	0	=15	497	20	479	21	214	21	445	16	224	17	500	18	2897	19
Warminger, A. H.	Kestrel 19	493	19	34	13	600	16	506	20	288	19	369	18	21	20	497	19	2808	20
Luck, V.	Jantar 1	464	21	0	=15	110	21	627	18	631	17	85	21	325	15	401	20	2643	21

FINAL RESULTS – 15m CLASS

		DAY 1 20.5 171.02Km ▲ Blakehill Farm a/f Didcot r/s		DAY 2 22.5 148.08Km ▲ Farringdon, Marlborough College		DAY 3 23.5 312.99Km ▲ Birdlip roundabout, Watford Gap s/s		DAY 4 25.5 242.65Km ▲ Marlboraugh College, Silverstone		DAY 5 26.5 223.61Km ■ Cirencester, Enstone a/f Chalgrove a/f		DAY 6 27.5 179.01Km ▲ Devizes Castle Didcot r/s		DAY 7 28.5 156.65Km ▲ Marlborough College, Salisbury race course		DAY 8 29.5 153.38Km ▲ A4/A361 roundabout, Old Sarum a/f			
Pilot	Glider	Pts	Pos	Pts	Pos	Pts	Pos	Pts	Pos	Pts	Pos	Pts	Pos	Pts	Pos	Pts	Pos	Tot Pts	Final Pos
Davis, A. J.	Nimbus 15	750	7	167	1	891	8	970	3	1000	1	998	2	863	8	876	5	6515	1
White, S. A.	ASW-20	861	2	15	16	1000	1	909	5	955	2	1000	1	920	4	774	9	6434	2
Spreckley, B. T.	Mosquito	888	1	24	=12	958	3	853	10	923	3	946	7	1000	1	743	11	6335	3
Wells, M. D.	Masquito	662	11	66	3	863	12	913	4	881	7	927	9	830	=11	898	2	6040	4
Aldous, R. E.	Nimbus 15	853	3	161	2	887	10	1000	1	862	12	455	13	923	3	889	3	6030	5
Rollings, C. C.	PIK 20D	837	4	59	5	865	11	976	2	822	14	950	6	650	15	859	6	6018	6
Cardiff, J. D.	ASW-20	664	10	57	=6	935	4	891	6	767	18	484	12	913	5	928	1	5639	7
Watt, D. S.	Mosquito	782	5	14	17	978	2	877	7	913	4	960	5	952	2	DNF		5476	8
Stone, A. J.	Nimbus	614	13	59	4	918	5	708	15	854	13	465	=14	851	9	703	12	5172	9
Hanfrey, A. W.	Mosquito	457	18	40	9	904	7	666	18	883	6	461	16	850	10	827	7	5088	10
Gough, A. W.	ASW-20	766	6	57	=6	379	16	759	13	801	16	824	10	874	6	625	17	4985	11
Purdie, P. G. H.	Nimbus 15	515	16	46	8	810	14	138	20	894	5	932	8	827	13	695	13	4857	12
Watson, A. J.	Mosquito	505	17	16	=14	889	9	856	9	800	17	253	19	830	=11	678	15	4827	13
Lusted, E. F.	DG-200	390	19	0	=19	87	20	778	12	864	11	967	4	436	16	878	4	4400	14
Williamson, J. S.	Mosquito	743	8	31	10	80	21	874	8	809	15	147	21	864	7	821	8	4369	15
Campbell, D. R.	ASW-20	618	12	24	=12	125	19	804	11	880	=8	977	3	183	20	693	14	4304	16
Redman, S. J.	LS-3	690	9	29	11	907	6	120	21	880	=8	519	11	202	18	760	10	4107	17
Cole, R. A.	PIK 20D	386	20	0	=19	595	15	674	17	718	19	373	17	825	14	521	18	4092	18
Sandford, R. A.	PIK 20E	595	15	16	=14	812	13	746	14	702	20	312	20	429	17	466	19	4076	19
Allen, P. R.	PIK 20D	609	14	0	=19	356	17	707	16	867	10	465	=14	32	21	627	16	3663	20
Hoy, S. L.	IS-29D	353	21	5	18	178	18	508*	19	240	21	321	18	188	19	298	20	2095	21

FINAL RESULTS – STANDARD CLASS

		DAY 1 20.5 171.02Km ▲ Blakehill Farm a/f Didcot r/s		DAY 2 21.5 166.48Km Shaftesbury roundabout ⟷		DAY 3 23.5 246.86Km ▲ Shaftesbury roundabout, Tetbury		DAY 4 25.5 213.01Km ▲ Marlborough College, Calvert cement works		DAY 5 26.5 223.61Km ■ Cirencester, Enstone a/f Chalgrove a/f		DAY 6 27.5 153.03Km ▲ Pewsey r/s Didcot r/s		DAY 7 29.5 123.63Km ▲ Membury s/s, Stockbridge			
Pilot	Glider	Pts	Pos	Pts	Pos	Pts	Pos	Pts	Pos	Pts	Pos	Pts	Pos	Pts	Pos	Tot Pts	Final Pos
Delafield, J.	ASW-19	902	2	278	1	1000	1	1000	1	1000	1	1000	1	640	=11	5820	1
Hood, L. S.	Cirrus 75	1000	1	134	6	433	6	965	2	948	2	990	2	881	1	5356	2
Piggott, A. D.	Astir	691	15	122	7	373	10	792	5	859	7	979	4	801	3	4617	3
Rowland, C. D.	Std Cirrus	788	9	6	9	477	2	770	7	921	3	980	3	670	8	4612	4
Sheard, E. G.	Std Cirrus	819	6	0	=11	416	8	739	9	905	4	771	=5	815	2	4465	5
Wheeler, J. H.	Std Cirrus	747	10	20	8	388	11	762	8	849	8	584	10	750	4	4100	6
Hogg, A. J.	Std Cirrus	724	14	1	10	458	3	605	14	827	9	771	=5	678	6	4064	7
Hackett, N. G. G.	Std Jantar	737	12	0	=11	455	4	549	16	904	5	568	12	629	13	3842	8
Taylor, J. R.	Std Cirrus	809	7	201	5	237	15	832	3	768	11	*270	16	675	7	3792	9
Phillips, D. M.	*+Cirrus	792	8	225	2	431	7	701	11	899	6	549	13	DNF		3597	10
Crawshaw, G. H.	DG-100	741	11	0	=11	437	5	631	13	358	16	771	=5	640	=11	3578	11
Burton, A. J.	Std Libelle	728	13	0	=11	190	=17	830	4	808	10	295	15	716	5	3567	12
Blackmore, R.	Std Jantar	865	5	0	=11	309	13	782	6	359	15	601	8	647	10	3563	13
Gaunt, T. R. F.	Std Cirrus	868	4	214	3	190	=17	647	12	388	12	575	11	661	9	3543	14
Jeffries, J. R.	ASW-19	897	3	0	=11	405	9	715	10	361	14	587	9	557	14	3522	15
MacLean, A. S.	Std Cirrus	517	17	0	=11	276	14	572	15	380	13	262	=17	512	15	2510	16
Ellis, C. A. P.	*Dart 17R	561	16	0	=11	315	12	508	17	354	17	262	=17	*342	16	2342	17
Forrest, R. G.	Skylark 3F	503	18	205	4	233	16	465	18	239	18	378	14	0	17	2023	18

* = Photographic penalty; + = declared handicap 102; *before glider = under rule 2.3B; DNF = did not fly.

BGA & general news

TUG FATALITIES

There were two accidents involving tugs within one week, both of them fatal and both being investigated by AIB.

The first was to an Auster J1/N flown by George Graham, the Enstone Eagles' tug master, with Peter Stevenson as passenger on May 30. The glider on tow was seen to be too high and the rope slack immediately prior to the crash. The aircraft caught fire on impact.

The second accident was to a BA 4 (Andreasson) at the Southdown GC's site at Parham on June 3 and was due to (preliminary findings) engine failure; the pilot was David Knight.

A third accident in the same period involved a Chipmunk at Dunstable; this was due to the glider getting out of position at 50ft or so. Timely action on the part of the tug pilot in releasing the glider and a quick recovery avoided more serious consequences

W. G. SCULL,
Senior National Coach

PILOT'S LUCKY ESCAPE

On June 16 a Skylark 4 belonging to the Imperial College GC broke up in cloud 5nm west of Lasham at the start of a Silver C distance attempt. The pilot, Adam Kingdon, lost control after climbing to 7000ft; when the glider broke up he fell clear of the wreckage and deployed his parachute when clear of cloud. The only injuries were minor cuts and bruises.

The pilot's attempts to sort things out did not include the one thing that could have saved the glider – that is opening the airbrakes – a basic consideration for anyone cloud flying.

W. G. SCULL

C of A FOR MINI-NIMBUS

The BGA Technical Committee have agreed to certificate the Mini-Nimbus HS 7 once modified. After the machine had been fitted with a geared anti-balance tab to the all-moving tail, tests were carried out by Derek Piggott and Frank Irving who then wrote a flight test report.

They reached the conclusion that when fitted with the anti-balance tab, the stick-force per *g* of the Mini-Nimbus in tight turns with the CG 355mm aft of datum is zero at all flap settings. The stick-free phugoid displays unusual characteristics. The static stability, stick-fixed and stick-free is close to zero.

The glider doesn't comply with OSTIV Airworthiness requirements but they felt it could be accepted for certification by the BGA if deemed to have "safe flying characteristics". Their view was that the characteristics were sufficiently safe in skilled hands and recommended a C of A be issued when fitted with the geared anti-balance tab and subject to the insertion of a warning in the Flight Manual as follows: Caution. This aircraft has extremely low stick forces. Do not over-control. Avoid rapid or large stick movements at high speeds. In the event of losing control in cloud or poor visibility, open the airbrakes fully to reduce the risk of overstressing and possible airframe damage during the recovery.

SGU'S SUMMER WAVE

Wave at Portmoak during the weekend of June 10-11 resulted in 25 pilots making what is thought to be a record claim of 33 gliding certificates with six Diamond heights, three Diamond goals, 14 Gold heights, three Gold distances, five Silver distances, two Silver heights and one duration. Most of the flights from the Scottish Gliding Union's site were from a winch launch (the tug being temporarily out of action) and over the weekend, although the strong north-westerly airstream was established two days earlier.

There was a new Scottish record with three pilots completing Gold distances and three Gold C pilots also covering 300km. Prior to this weekend it is believed that only two pilots had claimed their Gold distances from flights in Scotland.

The altitude record for the weekend went to Tom Docherty (Kestrel 19) who reached 26 000ft. He had to break off his climb while still at 1-2kt when his oxygen ran out. Others had their climbs curtailed through flying gliders without oxygen, including Scotland's newest and only third woman gliding instructor, Joy French, who took the K-6CR to 12 000ft.

A NEW REGIONALS

Buckminster GC hosted the first East Midlands Regionals at Saltby from June 3-11 with an entry of 35. Brian Spreckley was the Director and the Buckminster's K-13 was the outright winner of the Sports Class, being flown *hors concours* by Dave Watt, Chris Rollings and Alistair Kay. Mike Carlton won the Open Class. Full results of this and the other Regionals will be in the next issue. There were three contest days at Saltby for the Open and four for the Sports Class.

TUG OPERATING TECHNIQUE

For many years we have been concerned with pilot technique in avoiding sudden cooling to engines during descent because poor handling can cause cracks in cylinder heads at the spark plug and valve ports and also warp exhaust valves. It is impossible in a small space to describe specific techniques for the various engines being used in towing. However, there are a few basics that apply to all engines:

1. Eliminate any technique in letdown using a high airspeed with little power.
2. Use enough power during descent to keep some heat in the cylinders.
3. Limit airspeed to high cruise or not more than 1000fpm during descent.
4. Lean the mixture during descent.
5. "Dirty" the airplane (if it has flaps) so more power can be used.

The descent for the next pick-up will take longer, but fuel is cheaper than cylinders. The battle cry to tow pilots is simply – **avoid sudden cooling!**

J. A. DIBLIN
Williamsport, Pennsylvania

NEW YOUTH GLIDING CLUB

An inaugural meeting of the Cheshire Youth Gliding Club was held at Chester on May 17 and the objects are primarily to provide air experience and instructional flying for young people in the area. The club proposes initially to operate a high-performance two-seater motor glider based at Poulton airfield near Chester. For further details contact the Chairman, Rodney Witter, on Chester 36353.

WORLD CHAMPIONSHIPS' FUND 1978

The BGA acknowledges donations to the World Championships' Fund from the following:

Bicester GC
Cambridge University GC
H. Chappell
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Fulmar GC
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T. C. Harrington
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Portsmouth Naval GC
Rotary Club of Fleet
S. Spink
Stratford on Avon GC
Swindon GC
University of Glasgow & Strathclyde GC
Woodspring GC
Yorkshire GC

1979 EUROPEAN CLUB CLASS CHAMPIONSHIPS

The first European Club Class Championships will be at Orebro, Sweden, from June 13-21, 1979. It will be run to normal CIVV contest rules and is open to gliders which fulfil the following requirements:

Standard Class rules (January 1978) in respect of wings and airbrakes
Fixed undercarriage
No waterballast facility
One of at least ten manufactured in series production

Up to four gliders may be entered by each country and British entrants must be approved by the BGA. Pilots interested in representing Britain in this contest should apply to the BGA Competitions Committee not later than September 30, 1978. There is an entry fee of 500 Kroner and a charge of 25 Kroner per launch, but every effort will be made to obtain financial support for the British team.

GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	Name	Club	1978
87	T. E. MacFadyan	Cotswold	1.6

DIAMOND GOAL

No.	Name	Club	1978
2/868	J. T. Potter	Clevelands	15.4
2/869	M. C. S. Aiken	Cornish	13.12
2/870	T. A. Johnson	Heron	15.4
2/871	J. W. G. Meyer	Surrey & Hants	14.3

DIAMOND HEIGHT

No.	Name	Club	1978
3/339	J. G. Harrison	Eagle	16.2
3/340	M. S. Armstrong	Derby & Lancs	1.6
3/341	T. E. MacFadyan	Cotswold	1.6
3/342	N. Meiklejohn	SGU	10.6
3/343	S. Knox	SGU	11.6
3/344	P. S. Collins	Cranfield	31.5

GOLD C COMPLETE

No.	Name	Club	1978
650	M. O. Breen	Thames Valley	30.3
651	J. E. Graves	Bath & Wilts	30.3
652	W. F. Maidment	Surrey & Hants	30.3
653	P. N. Harborne	Airways	26.3
654	V. Luck	Airways	26.3
655	Pamela Roberts	Thames Valley	20.3
656	J. T. Potter	Clevelands	15.4
657	J. W. G. Meyer	Surrey & Hants	14.3
658	P. H. Steiner	Bicester	30.3
659	N. G. Hackett	Coventry	2.6
660	H. J. Purser	Cranfield	31.5
661	P. S. Collins	Cranfield	31.5

GOLD C HEIGHT

Name	Club	1978
M. O. Breen	Thames Valley	30.3
J. E. Graves	Bath & Wilts	30.3
W. F. Maidment	Surrey & Hants	30.3
P. N. Harborne	Airways	26.3
V. Luck	Airways	26.3
J. G. Harrison	Eagle	16.2
J. C. Marrice	Fulmar	3.12
Pamela Roberts	Thames Valley	20.3
P. Gibson	Cranwell	26.3
M. Ward	Lincolnshire	8.3
A. Roberts	Derby & Lancs	26.3
J. T. Potter	Clevelands	15.4
J. L. Richardson	Wrekin	20.3
S. E. Burnell	Wrekin	26.3
J. Torrant	Norfolk	22.4
R. D. Payne	Bath & Wilts	31.5
P. H. Steiner	Bicester	30.3
B. R. Pearson	Deeside	11.5
A. J. Cooper	SGU	10.6
T. W. Carpenter	Clevelands	26.3
G. C. Metcalfe	Surrey & Hants	31.5
Jay French	SGU	11.6
Beverley Cook	Wyvern	26.3
N. G. Hackett	Coventry	2.6
H. J. Purser	Cranfield	31.5
J. G. Henderson	SGU	10.6
L. R. Henderson	SGU	11.6
P. S. Collins	Cranfield	31.5

GOLD C DISTANCE

Name	Club	1978
T. A. Johnson	Heron	15.4
J. W. G. Meyer	Surrey & Hants	14.3

SILVER C

No.	Name	Club	1978
4983	D. J. Walker	Surrey & Hants	11.3
4984	P. S. Oglesby	Airways	30.3
4985	B. M. Cole-Hamilton	SGU	24.3
4986	M. Foreman	Highland	24.3
4987	A. Rohrer	Narrawmine	8.2
4988	W. J. Woodmason	Bristol & Glos	30.3
4989	G. Harris	Ouse	30.3
4990	A. P. Smith	Fulmar	26.3
4991	T. W. J. Stoker	Ouse	30.3
4992	A. J. Southard	London	23.3
4993	R. Palmer	Bristol & Glos	15.4
4994	D. Plumb	Surrey & Hants	14.4
4995	R. T. Metcalf	Imperial College	15.4
4996	M. J. Knight	Highland	26.3
4997	H. A. Piper	West Wales	15.4
4998	S. Catchpole	Blackpool & Fylde	10.4
4999	R. Jones	Culdrose	15.4
5000	Joan Wilson	Bicester	15.4
5001	S. K. Houlding	Bicester	15.4
5002	A. Crowden	Airways	15.4
5003	J. R. Willsher	Pegasus	11.4
5004	C. Miller	Devon & Somerset	15.4
5005	F. Seaton	Eagle	16.4
5006	L. Crane	Two Rivers	23.4
5007	Linda Ball	Four Counties	15.4
5008	D. C. T. Collins	Two Rivers	23.4
5009	S. Barber	Devon & Somerset	15.4
5010	O. H. Constable	Phoenix	16.4
5011	T. W. R. Langford	Two Rivers	4.5
5012	H. Habernicht	Two Rivers	22.4
5013	Angela Vietch	Highland	28.4
5014	C. B. Allen	Surrey & Hants	23.4
5015	P. G. Franklands	Derby & Lancs	23.5
5016	R. M. Milne	SGU	17.5
5017	Daphne Knowles	RAE	20.5
5018	J. B. G. King	Southdown	20.5
5019	F. R. Stevens	Coventry	20.5
5020	A. Thompson	Eagle	14.5
5021	A. Grievor	Kestrel	29.5
5022	C. M. Cruse	London	29.5
5023	B. N. O'Brien	Bristol & Glos	29.5
5024	M. J. McBride	Oxford	15.4
5025	C. J. Terry	Four Counties	29.5
5026	D. J. Fearon	Four Counties	28.5
5027	A. Elliat	Fenland	29.5
5028	J. Sentence	South Yorks	29.5
5029	P. J. Barclay	Surrey & Hants	20.5
5030	I. Robertson	SGU	29.5
5031	A. Critchley	Coventry	31.5
5032	M. A. Waundby	Wolds	2.6
5033	C. G. Hill	Avro	31.5
5034	P. S. S. Wheat	Doncaster	29.5
5035	G. D. W. Kershaw	Thames Valley	25.5
5036	J. A. Kitchen	Essex & Suffolk	30.5
5037	M. Strathern	Bristol & Glos	2.6
5038	Lilyane Weston	London	3.6
5039	V. H. Phillips	Doncaster	1.6
5040	J. P. Hobbs	Swindon	3.6
5041	K. Barnes	Humber	3.6
5042	J. Barrett	London	23.5
5043	P. A. Baker	Cambridge Univ	26.5
5044	J. F. Stuart	Midland	10.6
5045	P. J. Copland	SGU	8.6
5046	S. Grublys	South Yorks	29.5
5047	C. B. Inwood	Airways	25.5
5048	R. F. Buckett	Dorset	29.5
5049	J. W. Lang	SGU	11.6
5050	J. R. Woodley	SGU	11.6
5051	W. G. Upton	Thames Valley	16.6
5052	J. G. Henderson	SGU	10.6
5053	K. Martin	Hereford	29.5
5054	P. J. Hunt	South Wales	3.6
5055	A. J. Eddie	Pegasus	28.5

Philip Wills
MEMORIAL FUND

The BGA has established an appeal fund to honour the late Philip Wills.

The fund will be used to promote sporting and recreational flying in gliders. It is the primary intention of the Trustees to use the fund to assist BGA member clubs to acquire sites and buildings and to provide short term financial help. These objectives were very close to Philip's heart and were his intentions when he set up the Wills Reserve Fund.

The Memorial Fund has the full approval of Philip's family and the Trustees of the British Light Aviation and Gliding Foundation have already agreed to donate £1000.

It is hoped that contributions from the British gliding movement will exceed £10000 which is only £1.00 from each pilot.

Contributions should be sent to:

Christopher R. Simpson, Chairman of the Philip Wills Memorial Appeal

c/o the BGA Office. *(Cheques payable to Philip Wills Memorial Fund.)*

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Compiling the Nationals entry list for 1979

An explanation by GORDON CAMP, Chairman BGA Competitions Committee

The use of a Nationals Entry List to decide priority of entry to National-level competitions in Britain has been the practice since 1962. Originally the list was based on pilots' best six daily results, then in 1969 a new concept was introduced of a Nationals Retention List and a Regionals Promotion List based on a pilot's overall performance in recent competitions, the two lists being combined into a single published entry list.

This system, which was last described in detail in S&G, December 1975, p272, has remained fundamentally unchanged for nearly ten years. However, there have been increasing misgivings about the way the Retention and Promotion Lists are arbitrarily dovetailed together and it has always been debatable whether the system produces the right degree of interchange between National and Regional contests; some would argue that too few pilots qualify for the Nationals from the Regionals, whilst others might claim that too many are promoted. What is not disputed is that the system does not directly or predictably regulate the promotion flow at all.

To permit a controlled interchange of pilots between Nationals and Regionals and to avoid any anomalies produced by combining the Retention and Promotion Lists, the BGA Competitions Committee considered it would be better to keep the Nationals Retention List and Regionals Promotion List separate and to apportion places in National-level competitions to pilots from each list.

Some pilots may of course appear on both lists and, as in the past, it is still conceivable for a pilot who obtains a comparatively poor result in a National-level contest to re-secure his place for next year by flying well in a Regional competition. It is not the intention to prevent this situation as a straight fight between a Nationals pilot and promotion contenders is a fair one, and indeed helps to ensure that the interchange between Nationals and Regionals is at the right standard.

Nevertheless it is felt that some compensation should be made for the presence in Regionals of the very top National-level pilots who can significantly devalue the otherwise good performance of promising Regionals pilots.

To encompass all the above considerations new rules developed by Tony Burton have been approved in turn by the BGA Competitions Committee and Executive Committee. Copies of the rules in full detail are available from the BGA but the main points are summarised below. Incidentally, the announcement on this subject in the June issue, p130, suffered an omission which made nonsense of it and should be ignored.

New Nationals Entry List Rules.

1. General.

At the conclusion of a year's competitions two lists are prepared: a Priority List (comprising pilots flying in UK National-level Championships, World Championships and certain foreign competitions), and a Regionals Promotion List. Where entries for the following year's National-level Championships are over-subscribed, a fixed proportion of places will be allocated to pilots from the Promotion List, the remainder being allocated to pilots from the Priority List. The fixed proportion is $N^2/180$ (where N is the total number of British entries admissible), but will not be less than two or exceed one third. For example, a small select National-level competition of 30 pilots would have five pilots from the Promotion List, a typical 50-glider Nationals would have 14 and a larger 60-glider Championships would have 20.

Priority List places are filled first and any pilots thereby accepted who also appear in the Promotion List are disregarded when allocating Promotion places.

2. Priority List Compilation.

a) First of all, where the final results of the year's National-level Championships are unhandicapped, a simplified measure of handicapping is applied by multiplying pilots' total scores by the still-air speed index of the gliders. For each Class of these Championships, all pilots (including foreign competitors) are then listed in descending order of their final position according to the "handicapped" scores.

b) Next, each pilot is given a performance index calculated by dividing the number of competitors in the Class by the pilot's position in that Class. For example, 1st in a Class of 20 would be 20.0, 4th in the Class would be 5.0 whilst 5th out of a class of 25 would also be 5.0.

c) Performance indices are similarly calculated for British pilots flying in foreign competitions approved as equivalent National-level status (currently Hahnweide, Angers and Vinon), and for British pilots flying in World Championships (if any that year). No handicapping is applied to these results.

d) A list is then compiled, commencing with the British team pilots in order of their World Championships' performance index, then all the other pilots are added in descending order of their performance index from the various competitions above. Any ties are resolved by a procedure described in the full rules.

e) Foreign competitors are then deleted, plus all but the highest position of any pilots who appear more than once. Finally the previous year's Priority List is merged alternately from positions 21 onwards. Again, where pilots appear twice, only their highest position is retained. The resulting list is the current *Priority List.*

3. Promotion List Compilation

a) From the final handicapped results of each Class of the year's Regionals, pilots are listed in descending order of their final positions. Any pilots who are in the top 20 of the Priority List compiled as above are annotated accordingly.

b) Each pilot is given a performance index calculated by dividing the number of competitors in a Class by the pilot's position in that Class. However, whilst the top 20 pilots are included in their own right, they are effectively discounted for any pilots they beat, by improving a pilot's position in the Class by the number of top 20 pilots that beat him and reducing the Class size by this number of top 20 pilots.

For example, if the top places in a 26 glider Regionals Class are 1st – pilot A, 2nd – pilot in top 20, 3rd – pilot B, 4th – pilot C, the performance indices for pilots A, B and C are respectively $26 \div 1 = 26.0$, $25 \div 2 = 12.5$, $25 \div 3 = 8.33$, whilst the top 20 pilot himself is given $26 \div 2 = 13.0$.

c) Pilots are listed in descending order of performance index. Those appearing more than once retain only their highest position.

d) Finally the previous year's Regionals Promotion List is merged alternately from position 21 onwards, with duplicated names retaining only their highest position. The resulting list is the current *Regionals Promotion List.*

4. Publication.

The Priority and Regionals Promotion Lists will appear in the December issue of S&G, but to conserve space only the first 100 and 80 names respectively will be published.

THE ALEXANDER SCHLEICHER

Current production range of gliders has been consolidated to keep pace with ever increasing demand for their 15 metre class gliders and training two seaters.

The Schleicher stable now includes:-

ASW-19

A high performance 15 metre GRP sailplane built to CIVV Standard Class (no flap) specification. Accurate independent performance testing confirm a genuine 1:38 max glide ratio with an overall performance matching that of many 15 metre flapped racing class machines. (See Johnson, Soaring Magazine – August 77 and S. & G. December 77). Docile, light, crisp handling with good glide path control makes the ASW-19 suitable for pilots from early solo to 'Nationals' standard.

ASW-20

If you want the ultimate in 15 metre speed flying then the ASW-20 is for you. With a max glide ratio of 1:43 and outstandingly high rate of roll, it is more than a match for many Open Class gliders. With an approach path steeper than 1:4 at 50 knots, pilot confidence in field landings is assured.

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ASW-19	1st, Standard Class
ASW-20	2nd, 15 Metre Class

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INTER-SERVICE REGIONALS – May 1-14

JOHN WELSH, Championship Director

With the closure of so many RAF airfields it is not easy to find one which can accept a gliding competition. For 1978 the Army was asked to provide a site and by kind permission of the CO of the 1st Battalion Royal Irish Rangers, the airfield at Imjin Barracks, the new name for Little Rissington airfield, previously the home of the RAF Central Flying School, was made available.

John Williamson, task setter for the first week, had BGA permission to use a modified version of the task proposed by Fred Weinholtz (see S&G, April 1978, p57) on one contest day in four for each Class. Under the BGA modified system, the pilot can select his turning points after take-off, a development of the Cats' Cradle task which is more challenging and which I believe will become more popular. Points are awarded for distance with a speed bonus when a closed circuit task is completed. This calls for good pilot judgment to assess the weather, to decide what should be possible and to maximise his score by choosing the turning points he will use. John set the task twice, once as "Fred's Maxiroce" and once as "Fred's Expandable Triangle", both of which titles explain the aim. These tasks certainly shield the task setter from accusations of having over-set or under-set a day, but it demands increased effort on photographic interpretation and scoring.

The site was excellent; the weather appalling. On May 3, the first competition day, the weather cleared for a time and it was a contest day for both the Sports and Open Classes. On May 4 the Club and Open Classes were launched but most pilots failed to reach Y. May 5 and 6 were wet and foggy but on May 7 a slow clearance gave hope for a task and the Sports Class was launched at 1500hrs. Only one glider passed Y. The rain and low stratus returned on May 8.

On May 9 the sun shone but strong north-easterly winds and relatively weak thermals precluded on into wind leg for any Class. The Sports Class were sent on a 110km out-and-return to Droitwich, followed by the Open. Three of the Sports Class got to within 20km of home. The Open Class did better with 15 aircraft home with the winning speed of 49km/h. The Club Class, with a late launch, viewed their 91km race to Shobdon with trepidation. All credit is due to Andy Bould (K-8) who completed at 52km/h.

A ridge of high pressure covered the UK on May 10 and the forecast was good with lighter winds, sunshine and moderate to strong thermals. The arrival of unexpected amounts of cirrus had the Sports Class, launched first on a 308km triangle, in trouble and tasks for the remaining Classes were reduced. Only the Sports and Club Classes got sufficient gliders past Y to make it a contest day, the last one of the Regionals.

FINAL RESULTS (Handicapped)

Open Class

No.	Pilot	Sailplane H'cap	Day 1.3.5 110km ⇄	2.9.5 110km ⇄	Total pts
1	Jones, R.	118 Nimbus 2	140	875	1015
2	Hale, R. J.	98 Std Libelle	96	760	856
3	Cook, P. G.	100 DG-100	86	738	824
4	Lombard, W.	100 Cirrus	42	780	822
5	Lidbury, P. G.	100 Twin Astir	69	749	818
6	Jury, A. J.	100 Astir	53	746	799
7	Ritchie, A.	100 Cirrus	0	793	793
8	Oulds, T.	100 Astir	53	729	782
9	Throssell, M. G.	100 SHK-1	138	626	764
10	Webb, M.	100 Cirrus	0	762	762
11	Wynch, J. W.	106 PIK 20D	87	659	746
12	Boydon, M.	100 Cirrus	12	728	740
13	Taylor, N.	100 Astir	0	737	737
14	Roberts, B.	100 Astir	134	595	729
15	Taylor, J.	100 Cirrus	0	714	714
16	Horst, J.	98 Std Libelle	16	510	526
17	Wilson, F.	100 Astir	0	352	352
18	Feakes, R.	108 Mini-Nimbus	27	320	347
19	Norris, N.	100 Astir	0	314	314
20	Benoist, J. D.	100 Astir	108	168	276
21	Newall, R.	100 Cirrus	42	212	250
22	Wright, E.	100 Cirrus	42	0	42
23	Clarke, A.	100 Astir	6	0	6
=24	Bolton, P.	100 Astir	0	0	0
=24	Armstrong, T.	96 Cobra	DNF	0	0
=24	Hancock, A.	108 Mosquito	DNF	0	0
=24	Dean, M.	100 Astir	0	0	0

Club Class

No.	Pilot	Sailplane H'cap	Day 1.9.5 91km race	Day 2.10.5 72km ⇄	Total pts
1	Bould, A.	78 K-8	100	100	200
2	Beringer, J.	70 Oly 2B	44	93	137
3	Burn, J.	78 K-8	0	89	89
4	Earnden, K.	78 K-8	47	0	47
5	Whyte, D.	78 K-8	1	36	37
6	Bourn, A.	80 L-Spatz	14	19	33
7	Lee, M.	78 K-8	5	0	5
8	Sharpe, G.	78 K-8	0	3	3
=9	Saunders, J.	78 K-8	0	0	0
=9	Heaton, N.	78 K-8	0	0	0

Sports Class

No.	Pilot	Sailplane H'cap	Day 1.3.5 ▲ via alt. TP	2.9.5 110km ⇄	3.10.5 308km ▲	Total pts
1	Odell, J.	90 K-6E	12	265	26	303
2	Pobjoy, I.	90 K-6E	33	259	0	292
3	Easton, S.	86 K-18	1	269	21	291
4	Hymers, S.	82 Oly 460	26	182	15	223
5	Simmonds, M.	86 K-18	3	97	0	100
6	Millson, A.	86 K-18	19	DNF	33	52
7	Lawrey, M.	86 Oly 419	15	DNF	21	36
=8	North-Graves, A.	86 K-18	25	0	0	25
=8	Fox, J. A.	86 K-18	11	0	14	25
=8	Gibson, P.	90 K-6E	12	0	13	25
11	Matthews, J.	86 K-18	10	0	5	15
12	Steiner, P.	86 Skylark 4	13	0	0	13
13	Falla, S.	84 K-6CR	4	0	2	6
14	Kosak, J.	82 Pirat	0	0	1	1
15	Jennings, S.	86 K-18	0	0	0	0

DNF = did not fly

OVERSEAS NEWS

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

TRANS-EUROPEAN RALLY

The first Trans-European long distance rally started from Angers, France, on June 4 and ended on June 23, with two West German pilots, Dieter Memmert and Manfred Dick completing the 2800km course to share first place. They both flew Nimbus 2s.

The British pilot William Malpas (Std Cirrus) won the Standard Class and came third overall by covering 2280km. He has promised us a full report for the next issue and first gave news of this rally in S&G April, p67.

GERMAN RECORDS

Klaus Holighaus (Nimbus 2) has laid claim to the largest triangle yet flown in middle Europe. On June 3 he completed a 915km triangle at around 100km/h starting from Hahnweide. Conditions encountered ranged from blue thermals, cumulus with base at 10 000ft to thundery over-development. On June 4 he declared a 830km triangle but had to land 3km before the finish owing to a heavy thunderstorm.

Hanna Reitsch flew, on June 3, a 715km goal-and-return from Timmersdorf, Austria in her Std Cirrus and broke the World ladies' record held with 672.2km by Adela Dankowska of Poland. (Subject to homologation).

DUTCH NATIONALS

No tasks were flown during the first week of the Dutch Nationals held at Terlet from May 20 to June 2. The second week, however, came up trumps and resulted in seven contest days for the 26 pilots in the 15m/Standard Class (including two Open Class gliders) and seven pilots in the Club Class.

The tasks flown were five triangles of 182, 305, 108.5, 300 and 408km and two quadrilaterals of 349 and 244.5km. The largest task in the Club Class was a 300km triangle on May 31.

Dutch team pilots Cees Musters (LS-3) and Baer Selen (Std Cirrus) took first and second place while Daan Paré (Mini-Nimbus) came eighth. The Club Class was won by Paul Schok.

FIFTY YEARS AGO

On August 6, 1928, the first cross-country soaring flight to be made by using lift under cumulus clouds was performed by Robert Kronfeld in his sailplane Rhöngeist, designed by Alexander Lippisch and the prototype of the Professor which later went into series production. Kronfeld soared for over an hour above the west slope of the Wasserkuppe in Germany, wandering about under each large cumulus as it passed over but performing no tight or continuous circles. Then he went away down wind under one, 4½ miles to the Himmeldankberg, from which he then came back against the wind using a street of clouds and arrived back at 1780ft above the Wasserkuppe summit. Then coming down to land, he was greeted with loud cheers from a large crowd, but I did not know why until I read about it later in the magazine *Flugsport*.

During the preliminary hour over the Wasserkuppe, Kronfeld received repeated signs from his crew who were perched on a promontory called Pferdskopf, giving him the wind speed and direction.

A.E.S.

SMIRNOFF SAILPLANE DERBY

Karl Striedieck (ASW-20), the US 15m Class Champion and holder of the world goal-and-return record (1634.7km), won this year's Smirnoff Sailplane Derby with 6771pts. Wally Scott (ASW-20), who has won the Derby twice, came second with 6003pts and Inga Renner (Mosquito), the World Standard Class Champion and winner last year, was third with 5547pts.

The competition started on May 2 in Los Angeles and should have finished on May 18 with the gliders reaching Washington after a series of daily flights averaging an estimated 250 miles, but for the second time in the Derby's seven year history bad weather intervened. Storms drenched the Mid-West and East for several days and the gliders were grounded at Latrobe, Pennsylvania, after covering 2000 of the 2815 mile route.

APRIL FOOL?

German aviation magazines sometimes describe in their April issue a fantastic invention which is later admitted to have been an April Fool hoax. But a description in the April issue of *Der Flieger* of some marvellous new "thermal spectacles" has not yet been so acknowledged.

The story is of an 83-year-old Munich watchmaker who has invented a pair of spectacles which, it is claimed, make thermals visible by showing the presence of atmospheric turbulence, the air in thermals being turbulent while the flow in the surrounding descending air is "laminar". Each eye looks through a *pair* of lenses, one in front of the other, with a small separation between them, made of different kinds of glass. Suspicious features are: that the inventor took years to discover the best kinds of glass and their optimum separation, that they were put on the market on April 1 for DM 39.50 by an undisclosed firm, that special decorative types are made for ladies, including lorgnettes, and an extravagantly verbose description of what a thermal looks like through these spectacles.

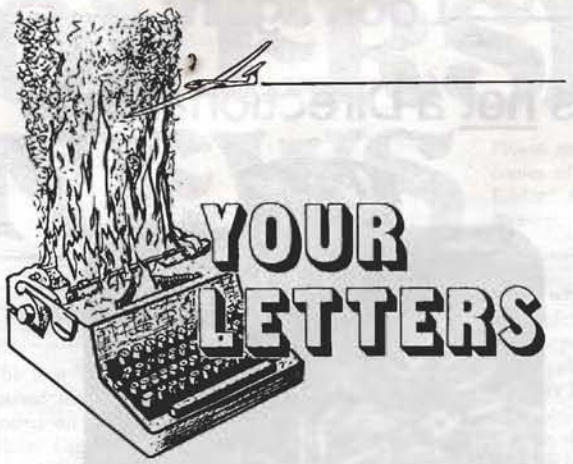
GLIDING IN IRAN

Alf Blacklin of the Cotswold Club who is working in Iran has visited the Teheran gliding club mentioned in the February 1977 issue, p33. It operates seven days a week on a military airfield and is open to civilian members with an annual subscription of about £100. A five minute flight from a winch launch costs in the region of £5. He estimates that the wave over the nearby mountains starts at about 15 000-20 000ft.

He has also discovered a gliding club at Ahwag and hopes to investigate further. "I'm told that soaring the gas flares is the regular pastime" he writes to us "and when you've seen the gas flares near the airport you realise they are rather better than stubble fires."

DANISH SPEED RECORDS

When good soaring weather at last reached Denmark in mid April, the fastest among many fast cross-countries, some of them local records, was an out-and-return of 312km from Barup to Astrup Kirke and back at 104.9km/h by Ib Braes (Mini Nimbus). *Flyv*.



PLANNED ROUTE OVER GLIDING SITE

Dear Editor,

I have recently discovered that the letter from Air Commodore Miller in the February issue (p37) referred to an incident I reported. Anyone reading the letter would quite reasonably get the impression that the cause of the incident was due to the fact the gliding club did not receive NOTAMS. However, the incident occurred within the ATZ of the gliding club, a point which was ignored by the CO of the RAF Station when I rang him after the incident.

It transpired that the "major formation of RAF aircraft" (which, incidentally, was less than a dozen aircraft) was flying on a planned route directly over the gliding site. The original route was at 2000ft but because cloudbase was approx 2000ft the aircraft were brought down to 1500ft, *ie* through the circuit of the gliding club. Surely it would have been safer to have planned a route which avoided active airfields altogether?

Air Commodore Miller refers to gliding clubs "flying around the UK totally ignorant of special formation flights" - I would suggest that the problem is the RAF are totally ignorant of the rules regarding penetration of an ATZ: - "An aircraft shall not fly within a zone which the commander of the aircraft knows, or ought reasonably to know, to be the aerodrome traffic zone of an aerodrome where no air traffic control unit is for the time being notified as being on watch, except for the purpose of taking-off or landing at that aerodrome."

I think the RAF would be most unhappy if a major formation of gliders spent a day thermalling at 1500ft over one of their airfields.

Finally, if Rex Pilcher wishes to comment on letters and make judgments, might I suggest he hears both sides of the story - after all, would he dig through a pile of NOTAMS before a flight which, at all times, would be directly over his own airfield and below 2000ft?

Washingborough, Lincoln STEVE HART

Rex Pilcher, Chairman, BGA Airspace Committee, replies: The rights and wrongs of Mr Hart's personal "close encounters" with half a dozen Vulcans have been adequately discussed by the Joint Airmiss Working Group who incidentally laid a good deal of fault with the other party - nobody is getting at you Steve. Air Commadore Miller's letter was designed to highlight the fact that a club, by its own admission, was not receiving NOTAMS and my comment was intended to ally myself to his desire to improve air safety. The law clearly states that any pilot, before he takes-off, shall satisfy himself that the flight can be safely made, taking into account the latest information and this usually involves NOTAMS.

THE VALUE OF SPINNING PRACTICE

Dear Editor,

My letter is prompted by Vic Carr and Bill Scull's article on spinning in the April issue (p51). I had the misfortune to become a statistic in 1977, fortunately not posthumously! I spun a Kestrel 19 at about 400ft, or maybe less, turning onto base leg for a field landing.

I had been thermalling slowly but inevitably downwards over a valley near Shobdon until at an estimated 500ft or so I decided that I must land in my chosen field. I turned downwind in a slightly harassed frame of mind, lowered the wheel and landing flap, had a good look round and then turned base leg. The next thing I knew I had about 60° or more of bank, increasing, and the nose was pointing nearly straight down. Full oppposite rudder and easing the stick forward stopped the spin but left me, and the glider, at an unknown speed, 45° nose down, but at what looked like 50ft altitude. The next thought was "instant high speed stall but no choice" so I pulled back hard. We levelled out about six feet or so but at this point the other wing went down. The result of all this was of course a catastrophic ground loop from which the only undamaged parts were me and the wings.

I think there are two worthwhile lessons to be learned from my mistakes: the first is contained in Chris Rollings' letter to S&G (April 1977, p81). He suggests that it is possible to spin a glider even though the attitude is correct. It certainly is and I do not remember monitoring the airspeed prior to my spin. I also do not remember trimming for circuit speed - another mistake.

The second lesson is also contained in his letter and concerns spinning as a training exercise. I do not enjoy spinning. It can be exhilarating but two or three spins make me airsick, especially when a lot of *g* is used on the recovery, and spinning Kestrels is particularly unpleasant. The wings start to flap and the glider oscillates in pitch and roll. In fact no two Kestrel spins seem the same. Notwithstanding all this, I have frequently taken my courage out of my back pocket and spun, and I am convinced that if it had not been for this practice I probably would have become a posthumous statistic. Recognition of the spin was instant and recovery action quite automatic.

I am now slowly retraining myself to monitor the airspeed more carefully, trim more carefully and generally apply much more discipline to my flying, especially at circuit height. It is inevitable that mistakes will be made from time to time, but better flying habits will help to prevent those occasions when two or three small errors add up to one large accident. My errors were not monitoring airspeed, not trimming carefully and not cancelling thermalling flap. These three factors in a situation of high workload produced an accident.

Dronfield Woodhouse, Sheffield GRAHAM SINGLETON

We love to have your letters but please may they be as concise and short as possible then there will be space for a greater exchange of opinion and ideas. ED.

WHAT'S HAPPENED ABOUT HANDICAPPING?

Dear Editor,

"Competition Diary, 1978" (S&G, December 1977, p268) contained the bald announcement that "There will be no handicapped results" for Nationals and Euroglide 1978. It is more than a little annoying to find that the following issue of S&G provides us with no more enlightenment upon this decision. I am completely unaware of any rational argument having appeared in the official magazine of the BGA, or anywhere else, seeking to justify this change. On the contrary, at a meeting of competition pilots held at Lasham during the 1976 Nationals only two pilots were opposed to handicapping. Both were Nimbus owners.

I know that the pedlars of "democracy" and "participation" are having a field-day, but what has happened to the chap pushing "communication". Hasn't he paid his subs?

Ilford, Essex CHARLES ELLIS

Gordon Camp, Chairman BGA Competitions Committee, replies: Each autumn, when the BGA Competitions Committee considers the format of the next year's National level Championships, the question of handicapping is automatically considered along with the other inter-dependent factors of number of the Championships, dates, sites, Class structure and number of entrants. After deciding for 1978 to continue the structure introduced in 1977 of having each of the three new FAI Classes, handicapping received particularly careful consideration. The argument for discontinuing handicapping was that virtually all the entrants would fall into narrow handicap brackets within these Classes and having up to six separate scoring lists would be unduly cumbersome. The argument for handicapping was that it enabled a good pilot flying a markedly inferior glider to demonstrate his true worth, and furthermore it made the Nationals Entry List fairer. The Committee decided in favour of discontinuing handicapping for the 1978 Nationals and Euroglide and, following BGA Executive approval, the necessary "communication" was effected *via* the BGA Newletter, S&G and the Nationals application form.

I'm sorry, Charles, if the decision appeared inexplicable. However it may be some consolation that Nationals and Euroglide results will be artifically handicapped when compiling the 1979 Nationals Entry List (further details are on p185.

ANYONE INTERESTED IN A NEW CLASS?

Dear Editor,

I have found the letters written by Peter Rivers and Paul Williams in the last issue (138/9) of great interest. For many years I have had a deep interest in lightweight aircraft, directing some considerable efforts to man-powered flight. Recently a lack of suitable weather for man-powered flight has somewhat sapped the inclination to build such an aircraft, so the suggestion of a small, lightweight home-built glider has fired new thoughts.

Peter Rivers spoke of empty weights of 45kg and Paul Williams of restricting size to that which can be built in a 16x8ft garage (workshop). Combining those two parameters I have schemed a sailplane of span 9m, aspect ratio 15, empty weight 45kg and an L/D of better than 20. It can be done!

I know I am by no means the first writer brimming with optimism about very light sailplanes, but I would like to try and go one stage further and see such an aircraft built and flown. To achieve this I feel the major priority must be to produce the hardware. If such hardware is to be the "forerunner" of a new Class of sailplane (10m Class?), it would perhaps be better if Class restrictions, rules etc, were worked out using the performance of the "forerunner" as a foundation stone for such specifications.

I envisage such a Class of sailplane not as a separate isolated type of sailplane, or even a replacement, but as an integral part of the gliding scene. Such lightweight aircraft would be cheap, simple to build and could perhaps enable clubs to easily double their numbers of aircraft, with syndicates being formed not so much to buy an aircraft as to build one.

I feel now is the right time to build a very light glider with a view to starting a new Class and would like to hear from anyone who has any interest, whether active or passive, in furthering the ideas I have expressed.

5 Granley Gardens, Cheltenham, Glos GL51 6LQ D. J. NORMAN

KITTIWAKE IS A FUN MACHINE

The Kittiwake photographed from the Blanik it towed to 3000ft.

Dear Editor,

With reference to Roy Procter's letter about the Kittiwake in the last issue (p139), the RN Kittiwake is now flying at Yeovilton after a year of unserviceability. The stern post was strengthened and the rudder attachment had some extra stiffeners fitted. The nose wheel steering rods were very prone to bending and they were also strengthened.

Total airframe hours are now 180, a 100 being in the last year. It's a very easy aircraft to fly and very popular with the pilots. The rate of climb with a single-seater glider is the same as that of a Chipmunk, but with a two-seater it takes a bit longer. As well as being used as a tug, it is fully aerobatic and slow rolls have been attempted. It's proved to be a fun machine to fly, but it is a pity it isn't a two-seater.

Hucclecote, Glos. A. R. HYETT

WE HANG GLIDER PILOTS ARE PROGRESSING

Dear Editor,

Having read your June issue I was interested to find an almost wistful and intangible feeling running through many of the articles and letters regarding ultra light flight and cross-country flying. Having been a hang gliding enthusiast since the days when a 3:1 glide angle and a trip down the hill was the ultimate, I wonder just how many glider pilots realise how far we have progressed?

We are years behind you, our older and more sophisticated brothers, but I feel some of our achievements in foot launching aircraft are worthy of note. First, our wings have developed at an astronomical rate. There are many first rate taut sail flex wings which are a joy to fly, able to make a 360° turn around a wingtip, to penetrate reasonable (to us) winds and land in a tennis court size field at zero ground speed. Our biggest problem lies in our abysmal glide angle, which means difficulty in gliding from thermal to thermal.

However this hasn't prevented some exciting cross-country flying by pilots all over the country. We are leaving the ridges behind in increasing numbers, just as you did 40yrs ago. The record currently stands at 24 miles but there have been lots of flights between 12-20 miles. Height gains have also been good with 3000ft above take-off achieved frequently in the past two months.

Bob Calvert, one of our top pilots, and I launched in zero winds from a fell in the Lake District in April, hooked into light lift, circled for a while and then realised we were in wave. We gained 4150-6250ft asl and flew for over an hour in a lenticular studded sky eventually flying along a wave for five miles, landing 16 miles from take-off.

We don't kid ourselves. We know we have a lot to learn and a long way to go, but already current hang gliding activities were undreamed of a few short years ago. We need help. The average hang glider pilot needs more contact with glider and power pilots to absorb the wealth of knowledge you have accumulated.

We have noticed a very mature attitude towards us from the Blackpool GC in whose area we fly. The club is extremely hospitable and is helping establish a set of rules which will help us both fly the same ridges in safety. Their attitude is to be applauded, for we are a fledgling sport, but will find our real wings just as surely as any bird.

Rochdale JOHN HUDSON

BHGA Competitions Committee

CFI, Tim Baldwin, of Greylag GC, Outer Hebrides, briefs 16-year-old Raymond Menary on his first solo.

CLUB NEWS

Copy and photographs for the October-November issue should be sent to the Editor, S&G, 281 Queen Edith's Way, Cambridge CB1 4NH, tel Cambridge 47725, to arrive not later than August 15 and for the December-January issue to arrive not later than October 10.

June 15, 1978

GILLIAN BRYCE-SMITH

ALBATROSS

It now seems very likely that the new addition to our club fleet will be a Blanik. The club K-6 has now become a syndicate aircraft and both an Olympia 2B and a Grunau are joining the private owners' fleet. Soaring this year has been fairly good and Bill Dyer has had the longest flight of the season with 3½hrs in the K-6. Launches are up on last year's statistics and we are in a relatively happy financial situation helped by interest free loans from various members.

Congratulations to Terry Willis on gaining his C certificate, to Barry Wallace on resoloing after 20yrs and to Dave Lloyd on his first solo.

At the moment the Prefect is on a major C of A so solo pilots are flying the T-21 which on occasions is staying up longer than the K-6! Recent film and beer/skittle evenings have proved to be so successful that more are planned for the future.

Visitors are as ever welcome at weekends, with or without gliders, although we would ask power pilots to refrain from flying in at the moment because of planning restrictions.

M.S.

BATH & WILTSHIRE

Our two pilots in the Nationals both did very well. Andrew Davis, aged 21, won the 15m Class to become the youngest ever Champion while Chris Rowlands came 4th in the Standard Class. (See Nationals' report, p175.)

The son of Bill Davis, our former CFI, Andrew started gliding six years ago and competing two years later, coming second in the 1977 Nationals. Chris won the 1976 Western Regionals flying his rather elderly Skylark 3B. We had a successful Spring Bank Holiday week. Ray Payne (Skylark 3A), our Chairman, Mervyn Pocock (DG-100), and Jim Kettlety and Dave Parker (Astir) climbed to 13 000ft in cloud. Barry Pocock, Mervyn's son, flew his Silver distance to Weston-Super-Mare.

J.L.

BRISTOL & GLOUCESTERSHIRE

Our task week during the first week of June provided a superb week's sunbathing with good gliding thrown in. Cu-nims gave some interesting cloud flying with one intrepid aviator reaching 18 500ft above site followed by an unconventional descent in cloud and a field landing. He prefers to remain anonymous.

The club fleet is now up to two Swallows, two K-8s and a Skylark 4 in addition to the three two-seaters. An unfortunate encounter with the dreaded Nympsfield clutching hand has put our Super Cub out of action for the summer but we still have two tugs available – so no problem.

Preparations are going ahead for Euroglide with volunteers slaving away at the clubhouse extension.

R.A.R.

CAMBRIDGE UNIVERSITY

Photo: Peter Tee.

When floods hit Cambridgeshire in early May there was a dramatic stop to our flying, as the photograph explains. However the three weeks of intensive flying at Duxford, now a regular feature in May and again in August, compensated. As well as long distance flights, there were numerous Bronze and Silver legs and first solos.

The newly rebuilt Olympia 2B, which came to grief four years ago in the cement works, has been in great demand.

After many years, as CFI, Ted Warner asked to be replaced, though will carry on as resident ground engineer and instructor. The club owes him an enormous debt. The job has been taken over by Joe Whelan. Our thanks also to our retiring Treasurer, John Deakin, who after an eight year stint has handed over to Peter Tee.

A.N.

COVENTRY

The news of the death of Doc Gregg brought a feeling of sadness and loss to us all. He was a founder member and had played an important part in the development of the club. His position as President has been taken by John Cadman.

The new bunkhouse is now completed and the site has been improved with extensive tree planting around the clubhouse.

We are still waiting for the final figure of profits from the Steam Engine Rally, jointly organised with the Vintage Traction Club last month. With a near-record attendance of more than 20 000 people we are looking forward to spending the money.

A few enthusiasts have been working hard to have winch launching on a regular weekly basis but, in the main, our three tugs (there are hopes it may be increased to four) have been our launching force. The glider fleet has been supplemented by a second K-8 which is now in service.

The task week is from July 22-30.

D.B.

OBITUARY

DR H. N. GREGG

The death of H. N. Gregg in May after a lengthy illness has robbed the British gliding scene of one of its more colourful personalities. I met him first in 1952 at the inaugural meeting of the Coventry GC at which time he was already an eminent local figure both in the medical profession and as a JP. He was also a member of both the Coventry Aero Club and the Midland GC.

The beginning of the CGC coincided with the time in his life when he decided that his heart really lay in gliding and he threw himself into the club's activities with all his innate enthusiasm and drive which was to prove such an asset at this stage of the club's development. Very soon the newly fledged committee elected him as Chairman, a position he held with dynamic efficiency for ten years. On the gliding field he was always a great driving force, whether instructing, tugging, winching or just driving the "Beaver". He was the club's first private owner but unlike many such who came later his first interest was always to keep the club aircraft flying, no effort being too great for him to achieve this end. His own gliding achievements included a Gold C plus Diamond earned in 1961 when wooden sailplanes still

dominated the scene. His election as President was a fitting recognition of the club's appreciation of his services and it was greatly regretted that he was not well enough to attend the celebration of the club's 25th anniversary at the end of 1977. I received a letter from him only a few weeks before his death. In it he made a passing but courageous reference to his being on his "final glide" but mainly he wrote about the club and enthused over his last soaring flight in the Swallow in 1977.

We who knew him have lost a sincere friend and our sympathies go to his wife Margaret and his children Richard, Sheila and Heather who have lost a great source of affection and encouragement.

DR MICHAEL HUNT

DEESIDE

After a busy period of flying until May, we were unfortunately reduced to just the Motor Falke – our Super Cub went on its C of A and a poor spares service kept our Rallye Commodore on the ground. Sadly this meant the expedition from the Midland GC had to be cancelled though we hope to see them in the autumn.

Congratulations to Tony Eade who earlier in the year completed his Silver C with a duration and also got his Gold, quickly following this with Diamond height. Also congratulations to Barry Pearson, our tug pilot, who gained Gold height on an instructors' course at Portmoak. Alan Middleton was promoted to CFI and Technical Officer at our AGM in April. Our K-6E is back after extensive repairs having been damaged ground looping on a field landing.

M.A.R.

DEVON & SOMERSET

We have had some marvellous soaring days. Steve Barber, Chris Miller and Mike Heath have gained their Silver Cs while Alan Barnes, Joe Beard, Ken Andrews and Ian King have their Bronze Cs. Colin Uncles did his duration in May and Simon Harris went solo while his father Norman completed his A and B.

Many thanks to Tony Thomas for his splendid and very hard work on the clubhouse ceiling. The much awaited retrieve vehicle is in service thanks to the efforts of club members, especially CFI, Gerry Leat.

We have a barbecue arranged for July 9 at the club and our dinner will be in October. The club's old Swallow and a syndicate Olympia 2B have arrived back at North Hill under new ownership after being rebuilt.

M.G.P.

DONCASTER & DISTRICT

On the good days this season Jack Sharples, our CFI, and Eric Hamill Jnr narrowly missed completing their 300km. Mark Hamill did five hours in the same power station thermal and arrived back with a black glider and proved his lungs to be sulphur proof.

On the bad days we have struggled with 20kt 90° crosswinds making the duty instructor's job difficult. The local wave has also frustrated us by occurring mid-week, but it relented on June 10 to give Justin Wills 11 000ft at 9.30am to start one of his marathon attempts.

J.A.S.

DORSET

At the AGM in May we said farewell to the Chairman, Ken Phipps, and CFI, Geof Warwick. Their places were taken by Joe Linnee and Alan Milne respectively, to whom we extend a warm welcome.

The Portmoak and Aboyne expeditions were not as successful as hoped, but we celebrated Richard Ough's duration and Bob Buckett's Silver distance. Then, in rapid succession, we witnessed the first solo flights of Tony White, Ralf Ness and Fred Samways.

Just prior to the task week, 16-year-old Simon Rowbrey completed his Bronze which enabled him to make a gallant, but unsuccessful, Silver distance attempt during the week. Considering the time of year, this first task week was blessed with very reasonable weather which enabled Derek Cracknell to get his five hours, Ted Henman his Silver distance and Bob Buckett to complete his Silver C with a cross-country duration. Maximum task points went to the ASK-13, congratulations going to Robin May/Margaret Chirgwin for the best flight.

A recent test of the Tarrant Mk II winch on our shortest runway gave us 1500ft launches. Therefore, by the time that this is printed, we expected the winch pundits to be fully operational with 2000ft launches from the long runway.

B.Mc.

DUMFRIES & DISTRICT

A K-2 was brought from Germany by club members during the winter after a 1300 mile trek to Geilenkirchen near Aachen on the German-Dutch border. Its maiden flight in this country was at Portmoak in April due to winch and site problems at our club. It is proving very popular and joins the T-21 and privately owned Oly 460.

We are settling down after a mammoth task of moving house during 1976 and have a splendid hangar, a clubhouse soon to come and an influx of new members. Our biggest concern at present is our east-west run which still needs a considerable amount of development. Easterly winds earlier in the season were keeping us on the ground.

But our site is giving us some interesting flights. Situated at some 600ft amsl amid very hilly country with the Solway Firth a little to the south, it's perhaps not surprising to hear tales of unexpected lift followed by horrendous sink. (One out landing already this season from a normal circuit.) We have had numerous soaring flights this season, though at times thermal activity has been curtailed by sea breeze fronts, and wave has developed on a number of occasions, though not contacted. Oh for aerotowing facilities.

Our thanks to club members on such projects as winch and trailer building and for enthusiastic support of many non-flying activities.

F.S.S.

DUNKESWELL

Congratulations to Tony Eastelow who completed his Bronze C in a week and immediately proceeded to fly his newly acquired Foka 4 on several cross-country sorties, to Julian Pearson who gained his first Bronze leg with a 50min flight on a virtually unsoarable day and Peter Collins who has just completed his A and B and eagerly awaits a first trip in his Swallow.

Having guided us safely through the last 3½yrs, our CFI, Dave Bindon, has retired for a well deserved rest, but will remain with us as Chairman and Technical Officer and Mike Fairclough has exchanged "The Chair" for a slightly hotter seat, in his new rôle as CFI.

B.H.F.

EAST SUSSEX

A week's trip to Lasham has been arranged for late June. After nearly a year's wait, a newly formed syndicate have taken delivery of their "unique" Oly 401 (Souped up 2B) from Cyprus. We have quite a few new members, though still have room for more and are always pleased to welcome visitors from other clubs.

D.E.C.

ESSEX

The cold weather discouraged pre-season fettling and it was late May before most gliders emerged, bright with their new conspicuity markings. Part of the clubhouse has been redecorated and hot showers installed, thanks to an enthusiastic band headed by Brian Murphy. The courses have started and we welcome our new course instructor, Dave Caward. Three Essex gliders were entered in the East Midlands Regionals. Congratulations to Mike Throssell and Tony Manwaring on their success in the Open Class.

We are looking forward to exchanging visits with our German friends from the Ludwigshaven GC who will be flying to North Weald in July. They have invited us back in August and we will be looking in at the World Championships first.

S.C.

ESSEX & SUFFOLK

We held our first ever task week in May and picked the hottest week of the year. Soaring conditions were poor and the main "task" was to keep cool.

Several members have gone solo, including John Whiddett, John Haugh, Bob Adams, Mark Stenton and we have also allowed Bert Bearcroft, Chief Tug Pilot and Jonathan Turnbull, another tug pilot, to go solo in the K-13!

Francis Whiteley completed his Bronze C and the following weekend flew the club K-6 to claim Silver distance. Alan Kitchen finished the remaining two legs of his Silver C with a five hour flight to Duxford. Bernadette Planque now has her Bronze C and is after her Silver legs, flying the syndicate K-6E. Simon Barnes has been on his instructor course and is a welcome addition to the instructors' roster.

There are many movements on the syndicate side; the BG-135 is now a regular sight over Whatfield and our Chairman, Eric Richards, is usually to be seen intently surveying the cumulus wondering what it would be like in his *mucha delayda* Vega.

During the summer we fly Friday evenings, which has again proved very popular. We are able to give air experience flights to local scouts, guides, schools and various clubs.

Whilst we have no immediate problem our site residence is not as secure as we would like; our clubhouse is at present stored in the erected state, with members awaiting the magic words "planning approval" before dashing into action with paint brushes etc. We have had a great deal of publicity recently in the local press, the majority pro-gliding and the club.

C.C.S.

HEREFORDSHIRE

It is with regret we say goodbye to Dave Carson, our course instructor for the last 18 months. We wish him well in his new post. His good humour and friendly criticism won't be entirely lost as he will visit us at weekends.

With the prevailing easterlies, we have initiated several new members in the long trek to the end of the 09 runway and the quality of the soaring has proved well worth the effort with many good flights.

J.C.

HIGHLAND

A quiet two months as far as flying goes. Jim Crockett and Colin Foreman each achieved Bronce C half-hours. Angie Veitch took the Astir to Dunstable for the John Jeffries' cross-country course. In spite of bad weather and poor visibility she put in several days flying and got her Silver distance with a flight of 298km (must be a record!). She found the course very worthwhile and enjoyable and is recommending it to us all.

In a one in a million accident in April the K-6CR collided ever so gently with the Bocian, smashing both canopies but doing no other

damage. Jim Tait did the 1200 mile round trip to Booker in one weekend to fetch a new Bocian canopy and we had the glider repaired and the C of A done within three weeks. Jeff Howlett did a very neat mod on the K-6 with a spare Bocian rear canopy.

On June 7 we had a demonstration evening for members of a church fellowship. We put on three of these demonstration evenings last summer and found them valuable for stimulating local interest.

R.E.T.

KENT

The hot weather of May and June, being anticyclonic, often brought low level inversions and maritime air to restrict our thermal soaring. However the north-easterlies have occasionally produced wave in the lee of our ridge, providing soaring for some of our more adventurous pilots.

Two more syndicates have been formed – a K-6E has come from Sleap and a Tutor from Nympsfield. We hope our Jodel tug will have its new engine in time for the task week at the end of July.

Congratulations to Alan Garside on his Silver distance on June 11.

D.H.

MIDLAND

After a somewhat frustrating start to the season, May and June proved to be more eventful. Congratulations to Messrs Austin, Cartwright, Ford, Gee, Olive, Powell and Heather who went solo; Paddy Ross on his C certificate and Vic Teague and Alan Croxford on gaining their Bronze.

Our CFI has been cultivating enthusiasm for cross-countries which has resulted in many attempts and successes, the best so far being 190km by Don Brown. John Stuart (K-6CR) gained his Silver distance and reached 10 800ft asl, only being beaten by 300ft by Don Brown. Roy Guest achieved his duration and Nigel Holmes gained Silver height in a wave flight to 9000ft asl. Len Dent, Chris Ellis and Ron Hawkes flew in the Shobdon task week in their Cobra and Oly 460.

Friday evening flying is very successful for the groups invited. Welcome to our new course instructor, Gary from Portmoak, and our thanks to John, Robin, Steve and Diana for their much appreciated hard work to complete our K-8.

S.H.

NORFOLK

For the first time in several years we were lucky enough to have reasonable weather for our spring task week, allowing tasks to be flown every day, totalling several hundred kilometres.

We are still having to share the airfield with a Sunday Market, with the attendant problems of losing a cross-runway, to say nothing of "close encounters" with various pedestrians and vehicles. Negotiations have been taking place during the past year with respect to better security for the occupation of our site and we are pleased to report promising signs from both our landlords.

We were delighted to offer assistance to nearby Rattlesden Club, particularly by providing instructors for the Falke which was originally one of Tibenham's fleet. When our Tutor was retired from club operation it was acquired by one of our members. He generously offered it to be used at Rattlesden and it has now been completely refabriced and modified for aerotowing.

"Victor November" is probably one of the first tugs to be maintained under the new "private owner" arrangement whereby 50hr checks can be carried out by our own qualified inspectors.

C.E.H.

OXFORD

Long grass is again a problem on the airfield. After a number of ground loop incidents some of the club fleet have been grounded for safety's sake until the grass is cut. As we may be liable for legal action if we cut it ourselves, there seems to be little we can do except wait. Also, there is some doubt about the long-term future of our site when the M40 extension passes nearby in a few years' time.

Mike Randle finished 6th in the Nationals and Brian Evans was 7th in the Sport Class at the East Midlands Regionals. Joachim Schneibel and Malcolm McBride have their Silver Cs, the latter by taking the K-8 on a tour of South Wales and the Bristol Channel before coming back to Aston Down to land. Richard Hall made several good cloud climbs during the ill-fated Enstone task week, the best being 14 000ft. Recent first solos include James Parker and Dave Wild.

We are sorry to record the death of Ray Harvey after an illness of several months. He was an active member of the club for many years and we extend our sympathy to Sarah and the children.

P.H.

RATTLESDEN

We had a four month period of inactivity over the winter due partly to the resignation of our CFI, Ralph Brooker – thank you Ralph for all your efforts. We have changed from a group to a club with a Committee, hoping to spread the workload a little.

We are greatly indebted to Joe Podolski and Jane James of the Norfolk GC for their help in restarting our club and their continued support in recent weeks. Also thanks to both Bill Scull and Brian Spreckley for their visits and advice. Despite heavy business commitments Arthur Parrott has become our new CFI.

We also have an enormous debt to the Kitchen brothers for the loan of a Tutor. This came to us in need of a complete refabric (see Nor-

folk). The work was achieved by members in less than a month, thanks largely to the drive of Mick Moyes and the help of the Watts' family. Congratulations to Geoff Moore, the first member to go solo in the Tutor.

Our fleet is now a Motor Falke and a T-21 for training and the Tutor, with plans to add a single-seater for cross-countries. Our ex control tower clubhouse continues to be a popular venue, membership is open and visitors are welcome – we are ten miles south-east of Bury St Edmunds.

K.L.

SCOTTISH GLIDING UNION

Good weather, a record attendance and hard work combined to make the open day in May even better than last year's. Particular tribute must be paid to David Walker Jnr and his winch driving team for their tremendous effort.

The new system of weekend set tasks combined with good wave and thermals has produced record results for the club; for example, two Diamond goals and one Diamond height in one early June day.

Rationalisation of the club has begun with a K-13, two K-8s and two K-6s now forming the backbone. A recent BGA course at Portmoak resulted in three new instructors.

Regular visitors will be pleased to hear that Betty Barr, who was seriously injured in a car crash earlier in the year, is now well on the road to recovery and expected back later in the summer.

R. H.

SHROPSHIRE

Following a poor wave season, early summer has seen numerous creditable long distance flights and triangles from Sleap. However, wave was contacted on June 10 by Vic Carr and Tim Chapman who climbed to 14 000ft and penetrated to the Lake Vynnwy area and Llangollen valley.

Neil MacKay, Denis Pearce and Tony Adams have replaced their K-6 with a Cirrus and we have another Dart 15 owned by Alan Cliffe and Bob Kirkham.

The best soaring conditions, of course, will be the first two weeks in August when we hold our annual task fortnight at Chetwynd airfield near Newport, Salop.

D.V.

SOUTHDOWN

It is with great sadness that we report a tragic accident involving the club tug. David Knight died on June 3 whilst doing what he enjoyed most of all – flying.

At the age of 23 he was an accomplished gliding instructor, tug pilot, and valued Committee member. He was totally committed to flying with or without an engine. He rarely spent a weekend away from the club and his exceptional enthusiasm, energy and vitality will be sorely missed.

S.M.S.

SOUTH WALES

A sudden dearth of cable breaks has led to a crop of first solos, the youngest being Mark Howells photographed with his proud Bronze C Dad. Mark was 16 years and three days old. Ron Johns gained his five hours and Silver height in one flight.

As the visiting BGA Chairman, Roger Barrett, was curious to know how far into deepest Wales we flew, Ivor Shattock took the Club Libelle on a 200km out-and-return to Llandeilo reservoir.

I.H.S.

SURREY & HANTS

Not one 300km badge flight has been flown from Lasham this year and that is not for want of trying. The glorious Goodwood sort of weather during the Nationals didn't inspire club pilots to venture far. A few storms in early June tempted two pilots to about 14 000ft for Gold height and some K-8s have been to Shoreham for Silver distances.

We still await the arrival from Slingsby's of our first Vega and many mouths watered after a flight or two in Ralph Jones' Janus. Plans are afoot to provide more advanced training to enable our considerable glass-fibre fleet to go cross-country more efficiently

C.L.

ULSTER

The faith we placed in our move to the new site at Bellarena at Easter has been more than justified. The soaring over the first few weekends was magnificent. Wave to over 10 000ft has been unexpectedly encountered in weak south-easterlies – we **knew** about the wave potential in winds from SW to NNW but this is a bonus. There've been thermals galore at 7500ft; cloudbase has been as high as 6000ft on occasions – positively stratospheric for Ireland – while sea breeze fronts have been soared to 4700ft. And where else on a local soaring flight can you both cross the open sea and an international frontier, as several of us have already done to spend lengthy periods exploring the Republic's airspace over Co Donegal?

To top all this, our hospitable landlord, Jim Allison, removed a fence to lengthen the site by the addition of a second, smaller field, without increasing the rent. We have rapidly recruited several new members from the local area, who will more than make up for the few drop-outs among our previously Belfast-centred membership who are reluctant to make the 80min drive to soar. All that remains now is to spread the word about the great potential at Bellarena – and Ireland's uncluttered airspace – among clubs in Britain and lay on a memorable welcome for the first pilots from across the water who choose to visit us.

After a few weeks in store our new Twin Astir began operations on May 28, following competition of its trailer by Jeremy Bryson and Alan Sands. The Blanik it has replaced was expected to remain in the Bellarena fleet, under the ownership of the Ulster Polytechnic soaring group. Another newcomer is a second SHK, which the three owners trailed from Bavaria in April, while the importation of yet another syndicate machine from Germany is likely soon.

The very major refurbishing of the club's Skylark 2, led by Billy Craig, was nearing completion at the end of May while some UGC pilots were planning to fly in the first week of the IGA's two-part Nationals at the Dublin GC's Gowran Grange site on June 3. The week was to be a serious shake-down for the two-crew Irish team from both the Ulster and Dublin clubs which will take on the world at Chateauroux.

R.R.R.

VINTAGE

Russavia Collection

Mike Russell's Duxford-based collection of vintage gliders and light aircraft became a member of the British Aircraft Preservation Council in April, thus being the only BAPC member collection devoted almost exclusively

to gliders and one of the few restoring only to airworthy standards. The following Saturday saw the arrival by air of the Miles "Gemini" with a new C of A from Shobdon, members of the group having made several visits to Shobdon under Ron Lake's expert supervision.

Work continues on the Kranich 2 (BGA 1147), with the smaller components now receiving fabric under David Braham's ever-watchful eye and next to fly will be the BAC Drone G-AEDB motor glider. This Drone, while pre-Kronfeld, is not however one of Lowe-Wylde's original "Planettes", but its acquisition brought into our care almost all the surviving Robert Kronfeld drawings on long loan from his son, Bill. From these have emerged evidence of Drone, Super-Drone, early BAC Series gliders, GB, Dickson Primary, Kronfeld Kr Ia two-seater and even some of the famous "Austria" - yet we've barely touched the pile! The unique 1946 Short "Nimbus" BGA 470 joined in April, so that ten gliders and a motor glider are listed, covering nine separate manufacturers of past wooden aircraft.

Another red-letter day was June 6, when as a result of Martin Simons careful watch over several years, he, David Braham and Mike Russell went to Kirkbymoorside to collect, for the not inconsiderable task of repair, catalogue, restoration and preservation, all the Slingsby Sailplanes' drawings from the very earliest days. There is much work to be done here, but we are positive that many, if not all, of the drawings for the following aircraft exist: Falke (British Falcon I), Falcon, Buxton Hjordis, Cadet, Tutor, King Kite, Gull 2, Primary, Nacelled and Open, Hengist troop carrier, Petrel, T-20, T-21, T-16, Sky, Gull 4, Prefect, Eagle, Skylarks 1, 2, 3, and possibly much more: it will be a huge task to sort it all out.

After so long, it was a moving experience to climb into the loft above Fred Slingsby's old office and see the purlins marked "Hjordis", "King Kite", "Falcon" and to find all those treasures. George Burton is to be congratulated in releasing these treasures, thus ensuring their permanent preservation. We are well aware of our responsibilities as future guardians of this irreplaceable material.

Work should speed up this autumn as new workshop equipment, saws, planers and so on, are installed. Our thanks to the Imperial War Museum for permitting all this activity and next year we hope to reward them with the fruits of our labours - a fully "original" German Kranich 2 in the air, behind our own restored Tiger Moth. Anyone interested in helping is welcome to call on us at Duxford (Building 63,) on Sundays and in particular we are interested to hear from anyone with librarians' skills to help with the preservation of the Slingsby and Kronfeld material.

M.C.R.

WOLDS

The most successful flights this year were during our task week at the end of May which started with a 185km task. Although unfinished, it provided the first badge flight - a Silver distance for Bill Young. On the Friday another 185km was set and completed by the Cobra and club K-7. Brian McFadden gained his Silver distance on this task and Mike Wandby completed his Silver C with a duration. Tony Acey (Spatz) had the longest flight after deciding to leave the task and enjoy a day's soaring. He was in the air for seven hours and finally returned to the task route to score points in the competition. The week was won by Bob Fox in a K-7 with solo pilots as navigators.

Bronze Cs were gained by Jenny Hurd and Alan Hunter and several Bronze legs were achieved this spring. We have introduced a large number of people to gliding with air experience flights on three or four nights a week with members crewing. Our thanks to all those who have helped.

A.J.B.

Service News

ANGLIA (RAF Wattisham)

Congratulations to "Taff" Morriss, Andy Queen and Bill Veitch on going solo and gaining their A and B certificates. Other badge flights have proved difficult because of the lack of an intermediate soaring glider. We are still awaiting a replacement for the K-8B. The club solo glider at the moment is the Prefect as the Astir is having minor trailer repairs. Converting from the open cockpit Prefect to the Astir 77 is interesting - a jump of 25yrs technology.

CFI, Alan Jury, was the top RAFGSA pilot in the Inter-Service Regionals' Open Class. However he was 6th overall and somewhat humiliated being beaten by RN, Army and civilian pilots.

The Tost winch is now operational, thanks to the hard work of "Porky" Woods. It has a more powerful engine and a reconditioned Tost paying on gear. We are now looking for stronger cable to launch the Blanik.

We say farewell and thank you to Stu Mullholland who has been Equipment Member and an instructor for the last two years. He has been posted to Lincolnshire to be closer to his part of the Mini-Nimbus at Four Counties.

A.R.J.

BANNERDOWN (RAFGSA)

Our new site at Hullavington is proving to be a good soaring airfield with thermal sources within easy reach of our winch launches. Our first flying month in May gained us over 1000 launches with flying almost every day. So far this season Steve Bloomfield, Malcolm Paton and Ro Howgego have gone solo with Ken Smith managing to re-solo without the aid of his four Hercules engines!

The work on our new clubhouse and bar is progressing well thanks to John Wright and Keith Darby and the excellent sledge-hammering of Pat Rowney. We hope to have our first party at Hullavington on June 24, following a dawn to dusk flying day (weather permitting). The proceeds will go towards the new bar.

J.J.H.

CRANWELL (RAFGSA)

The season is producing new soaring pilots and additions to the fleet with the recent arrival of a Prefect syndicate and a Cirrus. Congratulations to Peter Schneider and Mike Parkinson on Silver distances in the K-8 and to Pete Stratten on completing his Bronze C. The Tutor (C of A) and the Blanik (major servicing) are flying again.

N.J.H.

EAST MIDLANDS

The year started quietly with the K-7 going for repairs and the SF-26 having a major. Pete Young took over from Pete Bryan as CFI on April 1 - our thanks to Peter Bryan for all his efforts during the last 18 months.

We welcome a new instructor, "Rocky" Sutherland from Cyprus, but are almost immediately losing him on a three month detachment. We have also lost the services of Mary and John Charlett Green, Mary as our only lady instructor and John as one of our senior pilots and hardest workers, when John was posted.

Congratulations to John McKay and Pete Carr on completing their instructors' courses and again to Pete for his 50km to Syerston. The first day of note was March 5 when Dick Cadd gained the first A and B certificate of the year and there were also three Bronze legs. April saw the SF-26 back, due mainly to the efforts of Pete Carr and a small band of dedicated workers. Ian Gill completed his Bronze C while on a course at Bicester and there was frantic work on the K-8 trailer, damaged in the high winds, to get it ready for the Inter-Service Regionals. Although we didn't have a representative at the Regionals, Andy Bould flew the K-8 to first place in the Club Class.

May saw the K-7 back but the K-4 is now being repaired and re-painted. Dick Cadd, "Ginge" Leitch and Andy Williams are now well on their way to Bronze C. Our Astir is due very soon and with our present fleet, plus Stu Hoy's IS-29D, we have a variety of aircraft for any visitor wishing to try our autotow launching.

FOUR COUNTIES (RAF Syerston)

We welcome our new Chairman, Grp Cpt R. G. Bowyer and his wife and son. A and B certificates have been gained by Stephanie Kevan, Paul Bidston, Paul Tolson and Clare Farmer, Clare finally taking to the air after 11yrs of dutiful cooking at and around gliding sites.

Clare Farmer, Stephanie Kevan and Al Tolson from the Four Counties GC.

Al Tolson and Mac went on from Bronze C to quickly get Silver height and duration. Chris Terry completed his Silver C with duration and distance flights on two consecutive days and David Fearon gained his Silver C before reaching 17½yrs of age. Finally, in June we said a sad farewell to the K-6E.

L.B.

FULMAR (RAFGSA)

Club membership has expanded tremendously recently but with the Blanik on major for the last month it has left the K-4 to cope with the lengthy *ab-initio* lists. However our new Astir has arrived and should alleviate the stretched list for the K-8. The contractors have started digging up the airfield (shades of Milltown!), making access to the airfield from the hangar something of an obstacle course. But no matter how hard they seem to be trying, they haven't stopped us yet.

We say goodbye to Gordon Hunter who is posted to Harrogate. Gordon only stayed with us for a short time but we appreciate his work as DCFI. We also say goodbye to Dave Caunt who has gone to Strike HQ.

Congratulations to Pip Barley on completing his instructors' course; to John Long, Mick Seward, Chris Kingshot and Kevan Roseby on their A and Bs and to Bill Reid on his re-solo.

R.G.H.

GREYLAG (Benbecula, Outer Hebrides)

We continue to thrive, despite local disadvantages. Repairs were carried out locally to the second K-4 which is now flying after its heavy landing. The second towcar is being rebuilt and the winch acquired earlier is also under the spanner.

Recent achievements include a first solo for Raymond, 16-year-old son of "Hog of the Year" Howard Menary, who recently visited Portmoak with spectacular success. Howard managed to double his hours, complete his Bronze and do his five hours.

CFI, Tim Baldwin, departs in July and will be sorely missed. This club was Tim's idea and creation and his enthusiasm has kept us flying through almost insurmountable odds. The new CFI, John Turnbull, arrives in August to take up the challenge and the spanners.

B.S.C.

HUMBER (RAF Lindholme)

The Spring Bank Holiday weekend turned out to be a real corker. We had four Silver legs, namely five hours for Brian Lumby, Bob Travis and Chris Terry and a 50km to Dishforth for Kevin Barnes, Kevin and Bob completing their Silver Cs. Chris Terry finished his two days later with a distance flight to Doncaster from Syerston. Three of our Scouts have gone solo, Andy Fielding, Ian Morris and Steve Rolands; and Keith Sleigh and Kevin Barnes successfully completed their instructors' course at Bicester.

We are moving hangars and into a new clubroom off the hangar, but a lot of work needs doing before it will be habitable. However, needless to say the bar is well on its way to completion, as the present one leaks like a sieve and we get flooded out every time it rains.

On the debit side, Keith Taylor had an accident in the L Spatz which completely annihilated the glider and badly injured his feet and ankles. He is still in hospital, but doing his utmost to talk the doctors into letting him get into a two-seater for a ride!

K.M.G.

KESTREL (RAF Odiham)

Our spring wave expedition to Aboyne did not produce the anticipated Diamonds, although wave was present during the first two weeks.

Our former CFI, Don Webber, was married to Gill in March with Gordon Berry and Heather's wedding a month later.

Three more instructors have their full rating, Dave McCarthy, Martin Durham and Pete Andrews. We now have nine full instructors and six assistants which alleviates the shortage we were experiencing last season. Walter Anderson leaves us on posting but supplies his replacement by introducing his son, Derek, to the sport. Warwick Creighton returns from a brief tour in Cyprus followed by a "rest cure" at OCTU whilst Andy Mills, residing in Spain, returned briefly to display his tan.

Our pilots fared extremely well in the Inter-Service Regionals; Wally Lombard (4th) and Pete Richie (7th) in the Open Class, whilst Jerry Odell won the Sport Class with Mike Pobjoy second.

Andy Giniver has completed his Silver C and Gary Tester has gained Silver height. Keith Allen and Dick ("Biggles") Brooks have Bronze legs and Jackie Pobjoy has completed her Bronze C.

On Saturday, June 10, we were host to the Naval club from Lee-on-Solent. We assembled a total of 13 machines representing 12 different types, two tugs and two winches. The first machine in the air was the K-18 at 4.14am and when we finished flying at about 9.30pm we had achieved a total of 240 launches. The barbecue following the flying was well organised and supervised by Taff Williams and the party rounded off the day. This event has become so popular that it looks as though it will become an annual fixture between the two clubs.

P.W.A.

PEGASUS (Gütersloh)

Since our first full flying day on November 27 we have had at least a dozen A and Bs. Al Eddie completed his Silver C with a 50km on which he could have got all three legs; Phil Willsher gained his Silver with a duration and several Bronze legs have been achieved, all with a single drum winch operating on what was until recently a Master Diversion airfield.

The club has three gliders, a K-4, K-7 and K-8 with negotiations underway for an Astir. We also have a syndicate owned K-6E. We are taking everything, but the K-4, to the RAF Germany Gliding Association Comps at Detmold.

Our Chairman, Q. Oswell, CFI, Bob Sheffield, DCFI, Den Ballinger and the rest of us welcome visitors by air or road any weekend or public holiday.

C.P.

PHOENIX (RAF Brüggen)

Phoenix is still benefiting from last year's membership drive and Mike Tasker, Chris Hands, "Blakey" and Derek Ballard are now solo. Tony Radnor, Chris Jacobs and Al Thompson have a Bronze leg and Silver height; Steve Carter, Benny Herbert, Glen Connor, Geoff Phillips and Roy Twigg have Bronze Cs; Geoff Phillips, Terry Mitchell, Colin Davey and John Hughes have Silver height; Harry Worth a Silver distance; Oscar Constable a Silver C; Bill Tootell a Gold distance/Diamond goal and Chris Sherlock and Kingsley Grant Guest are our two newest full Cats. We had seven Silver height claims on one barograph trace! Congratulations to all – and thank you to Max Macon for coming to Germany to do the full Cat checks.

We have made full use of the Falke for field landing experience and the Morran for aerotows – all very useful experience in readiness for the RAF Germany Gliding Association Comps at Detmold. We would like to thank the Director, "Ben" Bennett, for his trojan efforts to keep us all happy – unfortunately the weather proved most unkind and for the first time since the RAFGGA Comps started 19yrs ago we have suffered a no contest competition! Instead we made full use of the ridge at Bisperole, courtesy of the German Club there.

M. T.

PORTSMOUTH NAVAL

During the spring, when the grassed areas of the airfield were so soft we couldn't winch, the opportunity was taken to re-fabric the T-21. Five of our instructors went to Bicester to help on an adventure training course and plan to return later this year.

Ian Hammond organised a very successful evening of films on experimental light aircraft and Paul Wheatcroft gave an enjoyable evening of gliding films.

The Easter course was a considerable success and even with the poor weather there were five solos with hopes of others going solo very soon.

We welcome our new Chairman, Cdr Blofield; Geoff Andrews stays as Vice Chairman and we welcome back "Bunny" Hale after a period working in London.

H.C.

TWO RIVERS (RAF Laarbruch)

The year started well with the launch rate, hours and kilometres for the first months being well above those for the some period during the last two years. Several Silver legs have been achieved, together with a healthy number of A and Bs who have taken the places on the K-8 list vacated by those progressing to the new Astir.

Congratulations to Pam and Don Reynolds who went solo on the same day after a relatively short training period and to Leigh Hood for his success at the Nationals. *Auf wiedersehen* and *Alles Gut* to Bill Ashbridge who is returning to the USA.

K.S.

WREKIN (RAF Cosford)

We unfortunately say goodbye in July to Chris Waller who has held executive posts on our Committee for the past seven years and for the last two has been CFI. He has been a great asset and a good friend to us all. Dave Cottle, a civilian member, has volunteered to be CFI until a Serviceman can be posted in – this is in addition to being MT member.

Tom Wiseman, Charlie McKinven, Caroline Warren, Rich Arnall and Pete Owen have A and Bs and Bronze legs were gained by Gary Feeley, Nigel Readman, Bob Payne and yours truly. John Morrice, a visitor from Fulmar, completed his Bronze C and Jerry Frew and Dave Gelder managed our first durations of the year.

J.B.R.

WYVERN (RAF Upavon)

We have been unfortunate recently with flying stopped at Upavon for a variety of reasons. However we were truly lucky to be invited to fly from Middle Wallop with the Army Chipmunk as a tug on one weekend and to spend another with the Bannerdown GC, taking along three of our aircraft.

During the recent good weather Phil Woods and Max Woodhead gained Bronze legs; Julia Stamp completed her Bronze C; Ken Mackley achieved Silver height and Silver distances were flown by Mike King, Julia Stamp and Ken Mackley. Mal Channing re-soloed after an absence of two years. Roy Gaunt flew in the Nationals the following fortnight.

J.S.

FOR SALE

KESTREL 19. Complete with full panel including PZL and Crossfell varios, oxygen system with 750 litre bottle, 360 channel radio. Metal trailer complete with fittings for easy rigging. £10500. Contact M. Costin or B. Rood at Northampton (0604) 56827.

OLY 463. Full panel, radio, trailer, outfit in exceptional condition. £3950. Tel 0621 815491.

OLYMPIA 463. Excellent condition, accident free, full panel, parachute, trailer, C of A to March '79. £4000. Tel Hobbis, Alton 83875 or Pollard, Arundel 882480.

ASW-15, top and bottom airbrakes, instruments, oxygen, trailer, £8000. Newby Bridge (04483) 545, evenings.

DART 15. Prongless, 320hrs, wooden spars, instruments, parachute, new C of A and new metal trailer. Nice machine. £4000. Graves, 250 Kempshott Lane, Basingstoke, Hants, or on Basingstoke 3191 by day.

ARMCHAIR PILOT'S 463. Mint 1965, one owner, 500 launches. No accidents. Knows all the hills. Trailer, C of A. £4000. Edwards 047-482 2257.

SHK. Full panel, parachute, barograph and trailer. Just refabricated and beautifully resprayed white, scarlet tips. £5900 or shares, based Keevil. Tel Bath 65375.

KESTREL 19. Trailer, full panel, oxygen, £9700. 3 Okebourne Park, Swindon. Tel 0793 42070.

FRUSTRATED? "Self-sustaining" self-retrieving medium performance glider. High utilisation factor. MGPPL unnecessary. Sae full details, Box No SG 546.

29:1 PLUS optional power assistance. Versatile, easy rig, flies beautifully. Tel Wholey Bridge 2074 after 6pm.

SWALLOW. Bristol Gliding Club has two for sale £1750 each. Also a closed trailer if required. Tel 045-386 342.

K-6cR, completely reconditioned including instruments, trailer and new C of A, £3950. Phone Brian Fox, Doncaster Sailplane Services, 0302 57695, 61713 evenings.

OLY 463, Dart canopy. Super machine, immaculate, syndicate members joining OAP's. Must sell, with or without tailor made, varnished interior, hardwood trailer. Best offer secures. Tel (day) Chepstow) 5091, (evenings) Chepstow 2160.

FOR SALE

K-6E, full panel, horizon, PZL and Ball audio, oxygen, radio, parachute, trailer. Offers. Tel Leek (0538) 383455 or after hours Barlaston (078139) 3166.

COMPLETE SKYLARK 2 CANOPY, PZL variometer, altimeter, ASI and artificial horizon, all fully serviceable. 0484 832668 evenings.

T-21, two-seater, canopy, carefully maintained, C of A October '78. View Pershore, Worcs. £1650. 021-454 5441 daytime, 021-706 3827 evenings.

PIK 20B. Superb condition, full panel including artificial horizon, low hours. Very good trailer and fittings. Ring Weston Super Mare day 23201, evening 413724.

SKYLARK 2, excellent condition, comprehensive panel includes A/H and two varios. Good trailer. Long C of A. £2750. Highcliffe (042 52) 6753.

PIK 20E self-launching sailplane. Syndicate forming, based SE England. 4 equal partners, 2 already taken. Mature pilots with both power and sailplane experience essential. Box No SG 547.

PIRAT (1974), full panel, anti-collision paint, C of A till Jan '79, maintenance free fibreglass trailer. £4500. View at Lasham. Phone Terry Gage on 01-570 3242 (office), 0256 27704 (home).

SHK – complete outfit inc trailer for sale, £6000. Tel 0636 76102 or 0427 3736.

TRAILER, suit OLY 2 or similar. Frame and chassis sound but needs re-skin. £100. Harry Wolf, 0202 743001 day, 02013 6186 evenings.

15m LOW-LINE TRAILERS suitable mini-Nimbus, Mosquito, ASW 20, Vega, Astir etc. £695. Martyn Wells, Whichford, Shipton-on-Stour, Warks. Long Compton 217.

K-6cR, excellent condition, instruments, trailer, available August. £4800ono. Contact Callow, Bishop's Stortford 59989.

SIE. Similar to K-6E but larger cockpit. Recent recover and C of A to Jan '79. Basic instruments, radio and open metal trailer with detachable covers. £3800. Ballard, tel Colwall 40142.

DART 17R, with trailer, full panel, radio and parachute, excellent condition, £5750. Tel Rugby 813690 or Sedgley 5979 (evenings).

ASH 360 channel glider radio, needs servicing. £250ono. D Paré, Parklaan 66, Bilthoven, Halland.

LIBELLE. Everyone thinks its brand new. Of course it has waterballast and includes its fibreglass home. My friends think I'm mad to sell it for only £7500. However, I have always been headstrong. Boxford 210241.

K-7 available November. Very good condition, major overhaul recently completed, open trailer included, £3500 delivered to Rotterdam, Zeebrugge or Ostende. Dave Wood, Two Rivers Gliding Club, RAF Laarbruch, BFPO 43, or Leigh Hood at Euroglide.

FOR SALE

SKYLARK 2B, well instrumented, excellent condition, £2500. Tel Hope Valley 30192.

SKYLARK 3F with full instrumentation and excellent condition: Competitive price at under £3500. Would consider forming syndicate. 061-980 2627.

GRUNAU 3, BGA 1935, new C of A, good condition. Ring Barry 743208 evenings.

K-6E, good condition, basic instruments, with trailer. £4850ono. Phone Andover 82111, Ext 371 during working hours, Durrington Walls 52373 evenings.

K-6cR, superb condition, rigging aids, tail dolly, 2 varios, T/S, compass. Open trailer with metal frame and canvas cover, £3900. Closed trailer available for above. Tel Basingstoke 57907.

JASKOLKA. £3750. This type still holds British National Goal Flight Record (Women). Excellent example (BGA 939) featured Janes Book of Gliders. Full panel, flaps, parachute, trailer. Tel 01-529 0197 (evenings) or 0273 720265.

PIRAT, privately owned, 12 months C of A, with trailer, instruments, parachute, complete respray. Can be viewed in Yorkshire by arrangement. Contact McGregor, 059-284 543 (day), 243 (evenings).

FOKA 3 sailplane for sale. Excellent condition, only private owners, with new megaplex canopy, open trailer with canvas cover. Price £2600. FOB. Esbjerg. Contact Flemming Larsen, Grundtvigsvej 7, Frederiks 7470, Karup J., Denmark. Phone Denmark (06) 661497.

20.5m JANTAR 2. Nationals winner '77, top performance plus good approach control, fully fettled. Hull only. S. White 06284 4035 or A. Kay, 02406 2491.

CHEAP Cheep Audio (see S&G last issue), steady or chopped tone, climb or sink – only £12.50 plus 50p p&p. Phone Oxford (0865) 770794 evenings.

SKYLARK 4, No 368. Trailer, rigging aids, oxygen, artificial horizon. Nov 1977 C of A. 0962 68408 evenings. View Lasham.

OLY 2B. Excellent soaring machine, complete outfit including recently built GRP skinned wooden trailer. C of A just completed. £2450ono. Tel 0305 832689 or 0305 832579.

SKYLARK 2. Superb condition, recent respray, full panel with A/H radio, Dart canopy, new C of A, metal trailer. Based RAFGSA Hullavington, Wiltshire. £2900ono or shares negotiable. Paull, 3 The Barton, Bleadon, W-s-M 0934 812087.

SWALLOW, basic instruments, recent respray and C of A, very good condition, £1800. Ring Cleckheaton 878328.

PZL VARIO. Unused since recent overhaul/test, calibrated in knots. Also TE capsules. Winchester 63343.

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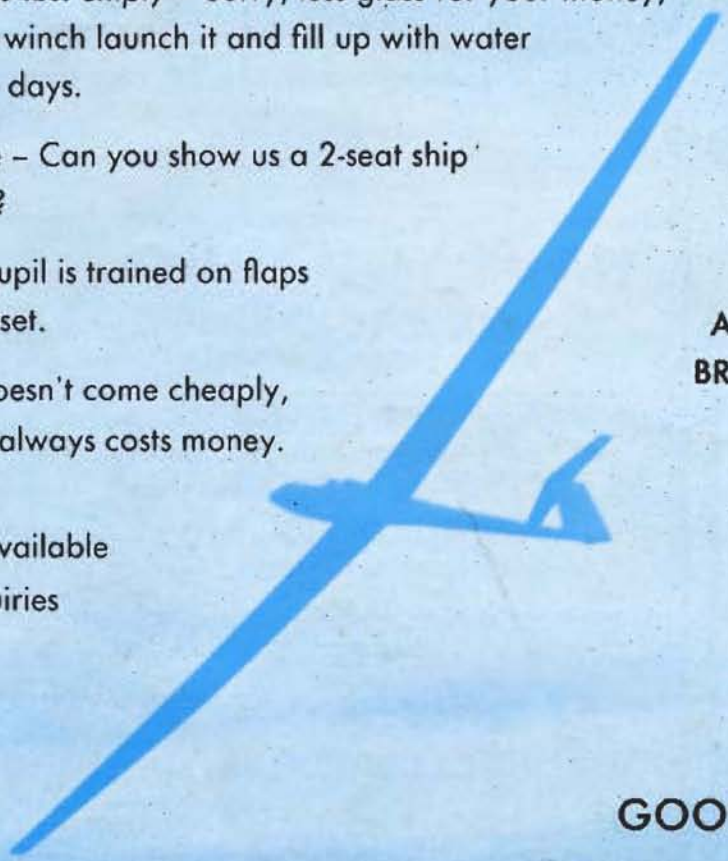

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