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Cover photograph : George Moffat flying the Nimbus near Marfa. *Photo by courtesy of Sandor A. Aldot:—all rights reserved.*

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WAVE SOARING

By JACK HARRISON

This article is in two parts. The first covers the theory, but the second is more practical, explaining actual flying techniques. A large number of facts, or what I believe to be facts, are given so no doubt it will be found to be hard work absorbing all the information. A detailed study will probably be necessary

MANY of us have heard the New Zealand story "ATC couldn't clear me at 25,000, so I climbed to 27,000 ft. to cross the airway." I foresee similar flights being possible in this country one day. The trouble is that "know-how" based on flying in British wave is limited. The Charlie Ross's of this world are undoubtedly far greater authorities on wave flying than I am, but as I have some 100 hours in British wave I may have a few hints to pass on. I also have the good fortune to fly for a living, so I can at least look at wave regularly, even if I do not always have the opportunity to soar in it.

Where in Britain can wave occur?

The short answer is — anywhere. Naturally, the best wave is found just downwind of the main mountainous areas, but it is not unknown even in East Anglia. Wave is not the rare phenomenon it is often thought to be; indeed, in some parts of Britain (i.e. the Highlands of Scotland), it is probably the normal rather than the abnormal state of the upper atmosphere. For reasons which will be explained later, the best wave occurs with west or north-west winds. Thus, to the east or south-east of high ground are the most favoured parts of the country. For example, the English/Welsh border, the Vale of York, or the Portmoak area. Wave expeditions should be planned to these and similar areas, but even in such unlikely places as Lincolnshire (where 10,000 ft. has been achieved) or Oxfordshire (14,000 ft.) it is worthwhile always to be on the lookout for wave.

Geographical Considerations

In a favoured wave area the best lift is frequently found in the same spot time and time again. A study of the geography will often help. The primary wave is the most easily located. This is the first wave set off by the hill. Examples of frequently used primary waves are found at Dollar (near Portmoak) in the lee of the Ochils, or at Ripon in the lee of the Pennines.

When soaring in the primary, it is easy to visualise the air cascading down the hill and bouncing up again (Fig. 1). The lift is

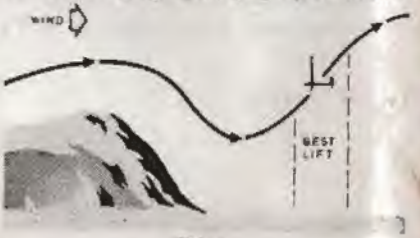

FIG. 1

found surprisingly close to the hill—only 1 to 3 miles. The exact position of the primary can often be worked out from the map. Recently, while flying in Wales, I anticipated wave directly in the lee of the Radnor Forest (a 2,000 ft. mountain). On six separate days, I found lift over precisely the same village of Evenjobb.

Alignment of the wave

Wave lies parallel to the hill producing it. It is not necessarily at right angles to the wind. This is *important* as it is often

FIG. 2

misunderstood. It is true that the wind must be approximately at right angles to the hill, but even 40° either side of this wave can still occur.

In the example shown (Fig. 2), if wave is initially located at C, it is clear that tracking at right angles to the wind is wrong. The beat required to remain in lift—CB or CA—has substantial headwind (tailwind) component. Thus the beat one way along the wave would take much longer than the beat in the opposite way—rather like hill soaring when the wind is slightly off the hill.

Alignment in different wind directions

Particular hills can only set up wave along particular directions. An example makes this clear (Fig. 3). The shape of the Black Mountain in South Wales is such that the wave can only be aligned NE/SW or NW/SE. Thus winds from NW or SW are best. If the wind is between these two directions, chaotic conditions can occur as the two wave systems are superimposed. I have soared the Black Mountain wave as the wind steadily backed from NW to SW. Initially, the wave was aligned NE/SW—line AB on diagram. Conditions then became confused, although soarable with difficulty, as the two systems overlapped. Eventually the wave settled down along the line CD.

On another occasion, I was soaring to the north of Long Mynd, with the wave aligned 030°/210°. Then, for a while, the alignment became 330°/150° before reverting to the NW wind wave. The change over was not progressive, i.e., at no time did the wave lie N/S, although for a short time the two systems were superimposed. I am inclined to think that many of the reported cases of the "wave suddenly collapsing" are no more than examples of change in wind direction resulting in overlapping of wave systems.

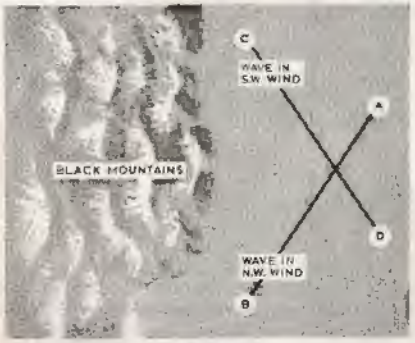

FIG. 3

Secondary and further waves

These lie parallel to the primary (and the hill). But the system may be staggered, so that each wave lies directly downwind of the previous wave (Fig. 4). Wavelengths are usually between 3 and 9 nm. Secondary and further waves are of course less powerful (although on occasion they may look deceptively better—I have never known the secondary wave of a *simple* system to be better than the primary). If say, the primary gives 6 knots to 14,000 ft., the secondary might give 4 knots to 12,000 ft. Five or six waves downwind, only 7,000 ft. might be obtainable, climbing at a mere 0.5 knot.

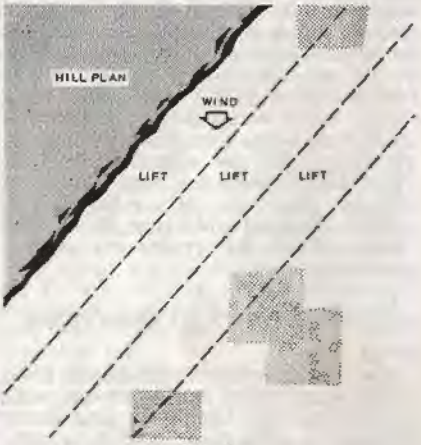

FIG. 4

In-phase hills

So far only simple wave systems have been considered. Real wave systems are usually more complicated, with further hills downwind reinforcing or killing the wave. The Pennines or Dollar waves, are relatively simple systems as there are no hills downwind to complicate matters.

In-phase hills can improve the wave. A good example occurs in North Wales, where Snowdon, and the mountains to the

SE are "in-phase". To the lee of the last mountain, in the Oswestry area, the wave can be quite superb. I have seen this system in ideal conditions, with a series of wave clouds improving with each downwind cloud. After the last hill the wave fell off rapidly. Sometimes hills can be out of phase, and cancel out. In other cases the hills may progressively decrease in size. Thus, although in phase, the strength of the wave does not improve further downwind. An example of this occurs to the NW of Portmoak, where the wave over Perth is no better than the wave over Loch Rannoch.

Wave many miles from hills

Wave is sometimes found in unlikely places, such as over Oxford. In these cases, it is not always easy to determine the alignment of the wave, and it may not even be possible to guess which hills are producing the wave. In the Midlands, this random wave is often aligned approximately 030°/210°. The probable reason for this is that the basic origin of the wave system is the Welsh Mountains, which as a broad generalisation, lie 030/210. So in a W or NW wind, when the air passes over small hills in the Midlands, such as the Cotswolds, it is already oscillating with this alignment 030/210. The "Kick" given by these new hills, although they are of random shape, simply increases the strength of the "latent wave", but retains the original alignment.

METEOROLOGICAL CONDITIONS

Wind

For usable waves, this must be 20 knots or more at 3-4,000 ft. The surface wind can be very light. Ideally the wind should increase steadily above 4,000 ft., and be 40 knots plus at 10,000 ft. In general, the stronger the winds, the stronger the waves. The direction should be substantially constant up to at least 12,000 ft. Wave usually dies off gradually with increasing height above a certain level, but a sudden decrease in speed, or change in direction, would determine the top of the wave.

The most favoured wind direction is NW. This is partly because NW wind weather is often favourable for wave formation (i.e. lapse rate, etc.), but mainly because many of the major mountain ranges in Britain run NE/SW. This is not to say that wave does not occur in other wind directions. It is the wind direction above about 2,000 ft. that is important. The surface wind would normally be backed some 30 degrees of this.

Lapse rate and Stability

For wave to occur there must be a stable layer sandwiched between two unstable layers. The lowest few thousand feet of the atmosphere must have a steep lapse rate. This can be the result of convection, turbulence, or forced uplift over hills. Common usage often refers to a particular air mass as being unstable, when what is really meant is that there is "potential" instability. An "unstable" air mass on a fine summer morning is not truly unstable until the convection has started, and the steep lapse rate has been produced. For wave to occur this true low level instability is necessary.

The unstable layer must not extend too high. If convective cloud tops exceed about 8,000 ft. wave is unlikely. A rough guide is that if showers occur, or are forecast, the unstable layer is probably deeper than 8,000 ft. Above the low level instability a stable layer is necessary. The stronger the stability, the stronger the wave (because stronger stability means

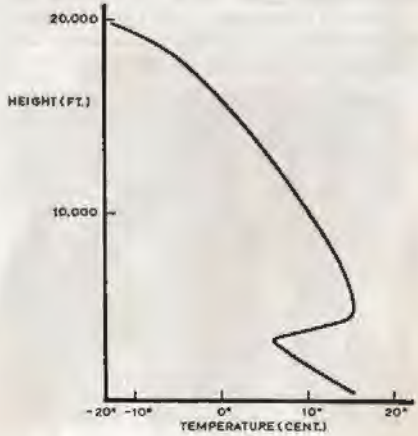

FIG. 5

shorter wavelength). Thus, a powerful inversion capping the unstable layer is ideal. Wave can only extend just above the top of the stable sandwich (invariably, the atmosphere is unstable at sufficient altitude), so the higher the stable layer goes, the higher the wave extends. An ideal temperature/height structure is shown in Fig. 5.

Thermals and Wave

A common phenomenon is for wave not to occur early in the morning, only becoming established when convection has started. Thus, instead of thermals killing the wave as is commonly thought, they do in fact get the wave going. I am excluding those occasions where the steep lapse rate near the ground is the result of turbulence, when wave conditions may exist throughout the day. But in convective situations I have several times had to wait for the morning thermals to start before being able to wave soar. In fact, nearly all my wave soaring has been achieved when thermals are or have been present. (After the thermals have died, a steep lapse rate near hill top level remains for some hours). The thermals need not be strong; indeed wave is often found above the weakest of thermals.

The distribution of thermals in wave situations is not random. Thermals are often found in the same place time after time, being triggered off by the wave. But it is often impossible to determine the correlation between the thermals and the wave. If thermals are found regularly in the same place, however, it is worth considering that there might be wave (assuming sufficient wind). This is particularly true with blue thermals. (There is always a strong inversion above blue thermals). I am tempted to go so far as to say that, with sufficient wind, there is always wave above blue thermals, but it is only contacted with the greatest difficulty.

Cloud

The ideal is strato-cumulus. There is a steep lapse rate below it, either from convection or turbulence, capped by a marked inversion at cloud tops. The humidity of the air determines the total cloud amount. Thus wave troughs may be marked by small gaps, or mere thinning of the cloud; or in drier conditions, the only cloud is in lines along the wave crests. The top of the cloud has an undulating appearance, with the rising air in front of the steepest slope of the cloud; making soaring relatively straightforward. However, from below, strato-cu may look most improbable as marking wave.

As I write this (in Wiltshire) the sky is covered with 7/8 strato-cu and would hardly rate a second glance from the average glider pilot. But careful study shows that the blue gaps remain in substantially fixed places, with cloud dissipating on the upwind edge of the gaps, and reforming at the downwind edge. The gaps, although not clearly defined, tend to be aligned crosswind. I have little doubt that it is soarable to 7-8,000 ft. or more. Perhaps some reader can confirm that 17th September was soarable.

Good wave can also occur over ordinary cumulus—provided the cloud tops are not too high. With cumulus, the line of lift is not well marked, but the good observer will notice that the cumulus usually forms in the same place, with certain regions containing plenty of cloud at all. The lift will be found just in front of the cloudy air.

I have experienced a most confusing situation, when wave occurred over cloud streets. The met. requirements for wave and streeting are rather similar. I eventually found myself soaring at 14,000 ft. in wave lift roughly perpendicular to the cloud streets several thousand feet below me. To say the least, it was confusing! Blue wave can also occur. Understandably, this is one of the most difficult types of wave to use.

The classic lenticulars are of course indications of wave. In my experience, the medium and high-level clouds, e.g. mother-of-pearl cirrus, are rarely helpful. The clouds that look the best are usually associated with the poorest lift. It is only the low (3-5,000 ft.) lenticulars—almost like roll clouds—that are reliable indicators of good wave. Not all wave clouds are lenticular: the best wave clouds do not look like lenticulars at all.

Frequently, in the evening, ordinary cumulus or convective strato-cu, suddenly becomes organised, and takes on a beautiful smooth, lenticular, appearance. This makes the wave pattern more apparent. But the wave has probably been just as

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good earlier in the day. It has simply been less easily recognised, and more difficult to get into.

Lines of ragged stratus—usually beneath other wave cloud, but sometimes in isolation, are often good indicators. In appearance they are similar to the curtain clouds of a sea-breeze front. They are deceptive, and to the casual observer, appear to have little significance.

In all types of wave cloud the upwind edge of the cloud, or the upwind boundary of the cloudy air, is to all intents and purposes stationary as the cloud is always forming in the same place. Similarly the downwind edge; in fact often the downwind edge is more noticeably stationary. In the smooth classic wave cloud this re-forming at the upwind edge is so regular that the whole cloud appears fixed in the sky. With cumulus and stratus-type wave clouds, individual clouds are very noticeably moving. Lift may be found in front of one cloud. This cloud drifts back. Suddenly more cloud forms upwind. This drifts back, and the process is repeated. The overall effect is that the new wisps of cloud form in the same place each time, with the position of the cloud as a **whole** remaining stationary.

Synoptic Situation (Weather chart)

An analysis of charts when wave has occurred reveals one surprising fact. The isobars have anti-cyclonic curvature. This factor alone, however, is no guarantee that wave will occur.

Suitable weather situations occur just in advance of a warm front, immediately after a cold front, and also in the warm sector (but usually too cloudy for useful soaring). Quite the ideal situation occurs when an anti-cyclone is just to the SW or S of Britain giving NW or N winds. Provided winds are strong enough this synoptic situation invariably produces wave. It might not of course be usable if the cloud cover is too great.

Time of Year

Spring and autumn, notably March, April and October, are especially favoured. These seasonal peaks are probably for the following reasons: In winter, the sun's heating is generally too weak to produce the necessary low level instability. In summer, winds tend to be too light. But good wave can occur throughout the year. One of my most enjoyable wave flights was on 12th July, and remember that the first crossing from N. Ireland to Scotland was on 31st December. Indeed, there is evidence of secondary peaks of activity in July and January.

Summary of ideal Met. Situations

In a suitable geographical area I would confidently anticipate wave in the following circumstances:—

1. Anti-cyclonic influence—with anti-cyclonic curvature of isobars.
2. Wind, 20 knots plus at 4,000 ft. Very strong winds, i.e. 50 knots plus, in upper atmosphere. Constant direction with height.
3. Cloud—strato-cu, base 3-5,000 ft. Tops not above 8,000 ft.
4. Time of day—late morning onwards.

* * *

Comments by TOM BRADBURY: I found this a very interesting summary of practical wave flying, and I look forward to reading Part Two. There are, however, a few points that are arguable:

1. From the paragraph on Met. Conditions sub-title Wind. "In general the stronger the winds the stronger the waves". This is not always true. Some years ago a mathematical study showed that the best lift may occur when conditions are only just right for waves to occur, and then an increase in upper winds results in a decrease in the wave amplitude. Actual wave flights have confirmed this, showing strong lift when upper winds were far from strong.

2. "Wave can only extend just above the top of the stable sandwich". Although it is true that the best lift is often found in this layer, the usable wave can go far above the stable layer. Moreover, a separate wave system of much longer wave length can exist at a very high level. A Canberra pilot experienced lift of some 3,000 ft./min. just to the lee of the Cairngorms at about 35,000 ft. in a south-westerly airflow, and a more remarkable report came from a jet pilot over Norwich. On this occasion the flow was north-westerly, and the pilot reported some 3,000 ft./min. lift between the heights of 35,000 and nearly 40,000 ft.

3. Although the diagram (Fig. 5) showing the temperature/height curve, with its marked inversion is correct, it is not necessary for there to be anything like such a sharp change for good waves to occur. Excellent wave, soarable to above 17,000 ft. has been found when the stable layer was hardly noticeable.

4. "Isobars invariably have anticyclonic curvature when waves occur." This is a new one to me. I think it is probably quite a useful rule, but there is nothing in the theory to exclude waves forming when the isobars are curved cyclonically, and in fact wave flights have been made with slight cyclonic curvature showing on the charts.

5. "Wave over cloud streets". Yes, this is a good observation, and in fact a number of wave flights from Nympsfield have started after flying up a street of cumulus and climbing into wave from near the top of the upwind cumulus of the street.

6. "Blue wave can also occur". Yes, probably much more often than is realised.

7. "Summary of Ideal Met. Situation." (4) "Time of day—late morning onwards." Although the sun's heating changes the stability of the lowest layer of air, and as a result usually alters the wavelength, the waves themselves certainly do exist through the night and early morning. However, from the practical point of view, it is probably much harder to get into wave from low levels when there is no convective lift to bridge the gap.

Finally, I hope nothing above sounds discouraging. The more people who can give us practical ideas on how to use wave the better, and the article ought to draw some interesting ideas from the experts (as in fact the author hopes).

OBITUARY

BILL IGGULDEN

DEATH either deals with you with a sledge-hammer or else adopts salami tactics, slicing off bits of you until you are no longer there, although you may for some time still go on as a so-called living being.

With Bill Iggulden it took the first course, and one which I would wish for all my friends; but when this comes at the age of 53, with so much still to contribute, and so many people within the warm glow of affection, it is an irremediable loss to those left behind.

I don't know how long I have known Bill, but I do know that from the first time we met we knew we could rely on each other as virtually members of the same family. When my second son Stephen went to Australia to find a job and work there for a few years, I gave him one letter—to Bill, and the Iggulden's adopted him as one of themselves and saw him through all the problems of integrating into a new world.

I came back from a meeting in Paris of the CIVV on the night of November 6th at which we had been discussing Bill's letters on the subject of the Australian offer to hold the 1972/3 World Championships, and at 5.30 a.m. on the following morning Brett, his son, who was in London, phoned me to tell me he had just had the literally shocking news of his death. I was too stunned to do more than mumble—Brett will forgive me because he too is an Iggulden.

There are people better qualified than I to record what Bill did for Australian gliding. He had been President of the GFA for so long that I can hardly imagine it without him. So I will simply say what Bill was as a man—and it is indeed simply said—he was a Gentleman. He was as straight as a die; he lived for what he could give, not for what he could get; you felt you could never let him down, for if you did so you would be letting down yourself. He had an astonishingly wide mind, and in conversation could beat me on any subjects from music to a discussion on the Gold Standard. He understood people, and that they strongly tend to live up to what one expects of them. I am certain he never did a mean thing, as I know he never committed a selfish act. There is no more I can say. The Scythian has taken a slice off all who knew him.

19th November, 1970.

P. A. WILLS

SOME ASPECTS OF TURNING POINT PHOTOGRAPHY

By LAURENCE HILL

I HAVE been asked to write about the problems of turning point photography. If the 1970 Open Nationals were typical I feel that the whole concept of basing the results of such competitions on photographic evidence is extremely shaky. However, it is possible that conditions for air to ground photographs have rarely been as bad as in this competition. Except for the final day, haze and poor visibility prevailed.

Early in the competition it was quite a surprise to me that with the same type of equipment I was faced with such varied results. It became obvious that some pilots were getting consistently better photographs. After looking at the ways in which the cameras were used the reasons for the variations became clearer.

Many pilots just had the cameras kicking about in the cockpit and held it in the general direction of the turning point with one hand and triggered it hopefully. In a later discussion it was said that a school of thought actually recommended this—this is about the only point on which I will be categoric—the camera needs a mount—no one can consistently hold a camera, point it at the turning point, fly the glider, trigger it and get good results.

To interpret direct from negatives easily they should have a sharp image and reasonable contrast. As the camera is a fixed focus affair the turning point should be in focus, but unfortunately this type of camera has a relatively slow shutter speed (probably 1/60 sec.). This means that camera shake is often present because the release was "snatched" rather than "squeezed", or the air was turbulent and shook the camera. This fault was quite common so do take more than one exposure at each turning point, however good you are, one might have "shake".

Contrast of the negative is controlled by many factors; camera design, film used and meteorological conditions, but several important factors which will lower the contrast are in the control of the pilot.

1. Dirty lens.
2. Dirty and scratched perspex.
3. Extraneous light falling on the lens —here some form of hooding means only the light from the subject falls on the lens. This is probably the greatest single factor which can increase contrast.

Kodak sells a 320 Kodisk lens hood at

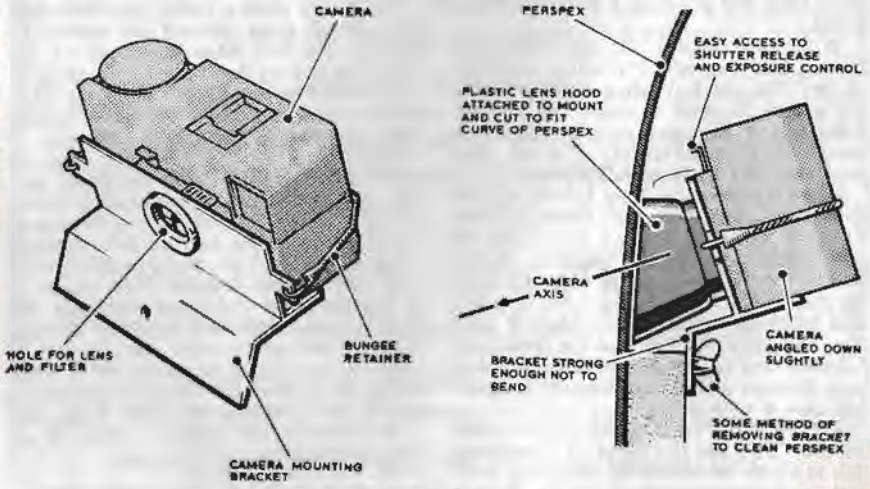


FIG. 1—*Suggested layout for a camera mount*

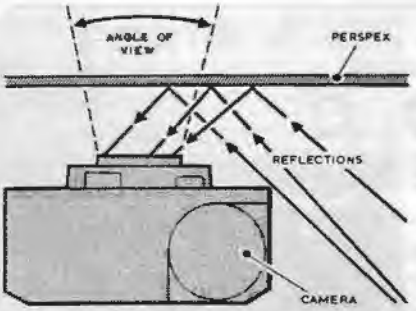


FIG. 2—*How internal reflections from the canopy affect the camera.*

£1 0s. 6d. This is made of tough plastic and can have the clip-on arrangement cut off and the front shaped to the perspex. The much modified hood can then be araldited to the face plate as shown (fig. 1).

4. Reflections from the inside of the canopy. Several mounts which held the camera well were so arranged that the lens was 2-4 cm. from the perspex. This allows reflections to enter the lens and lower the contrast (fig. 2). Besides the risk of camera shake, not hitting the turning point, reflections are another reason why hand holding cameras is unsatisfactory (fig. 3).

5. The use of a medium yellow filter helps haze penetration and increases contrast. For the Model 25 Instamatic a Kodisk 320 cloud filter which just clips on is available at £1 13s. 9d. Four other models of Instamatic clip-on filters can be obtained from any photo dealer but are not Kodak accessories.

I must mention that all my comments are based on photography through perspex. This is far from ideal, but few modern gliders have clear vision panels situated where you want the camera.

Taking the actual photographs:

Some points on the actual sequence of taking photographs for turning points which would help the assessors and competitors are as follows:—

(a) *Check the camera.* Before loading the film check the lens inside the camera as well as outside for cleanliness. A soft, clean, well-washed handkerchief is quite satisfactory for cleaning. Blow out last season's dust from the interior.

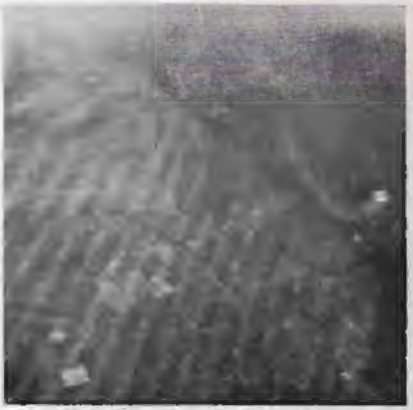


FIG. 3—*Reflections from pilot's striped jersey completely swamp the air to ground picture.*

(b) *Load the camera in the shade* (when blessed with direct sun). When winding the film to frame 1 watch through the red window that the backing paper is progressing smoothly, any apparent skidding may mean trouble.

(c) *Photograph the task board.* Make sure you fill the finder with the board. This assumes the board to be about 5 ft. x 4 ft. or bigger. If the organisers have a much smaller board it could be out of focus. Make two exposures and watch that the numbers move when you wind on.

(d) *Instal in the aircraft.* For average conditions set the camera to "Bright" if no filter is used and "Dull" if using the yellow filter. If the day is unrestricted sunshine the camera can be on "Bright" even with the filter.

(e) *Squeeze the shutter release.* When at the turning points take two or three exposures if you can; remember *squeeze* it! When low (1,000 ft. agl.) you are getting in very little of the ground in the photograph. Take several exposures as this helps to confirm the turning point (fig. 4).

(f) After landing, do remember to photograph the competition number and again make it nice and big in the finder.

(g) Wind on to the end before opening the camera.

The Kodak Instamatic is remarkably reliable, but when so much is at stake in a major competition I feel a second camera is essential. I realise this is just adding to the pilot's already long list of essentials, but one lost turning point could lose a competition.

Task Setting and Photography

So far I have criticised the poor competitors, but now for the task setters. They must bear in mind the shortcomings of the system and in certain conditions of bad haze it may be more certain to go back to observers.

An example of this was when Lincoln Cathedral was a turning point in the 1970 Open Nationals. For the glider to be in the correct sector the camera was pointing into sun (fig 5). The sun and the haze added to an almost impossible task for the camera. Luckily no pilots rounded the turning point high and so most were just identifiable. If a pilot had rounded the turning point at 6,000 ft. instead of the average 2-3,000 ft. he would have been able to see the turning point visually, but the resulting negative from a well installed camera might have been unreadable. We surely cannot expect the pilot to realise this, but he would be penalised for an unsatisfactory turning point photograph.

FIG. 5—*Lincoln—identified with the help of a crystal ball. The Cathedral is in the bottom right hand corner.*

For the 1970 Open Nationals we had photographed many turning points in advance, but the weather dictated different tasks from those originally planned. This meant that the assessor was having to identify turning points which he had not seen before. The most difficult were disused airfields. On one occasion there were three within twelve miles of each other, and it must have been difficult for the pilots to be sure which one was the turn-

FIG. 4—*The one on the left easily fitted the known layout of the airfield, the second just shows the features, the third could be anywhere. The pilot sensibly had taken several photographs.*

ing point in the haze. The feature of the turning point airfield was the perimeter track which was square and the actual point was the triangle between the runways. The photograph in fig. 5 shows the problem from the assessor's point of view. The fact that several pilots rounded the turning point low shows another shortcoming of the system.

The type of turning point which in my opinion is easy to assess has a distinctive feature with a good pattern surrounding it. Whether high or low there is no problem identifying it (figs. 6/7).

FIG. 6—*Olney Church—the position of the church just south of the village in relation to the road and river is distinctive whether high or low.*

FIG. 7—*Trowell Service Station—this distinctive feature on the M1 was easy to identify by its layout and other roads crossing the M1. The photograph shown suffers from camera shake but is still identified without trouble.*

Turning point photographs at Marfa—1970

Emphasis was placed on a system which would ensure that photographs were taken only after installation of the camera in the aircraft. The pilot had to photograph a declaration board on which his competition number was displayed. Before doing this an official drew a random line on the perspex with grease-pencil in front of the lens. The resulting interference shows on each photograph taken—this ensures no substitution of cassettes or cameras could be done without detection. Two cameras were mounted in each aircraft and both had to be exposed at each turning point. When the flight was complete the film was wound off. Each pilot was given a line drawing of the turning point and a Xeroxed photograph to guide him. This must have been a great help to him.

Another regulation was that the wing tip had to be in the top corner of the photograph. I assume this was to augment the grease-pencil lines as evidence that the photographs were taken out of the glider and not in a mobile copying device in the aircraft of a previous photograph of the turning point!

To me the grease-pencil lines are foolproof, and when one considers the angle of bank needed when the pilot goes closely round the turning point I feel that including the wing tip is quite unnecessary. Although the wing tip is a positive aiming device I am sure that pointing the camera slightly downwards on a line, as shown in (fig. 8), would make the taking of these

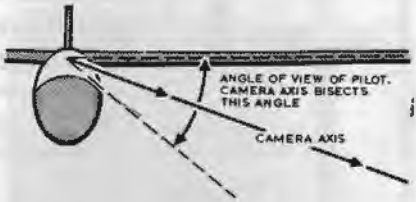


FIG. 8—*The line of the camera bisects the pilot's angle of view from the wing down to the edge of the canopy.*

photographs much easier. Assuming the glider is going closely around the turning point it would only need to bank about 30° instead of 45°-50° using the wing tip method.

WINCH AND AUTO-TOW LAUNCHING

By P. B. SALISBURY

WHAT emerges with crystal clarity from Norman Fox's Survey of winch and auto-tow launching (S. & G., October, 1970, page 355), and will doubtless continue to do so as his survey proceeds, is not only, as he remarks, the "bewildering variety of shapes, types and sizes" of machinery in use, but also the generally poor performance in terms of both launch frequency and fuel and other costs, all of which would account for the demise of the cable and its associated machinery as a respectable means of initiating a flight.

Before examining briefly some of the issues may I just make the upper limit of performance, reported as "16 or more launches per hour", a little more respectable by quoting the salient statistics of winching on the Long Mynd which, using a VW-powered retrieve winch, are normally achieved by a *practised* winch-driver:

Maximum No. launches per hour: 20 (limited by breathless groundhandlers).
Launches per gallon (petrol): 14-17 (according to headwind velocity).
Cable length: 3,000 ft. ± 300 ft.
Back-release height (calm air): two-seaters 1,100 ft. (unless instructional factors interfere). Common range of single-seaters: 1,200-1,500 ft.

In attending now to some of the points included in the Survey, it might be logical to make the initial assumption that each club possesses the launching equipment most suitable for its own operating conditions and finances. To what extent is this really true? Driving complete vehicles up and down (and unnecessarily around!) the airfield, whether for retrieving or launching, or both, is least economical, but totally vindicated on a smooth metalled surface that doesn't precipitate their collapse. On rougher sites, provided the cable run has sufficient width and a generally vegetable surface, it is rather surprising that the winch retrieve appears to remain such a sparsely used method; for the transfer of mass involved here is merely a hundredweight or so of cable and fittings and a few hundred pounds of glider and pilot. Great credit is due to those who, in the face of current opinion, instituted the system at the Midland Gliding Club, which this season should have provided in excess of 10,000 launches.

On the financial side, it is probably true in a number of cases that many of the "economies" customarily inflicted upon cable launching are thoroughly spurious in their overall effect: small engines with marginally sufficient power forced to run at full throttle nearly all the time: retention of conventional dry-clutch transmission: use of Diesels with unsuitable torque characteristics for the sake of burning cheap "red" fuel: making do with poor quality, worn, kinky or knotty cable: making do without a decent set of repair tools: bodgy repairs on basically dodgy machinery. Application of this type of economy, tempting (and sometimes inevitable) as it may be, can so disastrously oppose the desire to inject the awaiting fleet into the atmosphere that the consequent loss of launch and soaring fees resoundingly negates the original economy.

I would contest the view that communication between a winch and launch point need be complicated by sophisticated and expensive radio systems, except in special circumstances such as a lack of line-of-sight between launch and winch ends, or irregular or infrequent use of the winch. It is inconceivable that any amount of electronic clap-trap or back-chat will serve to remedy the underlying source of trouble and delay, namely the unfortunate volunteer who, through improper teaching, lack of practice, or fundamental ineptitude, is incapable of using the main winch safely and effectively.

Visual signals can supply the essential information for carrying out a launch in the most straightforward manner; for any additional information all the winch-driver requires is a cheap pair of binoculars. It is surprising the frustrations that can be allayed when the "Brownian" antics of the particles down the far end are magnified a few times!

What leads cable launching, particularly

winching, more firmly into the doghouse than anything else is the apparently widespread acceptance of its *de facto* association with the devastating "Fumble Factor" mentioned by Norman Fox. Winch fumbles, one is constrained to suspect, are tenaciously regarded by a select cadre in many clubs as being an inextricable part of the fun of gliding. Fun it may be for some, but chronically expensive fun for any club. The overt result of this hideous form of fun is the loss of revenue accrued from the negative launching of a queue of eager pilots.

But more complex and insidious events accompany every fumble, which can lead to inestimable waste of club funds, a waste so often taken for granted. Damage to winch and cable is more or less axiomatic, so is a pervasive frustration and ill-will amongst members and potential members, for which the opportunity to exercise one's darkest vocabulary does little to compensate.

Pilots' eagerness turns readily to alarm and despondency when they find they can rarely hope for a suitable airspeed from the cable; nor, from a miserable release height, can they hope for more than exceptional luck to conduct them into the nearest patch of ascending air. So that great money spinner, soaring revenue, is lost as well. To an early solo pilot the results of incompetent winching can be, and have been too frequently observed to be, a much more deplorable matter; one liable to trigger a train of events leading to profound anxiety on the part of both the pilot and anyone observing the flight.

This sort of fiasco, just as much as its inherent advantages in some conditions, is surely the reason why it is generally preferable to hitch on to a whacking great motorised aeroplane and go for a steady beat round the celestial bounds, climbing imperceptibly the while. For the earthbound remainder there's at least plenty of time to snatch a picnic between launches! And whether or not a particular tug pilot is predisposed to tow the glider to an eventually useful heavenly domain, the glider pilot is duly comforted by the fact that he at least has a guaranteed level of competence to operate the launching mechanism. Very different from the performance that same glider pilot might have to anticipate from an anonymous, recalcitrant club member installed reluctantly in the winch with a minimal briefing, trying to sort it all out after a six week lapse! Yet this latter "tug" driver not only has at his disposal a means of flicking an aircraft to the height of a 25 bob aerotow in 60-odd seconds, but also shares perhaps more directly than the tug pilot a major responsibility for the safety, consistency and profitability of the whole flying operation.

Thus I come remorselessly to my main point, one concerning which three professional seasons in the King of Sports has turned from mute suspicion to firm conviction. It is that quite regardless of the extent of Heath Robinson's or Emmett's influence on the design of a club winch or tow car, the main influence upon its successful operation is the fellow at the controls. I feel certain that if only more clubs would take pains rigorously to *select* and if necessary reward one or more (but not many more) persons from within or without their club the intrinsic merits of cable launching would emerge.

Its disparagers would then deign to rig their glossy ships, and after a day of uninterrupted, reliable and effective launches, of giant aviators, a swollen kitty and enhanced goodwill glinting in every corner of the club, even that figure of ignominy epitomised, that sweat-soaked, oil-stained, dishevelled personage from the nether regions of the site could afford to feel profoundly satisfied with the transformative effect of his new found and ever developing skill. Might even get offered a pint or two or . . .

I cannot possibly conclude without acknowledging the valuable effort Norman Fox has made to instigate an airing of this topic.

NEW SAILPLANES

Slingsby Kestrel 19 m.

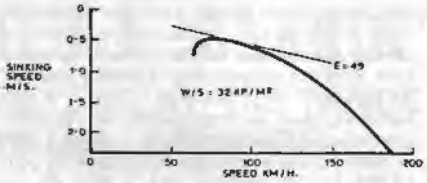
A carbon-fibre main spar research 19 m. Kestrel is under construction at Slingsbys and should fly in March. In order to save on research and production costs the wing moulds can then be used for a production version of a conventional glass-fibre 19 m. Kestrel which can go into production immediately after the research prototype has flown.

Slingsbys' decision to stick to 19 metres is largely due to the CIVV proposal to introduce a 19 m. prize within the Open Class in World Championships; a proposal they hope will be accepted at the March meeting of CIVV.

Nimbus 2

Klaus Holighaus of Schempp-Hirth announced at Marfa that he hoped to have a production version of the Nimbus flying during 1971. The prototype 20.3 m. span Nimbus 2 is under construction and due to fly in April with deliveries scheduled for late 1971.

The Nimbus 2, like most of the 20 m. ships presently being built, will have a four-piece wing. Its profile is the same as that used for the original Nimbus, but to minimise bending the structure will be stiffened. The flap settings range from −8° for maximum cruising performance and +6° for circling flight, and can be dropped to 20° for landing. The ailerons will droop with the flaps for improved low speed control. Airbrakes will be fitted to the upper surface only of the wing while a tailchute will permit steep landing approaches.



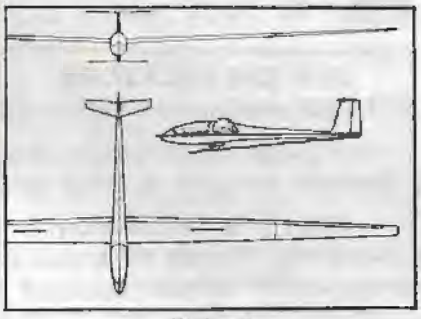
Nimbus 2 calculated polar curve.

The cockpit, front fuselage as well as the T-tail of the Nimbus 2 are based on the Standard Cirrus which have already been well tried. Empty weight is estimated at 340 kg. with a payload of 130 kg. An additional 140 kg. water-ballast can be carried. Maximum rough airspeed lies around 218 km/h. and best glide ratio is calculated at 49:1 at 90 km/h.

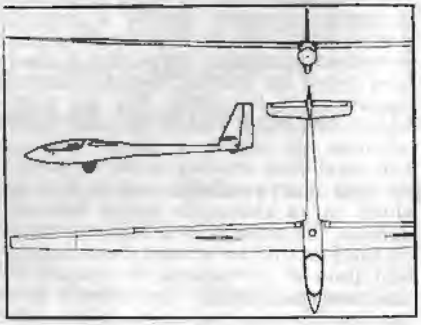
Schleicher ASW-17

The decision to produce a 20 m. development of the ASW-12 came after the extra experience gathered on the enlarged (19.08 m.) ASW-12, flown so successfully by Hans-Werner Grosse at Marfa, and Schleichers are starting the production of the ASW-17 with the prototype due to fly during this spring and first deliveries for the latter half of 1971.

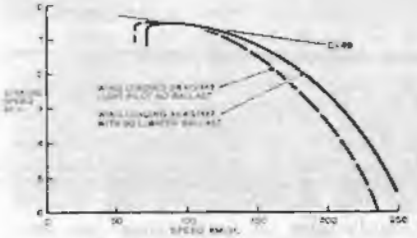
The ASW-17 will have an enlarged cockpit (3 in. longer and 2 in. wider than the ASW-15) for greater comfort and room for more instruments. The Wortmann wing (FK-62-K-131 mod.) will carry tanks to hold 80 litre of water ballast and be fitted with airbrakes. Based on the good results of the Akaflieg Braunschweig SB-9, the wing will be a



Nimbus 2



ASW-17



ASW-17 calculated polar curve

four-piece affair; this should make it easier to lift for rigging and trailering.

The calculated performance is comparable to the ASW-12 and should be equal to any other 20-metre sailplane. The price should also not be much higher than that of the ASW-12.

Technical data

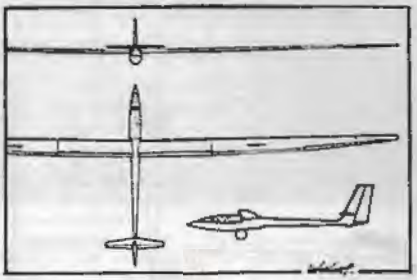
Span, metres	20
Wing Section (see text)	
Wing Area, sq./m.	14.70
Aspect Ratio	27.2
Max. L/D, Kg/sq.m.	28
(with ballast)	36
Empty Weight, kgs.	350
AUW, kgs.	470
Glide Ratio at 100 km./h.	1 : 48
Max. Speed, km./h.	250

SB-10 30 m. Two-seater

The calculated performance for this project, in hand by Akaflieg Darmstadt, points to a very high glide angle of 1:53.5 and a min. sink of 40 cm/sec. To achieve these figures the designers have had to go to a wing span of 30 m. and aspect ratio 38.7.

The wing of the SB-10 will consist of the 4-piece wing from the 22 m. SB-9 single-seater which has been flying for some time. Another 8 m. long centre-section is to be constructed and added to this. Because of the high loads involved new materials will be used and the most expensive and important part—the spar—will be made of carbon-fibre, this is to ensure sufficient stiffness.

The wings have been designed to take flaps and waterballast tanks. The front fuselage of tubular steel will have a glass-fibre covering, while the aft fuselage will be an aluminium alloy tube. As well as a retractable undercarriage, the machine will be fitted with brakes and a tailchute.



SB-10 Two-seater

The aerodynamic details are well advanced, but even so it would not be surprising if the detailed construction should provide the designers with plenty of headaches. The maiden flight is expected to take place in about two-years' time.

Technical data

Span, metres	30
Wing Area, sq/m.	23.3
Aspect Ratio	38.7
Wing Loading, kg/sq.m.	28-39
Flying Weight, depending	650
on ballast between, kgs.	910
Glide Ratio	1:53.5
Min. Sink, m/sec.	0.40

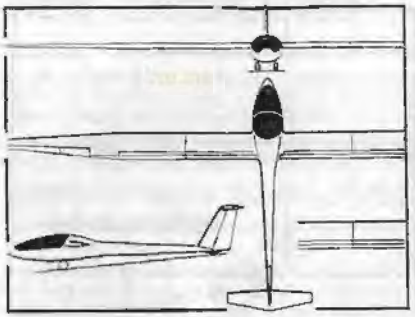
Excerpt from *Aero Review*, Nov. 70.

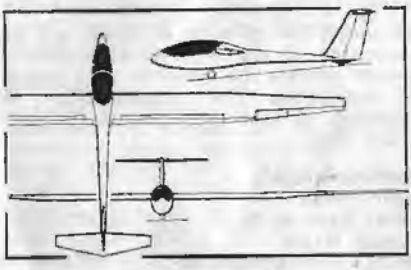
Italian Calif series

Since our last report in S & G, August, 1969, page 354, the Caproni company is now engaged in large-scale production of the Calif series.

The original Aviamilano A-2 and A-3 have been redesigned, and with greatly improved aerodynamics and stronger structure to boost performance and simplify production, the single-seaters will be known as the A-10 (15 m. two-piece wing), A-12 (17.88 m.) and the A-14 (20.38 m.) both with a three-piece wing.

Supplementing this array of single-seaters, Caproni are also engaged in the construction of two new two-seaters. A distinctive feature of all the sailplanes is the tadpole-shaped fuselage. The monococque forward section is of glass-fibre with load carrying light alloy structure with a narrow-diameter all-metal stressed skin tail boom. All models have an all-





moving T-tail and retractable undercarriage.

The Calif series embodies a new wing, with an original and patented trailing edge flap/airbrake system, which substantially improves low-speed and circling flight as well as cross-country performance. The flap/airbrake system used complies with the proposed specification Part III of Section 3 of the FAI Sporting Code.

The Wortmann wing section FX 67-K-170/150 at root, and FX 60-126 at tip, is used on all versions and constructed in all-metal single spar stressed-skin, including the ailerons and flaps.

The A-20 and A-21

These are two-seater versions of the A-12 and A-14 and represent the ultimate in this class of sailplane. According to Caproni the world market is ready for a new high performance two-seater as no manufacturer of importance has been engaged in the production of such a machine for a number of years.

A particular point of interest is that the seating is side-by-side. This offers better overall control, superior all-round visibility, room for a large intrument panel, and more contact between the pilots, etc., all important items especially for instruction and competition flying. Wind-tunnel tests also showed that, contrary to popular belief, a tadpole-shaped fuselage with side-by-side cockpit produces rather less drag than a tandem cockpit with less frontal area. Unlike the monowheel on the single-seaters the two-seaters are fitted with a *pair* of retractable wheels.

The A-21 has completed its test flying programme successfully and production has already started.

A-21J

A powered version of the A-21 is also well advanced. It is fitted with a micro-turbo Eclair jet engine of 176-206 pounds sea level static thrust. This jet sailplane, well suited for sports flying, civil and military training and meteorological flying, is also fitted with paired retractable wheels. The wing tanks hold 220 pounds of fuel and the retractable side air intake

Above — Calif A-20 (note undercarriage)

Calif A-10

Below—Calif A-21 in flight and (opposite page) on the airfield

feeds a plenum chamber to which the engine is fitted.

The A-21J can be considered as a "poor man's U2" with a service ceiling of almost 45,000 ft., a proven restarting capability up to 8,000 ft., a 1,250 ft. take-off length over a 50 ft. hedge and a maximum range (powered) of 540 nm.

The Italian Air Force have shown great interest in both the A-21 and A-21J as a trainer for initial flying instruction, conversion to jet power and subsequent training.

Production plans for 1971 foresee five to seven sailplanes per month and Caproni are holding firm orders and options for 41 machines, mainly for the Italian Air Force, the National Soaring Centre as well as private owners. Unfortunately no prices have been stated.

Technical data	**A-10**	**A-12**	**A-14**	**A-20**	**A-21**
Span, metres	15	17.88	20.38	17.88	20.38
Wing Section, Wortmann					
Wing Area, sq/m.	11.43	13.85	16.10	13.85	16.10
Aspect Ratio	19.68	23.08	25.8	23.08	25.8
Max. L/D, Kg/sq.m.	28		27	34.7	34.3
Empty equipped weight, Kgs.	220	260	280	320	350
AUW, Kgs.	320	400	433	550	580
Min. sink, m/sec. at km/h.	0.55/73	0.47/80	0.40/79	0.55/77	0.50/80
Stall (flaps up) km/h.	62.7	64.4	62.4	70.5	68.4
Max. speed, km/h.	270	270	270	270	270
Glide Ratio at km/h.	41:1/85	45:1/93	49:1/90	42:1/90	45:1/95

★ ★ ★

BACKGROUND TO TORVA SAILPLANES

THE emergence of a new company to manufacture sailplanes in this country is something of a novelty and its first product in hand is creating considerable interest.

For some years now the supply of new sailplane designs has come from abroad and it should be heartening to find that steps have been taken to design and make sailplanes in this country. It is ironic that materials, design-knowledge and practical skills have been readily available but somehow the enterprise was not.

The sailplane market, like many recreation markets, is one much influenced by fashion. In recent years the advent of GRP structures as well as the better wing sections of Drs. Eppler and Wortmann have improved the performance of the product considerably. But the sailplanes produced, however, were of too high a price and optimised towards better conditions than those normally found in the more temperate industrial zones of the world where sailplanes are bought. Taking all this into account, Torva decided to make a good climbing sailplane with well-harmonised controls, that could land slowly in the small fields of old England.

Because designers have been looking for better and better shapes, cockpit room has suffered greatly and now only just fits the light and slight pilot. Several excellent designs have unnecessar-

The fuselage mould for the Standard Torva

ily restricted their sales potential through this. A good wave flight can take several hours before the elusive height is achieved, and in such conditions, maps, sandwiches, camera, heavy clothing must all be accommodated. Torva has catered for this.

A careful anaylsis of the economics of the exercise showed that glass-reinforced-plastic was superior to any other forms of construction. It was more resilient than metal, more easily fabricated, gave a better appearance and required less supporting structure and has therefore been adopted for this new sailplane.

It was necessary to test the laminates of the material in varying thicknesses and grades. These tests were done at Leeds University and they confirmed the strength values used in the initial structural design. Further proof tests were also done on the completed wing structure and these tests were equally successful.

In any design the fuselage shape is important and the fuselage cross-section is built to conform to a mathematical curve of a higher-order equation. The time spent to draw the sections and fit them into the overall complex shape is considerable. Torva was fortunate to have the co-operation of the Computer Aid Design Centre at Cambridge who used their "multi-patch" programme to draw the fuselage and canopy sections. This saved considerable time and gave an insight into modern technology.

The performance calculations suggest that Torva will be a good climbing glider with a glide angle of about 1.38 at a wing loading of 5.75 lbs/sq.ft.

J.C.R.

★ ★ ★

GIPSY 12/15 DEVELOPMENTS

By L. P. MOORE

THE August-September, 1969, issue of SAILPLANE & GLIDING announced the introduction of a novel prototype sailplane in which the metal wing skin was bonded around a core of rigid foam, providing such efficient stabilisation to ensure an exceptionally light and rigid structure for any chosen span. When tested to destruction under supervision of the BGA our typical specimen had passed through OSTIV's Proof and Ultimate requirements while yet remaining within its elastic limits—even without skin wrinkles having begun to appear.

For those who did not read this article: an orthodox, framed, metal-skinned fuselage, having a V-tail, was designed to take a series of such wings ranging in span from a Mini at 12 m. to a Standard at 15 m. and a Open variant at about 16 m. As all wing variants are of approximately the same area, their aspect ratios increased with span. The 12 and 15 m. versions were untapered for simplicity, good handling and low cost, while the Open wing was to have a tapered extension of the 15 m.'s inner span. A computerised calculation had shown that an optimised and tapered 12 m. sailplane could have an empty weight as low as 230 lbs. and should have had an aspect ratio of 17. We decided to prototype a

12 m. and designed accordingly for The Birmingham Guild to construct.

Flight trials commenced on 7th April, 1970, in the capable hands of Derek Piggott and by the end of the day he was putting Gipsy 12/15, as she was then named, through mild semi-aerobatics, having flown her from stall speed to 105 kts. in gusty cross-wind take-off and landing conditions.

With the members of the Design Group distributed between Lancashire and Hereford and working on a spare-time basis, the factory at Birmingham and the test pilot and airfield down south, it may be understood why it took till autumn to complete the BGA's Test Schedule for C of A and a mere thirteen hours' flying. To complicate matters further, Derek, unfortunately, had to leave for Eire in late-summer. We were fortunate enough, however, to enlist the week-end services of Roy Procter, who, with similar thoroughness and skill, took the prototype through what might be called her evaluation trials.

There had been the usual crop of modifications associated with first-of-the line prototypes but only one had caused us any real trouble, and that had been flutter of our novel trailing-edge airbrake at high speeds. It took us a long time to trace the cause, while eventually the cure turned out to be kindergarten. This component had nevertheless produced a glide-control angle of 1 : 7 and had successfully limited the dive speed to 5 kts. below the limit demanded. Roy reporting upon this 125 kt. manoeuvre writes: "there was no noticeable bending or distortion (of the wings)".

As for weights—in the interests of speed and economy we had either been compelled, or had chosen, to accept many compromises; such as, in-stock gauges and components; no weight-saving holes in the foam; no spanwise taper in dimensions other than the main spar booms; double gauge glass-fibre mouldings for the cockpit, canopy, and wing tips; oversize wheel; a two-fold weight of adhesive—due to inexperience at the time—plus extras for handling and crash-protection. In the end we were flying at a maximum wing loading of just 6.5 lbs./sq.ft. Nevertheless, she produced her well-behaved stall at 37 kts. (corrected) and lifted off at 39 to 40 kts. at full load.

Both test pilots and the BGA's No. 1 Test Group reported that she was delightful to fly. Derek's conclusion is reflected by Roy, where he writes "Chandelles . . . were extremely pleasant, with positive control in all three axes being maintained throughout the manoeuvre. The characteristics of the glider would indicate that it would be an excellent aerobatic machine. . . ." So much for test flights.

Best glide ratio for the 12 m. version has been estimated at 31 : 1. Good as this would be, the minimum performance standard required now for official Sports/Club Class contests threatens exclusion of the 12 m. version. We decided, therefore, to prototype a 13.5 production model.

This will be a straightforward extension of the 12 m. wing, but having its components tapered in gauge spanwise, and having its airbrakes power increased by about 40%. The fuselage and empennage will be extensively lightened and improved in detail. The tailplanes will be slightly extended to suit the increased

wing area and to retain the present low drag features of unusually high aspect ratio and small angular movements. A CG range as high as 15 to 48% chord will be attempted. The rigging, tail handling, trimming, field of view aft, canopy stiffness, fittings and contour, rudder pedal adjustment, and the wing tip skids will all be improved, while the heavy airbrake load at high speed will be halved and an advanced cable release hook will improve aerotowing further. These are only some of the several features being improved at the helpful suggestion of our test pilots and the BGA's Technical Committee.

The weight-saving programme will at least retain the present remarkably low inertia, while control power may be increased; so we look forward to having a very obedient machine with a considerably higher level of performance than expected for the 12 m. version. I myself believe that not enough regard is paid to the advantages conferred by low inertia upon thermalability and upon transition from thermal to penetration flight in weak and small-diameter thermals. The drag produced by steepish turn reversals is frightful and hence it is important to be able to make them snappily and with the minimum of control movement. Hill scraping in smooth but dicey conditions emphasises this point more convincingly than anything else.

We plan to employ the first two 13.5 m. machines for demonstration and competition flying up and down the country during the forthcoming soaring season. The type name Gipsy has been relinquished. We are using the type letters and numbers BG-100 in the meantime. Our aim remains the same: namely, to produce a smaller, lighter sailplane, and a lower cost sailplane than any other of comparable performance.

TALKING AROUND CHAMPIONSHIPS

By ANN WELCH

THE meteoric and successful rise of glass-fibre, which has so rapidly devalued excellent gliders like the Dart and K-6, and the appearance of the 22-metre ships have between them raised considerable problems in championships classification and expense. The need to keep championship rules viable for newer gliders without further devaluation of the older ones requires a careful compromise that is not always appreciated by pilots who want the best regardless of expense.

Such pilots are currently becoming fewer in number as the cost of aircraft to meet their sophisticated needs goes on up, but this is no help to either manufacturers or more modest, or realistic, pilots.

In November, 1970, CIVV agreed certain proposals to be sent to all National Aero Clubs for their consideration and decision at the March, 1971, meeting in Paris. Behind the proposals is the intention to help manufacturers, by stabilising requirements in the Standard Class, so that they could have the opportunity for longer production runs with fewer price rises. Open Class *production* aircraft would also be encouraged.

CIVV PROPOSALS

Proposals — Standard Class

Introduction of fixed-hinge flaps. It is recommended that the introduction of fixed-hinge flaps which was planned not to come into force before 1974, should now be postponed indefinitely.

REASONS: (a) No proof of their effective, and simple operation has been made available. The opportunity for a flapped standard class aircraft to fly *hors concours* at Marfa was not taken up. (b) Letters and requests from Aero Clubs and manufacturers have been received asking that the introduction of fixed-hinge flaps be abandoned.

If the recommendation is accepted—that fixed-hinge flaps should continue to be forbidden—the Bureau recommends that the opportunity should remain open

for *hors concours* entry in World Championships of a glider fitted with fixed-hinge flaps.

Airbrakes. It is recommended that the rule defining airbrakes (New *Code* 10.2.3 or old *Code* page 30, 1.6) should be changed to:—

Airbrakes. The glider must be fitted with effective airbrakes which extend above *or* above and below the wing and which are capable of being moved continuously by the pilot. They must not be capable of being used as lift increasing devices. Drag parachutes and other methods of approach control are prohibited.

REASON: The present rule which includes the speed-limiting requirement is unenforceable: it is a matter of national airworthiness certification, and should not be a competition regulation.

It is proposed that, if agreed at the March CIVV meeting, the change in this rule should be brought in for 1972.

Dischargeable ballast. It is recommended that dischargeable ballast shall be permitted in the Standard Class.

REASONS: (a) Modifications to enable dischargeable ballast to be used are cheap and simple to arrange in glass-fibre aircraft. At the same time they provide almost "two gliders for the price of one", since the aircraft can be effectively used in a wider range of soaring conditions. (b) It is safer. At present aircraft are loaded up with lead which cannot be got rid of when lift weakens, or the pilot is faced with a difficult landing.

If this recommendation is agreed a date for its introduction will have to be decided which will give reasonable time for implementation by manufacturers.

World Championships Classes

19-metre Prize. It is recommended that a special prize be awarded to the best placed glider in the Open Class Championship with a wing span not exceeding 19.00 mm. The prize could be called the FAI 19-metre World Cup.

REASON: To encourage the continued entry of production aircraft in the Open Class, which is now lessened by the introduction of 22-metre and jumbo super gliders.

* * *

CHAMPIONSHIP CLASSES

Quite separate from the CIVV proposals, which apply only to World Championships, there is a problem which exists at National, and local, level. This is that there is too wide a range of good gliders in nse to be easily accommodated in just one or two classes. Circumstances in each country are different, so a whole list of slightly different groups, classes, and requirements is appearing.

It is time that some rationalisation took place, so that everyone is able to continue to run the sort of championships that they need, but with it making sense to everyone else. This is not difficult to do, and credit is due to Steve du Pont's proliferous "think tank" for the concept.

The first step would be to decide a range of typical span groups. A lot of advice should be taken on what spans would be best, but the number should not be less than 3, nor probably more than 5. As an example only let us use these 4:—

1. Unlimited span
2. Max. 19.000 mm.
3. Max. 15.000 mm.
4. Max. 13.000 mm.

Having decided spans, the second step would be to classify the different sorts

IRVIN TYPE EB 69 lightweight parachute assembly

The Irvin Type EB 69 lightweight parachute is especially designed for use in low-profile cockpit gliders, including the Phoebus, ASW 15, Kestrel and Libelle. The parachute is manufactured from synthetic materials and features an exceptionally thin two-cone, horizontally opening pack which is worn high on the shoulders. The canopy is the Irvin Type 1.24 and the complete assembly is normally supplied in distinctive black and maroon.

VITAL STATISTICS Nominal weight complete: 15 lb 4 oz (6.92 kg)
Pack depth : 4.75 in (120 mm)
Pack length: 14.75 in (375 mm)
Pack width : 15.5 in (394 mm)

IRVIN AIR CHUTES

IRVING AIR CHUTE OF GREAT BRITAIN LIMITED
LETCHWORTH, HERTS.
TELEPHONE 6262

of championship categories which are practicable. There would appear to be four:—

A. Open—No class rules.
B. Formula—Class rules, e.g., World Standard Class.
C. Handicap—Limited or unlimited handicap range, e.g. British Sport Class.
D. One Design—Single type, e.g., US 1:26 championships.

When you get down to it, there is, in fact, nothing new in any of this, but it does give rationalisation without either restriction or confusion. The official category of the World Championships would, therefore, be:—

Unlimited span—Open championships (1A).
15 metre—Standard Class championships (3B).

If the CIVV proposal for 1972 is accepted, there would also be:—

19 metre—Open World Cup (2A).

In Britain our 1971 Nationals will be:—

Unlimited span—Open championships, 1A.
15 metre—Standard Class championships, 3B.
Unlimited span—Handicap range unlimited (1C).
Unlimited span—Handicap range limited (1C).

If USA should want to have 15 metre championships without using Standard Class rules they would hold a 15 metre—Open championships, 3A. Their 1:26 Meeting official category would be 13 metre—One design, 4D.

If manufacturers and others would suggest and accept a useful range of spans, the categorisation of championships—world, national and local—could be logical and simple; both manufacturers and customers would have fewer problems.

* * *

NORSE ATLANTIC WAVES

As well as organised championships it is hoped that there will always be room for competitions that run over a year, in which pilots do the flights from their own sites and in their own time. Such competitions are valuable in places in which the weather is poor or unpredictable, such as the chilly "temperate" countries, to whom 8,000 ft. cloud base and 10 knot thermals are a dream. But as well as having somewhat modest thermals, the Norse Atlantic countries are finding more and more waves, and these could be the basis of an all-year contest.

Each Aero Club would enter the best performance by a single pilot from its own country, and I would visualise the entry consisting of two flights—a 100 km. triangle speed, and a gain-of-height in wave. It would not be difficult to work out a simple points system formula for the speed and height. An important requirement would be that the gliders used should not have a handicap rating better than, say, a K-6E, or equivalent to the British handicap rating of 96%, although they could be two-seaters or even motor gliders.

The countries eligible for this contest, in alphabetical order, might be Denmark (except that it is short of waves?), England and Wales, Finland, Iceland, Ireland, Norway, Scotland, and Sweden—the disregard for political boundaries is in keeping with our innocent sport.

Each entering Aero Club would do its own flight documentation, though for the sake of appearances the winning entry should probably be given independent scrutiny. Part of the idea would be that the new winner should, if practicable, go and collect his trophy from the previous holders, who would give him a 2-3 day jolly in their gliding clubs and homes: if the trophy could carry a small money award this could help with fares. Perhaps not more than 2 or 3 consecutive wins by any country should be permitted.

If anyone thinks that such a contest might provide some fun, or they would like to provide a trophy, possibly with a small annual grant, would they please contact the writer, c/o S & G.

AIR TOURS INCORPORATED

By ERICA SCURR

EVERYONE knows about Texas. They know the size and strength of the thermals, the type of terrain over which the tasks are flown, and the expected heights of cloud base. Even the flora, fauna and "ghosts" of the south-west Texas region have recently been the topics of writings and discussions. Texas, however, although large and spectacular, is not the United States, and I would like to tell you something about the underrated East.

I came to Columbus, Ohio, from London in April, 1968, and found the local gliding club, the Central Ohio Soaring Association, in operation at Marion Municipal Airport, 50 miles north of Columbus, seven days after my arrival. The same afternoon I had my first ride in the USA in a Schweizer 2-22. The surprise of that first flight is still with me and had nothing whatever to do with the conditions or the glider.

The country is flat! I know it sounds stupid but it is flatter than anyone accustomed to south-east England, and Booker environs can possibly imagine. On a clear day you really can see forever, and there is not a break or ripple on the horizon. The countryside is just one enormous flat regular chessboard.

When the Ohio area was first settled in the early 1800's the land was allotted in "sections" or large rectangular blocks. The farmers subsequently divided their sections into smaller fields but retained the regular system. Consequently, the country is criss-crossed with "section lines" running east-west and north-south, and it is possible to fly hundreds of miles navigating simply by the sun and the section lines. This pattern persists from Ohio westward to the Rockies and is a big feature of flying in the Midwest.

Fields are large enough to be airstrips and are usually flat and cultivated. For outlandings pasture is best avoided, as it has probably been left as pasture for some good reason by the farmer. The main crops are corn (maize and soya-beans), and from April until August it is almost impossible not to find a field with a very young crop, which will not be damaged by a landing, or a recently mown or harrowed field. Before the corn is cut, in late summer, selection may be restricted, but this is only assuming one has to land in a field. Nearly all communities have an airport or strip and it is quite feasible to plan a Gold distance, Diamond goal triangle, or out-and-return from Marion without ever being much more than 20 miles from an airport.

I feel you may be getting suspicious. I am leading you straight into cross-country flying in this glider pilots' paradise, and I know my compatriots well enough to hear, even at this distance, "Aha, but, what about the weather?" "You can't fly in cloud over there can you?" "Don't they have all kinds of airspace restrictions?"

THE WEATHER

Well, what about the weather? Summer comes in April. That is when the temperature first climbs into the eighties and, with overnight lows in the fifties, that is also the time of some of the best gliding weather. Ground elevation in the area I am describing is about 1,000 ft. (all heights amsl), and cloud bases can

Turning over the Bucyrus, Ohio, airstrip

reasonably be expected to be 5,000 ft. early in the soaring day and rise to 7,000-8,000 ft. by late afternoon. So who needs to fly in cloud?

Thermal strength is weak at 2 knots, and rises to 4-6 knots on normal good days. The day tends to start later than at home, with the first cumulus often not appearing until 11:30 or 12:00 EDT (Eastern daylight time) but development to good cross-country type cover is then fairly rapid and it is possible to be airborne in June and July at 6,000 ft. at 19:00 EDT.

One of the predominant features of the Midwest summer is the Canadian cold front, which sweeps across the Central Plains states accompanied by lots of rain, thunderstorms, and often tornadoes. The approach of one of these monsters is heralded by strong westerly winds, and the overall effect on leaving an air-conditioned building is of walking out in front of a giant electric fan blowing hot air. The winds persist for about 24 hours after the front has crashed its way through, and in this period the sky will be filled with racing streets of cumulus with some still building and precipitating.

The next day is the one to take as a holiday and plan your Diamond! The air is still unstable, the winds light and westerly, and the visibility is usually what "Flight Service" describes as unlimited. The days following may also be good but are more likely to be blue. Late in the summer, notably in August, the high pressure behind the front will fill with decaying hurricanes from the Gulf of Mexico and the visibility will probably be sufficiently reduced to rule out cross-country attempts.

SEVEN-MONTH SEASON

So there you have it, the amazing Midwest, one hour's 707 flight time from New York. Flat inhabited country, lots of villages and farms, good fields but plenty of airstrips if you prefer. Also, idiot-proof navigation aids, and the kind of weather an English pilot must consider great, even if it is not as great as Texas. Are you still sceptical? Then consider that a 16-year-old with about 30 hours solo in his second season made his first cross-country flight, a mere 125 miles in a 1-26, which has about Swallow performance. The same young pilot made a number of tries for Gold distance after his initial flight, the best being 155 miles.

The Municipal Airport at Marion, Ohio.

English strength conditions persist into October giving a fairly reliable seven-month season. One topical note of interest: all straight line distance flights from central Ohio to the east will carry a pilot across the Ohio river valley and through one of the worst pollution areas in the US. At 6,000 ft. groping in the haze and fumes from the steel mills below, the problem becomes personal as well as topical.

SOME OF THE CLUBS

The Blue Grass Soaring Club operates out of Cynthiana, Harrison County Airport, in the tobacco growing and horse breeding region of Kentucky between Cincinatti and Lexington. The group, which has 14 members (7 active), a 1-26 and a 2-22, this summer hosted a week-end contest which attracted the pilots and crews of 14 sailplanes. One of the warnings given out at the pilots' meeting involved landings. Pasture was recommended over crops or planted fields, as these were very likely to be tobacco and would result in an expensive landing fee even if the glider was undamaged.

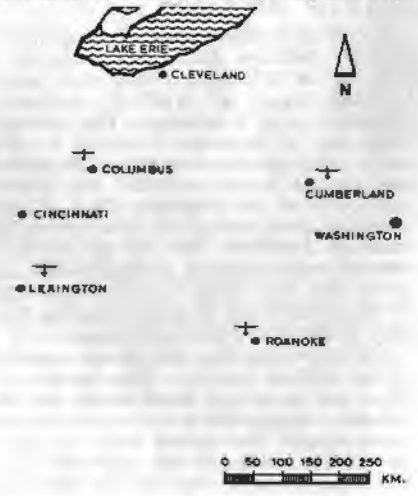
Once airborne over the site the country looked almost familiar. The flatness of Ohio was gone and small roads wound between irregular fields and woods. Home sweet home! The closest thing yet anyway. After landing in the approved pasture, near Paris, I even had to shut the

gates leading into my field to keep the cows out. The least familiar part of the weekend was rigging in temperatures of nearly 100 degrees and greater than 80 percent humidity. Even a K-6 is hard work at times.

New Castle International Gliderport lies in one of the valleys of the Blue Ridge Mountains of Virginia, about 20 miles north-west of Roanoke, and has all the charm and character of some of its more famous English counterparts. It is also almost as difficult to get to. My selected route took me up Sinking Creek Valley (not a gliding club name!) where the valley floor is about 2,000 ft., and the "step" down is a road comparable to anything Switzerland or Austria has to offer. Having negotiated this obstacle with an old Buick and trailer, fording the local stream which crosses the driveway into the field, made Camphill in winter seem easy.

The Blue Ridge Soaring Society has 21 members and uses a short, grass farm strip. To a "flatlander" the first launch is a traumatic experience. The surrounding ridges rise to greater than 3,000 ft. and are completely covered with trees. The neighbouring valleys offer no landing fields for nearly the first 10 miles of any flight east, which was the general direction of most of the tasks. The local area, however, gives excellent ridge and thermal soaring over some very beautiful country and the club brims with Southern hospitality.

A clubhouse with accommodation and cooking facilities is a rare find in the US but there is one right here. One word of warning to any intended English visitor: the country is dry. No beverage containing greater than 3.2 percent alcohol can be purchased closer than the county line, nine miles from the village. After my first visit I discovered from a road map that the area is part of the Jefferson National Forest which may account for all those dreadful trees. For more information on this site, and the cross-country potential which I never really investigated, I would suggest reading "Pilots' Choice".[1]



THE SITE WITH EVERYTHING

A Diamond distance out-and-return to the north-east from New Castle lies along the Appalachian mountain chain to Cumberland, Maryland. The Municipal airport, home of the Cumberland Soaring Group since 1958, is actually situated in west Virginia at the point where that state meets Maryland, and almost Pennsylvania.

This site has everything. The ridges are lower than in Virginia and cloud bases at 5,000-6,000 ft. make cross-country flights to the east, out over the Shenandoah valley not too bad even for a beginner. The valleys are wider, and field areas are easy to locate and usually offer at least one suitable for a landing. It is, however, advisable to check with the locals for bad terrain, unlandable valleys, and areas of National Forest on course, before setting out on contest tasks.

A glance at the map immediately shows the ridge soaring potential from Cumberland. Appalachian weather is much the same as in Ohio and the cold fronts pound the north-east south-west oriented ridges with strong north-westerly winds. For those with the skill, courage and endurance, such as Karl Streideck,[2] it is possible to fly hundreds of miles along these ridges in the right weather conditions. During the September Regionals at Cumberland this year the two leading pilots on the distance day, Art Hurst and Gled Derujinsky, both flying Standard Cirruses, went 314 and 313 miles respectively, mainly soaring ridges.

LIKE PORTMOAK

You will also not be surprised to learn that Cumberland is the local version of Portmoak. The Cumberland wave sits above the valley across the local ridge, a very convenient 2 miles upwind of the airport. In summer conditions it is possible to climb into the wave from a low point of less than 2,000 ft. on the ridge, using thermals. In winter it is possible to go straight off the ridge at 2,500-3,000 ft. into the bottom of the wave. Diamonds are tough, the absolute altitude record being, I believe, 22,000 ft. but Gold is comparatively easy. Local tow pilots will be ready for you at dawn if you can convince them you will be ready to launch, and I doubt if even Rhoda Partridge's delightful Mynd can compare with a view of Appalachia from 11,000 ft. in the crystal clear Canadian air behind a front.

There is one big difference to Scotland. By November the dawn temperature in this part of the USA especially following the passage of a cold front may be of the order of 10 degrees F, and they will go as low as minus 10 degrees in January and February. I shall leave it to you to work out the temperature at 20,000 ft. Electric socks are not a joke! Cumberland is about 300 miles from Columbus or New York and a fairly easy weekend trip.

In case you are about to rush off and book that twenty-one day charter flight to the Eastern US, I must mention that none of these clubs has any kind of commercial operation and, while the members will probably be delighted to fly you around in a 2-32, you will not be able to get solo or cross-country flying in club gliders. You would need a lucky invitation from a local private owner, and, since most private gliders are uninsured, this means *very* lucky!

THUNDERSTORMS

One weather feature worth additional comment is the Midwestern thunderstorm. All the sites described lie roughly on Mediterranean latitudes, a fact which seems to be disregarded on both sides of the Atlantic. Thunderstorms are fast to develop, fast moving, big and bad.[3] Blow-over accidents are not just an indication of carelessness, and the only safe place to have a glider when a squall line goes through is in a hangar. In tornado conditions that may be insufficient.

The severity of these storms discourages any idea of cloud flying, since being around one is bad enough, never mind being in it. In the mountain areas the biggest danger in squall lines is their rapid movement along the valleys, cutting visibility to nothing in the heavy rain and forcing field landings in highly undesirable conditions.

AIRSPACE

And so, finally, to the point I ducked earlier, airspace restrictions. Visual flight rules in controlled airspace in the USA permit flight 500 ft. below cloudbase when there are three miles or more surface visibility, and flight above base altitude with 2,000 ft. horizontal separation from cloud. This makes most types of gliding flight permissible in controlled airspace in the weather conditions I have outlined.

Most contest pilots carry VHF radio and it is unusual not to get co-operation from local airports with control towers during cross-country flights. The size and location of the clubs I have mentioned will give you some idea of the density of the gliding population and make the definition "minor minority sport" easy to understand. Gliders, on or around most airports, are a novelty and do not seem to be treated as a nuisance. Most pilots also have General Aviation or Commercial flying experience and know how to use the radio, navigation and weather forecasting aids available to them.

"Air Tours" next scheduled trip is to Chester, South Carolina, in early April. I am assured that there are no mountains, fewer trees, and they guarantee Diamond conditions in early spring! Why not Texas? Well, Chester is only 500 miles while Marfa and Odessa are 1500, and I really don't go much for rattlesnakes, tarantulas, and yucca bushes anyway.

References

1. Pilots' Choice, by GREN SIEBELS, published by SOARING SYMPOSIA.
2. Confessions of a Pennsylvania Ridge Runner. KARL STREIDECK, *Soaring*, May 1968.
3. An Encounter with the Black Bear. EDWARD P. WILLIAMS, *Soaring*, July 1970.

BGA NEWS

BGA Chairman

Congratulations to our Chairman, Ken Wilkinson, on his appointment as Managing Director of BEA from the 1st January. We feel sure that everyone in British gliding would like to join us in wishing him well in his new post.

Annual General Meeting

As previously notified, the AGM will be held at Imperial College on Saturday, 27th March. This year the Meeting has been scheduled to start at 14:30 hrs. and it is hoped that members travelling to London will find this timing more convenient.

Endeavours had been made, but unsuccessfully, to arrange for a venue in the Midlands.

We also hope to see as many members and their friends as possible at the Ball in the evening, so send for your tickets now. Price 50s. (£2.50) each.

Maps

New editions of the UK 1:500.000 air maps (GSGS4649) have been published recently. Sheet NW 53/6½ (Edition 15) Northern England, and Sheet NW 50/5½ (Edition 17) Southern England and Wales —correct at 15th October and 17th September, 1970, respectively are available from the British Light Aviation Centre or accredited chart agents. Price 10s. each plus postage.

Official Observers

The prefix to registration numbers of all Official Observers indicates the final year of their validity. Thus, the appointment of all those with a prefix of 70 lapsed on the 31st December, 1970.

Applications for renewal for all concerned should be submitted without further delay.

CIVV Sporting Code

All Official Observers and interested pilots must have a copy of the revised Chapters 1-7 of the Sporting Code detailing the new regulations in force since 1st January, 1971, for the control of records and badges for gliding. Copies are available from the BGA Office at 5s. (25 p.) each.

Records Homologated

The following records were homologated by the Executive Committee at their December meeting: **British National** and **UK** multi-seat distance and goal. Mr. and Mrs. J. S. Fielden, 14.8.1970, Bergfalke, 421.5 km. UK (Feminine) single-seater 100 km. triangle, Anne Burns, 14.6.70, Cirrus, 80 km/h.

World Records homologated: Single-seater distance, W. A. Scott and B. Greene, 26.7.70, ASW-12, 1,153.82 km. (jointly held). Single-seater goal, H. W. Grosse, Germany, 4.6.70, ASW-12, 1,032.2 km. Single-seater (Feminine) goal-and-return, Susan Martin, Australia, 6.2.70, Libelle 301, 656.04 km. Multi-seaters; goal-and-return, J. C. Lincoln and C. Crowl, USA, 23.5.70, 2-32, 651.13 km. 300 km. triangle, B. C. Stevens and H. Keartland, South Africa, 10.1.70, 2-32, 104.47 km/h.

British National record claimed: Single-seater 100-km. triangle, E. P. Hodge (in Rhodesia), 1.11.70, Diamant 16.5, 126.4 km/h. Subject to homologation.

Whitbread Bursary Award

The following pilots have received £10 each for gaining their Bronze C before their 19th birthday: M. J. Fielding (Avro), and G. M. Polkinghorne (SGU).

National Ladder 1969-1970

A new name has appeared on the top of the Ladder, previously held by Alan Purnell. Yorkshire club members made a determined effort and are to be congratulated on reaching second, third and fourth places. They also had the largest overall entry—a much better effort than the larger clubs. The Trophy winners are: Enigma Trophy (Best in privately owned gliders), Chris Lovell (Surrey & Hants.). L. du Garde Peach Trophy (Best in club gliders), L. Frank (Coventry).

Leading results all with four flights and in privately owned gliders:

Pos.	*Name*	*Club*	*Points*
1.	C. Lovell	(Surrey & Hants) ...	4012
2.	D. Lilburn	(Yorks.)	3045
3.	F. Knipe	(Yorks.)	2990
4.	B. Goldsbrough	(Yorks.) ...	2712
5.	S. Waller	(Bristol & Glos.) ...	2625
6.	M. Horan	(Midland)	2502
7.	M. Garrod	(London)	2412

8. W. Fay (Coventry)	... ...	2293
9. P. Pozerskis (London)	...	2256
10. R. Sandford (Bristol & Glos.)		2147
19. L. Frank (Coventry)	... ...	1539

National Ladder 1970-1971

The new Ladder has already begun, and no doubt there are already some pilots who have done eligible flights. However, in view of the fact that the BGA Flying Committee are examining proposals for minor alterations to the rules, I am proposing to defer the first return for the Ladder until 1st February. We are looking forward to an even better Ladder entry this year.

M. P. GARROD,
Chief Ladder Steward.

Dates 1971 Regionals

Subject to their achieving a minimum entry of 10 places, the following competitions will be accepted by the BGA for promotion purposes:

May 15–23
Western Regionals, Nympsfield.

May 29–June 6
Open-Standard Nationals, RAF Newton.

June 12–20
Sport-Club Nationals, Husbands Bosworth.

June 26–July 4
Lasham Regionals, Lasham.

July 10–18
Dorset Regionals, Compton Abbas.

July 24–August 1
Wycombe Regionals, Booker.

August 7–15
London Regionals, Dunstable.

August 21–29
Northern Regionals, Sutton Bank.

Preliminary closing date for Nationals 1st February, for Regionals 31st March.

Motor Glider Legislation

Progress at last! By the time this appears in print, we should have the new motor glider pilot's licence. This should enable us to operate motor gliders, as defined by the Redhill 1969 definition (S. & G., December, 1969, page 490), in a way which will integrate them usefully into club gliding.

The licence will be issued by DTI (Department of Trade and Industry) on the recommendation of the approved BGA Examiner in the club operating the motor glider—usually the CFI. It will follow the aeroplane PPL pattern, with a student pilot's licence and a medical. The SPL holder will be able to fly solo on a motor glider under supervision. The licence itself is obtained by either completing an aeroplane training course of 35-40 hours, *or* gaining a BGA Bronze C, and

(a) Having 8 hours' flying experience on a motor glider, including a minimum of 4 hours' dual (with one of these hours after first solo) and at least 3 hours solo.
(b) Passing the PPL exams on air law, met., navigation, and an oral test on the use of the motor.
(c) Carrying out a solo cross-country flight: a 100 km. triangle on a glider, or 150-km. triangle on a motor glider.
(d) Passing a flying competence test given by the approved examiner.

The current price of the licence is £3 for five years, but with no additional charge when converting to an aeroplane PPL. There will be reductions in the amount of flying required for conversion.

The motor glider instructor will obtain his rating through the BGA, after he has completed the required conversion flying. This will include learning how to teach the student take-offs, power-on stalls, and other exercises in which power is used.

ANN WELCH

PROVISIONAL HANDICAP LIST FOR 1971

The Skylark 3 and K-6CR are taken as "datum gliders" at 100% (Figures are actually calculated with respect to the Skylark: the K-6CR happens to be the same). The basis of other glider figures is the relative theoretical cross-country speed achieved after climbing in an "Average British Thermal" of about 2.5 knots (1.2 m/sec.). Thus an ultra high-performance machine calculated to achieve twice the datum gliders' speed would be handicapped at 50%, and a very low-performance machine travelling at half the datum gliders' speed would be given 200%. Allowance is also made by a graphical method for thermalling performance, by adjusting the rate of climb in the datum thermal with the minimum sink point of the appropriate polar curve.

In practice this means that a Foka only extracts about 2 knots climb from the datum thermal whereas a K-8 achieves nearly 3 knots. These corrected climb figures are fed into the standard formula for cross-country speed, and these speeds compared with those for the datum gliders are rounded off to the nearest even percentage, to form the list of handicaps. (See S. & G., December, 1967, page 459.)

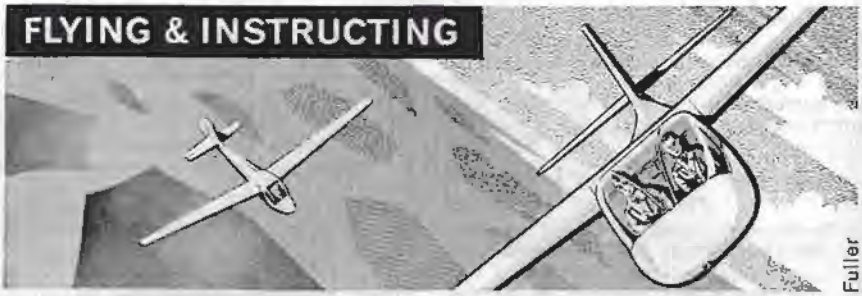
H'cap %	Sailplane Type
80	BS-1, Diamant 18
82	Kestrel 17
84	Cirrus, Phoebus 17, HP-14 (18 m.), SHK
86	Diamant (16.5 m.), HP-14 (16.5 m.)
88	Std. Libelle, ASW-15, Std. Cirrus, LS-1
90	Dart 17
96	K-6E, Olympia 419, Foka, Vasama
98	Dart 15, Olympia 465, Skylark 4, Pirat
100	**Skylark 3, K-6CR (Datum gliders),** Olympia 403
102	Olympia 463, M-100s, Fauvette, Super Javelot
104	Std. Austria-s
106	K-8, Jaskolka, Regal, Olympia 460 (Series 1)
108	Skylark 2, SF-26, T-53
110	K-13, Blanik, Eagle, Bocian
112	Sky, Weihe
114	Mucha Standard, Capstan, K-7, K-2
116	Skylark 1
120	Kranich
124	Olympia 2, Meise, Swallow, Gull 4

Notes: 1. Other gliders will be given handicaps based on their maker's performance curves, unless subsequent information influences the Handicap Committee. For example, maker's figures for the following gliders give these handicaps: Sigma 64, BS-1B 72, ASW-12 74, Libelle 301 (flaps) 83, Phoebus 15 37, Std. Torva 90, SF-27M 96, K-14 103, SFS-31 116, Falke 130%.

2. These handicaps apply in BGA contests at all AUW and CG positions allowed for by the glider's C of A. (This allows for the carriage of water ballast and the flying of two-seaters, etc.)

3. Any questions should be addressed to the Chairman of the Handicapping Sub-Committee, c/o the BGA. Pilots wishing to adjust their glider handicap should produce tangible performance evidence. This should take the form of an authenticated polar curve, "Tested Points" from timed glides on final glides, or from well conducted formation runs in company with known types. Particular figures required are a low speed point at min. sink, and a high speed point at about 70-75 knots (130-140 km/h.).

I. W. STRACHAN, *Chairman,*
BGA Handicapping Committee.



Fuller

Providing Gliding Instructors

A RECURRING problem which CFIs have to face is providing a corps of instructors to cope with the requirements of the club. There are two considerations —quantity and quality. Too many instructors, and there is not enough work to go round. They get out of practice and pupils suffer from the plethora of different teachers. Too few, and the keen ones get overworked and fed up; sickness and holidays strain the system, and a sudden job change makes the roster unworkable.

Nothing is more demoralising for a pupil than to arrive at the club on his much anticipated Sunday only to find good weather, a two-seater available, but no instructor. No gliding, if due to natural or mechanical phenomena, is excusable. Human failings are less so; and no flying due to them is plainly, in the eyes of the pupils, anyway, the CFI's fault.

What is a reasonable instructor strength? The answer to this question, of course, depends upon the size of the club, both in terms of membership and numbers of gliders, the two generally going hand in hand. On a rostered basis it would be reasonable to expect the use of an instructor for a minimum of three weekend days a month, plus a certain amount of "fill-in" time as well. Remember that instructors need solo time as much as ordinary members, and they should not be pounced on to fly the two-seaters when they have turned up for an afternoon's soaring.

Now the ideal way to operate a two-seater is to have two instructors involved. While one instructor is flying, the other de-briefs the previous pupil and briefs the next, so that he is ready to take over with little or no delay to the launch rate. On a short winter day, two instructors will then be with one glider and the manning equation is simple. (Lunch is taken on a shift basis.) In summer it is unreasonable to expect two chaps to operate for around twelve hours, so they must be relieved half way through the day, ideally again by two instructors. This, of course, is a counsel of perfection and in practice ad hoc, as opposed to rostered, instructors will be available. (Bear in mind the comments about instructors' solo flying.) As a compromise, three instructors should be rostered per glider in the summer, unless there are enough to work a complete changeover in the afternoon.

We are now in a position to work out the number of instructors needed, and we will take the summer period as needing the most personnel. Each two-seater will need three instructors and there are usually nine flyable weekend days in an average month, therefore 27 instructor days are required. With each instructor giving three weekend days, nine are required. In practice, some instructors volunteer more than three days a month, but in working out instructor strengths the figure of 27 days per two-seater is worth remembering.

Using this sort of calculation, a CFI can see immediately the problem he will have to solve when his committee agrees to purchase another two-seater. Let us assume that a club has two training gliders and a cross section of instructors varying from highly available (!) bachelors to committed married men. (*Pace* lady instructors, we are thinking about you, too.) Fifty-four instructor days are required, therefore 18 instructors.

However, say five instructors give four

days a week each—20 days—leaving 34 instructor days to find, i.e. eleven plus instructors at three days each. The process of arriving at a strength is easy to follow. Find out what the existing instructors are prepared to offer and then work out the extra requirement at a minimum of three days per month. This may seem conservative, but remember sickness, holidays and sudden job changes, to say nothing of marriage.

A good CFI who plans ahead will be in a position to anticipate changes to his club's fleet and membership, and will make arrangements to train, or have trained, sufficient instructors to cope. He will not, of course, forget about the necessity to have fully rated instructors present to run flying when he himself requires a rest or is not available for any reason.

This brings us, conveniently, to the subject of quality. Notwithstanding what we have said about quantity, it is far better to have too few first class instructors than the correct number including mediocre ones. It is vital to recognise that the life of an innocent member of the public who joins a club is totally in the hands of his instructor, not only when he is flying dual, but for the rest of his flying career. Poor instruction at any stage may lead to a fatal accident later.

The CFI is the only arbiter, and the standards he should apply for the selection of a trainee instructor should not be influenced by the fact that Joe Bloggs did a lot of good work on the winch. (Incidentally, the same philosophy should apply to the selection of committee members!) To help CFIs make their choices, the following is a reasonable method of instructor selection:—

(a) Start making a preliminary survey of pupils while still dual. Look for general aptitude, willingness to learn and relationship with other pupils.
(b) At the Bronze C flying test stage assess flying ability and theoretical knowledge. The list prepared at (a) will be narrowed down somewhat.
(c) After the Bronze, make a point of chatting to and flying with prospective instructors. Give them supervising jobs like showing new members around, teaching winch or tow-car driving, organising log-keeping, etc. While this is going on, make a real attempt to obtain feedback from the trainees as well as their mentor.
(d) Encourage him to fly as often as possible; if he is the right sort of person he will want to do this anyway, not just when soarable.
(e) Recommend the right sort of books to read. If there are professional instructors in the club, encourage them to talk to potential instructors about the psychology of communicating with students.
(f) Do not commit yourself to any of the likely people. They change. Before an instructors' course is the time to find out.
(g) When you are certain whom you want, take the trouble to give them intensive personal coaching, before the instructors' course.
(h) Try to get them on the best courses, preferably with the National Coach, but if not, at a club with a good record of running this type of course.
(i) When he returns from his course, do a thorough acceptance check. Do not be afraid of turning him down or giving more training, but if your selection was reasonable then this should not happen. If, as we hope, he does come up to standard, let him start instructing quickly, but see that he does not become a willing horse and lose interest from overwork.

A final piece of advice. Roster instructors sensibly and see that they are not allowed to overdo it and become stale. On the other hand, do not be afraid to weed out the not-so-keen and the sporadic attenders. They get ont of practice quickly and the pupils suffer. Finally, under no circumstances put up with those who do it for personal glory. The braggart and show-off has no place in instruction.

R. A. NEAVES

KRONFELD CLUB NEWS

THE AGM was held on the 25th November when Bill Goldstraw, both a power and glider pilot, was elected Chairman, succeeding John Stanley, whose two-year period had been completed. Cliff Tippett was re-elected Hon. Secretary, and Diana Thomas-Ellam continues as Hon. Treasurer. Committee members: David Scallon, Ron Willbie, Lucy Connolly and Trevor Simpsoo.

The club had had a good year but was still concerned about the weekly programme. Great efforts are being made to ensure that there are many speakers and other meetings of interest throughout 1971. Talks are also continuing in respect of the Aviation Society of London being absorbed into the Club structure, and details of this scheme will be sent to members as soon as possible.

The Kronfeld Aviation Art activities will, in the future, be under the direct control of the General Committee, and Margaret Kahn, Arthur Speechley and Pat Anderson will look after this side of the Club's affairs. This includes the Annual Art Exhibition which will now be open to all members of the Club without qualification.

Members decided that the present title of the club was possibly somewhat restrictive and by majority vote declared that the name should be the Kronfeld Centre. Arrangements for this change of name are now in hand.

C.T.

Diary of Lectures and Film Shows
Wednesday evenings at 8 p.m.

Jan. 27. Air Racing—Talk and Films by Beverley Snook.
Feb. 10. Wave Soaring—by Chris Lovell and Alan Purnell.
„ 17. George Burton talks about The world of Slingsby Sailplanes.
„ 24. Blind Landing and other aviation films from Smith's Instruments.

★ ★ ★

AVIATION ART SOCIETY

1970 Annual Competition— JUDGES' REPORT

THERE is a certain liveliness about this exhibition and a far greater variety than I have seen in previous shows. There were fewer conventional paintings, and some encouraging attempts towards a distinguishing colour departure, and a most rewarding selection of inspired work.

The quality of imagination shown by several artists has introduced a larger dimension and has lifted these works out of the field usually described as visual reporting. The exhibition is too crowded of course, no fault of the hanging committee, merely that the premises do not measure up to the enthusiasm of the exhibitors.

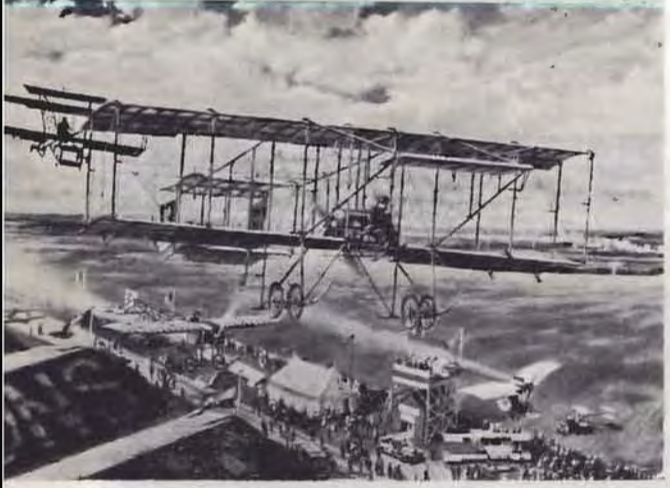
There are a number of paintings deserving special mention; unfortunately, I cannot cover them all. The awards of the judges should give you some idea of the individual merits. I would like to comment, however, on Kenneth McDonough's work. He has a prodigious natural endowment as a draughtsman and sometimes combines this with some admirable compositions. His paintings show an exuberance for an inexhaustible amount of research into details to a point where he is in danger of losing the artistic control I have seen in his work. His *SS Nonrigid Airships* is one of the more controlled studies and succeeds admirably with good restraint colour.

Brian Withams has produced another outstanding work with *Second Wave Attack*, this has an artistic and decorative quality coupled with good colour values, a striking design unfortunately very rarely seen in an exhibition of this kind.

Don Grant's painting *Returning to Base* was another conception of a familiar subject we much admired. A departure in colour, well composed, with the aircraft sitting nicely in its characteristic flying position.

John Taylor, who very kindly assisted with the judging this year, in particular liked the *Pathfinder* of Rex Flood. The dark sky surrounding the lone aircraft was so evocative of the part this special group played during the war.

Jonathan Esthope's *Rooftop Dog Fight* was another narrative painting that had



SELECTION OF PAINTINGS FROM THE EXHIBITION

Top left: Lyn Williams has depicted a close finish of Farman biplanes, a Short M2, and an Antoinette. Left bottom: John Wilks' painting of a Sisu. Centre top: Margaret Kahn's Late Home-coming, and below G. Coulson's Singing Wires faithfully portrays a Gloster Gamecock. Top right: Sun, cloud and Cirrus by Anne Roper. Bottom right: The picture which won the Gliding Challenge Trophy by R. Wensley Smith

(Photos by courtesy of "Flight International")

an unaccountable charm that even its black frame failed to dispel. All the beautifully handled watercolours by C. J. Ashford were excellent. It was very difficult to choose between them except that the judges were unanimous about the R-34; this appealed to us all. For one who could handle watercolour so freely, and at the same time so precisely, I should have thought that the hard outline was not at all necessary.

C. J. Wilson, who so ably succeeded with his *Harrier* painting in the first-timer's section has a remarkable resource for zestful enjoyment in applying his paint, a tremendous asset I would recommend to any illustrator who wished to impart a feeling of excitement into his work.

A new dimension that attracted a great deal of interest this year comprised the sculptural forms, particularly that by T. S. Halliday. There has been, and no doubt will be, a demand for something connected with flying achievements to be commemorated in a three dimensional form.

Not many have succeeded in the past simply because they have not been able to combine an artistic sense with a knowledge of their subject. Some years ago the Air League very nearly commissioned a piece of hardware by Lynn Chadwick described as a memorial to the R-34. This was to be erected at London Airport, but for the intervention of one or two people who were very knowledgeable on the subject of aviation. Lord Brabazon described the object as a "Pregnant kipper", but it was Charles Gibbs-Smith who finally slapped it down when he pointed out that the artist had used heavier-than-air forms to commemorate a lighter-than-air achievement.

Congratulations however to Halliday for something far more sincere in approach to a difficult subject.

FRANK WOOTTON,
Chairman, Judges Panel.

The 100 exhibits on show were produced by an all-time record of 49 artists. The winners were as follows:—

The Kronfeld Challenge Trophy—for the best exhibit by a non-professional artist, to B. Withams; 2nd, W. Waller; 3rd, J. Easthope. *Commended*—Mary Steer, E. Miller, E. A. Taylor.

The "Flight" Tankard—for the best exhibit by a professional artist, to K. McDonough; 2nd, D. Grant; 3rd, D. Stredder-Bist. *Commended* — K. McDonough, C. Peckham.

THE BAC Trophy—for the best exhibit of a Service aircraft, to M. Turner.

The Harry Cooper Memorial Trophy—for the best light aircraft exhibit, to L. Williams.

The Gliding Challenge Trophy—for the best exhibit on gliding or soaring by a non-professional artist, to R. Wensley Smith. *Commended*—Margaret Kahn, J. Wilks.

The Water-colour Prize—for the best exhibit by a professional or non-professional artist, to C. J. Ashford. Two other water-colours by the same artist were commended.

The Best First Entry Prize—for the best exhibit by a non-professional artist who has not entered the competition previously, to C. Wilson. *Commended*—D. F. Bartlett.

SOME MORE ABOUT THERMALS

By H. R. DIMOCK

CONGRATULATIONS to Brennig James and Harold Drew on their writings—(S. & G. December, 1970, pages 494, 462). Here I must add something else about thermals about which nobody else to my knowledge has ever written.

Clouds sometimes have a self-generating upcurrent of air under them. This is a bald statement. I refer to my logbook that on Sunday, 5th May, 1968, when my Diamant 18 was all new and lovely, I was aero-towed to 2,000 ft. above the Air Station at Lee-on-Solent when a line of cloud was approaching from over the middle of the Solent. It was a blue sky day with just this one thin line of cloud coming in over the sea. The visibility was wonderful. I flew at 60 knots in a straight line along the cloudbase which varied from 1,900 ft. to 2,000 ft. until it went down suddenly over the high ground of the Isle of Wight, near the tip where the famous Needles were in view.

I flew through the cloud at the end of the cloudstreet and observed the source rising from fairly close to the ground. This line of thin and narrow cloud was over the middle of the water of the Solent which averages about 16,000 ft. wide, so the nearest shore would be around 8,000 ft. away. I flew there and back with only one 180° turn at the end (without any circling or deviation) of the cloudstreet, a total distance of about 34 miles.

Since thermals can obviously not come up from the very cold water in May, I repeat my assertion that certain clouds generate an upcurrent of air continuously. I often fly over the Isle of Wight from Gosport, Portsmouth, or Lee-on-Solent, under clouds which enable me to fly in a straight line across a 6-mile route over the sea from the mainland, the bases anything from 2,000 ft. to 4,000 ft. losing a little or no height on the way.

The wind direction on 5th May was the normal prevailing southwesterly, at other times it varied from S to NW, and this phenomenon occurs quite often. I would expect that this self-generation also occurs over land giving rise to the cloudstreets that glider pilots are able to make use of. As far as I remember, the wind strength on 5th May was about 10 knots on the ground, and at 2,000 ft. would have been 14 knots, so the cloud would have been over the sea after leaving the land for 12 miles, getting on for 1 hour over the water. The rate of sink of the Diamant at 60 knots is about 4 ft.sec., 8 minutes for 2,000 ft. Since the cloud is over very cold water for nearly an hour, obviously one must look for something definitely not thermal. Do smoke-ring bubble type thermals get triggered off by the cliffs and continue to rotate at condensation level?

Another somewhat similar flight occurred over land on 22-5-64, at the last part of a competition flight from Lasham in a Skylark 4. Arriving over West Hartlepool aerodrome at about 20:00 hrs., after all normal thermal activity had ceased, I noticed the smoke from a group of factory chimneys, some distance inland, was making cumulus clouds under a sky which was totally overcast. I had plenty

of height to go and investigate and vet return to the aerodrome, so I flew to the chimneys and rose to 5,000 ft. The cumulus was travelling northwards at about 5-10 knots before disintegrating after about 10 miles. I flew along this cloudstreet maintaining height at 5,000 ft. and arrived near Newcastle over Usworth aerodrome with 2,000 ft. in hand. By this time, 20:45 hrs., it was getting dark, street lights were on, and some fog was covering the fields in places, so I opened the airbrakes and landed at Usworth.

The thermal smoke from those chimneys had risen almost vertically and had produced clouds in a non-thermal environment. These clouds produced uplift which was, for the want of another word, self-generating.

I do not believe that thermals from the ground are anything other than a form of large dust-devils which travel with the wind, rotating in the Northern Hemisphere in an anti-clockwise direction generally, and therefore I favour turning in the opposite direction, i.e. right-handed in order to reduce the rate of turn. These thermals suffer from wind gradient and get broken off as soon as they lean over too far to remain coherent. Hence the met. officers when briefing competitors often say "the wind is strong so you will find the thermals very broken today". Do they really know why?

GLIDING CERTIFICATES

THREE DIAMONDS

No.	*Name*	*Club*	*1970*
17	R. Fortescue	Cambridge	5.6
18	M. P. Garrod	London	11.6

DIAMOND DISTANCE

1/27	R. Fortescue	Cambridge	5.6
1/28	M. P. Garrod	London	11.6
1/29	G. S. Neumann	Cambridge	5.6

DIAMOND HEIGHT

3/117	L. A. Crawford	Coventry	19.10
3/118	R. Forteseue	Cambridge	19.10

DIAMOND GOAL

2/354	A. Harris	Zell Am Zee	22.6
2/355	J. D. Greenhill	USA	21.8
2/356	H. D. Campbell	USA	4.10

GOLD C COMPLETE

272	A. Harris	Zell Am Zee	22.6
273	J. D. Greenhill	USA	21.8
274	H. D. Campbell	USA	4.10
275	P. Garnett	Surrey & Hants	1.10

GOLD C HEIGHT

No.	*Name*	*Club*	*1970*
	S. C. Kovac	Surrey & Hants	1.10
	C. M. L. Hodgson	Surrey & Hants	1.10
	N. F. Cunningham	Surrey & Hants	3.10
	F. Sillick	Surrey & Hants	1.10
	D. Irving	SGU	1.10
	P. A. King	Cambridge	17.9
	P. W. Gellett	Surrey & Hants	2.10
	A. R. Davidson	Surrey & Hants	5.11
	L. A. Crawford	Coventry	19.10
	L. Bleaken	Cotswold	1.10
	P. Garnett	Surrey & Hants	1.10
	D. K. Gardiner	Kent	3.10
	C. F. H. W. Cooke	Surrey & Hants	1.10
	L. Woods	London	24.10
	R. A. Rice	Midland	18.10
	M. J. Silver	Norwich	1.11

GOLD C DISTANCE

A. Harris	Zell Am Zee	22.6
J. D. Greenhill	USA	21.8
H. D. Campbell	USA	4.10

SILVER C

No.	*Name*	*Club*	*1970*
2741	P. A. Cook	London	1.8
2742	J. W. M. Manclark	SGU	24.5
2743	G. J. Bigley	Ulster & Shorts	21.7
2744	D. N. Harsent	Bicester	3.8
2745	F. J Davies	Coventry	1.9
2746	A. J. Hulme	Cambridge	19.8
2747	J. H. D. Partington	Southdown	11.8
2748	H. A. Blomiley	Derby & Lancs	31.8
2749	Susan Goldsborough	Yorkshire	1.9
2750	A. W. Newton	Glamorgan	31.8
2751	D. F. Holmes	Derby & Lancs	14.8
2752	R. A. Smith	Dusé	31.8
2753	R. Brooker	Essex & Norfolk	30.8
2754	D. J. Carey	London	5.9
2755	S. Elsey	Doncaster	30.8
2756	E. J. Godsell	Bicester	11.6
2757	R. Hawkins	Southern Cmmnd.	14.8
2758	B. Shaw	Leicester	5.9
2759	G. C. Grainger	Worcester	1.9
2760	D. C. Ward	644 GS	20.7
2761	P. Shanahan	Airways	14.8
2762	C. A. Howlett	Leicester	15.8
2763	J. H. Davies	Humber	13.9
2764	T. Goreley	Four Counties	23.3
2765	J. W. Rennie	Thunderer	11.8
2766	R. C. Addis	Yorkshire	11.8
2767	J. Swannack	Trent Valley	1.9
2768	J. Beck	Clevelands	20.9
2769	A. J. Madge	Chiltons	29.9
2770	D. N. Densham	East Midlands	30.9
2771	G. D. A. Green	SGU	1.10
2772	R. D. Ruck	Cotswold	30.9
2773	J. P. Saunders	Surrey & Hants	5.6
2774	J. Hempseed	SGU	3.10
2775	D. E. Hills	Norfolk	5.6
2776	D. Garber	Four Counties	19.4
2777	T. R. Warner	Kestrel	4.10
2778	J. Chandler	Cranwell	10.8
2779	D. Irving	SGU	9.10
2780	C. C. Byrne	Cranfield	25.10
2781	A. G. Francis	Four Counties	18.10
2782	P. Brown	Handley Page	26.10
2783	R. W. Robertson	Leicestershire	1.11
2784	D. A. Tilley	Leicestershire	2.8
2785	T. J. Walsh	Four Counties	23.10
2786	D. A. White	Clevelands	23.5
2787	E. P. Rice	Crusaders	29.10
2788	P. K. Cornwell	Two Rivers	8.6
2789	A. F. Clutterbuck	Surrey & Hants	21.6

DOUBLE DIAMOND BY DART

By MIKE GARROD

BUT for a phone call from Chris Riddell in Yorkshire it would never have happened. "Would you be interested in selling your Dart in America?"

I was. Five months of correspondence, telegrams and accumulation of vital documents saw the Dart depart from Harwich in February, 1970 for California. At the end of May the new owner, Eugene Martz, had his first flight in it.

I will admit to ulterior motives in this sale, and fortunately Eugene agreed to my coming over for four weeks to have a go at Diamond distance. It wasn't an entirely one sided bargain, however, as I was able to offer a good deal of assistance with glider and trailer and be a crew member as well.

I duly arrived by BOAC in San Rafael in the middle of June. I was made most welcome by Eugene and his wife Bonnie. Four days were spent visiting friends, seeing the sights, and re-adjusting to an eight-hour time shift. One major hurdle was overcome—getting a private glider pilot's licence from the Dept. of Transportation, Fed. Aviation Administration. I'd armed myself with numerous documents, but no PPL and was lucky not to have to take a written exam and flying test.

"At this point my heart was in my mouth!"

The weekend of June 26th saw us motoring East, Dart seven seven victor in tow, for Truckee, an airfield on the eastern side of the Sierra Nevada. We arrived there in a thunderstorm, low cloud and heavy rain masking the forested mountain peaks. It was with my tongue in my cheek I said to Eugene "Did I come 6,000 miles for this?"

We stayed in a privately owned cabin on the edge of lake Tahoe, a beautiful and almost unspoilt district just west of Reno, Nevada. Six other members of Eugene's Club had also come for a week while a big party had been arranged for the following week-end to enable me to meet a number of experienced pilots.

Truckee airfield is about 6,000 ft. up, has two tarmac runways and is heavily utilised by powered aircraft from Cessnas to four engined turboprops. Frank Sinatra occasionally lands there, being the nearest airfield to one of his many gambling joints. The surrounding area is almost entirely forested, but eastwards it changes rapidly to semi desert. There is no air traffic control, but most gliders and powered aircraft use a common frequency to advise their movements, a listening watch being kept by the base operator.

My first flight was to 14,000 ft. in wave —just like a good day at Portmoak! My second one, using thermals, was a 60 mile out-and-return to the north during which I discovered that Californian thermals are twice as rough, twice as big and climb twice as fast as English ones! Cloudbase was 12,000 ft. asl, which seemed barely adequate for cross-country flying with terrain between 5,000 and 10,000 ft. Indeed, local pilots consider 15,000 ft. as the minimum for an ambitious flight combined with a high lapse rate.

Eugene was the first to declare a 500 km out-and-return to the south. I saw him leave between the twin peaks of Mt. Rose (10,778 ft.), and set off after him along lake Tahoe and over Spooner Pass.

This was the day I christened the downdraught of the lee side of Mt. Rose as "The Waterfall". I called Eugene once I'd rounded the mountain, and back came the news he was struggling over Carson City. It all proved too much for him and a dejected Martz drove home under a cumulus filled sky! His second attempt two days later, was more successful. A higher start and faster run got him through the waterfall and on to the mountains beyond Carson City, and no doubt would have achieved a considerable distance had the radio not faded out! A faint carrier wave blip enabled me to maintain contact but with this weakening as well I advised him to land at Douglas County airport, Minden.

Bad luck continued to harrass us; a 6 inch crack in one wing preventing any flying for two days while a repair job was done at Beckwourth. This appeared to have been caused by flight loads, but initiated by ground handling damage we'd not spotted earlier. Eugene contented himself fishing trout, but there was no luck in this sport either.

Then came my turn to put my experience to the test. I declared Lone Pine, 200 miles south, the intention being to return north for 500 km.

I left Mt. Rose with 12,500 ft. and pointed down into the waterfall at up to 80 knots. My next thermal was 20 miles on and only just in time. No wonder Eugene had been caught out! Just beyond Mono lake I ran into catastrophic sink, the only safe landing spot I knew being 15 miles behind at Lee Vining. But I wasn't sunk. A weak thermal raised me a few hundred feet and I noticed I was drifting towards the mountainside.

A glance at the surface of Mono lake confirmed my observation and I proceeded to hill soar the eastern side of the Sierra Nevada with a westerly wind aloft! Some curlover! It was a simple matter to get above 10,000 ft. again, and strike south until I met a wall of rain and flickering lightning at Mammoth Lakes. Reluctantly I returned for home, contacted Eugene, and rendezvous'd at Bryant airfield, Bridgeport, 200 miles.

The next day offered similar weather, and with my previous day's experience as a guide, suggested Eugene attempt a Gold C distance and Diamond goal to Carson City via Lee Vining. This he did in fine style in just over 5 hours, mostly between 10,000 and 15,000 ft. Success at last and the first Diamond!

Two days with cirrus-covered skies followed. Time was running short. Saturday 11th July dawned clear, and in spite of an unpromising forecast from the Met. at Reno I declared a 500 km distance via Alturas, 150 miles north. Midday saw me 20 miles north of Truckee under one-eighth cumulus, base just over 12,000 ft., and 75 miles saw me at 8,000 ft. level with a mountain top to the west. Hot air was blasting into the cockpit. Lift was difficult to find, only giving 2-3 knots up to 9,000 ft. Apart from a hayfield alongside a ranch, the terrain within 10 miles radius was only fit for a red-tailed hawk to land on. Precious minutes ticked by as I struggled to get higher, without any results, so with fingers crossed, I aimed at the next known landing spot, Ravendale (alt. 5,300 ft.) 16 miles away the other side of a 6,700 ft. peak.

The next ten minutes were hair-raising. I crossed over Horse Lake, a dry dust-bowl in a featureless valley, sinking steadily, wondering whether I could clear the ridges between me and Ravendale. The whole area was apparently

Mono Lake and Lven Vining from 5,000 ft.

uninhabited, barren, and covered with sage brush. Rattlesnakes, too, they tell me! Disastrous landing country for a fixed-wheel Dart, but a five knot thermal whisked me away out of danger.

The subsequent 30 miles were less traumatic, apart from one ghastly plunge at 80 knots at well over 1,000 ft. per minute, which lost me 2,000 ft. before I hit the thermal causing it. I managed to keep above 8,000 ft., with climbs to 11,000 ft. and over the last wilderness stretch to Alturas was topping 12,500 ft., some 8,000 ft. above the valley floor. Inter-thermal speeds of 70 knots put the final 20 miles to Alturas behind me in about 25 minutes, and four minutes past three saw me aiming my Voigtlander Vito B through the clear-vision panel at the airfield far below.

I went straight for Eagle Peak Mountain where puffs of cumulus tempted me east off course. A very rough, yo-yo ascent got me to 14,000 ft., and really wound up the airspeed needle when clouds formed on track for home at almost 15,000 ft., 5 pm. saw me 60 miles from Truckee, 71 miles from the coveted 500 km.

It was going to die at some point, and this began when I was 40 miles from Carson City. I wanted one more climb to 14,000 ft. to get in, but 11,500 ft. was all I could achieve over the final mountains before Reno. Ahead—no cloud of any consequence, a huge valley to cross, and one more mountain range up to 7,000 ft. As I sank slowly at near max. glide angle across Reno with only 4,000 ft. between me and the valley floor, I can hardly say I felt optimistic of any chances of hopping over that last range to Carson City.

Just to prove I needn't have worried, the evening thermal kept me aloft until sunset, and I only opened the airbrakes when a familiar white shape came speeding down highway 395. Almost 9 hours flying, 329 miles, and a second Diamond for seven seven victor!

And so for me ended a fantastic two weeks' flying in the Sierra Nevada. My thanks must go to the members of the North Bay Soaring Association, and particularly the Martz family, for making my visit so enjoyable. How can an Englishman with his 3 knot thermals ever repay such a debt?

Turning Point at Alturas. Photo: M. Garrod, but not with an Instamatic.

A NEW HILL SITE IN LANCASHIRE

By KEITH EMSLIE

FOR some years the Blackpool & Fylde club has been dropping hints in Club News about a new hill site. Nothing obvious seemed to happen, but much patient background work has finally resulted in the offer of a major recreational grant to assist with the purchase of a 58-acre farm, and turning it into a gliding site. The farm is at the foot of an exciting hill configuration, somewhat reminiscent of Portmoak, and we have every intention to take up the grant and to use it to build up our club. We are sadly aware that we have been a backwater, and are keen to remedy this.

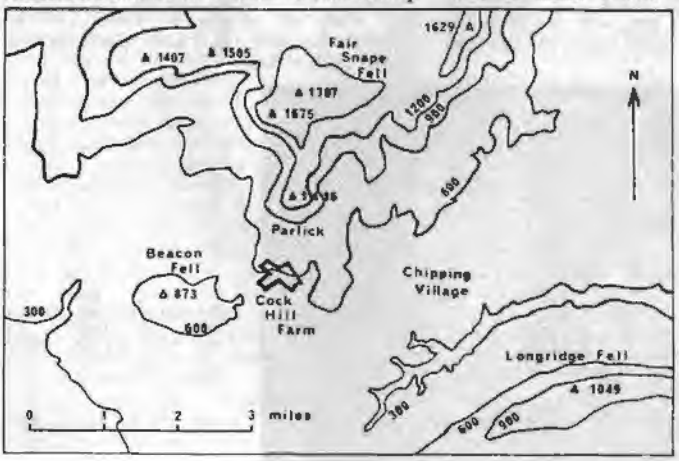
The half-million map marks a high point at 1,707 feet, Fair Snape Fell, which is ten miles north of Preston. The quarter-inch sheet shows this to be a plateau with steep edges facing south and south-east, while from the summit there is a glorious hog's back, a mile long, which juts out to the south. This has equally good west and east faces, and ends in a minor peak, Parlick Pike, which forms the parson's nose (if hogs have such a portion in their anatomy).

In 1967, after several very discouraging rebuffs from major landowners to the west of the fell, we got an estate agent to write to all the farmers living to the south of Parlick. This make-or-break step brought two replies, one of which was from our good friend Mr. W. J. Jolly, who was prepared to negotiate. He has been waiting very patiently ever since. His land, which is freehold, is as nearly flat as you could hope to find, on the 600 ft. contour of the valley floor, within a mile of the peak of Parlick. This is close enough for winch launches to give easy access to the hill lift, but positioned to be clear of the lee of the fell in all winds except ten degrees east of north.

Trial Flights

Mr. Jolly gave us permission to try the fell, so we turned up on the 1st October, 1967, which day provided a strong south-westerly breeze for the occasion. At first we didn't realise how much southerly component it contained, and the first launch saw Jack Aked (our CFI) scraping at the edge and base of the lift region for a quarter of an hour, but unable to climb above launch height. Unfortunately his second and third launches were lower than the first, so again he didn't get away. He then put me in a spot by offering me a circuit, with barely time to fit it in before dark. My cockpit check included a P, for Prayer.

The launch was a beauty, giving 200 feet in hand above the height of the



Map of the area showing the new site.

Parlick cairn, so I let the wind carry me straight towards it, like returning to the Mynd after failing to find a thermal. The slope was working fine, but the beat was so short that it required a figure of eight over the rump, like the tip of an imaginary tail lashing back and forth. Once this exhilarating manoeuvre was within the lift region I soon climbed to 500 feet above the peak, which opened up a majestic view along the spine to the face of Fair Snape, squarely in the path of the wind.

The ground crew suffered mixed emotions when the Olympia turned downwind and disappeared from view behind the port hip bone. From the air this was a simple decision for the hill was working, and the next bit would be better, but I didn't have a radio to reassure the anxious watchers.

The view was awe-inspiring, and the fell slid past rapidly, so that within a minute I turned into beautifully smooth lift of 6 knots, and flew west to put the gang out of their misery. I heard their cheer when I came into view again! The lift region was extensive, and I was swept up to cloud base at 3,000 ft. asl, where the climb rate was still better than 1 knot.

Heading straight upwind got me back to the winch at a height 500 feet more than the launch had been, and just left enough time before dark for a second sortie to Parlick. Several more wags of the tail charted the borders of the lift region on this vital stepping stone, which is clearly adequate for this function in any southerly wind, and confirmed that the field can easily be reached from there also.

The foot and mouth epidemic came, and then the hay crop started to grow, so our second attempts had to wait until August 1968, when we got identical conditions on two successive Sundays. The wind was about 10 knots from the northwest, which gave easy access to the lift on the side of Parlick, and even on the shielded face of Fair Snape itself.

Jack Aked, Ivor Stretch and myself enjoyed hour-long flights, and found no difficulties or regions to avoid. Dual site checks need only be minimal, and it will be easy to convert our airfield-trained pupils to the joys of hill soaring. The result of our trials was enough to give us great confidence that the hill will work in every wind direction between northwest and south. By inference the east face should work between north-east and south, in fact the aeromodellers reckon that the east face works very well in even the most gentle of breezes.

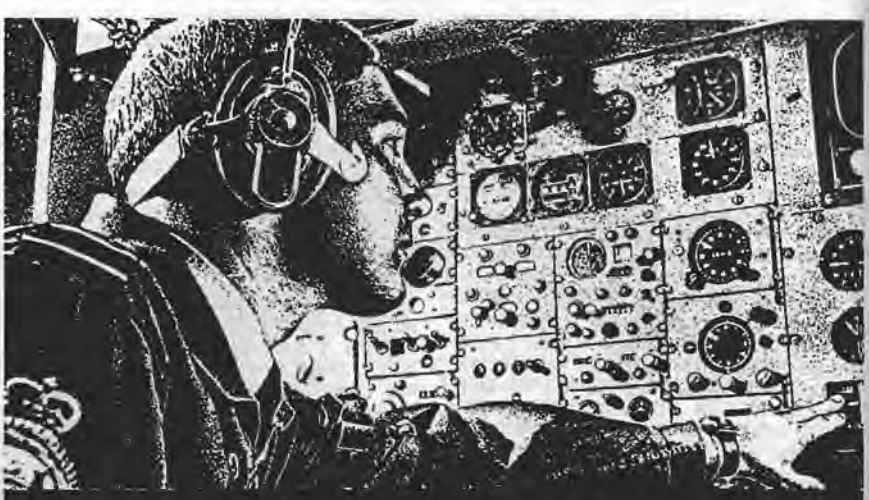
Mixing our traffic with theirs produced no problems, the models are easy to see and occupy lower flight levels than ours. The only real problem that has arisen is whether grouse will mistake us for buzzards, and so leave their nests.

We have thus been forced to agree to put the long southerly face out of bounds, keeping a mile clear of the flourishing grouse moor that is behind it. The owner has offered to fly with us while his gamekeepers watch the grouse, using radio to bring the glider closer if the birds are ignoring it. Has anyone met this problem before? We would be very interested to hear from them.

Soaring Prospects

Thermals are plentiful, and have kept us going on our present airfield (Samlesbury), but this is in the Ribble valley. We find that west winds bring sea air inland and so suppress convection. This effect moves up the estnary and river valley much quicker than elsewhere, and we have frequently seen our thermals move out of reach by early afternoon. But on every such occasion this front has failed to reach Chipping; in fact our new site seems to be covered with vigorous cumulus until nearly dusk. Sea breeze fronts form in suitable easterly winds, which don't blow very often, but we have identified and explored some good specimens.

Lenticulars appear frequently, in every wind direction, except perhaps due west, and we are certainly ringed round with mountains over most of the compass. Some of the cloud formations that we have seen suggest that the local hills also know the trick, and set off their own systems. We have only been able to contact wave on a few occasions from winch launches at Samlesbury, while we have never tried aerotows or motor gliders. But we look forward to many interesting flights while we get to know the new area, using our universal hill to lift us up to the higher lift above. We even have



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Royal Air Force

another hill which faces north, and is only three miles away downwind, too far to reach in our Grunau or T-21, but not too far for more modern machines.

So we look to this site to liberate us from a tradition of local soaring, and to develop a more adventurous attitude of mind. We will have to give thorough training in field landings, for there are not as many large level fields here as in the flat counties, but with hills all around and the wind blowing, who needs to land anyway?

Navigation also will be important, with the extensive Liverpool-Manchester-Leeds-Bradford control zone a complete barrier to the south. But to the north there is only Amber One crossing at FL 45, and a lot of Pennine Chain, through which to stalk the Helm wind.

Field Work Required

One of the reasons that stopped us trying an east wind day was that the launch point is on a neighbour's land. Mr. Jolly's fields would only give runs of 900 yards, but Mrs. Brewer has been very co-operative and has agreed to exchange about ten acres with us, to give us a more useful flying field with two good winch runs. We hope to negotiate the grazing rights for rent, and to sell the farm buildings which are not well suited to our purposes. We plan to erect a hangar and clubhouse which will cater for our needs for many years to come, taking the Portmoak buildings as a guide to the floor area, although the style and appearance may well be different.

Before we can start flying in earnest there are several fences to be moved to establish our new boundary, and some internal fences and earth banks to be removed. Very little draining or levelling is needed in the first instance, for we propose to use either a retrieving winch or a soft tyred vehicle to avoid damaging the surface. Since launch height is important we would like comments on how much height you lose by carrying up the retrieve cable.

Can We Afford It?

While the grant was under consideration we were building up a core of experienced members, and a black balance sheet. We constituted ourselves as a Company, and set up sub-committees to run operations, leaving the main committee to concentrate on policy during the tricky process of expansion and transition. We are now just big enough and solvent enough to purchase the land, the vital step to give us a freehold site. This is the biggest step that a club ever faces, and we are prepared for it. The next question is how much more can we do at the same time?

The full scheme includes a modern two-seater, hangar and clubhouse, all of which are almost equally desirable, but probably not attainable simultaneously. We have got some promises from members who will lend money, and are approaching the rest personally to see if more will be forthcoming now that Utopia is upon us. But we must admit to being well short of our full target of capital investment, though not yet exhausted of ideas.

Our long term prospects look very promising, for even the most pessimistic extrapolations of our present operations promise to bring in ample cash to service and repay the loans. We have also started long term money raising efforts, and our waste-paper collection is thriving.

We have plenty of new pupils coming forward; but we would be very pleased to hear from any experienced pilots living in Lancashire who are currently inactive because of the travel involved to reach the Long Mynd, Camphill, Sutton Bank or Walney. We do not expect to embarrass any of those clubs by attracting members from them, for we have no neighbours nearer than 80 miles. We have had block membership arrangements with Lancaster, Manchester and Salford Universities, but have had to close these in favour of building up our core of permanent members; we hope to re-open and expand these associations later.

When the site is fully operational we will be glad to welcome visitors with aircraft, but this will not be during 1971. If any readers look forward eagerly to using this as a jumping off place for badge or record flights, we would ask them most earnestly to consider if they could help us to speed the day. Loans would be especially welcome, and could significantly reduce the time scale of our development. Any offers?

ANNUAL STATISTICS 1st OCTOBER, 1969 — 30th SEPTEMBER, 1970.

Gliding Club	Aircraft					Launches		Hours		Flying Days		Cross-Country		Courses		Certificates					Membership		
	2S	SEC	HP	PO	TUG	On Club Site	By Club Gliders	Total	Club Gliders	Total	Soaring	Total Miles	By Club Gliders	No.	Pupils	First Solos	S c	S l	G c	G l	Male	Fem.	Non-Flying
ALBATROSS	1	1				856	856	65	65	45	7					5		4			32	6	20
AVRO	2	3		1		3,763	3,763	372	372	120	50					10		3			169	13	10
BATH & WILTSHIRE	2	2		5		3,578	3,986	690	376	68	56	1,080	80			4	1	3		3	70	7	10
BLACKPOOL & FYLDE	1	3	1			2,357	2,348	349	341	78	53					6	1	1			99	4	80
BRISTOL & GLOUCESTERSHIRE	2	4	1	15	3	7,809	5,929	1,888	200	200	116	3,073	240	23	184	15	8	15			176	5	31
BURTON & DERBY	2			4	1	2,852	2,496	535	348	85	44	166				8	2	8			60	3	
CAMBRIDGE UNIVERSITY	2	3	1	5	1	4,912	4,697	1,894	1,253	238	101	7,127	1,016	9	50	20	3	13	2	5	216	38	9
CORNISH	3	3		5	2	4,872	4,558	1,068	875	192	66	480	80	24	205	5		4			62	10	22
COTSWOLD	3	1	1	5		4,796	3,928	868	599	90	49	2,380	1,261			12	4	8		2	88	10	4
COVENTRY	2	3	1	12	2	4,401	3,484	2,051	1,288	180	71	5,745	545	19	127	21	3	13		2	215		35
CRANFIELD INSTITUTE OF TECHNOLOGY	2	1	1	4	1	N/R	1,800	N/R	490	N/R	N/R										115	3	
CUMBERNAULD	2	2				1,625	1,625	107	107	64	13					4					70		
DERBYSHIRE & LANCASHIRE	3	4		12		6,091	4,828	2,001	1,033	107	120	N/R	N/R	26	176	7	6	18		1	162	6	101
DEVON & SOMERSET	2	1		11	1	5,815	4,685	1,817	594	178	111	N/R	N/R	9	72	11		7			137	12	26
DONCASTER & DISTRICT	2	3		6	1	4,613	4,129	979	777	206	72	2,561	496	24	236	16	3	17	1	2	111	9	34
DORSET FLYING CLUB & AVIATION CENTRE	1	1	1	6	3	3,700	3,000	2,000	2,000	N/R	N/R	N/R	N/R			10		10			44	3	
DORSET GLIDING	2	2		10	1	4,889	3,972	1,105	614	103	57	1,410	56	2	12	14	1	4		2	120	7	56
DUMFRIES & DISTRICT	2			2		555	496	89	59	42	16					1		3			28	3	2
ESSEX	4	1		10		5,133	3,959	1,038	498	129	54	1,270		3	24	16	12	24			235	3	
ESSEX & SUFFOLK	1	1			1	663	663	325	325	63	31					4	1	3			38		
GLAMORGAN	1	3				434	405	50	42	26	11	57		1	10		1	2			20		
HAMBLETONS	3	2			2	6,259	5,786	614	520	200	N/R	N/R	500			18		2			76	8	
KENT	3	1	1	11		10,558	10,066	1,927	1,417	282	148	1,685	125	32	375	37	8	30		2	157	19	51
LAKES	2	1	3		1	2,278	2,166	352	284	87	33	N/R	45	4	30	9	1	2			50	3	13
LASHAM GLIDING SOCIETY	3				4	23,821	12,410	4,179	1,569	305	178			81	344	59					243	12	31
(LASHAM FALKE)						5,467		910															
IMPERIAL COLLEGE	1	1	1	1		2,083	1,983	626	546	170	65	1,210	1,210	3	15	13	3	10		1	64	2	2
POLISH AIR FORCE ASSOCIATION	1		3	1			380	270	250			2,900	2,700								30		10
SURREY & HAMPSHIRE		5	5	44			5,002	2,801				22,868	9,172				15		5	7	260	15	

LEEDS	2	2				3,282	3,282	219	218	103	N/R					5				65	8	
LEICESTERSHIRE	2		1	4	1	1,511	954	872	402	79	35	N/R	N/R							56		4
LINCOLNSHIRE	4			4		4,167	2,778	453	207	140	46	438	129	1	10	10	2	7		60	4	12
LONDON	4	5		44	4	15,488	13,601	5,205	3,651	289	185	N/R	N/R	16	109	30				397	27	65
MIDLAND	3	4		11		9,679	8,800	3,765	2,021	186	99	1,479	309	19	310	19	2	30	2	122	16	61
NEWCASTLE & TEESSIDE	1	1		4		1,810	1,742	379	328	104	85	100	20	4	50	4	1	3		63	2	10
NORFOLK	2	2		4		3,743	3,233	494	374	160	30	292	106	3	15	10	2	11	1	78	10	25
NORTHUMBRIA	2	2		7	1	3,341	2,679	396	267	115	43			3	30	6	2	4	2	67	6	1
NORWICH SOARING GROUP				3	1	272	261	248	248	63	57	1,965	1,965				1	3		18	2	
OUSE	2	3		5		4,543	4,037	628	460	102	30	1,044	228			7	1	3		87	11	11
OXFORD	2	2		4		2,810	2,662	841	650	79	42	296	296			4	2	6	1	58	5	7
PERKINS SPORTS ASSOCIATION	1	1			1	720	N/R	N/R	N/R	63	27	N/R	N/R	2	15	2		2		34	2	
ROTHERHAM	2	2				1,468	1,448	105	105	65	19									32	2	26
SCOTTISH GLIDING UNION	4	4		10	2	9,392	7,637	5,520	4,814	309	219	N/R	N/R	16	125	30	2	35	26	203	15	32
SCOUT ASSOCIATION	1					143	143	33	33	11	N/R									NA	NA	NA
SOLWAY				4	1	689		134		51	33	150				1				20		
SOUTHDOWN	2	2		3		4,240	4,065	613	510	97	42	168	168			6	1	4	2	126	17	30
SOUTH WALES	2	1		5		3,160	2,920	420	232	84	42	540		2	10	12	1	5		86	10	42
STAFFORDSHIRE	2	3		7		3,479	2,783	604	340	91	31	650	150	2	30	9	1	9	1	93	4	1
SWINDON	1	1	1	5	2	3,260	2,600	1,200	520	130	N/R	2,200	700				1	2	1	70	6	2
TRENT VALLEY	2	2		2	1	4,556	3,396	529	339	96	40	555	5			9	2	4		80	9	7
ULSTER & SHORTS	2	2	1	1		1,852	1,852	322	322	82	27	150	150			12	2	5	1	60	3	
UNIVERSITIES OF GLASGOW & STRATHCLYDE	1	2				805	805	47	47	39	8					5				33	5	
UPWARD BOUND	3	2				2,261	2,257	184	184	65	23	52	52		31	11	1	5		NA	NA	NA
WEST WALES	2	1			1	4,091	4,091	396	396	132	54	252	252			9	1	4	1	48	3	
WORCESTERSHIRE	3	2		10	2	8,471	7,769	994	762	230	108	950	150	24	245	23		6		186	20	20
WYCOMBE GLIDING SCHOOL	3			12	2	6,000		1,300		257	170			5	28	30				NA	NA	NA
AIRWAYS		1	2		1		1,450		950								17	4	2	1	201	5	272
THAMES VALLEY	1	2					1,050		550								16	4	1	1	166	6	
YORKSHIRE	3	2		6	1	8,700	5,000	4,950	1,450	320	220	3,800	250	16	160					200	8	30
CISAVIA																						
AQUILA	2	1				938	938	126	126	51	18	29	29			2		1		32	4	1
RAF FARNBOROUGH	2	4		2		2,820	2,688	591	510	89	27	370	270			6	1	4		71	5	8
CIVILIAN TOTAL	118	107	25	329	43	241,070	199,357	58,936	40,649	6,943	3,280	69,492	22,755	373	3,028	587	132	365	11	67	5,959	419	1,236

KEY: 2S = two-seaters, SEC = secondary, HP = high performance, PO = privately owned, N/R = no record, NA = not applicable, S = Silver Cs, G = Gold Cs, c = complete, l = legs, Fem. = female

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	Aircraft					Launches		Hours		Flying Days		Cross-Country		Courses		First Solos	Certificates				Membership		
	2S	SEC	HPT	PO	TUG	On Club Site	By Club Gliders	Total	Club Gliders	Total	Soaring	Total Miles	By Club Gliders	No.	Pupils		S c	S I	G c	G I	Male	Fem	Non-Flying
AGA																							
KESTREL	2	2	1			3,880	3,870	865	865	79	58	4,000	4,000	2	12	10	3	14		7	80	5	1
SOUTHERN COMMAND	4	4	1		1	3,905	3,905	796	796	121	35	4,900	4,900	5	41	10	2	5		2	56	1	75
RAFGSA																							
ANGLIA	2	4			1	3,273	3,243	613	610	97	60	717	717			9	3	10			49	9	5
BANNERDOWN	2	3				2,340	2,340	348	348	N/R	N/R	56	56								55	10	
BICESTER	5	7	4		2	18,785	18,366	6,695	5,865	226	N/R	27,532	27,532	10	160	27	30	38	4	12	355	8	
CHILTERNS	2	2				3,279	3,279	805	805	N/R	N/R	475	475			7	7	20			65	5	
CLEVELANDS	2	4	2		1	8,860	8,812	1,319	1,319	214	96	1,241	1,241	7	35	23	5	24		7	101	9	
EAST MIDLANDS	2	2	2			3,048	2,701	640	605	96	73	2,070	2,020			9	3	9	2	3	57	2	
FENLANDS	2	2	1		1	4,171	4,170	696	696	112	30	1,175	1,175			17	3	11		3	60		
FOUR COUNTIES	2	2	1	4	1	6,662	6,662	1,730	1,730	188	85	3,656	3,656				7	20		1	75	10	
HUMBER	2	3				5,700	4,820	676	569	82	22	720	695			16	2	5			62	4	15
MENDIPS	2	4				3,514	3,514	457	457	126	67	1,250	1,250			10	1	6	1	2	62		
MOONRAKERS	2	1	1	6		2,200	1,600	745	495	102	67	5,940	2,200			6	3	11		2	50	10	
WREKIN	2	4	1		1	5,564	5,564	1,026	1,026	194	56	1,089	1,089	2	12	21	8	27		2	110	4	
RNGSA																							
CULDROSE	2	3		1	1	2,948	2,804	385	357	126	12	82	20	2	16	14		2			50	6	
FULMAR	2	1	1		1	3,790	3,790	476	476	86	35	200	200	2	17	22		3			36	4	
HERON	3	4				3,369	3,157	567	567	94	36	2,719	2,719			10	2	10		1	57	2	
PORTSMOUTH	3	2	1	2	2	2,777	2,742	503	467	108	23	98	90			2	1	4			100	7	6
SERVICE TOTAL	43	54	16	13	12	88,515	85,339	19,342	18,053	2,051	755	37,912	34,035	30	293	213	80	219	7	42	1,480	96	102
SERVICE AND CIVILIAN TOTAL	161	161	41	342	55	329,585	284,696	78,278	58,702	8,994	4,035	107,404	76,790	403	3,321	800	212	584	18	109	7,439	515	1,336
OVERSEAS																							
EAGLE (ARMY, GERMANY)	2	3	1		1	3,967	3,967	760	760	91	37	5,000	5,000			8	1	15		1	60	10	
PHOENIX (RAF, GERMANY)	2	4				3,442	3,442	482	482	94	20	1,562	1,562	2	16	15	2	6	1	2	50	6	
TWO RIVERS (RAF, GERMANY)	2	3	1	1	1	6,967	6,967	977	977												50	6	
CRUSADERS (RAF, CYPRUS)	2	1	1			5,815	5,815	870	870												87	12	
OVERSEAS TOTAL	8	11	3	1	2	20,191	20,191	3,089	3,089	185	57	6,562	6,562	2	16	23	3	21	1	3	247	34	
AIR TRAINING CORPS (2 Centres and 28 Schools)	143	14				166,318										3,654							

CORRESPONDENCE

SAILPLANES, WORLD CONTESTS AND US

Dear Sir,

Wally Kahn's article on Classes (S. & G., October, 1970 issue, page 347) puts the finger on the weak point in the present Class-system and I agree completely with him that new classes are indeed needed in the future. Before we start dreaming up a new system, however, two things must be kept in mind:—

(1) the future development, and (2) the sailplanes presently available.

While Wally clearly has had the first point in mind the second needs a survey of the number of different modern competition sailplanes available today. The following figures are a rough estimation, but it would be easy to get the correct numbers produced by writing to the manufacturers.

Type	*Flap*	*Span*	*No. made*	*Total*
Libelle H-301	Yes	15	100	
Diamant HBV	Yes	15	10	
Diamant	Yes	16.5	50	
Phoebus C	No	17	150	
Kestrel	Yes	17	50	360
FK-3	Yes	17.6	10	
Cirrus	No	17.7	100	
Diamant 18	Yes	18	50	
AN-66	Yes	18	3	523
Cirrus B	No	18.3	5	
ASW-12	Yes	18.3	13	
BS-1	Yes	18.3	17	
Kestrel 19	Yes	19	1	559
Nimbus	Yes	22	1	
Kestrel 22	Yes	22	1	561

If these figures are put together we get the following table:—

Span	Number of sailplanes Flaps	No Flaps	Total
- 17	210	150	360
17.01 - 18	63	100	163
18.01 - 19	31	5	36
19.01 -	2	0	2
Total	306	255	561

Although these figures are rather rough it can be seen that about 93% of the present fleet of modern Open Class sailplanes are 18 m. or less. 64% are 17 or less, the majority (36%) being exactly 17 m., while there is only 7% left over for those over 18 m. In the proposed 17 m. flapless class only 27% of the present fleet fits, and all of these are of a make which is now out of production.

From the experience at Marfa we know that the present 17-18 m. sailplanes, flapped or not, have very similar performance. In fact, all the production types, entered in this "span-class" were represented in the placings 10 to 15, while the ASW-12 and the bigger ships occupied the top nine places (with the very honourable exception of Edward Makula who was placed fifth with only 17 metres). The obvious conclusion is that a new restricted open class only needs a span limit of 18 m. with no variable geometry permitted.

It is sad to see all the present excellent open class sailplanes being phased out of production in favour of the very expensive 20 metre plus ships. The best way to save them is to create an 18 m. class in which all of them fit.

The Swedish Aero Club will soon make a proposal to the FAI along the following lines:— Standard Class—As at present. 18-metre Class—Variable geometry not permitted. Open class—No restrictions.

If a fourth class is introduced it should be a performance-limited economy (or Club) class.

Borlänge, Sweden AKE PETTERSON

SOARING PARADISE

Dear Sir,

Henry Pulitzer's note on Mauterndorf in the December S. & G., page 517, is good news to everybody interested in Alpine Soaring. The airfield is not in the 1970 Air Touring Flight Guide and my 1968 map of Austria Civil airfields lists it as "Power Flight only"!

It is rather difficult to get information on Alpine centres (one reason for returning to a place one already knows; local knowledge can be of great importance). I would like to ask if anyone else would be interested in founding (or re-activating) an Alpine Soaring Group in the UK? The first job would be to collect and sort information available on centres; in particular, digging out any met. statistics. Later on some co-operation in the provision of facilities in the Alps (e.g. a big syndicate) might also be considered, though there are obvious difficulties in operations of this kind.

Henry is not quite fair in saying "for some *unaccountable* reason British pilots seem to go to Zell am See" (especially since the beautiful photograph shows a Standard Austria flying from that site). The main reason is that Zell (like Aigen) has geography particularly favourable to long cross-country flights. It is this which leads to those long lines of gliders which can be a disadvantage, in spite of three Super Cubs permanently on the site. I doubt whether any one site will be chosen as "best" by all pilots, but unless you have a great deal of time, the most important factor is likely to be weather conditions. I do not know of any comparative statistics for sites on the north and south sides of the Alpine High Wall, nor for those at the east and west ends of the range.

Pans Garden, Beaulieu SO4 7YH RICHARD FORTESCUE

LANDING IN CORN

Dear Sir,

I would like to cross swords with Ray Stafford Allen on the above subject. (See S & G, Oct.-Nov., page 414.)

No pilot *wants* to land in a cornfield whether it is standing or sitting corn. In standing corn the probability of severely damaging the aircraft is extremely high. In low corn the pilot has the unpleasant task of explaining himself to the farmer, and keeping the spectators out of the field.

I landed in high corn in 1969, after an air emergency, and finished up with a badly broken glider. If I had not landed in the corn there would have been a badly broken pilot. In 1970 I landed in low corn simply because from 1,500 ft. there were no fields other than cornfields in which I could have landed without certain damage to the aircraft. I therefore chose the one to which I would do least damage. I was in this area because it was the only place that could have produced lift within gliding range. There was lift there but not enough.

In East Anglia there are quite large areas where from 2,000 ft. it is impossible to reach any reasonable field which is not growing corn. In 1970, due to the late spring, only a few hayfields had been cut by the first week of June.

It is easy, given good navigation, to stay out of controlled airspace. However, it is not so easy to pick your landing area, especially when in competitions the decision to land is taken at 500 ft. or sometimes less. A sailplane can always be stopped from going up, and it can be stopped from drifting into controlled airspace by a timely landing, but without an engine not even the best pilots can always stop themselves from an unwanted landing.

I feel strongly about landing in crops of any kind, and the only real solution is to delay competitions until after the corn harvest. There are then plenty of good landing fields. The farmers are more pleasant to deal with, and the burning stubble often produces first class thermals, even in complete overcast. Another point is that pilots are in real practice late on in the season.

Please let us stop talking about penalties and do something positive like moving the time of the competitions, or possibly, better still, fitting engines.

Manorbier, Pembs. PETER WILLIAMS

SKYLARK 4. Dunstable Based. Excellent condition. Full panel. Rigging aids. Trolleys. Parachute. Trailer. £1,400. New Winter barograph £50 if required. Ventress. 154 Station Road, Harpenden, Herts. Tel. Harpenden 60598.

HP14c 18 metre all-metal high performance sailplane. Provins, 20 Malvern Crescent, Scarborough. Tel. 3092.

ALL MATERIALS for glider repairs or home builders from SLINGSBYS.

SHK-1 and trailer. No instruments, excellent condition. £2,200, would consider joining new syndicate with 2 others based at Lasham. G. R. Paddick, 355 Staines Road West, Ashford Common, Middlesex. Tel. Ashford 55668.

17 metre Phoebus £2350 for bare aircraft. No offers. Box No. SG 351.

SHK No. 174. One half summer share Lasham with limited winter flying Portmoak. £875. Howard, Yew Trees House, Boxley, Nr. Maidstone. Tel.: Maidstone 52929.

T53 As New. Full A.R.B. C of A. £2,400 o.n.o. SLINGSBYS.

BLANIK. Excellent machine in good condition. 5 years old, fully instrumented for cloud flying. Hood for rear cockpit instrument training. No prangs, current C of A. £1,500. Cornish Gliding Club, 15 Mount Egar, Carnon Downs, Truro, Cornwall. Tel.: Perranarworthal 2094.

SWALLOW £650. Seen Long Mynd. Mansell, 3 Brookfield, Mawdesley, Nr. Ormskirk, Lancs. Tel. Mawdesley 681.

IMMACULATE SKYLARK 3F, Dart Type Canopy, 6 Gold C legs obtained. 10 yr. C. of A. Very good competition record, with trailer £1,150. F. Townsend, 5 High View, Meir Heath, Stoke-on-Trent. (Blythe Bridge 3597, after 7 p.m.)

PYE CAMBRIDGE, two channels, aerial, as new £80. KIDDE Type D.H. 240 Oxygen set £10. Darbishire, Charterhouse, Godalming, Surrey. Tel: 22750.

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TIGER MOTH. Very good condition. New paint. Write S. A. Centrair B. P., 44/36 Le Blanc, France.

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NEARLY new Diamant 18 with water ballast tanks and all mods, only £2,500 or £835 and 24 monthly payments of £82 11s. 2d. A syndicate of four could buy this superb glider for about five pounds a week each. Colin Donald, 15 Broadway, Peterborough. Phone Peterborough 68818, or home, Castor 253.

EB.62 PARACHUTE, £58. Ferranti Mk. 5 Artificial Horizon, 3½in. diameter face, as new complete with 12V. inverter, £75. Ferranti Mk. 4 Artificial Horizon, as new complete with 12V. inverter, £45. J8 Artificial Horizon, complete with inverter, £78. Winter barograph, little used, with new calibration chart, £50. Kelvin Hughes Mk. 2A Turn & Slip indicator, £12. All serviceable. Southern Sailplanes, Thruxton Airfield, Andover, Hants. Tel. Weyhill 373.

STANDARD OLYMPIA with major C of A. Resprayed. Immaculate. £420. Trailer closed £150. Open £50. Barograph £30. Electric vario £10. Artificial horizon with inverter £35. Parachute £30. Turn & Slip £6. Player, 10 Blendon Drive, Andover. 5513 business hours.

SKYLARK 3B and trailer, both excellent. 3F canopy and seat, full panel, 10 year C of A. J. D. Kape, 2 Squirrel Rise, Marlow Bottom, Marlow, Bucks. Marlow 5697.

DART 17R. Complete soaring instruments. Excellent wooden trailer, £1,700. Sandford, 22 Meadway, Shrewton, Wiltshire. Tel. Shrewton 454.

FERRANTI Mk 4 Horizons. Fully tested £20. Box No. SG 352.

SITUATIONS VACANT

NORTHUMBRIA Gliding Club require Course Instructor, full BGA rating, for July, August, September, 1971. Applications with full particulars to H. Wharfe, Secretary, 122 Northumberland Street, Newcastle upon Tyne, NE1 7DG.

TUG Pilot wanted, Wycombe Gliding School, from March 1971. Food and accommodation provided. No remuneration. Apply General Manager, Wycombe Air Park, Marlow, Bucks. Tel. High Wycombe 29261.

TUG PILOTS required for courses 1971 season, Coventry Gliding Club—Husbands Bosworth. Monday to Friday, meals free, accommodation free (caravan) if required, no remuneration. Tiger and/or Condor towing experience desirable. Deputy Tugmaster, 4 Clint Hill Drive, Stoney Stanton, Leicester, LE9 6DB.

Lasham Staff Requirements for 1971

Gliding Instructor: B.G.A. category preferably with P.P.L. for Glider and Motor Glider instruction.

Tug Pilot: Preferred qualification—Silver C.

Tow Car Drivers: Two car drivers with gliding experience.

Please apply:

The Manager,
Lasham Gliding Society Ltd.,
Nr. Alton, Hants.

RESIDENT Full time Course Instructor 1971 May to September inclusive. Must be full BGA Rated, free living and salary up to £30 per week according to qualifications and ability, ie tug pilot, Falke instructor, etc. Position of resident duty tug pilot available for free living only. Write to Gil Phillips, Clarance Esplanade, Tenby, Pembs.

COURSE INSTRUCTOR. Derbyshire and Lancashire Gliding Club require resident Instructor for 1971 May—September inclusive. Also Winch Driver for same period. Applications giving details of experience to: Mr. R. A. Hare, Newman Road, Rotherham, Yorkshire.

The Worcestershire Gliding Club have the following vacancies for the coming season—May to October:—

Assistant Course Instructor

Winch Driver

Resident Tug Pilot

Stewa.d ard Stewardess (House available)

Apply with details to the Manager, Worcestershire Gliding Club, Bidford-on-Avon, Worcs.

Experienced B.2 Instructor for Gliding Holiday Courses at Nympsfield. Must be used to hill sites and the associated clap traps!

Dedication to gliding less important than the ability to create a friendly holiday atmosphere.

Also wanted at Nympsfield, an experienced winch driver for holiday courses. Both these situations are for the period from the 19th April to the 17th October, 1971 with at least 2 weeks holiday in this period.

Apply to:

The Chairman,
Bristol & Gloucestershire Gliding Club,
Nympsfield, Stonehouse, Gloucestershire.

WANTED

TUG AIRCRAFT required — full details to Richards, 4 Bentley Court, Sussex Road, Colchester, Essex.

OLYMPIA 2B. Skylark 2 or 2B. Details and sensible price please to: 1 Moorside Mount, Drighlington, Yorks.

K-6CR with instruments and trailer, B. Lumb, 27 Sunnyview Gardens, Leeds 11, Yorkshire. Tel.: Leeds 700935.

FINANCE

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

INSURANCE

WE are experts in glider and aircraft insurance. Let us quote you the lowest rates with the most reliable companies. Write to Brian Gudgin, Marlow, Gardner & Cooke, 254 Lincoln Road, Peterborough. Telephone 68543.

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

CLUB NEWS

TROUBLES seldom come singly, and 1971 has begun badly. No fewer than four of the clubs have suffered severe losses in men and material. We extend our sympathy to Lasham and Portmoak over the sudden deaths of Tony Barker and Tom Davidson respectively, both having given great service to Gliding over many years. We are sorry, also, to hear of the fire which destroyed four gliders of the Chilterns Club at RAF Benson, and the crushing by snow of the Kent Club hangar involving severe damage to eight machines.

Copy and photographs for the April-May issue should reach me by 10th February, and news for the June-July issue by 14th April; typed double-spaced on foolscap. Please remember to add your name, address and Tel. No. on all copy to be sent to me at 11 Great Spilmans, Dulwich, London, SE 22. Tel. 01-693-3033.

YVONNE BONHAM (Mrs.)
Club News Editor

2nd December

BATH & WILTSHIRE

THE contractors' men have arrived and although at the time of writing we are still operating at Keevil, major resurfacing of runways must stop us any weekend now.

Our old friends at Bannerdown will entertain us through the winter. They have offered us every kind of hospitality and help and we are more than grateful.

Flying has been fairly limited of late, but the Bocian and the T-21c continue the training and the Swallow rarely stays on the ground for long. A couple of new machines have arrived. Bill Davis has his long-awaited Cirrus, and the John Graves/Brian Selmes partnership has bought a red, white and blue Dart 15. Its trailer—once part of a gliding holiday scheme—has windows, fold-down bunks and the name "Keevil Hilton".

The K-6 is going to Essex while its former owners search for a slicker ship.

A bungey is on order, a farmer with gliding enthusiasm having offered us the use of a field on the Huish ridge. We should be hurling the first volunteer into space any day.

R.J.C.

BLACKPOOL & FYLDE

WE were very gratified to be offered a maximum grant towards buying the farm below Fair Snape Fell (see page 48). Our solicitor is working on the contract, which should be signed before these words appear, and the farmer hopes that he will be able to give us full possession next spring.

We are looking at the two-seaters available, and the cash that will be left after we have bought the farm. It is highly desirable for us to get the glider now, and get used to flying it before we take it to the hill. The hangar and club house may have to wait, unfortunately. We would welcome new members with previous experience who might now like to join us. Please write to our Secretary, Eric Ripley, 116 Clifton Drive, Blackpool.

At our AGM in October, Jack Aked was elected to Honorary Life Membership, the most fitting reward we could find for his 20 years' leadership of the club. Eric Ripley was elected his successor as Club Secretary. Ivor Stretch retired as Chairman. He guided us through the preparatory stages of site, grant negotia-

tions, and the formation of the Company, leaving sound foundations for the future development of the club. John Gibson has now taken on this post. Stanley Race becomes Vice-Chairman, and Bill Barcroft carries on as Treasurer.

We are very fortunate indeed to be able to call on members such as these, who are willing to use their professional skills to help develop our sport. We also welcome Derek Sandford, Derek Howard and Dick Seed to the Committee.

K.E.

CAMBRIDGE UNIVERSITY

SIXTEEN triangles were flown from Cambridge in August, we had a good Mynd Camp in September, but October saw an abrupt end to a superb year when our Tiger Moth developed a crack in her crank case and brought flying at Marshalls to a halt.

However, 1970 has been a memorable year for the CUGC. We have welcomed many new members and flown our greatest ever total of cross-country miles. Our tally of new solo pilots, badges, etc., has increased since our last entry and is headed by Richard Fortescue, who became our second Diamond Badge holder when he climbed to 19,000 feet in his Phoebus whilst at Portmoak in October. We must extend our thanks to the clubs both at home and abroad who acted as hosts to several foot-loose members last year.

Flying continues at Duxford where the aquisition of a Humber tow car makes launching in light winds somewhat easier. Our series of winter lectures at the County Arms in Cambridge are proving popular and well attended. The Skylark 4 was on holiday at the Long Mynd in November, and Friday nights found enthusiastic members trekking up the A5 praying for west winds.

V.N.

COVENTRY

WE are now preparing for the 1971 season and we are organising several "extra-mural activities" to supplement the year's gliding. We have been offered a stand in the Birmingham Boat Show at Bingley Hall in February, and we plan to suspend the Chairman's Dart 17R from the roof. There is to be another Traction Engine Rally in May, and also a Vintage Car Club are terminating a Rally at Husbands Bosworth. We will we hope be doing a spot of gliding too!

To end the 1970 season, our much respected Secretary/Tug Pilot, Adam Hepburn, has decided to see what the other end of the tow-rope looks like and has gone solo in the Capstan. On one of the many expeditions made by our pundits to the winter wave sites, Les Crawford attained 18,000 ft. in the club Skylark 4 at Portmoak, thus gaining his Diamond height. This is probably the first Diamond height at HB gained by a club pilot in this country. Lou Frank has been awarded the L. du Garde Peach Trophy for the best performances during the year in a club glider.

During the winter months, a few adventurous pundits have been attempting to try out small local ridges, mere bumps but nevertheless worth trying. Visits from the Scheibe Falke have also brightened our lives and everyone is queueing up for a ride.

V.M.

DERBYSHIRE & LANCS

THE weather was not on our side for some weeks during the latter part of 1970. We had a lot of rain, low cloud and very strong winds, and a large number of early solo pilots were not able or not allowed to fly except in the two-seaters. On the whole though, 1970 was a good flying year with much more wave than usual.

During the non-flying days we were able to catch up on the maintenance side of the club particularly in the direction of winches. All manner of jobs have been done by our workshop wizards under the magic wand of Alf Blacklin. The permanent winch house on the west edge has had a huge wire cage built around it to protect the poor old winch driver in the event of a cable break.

The party season was greatly enjoyed with rather more parties this time. Our Christmas party was well attended as were several private parties and our dinner-dance which was held at the Hallam Towers Hotel again in Sheffield on the 24th January.

P.H.

DEVON & SOMERSET

AT the time of writing we are lined up for our AGM and therefore thinking about statistics and costs. Our total flying time last year of 1,018 hours (including PO.'s 424 hours) came remarkably close to the 1,013 hours flown the previous year although the number of launches had reduced from 6,124 to 5,815 (see Statistics, page 52).

The Bergfalke 3 acquired in May more than compensated for the sale of one of the Swallows. Nine weekly courses were completed with the voluntary help of the club instructors who now muster 15. More of these courses are now being booked *en bloc* by youth and educational associations and although this means a lot of hard work by club personnel, it is thought to be well worth while.

Looking back over the year we have achieved our objectives regarding aircraft, clubhouse and hangar, and also managed to produce a small surplus on the year's finances. Decimalisation on February 15th will coincide with a winch launch fee of £0.40 and aerotow charges of £1.25 and £1.50 for single and two-seaters respectively to 2,000 ft. Other aerotows will be based on a time scale charge of 15p. per minute. Incidentally, similar information from other clubs would be appreciated and perhaps a table of charges published in S. & G. would serve as a useful reference when these figures have to be assessed.

These notes would be incomplete without at least a brief reference to our flying activities which, like many other clubs at this time of year, have been concerned with wave. Even the Tiger is now being fitted with a vario in order to participate in the increasingly popular pastime of hunting this elusive form of lift, and days which formerly were written off because they promised neither thermal nor ridge soaring, are now pregnant with possibilities!

A.E.R.H.

DONCASTER & DISTRICT

WITH most of the debris left by running the Nationals cleared away, we have been able to look at our operations a little more closely. The first change was to replace our faithful Auster with a bright new Condor tug. It is interesting to note that the rate of climb of the new tug towing is as good as the standard Condors operated by our power friends at Doncaster. This gives us safer tows (we rarely cross our airfield boundary at less than 500 ft.) and happier tug pilots.

The second change, due very soon, will be when we take delivery of the Motor Falke we have on order. Our problem here is to make sure we have enough instructors cleared to operate this machine. Bill Scull has helped here by spending a weekend with us, advising on operating methods, and handling in the air.

Our wave flying although not as spectacular as some is quite regular, with 7-10,000 ft. climbs in the local area, but if you are prepared to venture forth, as Bob Plane did, climbs up to 17,000 over Harrogate are now proved possible.

A strong social programme is planned as we prepare for the first winter in our new clubhouse.

J.A.S.

KENT

STOP PRESS:— The end of 1970 came to a sad end for the club. During the night 30-31st December, the blister hangar with 9 gliders and a Tiger Moth inside collapsed with the weight of a 2-3 ft. snow drift which had built up on one side of the hangar.

Several machines, club as well as privately-owned, have been written off or have been badly damaged. One glider and the Tiger Moth escaped damage. A rough estimate shows a loss of between £10,000 and £12,000, but the club will have to find a certain amount of the money as the hangar was not insured against collapse.

LAKES

THERE appears to be no limit to just how bad weather can get at weekends. We visited Dishforth during September to be met with poor visibility and stable conditions. Anyway, many thanks to them for a very interesting weekend.

Many thanks too to Slingsby for a modified T-53, on loan, whilst ours is having its annual face-lift. We are very fond of our "B" as an excellent solo machine and a good trainer which can

walk away from a good many solo machines. Three more solos were recently flown when the weather co-operated and the wind dropped below gale-force, while others converted to the high-performance aircraft. Launch rate is improving due to more intensive use of the runway space available, circuit discipline, and two cables.

It is surprising how popular our sky is when the weather does co-operate. On the 15th November, 1970—my first log entry for four weeks—the sun sparkled on the snowy backdrop of Lakeland Hills and, whilst quietly browsing at 3,500 ft. in weak wave, I was sniffed at by a Cherokee and a vivid blue Frog model which turned out to be a Turbulent. During the day we had visitors, by air, from Manchester and Birmingham, and numerous passers-by heading north, north-east.

An interesting phenomenon for meteorologists: On 22nd November, 1970, wind southerly, 15 knots, conditions unstable, a long thin funnel cloud about five miles out to sea, and about two miles behind it, the sea being lashed into foam. When the cloud from which this came arrived over Barrow, our T-53 soared it for 38 minutes at 2,500 ft. but did not encounter strong turbulence. When first sighted the funnel appeared to be moving across wind from west to east, but as the cloud neared, the wind veered to 240°, and remained in that direction for the rest of the day.

R.R.H.

LEICESTERSHIRE

THE usual winter weather has set in, and since the middle of October with the exception of the odd good weekend, we have had very few flyable days. However, on the days that it has been possible to fly we have made good use of our two T-49s to combat long flying lists. We have just acquired another retrieve vehicle to help reduce the turn round time of the gliders and we hope to get in even more flying next season.

The end of the season saw some hard work being put into renovating the club's Skylark trailer. This is mainly due to the generosity of Fred Fitchett who supplied the materials for the repairs and also put in some hard work himself. We now have a first class trailer which should stand a few more years of retrieving.

The end of the season also saw some of our syndicates going on sorties to Sutton Bank, where some good flights were made. Bob Robertson, our hard working Secretary, took some time off for a visit to the Mynd to get his five hours and has now obtained his PPL as well.

Our Annual Party was held at the end of November, this year's venue being a local pub. The evening was a great success thanks to Ron Willetts' excellent organisation.

P.G.T.

LINCOLNSHIRE

A TREMENDOUS air of excitement exists at present, due to the trials we are carrying out on a new method of launching. Requirements—1,500 ft. of single filament polypropolene rope (cost £15), a towing vehicle (in our case an old Vauxhall Cresta) and a launch run of approximately 1,800 yards. Method—The rope is laid out between the glider and tow car, leaving enough slack for the car to build up speed to 40-45 m.p.h. at which time the glider is rapidly pulled into the air and gains height rapidly.

The T-31 and Bergfalke, both two up, have regularly had launches of 1,000-1,100 ft. respectively in light wind conditions. One strand of the rope broke after 55 launches but was cut and spliced giving 11 more launches at the time of writing, and an expectation of many more.

Club members feel that these launches should be logged as motor car/bungey launches!

M.J.T.W.

LONDON

THERE were no noteworthy flights made from Dunstable in mid and late autumn, though regular hill soaring at weekends resulted in a good deal of flying. As a result of weekend visits to Dishforth, Len Woods and Peter King achieved their Gold heights with climbs up to 15,000 ft. Tony Letts, flying his SHK, wasn't so lucky, and had one traumatic aerotow through very rough air with a completely misted up canopy!

With courses finished we are back to our winter routine of five day week flying, and with all the rain we've been getting the site will soon be under mud again.

The club aircraft will be getting their annual inspections done after a very busy year, and for the first time in many, many years none of them have been out of commission for more than a week. As a result, hours flown are exceptionally high. The only under utilised aircraft has been the T-21, but this will get a new lease of life in the coming season with a heavy programme of instructional flying.

Tug aircraft remain a headache, and we have only two Tiger Moths with low engine hours left. However, it seems we may be able to hire a Rollason Condor, though details of this arrangement are yet to be finalised.

We have held National contests at Dunstable for the last three years, but for a change we are reverting to a Regional one. This will be early in August. Judging by the fact that there are almost double the number of places available in Regional contests, we may finish up with a more manageable number of gliders, as compared with the usual 40. We may also be holding an Air Display again.

M.P.G.

MIDLAND

BOTH October and November were notable for the number of weekends on which we had a westerly wind, and a great many heights have been gained in wave during the period.

Mike Costin and his Cirrus arrived to try our wave, and we also had a visit from Sir Alec Rose, who had a flight in the K-13.

Ray Stafford Allen and his hot-air balloon syndicate visited us too. Several flights were made, but probably the most spectacular was one which started in the west valley. The balloon was seen to rise slowly out of the field, and to drift towards the hillside in the westerly breeze. It came drifting up one of the gullies and passed over the top of the Mynd at about 20 ft., to pass out of view down the east side. Apparently it carried on for some five miles before coming to rest in a field. Later on that day it was tethered to 100 ft. of rope, and went up and down showing the local farmers what their farms looked like from that height.

Our Clubhouse has been fitted with oil-fired central heating and is very warm. This will probably mean a shortage of bungey launchers on cold days, but it is a welcome change to walk into a warm Clubhouse. The annual Trog Party on 14th November was a great success, thanks to Janet Hilton and her helpers.

P.M.S.

NORTHUMBRIA

WE have erected our temporary club-house, office and kitchen, and hope to have central heating installed shortly.

Progress on the ground has been matched by an increase in our flying activities. Our total winch launches for the year was almost double the previous best and use of the tug for the first time this year has increased the amount of wave flying to such an extent that 8% of the total membership have been to higher than 10,000 ft. this year. The tug has also been used to drop gliders on to an upwind north-facing ridge which is out of range from a winch launch. This use of the tug has extended our soaring season and we have had unprecedented claims for C and Bronze C flights in November. A new Skylark 2 syndicate has been formed bringing our fleet up to 11 gliders and a tug; this move once again makes the club Jaskolka "syndicate" one of the smallest on the field.

The Annual Dinner-Dance was held in the Towneley Arms, Rowlands Gill. The Cawthorn Cup, for services to the club, was presented to Alan Brown and the Northumbria Cup, for top pilot on the Club Ladder, to John Greenwell.

J.R.G.

OUSE (York)

OUR annual dinner, held in the beautiful and historic Merchant Taylors' Hall in York, was, as usual, an outstanding success. Guest of honour was George Burton, who was accompanied by his charming wife Kathie. They have a remarkable flair for making friends. George responded to the toast of "The Gliding Movement", proposed by the chairman, Major Alan Simpson, who was responsible for the Press, Radio and Television publicity for this year's Nationals at Doncaster. George, probably inevitably, expressed great faith in motorised gliders!

At the Ouse Gliding Club's annual dinner. L to R—Gp. Capt. J. W. Foster, DFC, AFC, RAF, Mrs. Kathie Burton, Major Alan Simpson, Mrs. Foster and George Burton

Group Captain J. W. Foster, Station Commander, RAF Church Fenton, responded to the toast of "The Guests", proposed by Club Secretary, Eric Rogers. Warm thanks were expressed to the CFI. James Wilfred Coulsey, who has done so much for the Ouse Club. Audrey Boddy received Wilf's plaque for "service beyond the call of duty", Kevin Atkinson and David Smith shared the "most enthusiastic youngsters' trophy" (The Anthony Foster Memorial Trophy), and Peter Ramsden received the "ladder winner's trophy".

It was stimulating to see members present from towns as far apart as Huddersfield and Hull. Arthur Sams was congratulated on his efficient planning of the dinner-dance, and thanked for his hard work for the Open Day and Flying Display in June.

It was a good finale to a busy year. With two-thirds of our membership now solo pilots we are planning for more and more cross-country flying in 1971.

A.H.S.

PETERBOROUGH & SPALDING

AFTER its extensive repairs, our Bocian is expected to be back in the fold shortly, and we hope to restart our "prior bookable" winter flying programme. Our abortive attempts to obtain a temporary replacement during its absence has made us decide it is essential to have more than one Club operated two-seater, and a syndicate has been formed to purchase one at the earliest opportunity.

On the powered front, the Beagle Terrier tug aircraft is due for its C of A, its place being taken by a refurbished, immaculate, and very attractive "Flame and Black" Tiger Moth.

Although not quite finished, our new hangar is coming on apace, and we hope shortly to be securely installed.

As a new Club, one of our aims is to organise a full social calendar throughout the winter months. In October we held a combined Film Show and Lecture —the latter laid emphasis on first cross-country flights, and was extremely interesting. We are more than indebted to Keith Chard for coming all the way from Dunstable to give it. November's Social Evening proved to be a highly successful venture.

J.V.L.

SCOTTISH GLIDING UNION

STOP PRESS:— It is with great regret that we learn that Tom Davidson, one of the best known members of the club, died at the age of 79 at the beginning of the year. An Obituary will be published in our next issue.

SOUTHDOWN

AN Instructors' Conference was held in the Clubhouse on 15th November. 24 instructors from Swindon, Kent, Lasham and Southdown were present. The object was to provide a general instructors' conference to bridge the gap between the training courses and the CFI's Conference. This is the second of these to be held at Firle this year. Now that this type of conference has proved successful, it is hoped that the idea will spread throughout the country and be organised on a regional basis.

Talks were given by Derek Piggott, John Ellis and Ray Brigden and discussion followed. Everyone appeared to enjoy it, but a few envious eyes were cast up toward the ridge where we were soaring in north-westerlies. Catering was expertly organised by Joyce Head, Chairman of the Clubhouse Sub-Committee, ably assisted by our Treasurer, Joan Cloke, and various male dog's bodies.

On the flying side, September was mainly circuits with the exception of a one-and-a-quarter hour flight by Traves and a pupil, soaring the sea-breeze front in the T-21. However, October gave us some good soaring and the monthly CCPR course had more interesting flying than some of their predecessors.

November has been soggy and uninspiring, with the exception of ridge soaring on the 15th, on which day the elusive wave was again contacted briefly by Keith Mitchell in the Pirat.

K.J.P.M.

SURREY & HAMPSHIRE

PLANS are being hatched for the 1971 season, we intend to buy another sailplane but of course the usual arguments come out—Open or Standard, wood or glass, etc. Thinking about money required for new gliders it is significant that profit can definitely be made from soaring fees.

We raised our soaring charges (for the first hour of any flight) at the start of 1970 and for only a small rise in total flying hours over 1969 the increase in revenue was staggering—about 40%—at no greater extra expense to individuals, a five-hour flight costing £4.70 in soaring fees. The answer is good reliable launching equipment, easily operated and easy solo gliders that stay up in the hands of beginners. Our K-8's do 330 hours a year each, mostly with early solo pilots.

Wave has again been a source of lift for the winter hogs. Several flights of over an hour occurred in November with the 24th and 25th being the best days. Indeed on the 25th rolls of crosswind strato-cu clearly marked a system generated by the western end of the South Downs around Petersfield in stable southerly winds. Two flights ended because of darkness.

STOP PRESS:—Tony Barker died unexpectedly in the train on his way to London on Monday, 28th December. He had been with us at Lasham for many years and with his wife Constance he took part in all the social activities, and his judgment on matters of club policy was highly respected. We extend our deepest sympathy to his widow and family in their bereavement. We also mourn the sudden death of Ted Lunn early in January.

C.L.

ULSTER & SHORTS

WEATHERWISE, 1970 was the worst year for gliding in Ulster that anybody can remember. The USGC was glad to see the end of it. Nonetheless, we managed to graduate 14 soloists by the end of November and many of these have progressed a long way since. Our newest soloist, Billy Craig, went solo in the Eon Baby on 28th November, the first flying day after his 16th birthday.

The Capstan, one of our two dual machines, was sold to the Royal Naval Gliding Association in October and was borne away in an RAF C-130 Hercules which called at Shorts' Sydenham airfield to collect it.

We are also eagerly awaiting delivery of a new Motor Falke ordered from Slingsby and expected in February. This will be used for *ab-initio* training and free the Blanik for advanced instruction and dual soaring.

Ulster in 1970 was no place for winning gliding gongs and the greatest success attended those whose jobs or inclinations take them across the North Channel and permit visits to British sites.

George Bigley completed his Silver C this way with a cross-country, mostly above cloud, from Compton Abbas to Lasham on a day when the Lashamites were only circuit bashing. Great was the amazement of a bunch of *ab-initio* students who ran over to ask George where he came from, when he replied "Belfast."

Late in October Bob Rodwell was aiming for his Silver C duration on Chinnor ridge in a Booker Skylark 3G when it became thermic and he got his gain of height too, climbing to 4,600 ft. Following this he drove up to the Long Mynd for more glorious ridge, wave and thermal flying, returning from England with 14 hours logged in six late-season flying days.

Tales like these have started others thinking about cross-channel expeditions for 1971 to fabled places like Portmoak. But there are others wanting to get to grips again with wave in Co. Kerry and other parts of Ireland's unexplored west, after Secretary Jeremy Bryson's 13,000 ft. climb from Inch last May.

We'd like to induce a reverse flow and any gliding man—or woman—from Britain travelling west is warmly welcomed at Long Kesh any weekend. Indeed, so pleased are we to see visitors from other clubs that—alone, as far as we know, apart from the Dublin club—we don't even charge them a daily membership fee.

R.R.R.

VALE OF NEATH

ON the 15th of July, 1970, it was finally decided to form the Vale of Neath Gliding Club, the decision being taken by an enthusiastic group of aviation-minded members of the RAF Association at Glynneath in Glamorgan, South Wales.

The initial driving force behind this venture is Sqd. Ldr. J. Howard Thomas, DFC, an accomplished power and glider pilot, who is backed by an active committee headed by Les Duke, President; Clason Thomas, ARIBA, Chairman; Harry Lewis, Treasurer; the feminine touch being added by the attractive Mrs. Pat Hall, the very able Secretary.

One week after the formation of the Club, the Ladies Committee was born, and has been extremely active in raising

funds for the many necessities required in such an undertaking. The response of would be members was overwhelming, and the books are closed temporarily whilst the Club gets under way.

The official launching of the Club was at a Buffet Dance, held at the RAFA Association's comfortable premises, Lancaster House in Glynneath, which was attended by Miss Sandra Cater, the current "Miss Wales", the Chairman of the Neath Rural District Council and his good lady, and, needless to say, this event was an outstanding success.

The Club is fortunate in having two sites to fly from, one for *ab-initio* training and a hill site for soaring; the first aircraft has been purchased for training purposes, and a second, a more sophisticated type, is being negotiated for. A hangar has been purchased and is in process of being erected, and two caravans made available for use as office and canteen accommodation. A trailer is also being bought for transporting gliders to and from the hill site, so in just four months, the idea has become reality.

With Howard Thomas as CFI, and joined recently by ex-Fl. Lt. Ron Vince as assistant, flying is expected to commence almost immediately.

R.I.V.

SERVICE NEWS

BANNERDOWN (RAF Colerne)

AS with most clubs at this time of year our AGM is over and produced some interesting changes. Many of these were necessitated by the RAFGSA's new scheme for renting gliders. Our chairman cheered us all when he gave a hint of Wednesday afternoon flying by the summer. This should help fill the cash box with our new decimalised flying fees.

Bath & Wilts. are coming to fly with us in the next few days and we look forward to both their presence and the increased activity they will bring. Tom Bobbin with his Sky is also expected in the next few weeks.

Ken Hartley, with two aids, has built us a new bar—a magnificent item of wooden clinker panelling.

B.S.

CHILTERNS (RAF Benson)

1970 came to a disastrous end for us here at Benson. A fire badly damaged the club hangar and totally destroyed our four aircraft. It may be found possible to repair the hangar but it was not possible to salvage anything from the gliders.

We should however be back in the air by the time this reaches publication even if only with one aircraft. Our ground equipment was barely damaged in the fire and so we still have two good winches, tow-out vehicles and our control box. Shortly before the fire our retrieve vehicle came to an undignified stop on the way back from Bicester and has not moved under its own steam since. This seemed at the time a major disaster but it has rather paled into insignificance in the light of the more recent event but the efforts of our MT member, John Butler, are not going unnoticed.

We hope that in the next issue we shall be able to report on the acquisition of new aircraft and new achievements—even if we are without gliders we are definitely not without spirit!

G.M.

FENLAND (RAF Marham)

FENLAND has not hit the headlines for so long, that people could be excused for thinking we were defunct. Nothing, however, could be further from the truth. In fact, we are flourishing.

Firstly, a résumé of the current Club Committee. Our Chairman is Wing Commander G. M. Matcham, whose keen interest both on and off the field has been a tonic to us all. Officer i/c is Sq. Ld. Bill Meacham, also a very keen participant.

Fg. Off. Bob Lyndon is our CFI, and Ch/T. Colin Elliott, Dep. CFI and Bar/Social member. Our MT is maintained by Cpl. Ray Drake, whose wife Margaret cooks substantial meals for us on the field each weekend. Our fleet is maintained by Sgt. Colin Rooke. Ch/T. Jim Pignott has reduced our old tea bar to a bare chassis, rebuilt it with Aerolite glued joints, no less. Gliding clubs in various parts of the world have benefited from Jim's expertise, and we at Fenland count ourselves lucky to have him here for the second time.

A new post, that of Trailer member, has been filled by "Mitch" Middleton. Our quiet and efficient Secretary is Sq. Ld. Pete Balmforth, who is also often to be seen with his Instructor's hat on.

The CFI is running a Strike Command Expedition to Portmoak in March. Besides Fenland, the Anglia club from Wattisham and the RAFGSA Centre will be participating, and certificates will be the order of the fortnight.

The Club AGM was well attended in November, and reports indicate a sound viable club.

C.R.E.

HERON (RNAS Yeovilton)

THE last quarter has been one of slight deflation, however, the weekend weather has been exceptional for the time of year. Local convection has been of the "teasy" type and more frustrating than satisfying; to add to this, the Tiger Moth seemed jinxed to fail week-end after week-end, when we needed it most to reach the greener grass.

Yeovilton is well placed geographically to pick up radio information from five or six clubs in the south of England, notably Bath & Wilts, Nympsfield, Devon & Somerset and particularly Usk, the latter reporting regular wave and impressive climbs just recently. Perhaps we will meet mid-channel one week-end.

Our first winter expedition proved to be a great success, a dozen of us trailed to Land's End to join up with Alan Davie and the Culdrose members for a long week-end in Indian summer conditions. The ridge didn't quite perform as hoped but local thermal provided a satisfying challenge and exposed the sheer beauty of the Land's End peninsula.

The unexpected change in weather conditions has to be experienced to be believed, during the space of five minutes the whole tip of Cornwall was engulfed in oragraphic cloud, extending down to ground level. The Auster and Skylark were caught up in this situation whilst in combination, having taken off in good clear conditions. Pip Phillips demonstrated his ability by flying up the Copp valley to airfield level. Tony Wray, however, was somewhat stuck in the Skylark and spent what seemed a life time negotiating the cliff line defined by the oragraphic cloud and eventually landed in one piece on Sennen Cove beach. Retrieve time was limited as the tide was on its way in. Several rolls of film were exposed and the caravan of club members and volunteers grew in length as the clipped form of the Skylark made for the slip-way.

We look forward to 1971 with great expectations. The Blanik should be flying again within the first quarter, thus providing an advanced trainer for dual cross countries, aerobatic and instrument flying training. A syndicate Auster is in the process of being purchased, the idea being to relieve the demand on the Tiger Moth and provide a more versatile service to the club.

D.R.B.

MENDIPS (RAF Locking)

THINGS have been going from strength to strength on the operational side.

On the membership side, a few stalwarts have left, Alan Long, Geoff Thatcher, Nick Boreham and Sandy Bryce, the latter leaving in glory by catching what must have been the last thermal of the year to get his Silver height. Unfortunately it is time to say "sayonara" (I've never been the same since my holiday in Japan), to our CFI Len Barnes and his wife Ann. They will be missed by all, they leave for a tour in Cyprus.

Mike Laundy was extracted complete with stiff joints and groans from the cockpit of the Olympia after completing a splendid 6½ hours on the ridge. Alan Hardon and Taff O'Shanahan both completed a Cross Country to Wells and back 40 NM, good stuff for down here at this time of the year.

F.P.G.

WREKIN (RAF Cosford)

OUR AGM on 28th November was well attended and followed by a very successful party.

At the Trophy presentations the 6E model for the best flight of the year went to Kev. Kiely. He was also given a "Pot" from the club as he leaves us shortly for Gan. When Liz Kiely was awarded the "Tutor Pewter" for the most progress during the year there were mutterings of —What's this? A Kiely benefit? The "Silver Swifty" went to Mick Orr and "Jim's of Pot" to J. Keenan for the first hour of the season off a winch launch. Nigel Bailey was best adult pupil and Brian Harvey best apprentice.

Meanwhile some of the club members are still clocking up hours. Eddie Wright did his 5 hours for his 2nd Silver leg on the Long Mynd, earlier in the month. A few of our members have been flying there on west wind days when we could not fly at Cosford.

We have two more instructors. Andy Price—who has come to fly with us while on a course at Shawbury, and Chris Jocelyn from Gaydon.

C.P.

CRUSADERS (Cyprus)

AIRSPACE over the eastern plains of Cyprus can be busy at times, but under amicable Nicosia Air Traffic control gliding continues virtually unrestricted from Prastio and Kingsfield. Cyprus weather provides the advantage of almost permanent VMC, and amusing R/T dialogues have been struck with passing Vulcans and a Harrier. Club cross-country pilots are becoming international ambassadors when landing out, and without exception find tremendous hospitality from both Greek and Turkish villages. The Cypriot people are gradually learning about the sport and only once has the island's United Nations force been alerted, when the Olympia 401 was reported as a "hostile reconnaissance jet circling over our village".

At the Annual Dinner and Dance held in Limassol in November, the three Club Trophies were awarded as follows:

The Andy Marshall Trophy for the best working effort, to "Pip" Rice; the Pundit's Pot to Benny Goodman for a series of meritorous flights, including the island's sixth Gold C height; and the Novices Trophy for the best *ab-initio*, to Ken O'Brien of the US Embassy. The Dinner was also Benny Goodman's farewell party, prior to his posting to Cosford.

Frustration on a day when thermals were somewhat sparse led Chalky White, aided and abetted by the undersigned, to set fire to the old clubhouse. Flames 50 ft. high failed to break the inversion, but the pall of smoke which spread downwind from Dhekelia to Famagusta was the signal for an unexpectedly large and high-ranking audience to arrive on the airstrip!

G.C.

EAGLE (Detmold)

ONE November morning at 4 a.m. saw the departure of the Eagle in search of Foehn winds, Diamonds and sticky buns to Zell-Am-See, Austria. Needless to say, we found no Foehn, no Diamonds but plenty of sticky buns. Between eating, mountain climbing, and other dubious activities, we did manage to fly occasionally, in fact our four aircraft there flew 110 hours from 87 launches.

The first few days were spent site-checking first timers, which produced much to think about for the less-experienced, and a few choice comments from the front seat of the K-13 "mind that mountain!" On being let loose in the solo aircraft, our pilots went certificate chasing with a vengeance, a C and Bronze leg for Geoff Lenton, 2 Bronze legs and 5 hours for Al Mathie, 5 hours and Silver height for Martin Hardy in wave at 11,000 ft., and a Gold height, awaiting confirmation for Chris Watson.

Lemmie Tanner just failed to get his Diamond height, and a certain Libelle owner was overheard to exclaim on the radio, "I spend thousands of pounds on a Libelle, when I could have had *that* for next to nothing". "That" was the Swallow which persistently stayed 1,000 ft. above him.

The club competition at Zell this year was for the Rockafeller Schlepp, the longest tow, and won by Martin Hardy with over 30 minutes! The expedition was enjoyed by all, though complaints about empty bank accounts are now common. Still, roll on next year.

C.W.D.W.

OVERSEAS NEWS

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

AUSTRALIA

Sailplane Design Competition.—Full conditions for entry in this competition (announced in S & G for October, 1970) are issued, and applicants for entry can obtain them from:— Australian Gliding, Box 1650 M, GPO Adelaide, South Australia.

They must enclose a year's subscription to **Australian Gliding** (£3 Sterling) if they are not already subscribers. The full conditions cannot be given here, but among them are:—

The span is to be 13 metres. The sailplane should have as good a general cross-country performance as possible, yet be capable of being built by gliding clubs or intelligent amateur groups. It will not be intended for the 'first solo' pilot, but for pilots accustomed to a range of different sailplane types and with some recent competition experience. There is no restriction to traditional materials and methods of construction, but the judges will not look favourably on a design which requires the use of elaborate machine tools, rare or very costly materials or complex production techniques.

A wheeled undercarriage is required and, if retractable, a landing with the wheel retracted must not injure the pilot.

Entrants may register their intention to compete up to a month before the start of judging on 1st December, 1971, by which time all designs must have reached Adelaide.

The judges will be H. R. Millicer, M. Waghorn, W. Riley, H. Schneider, J. Fincher (of DCA), R. S. Rowe and R. J. Martin.

The prototype of the winning design will be constructed by Riley Aeronautics Ltd., and after initial test-flying will be the property of the designer. Details of additional prizes will be published later in *Australian Gliding.*

AUSTRIA

World Champs 1972.—The Austrian Aero Club has decided, after all, not to make any offer to sponsor the next World Gliding Championships, as no suitable airfield is available.

Luftsport

ITALY

Varese Lowers Fees.—Since most visitors to Varese take their holidays in weekly periods, this gliding centre has decided to offer to pilots the opportunity to fly the centre's sailplanes for as long and as often as they like over a period of 6 days, for the price of L.15,000 (about £8.50) per pilot per 6-day period. All launches are by aero-tow, costing L. 2,500 to 600 m. or L. 3,500 to 1,000 m.

Pilots bringing their own sailplanes are also welcome, and can bring their families. Accommodation in the clubhouse is L.700 per day, or there are camping facilities on the airfield.

Good thermals begin in early March, and 400-km. or 500-km. flights are possible in early April. Write for information folder to:—
Aeroporto Calcinate, Varese, Italy.

FINLAND

INTERNATIONAL COMPETITION 1971.— In connection with the Finnish National Championships and the Nordic Championships next summer, pilots from other countries will have an opportunity to take part. The period of the competition is 6th—20th June, 1971. The site of the competition will most likely be Rayskala Gliding Centre in the southern part of Finland (60° 45′ N, 24° 07′ E).

This is a preliminary announcement only. An official invitation will follow in due course. We really hope to see as many foreign glider pilots as possible gliding with us next summer.

SUOMEN ILMAILULIITTO
Finnish Aeronautical Association

FRANCE

A Tale of Two Cities

THE Phoebus had a busy month. In just twenty-four hours from my Yorkshire home David Carrow and I were in Angers, some 500 miles away in the province of Anjou in central France. We were there for the Coupe d'Europe — the French gliding meeting with substantial international entry. They came from Belgium, Germany, Norway, Switzerland, Yugoslavia and three sailplanes from UK. David and I had the Phoebus, Chris Day was there with Anne Burns' Cirrus and Humphry Dimock flew his Libelle.

It was hot, very hot, when we arrived. We found the caravan and set it up with a tent. Then we went out and rigged the sailplane. David comes outside that statistical term 95 percentile, which means that ergonomically he doesn't conform. This had been discovered on a rather wet afternoon at Rufforth when we decided that a new panel was necessary to accommodate his considerable height. This had been made and was now to be fitted. As *Les Nuages est interdit* as the French have it, we had removed the horizon and turn and slip and given more leg room. David flew for an hour and expressed himself generally satisfied.

I had to leave for business reasons, so it was not until two days later that I flew the Phoebus to become familiar with the terrain. The thermals were fine. France is big and flat around Angers. Only the Loire river winds slowly in a generally westerly direction to drain the wine growing district of Anjou and Touraine. By a quirk of History, this area abounds with *chateaux* both large and small. To see these great houses, it is possible to gain a clear understanding of the French character and their flair for civilised living. But away from the rivers and the *chateaux*, the country is generally flat, the only features being straight roads and few railways. Visibility was excellent and navigation straightforward.

Of the ten-day meeting, we had six contest days and between us we flew for some thirty hours and covered 1,500 km. of good old French soil. We did not hear the word "Airway" once.

The briefing was presided over by M. Herson in his own brand of French while the Meteo Mr. Vayence was excellent in his precise French. The organisers claim that they will not set a task unless they are satisfied that a large proportion of the field will complete. Thus tasks are speed triangles or out-and-returns.

This year the Open Class of 22 entrants had 13 Phoebus present. We were at least fashionably dressed! Two BS-1, two Cirrus, two Diamants, an Elfe and a Libelle. The Standard Class had four LS-1, numerous K-6 of various types, ASW-15, a Delfin and a Wassmer Squale, being a composite glider of wood and glass-fibre. At such a meeting it is possible to see the rapid progress of sailplane design in recent years.

In the flying itself there was a marked advantage in the gaggle flying of the French and the Swiss. Certainly the

French flew with great skill and style. There was little wasted effort and they flew fast. Fortunately thermals were strong enough to support such a technique. When there was only 4 seconds difference between first and second in a 231-km. circuit, lasting 2.30 hrs., it was not difficult to realise that this was tough competition.

* * *

So it was a striking contrast to go to Doncaster—although there are some similarities: both are industrial towns with an historic past, both are flat in thermal country, both have an airfield right up against the town. But there the similarity ends. It came as a real shock to be expected to fly all day in half-metre thermals at heights not above 3,000 ft. It took no less skill and demanded no less of the pilot in Yorkshire than in Anjou. In England we fly when there is hope if nothing else. In France there have to be thermals and you have to race or you go somewhere else. So the French specialise in **racing.** We specialise in flying and the ability to survive. The tension and the urge to win are no less in this country than in France, but we have a more Love/Hate relationship with our sailplanes than the Europeans, who, knowing what they want in more uniform conditions, treat their sailplanes as a means to an end, rather than an end in itself.

We came back from France greatly impressed, quite sure that the British gliding movement should take the opportunity to gain more continental experience to find out what soaring racing is all about. Only on the Husbands Bosworth day and the last day at Doncaster did we have a chance to do this and it made a real impact on the placings. Just one final question: Do we know how to handle these hot ships? I nearly said do we deserve them?

CHRIS RIDDELL

RHODESIA

NATIONAL CHAMPIONSHIPS.—The thirteen machines in the 1970 Nationals between them flew close on 40,000 kilometres in 800 flying hours. Pilots included South Africans, Rhodesians and one New Zealander.

The overall winner was South Africa's Tim Biggs, flying a Standard Cirrus. He achieved 354 points out of a possible 384 to win the Rhodesian title for the second year in succession.

Second and third places were also won by South Africans, with 334 points going to Ted Pearson, who flew a Standard Cirrus, and 305 to Adrian Martin who began the competitions in his SHK Austria but, following a heavy landing which damaged his undercarriage, used a borrowed Standard Austria for one day and thereafter flew a Ka-6 borrowed from a club syndicate.

South Africa's Hugh Keartland also had bad luck with a heavy landing of his open Libelle, and thereafter used a borrowed Ka-6E.

The Rhodesian national placings were: (1) Bob Moore, flying a Standard Austria (274 points which gave him fourth place in the open placings); (2) Trevor Torgius, flying a Vasama (258 points, which brought him fifth in the open placings); (3) John Colban, flying a Ka-6CR (254 points, bringing him sixth in the open placings).

Although South Africans won all first three places in the Opens, one of the most coveted awards of all went to Rhodesia's Trevor Torgius—the Anglo-American Rose Bowl Pilots' Award Trophy for the pilot who, in the opinion of all other contestants, puts up the best performance having regard to previous experience and type of machine he flies.

Tasks included one out-and-return of 436 km. and three triangles of 300 km. each.

On the third task day, a planned 300 km. triangle, taking in Umvauma, Gadzima and Umvukwes, had to be cancelled because Air Traffic Control refused to approve the route. An out-and-return of 234 km. to Lion's Den was substituted: all aircraft landed away and afterwards Salisbury Gliding Club chairman Ken Taylor said that "it was an unsuitable task on account of meteorological conditions. It was not our choice, but was forced on us by ATC limitations." He added: "The competitions, thanks to the spirit that went into them, were as usual a great success, but I am bound to say that the problem raised this year—for the first time—by ATC

rulings do give me cause for concern in the future. This matter will obviously be pursued further, and we shall have discussions with the relevant authority—namely, the Director of Civil Aviation."

Although Salisbury Gliding Club was the host club, the competitions took place under the auspices of the Central African Soaring Association. The Association chairman, Bob Moore, and the competitions organiser, Alf Thompson, have expressed themselves as highly concerned over the official refusal to approve certain task routes. According to Mr. Thompson, this could spell the end of any further Rhodesia National Championships. Official reason for the ban on certain tasks, however, was that they were either along or across some of the busiest passenger-carrying routes of powered aircraft, and in the interests of safety could not be approved.

Wings over Africa

SOUTH AFRICA

AN official register of records established in Standard Class sailplanes is to be established and maintained by the Gliding Committee of the Aero Club of South Africa. In the past the only South African records maintained for gliders were in the Unrestricted or Open Class. Tim Biggs has been appointed to maintain the record register. This move follows recent technological developments in the Open Class which make the current production super-gliders too expensive for average glider pilots to buy and operate.

NATIONAL CHAMPIONSHIPS.— These will have started on 27th December and finished on 9th January, too late to be fully reported in this issue. Johann Tromp, vice-chairman of the Bloemfontein Gliding Club, was asked by the Aero Club's Gliding Committee to organise the event. As in previous years, events counting for the national championships were flown on alternate days with free-for-all competitions which enabled crew members and syndicate sharers to take part. Clubs wishing to enter non-competitive pilots in club aircraft, including two-seaters, were permitted to do so provided they flew only on "competition days" and not on "championship days".

Wings over Africa

TANZANIA

THE Serengeti plain is situated in the North-West territory of Tanzania. It is a vast game park of many thousands of square miles in which huge herds of wild animals roam free, protected from all but the poachers. Hundreds of different species of animals, birds and reptiles, including lion, rhino, elephant, water buffalo, leopard and cheetah—the biggest herds, however, being wildebeest and zebra, of which as many as 6,000 may often be seen together. Landing out in a glider, therefore, is not a matter to be taken lightly.

The Gliding Club, if such it can be called, is situated more or less in the centre of the park at a game camp called Seronera, which is the headquarters of the Serengeti Research Institute, and it is due to the enthusiasm of the Institute's director, Dr. Hugh Lamprey, that gliding is available. The club was first started about four years ago when Dr. Lamprey bought an old T-31 from Nakuru Gliding Club in Kenya. Later a K-7 was added, but no single-seaters are yet available.

In the late winter (August in Tanzania) of 1969, I decided that a year away from gliding was too long—so my wife and I decided to fly the 550 miles from Dar-es-Salaam to Seronera for a long weekend. My wife did the difficult work of the trip—that is navigation and radio, whilst I was able to relax and do the flying. After one stop in order to refuel at Arusha (no fuel available at Seronera), we landed safely at the game camp, after buzzing the area several times in attempts to clear the zebra from the strip. The total flying time to reach Seronera was 4¼ hours.

We were immediately made very welcome and offered accommodation at the bungalow belonging to one of the gliding types, where we were wined and dined in five-star style (we had taken the precaution of taking with us a good supply of liquid refreshment, as the nearest shop is over 200 miles away). The following day, Saturday, due to lack of bodies, gliding could not be laid on, so the few enthusiasts fettled.

ANON

Camphill News

UNITED STATES

National Design Competition.—Owing to the reduced number of US designed and built sailplanes in World Championships, and a prospect of still further reduction, the Soaring Society of America announces that "This tendency can be reversed if superior US designs are flown and put into production. Time required for this reversal is considerable. Four or five years". So the SSA announces a Design Competition, and asks for contributions towards prize money.

Entries must be complete flyable sailplanes with instrumentation and radio suitable for competition soaring. They can either be Standard Class according to current international rules, or Open Class with a span limit of 18 metres. There will be a Judging Committee under Paul F. Bikle. This Committee may reject any or all entries if, in its opinion, they are not competitive with the best currently available sailplanes. Potential entrants are recommended to register with the SSA so as to receive information and data.

Soaring

WEST GERMANY

National Championships 1971.—These will be held at Bückeburg from 15th to 30th May. A notable feature is that the Open Class will be handicapped according to span. The datum span is 20 metres and will get 100% points. For every metre beyond 20 there will be a handicap of 1%, while spans below 20 get a bonus of 1% for every metre below.

This system of handicapping by span has evidently been inspired by a paper recently circulated by Eugen Hänle of Glasflügel. Hänle pointed out that those who could not afford the big exotic machines had little chance of winning an Open Class competition with a machine of less span, so tended to sink into the Standard Class. However, he recommends twice as large a handicap, starting at 100% for 15 metres, and subtracting 2% for every metre beyond 15. It has been decided not to divide the Open Class into separate competitions for ladies, juniors and seniors.

Participation of a Club Class in the Championships has been accepted.

Luftsport

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