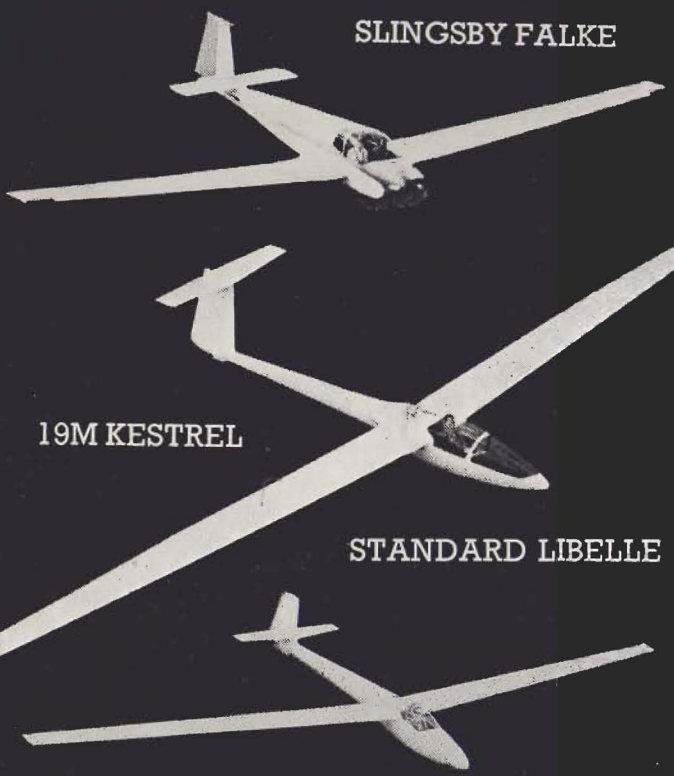
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# Christmas, 1971

ONCE more 197 (my syndicate ASW-15, in case you did not know) is wintering in Scotland and disporting in winter waves—a sure sign I have to pen a Christmas message, but in the comfortable knowledge that in a few months the summer migration south will be on. Just time to reflect on the past summer and its joys and sorrows.

Most of us will have been conscious of motor gliders this year—they are beginning to make their beneficent presence felt and training is becoming faster and better, at a rate we can almost feel. Problems lie ahead though, as all the graduate pilots look for something to fly and somewhere to fly it from. Fortunately, we look like achieving sensible operating and maintenance legislation, so that this very efficient and effective piece of equipment can be used as economically and simply as possible.

At the higher performance end of the scale, we have seen glass-fibre ships in increasing numbers—and more of them built in this country. They are making their mark on the national record book and the normal club and competition performances—500km triangles scarcely cause comment in the bar now! Except when such a phenomenal increase in speed occurs, as was achieved by Steve White this summer.

Torva has shown its paces in test and competition, Sigma has flown (and looks like being ready for Yugoslavia) and, of course, talking of Yugoslavia reminds me that funds are needed, as is usual in a World Championships year, to send our team. So anyone feeling a truly Christmas spirit of generosity knows how to give expression to it without further instruction from me. (Please make cheques payable to the BGA, World Championships Fund.) I take this opportunity of wishing the team good luck in the tough competition they will face.

Which brings me to the pleasant and more general distribution of good wishes at this season of goodwill. Particularly, and especially, to all those who have laboured so willingly during the year, in the BGA office and committees and in clubs up and down the country, for the well-being of this sport—which gives us all so much excitement, pleasure and interest. A Merry Christmas and Happy New Year to you all.

KEN WILKINSON, *Chairman BGA*







*Pteranodon feeding its young (after J. Burian)*

# PTERANODON — a light wind soarer

By GEORGE WHITFIELD

THIS vintage sailplane represents the ultimate light wind soarer, combining light weight with a large wing area and a thin highly cambered wing section. All possible techniques have been used to minimise weight. The main structural members are thin-walled tubes, braced where necessary with cables. The wing surface is a single, thin membrane, the fuselage is very small and the tail has been dispensed with; resulting stability problems have been overcome by an effective automatic pilot.

The wings fold for convenient ground handling, and the aircraft is self-launching from any suitable cliff. The aircraft was remarkably successful, as might be expected after 80 million years of development. Variants of it could be found in large numbers all over the world at the end of the Cretaceous period—about 80 million years ago.

## STRUCTURE

A GA drawing of the Pteranodon is shown in fig 1. This has been derived partly from fossil evidence—very like reconstructing a crashed airliner from the pieces—and partly from an engineering assessment. Clearly any animal must have a viable engineering structure, and the constraints of flight ensure economical design. An animal as large and as highly evolved as Pteranodon will be close to the optimum shape, so the best engineering design consistent with the fossil evidence has been taken.

The drawing shows the gliding configuration, since Pteranodon is primarily a glider; but he is actually a powered glider, and can flap his wings through 95° to give a rather poor powered performance. The wing span of the specimen discussed here is 23ft, and the AUW 30lbs, giving a wing loading of 0.71. Larger specimens had wing spans up to 27ft.

The wing has a leading edge spar and a flexible elastic membrane. The spar consists of thin hollow bones, and is braced inboard of the knuckle by a tendon in front and below. The wing membrane is tensioned in the spanwise direction (fig 2); the obvious alternative, a taut trailing edge and chord-wise tensioning, would give too much backward bending movement at the spar. The whole wing is inclined upwards at 20° at the root—there is an ingenious lock in the shoulder joint at this angle—but curves downwards towards the tip, so

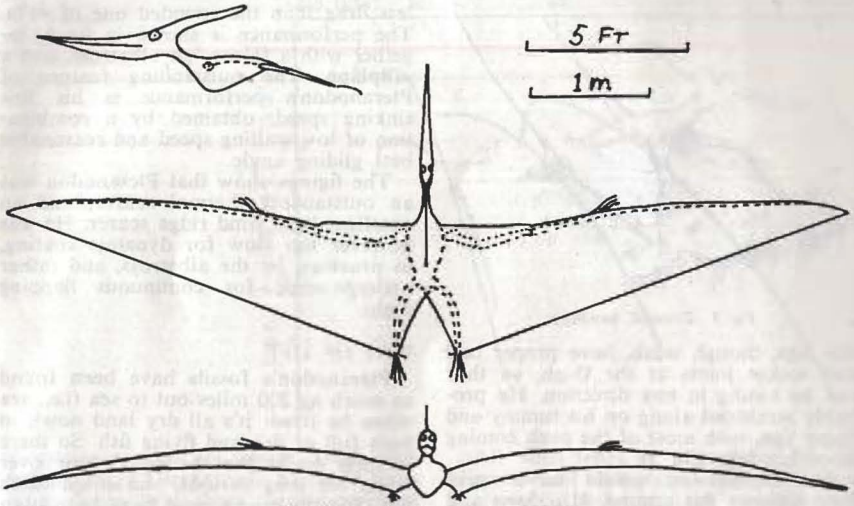



*Fig 1 GA drawing of Pteranodon*

that in spite of the curvature of the membrane, the angle of incidence is constant over the span. With the curvature shown the wing can stand an acceleration of 2*g* with a factor of safety of two.

The neck is long and flexible and the head, in spite of its large size, is very light. The crest provides aerodynamic balance for the large beak, saving weight by allowing for much weaker neck muscles. The body is small and covered with fur. The legs are thin and not suitable for walking. They are however excellent for hanging, having strong hooked claws; since suitable trees would be rare, Pteranodon probably used to hang from cliffs.

## GROUND HANDLING

Ground handling is difficult. The wings fold backwards at the knuckle, with the tips crossing over the back. But the other wing joints, wrist and elbow, only bend a little and the shoulder is a hinge allowing only vertical movement. So although Pteranodon can lift his body by his arms, he cannot walk on them.

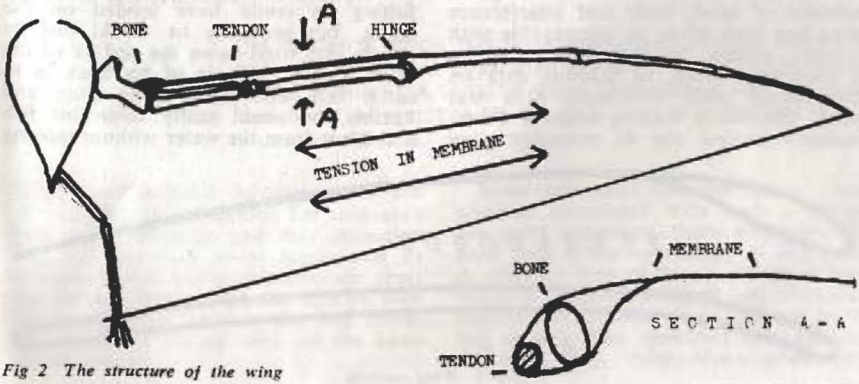



*Fig 2 The structure of the wing*

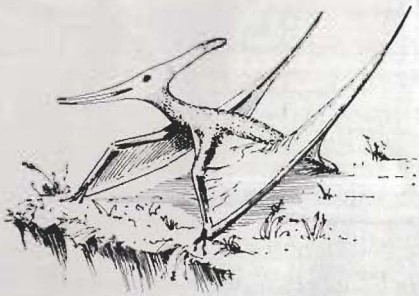


*Fig 3 Ground handling*

His legs, though weak, have proper ball and socket joints at the thigh, so they can be swung in any direction. He probably scrabbled along on his tummy and finger tips, with most of the push coming from his legs (fig 3).

But Pteranodon would have spent little time on flat ground. His claws and legs are excellent for hanging from cliffs and ledges, and this is where he would normally live. Having soared up the face, he could land on top and scrabble over to hang on the edge, or he could land directly on the face. Here he would be comfortable and safe, and could easily launch himself again.

## PERFORMANCE

The performance of Pteranodon has been estimated by standard glider techniques; the only problems were estimating the drag of head and body, and obtaining wing section data at the correct Reynolds Number. The drag coefficient of head, body and interference drag has been taken as comparable with modern gliders. No data was found on a membrane wing, so Schmitz data on the curved plate Göttingen 417a was used. The sharp trailing edge of Pteranodon's section (fig 4) probably gives less drag than the rounded one of 417a. The performance is shown in fig 5, together with a falcon, an albatross, and a sailplane. The outstanding feature of Pteranodon's performance is his low sinking speed, obtained by a combination of low stalling speed and reasonable best gliding angle.

The figures show that Pteranodon was an outstanding thermal soarer, and an excellent light wind ridge soarer. He was however too slow for dynamic soaring, as practised by the albatross, and rather underpowered for continuous flapping flight.

## WAY OF LIFE

Pteranodon's fossils have been found as much as 200 miles out to sea (i.e., sea when he lived; it's all dry land now), in beds full of fish and flying fish. So there is little doubt that he could soar over water for long periods, and could catch fish. But the young must have been born small, whether alive or as eggs, since the pelvic girdle was small; this requires a nest or nursery on land. So probably Pteranodon bred on cliffs by the sea, facing the prevailing wind, which would give him an easy soar home. On the ground he could lie on the top, or more comfortably hang from the cliff edge or a ledge, as bats do today. One or two flaps and a dive would launch him again into the lift.

At sea he must have slope soared, either where the wind blew over the upwind side of a wave, or where a long fast roller overtook slower air (see "Surf soaring", by Chris Hughes, p 458). For fishing he could have landed on the water, but probably he would just fly slowly into wind down the surface of the wave, dipping the tip of his beak in to catch fish. His neck being long and flexible, he could easily catch his fish and lift it from the water without moving

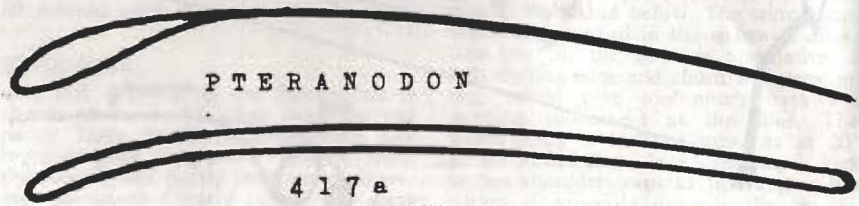
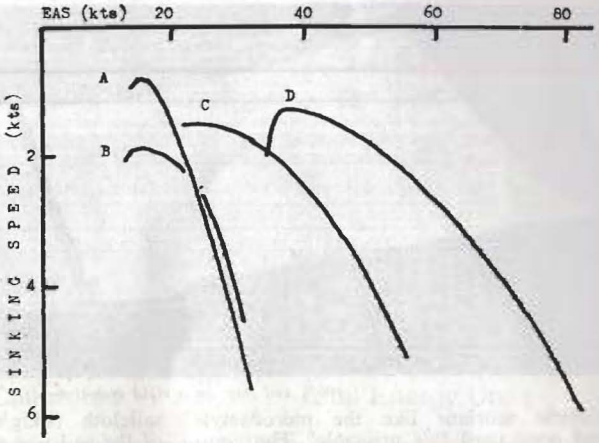



*Fig 4 Wing sections*

*Fig 5*
*(a) Pteranodon*
*(b) Falcon*
*(c) Albatross*
*(d) K-6CR*




it sideways, and so would avoid this serious drag. Alternatively he could have eaten flying fish; these were numerous at the time, and could have been caught in the air.

Take-off from flat ground was impossible, but he would normally never land there; from a cliff edge take-off is easy. Take-off from the sea presents little problem. Any wind strong enough for soaring would almost give him flying speed; a single flap when facing into wind on the crest of a wave would launch him into the lift, just like a T21 hand-launch.

All this tells us something of the climate and geography of the time. Pteranodon requires light steady winds, perhaps 10 to 15kts, blowing most of the time from one direction, like the trade winds today. Serious storms must have been rare, since Pteranodon was too weak to withstand strong winds and too large to shelter effectively (only his wing tips fold). There must have been wide areas of warm sea, with plentiful fish, on which the light winds could raise large waves.

Altogether very pleasant.

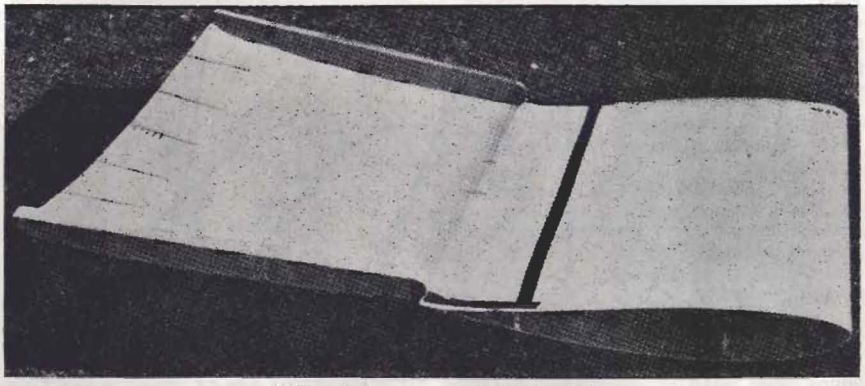
# THE SAILPLANE

By F. X. WORTMANN

The following article has been condensed slightly from the original OSTIV paper presented at the 12th OSTIV Congress, held at Alpine, USA, in 1970. Some of the tables and diagrams have been omitted. The full paper is printed in English in the Swiss *Aero-Revue,* June, 1971.

THE aerodynamic advantages of the variable chord concept for sailplanes look very attractive and this attraction may well increase when Sigma and its successors eventually demonstrate their capabilities. But a rigid flap has its own limits, primarily in that the flap extension may not exceed 40% of the basic chord length.

Since structural and mechanical complexities associated with such a design are quite expensive, there will probably exist only a few superships of this type. A different type of flap is proposed here which is made of sailcloth and is able to exploit the variable chord concept to its full extent. Why shouldn't the sailplane fly with sails, when those giant pre-



*100% sail flap on a rigid airfoil model*

historic saurians like the pterodactyls had once used this principle? The combination of a fixed wing with a sailcloth extension is by no means new. The British racing catamaran 'Lady Helmsman' incorporates the principle.

Modern sailcloth is a highly engineered material which can easily stand the aerodynamic loads encountered at low speeds. It can easily be stored, and flap extensions up to 100% and more are no problem. (Such large flap extensions will, however, be rewarded only if the radius of circling is less than 200ft). The additional weight and the mechanical difficulties to hoist and to reef the sail are minimal.

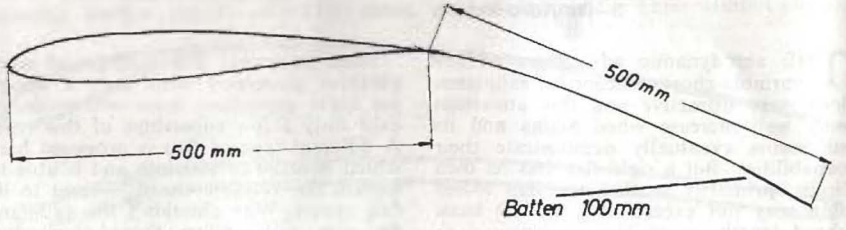
But will it work safely? To get a preliminary answer we have done some two-dimensional wind tunnel tests to encourage further developments in this direction.

## EXPERIMENTAL RESULTS

The tests were done with an old airfoil similar to the FX60-126 and a light sailcloth (145g/m²). The forward edge of the sail was glued to the airfoil, while the trailing edge was free. The warp ran in spanwise direction. This model was fastened between the tunnel walls in such a way that the cloth tension in the spanwise direction and the flap angle could be changed.

The first tests revealed a tendency for trailing edge flutter to occur beyond a certain dynamic pressure. This flutter was practically independent of the angle of attack. The frequency at the usual cloth tension was in the range of 50 cycles per second. With a stroboscope it could be observed that the cloth at the trailing edge in the mid-span region bent up to 90°. The amplitude of the cloth oscillation increased with the wind speed, and the same held for the drag, which could be doubled this way. Obviously, this type of flutter is restricted to only the latter portion of the sailcloth and can be suppressed by some small battens glued to the cloth.

Another type of flutter developed when the angle of attack was lowered to such




*Cross-section of airfoil/sail combination*

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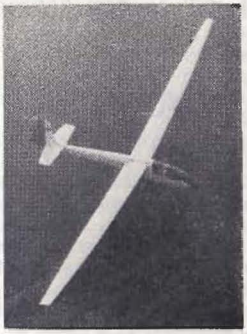
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a degree that the positive difference between the upper and lower sides of the sailcloth became negative. The forces which evolved from the buffeting sail were much stronger than with the trailing edge flutter and could be dangerous. However, the main function of the sail is at low speed flight ranges, having lift coefficients of 1.5 to 2, but not of 0.5 or lower.

At high lift coefficients the drag values were higher than with the rigid flap of the FX67-VG-170/1.36 airfoil. This was partly caused by different transition points, but also the porosity of the sailcloth had a detrimental effect on the drag. When the lower surface of the sailcloth was covered with a thin plastic foil in order to avoid any porosity, the drag polar improved considerably. Therefore, the sailcloth should be airtight.

One of the most promising qualities of the sailflap lies in the fact that the extension can also be used as an aileron.

### THE VARIABLE CHORD CONCEPT WITH SAILS

Some further remarks may be given to this concept without going into technical details. It is suggested that five to seven struts be fitted to the wing along the trailing edge; these would define the camber of the sail and transmit aerodynamic forces to the wing. They can be removed on the ground for easier handling of the wings. The additional drag of these struts in the high speed mode will be proportional to the additional wetted surface. The sail is stored on a circular cylinder inside the basic airfoil approximately three-quarters of the way back from the leading edge.

To extract the sail out of the lower side needs only a pull on the extreme rearward corners of the sail at the wingtip and wingroot. The sail then slides from below along the cambered struts and the lift forces press the cloth against the struts.

When the sail is out it should be possible to increase the tension of the sailcloth in spanwise direction up to between 50 and 100kg. A slack sail is not particularly bad but a tight one works better. It is not necessary to apply a special tension in the chordwise direction. The aileron should be hinged in such a way that the cloth tension can be transmitted into the wing without hampering the turning motion. On the inboard side the aileron chord should slowly reduce to zero, otherwise the sailcloth in this region will separate from the lower side of the wing when the aileron goes down.

To reef the sail the cloth tension is reduced and the circular cylinder in the main wing is rotated until the two trailing edges coincide. The part of the sail which is stiffened by the battens remains on the lower side of the airfoil.

The whole concept should not be attempted in one step. It is probably better to test the low speed configuration by a modification of a suitable existing glider and to develop the in-out mechanism of a new wing on the basis of this experience. There is always the danger of over-engineering such a project and to lose the basic simplicity. Presumably, at least with respect to gear and gadgets, much can be learned from the world of racing yachts.

It is hoped that this suggestion may help to realise the benefits of the variable chord concept. From the point of view of the author it seems the most natural and logical way to new horizons of soaring.

# SURF SOARING

By CHRIS HUGHES

FOR centuries the effortless soaring of the albatross has mystified mankind. During more recent years, in an effort to provide a simple scientific explanation for its unequalled soaring skill, it has become accepted that it uses the technique of dynamic soaring, a gain of height being achieved as a result of into-wind climbing flight in a steep wind gradient.

This seems to be an easy explanation, but have all the problems associated with dynamic soaring been fully considered? For instance, the whole of the climbing part of the flight must be made directly into wind; any descending flight must be cross-wind or down-wind. How can an albatross succeed in soaring when the wind is relatively light or when it

occasionally climbs down-wind? Observers will be able to note that an albatross can work its way up-wind without difficulty and it can soar continuously without ever climbing more than a few feet above the water. All these are impossible to explain purely using dynamic soaring. Why should we not, therefore, assume that a totally different technique is used and forget about dynamic soaring?

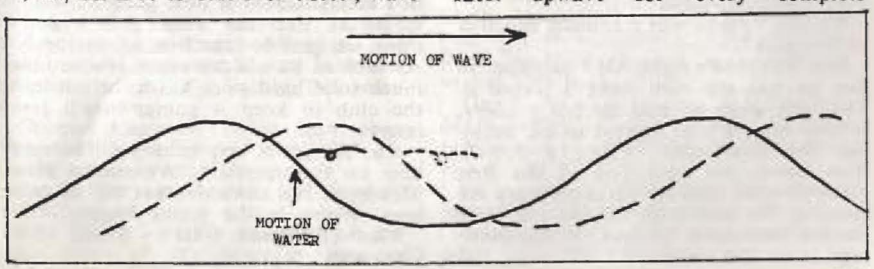
The only thing that is always present when an albatross is soaring is large wave motion, either ocean rollers or large waves created by passing ships; and most observers also seem to note at least a moderate breeze. Let us deal first with the breeze. Being a very heavy, fast-flying bird, the albatross has difficulty in taking off unless there is apparently about a 10 to 15kt breeze, although they have been known to get airborne and soar in a dead calm. Hence, being very lazy birds, they will tend to remain sea-borne in calm conditions. So that just leaves us with the large waves.

A typical ocean roller can easily be 20ft in height, 600ft from crest to crest and can travel at 25kts (say 40ft/sec) always remembering that the *water* remains almost stationary, just moving up and down as the wave passes.

The time taken for a wave to travel one wavelength will be approximately 15 seconds, and it can be calculated that, assuming the wave to have the shape of a sine wave, a particle of water on the surface and the air just above that surface will have a maximum upward speed of 4.2ft/sec as the wave approaches. In practice the wave is not quite of this shape and as a result of irregular forms, an area of upward moving water travelling vertically at double this speed should easily be found, ie, 8ft/sec. Due to curl-over effects, wave draw-back, wind shadow, etc, the air on the wave's leading edge will be almost still in relation to the *water*, or even moving upwind upwards towards the crest. The result is that by flying in the region of the front of an approaching wave, an area of rising air of the order of 8ft/sec or more is there for the using.

Hence it is reasonable to suggest that a bird flying into this region is able to considerably increase its air speed and speed relative to the water during a short interval of time, and to use this extra speed either to gain height or to hop quickly on to the next wave. My own observations would certainly confirm that an albatross accelerates after entering the trough and always flies with its wing-tip very close to the oncoming wave in the position shown in the diagram.

Flying upwind and 'up-wave' is a far more difficult process than one would at first think, due to the fact that while the bird is in the wave trough, it is drifting down wind and down wave at the speed of the wave. Let us assume, using round figures, that the wind strength is 19kts (30ft/sec) and that the average air speed of the bird is 60kts (90ft/sec). This means that, taking account of the wave speed of 40ft/sec, it must spend about $600 \div (90-30+40)=6$ seconds flying up-wind and up-wave to reach the same position on the next wave. Let us assume that it spends 6 seconds accelerating in the wave trough, remembering that all the time that the bird spends in the trough it is drifting down-wind and down wave at 40ft/sec. That means that, as each wave takes 15 seconds to move one wavelength, the bird has only $15-(6+6)=3$ seconds left to enable it to work up-wave. Hence with a wave speed of 40ft/sec, it might make $3 \times 40=120$ft upwave for every complete



manoeuvre. The longer the time spent in the trough, the less is the ability to penetrate upwave. Obviously by utilising conditions to the best effect, a bird with a well developed soaring instinct can improve on this, but what I have set out to show, by using likely round figures, is how an albatross can quite easily work up-wind and upwave, a manoeuvre which just cannot be explained using dynamic soaring theory.

That a dynamic effect can be used occasionally to gain a little extra height is not disputed, but dynamic soaring is just not a means of producing prolonged soaring flight, so why not throw the theory out of the window? The soaring technique I am suggesting here can be likened most nearly to surf-boarding, except that far greater speeds relative to the water can be achieved enabling the albatross to fly from one wave to another using the energy which these speeds provide. May I therefore suggest a name for this soaring technique: Surf Soaring.

# THE COMMITTEE MEN

By R. SUPPARDS

**CHAIRMAN:** Gentlemen, if we start promptly we should finish in time to have a little refreshment, I declare the meeting open. Are there any apologies?

**Secretary:** Er—well, Arnold's not here. I can't say he sent his apologies, but I'm sure he'd like to apologise if he could.

**Chairman:** Ah yes. How is Arnold, James?

**Sec:** All considered he's pretty well, Mr Chairman. I'm sure he still recognises me when I call in visiting hours. I told him he'd been re-elected to the committee and I think he understood. I'm sure he tried to nod his head, but of course he doesn't move much these days. His bones are getting very brittle. But he wasn't any worse this month than he was last time I went to see him, to tell him we'd nominated him again for the committee.

**Ch:** I suppose we can't expect any real improvement in his condition?

**Sec:** No, I don't think so. But he's had a very good innings.

**Ch:** I'm told he was a founder member of the club?

**Sec:** Yes, that's right, Mr Chairman. In fact he was the club when I joined it. That was when we had the old primary. It was Arnold who started us off building the two-seater. Very far-sighted. You know, we were one of the first clubs to start thinking of two-seaters for training. We used to fly all day and work on the two-seater project in the evenings.

**Ch:** Yes, so I understand. What a great spirit there must have been in those days! The club wouldn't be the same without Arnold. Poor old chap. I'm afraid next year we might have to think of filling a vacancy on this committee, gentlemen, as we had to do this year following old Tom's sad departure. Well. we'll minute Arnold's apology. Is there anyone else?

**Sec:** Young Grant's not here!

**Ch:** Why not? I must say I think that's irresponsible. After all, this is the first committee meeting after his election. He's young and healthy. There's no excuse.

**Sec:** I expected nothing else. I've thought him unreliable ever since he arrived in town last summer, with his talk of great flights he'd made. A real bull expert. I can't make out how he found enough support to get himself elected onto the committee.

**Treasurer:** He has a small following among the younger members. In fact he's brought quite a little gang of young layabouts into the club. But I don't think we need to take him too seriously. As soon as he and his mates realise how much solid hard work has to be put into the club to keep it going, they'll lose interest.

**Ch:** Well, it is very irritating. The next item on the agenda is Welcoming New Members. We can't do that till he gets here. Where is the young beggar?

**Vice President:** He's flying, Mr Chairman.

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**Sec:** What?

**Ch:** Flying?

**VP:** Flying.

**Ch:** How can he be? The glider is unserviceable, isn't it? It was last month. Didn't you tell me so, Jack?

**Jack:** Oh, I believe he spent a bit of time patching it up. At least, I hope he did. It certainly wasn't safe to fly last time I looked at it. All the fabric had come off the rudder, and the ailerons weren't even connected. The cables had been taken out of the wing. That was in January.

**Sec:** There you are. I told you he was untrustworthy. I don't care if he breaks his own neck, but he's no right to endanger the club's property. If he'd had to work on the building of that machine as I and Arnold and Jack did, he wouldn't treat it so lightly. Ten years' work, that was!

**Ground Engineer:** Apart from that, how did he get himself launched? He couldn't have used the winch.

**Ch:** Is that unserviceable too, George? I didn't know.

**GE:** No, it isn't u/s. But I've got the cable drum off. It's down in town, in my workshop. I've been working on it a bit since the new year. I meant to bring it back this afternoon, but I forgot. But the winch is in top condition now.

**Ch:** Thank you, George. That's splendid. We all realise how much effort you've put into that winch over the years. It really is a beautiful piece of machinery, and maintained in perfect shape. It looks hardly used, even after seven years. But how the devil did that young larrikin get into the air?

**Jack:** Here he comes now, Mr Chairman.

**Ch:** At last! Now we can get on.

**Grant:** Hello, Mr Chairman, I'm sorry I'm late, but we had a terrific flight. We got up to eight thousand and . . .

**CFI:** We? Who was with you?

**Grant:** I took Mike with me. He did most of the flying. He's coming on well now, he'll be ready for solo in a few more hours.

**CFI:** Do you mean to say you've been giving instruction?

**Grant:** Yes. Why not?

**CFI:** It is a club rule that only qualified instructors give instruction. We have a first rate safety record. No-one's had any kind of accident or incident here for ten years. And we enforce that rule.

**Grant:** But I am qualified.

**CFI:** You can't be. I haven't checked you out. In fact we've only your word for it that you're fit to fly solo.

**Grant:** Well, I'm sorry if I have broken a club rule. but no-one told me that one. And as for checking me out, you never seem to be at the aerodrome when I am. I suppose you do all your flying on Saturday mornings and I have to work then so I can't get here till afternoon. But I assure you I am a qualified Senior Instructor under GFA rules.

**Ch:** Aren't you rather young to be a Senior Instructor? In any case, whatever your old club called you doesn't apply here. We have our own high standards. as the CFI says.

**Grant:** Age has nothing to do with it, Mr Chairman. It's a matter of flying ability and . . . you know, teaching skills and so on.

**Sec:** (audibly muttering) See what I mean? A real bull expert!

**Grant:** And the GFA isn't exactly another club, Mr Chairman. It's . . .

**CFI:** Well, I don't care what it is. You'll have to be checked out before you fly again.

**Grant:** What about tomorrow morning?

**CFI:** Sorry, I have to be somewhere else tomorrow.

**Grant:** Next weekend then?

**CFI:** No, that won't do either. I have to be in town.

**Grant:** When, then? If you like I'll get a Saturday morning off and we can fit it in then. Just name the day.

**CFI:** Er . . .

**Ch:** Order, order. Gentlemen, we have an agenda, and if we are to finish by a reasonable time we must push on. Item 3. Oh—Consider yourself welcomed to the committee, Grant.

**Sec:** Huh!

**Ch:** Item 4. Oh, before we go on, Grant, how the devil did you manage to get yourself launched? I'm told the winch is u/s.

**GE:** I protest, Mr Chairman. The winch is not u/s. as I just told you. It is in top condition. Like new!

**Ch:** I'm terribly sorry, George. It was a slip of the tongue. I mean, Grant, you didn't actually use the winch, did you?

**Grant:** No, it IS u/s. Some beggar's stolen the cable drum. It's been missing ever since I joined the club. But we found some good cable in the hangar and we've been towing with my utility.

**GE:** But dammit. that's my new cable for the winch! Do you mean to say you've pinched it for your damned towing? Don't you realise how it'll wear?

**Sec:** Absolutely irresponsible.

**Grant:** I couldn't ever find you to ask about it, George. No-one could remember where the cable came from. It still had the factory wrapping round the spool, but the whole thing was covered with cobwebs. That was months ago. Didn't you realise we'd been using it?

**GE:** Of course I didn't, you young devil. I've been toiling on that winch down in my workshop, trying to get the club's gear into top line. I haven't had time to come round here checking up on you lot. I thought I could rely on gliding people having a bit of common decency. Not to say honesty. You had no right to steal that cable and I'll see you damn well replace it.

**Grant:** I'm extremely sorry, George. I certainly had no idea it was your cable. I thought it must belong to the club. But those of us who have been using it will certainly have a whip round and pay you for it. What did it cost?

**Treasurer:** It is actually club property, George. You remember, we bought it for you some time ago. But the price of cable has gone up a lot since those days, Grant. Paying the club for it won't do. You'll have to replace the cable.

**Grant:** Well, what's all the fuss, then? We used the club's cable for launching the club glider. So the club can buy some new cable, can't it? We'll need some more soon anyway. But actually, for car towing, piano wire will do just as well, and it doesn't wear so much.

**Ch:** The agenda, gentlemen, the agenda. After all, this is a gliding club, not a car and piano club.

**Sec:** Mr Chairman, I don't think we can let this be passed over. I move a vote of censure on Grant. He has behaved very badly indeed. He's been flying and giving instruction without a clearance, he's used George's good electrical cable for his own car, and he's been flying the club glider in a dangerous manner without fabric on the rudder and with the ailerons disconnected. I'm astonished that he can sit there and face this committee as an elected member when really we should expel him from the club, along with his larrikin friends. Conduct like his is going to undo all the good work we older members have done over the years.

**GE:** I'll second that!

**Grant:** On a point of order, Mr Chairman . . .

**Ch:** All those in favour? Passed *nem con.*

**Grant:** Mr Chairman, *nem con* means no-one opposed the motion. I do oppose it, in fact it's utterly ridiculous. But I suppose the idea is to make me so angry I'll resign from the committee. Well, I am not going to. And if you force me out, I'll call an extraordinary general meeting of the club. I'm allowed to do that if I can get ten signatures, which I can, gentlemen, from the younger members. But for the record, the club glider, horrible, ugly and ancient as it is, is now fully airworthy. I am a fully qualified instructor and airframe repairer, and the steel cable we found in the club hangar

has been used for club flying and nothing else. And, Mr Secretary, you can write that all down in the bloody minutes and stick them where you know best.

**Sec:** You young puppy! Insolence . . . words fail me . . . .

**Grant:** Just as well. Also, for the record, I'm nearly thirty years old.

**Ch:** Item 4. Minutes of the last meeting. Taken as read, gentlemen?

**Grant:** No, I haven't read them, Mr Chairman. The Secretary didn't send me a copy. May I see them, please?

**Ch:** See the minutes? Well, I suppose so, if you must. Let him look at them, James.

**Sec:** He wants to read the minutes?

**Grant:** Yes.

**Ch:** Only for the last meeting, you know, James. He doesn't have to go back further than that.

**Sec:** I'm sorry, Mr Chairman. I didn't actually bring them with me.

**Treas:** You see, Grant, we don't usually bother. They are always taken as read. It's only a formality, after all, isn't it!

**Grant:** I don't think so. How can you remember all the decisions you've taken?

**Treas:** Ah, well, when you've been in the club as long as we have you'll understand how we work, and then you won't need minutes.

**Ch:** Order, gentlemen, please. We must get on. Item 5. Matters arising from the . . . Well, we don't need to linger over that . . . Item 6. Now, here gentlemen, we have something of very great importance to the future development of the club. I'm sure you'll all agree the club spirit will benefit very greatly from this extension to the . . .

**Grant:** I'm sorry to interrupt, Mr Chairman, but I would be most grateful if we could take Item 10 on the agenda before Item 6.

**Ch:** Item 10? What's that? Where is it? . . . But that's Any Other Business! It's taken after everything else.

**Grant:** I know that's usual, Mr Chairman, but I've noticed on other committees I've been on that Other Business often doesn't get full discussion because people are anxious to get away after a long meeting. I have an item to raise which is far more important for the club than any of these others, and if you agree to all these other things there won't be any hope of money being available for my item.

**Ch:** But all these things are intended to make more money, Grant. The bar extension, the new wine cellar, the poker machines, the opening hours at weekends—you can see how much profit the club can make, quite apart from the improved atmosphere. We've been losing members to the RSL and the Institute. These new measures will attract a lot of new members. I'm convinced they're in the club's interests.

**Grant:** I don't doubt you are. But I think the club should buy another glider. A modern two-seater. And we ought really to have a solo machine too. A K-6 or something like that. You can buy them for around $4,000, secondhand.

**Ch, Sec, Treas, GE, Jack:** Buy a glider? You must be joking, $4,000!, etc, etc.

**Grant:** I'm dead serious. I suggest we buy a L-13 and a K-6.

**Ch:** I don't understand all these figures.

**Jack:** $4,000 for a glider! It's absolutely ridiculous. If you want a glider why can't you get down to it and build one, as we had to? The club two-seater


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only cost us twenty pounds.

**Grant:** Yes, it looks like that, too. And a few of us have spent ten times that amount on it these last few months, just to make it fit to fly. The club needs a new one—two or three, in fact. As the Chairman said, this is a gliding club, after all. At least, that's what it is supposed to be.

**Treas:** It's almost five o'clock, Mr Chairman!

**Ch:** Good Lord, so it is. Item 6.

**Grant:** But Mr Chairman . . .

**Sec:** You're out of order.

**Ch:** Item 6. Green's estimate for the new bar extension was $4,400, gentlemen. Very reasonable I think you'll agree? All those in favour of accepting? Passed *nem con.*

**Grant:** I'm *con*, Mr Chairman. The club could buy a good K-6 for that sum.

**Ch:** Item 7. Extension of the licensing hours to match the RSL. This has been granted gentlemen. All in favour say aye!

**Sec:** That's very definitely not out of order!

**Ch:** Item 8. The wine cellar. This is going to cost us $2,000, gentlemen, to build, and then the stock will of course have to be considered as a long-term investment. Jack will select the wines. All in favour?

**Grant:** There goes the deposit on the L-13.

**Ch:** Item 9. The new poker machines will cost us a good deal, gentlemen. We haven't discovered how much, but I'm sure they'll pay for themselves in no time, and then next year we can think about a new billiards table. Item 10. Anyotherbusinessmeetingclosed — thankyou-very-much-gentlemen. Open the bar, James. All that bloody work has made me thirsty.

*Reprinted from Australian Gliding.*

# TWO CAR-LAUNCHED 500's IN A WEEK

By CHRIS LOVELL

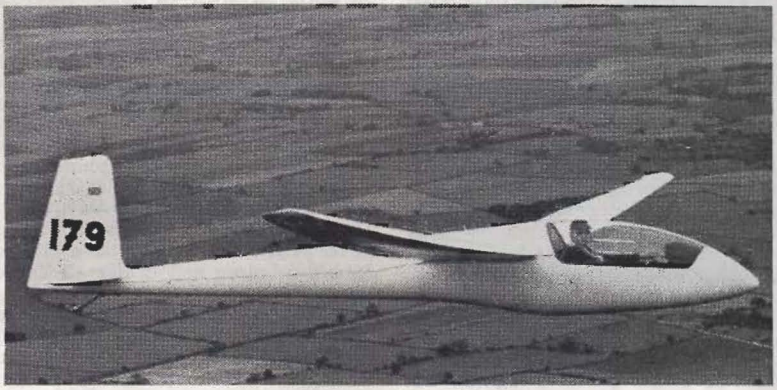
The February, 1970, S&G featured an article by Chris Lovell entitled 'If you do 500km after reading this—tell me how!' It discusses some possible 500km triangles from different sites in Britain and describes some of his valiant attempts. It was therefore inevitable that when he finally achieved his 500km triangle he would have to write the final chapters of the saga.

I OFTEN wonder why people start gliding. Cheap means of learning to fly? To show off to a bird? Because dad does it? Or, like me, having an actual surplus of cash and being prodded by my colleagues at the BBC, who were already in the gliding section of the BBC club.

A bit of success and lots of luck brought me two Diamonds by the end of 1967—300km on a 6,000ft cloud base day and 7,000m in a 10kt wave. In 1967, the Surrey & Hants club bought a Dart 17R which brought 500km flights faintly into view. On the day Brennig James did his 500km triangle, I managed 320km—a lot to learn yet.

In 1969 I tried more seriously, taking greater care in planning the right task for the weather. On April 30 I tried Lasham – Dunkeswell – Bridgnorth – Lasham in the Dart in no-wind conditions. A good start was made, but slow going over Somerset caused me to abandon the task over Nympsfield and return to Lasham (380km at 62km/h, my longest flight yet). I then got the idea of using as much of Wales as I could, basically because the high and variable elevation of the ground should produce good lift.

On June 27, 1970, I set off on an out-and-return to Llandrillo in the Bala to Llangollen valley. A strengthening NW wind saw me hill-soaring the Dart on the Mynd at 15:30. A quick zoom downwind back to Lasham ended that attempt—just under 400km.




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One 28% triangle seemed to offer good possibilities: Lasham-Knighton (Radnorshire)-Melton Mowbray-Lasham, 519km. The extra distance was added so that Lasham's occasional sea breezes, causing lack of urge for the last 10km, might not rob me of a Diamond distance. The only drawback of this task is that one has to do it at the start of a fine spell, otherwise massed pollution from the Midlands would reduce surface heating after a day or two to bring thermals down to below 500km standard over a large part of the course.

On July 21, 1970, I had a go at this triangle in the club's newly acquired Phoebus C. The wind was a strong westerly with rather a lot of cumulus spread out. I did get to Knighton but after going along the second leg for a few miles, things deteriorated and I worked my way very carefully back to Lasham—412km. There were unfortunately no other days during 1970 when the weather was good while I was at Lasham.

Summer 1971 was a much better season overall and on May 31 I had another attack on the Midlands triangle. It had been a rather wet and windy bank holiday weekend but the Monday was clear with no wind. All the sooty factories should be shut, so off I went in the Dart. It was very good at first but it all went peculiar over Hereford and, later, elsewhere. Eventually, I ended up on Newbury Racecourse—390km.

June 22 started out like May 31, but with a 15kt NW wind. It was quite soarable by 08:30 and a launch at 09:50 started me off to Knighton once more, in the Phoebus. The wind was stronger aloft than it had appeared from the ground and thermals were a bit broken up under 2/8 cumulus, base 3,000ft asl. But I could see for about 50km and it seemed OK except for a rather low inversion.

A low point near Swindon wasted half an hour and then peculiar things started happening. The sky looked the same but soaring became difficult. A 6kt thermal climb over Chedworth shot me at least 600ft above the small cumulus and confirmed a suspicion—wave. Here was me trying to do a 500km triangle on a day with the wind above a low inversion blowing at 35kts and waving all over! However, a spell of good thermalling took me to near Malvern, east of the hills, and a wave here lifted the Phoebus to 5,800ft, 2,000ft above the cumulus.

I reached Knighton at 15:00 (much too late to try to complete the task) after another wave climb to 5,300ft near Ludlow. I wandered up to the Mynd from there, took a few photos of hill forts all called Caer Caradoc and scuttled home sharply—410km. Incidentally, this was a Tuesday. Tuesdays have provided me with five flights of 300km or more and nearly all Tuesdays last summer were 300km days!

After several failures at this Midlands triangle I started looking at maps again for new tasks. Out-and-returns northward run into industrial murk more often than not and going NW for 250km takes one over high mountains just before the useful turning points. So, think again.

Now the gnomes of the FAI had decided that as from January 1, 1971, the 28% minimum leg length for a triangle would not be required for Diamond triangles. After my failed attempts at the 28% types, I began a search for thin triangles, especially north-west into Wales but avoiding that last bit over the Himalayas.

Lake Vyrnwy between Welshpool and Bala has a very photogenic dam at its south-east end—492km out-and-return from Lasham. If I went round Bath Racecourse first, I could make that into a long thin 506km triangle. There is no



*Bath Racecourse*

heavy industry on the route and providing that SW winds were avoided because of sea air in the Severn estuary, there should be no problem on a fine day.

By 09:00 on Tuesday, July 13, long cloud streets NE-SW over Lasham indicated that a long task was on. The visibility was perfect; wine-clear air blowing in on a 12kt NE wind. A car launch to 1,000ft took me into 6kts lift and off I went to Bath full of enthusiasm and bacon and eggs. It must have seen me coming. Although I'm happy with a cloud base and inversion at 3,000ft asl, it gets a trifle dodgy when the cloud abdicates. The wind aloft was more like 16kts and further round to the NNE. All the cloud vanished when I was approaching Bath and with the clear air there weren't even any hazy patches to indicate thermals. It took two hours to pass Bath (at 12:10) and there were 400km to go with seven hours left, but it was not impossible.

The low inversion combined with the high ground in the area made thermals very broken and distorted. I had to fly NNE up the Cotswolds to Nympsfield just to stay up on account of the lack of lift over the Severn. I then got stuck at 1,500ft for 20 minutes near Stroud. 500km—laugh!

The Severn area then sprouted cumulus all over and I sped NW to Hereford, then ran into more trouble between there and Knighton with dead areas and drift while scraping in weak lift. Beyond Knighton the inversion lifted a little to 4,500ft asl, but time was pushing; I had to be at Vyrnwy by 15:45 at the very latest. The visibility became poor and the wind decreased a little nearer the high pressure area to the west.

I then did the unforgiveable thing—misnavigated to Newtown instead of Welshpool. The towns are similar at a glance and realised too late that I had gone wrong at Knighton.

Set off up the wrong valley I did—and in Wales never set off up the wrong valley!

I ended up over a rather featureless high plateau with nothing much around me except a Phoebus and a few soggy cu. Knowing roughly where I was, I flashed north towards Vyrnwy, but with time running out, I reluctantly left the area at 15:50. I was probably no more



*. . . a rather featureless high plateau*

than 5km or so from the dam but had no spare time to search in weakening conditions. There was no point in landing out up there, really.

Conditions coming home were much better with larger well marked thermals up to 4,500ft base. At 19:25 a tiny patch of cloud over Aldermaston took me to a thermal that must have forgotten how late it was and, having struggled thankfully up to 3,500ft I was then able to float home. Nine hours 14 minutes, 510km but no Diamond. Lots of condolences, etc. I keep a book of barograph traces and I wrote under the trace "I'll have to do it again."

Back to work on Wednesday just for a rest!

I had first pick of the Phoebus on Saturday July 17. It was sort of a sunnyish morning with some low scraggy cumulus in a peculiarly hazy sky, wind N, 10kts. It was not unlike the 13th. I debated whether to fly (as it didn't seem at first to be improving) or to take the current bird (still in bed) to the New Forest. The cu got larger and the haze cleared. There came mutterings from the next Phoebus pilot on the ballot list like, "Aren't you going to fly?", etc, etc.

The Phoebus was extracted from the hangar and made ready. The bird put her name on the Falke list instead of going to the New Forest. Hugh Hilditch and I did a mutual traipse to the end of the main runway for our customary car launches, and by now it was absolutely

Texan. I made the declaration (Bath-Lake Vyrnwy-Lasham) eight minutes before my launch. I pulled off at 10:25. a bit late in the day. Horrors! 800ft and 6kts down! Ten minutes were spent over the launch point at 600ft before whoosh! —6kts up to 5,800ft!

Aloft, wind was NE 10kts, and cloud base starting 4,500ft asl. Visibility was superb, at least 60km. I batted along to Bath at Mach 0.122 and reached the racecourse five minutes earlier than on Tuesday, averaging 80km/h. This time there was a beautiful array of cu over the Severn and the whole sky seemed full of Diamonds. Several climbs achieved 800ft/m from first to last circle. I skirted the NE slopes of the Black Mountains near Madley airfield and went north up a cloud street to Knighton (I seem to spend a lot of time over east Radnorshire). There is a wooded hill on the NNW side of Knighton with a group of trees of a different shade of green planted in the wood showing up the letters 'ER' about 50ft across. The letters appear on the other side of the hill too, but the correct way round so they don't go right through the hill!

There was so much radio chatter from variometer doubters at the Compton Abbas comps that I spent much of the time with the wireless switched off. However, one quiet spell revealed 'Kan Kan' over Shobdon. I was near there at that time and Wally Kahn duly hove into view in his new Kestrel. He was surprised to see me shoot off NW from Knighton when he thought I was trying his declared Knighton-Melton Mowbray triangle (which Hugh Hilditch was also attempting).

It remained very good until I got into the valley round Montgomery. A patch of high cover, the only altostratus over Great Britain that day, I should think, hid the sun just here and I reached it just when I should have been climbing away in the next thermal. A nasty period of ½kt up and 6kts down began to turn Diamonds into greenhouses amid Welsh postage stamps, before at long last the sun came back and thermals climbed to 4,000ft again.

The wind here was still NE and about 15kts, enough to see one's drift while circling and to notice cloud shadows chasing over the fells.



*Lake Vyrnwy dam* (*photos C. Lovell*)

Three pm arrived with about 20km to go to Vyrnwy dam. Leaving a cloud street at 5,800ft asl I flew straight to the dam in weak wave lift and back to the street, losing 1,000ft for about 15km travelled. The weak wave was triggered off by the 2,700ft high hills upwind producing lift over the TP. Pictures were taken at 15:31 and all round was a most incredible sky-, land- and sea-scape. There were little white horses on the deep blue water of the lake, high cumulus with bases around 8,000ft over the stark outline of Snowdonia and a distant silver ocean beyond a sea breeze curtain cloud round the coastline—beautiful.

I sped over the next 50km to the SE of the Mynd without so much as a single circle. The rest of the flight was relatively uneventful except for a claggy patch near Cheltenham where the Midlands industrial haze had come south on the NE breeze. Cloudbase was now 6,600ft asl, making life exceedingly joyful. At 18:15, an 8kt climb near Welford to 5,500ft gave me a 35km final glide at 80kts—and 100kts over the clubhouse at 300ft.

During the float round the circuit reflecting on the day's task and looking at the lengthening shadows I realised what I had done—completed my Diamond C in Great Britain. My 500km had finally succeeded after 10 tries—10 car launches totalling 75 hours and 3,750km.

Hugh Hilditch's SHK rested outside

the hangar after his successful triangle, and after a long, steady approach—I didn't want to try anything flashy after eight hours in the air—Phoebus No 266 also cooled off in the evening shadows.

In my relatively limited experience, success seems to depend on many things. The right task is obviously required, but other aspects are almost as important. Lack of twitch before take-off is essential. Also, never worry about what other people are doing. Nothing is more likely to reduce your cross-country speed than hearing over the radio that conditions over Little Drizzling-in-the-Bog are poor. Keep going at your own speed. The other guy may be a rich, incompetent glider driver with a good radio and a duff vario. You'll find out if conditions are deteriorating anyway, if he is on your track, so keep your radio switched off except for cloud flying and essential communication, and make the best of what you are able to find.

On these long tasks be ready as early as possible. I try to be all set to go with the glider at the launch point before breakfast. Decide on which task over cornflakes (or porridge!) having had a number of routes planned ready for the good day, and study the conditions while going out to launch. Many a happy few minutes have I spent looking at a stream of gliders on tow to the launch point while climbing at 4kts off a 900ft string fling. If you know your site well, you can often stay up locally before it gets generally good enough to go away. It's a good plan to get launched when it's only just possible to soar so that there is absolutely no delay in setting off as soon as it brews up properly. Many a good flight is lost by being at the back of a queue of 40 gliders.

On the next good day, have a go—you'll get round eventually.

# FLYING THE CLOCKWORK MOUSE, or

## HOWIDUNNITT WITHOUT USING THE ENGINE

By IAN STRACHAN

Ian Strachan, flying an SF-27M motor glider Hors Concours in the 1971 Club Class Nationals, was placed on points above the Class winner.

I BECAME interested in motor gliders some years ago when the Schleicher K-12 flew and it became evident that viable cross-country engine-off performance was obtainable without some of the usual frustrations. When the BGA bought a developed version, the K-14, to find out what motor gliders were all about, I was fortunate to fly about 30 hours in this machine, which, if one is satisfied with K-6CR engine-off performance, is still a real "fun ship" for soaring.

But high performance competition flying was the only real way to prove this new concept, so I went into a six-man Scheibe SF-27M syndicate with the express idea of flying the machine in the 1971 Nationals under whatever rules the Flying Committee allowed me to fly.

The maker's figures gave a 96% handicap for the machine (engine folded away). This is numerically the same as a K-6E but the performance spectrum is shifted slightly to the right—ie, a worse minimum sink but a better high speed performance. In the event, flying with a slimmed (140lb) pilot and only 1 gallon of fuel, these figures proved remarkably accurate.

The only problem in preparation for the Nationals arose when, final-gliding into Dunstable and finding myself losing out, I decided to cut my losses and start the engine. Abysmal failure and a field landing followed. The Hirth engine then (of course!) started easily once on the ground. The field was too short for a self-launch but a Dunstable tug obliged and the first UK 'twin-engined' aero-tow took place to 500ft, where I cast off to return to base. The moral in this story is that motor gliders must have really reliable re-starting capabilities to take

advantage of their attributes. Current production SF-27M's have an electric starter as standard whereas ours had only a hand toggle. Other fruitful areas of development might be lightweight cartridge starters, or flywheel inertia starters wound up either electrically or by the pilot winding up a clockwork spring.

When the Open Class Nationals dawned, my primary job was the unenviable one of task setter. To ease the frustrations of this office, I borrowed the SF-27M for a couple of days, and was able to 'complete' one task, an alternative out-and-return. This turned out to be the all-too-typical UK task, with thermals not coming up to strength and the wind going round so that instead of being a crosswind on each leg, it was downwind first then upwind. Most pilots reached their turning point but no-one returned. Landings were spread up the return leg after some really heroic flying. Not being part of the official contest, I reached the Leicester area on the return "legitimately", took a 5,000ft climb from the motor and did a final glide home with engine stowed.



*SF-27M motor out . . .*

My first effort in the Club Class Nationals was to "thermal snift" for the organisers. This proved three things: (1) There were no thermals; (2) Husbands Bosworth is a bumpy airfield; (3) an SF-27M with 50psi in its tyres gives a very rough take-off ride. The problem was solved by halving the tyre pressure, after which the ride was positively comfortable. However, future motor glider designers should realise that the low acceleration on bumpy fields demands some undercarriage shock absorbtion.

There is little to say about the actual contest flying except that my mental attitude after launch was identical to that in a normal glider; I *really didn't* use the motor on contest flights (and the organisers ran multifarious checks to prove it); and finally, as with any pilots who do well, I had a goodly share of luck. The machine as a glider really lived up to its claimed performance. I suspect that the original SF-27 without the motor was a much underrated machine. Another few metres span on the motorised version would make a really fabulous glider, and my earlier dream of a motor Cirrus has already been achieved in the form of Cirrus wings fitted to an SF-27M fuselage. That's the sailplane I want to fly in the 1972 Nationals, and the one I see enabling me to complete my last Diamond in the UK by doing a 500km triangle.

I firmly believe that the high performance motor glider will enable pilots to "press on" and complete tasks that otherwise they would have thrown away. Even if they get caught out miles away from home, it should be straightforward to use the motor to get back to a soarable area for a civilised return to base instead of a retrieve. A recent *S&G* told of a motorised ASW-12 variant (the D-37) with a glide angle of 40:1 and min sink of 0.5m/sec (1kt)—this really shows the trend of the future

On the contest launch grid, the motor glider fitted in reasonably well, although increased longitudinal spacing would be desirable to protect the glider immediately behind from slipstream. Launching, once the tyre pressure had been reduced,

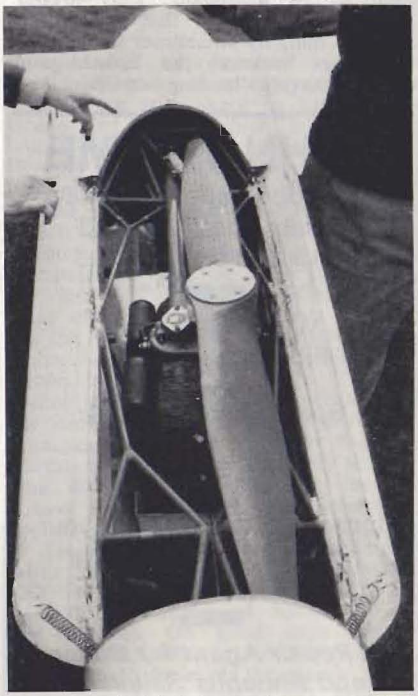
was straightforward on the long E-W run at HB but on the very short N-S run more "twin-engined aero-tows" were taken to 200ft before casting off. Ideally, therefore, future contests with motor gliders should take place from reasonably regularly shaped airfields. Since the emergency landing fields west of HB are virtually non-existent, a climbing circuit close in to the field was executed to allow landing back in the event of engine failure. Until the statistical reliability of motor glider engines is proven, this feature may be necessary at airfields with parlous emergency landing fields.

Observation of engine stowage at the Dropping Zone was not as straightforward as had been hoped. On a designated start there was no problem as following tugs and gliders were always there to observe. But on relight or pilot selected start, observation was inconvenient. For the future, a two-seat motor glider using radio, tasked with observing both start line and DZ, would be desirable. Cheating by the motor glider pilot would be difficult anyway because the height of launch is marked on the barograph, and one would never know whether others were looking if there was a deliberate attempt to go to a place other than the proper DZ.

Contest flying itself was no different to that experienced in many other Nationals, whether flying with the engine permanently locked in (as it was on one day), or whether it could have been restarted (but zero points scored). However, so that fair play can be seen, and also to protect the motor glider pilot in case of barograph failure (if the solenoid recording engine time should malfunction), I am now convinced that in mixed glider and motor glider contests, the motor should be inoperative after launch until landing.

In the SF-27M this can be done most conveniently by padlocking the engine downlock before take-off. When the engine is retracted after launch, the downlock is then permanently made preventing unlocking of the engine until the padlock is opened. At HB this was achieved by an official observer placing the key out of reach of the pilot but a better way would be to lock the appropriate lever with swaged cable of such a length so that the lock itself was out of reach. The pilot could then freely carry the key in his pocket and there would be no thoughts of "fiddle" by the pilot getting a secret padlock key in order to beat the first method of sealing. On landing, the pilot would have access to the padlock and be able to re-erect the engine, top up with fuel and fly home, if the landing field was big enough (a big "if" with the "SF").

At HB, this form of "airborne retrieving" was done twice, from North Denes and Lasham. In the latter case I arrived back in time for an hour's local soaring before my crew arrived back on site. This is the gentlemanly way to fly! There were mutterings of "minimising retrieve fatigue" and "unfair advantage". With my hand on my heart, I believe that since the 1961 Nationals, retrieve fatigue has not been a significant factor in UK Nationals. In any case, the airborne retrieve is mentally taxing, requires refuelling first—you try getting two-stroke



*. . . and tucked away (photos I. Strachan)*

at an orthodox airfield!—and just lends itself to the most enormous retrieve muddle between crew and pilot should things go wrong. Other pilots who own fast retrieve cars or have a comfortable "pilot's bunk" fitted are not differing in principle from the motor glider pilot who has also paid extra money to buy convenience.

More fundamental is the question of whether self-retrieving into relights should be allowed. This situation did not arise at HB, but with a suitable penalty time based on landing time back at base and out-landing distance backed with a landing certificate, I see no reason why this should be unfair to other pilots. Of course the "penalty time" must be such that the motor glider is always at a disadvantage compared to a road retrieve by an efficient crew. Surely the habit of rigging and de-rigging should not force pilots landing at airfields into unnecessary road retrieves—if it did it would seem to be a classic "sour grapes" attitude. We all know that glider pilots are very naughty sometimes and present themselves back at the launch point without having landing certificates to prove where they went before their re-light—no such easy way out for the motor glider pilot if *he* wishes to fly back home for a re-light.

My recommendations for 1972 contests in which motor gliders wish to fly in company with normal machines are thus very similar to the rules prepared for *hors concours* flying for 1971 (see *S&G*, p269). Two extra considerations apply, however, the most important being that the engine should be inoperable for the contest flight after launch, and that airfields at which these contests take place should either be a regular shape to allow self-launching in all wind directions, or should have sufficient tugs to allow short "booster" launches in the awkward wind directions.

In due course, when enough motor gliders are flying in the UK to form their own contest class, all sorts of restrictions can be thrown aside to fully exploit the advantages of the new medium. Engines should be capable of instant use, to prevent all field landings, severe penalties being made for each minute of engine time so that the pilot who soars completely round the task will always win. Just think—contests with guaranteed arrival at the goal! Some may frown but I believe this is living with the times and not in the past. Who knows, contest entry fees may dwindle away, as may insurance premiums. We can have safe contests when the corn is high. And the organisation of "wave" task weeks and contests may take on a new light.

REFERENCES (all S&G):
'The K-12', by Andy Gough, Feb 1968, p43.
'The proof of the pudding', by Ian Strachan, April 1970, p129.
'German motor glider contests', by Peter Ross, Dec 1968, p 497; Aug 1970, p283; Aug 1971 p319.
'In the grip of the elements', by George Locke, Aug 1971, p 269.

EDITOR'S NOTE: Motor gliders may participate in 1972 BGA competitions (see p505).

**Pitot tubes at dawn** The "scar of honour" code of German student duels is in danger of vanishing and Bonn's Allemagne Fraternity has proposed that some other test of courage be adopted instead of duelling, such as parachute jumping or glider flying (*Scarborough Evening News*, August 2, 1971).

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# YUGOSLAVIA 1972

By ANN WELCH

VRSAC, pronounce Vrshats give or take the odd sibilant, is Yugoslavia's gliding centre. It lies, rather surprisingly, against the Romanian frontier—with friendly arrangements for the return of straying glider pilots—and downwind of the prevailing westerlies. The bright lights of Belgrade are 85km to the SW, with the holiday resorts of the Adriatic coast Diamond distance further on in the same general direction.

The task area is of necessity to the west and south of Vrsac. Westwards is the flat plain through which flows Yugoslavia's Sava River as well as the Danube and Tisza wandering down from Hungary in the north. All these rivers finally come together in the region of Belgrade and then run eastwards for Silver C distance to the south of the airfield; retrieve crews may feel that a little pre-champs study of road bridge locations would be time well spent.

To the south and SW of Vrsac the ground rises steadily, finally reaching peaks above 8,000ft some 400km to the south in the mountains of Macedonia. Skopje, to which goal flights have been set in Nationals, is among these mountains, which can hand out good wave lift.

All over Yugoslavia there has been considerable improvement in roads—and telephones—in recent years, but retrieves are still likely to have to use some dirt roads, which may also be rocky and hilly in the south. Just to the SW of Vrsac there is a sandy area without much in the way of roads at all.

The weather in July is more or less what can be expected from summer in latitude 44° (Florence, Toronto). Day temperatures can be expected between 27° and 33°C, although the Danube plain may often be hotter than this. Retrieves in the mountains to the south, on the other hand, could be quite chilly affairs when lasting into the night. The July synoptic situation gives generally anticyclonic weather interspersed with short changeable periods of about two days duration. In these rain is likely to be of the thundery type, and may be very heavy (up to 90mm) and accompanied by strong winds.

Tasks expected during the championship period are 200-400km triangles, and 300-600km out-and-returns in a S-N direction. Triangles of 500-600km may be possible. On good days thermals reach 5,000-6,000ft agl. (A 300km triangle is shown to scale on the map.)

As regards the time of day Vrsac will

be very different from Marfa. There the clock ran late on the sun—thermals at 17:00 were what could be normally expected at about 15:00. In Vrsac, the sun rises at 03:00 by the clock and sets at 18:30. This may give plenty of drinking time, but to use the possible 9-10 hours of soaring conditions briefing is going to have to take place perhaps as early as 07:30 hrs. In other words the thermals one would normally expect to find at around 15:00 will have come and gone shortly after lunch.

Vrsac airfield has three good runways with space available for take-offs at 10-15 second intervals. The main grass runway direction is 015°-195° with 2 subsidiary grass runways. On the airfield itself there are hangars for briefing, and workshop and battery charging facilities; the glider parking area is nearby with electricity, water and loos. Each country is to have a shelter for stores, etc, in its parking area. Refreshments will also be available in this area, together with an exhibition of aircraft and gliders.

About 1km from the airfield hangars, along a black-top road, is the hotel complex. Pilots will either share two- or three-bedded rooms. The older of the two hotels has baths along the landings, but the new one has showers and loos for each bedroom. Crews will be in 'The Camping' or in hotels in the town as they wish. Visitors will have a special camping area reserved for them.

The hotel area also has two restaurants (with capacity for 600 meals and which will stay open all night), bar, large hall for entertainments, rooms for reading, chess, and billiards, further refreshment kiosks, and a health centre. This will deal with lesser illnesses, accidents and indiscretions; serious cases will go to the hospitals in Vrsac.

The tugs will be Citabria and UTVA-66 aircraft, 36 of them. They are expected to provide tows to 600m in 2½ minutes, and to get 50 gliders to this height in 15 minutes—if pilots are ready! Each glider will be given up to three tows per day.

Controlled airspace exists above 2,500m (8,350ft). Special arrangements are being made for the Championships, but there may be a height limit of 10,000ft on some days. Barographs will be required. Landing fields generally are good, and in the Vrsac area there are also 10 sports airfields. It is expected that a "Vrsac Air" will be put up in the late afternoons to help relay messages between pilots and crews, particularly over the sandy area. A helicopter will also be available to the organisers.

Cloud flying will be permitted in the rules. The November CIVV meeting in Paris discussed very fully the relative values of enabling the pilot to make maximum use of the weather and the fact that there are an increasing number of countries where cloud flying is not permitted and whose pilots, therefore, cannot normally practice the art. At the vote, it was decided to allow cloud flying.

Take-off will be by Designated Start. Crossing of the start-line is mandatory, and the line itself will be opened 15 minutes after take-off of the last glider to be launched in the Class.

Photographic evidence of turning points will be used. Two fixed cameras are required, as in the system developed at Marfa.

The scoring system is straightforward, with a maximum of 1,000 points available for each day. A day factor is included to devalue poor days, but is only applied when its value is 0.8 or less. This means that if the weather is as expected, all days should be 1,000 point days.

Retrieving is to be by car and trailer.

It is not expected that there will be any reduction in the usual maximum of four gliders per country; some 17m Cirrus, built locally under licence, will be available for hire.

The cost, including all the usual, is 12 US dollars per head per day, practice or championship period. Entries have to be in by 15th March, 1972. Entry forms will be sent to national aero clubs shortly.

Although it is early days, a great deal of preparatory work has been done by the organisers, and they and the town of Vrsac are preparing a big welcome for their visitors.



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# DETECTING CONVECTIVE ELEMENTS BY RADAR

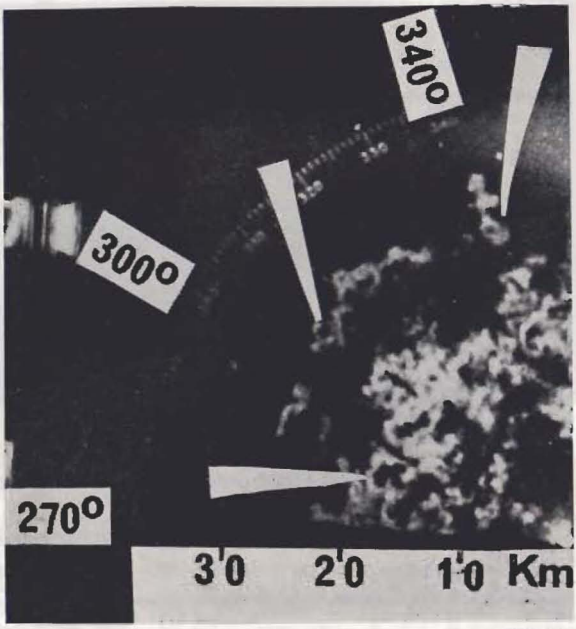



*Figure 2*

By Dr J. R. STARR

THE Meteorological Research unit has brought a high-power radar into operation for meteorological studies at the Royal Radar Establishment site at Defford, Worcestershire. This radar has a 25m steerable antenna and is only rivalled in sensitivity by the USAF-NASA radar facility at Wallops Island, Virginia.

Such a radar can detect not only birds, insects and clouds, but also certain naturally occurring regions in the *clear* atmosphere where sharp changes in temperature or humidity are to be found. These regions exist round the edges of convective elements and also in the form of virtually horizontal layers. Small scale turbulence (ie, on a scale of 5cm) within such regions gives rise to irregular patches of refractive index gradient, and it is these "inhomogeneities" in refractive index which the radar "sees". The radar can therefore detect convective elements well before they have risen above the condensation level to form visible clouds, by virtue of the sharp humidity gradients existing around their edges.

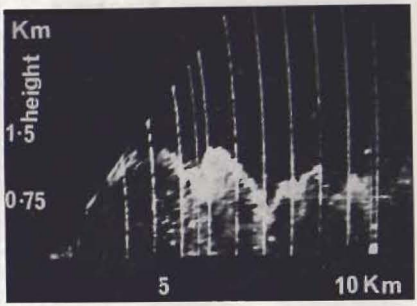



*Figure 1*

Figure 1 shows a vertical section through convective elements on May 5, 1971.

Figure 2 shows a horizontal section through a large number of convective elements on the same day.

Figure 3 illustrates how the radar beam "slices" through the convective bubbles to give the "rings" shown in Figure 2.

Only the edges of the convective elements are seen since, within the elements

themselves, gradients of humidity are less well marked. The characteristic size of the elements is seen to be about two or so kilometres in diameter, and we may ask whether the radar observed "convective elements" are the same as the "thermals" of the glider pilot, or whether the latter are smaller, preferred regions of more vigorous convection (ie, vigorous convective "towers") within the larger element.

We have found also that regions of relatively deep convection which precede shower or thunderstorm development are often persistent and trackable. It has thus been found possible to identify regions of preferred thunderstorm development three hours before the first outbreaks of rain.

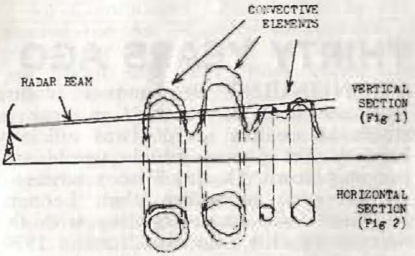



*Figure 3*

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NOTE: Dr Starr and his colleagues are at present working on the data produced by their recent investigation of convection, and we hope to publish a full account of their findings in the near future. A paper by Dr Starr on earlier investigations of lee waves generated by the Welsh mountains will appear shortly.—ED.

# GOODBYE, BROOMSTICK, AND THANK YOU

By RHODA PARTRIDGE

"I KNOW you love her, Rhoda, but you've got to go into glass-fibre sometime and the longer you leave it the more money you're going to lose."

He was right about me loving my Broomstick (The most beautiful K-6E the Schleicher works ever turned out). I'd considered keeping her until my extreme old age, even played with the idea of being buried in her, like the Vikings were buried in their ships. But I'd given that idea up because, knowing Gliding People, I reckoned that some rotten syndicate would certainly dig me up.

That thing he said about losing money. Now that's serious. I'm odd about money. I only got the trick of making the stuff eight years ago and I love it. The way you can swop it for things and the way it will take you to places. I have to make, create, manufacture on average, three pots to gain two pounds (I do make big, beautiful, expensive things, but the cheap ones sell better). So, if I lose £400 I've lost 600 pots, and that, you must admit, is serious.

So I ordered a glass-fibre glider and put Broomstick on the market. I don't really think I really believed I'd sell her. It sounds dotty but I went on planning holidays and looking at maps and watching weather charts while doing some rather desultory negotiations about selling her.

On June 16 I trailed her down to Compton Abbas with hopes (dreams!) of a 300km. On June 17 two brigands arrived from Dunstable, offered me the price I expected, and backed me up against a wall holding a cheque to my throat. I took it, mesmerised, and they, eyes glazed with excitement, hitched my Broomstick on behind their car and drove off. I do realise that it was ridiculous of me to have wept like that. But it was all so sudden, and, damn it, they were making off with my toy!

I flew the Compton Abbas K-6CR and I had one especially hilarious flight in the 1936 Kirby Kite. She is great fun to fly. The tow alarmed me because she resents it so. She shows her rage by dancing wildly about presenting first one wing tip and then the other to the tug. You sit flat on the floor of the open cockpit with your knees round your

ears, wearing goggles and a helmet. When the battle is over and you release you watch the string on the pitot head as you bring the speed back. When the string stops twirling about and lies back quietly you are flying at the correct speed for your weight, in my case 26kts, now isn't that a sophisticated bit of instrumentation? She's great fun in lift because you feel every slight movement of the air.

I got her set up in a nice thermal with the green ball of the nostalgic Cosim vario stuck at the top and we twirled up to cloudbase like a ping-pong ball on a fountain. It was very special, swanning about the summer countryside in such a gay little open glider. We got to 4,500 and my bare feet got winter-cold.

John Thorne let me fly his SHK, which was a great honour. Very smooth and luxurious, with a specially nice amount of feel on the stick. Not heavy and tiring but not so light that one felt that the merest sneeze could result in a barrel roll. I had 2½ hours on one evening flight and I loved it. Super high speed performance too. John has an ingenious way to stop you landing with the wheel up. He's got a socking great paper-clip that lives on the wheel lever when the wheel is down and is put on the brake lever when the wheel is up. So, should you forget to do your *last* thing, you get an astonishing handful of paper-clip as you reach for the brakes.

Now that Broomstick has gone, I'll tell you about the "Most beautiful K-6E the Schleicher works ever turned out" caper. I got into trouble with other K-6E owners about it and I must admit that the quotation was from the first article I wrote about her. In fact, no one said it but me! I said it because I reckon that every owner of a K-6E thinks it is "the most beautiful K-6E the Schleicher works ever turned out". It's such a wonderful design. Docile and responsive. Perfectly balanced controls. Such an easy, cunning way with marginal conditions. So neat and firm in a strong turbulent thermal. Into a tiny field over a high hedge, no problem. Picks up weak wave, latches on and whisks up. I must be crazy to have sold her. But I did worry during the winter when she was getting cold and damp at the Mynd.

What next? In April I hope "New Broomstick" will be flying. A baby Cirrus. Schempp-Hirth's 15m masterpiece. The mere thought of owning one makes me wild with unbelieving excitement. But at the moment I'm still in mourning for Broomstick. We had some wonderful flights together. She taught me a helluva lot and she even made me a profit when I sold her. You can't ask more of a glider than that. Thank you, Broomstick!

# THIRTY YEARS AGO

CONTINUING this annual feature now leads us to 1941, a year in which all civilian soaring was officially banned. Yet gliding people would still not stay down. Dudley Hiscox writes:

"Do you remember that Leonard Hatcher" (who started gliding with the first Surrey club near Guildford in 1930) "and John Copeland not only once owned a Cambridge sailplane but also possessed a launching winch. It must have been in 1941 that the three of us went on several occasions to a west-facing hill site between Smalldole and Shoreham and there enjoyed several hours of soaring. Their launching winch was also used at Ralph Slazenger's wartime gliding demonstration when he was an A/C1 at Hastings." (This probably refers to a gliding unit at an RAF airfield near Wilmington, by the South Downs, which we should have mentioned last year. It was operating in early 1940, to give RAF people something to do during the "phoney war" period.)

In the military field, German glider-borne and parachute troops captured Crete, causing German propagandists to say meaningly: "There are now no unconquerable islands", and the British public to say: "Now at last we know why the Germans did all that gliding before the war". (Both were wide of the mark.)

In 1941, the Air Training Corps was formed. Dudley Hiscox, then chairman of the London Gliding Club, describes below how he and a few others managed to get gliding introduced into the ATC, having to surmount so many obstacles that the actual flying is unlikely to have started till the following year. Can anyone establish the precise date?

A.E.S.

# HOW ATC GLIDING BEGAN

By DUDLEY HISCOX

IT is interesting to remember that Halton was the very first ATC gliding school, that it was set up with London Gliding Club equipment, and to recall how its formation came about.

Air Commodore Chamier having persuaded the Air Ministry to approve of gliding for ATC cadets, the impression got about that ATC boys could and would be able to build their own gliders. Fred Slingsby at Kirkbymoorside, anxious to be helpful, had presented the complete specification of his Cadet training glider to the newly-formed department of the Air Ministry. Copies of the plans were made and issued to all the ATC units that asked for them, together with kits of materials for building their machines. Command Gliding Officers were appointed but no sites had been allocated. What is more, there then existed an edict from the authorities stating that no gliding was to be permitted within X miles of an RAF aerodrome.

In the meanwhile, the do-it-yourself proposition was not proving workable, so it was decided to requisition primary gliders from the closed-down civilian clubs. Those from the London Gliding Club were removed to and stored at Halton; a member of the old Norwich Gliding Club, "Pip" Firmin, of H-17 renown, was appointed Gliding Officer at ATC Central Command, Rickmansworth. When it was seriously suggested that he should organise gliding operations at Stanmore Cricket Club ground, he had grave doubts about it and apparently suggested to his Commandant that his friend, the chairman of the London Gliding Club, might be willing to help by advising on the feasibility or otherwise of the project. The cricket ground was, in fact, quite hopeless and the golf club at Apex Corner was next surveyed. That, too, could not be recommended, with its bunkers and trees here, there and everywhere.

Having thus become so far involved, it was inevitable that I should come in contact with a loveable character, F/Lt Jim Ford, of a Southgate ATC unit, who had in fact built a Cadet glider for his boys from the drawings and materials supplied. He and I, putting our heads together, hatched a bit of a plot! Permission was sought and obtained to go to Halton aerodrome ostensibly to examine and then report on the requisitioned gliders known to be stored there. What we did, one week-end (when the station was likely to be practically shut down), was to rig a primary glider and, having obtained a length of towing wire, get the machine auto-tow launched by running Jim Ford's car across the aerodrome.

It succeeded and I flew a circuit, but what a rumpus it caused! Flying a glider on an inactive aerodrome in defiance of Authority, and a mere civilian too! The AOC was so furious that he refused to see me when I expressed the wish to tender my apologies. He was Air Commodore Dacre and, in spite of everything, I knew he couldn't be such a bad sort, for hadn't he been flying in the pioneer days of aviation and wasn't he the first pilot to fly an aeroplane off a battleship during or even before the 1914-18 war?

The ATC Commandant at Rickmansworth, Wing Commander Carthew by name, was a barrister of some considerable renown, with the ability to charm the birds off the trees. Although he had actually been in the plot, he duly rallied forth to make peace with the AOC, to excuse and explain away the dastardly incident. He had been briefed on Dacre's past achievements, and so successfully did he deliver his "case" that it was eventually agreed that glider flying *was*

BRENNIG JAMES would like to take this opportunity of wishing a Happy Christmas to all his many admirers, and a thousand curses to his enemies.

a possibility when the aerodrome was unused, as so often it was at weekends.

Luckily the OC of the Aerodome Flight, by name S/Ldr Mallinson, a delightful character (closely resembled by Jimmy Edwards), was to prove a friend in need and raised no difficulties. Eventually the Air Ministry also agreed and very soon we got No 1 ATC Gliding School functioning with F/O Ted Spragg, an ATC Equipment Officer, in command. Similar outrages heralded the establishment of other schools in the Central Command.

For instance, a tremendous thruster, F/Lt Burge, of Harrow ATC, found a local field just large enough for the purpose of glider training by straight hops, but it had no form of hangarage. Arriving at another part of the Borough in his uniform and with a borrowed RAF truck, he bluffed the Home Guard Unit into permitting him and his boys to dismantle their Headquarters Hut and reerect it on his gliding site. A primary glider would just go in the building with the tail booms removed. Hangars for gliding schools at Bray and at Hounslow were also acquired by devious methods.

# VARIATIONS ON A GLIDING THEME— 1971 Northerns

By DOUG BIRCH

THE 19 stalwart pilots who took part in the final regional competition of 1971 are to be excused for feeling slightly aggrieved at the daily helpings of unsympathetic weather which descended upon the Yorkshire Gliding Club and its environs during the allotted period set aside for the contest, August 21-30. During the seemingly interminable wait for weather improvement, the ever-optimistic aviators would be drenched by torrential rain, or vanish into the banks of orographic cloud which trundled unconcernedly over the hill with monotonous regularity.

However, a select group of pilots (possessing a pioneer spirit which would not have disgraced Dr Livingstone) safaried through persistent strong wind and knee-high heather, risking life and limb, to check certain alleged anatomical features of the White Horse which adorns the face of Sutton Bank. Notwithstanding these atmospheric and mortal activities, three contest days were achieved and on other days many pilots experienced their first taste of Northern wave. On the first Saturday (a 25kt north-easterly day) wave was contacted at 800ft above site and rose to a maximum of 6,000ft. Many pilots spent two to three enjoyable hours that afternoon.

A philosophical competition director in the body of Fred Knipe daily gathered pilots and crew together in the hangar to hear the meteorological incantations of Ken Winspear. Then he was usually forced to dismiss them for the day.

But it came to pass that on Wednesday the 25th, the first task of the week would be flown. The forecast indicated that a ridge of high pressure would bring a 5kt (increasing to 15kt) SE wind with thermals of 1-2kts, building up to a possible 5-6kts and tops in the region of 3,000ft. With this in mind the task setters decreed a 110km triangle, Thornton-le-Dale, Pocklington, Sutton Bank, thus sending competitors over high ground where it was hoped thermal strength would be greatest.

By 13:30, the official "snifter" had reported that visibility was improving and weak thermal activity was in evidence. First away was Barrie Goldsbrough in his Diamant and in another 25 minutes all but Chris Riddell were airborne. It was evident right from the start that conditions would be difficult and early radio reports confirmed this. The forecast 15kt wind soon became a reality and proved to be the major problem of the first leg, several pilots succumbing to its forces and landing before Thornton-le-Dale. Ron Sandford re-

ported that he "was very low and scraping at Pickering" but he later recovered to stay airborne until just short of the second TP.

Barrie Goldsbrough, after rounding the first TP at 800ft, hung on grimly to a very weak thermal and hauled himself up to a respectable 3,000ft over Malton, an area where many pilots finished their first day's task. From this altitude he managed to sustain a glide and reach the Pocklington corner of the triangle which was circumnavigated at a lowly 500ft. He was the only pilot to do so before coming to earth.

Chris Riddell made a very late start in his Phoebus, had a good flight, and made half-way along the second leg before having to land. The leading places of the day were filled by Goldsbrough, Sandford and Riddell respectively while Bill Fay, chairman of the Coventry Gliding Club, had the distinction of reaching 4,500ft, the highest climb of the contest so far. Ray Stafford Allen and Lynn Brown flew their Capstan into the premier two-seat position.

Contest day two dawned blue with a forecast very similar to the previous day, the main difference being the time and length of convection which was due to start 1½ hours earlier and last for only three hours, so it became imperative that a prompt start be adhered to if the 98.5km goal race to RAF Ouston was to be completed. This was to prove a day when local topographical knowledge was to be a great asset.

Yesterday's winner, Barrie Goldsbrough, was last off the grid and he was soon to be seen struggling in weak lift. Eventually he joined Bill Fay at 2,500ft, from which they both started a glide lasting 10 miles before they were down to 800ft. At this juncture they parted company, Bill working hard but not making much progress and Barrie managing to latch on to a nondescript current of rising air and then slowly gaining height.

By this time visibility west of track had been described as "decidedly grotty", but to the east, over Chester-le-Street, a few juicy cumulus were puffing merrily away and their magnetic attraction rapidly drew the field towards them. Further north, however, the clag was settling down to an oblique visibility of under two miles. This was destined to make life that little more difficult for those pilots who reached this area.

Eight miles out from goal, although their position was then unbeknown to them, Ron Sandford met up with Barrie Goldsbrough, and they decided to try and find Ouston together. It was not until the Tyne tunnel was identified that they knew exactly in what direction their destination lay, so with the objective still obscured a final glide was started. When they were both down to 800ft Ron found a thermal and decided that it might be advantageous to get a little more height so he stayed with it, meanwhile Barrie pressed on and finally crossed the threshold of Ouston at less than 300ft. Ron arrived two minutes later.

The interesting tale of the day came from Mike Carter. Finding himself completely lost due to the poor visibility he hit on a navigational plan that really could not fail. He decided that by flying due east he must at some time arrive at the coast and then by following the coastline in a northerly direction he must surely arrive at the Tyne estuary. This he did and by following the course of


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the river inland he arrived at Ouston, the third and last pilot to do so that day.

Jim Beck, at 18 the youngest pilot in the competition, also hit on the same plan, but unfortunately he turned up the wrong river. What he took to be the Tyne turned out to be the Wear and he ended up on the outskirts of Sunderland. Nevertheless it was a good effort in his first competition.

The first and second positions overall remained the same while the Ramsden/Cheseborough Skylark 3 moved into third position.

Contest day three on Friday turned out to be the last competition day before the bad weather took over Sutton Bank again. The task, a goal race to Doncaster via Stamford Bridge, 85km, proved to be more difficult than was originally expected with only Ron Sandford reaching Doncaster. He was one of the pilots who made use of weak wave which was working over the hill at Sutton Bank. He used it to climb to 3,000ft and then set off. After Stamford Bridge he made another climb, this time to 5,500ft, and continued the first half of the second leg in wave. This was followed by a comfortable glide to goal.

The next pilot, Barrie Goldsbrough, landed eight miles short after the "big" thermal he was working fizzled out. Although many pilots spent considerable time in the air very few made any progress past the TP. For perseverance. Bob Addis takes the biscuit: he finally rounded Stamford Bridge at 20:00.

One pilot on landing found himself face to face with a burly policeman who asked him to get out of his glider. The bewildered pilot did as he was asked and watched in amazement as the guardian of the law proceeded to look suspiciously around the cockpit and then shine his torch down the inside of the fuselage. On enquiry the pilot was told brusquely that all aircraft landing in that area were subject to being searched.

"For what?" the pilot asked.

"For illegal immigrants," the bobby answered. One has heard of Pygmies and togetherness, but this is ridiculous.

In the final analysis, Barrie Goldsbrough beat Ron Sandford by three points, the others trailing some distance behind. This result was to be expected as both the leading positions were taken by men with considerable experience in National competitions and both were flying very hot ships. Nevertheless, one must not detract from their fine efforts in conditions which can only be classed as poor. The competition organisation was very good, the Met man Ken Winspear was absolutely spot-on every day with his forecasts, the atmosphere was friendly and likeable and all pilots had a very enjoyable week regardless of the weather. Here's hoping for good weather in 1972.

| *Final Results*<br>*Pilot(s)* | *H'cap*<br>*%* | *Sailplane* | 25.8<br>18 | 26.8<br>34 | 27.8<br>18 | *Total*<br>*Score* |
|---|---|---|---|---|---|---|
| 1 Goldsbrough, J. B. | 80 | Diamant 18 | 18 | 34 | 16 | 68 |
| 2 Sandford, R. A. | 88 | Std Cirrus | 15 | 32 | 18 | 65 |
| 3=Ramsden, P. | 100 | Skylark 3 | 8 | 25 | 5 | 38 |
| 3=Kenworthy, A. T. | 102 | Olympia 463 | 3 | 27 | 8 | 38 |
| 3=Carter, M. E. | | | — | 30 | — | |
| Addis, R.C. | 100 | K-6CR | 0 | — | 8 | 38 |
| 6 R. C. Stafford Allen | 114 | T-49 | 6 | 26 | 0 | 32 |
| 7 White, A. | 110 | K-13 | 8 | 20 | 0 | 28 |
| 8 Beck, J. | 106 | K-8 | 0 | 19 | 8 | 27 |
| 9=Mawson, J. J. | 96 | K-6E | 0 | 18 | 8 | 26 |
| 9=Johnston, I. G. | | | 9 | — | 8 | |
| Benson, J. M. | 88 | Dart 17RW | — | 9 | — | 26 |
| 11 Buckley, Phillipa, | | | — | 15 | — | |
| Burne, A. G. | 90 | Dart 17R | 0 | — | 8 | 23 |
| 12 Riddell, J. C. | 84 | Phoebus 17 | 15 | 4 | DNC | 19 |
| 13 Fay, F. W. | 90 | Dart 17R | 8 | 10 | 0 | 18 |
| 14 Kerr, R. J. | 98 | Skylark 4 | 0 | 15 | 0 | 15 |
| 15 Provins, W. A. | 88 | Std Libelle | 0 | 12 | 0 | 12 |
| 16 Crocker, B. B. | 124 | Olympia 2B | 0 | 7 | 0 | 7 |
| 17 Mackay, N. | 96 | K-6E | 0 | 3 | 0 | 3 |
| 18 Taylor, L. | 110 | Eagle | 0 | 0 | 0 | 0 |

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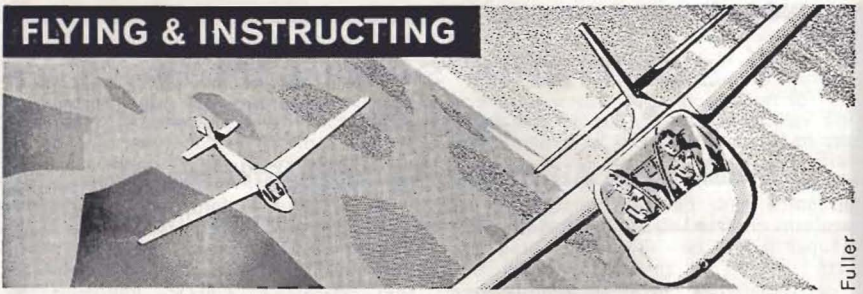


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Fuller

# SAYING IT — AGAIN!

WHERE do we fail in communication? Is it in the written word which everyone reads and then forgets?

I was talking to Roger Neaves the other day about a number of things that we both definitely believe in. One of these was the problems of teaching judgment exercises, like approach planning and the use of airbrakes. Another was to do with the negative approach commonly used in the supervision of solo pilots. In both cases, Roger's view was that it had all been said many times before, commonly by instructors who had gained enough experience to come to definite conclusions, and who had then failed to communicate these to you or me—which is the point at which we started!

We believe that a lot of things concerning judgment exercises which you can tell a new instructor are, by and large, forgotten until he has gained enough experience to convince himself. Let us look at some examples.

A solo pilot, after a soaring attempt, makes a low final turn—low enough to worry the watching instructor. During the turn, the pilot opens his airbrakes but makes a satisfactory landing. He may even be surprised when the instructor comes over to have words with him (incidentally, the instructor's approach at this stage is critical). Let's examine the reasons for this low final turn, other than the probable one of flying through sink immediately after the soaring attempt.

(a) During the course of this pilot's training, while the instructor was making the approach and landing, what did the instructor do if he was short of height in the circuit? He made a low final turn. Moreover, what did he allow the pupil to do if he was short of height? You've guessed! Another low final turn. So you really have no right to criticise the solo pilot, have you?

(b) Opening the brakes in the final turn at some sites may be a crime, but watch that solo pilot making his low turn; willy-nilly the brakes come open. I call this the "going-in-to-land" syndrome. In all his training launches, the airbrakes were opened during the approach—hence the syndrome. Just occasionally in a marginal final turn, a glider gets broken and often enough this is because the brakes were opened. Only this time there was not enough in hand to tolerate the additional height loss. Commonly this state of affairs will exist where a pilot has not been taught that airbrakes are an approach control aid ("aiming point" technique is the exercise). So what is the solution?

For (a), the low final turn, really set the example and do not condone the low turn during training. (If you can't launch your glider high enough to make a complete circuit then either get a new winch, or a new glider of better performance, or both.)

For (b), teach "aiming point" technique and make the student pilot carry out one or two landings in which the airbrakes are closed at least for the final stage of approach and landing.

Another syndrome which can often be pinpointed as the cause of an accident

is the "land parallel to and in the same direction as take-off" one. This is entirely understandable when you bear in mind that all landings during training may have been made in this way. For instance, the pilot who has a failed aerotow turns back to the field and tries to make a circuit. He may at last concede that he cannot get back to the landing area. Actually, he has only enough height to land down-wind but he tries a low final turn and then stretches the glide—which, of course, won't stretch. There is a further factor which creeps in here. The psychologist probably has a name for it, and this is that the situation will often not appear, to the pilot, to be as bad as it actually is. (It will also often appear worse than it really is to the observer). Perhaps the points raised serve to illustrate some of the psychological implications of the things we do (unwittingly) during training.

Further problems of a similar nature arise when it comes to teaching winch launch failure. The inevitable approach to this exercise leads an instructor to say to his pupil: "What would you do with a cable break at 400ft?" (He, the instructor, thinks but does not say "assuming a position in the field to relate to a typical launch today").

The student makes all the right noises, perhaps, but what then happens in practice? The instructor simulates a break and the student makes a decision. But at the instant that the cable break has been given, there may be three possibilities: a landing ahead, a dog-leg approach or a short (but preferably not low) circuit.

The pupil chooses the first, and almost certainly the safest, alternative. The instructor, however, says "No, let's do a quick circuit".

Now think about this for a moment. The student has made a correct decision. The instructor is overriding the student's decision, and implies that he, the instructor is right and the student wrong, which does not do very much for the student's confidence. If this happens on all his training cable breaks (or launch failures) then the pilot may harbour grave doubts about his ability to deal with the situation. The only way in which he can build up his confidence is by making correct decisions. We do not, in the normal course of instruction, do much to make the student decisive.

If all this appears very obvious as you read it, then ask yourself if you have thought about it in a practical context. Take this example:

When flying a glider with airbrakes, there are two ways in which an approach can be made to look right. If you are within the control range of the airbrakes, then obviously by opening the appropriate amount you will arrive at the correct point on the airfield.

If however, you are too high to make a controlled approach in this way, then it can be made to look right by pointing the nose of the glider at the chosen landing area. If the machine's airbrakes are adequate, the speed does not build up much, if at all. If this habit develops during training then there is a real risk that when the pilot flies a modern high performance machine on which the airbrakes or spoilers do not control the speed to the same degree as the airbrakes that he is used to, he may have a field landing problem.

This short article will, I hope, make you consider some of the long term


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JOHN MURRAY

implications of the things that you, the instructor, do: The low final turn; opening the airbrakes; always landing parallel to and in the same direction as take-off. The considerations really are far reaching—read the accident reports some time and consider whether or not this could all stem from the initial training.

I suppose this is just another article which will fail to communicate; probably someone will say it all again in 5, 10 or 15 years' time. Also someone undoubtedly said it all 5, 10 or 15 years ago. I wonder?

FOOTNOTE—A NEW EXERCISE

Most students have trouble making controlled approaches. One of the reasons is poor speed control. The following exercise has been tried by myself on a number of pupils, with considerable success:

Practice co-ordinating spoiler (or airbrake) with elevator until good speed control is achieved and then try to teach them landings—it is so much easier.

W. C. SCULL

## FALKE: WET WINGS TAKE-OFF WARNING

A GERMAN instructor was giving his pupil a motor-glider conversion flight in an SF-25B Falke when a heavy shower made them decide to land. When the weather cleared, they took off again but were unable to gain height, so hit an obstruction and were injured, reports *Aerokurier*.

The magazine adds that they carried on board a flight procedure handbook, and quotes from it a warning that the Falke has a sailplane wing profile that is very sensitive to rain so that, whereas a dry wing has a minimum take-off speed of 60-65km/h, the minimum speed for a wet wing is 75-80km/h. This represents an increase of about 10 knots.

THE NATIONAL COACH comments: As glider pilots, we are sometimes concerned with rain on our wings and how much more rapidly this makes the machine descend. If a glider goes down faster, then a motor glider will go up more slowly. It may well be the case with wet wings that the take-off run will also be extended by the wet grass. The two factors combined can more than double the take-off run—and if tall obstructions are to be cleared, the reduced climb performance may be critical.

## WAVE FLIGHTS

| *Date* | *Name of pilot (PI)* | *Height wave contacted (ft)* | *Absolute height (ft)* |
|---|---|---|---|
| *Aboyne (Deeside)* | | | |
| 1-8 | A. J. Middleton | 2000 | 5200 |
| 2-10 | L. S. Joiner | 3200 | 6200 |
| 2-10 | A. J. Middleton | 2000 | 6500 |
| 2-10 | G. J. Dorward | 3500 | 6900 |
| 2-10 | G. J. Dorward | 4000 | 5900 |
| 4-10 | M. C. Fairman | 2700 | 5300 |
| 6-10 | M. C. Fairman | 2500 | 11700 |
| 7-10 | M. C. Fairman | 4500 | 11900 |
| 10-10 | A. J. Middleton | 2000 | 7600 |
| 10-10 | L. S. Joiner | 2475 | 11775 |
| *Doncaster* | | | |
| 29-9 | A. Craw | 3000 | 6500 |
| *Kingussie (Cairngorm)* | | | |
| 4-9 | W. R. Longstaff | 4000 | 12850 |
| 4-9 | A. Lindsay | 4000 | 7350 |
| *Hedley (Northumbria)* | | | |
| 28-8 | J. R. Greenwell | 2800 | 3400 |
| 19-9 | J. R. Greenwell | 2700 | 3200 |
| 19-9 | D. C. Pattison | 2600 | 3100 |
| 6-10 | D. E. Ingle | 2500 | 10800 |
| 6-10 | T. T. Pitlon | 2800 | 11500 |
| 6-10 | A. Brown | 2800 | 7800 |
| 10-10 | L. Watson | 2700 | 3400 |
| 10-10 | V. Lawson | 2800 | 12800 |
| 10-10 | D. J. Osborne | 2800 | 12600 |
| 10-10 | A. Brown | 2800 | 7800 |
| 10-10 | W. M. Haley | 3000 | 13200 |
| 10-10 | A. Brown | 2800 | 3200 |
| *Milltown (Fulmar)* | | | |
| 30-5 | T. G. Armstrong | 1400 | 11500 |
| 19-9 | J. Higgins | 1550 | 9300 |
| *Long Mynd* | | | |
| 1-9 | D. Brown | 2200 | 5100 |
| *Nympsfield* | | | |
| 20-6 | L. P. Smith | 2000 | 13500 |
| *Portmoak* | | | |
| 31-8 | M. J. Wood | 2200 | 8250 |
| 29-9 | E. A. North | 2000 | 4000 |
| 1-10 | C. Hodgson | 1000 | 5500 |
| 1-10 | H. S. Mettam | 2500 | 11600 |
| 1-10 | M. Cooke | 1200 | 7500 |
| 1-10 | J. E. G. Harwood | 1850 | 10500 |
| 1-10 | A. D. Purnell | 1400 | 18500 |
| 1-10 | D. R. Hills | 900 | 6000 |
| 1-10 | D. R. Hills | 1100 | 5000 |
| 1-10 | M. Bialkiewicz | 2100 | 11000 |
| 1-10 | T. J. Krzystek | 2800 | 7150 |
| 1-10 | P. W. James | — | 15300 |
| 1-10 | R. Walker | 2000 | 14600 |
| 1-10 | C. D. Lovell | 2500 | 17790 |
| 1-10 | W. A. H. Kahn | 1400 | 10120 |
| 1-10 | G. D. Butler-Madden | 1800 | 11420 |
| 1-10 | G. D. Butler-Madden | 1400 | 7000 |
| 1-10 | P. R. Horne | 2360 | 9360 |
| 1-10 | P. B. E. Thompson | 2100 | 11100 |

| Date | Name of pilot (PI) | Height wave contacted (ft) | Absolute height (ft) |
|---|---|---|---|
| 1-10 | E. A. North | 2500 | 14500 |
| 1-10 | J. N. Wardle | 2020 | 9250 |
| 3-10 | P. W. James | 1800 | 4900 |
| 7-10 | G. D. Butler-Madden | 2400 | 5500 |
| 8-10 | G. D. Butler-Madden | 2700 | 5800 |
| 8-10 | A. Sambale | 2000 | 7700 |
| 8-10 | P. W. James | 3300 | 9800 |
| 11-10 | M. A. Howard | 2500 | 6400 |
| 11-10 | E. A. North | 3000 | 14800 |
| 11-10 | A. D. Purnell | — | 17300 |
| 16-10 | J. N. Stevenson | 2340 | 7340 |
| 18-10 | P. W. Lever | 1200 | 3500 |
| 18-10 | P. W. Lever | 1200 | 3000 |
| 18-10 | R. Morris | 3000 | 5800 |
| 18-10 | L. Rotter | 3500 | 6500 |
| 18-10 | R. Gordon | 2500 | 6200 |
| 18-10 | J. H. D. Partington | 2500 | 6700 |
| 18-10 | N. A. Dean | 2500 | 7000 |
| 20-10 | N. A. Dean | 2500 | 5000 |
| 20-10 | A. Milne | 900 | 8200 |
| 20-10 | P. W. Lever | 1200 | 3800 |
| 20-10 | I. Dunn | 2300 | 4800 |
| *Shobdon* | | | |
| 6-10 | M. C. Costin | 7200 | 8900 |
| 9-10 | M. C. Costin | 4500 | 8000 |
| *Sutton Bank* | | | |
| 15-7 | A. T. Kenworthy | 1700 | 13400 |
| 21-8 | J. B. Goldsbrough | 2000 | 5000 |
| 30-9 | R. F. Tindall | 3500 | 11300 |
| 1-10 | R. F. Tindall | 3800 | 8800 |
| 7-10 | I. G. Johnston | 2000 | 12000 |
| 7-10 | P. Lazenby | 1300 | 14400 |
| 8-10 | P. Lazenby | 1400 | 8700 |
| 9-10 | G. B. Ventress | 2000 | 11300 |
| 10-10 | M. Carter | 2000 | 4000 |
| 23-10 | P. Lazenby | 1900 | 14700 |
| 23-10 | P. G. King | 2100 | 11300 |
| *Usk* | | | |
| 30-8 | I. Shattock | 1800 | 5000 |
| 30-8 | H. Evans | 2200 | 3300 |
| 30-8 | P. Gould | 3000 | 3650 |
| 30-8 | P. France | 3600 | 4300 |
| 30-8 | D. Roberts | 2300 | 5300 |
| 31-8 | I. Shattock | 3600 | 4100 |
| 31-8 | P. Gould | 2000 | 7200 |
| 8-10 | D. C. Pentecost | 4000 | 5500 |
| 9-10 | D. C. Pentecost | 4000 | 6000 |
| 9-10 | T. L. Janson | 3200 | 6600 |
| 9-10 | P. S. Wybrow | 4200 | 10200 |
| 9-10 | L. Ballard | 3000 | 4200 |
| 9-10 | A. David | 4050 | 9400 |
| 10-10 | P. France | 3500 | 5580 |


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# THE KESTREL IN THE ALPS

By HUMPHRY DIMOCK

OWING to many teething troubles and delays by the weather and other things, my new Kestrel was not fully operational until after we had arrived at Vinon in the southern French Alps on June 22—five days before the International Mountain Soaring Contest was due to begin.

One of the first things I noticed about the Kestrel was the reduction in aileron drag compared with all my previous gliders. This must be due to the effect of the "flaperons", the flaps which are continuous from the fuselage to the ailerons, and which act with the ailerons except when fully depressed for landing. We found that we did not need to watch the yaw string so carefully. By "we" I mean myself and my crew chief Timothy Simmonds who, by the time the competitions started, had flown the Kestrel almost as much as myself. The other crew members were my wife Patsy and niece Sallyanne. Another important improvement about this machine is the absence of "shake" when cruising at high speeds of 100 knots or more. I make the comparison with the Diamant, Dart, and all the Skylark range which I have had in the last decade.

## A STREAM OF SWIFTS

The first task set was a 300km triangle via La Baume and Guillestre under a completely overcast sky, a condition which is very unusual in this district. The first leg was into the teeth of a very strong NW wind. Playing for safety I flew north up the valley towards St Auban aerodrome (25 miles) near where the Montagne de Lure runs west so that I could slope-soar on to the track.

I spotted a stream of swifts flying in the same direction and flew under them, adjusting my speed to their speed, which was a steady 48kts. They were following a weak sort of wave which took me to an untidy group of mountains to the east of St Auban. After slope-soaring with birds and gliders it took me three hours to get enough height to cross the valley to the windward of the Montagne de Lure, which was only 30 miles from home. By this time the wind had backed towards the west and I could not climb the 5,000ft peak further along the ridge.

Then I learned on the RT that so many pilots had landed out that the task was cancelled. At this time the clouds blew away and in the sunshine I was able to fly the anabatic and orographic upcurrents within easy reach of St Auban aerodrome. Eventually, in response to my crew's strong suggestions, I flew home to Vinon after 5½ hours of an interesting flight.

On June 28, a 217km triangle was set via Moustiers (24 miles to the east across a plain 2,500ft ASL, where there are good mountains for anabatic air currents) and ravines. Due to the strong wind, the thermals were very weak and broken and I was one of the five unlucky pilots who failed to reach Moustiers. Ten of the 19 others who did reach Moustiers managed to complete the circuit. I had run into 10kt sink when only 100ft above the ground and was lucky to find a patch to land on.

## THANKS TO ALLAH

June 29 was pretty with lenticular clouds caused by the strong wind, and a 152km flat triangle was set. The CFI of St Auban was one of the officials and he gave me a very good briefing. This was to fly the primary wave behind the range of the Montagne de Luberon to the first turnpoint at Merindol, 47km to the west, then return to Vinon in the wave with enough height to fly north to Pont les Mees (TP 2) and return again to Vinon.

Flying at 60kts to Merindol without circling, I was able to climb to 11,000ft. Maintaining this height, I was able to fly at 80kts back to Vinon and to the second turnpoint, from where I flew at 100kts most of the way home. My "John Willie" calculator was very useful. The Kestrel did the trip in 88 minutes and beat the field by half-an-hour. This was one of the loveliest flights I have ever made. The visibility was more than

100 miles and I could see a large part of the Mediterranean coast. The scenery was so spectacular that I was reminded of an Indian friend of mine who, on a similar flight, was so emotionally affected that he folded his arms and bowed his head and said thanks to Allah for allowing him to behold such beauty. I myself certainly thought of Him, and was in a state of high exaltation for the whole flight. My average speed for the triangle was 105km/h. My actual speed for the distance covered, four legs instead of three, must have been much greater. After yesterday's failure, today proved the Kestrel to be a wonderful glider and it made me very happy.

## . . . A PILE OF DINNER PLATES

A 209km triangle was set on June 30 in a howling gale, via Orpierre and Dolmilloux Fort. The gusts and turbulence made the take-off look so dangerous that two competitors jibbed at the prospect of damaging their gliders and withdrew. They changed their minds and flew after all the rest had gone. Some pilots, myself included, had three tries before contacting wave. The Kestrel, which has a sliding elevator control, did not suffer from pilot induced oscillations, and was easy to control in the turbulence. My first wave took me to 12,000ft and I chose a cruising speed of 100kts between the waves. It was necessary to fly at 55kts to breast the waves while climbing. The rate of climb was usually about 10kts.

As I did not have oxygen I was forbidden to go above 4,000m (13,000ft). One pilot reported having broken off his climb at 28,000ft while still getting 16kts of lift. This sort of flying is more exciting than any words of mine can describe. The Kestrel revels in high speed and passes the Standard Class in a most spectacular manner.

Unfortunately, on this flight it was necessary to go below cloud to photograph the first turnpoint, and here I joined about 10 other pilots scraping about in disorganised slope-lift which ceased just above the peaks. I wasted an hour before finding a wave to lift my spirits with the Kestrel. In one place the wave clouds were stacked one above another like a pile of dinner plates above the white tablecloth which was a continuous sheet of cloud. My time was 3:24.

## DRIFTED TO A MOUNTAIN WALL

On the fifth contest day, July 1, the wind had dropped, and a 307km triangle via Beaurieres and Guillestre was the task. Thermals above the aerodrome gave lift of 8-10kts to 6,000ft at cloudbase. The cumulus clouds and the lift stopped 20km from the turnpoint on the first, 95km, leg. The Kestrel passed all the other gliders in sight quite easily, using an inter-thermal speed of 90kts, pulling up to slow down under each cloud, and circling occasionally in the strongest lift. Thermals of less than 5kts were discarded. At the turning point, which was about 4,000ft high, I was down to 500ft above it, and again spent an hour in the valley with many other gliders before finding an upcurrent high enough to enable me to continue.

Soon after, near Aspres aerodrome, I ran into continuous 12kt sink and had lined up to land with wheel down, when at only 200ft the Crossfell gave a squeak. As I could still land if the squeak was false, I did a tremulous circle, and continued circling for one-and-a-half hours in the same thermal while drifting away from the aerodrome across the valley, sometimes below the aerodrome level. A Libelle which had joined my "thermal" 500ft above me went in and landed at the aerodrome. Finally I drifted to a mountain wall which had been heated by the sun and rose to the inversion level at 5,000ft. From here I mountain-hopped until 10km from the second turnpoint. It was now 17:00 hrs and I had no hope of finishing the task as the thermals were getting weaker as the rocks cooled off, so I went back to the aerodrome at Gap for a safe landing place.

## DETOUR

Day 6, July 2, was another thermal and anabatic day, the task being a 229km triangle (Rosans—Segnes-les-Alpes) over mountains far away from any aerodrome. In order not to get lost among the mountains as I did two years ago, a friend and myself decided to detour round familiar valleys which in-

creased our distance to about 300km. We both enjoyed the flying, but were amongst the last to return. This day had one good laugh. From 35 miles away the following RT conversation took place:

*Pilot:* "If I do not get any more thermal, I might not get back, I'll have to find out."

*Sally:* "How will you find out?"

*Pilot:* "I'll have to consult my John Willie" (the John Williamson Calculator).

*Sally:* (after a long pause) "Are you being rude?"

The next day, the task was a 304km out-and-return. I chose the wrong cloud and then the wrong mountain and landed at St Auban, a mere 25 miles away, a very disappointed pilot.

July 5 was a complete contrast. The task was a 237km triangle via Gap and Renuzat, on a picturesque day of clouds among the mountains. I enjoyed every second of it as at no time had I any fear of landing out. Some of the snow-covered summits had their heads buried in dark clouds, under which the anabatic current gave lift of up to 15kts. It is a glorious thrill to be able to fly at the mountain face with a speed of 100kts (7kts below the rough air speed limit) and do a chandelle into the anabatic known to be there at a distance of one span from the rocks.

Thunderstorms were predicted on the following day, so it was not considered safe to set a task among the mountains. Timothy flew locally for a few hours while the girls went shopping, and then we all went swimming in a large lake as the storms broke.

## A GREAT SHOWER OF SPARKS

This day was much about the same as yesterday but a triangle of 166km was set. Most gliders landed back after the first launch, but after lunch the weather seemed to improve and there was a scramble to get off again. There was a line of storm clouds running parallel to the last leg, but eight miles distant. I made for these clouds, and managed to get enough height to get to the first turnpoint, but halfway there I decided that there was no hope and turned back. Then I ran into a continuous 10kt sink and was down to 1,000ft 15 miles from home.

I radio'd that I had no hope of getting back, had run into heavy rain and would sit the storm out in my glider after landing. Near Monosque, 10 miles from home, I was down to 300ft in a valley which we had previously dubbed "the valley of the wires" because it was criss-crossed with high and low voltage electric wires. Then, while at 300ft I found myself in an area of zero sink and searched in vain for a safe field to land in. The no-sink became gentle lift, then 4kts up, so I circled while thinking "No, this is impossible". I had been imagining a heap of glass-fibre and flesh mingled with electric wires. At 1,000ft I turned the Crossfell on to ×3 and it still registered the maximum of 30kts up.

Now, after a tremendous heartshake, I was safe and called my crew, but without avail as they were sitting round the telephone waiting for a call. Suddenly, at 1,500ft the rain turned into very large hailstones, and I flew with flap down and minimum speed in case the canopy should get broken.

Then, equally suddenly, lightning and thunder started all around me. The lightning was so close that the thunder came with it. Often, as the lightning hit the ground, a great shower of sparks went up and I suddenly realised that it would have hit a pylon in the valley and the wires, and set off a "flashover" as the insulators were smashed. It was a wonderful spectacle to watch as the lightning was continuous, but I was a little apprehensive of being hit by it. When I flew to the aerodrome the wall of water was advancing across it. I was spotted and told to land near the hangar, but the downpour reached it before me. However, many people still in the normal rig of bathing costumes or bikinis ran out and pulled the glider into the hangar where I was able to step out without getting wet. Whew, what a save! Incredible.

The last day was one of clouds and a short triangle of 103km (Moustiers-Pegruis) was set in order to get people back for the barbecue party. After an abortive start I flew around watching other people getting relights, and finally decided to make another start and fly back to a 6,000ft thermal three miles behind the start line to gain height.

From there I could get to the mountain behind Moustiers, the first turnpoint. This ruse worked, as I flew all the way there, 40km, in a little rise or a little sink, losing only 500ft on the journey, while flying at 60kts. At Moustiers a Foka showed me where there was a good thermal above the mountain, and I shared it with him to cloudbase. Then in the sunshine in the opposite direction in which I wished to go I saw some large falcons circling, so I flew to them. Now the Kestrel was among its own kind.

At 9,000ft my "John Willie" calculator said that I could complete the journey at 80kts, and at the second turnpoint the Foka was 5,000ft below me. On the way back I made use of clouds and was able to do 110kts for the last 20 miles.

Most people took it for granted that I would get several wins as the Kestrel was the best machine in the contest. My only excuse is that I made large detours to fly near aerodromes rather than inhospitable valleys, and took upcurrents to their limit to avoid landing out.

# NATIONALS ENTRY LIST FOR 1972

SHOULD the entry lists for any of the 1972 Nationals be oversubscribed, priority of entry will be determined from the list printed below.

The method by which the list was compiled was modified somewhat from that used for calculating the entry list for the 1971 Nationals (see S & G, August 1970, p317). Pilots can obtain a copy of the modified rules from the BGA office. Any pilot who believes his position on the list to be incorrect is asked to write to the BGA, giving details of the competitions in which he competed in 1970 and/or 1971, his competition number and his full name.

| *No.* | *Name* |
|---|---|
| 1 | Hanson, D. F. |
| 2 | Goodhart, H. C. N. |
| 3 | Fitchett, B. |
| 4 | Tanner, L. E. N. |
| 5 | Grenet, P. |
| 6 | White, S. A. |
| 7 | Burton, G. E. |
| 8 | Saundby, R. P. |
| 9 | Gough, A. W. |
| 10 | Dobson, B. F. |
| 11 | Newall, R. W. B. |
| 12 | Garrod. M. P. |
| 13 | James, D. B. |
| 14 | Harrison, K. A. |
| 15 | Burton, A. J. |
| 16 | Stevenson, J. N. |
| 17 | Cardiff, J. D. |
| 18 | Zotov, D. V. |
| 19 | Sandford, R. A. |
| 20 | Gaunt, T .R. F. |
| 21 | Hood, L. S. |
| 22 | Williamson, J. S. |
| 23 | Cockburn, D. |
| 24 | Austin, D. C. |
| 25 | Piggot, A. D. |
| 26 | Burns, Anne |
| 27 | Jones. R. |
| 28 | Greaves, C. M. |
| 29 | Goldsbrough, J. B. |
| 30 | Orme, H. |
| 31 | Ellis, J. J. |
| 32 | Shephard, E. G. |
| 33 | Wills. C. |
| 34 | Livesay, M. H. |
| 35 | Delafield, J. |
| 36 | Evans, J. A. |
| 37 | Hogg, A. J. |
| 38 | Aldous, R. F. |
| 39 | Bridson, D. S. |
| 40 | Glossop, J. D. J. |
| 41 | Watson, A. J. |
| 42 | Smith, M. J. |
| 43 | Robertson, D. J. |
| 44 | Belbin, E. R. |
| 45 | Waller, R. S. |
| 46 | Smith, G. E. M. |
| 47 | Hale, R. J. |
| 48 | Boyle, C. A. |
| 49 | Carrow, D. D. |
| 50 | Jerzycki, E. |
| 51 | Wheeler, J. H. |
| 52 | Cooper, R. H. |
| 53 | Wishart. R. |
| 54 | Lysakowski, E. |
| 55 | Ince, D. H. G. |
| 56 | James, P. W. |
| 57 | St Pierre, A. H. G. |
| 58 | Brown, N. P. |
| 59 | Withal, C. L. |
| 60 | Kenworthy, A. T. |
| 61 | Costin, M. C. |
| 62 | Cousins, R. |
| 63 | Atkinson, G. B. |
| 64 | Jeffries, J. R. |
| 65 | Strachan, I. W. |
| 66 | Dickson, W. W. |
| 67 | Stanley, J. H. |
| 68 | Harding, R. W. |
| 69 | Oulds. T. |
| 70 | Collison, S. R. M. |
| 71 | Pozerskis, P. |
| 72 | Vennard, D. A. |
| 73 | Warminger, A. H. |
| 74 | Foot, R. A. |
| 75 | Morison, S. M. |
| 76 | Welsh, J. H. |
| 77 | Kahn, W. A. H. |
| 78 | Ramsden, P. |
| 79 | Farmer, A. T. |
| 80 | Sheppard, F. S. |
| 81 | Gill, C. J. |
| 82 | Barry, B. A. |
| 83 | Zealley, T. S. |
| 84 | Hardon, R. A. |
| 85 | Lee. D. G. |
| 86 | Feakes. R. |
| 87 | Haynes, K. W. |
| 88 | Aldridge, K. R. |
| 89 | Newall, Pamela |
| 90 | Day, C. G. |
| 91 | Wilkinson, K. G. |
| 92 | Carter, M. E. |
| 93 | Camp, G. W. G. |
| 94 | Foot, C. C. |
| 95 | Paul, I. |
| 96 | Tull, V. F. G. |
| 97 | Smith, Angela |
| 98 | Fairman, M. C. |
| 99 | Miller, A. S. |
| 100 | Lilburn, D. W. |
| 101 | McGee, T. N. |
| 103 | Kronfeld, J. R. W. |
| 104 | Deane-Drummond, A. J. |
| 104 | Seth-Smith, M. P. |
| 105 | McLuckie, R. |

| No. | Name |
|---|---|
| 106 | Simpson, C. R. |
| 107 | Stafford Allen, R. C. |
| 108 | Tarr, J. |
| 109 | Lombard, W. C. |
| 110 | Woods, L. |
| 111 | Smith, G. K. |
| 112 | Wilton-Jones, M. |
| 113 | Wright, R. H. |
| 114 | Wood, M. J. |
| 115 | Morrison, S. A. J. |
| 116 | Neal, M. S. |
| 117 | Ellis, C. A. P. |
| 118 | Smoker, J. L. |
| 119 | Knipe, F. H. |
| 120 | Gough, A. F. |
| 121 | Monteith, J. R. |
| 122 | White, A. |
| 123 | Paddick, G. R. |
| 124 | Wynch, J. W. |
| 125 | Bellew, J. B. |
| 126 | Keogh, B. |
| 127 | Simms, J. A. |
| 128 | Rood, B. W.T. |
| 129 | Manley, N. K. |
| 130 | Cook, P. G. |
| 131 | Martin, J. A. |
| 132 | Gaunt, N. |
| 133 | Greenwood, T. |
| 134 | Watson, B. B. C. |
| 135 | Wilkinson, N. A. |
| 136 | Whittaker, R. F. |
| 137 | Bird, M. |
| 138 | Beck, J. |
| 139 | Burgess, P. G. |
| 140 | Stoddart, R. C. |
| 141 | Holdcraft, D. P. |
| 142 | Wagenaar, A. J. M. |
| 143 | Edwards, A. W. F. |
| 144 | Graham, T. |
| 145 | Krzystek, T. J. |
| 146 | Thrussell, M. C. |
| 147 | Smith, R. J. |
| 148 | Maltby, H. W. |
| 149 | Marsh, C. J. |
| 150 | Butler, D. J. |
| 151 | Street, C. D. |
| 152 | Plane, R. S. |
| 153 | Johnston, I. G. |
| 154 | Scott, P. M. |
| 155 | Adams, A. B. |
| 156 | Barrett, R. Q. |
| 157 | Gale, M. A. |
| 158 | Johns, H. |
| 159 | Plumb, F. A. |
| 160 | Rouse, J. E. |

# DUSK

*Slowly the sun dips beyond the sea,*
*And a grey mist enshrouds the land.*
*Azure the sky and gold the fleeting clouds,*
*As I wing my silent way along the very edge*
*Of life.*
*Below, the water shimmers with a myriad sails*
*Unfurled — to catch the last few wisps of wind;*
*And as the land slips past I almost smell*
*The blossom and hear the distant lowing*
*Of the cows.*
*Ahead are purple hollows filled with dew,*
*And long shadows reaching over earth;*
*Around my craft the limpid evening air*
*Holds me aloft.*
*Far away the turmoil, dust and noise;*
*I am at peace — elated — and content*
*To be.*

*Anon*


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# TRAILER BUILDING DOESN'T TAKE TOO MUCH WORK . . .

By J. C. RIDDELL

THERE are basically two types of trailer; those which last and those you wish you had never built. I have made both types. Your wise editor has asked me to put down on paper some of the major points that I have learned the hard way.

## 1) DEFINING THE OBJECTIVE

It is very important to be clear what you want your trailer to do. If it is to be a home from home for an ageing Skylark, it is likely to be rather different from the slinky low-line things that we can build for more recent designs. In addition, the facilities available may preclude all but the most straight-forward shape based on commercial plywood panels.

You should get hold of a sketch of the sailplane that you propose to fit, and the weights of the components to be accommodated. For those in current production, the manufacturers will supply you with a drawing of sorts, stating the overall dimensions and, if you are lucky, the weights and centres of gravity of the individual wing panels, tailplanes and fuselage. If you cannot get this information for the "Gregarious Bee" that someone has recently rebuilt from parts discovered in a Hampshire barn, then you are going to have to weigh the pieces on the bathroom scales. A suitable activity for a wet Sunday afternoon when everybody is in the hangar with nothing to do.

It is very important to get a good idea of the weights of the glider bits, as you cannot work out the weight distribution and the ride characteristics of the trailer without them. The weights to take (with an example) are:

| | | | | |
|---|---|---|---|---|
| *Wing:* | port | *Tip* 50lbs | *Root* 88lbs | *Total* 138lbs |
| | stdb | 52lbs | 80lbs | 132lbs |
| *Fuselage:* | | *Wheel* 160lbs | *Skid Tail* 45lbs | *Total* 205lbs |
| *Tailplane(s):* | | | | *Total* 15lbs |

Once you are armed with this information and the dimensions of the pieces, you should also note other odd quirks of the design, like forward opening canopy, retractable wheel, drilled hole in tail skid axle for location, or whether the wing is in two or more pieces. Is there provision within the design for a vertical steadying pole or framework, or is the fuselage intended to sit in a cradle bolted to the floor?

A final major decision is: Do you want to be able to get into the trailer once the sailplane is nicely tucked away for the night? If you cannot get into the cockpit without taking everything out again you will no doubt rue it when your partner at some regionals has forgotten to take out the batteries for overnight charging, or even left the horizon on, the low hum being just audible as you pull into the trailer park.

## 2) PUTTING PENCIL TO PAPER: THE DANGEROUS MOMENT

If you have a drawing board available, then this can be a great help. I always used one when designing my trailers, and this was done on an old elephant-sized board propped up on a table.

The first thing to do is to decide the overall dimensions of the box. You take the longest piece. Suppose it is one wing. Make sure that the dimension you took so carefully in the hangar does include the bit of spar sticking out at the root. The span of the glider will be less in this case than twice the dimension that you have. This test should be applied. If it is not, then you have forgotten the overlap on the spar. The inside length of the trailer must be more than this dimension; I would add some two inches to be safe, for you may design a recessed door at a later stage, and this can easily take an extra inch.

You know the inside length, so now you have to add the thickness of the box frame itself. On wood boxes this is usually 1in x 1in or 2in x 1in plain square

edge timber with a ply facing. This should be added to the nett length that you have established. List these lengths on a sheet of foolscap.

Now examine the fuselage and decide just how it is to be fitted. If the wing roots and nose of the fuselage are all at the rear of the trailer, then you are going to have to butt the axle well aft to balance the thing. This will mean that your turning circle will be reduced, with increased risk of cutting-in on corners, colliding with traffic islands and so on, but also you will find that the trailer is very nose heavy when empty and a bit of a pig to move single-handed. It is for these reasons that the silent concensus has placed wing roots at the rear (for ease of loading) and the fuselage nose forward.

In this way you can get the wheel in the mid-point of the box and move the fuselage to give the best weight distribution for easy towing. Generally, this works out that the centre of gravity of the loaded trailer is a short distance forward of the axle, and gives a loaded weight of 20lb on the car hitch. There is very little difference between the loaded and unloaded conditions with this layout, and, as the French say, *"Pas de problem"*.

So we have arrived at a point where we can see the way the trailer is to be laid out, how long it is, and where the wheels will come. We know the fin is at the rear and thus the overall height of the box can be established. To save you mental stress, it will be about 4ft high and 4ft wide. To add a little style to the thing, the front eight feet of roof can be lowered at the front end to 3ft, and this gives a reduced frontal area and slightly less wind resistant. It will probably bring the trailer into the turbulent wake of the car, and this will be an advantage.

### 3) MATERIALS TO HAND

A brave journey to the local woodyard has established that you can get waterproof resin bonded plywood in 8ft x 4ft sheets. This is the stuff for the outside, and I feel it should not be less than 3mm (⅛in) thick, or it will weave in practice, and give a shoddy look to your


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trailer very soon. You will have to glue it up, and Aerolite is the stuff; but you all know about that.

The main frame will be good, knot-free pine of sections 1in x 1in and 2in x 1in. This can be supplied by your timber merchant cut to size. The overall cost of the ply and timber will be about £50 nett.

The undergear and hitch will cost about £40 and the lighting and cable will be about £12. Paint will amount to about £10 if you buy new, but usually the finished work can be finished in paint at a lesser cost if you look around. To this cost you may have to add the cost of the steel underframe if you fit one. Some steel work is required to attach the hitch to the box of the trailer.

The axle can be bolted to the lower longeron with four ⅜in coach bolts. Note that the lower longeron should be locally thickened to support the concentrated load into the trailer box at this point.

## 4) STRESSING THE TRAILER BOX

We now have the full amount of information to stress the trailer box. This consists of: 1) Overall dimensions, inside and out; 2) weights of the components; 3) weight and size of materials; and 4) approximate costs of the total material.

As I said earlier, the wing's position and centre of gravity has little scope for adjustment, so put the loads at the tip and root into the line drawing of the trailer box. Put in the reaction load for the axle at mid-point. Put in the hitch load at the line of action of the hitch. These two figures should add up to the total weight of the trailer and sailplane, less the weight of the axle and wheels.

Now, the position of the fuselage can be established by simple moments. This will tell you where the loads are to be taken on the trailer box. If you assume that this is all, then the trailer will not be strong enough. These loads must be multiplied by a factor of five to give a reasonable structure. For simplicity, the loads are all assumed to be taken in the pine frame, with an ultimate stress in pine of tensile 8,000psi and compression 4,000psi.

The position of the supports in the box are determined by the size of the plywood panels to be used. These panels are spliced at 8:1. This means a 1in


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wide splice on an ¼in thick ply. Thus the centre of the verticals occur at 95in centres. The ply will need a diagonal stiffener on this length between the uprights.

Now that the frame is defined, a force diagram is required to establish the loads in the structure. This is quite easy. It will be seen that the greatest loads occur in the middle, over the wheels, as would be expected.

## 5) ADDITIONAL POINTS

The roof has to be curved to stiffen the panel and to allow the rain to run off. But these roofs are made out of the ubiquitous 8ft x 4ft panels, and as they are radiused, the sides of the trailer must be bent inwards at the top to ensure that the roof length along the radius is not more than four feet.

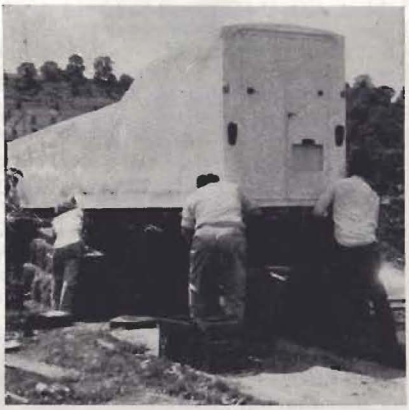
The floor is made of the ⅜in or ¼in ply stiffened at the verticals and at the point loads of the fuselage wheel and the wing roots. It should be painted with bitumen paint underneath, and varnished on top, as should the whole inside of the trailer. As they stay outside most of the time, damp protection is most important.

The wiring diagram is standard to all trailers. The fittings can be obtained from most accessory shops. These days, two triangular reflectors are required, and so are the four side reflectors and marker lights. Internal lights are easily connected into the circuit if the small push-in connectors are used. I prefer these, for they are easy to fit and look well.

So now you have your very own trailer. It should weigh about 6cwts and tow well. It should be a credit to your syndicate and have taken you about 200 hours' work.

# . . . OR TOO MUCH MONEY

By R. H. D. RUCK



WHAT is this? A very short field landing? No, not quite, just one more side to flying a glider on a shoestring.

Two likely lads purchase a glider, no trailer. Bright spark me says I'll build a trailer (never even built a rabbit hutch before).

"What with?" says my chummy. "No funds, rent spent."

"With rubbish," says I, on a budget of £20.

INGREDIENTS

Many visits to scrap yard supermarkets.

| | £ p |
|---|---|
| Upright formers from Cadbury's cake vans | 0.00 |
| Top formers from two BMC LD vans | 0.00 |
| Plywood from umpteen vans | 0.00 |
| Lights | 0.00 |
| Bulbs | 0.00 |
| (keep brackets, screws, bolts—needed) | 0.00 |

Buy mini-van with good rear subframe for £5. Keep rear subframe and sell rest for £10. Credit £5.

| | £ p |
|---|---|
| Aluminium door surround and guttering from 1937 Albion Lorry | 0.00 |
| Roof air vents from 5cwt Ford Thames van | 0.00 |
| Lucky purchase of six sheets ¼in. fibre glass, 14ft by 9ft @ £1.00 each | 6.00 |
| Resin and glue | 5.50 |
| Shop around for discontinued paint lines | 3.50 |
| Welding on extended Mini subframe and various | 5.00 |
| Two good tyres and tubes | 5.00 |
| Some bolts, screws and nails we had to purchase | 1.50 |

(Sorry, chummy, budget is looking sick.)

| | |
|---|---|
| Enough sheets of ¼in plywood from packing cases for floor from a helpful friend =one double Scotch | 0.32 |
| Second-hand ball hitch | 2.25 |
| Pints of beer for various bits from friends approx. | 1.00 |
| Angle iron from bedsteads | 0.00 |
| | 30.07 |
| Credit from Mini | 5.00 |
| | 25.07 |

Now, commandeer back lawn, get up at five o'clock each morning, do three hours banging before normal duties for three months. Partner comes to help on different days, but has to be watched if there is fresh cream for sustenance because he will scoff the lot.

Bless an understanding wife, borrow two dozen hay bales, and you get the picture at the beginning of the article—heaving a 30ft trailer over a 4ft wall.

Out through my good neighbour's patch, and some very satisfactory road tests.

PS: Many thanks to many friends and especially the previous owner of the glider for lending us his trailer until his shiny new Libelle arrived.

PPS: No TRAILER ORDERS TAKEN.

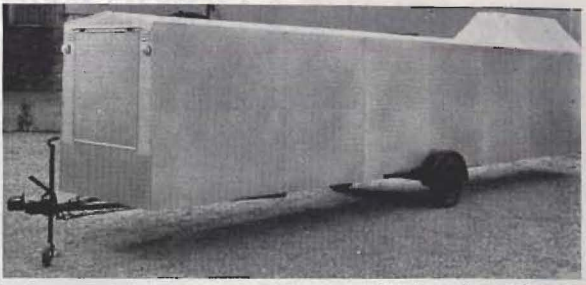
## EQUIPMENT NEWS

### PZL INSTRUMENT DEVELOPMENTS FOR 1972

"MINIATURISED" variometers to suit the smaller panels are being developed by PZL; they will be the same size as the firm's miniaturised turn and slip indicators, under 3in. in diameter. A variometer registering from 0-20kts is also being produced, and a lighter and more compact oxygen system is being developed. A 9-volt turn and slip indicator is also being considered. Details from John Strugnell, Daltrade Ltd, 110 Cannon Street, London, EC4, telephone 01-623 5464, or at home evenings telephone Bourne End 23458.

## METAL TRAILER AVAILABLE

LANDSMAN'S of Huntingdon has introduced a metal glider trailer. A unit with interior dimensions 26ft 3in long, 4ft 2in wide and 4ft 6in high (6ft 3in over tail at rear), complete with jockey wheel, full road lights and two interior lights will cost £346 plus £50 for interior fittings. Units which need to be longer will only add a few pounds to the price, Mr D. Spreckley of Landsman's says.



*Landsman's metal trailer*

It was decided to add this enterprise to the company's business (which is the building of commercial mobile units like site offices and laboratories) after Mr Spreckley had joined the Coventry Gliding Club and was "pretty shaken by the hotch-potch of amateur-built monstrosities there were around."

Features include the fitting of "anti-gatepost" guards in front of the mudguards and the tail-carrying section being built high enough for a man to stand up in (giving some protection in bad weather). The wing-tip is carried in a sling, the base of which is made of heavy carpet material so that it conforms to the precise shape of the wing. These run in on King sliding door fittings with nylon runners—"This seems a better idea than the trolley."

Details from D. Spreckley, Landsman's (Co-ownership) Ltd, Buckden, Huntingdon PE18 9UJ.

## GLASS TRAILERS FROM TORVA

TORVA delivered its first glass trailer to a customer at the end of September. This was a streamline form on the 4ft x 4ft section basis and is designed for the range of 15m glass sailplanes currently available.

The undergear is the Rubery Owen 15cwt unit and the hitch the 50mm B&B unit with integral jockey wheel.

The main design feature is the rear "Cam" shell door which gives full width access to the trailer. There is also an access door at the front end, which is streamlined to give less wind resistance when towing, thus making a significant reduction to towing petrol costs and horsepower needs, Torva says. It can be made to accept a 17, 19 or even 22m glider.

Details from Torva Sailplanes Ltd, Pavilion Square, Scarborough, Yorks.

## RANGE OF WOOD/GRP TRAILERS

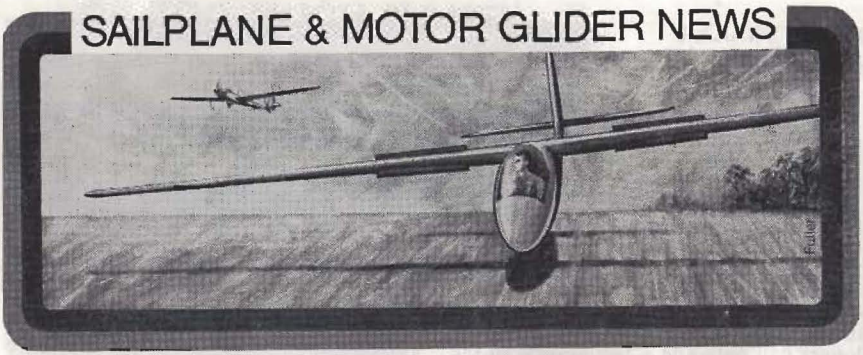
A RANGE of trailers designed specifically for the current plastic gliders has been introduced by Dr A. J. Watson, Glass Trailers, 6 Park Road, Chandler's Ford, Hants. Construction is of glass reinforced plastic and wood, the whole structure being finally sheathed in GRP to produce great weather resistance and a surface requiring only an occasional wash. Corrosion and condensation are minimal, the manufacturer adds.

They are streamlined and have a rear access door. Other features include Rubery Owen independent suspension, rod-operated over-run brakes, B&B combined hitch and prop stand (jockey wheel optional) and lighting and reflectors complying with current regulations.

Prices: "Standard" (26ft 9in long for Libelle, Std Cirrus, ASW-15, LS-1, etc) £365; "Open" (32ft long for Cirrus, Kestrel, Phoebus, etc.) £425; "Automatic loading fittings" £35-50.

Floor guide rails are normally fitted but can be omitted to order.

★ ★ ★



# TORVA TO DATE

By J. C. RIDDELL

WORK at Torva Sailplanes has gone ahead to jig up the production series of the Torva range. We are particularly keen to establish interchangeability of components and speed of assembly so that low costs can be achieved.

Our experience at the Husbands Bosworth Nationals gave us a clear sight of the way we had to develop Torva. We are taking the fixed wheel version that was called the "Standard" and have re-christened it the "Sprite".

The Sprite is optimised for high intensity operation, in clubs and schools where ease of ground handling is most important. This feature, linked with the good thermal climb performance and substantial airbrakes, will mean that clubs will be able to give their newer members, trained on the Falke, single-seat soaring experience in a modern glass ship.

For the private owner, we have taken the Standard version and are fitting it with water ballast, and are retaining the retractable wheel. This is renamed the "Sprint", and is optimised for racing. This will give a sailplane of wide spectrum performance: You can load up with water, belt down the track, catching them all up and, on the final leg when the thermals are dying, dump your water ballast and float home at max glide above the lot.

Structural testing is now in hand and we are building a rig for the "ultimate strength" test of the wings. We loaded the prototype wings before we flew it and found them to exceed our expectations for strength. The fuselage was tested to destruction inadvertently when landing at Sutton Bank, and the structure failed progressively, showing the excellence of the design. It is not intended to rebuild this fuselage, and it will be used as a mock-up to work out the cockpit layout.

Detail modifications have been carried out on the fuselage. We have increased the wing incidence to improve forward vision, and we have raised the tailplane to improve ground clearance.

It is interesting to note that there have been a number of accidents to rear fuselages due to the whiplash couple from the T-tail configuration; the lower set tailplane—as on Torva—does not have this difficulty.

In our case, the rear fuselage is designed to meet the BCAR Section E "Asymmetric tail load case", whereas our foreign friends do not have this requirement.

*Christmas Greetings*
*& Best Wishes*
to all our gliding friends from
**BONNIE & CHARLES BENTSON**
6200 Wiesbaden, Rueckertstrasse 1,
West Germany. Tel. Wiesbaden 84966

# SIGMA PROGRESS

By FRANK IRVING

THIS is a very brief note on Sigma's progress up to the end of October; the intention is to provide regular reports in future issues at rather greater length.

Sigma first flew at Cranfield on September 19 in the hands of Nick Goodhart—flaps out, undercarriage down and door removed. Three problems immediately became apparent, two of which were rather unexpected. The noise level in the cockpit was so high as to discourage coherent thought; almost full left aileron (but no roll spoiler) was required to keep the wings level and there were indications of rudder oscillations. Since RAE had predicted rudder flutter, the last came as no great surprise. The noise level was partly due to the absence of a solid bulkhead behind the cockpit and has been greatly diminished by inserting a sandwich diaphragm, although the source of the noise remains to be tackled. The aileron situation was due to some fortuitous wing twist, of obscure origin, and was greatly improved by unriveting eight feet of leading-edge, unwinding the appropriate twist and putting it together again.

Since then, six more flights have been made by Nick, Lorne Welch and myself. The undercarriage has been raised—and lowered—several times, but the flaps have not yet been retracted because the rudder flutter problem is not yet resolved. We know what we are trying to do, and Sigma may well be sporting a vast and ungainly mass balance on its next appearance. The ultimate idea is to use a damper in the rudder circuit to reduce the weight and add more elegance.

Other impressions, necessarily tentative because we have barely exceeded 60kt so far, are:

1) The elevator feel is not unlike that of other modern gliders. The response feels a little slow, but not unduly so.

2) As expected, the ailerons alone at speeds up to 60kt are not particularly effective, but using the roll spoilers as well produces very gratifying results.

3) The view, flaps extended, is good.

4) Landing has presented no problems, provided the pilot remembers to land about two feet higher up than usual.

5) Also as expected, the approach


## THE A-Z OF GLIDERS

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

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

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

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

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

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

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**SEGELFLUGZEUGBAU**
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spoilers are less effective than airbrakes. The tail parachute has given mechanical problems, hopefully now resolved.

6) Rigging is quite straightforward but the bits are undoubtedly heavy.

To summarise, it has sundry snags, like any other prototype. None of them are insuperable and we know how to fix them. Some, like improving the fit of the flaps and spoilers, are matters of careful and rather tedious fitting. Others, like the rudder damper, require equally careful thought and design.

Little attention has been given to the performance so far, but it seems to float about in a very satisfactory manner and the stalling speed is pretty close to that predicted. The omens seem favourable and we await with bated breath the first flap retraction.

On Saturday, November 13, Sigma's flaps were put in and out successfully in flight. ANN WELCH

## ORLICE — CZECH STD CLASS GLIDER

A BEST glide ratio of 38:1 is claimed for the VSB-66-S "Orlice" Standard Class all-wood sailplane, the prototype of which flew late in 1970.

Features include DFS-type airbrakes, wing-tip end plates, water ballast tank in fuselage aft of the cockpit, all-moving V-tail and a non-retractable wheel. The first production models are expected to be completed in 1973. Details from Dipl Ing Milan Forejt, Pradlacka 30, Brno, Czechoslovakia.

TECHNICAL DATA

| | |
|---|---|
| Span (m) | 15 |
| Wing section, Eppler STF 863 615 | |
| Wing area ($m^2$) | 10.5 |
| Aspect ratio | 21.4 |
| Wing loading (kg/$m^2$) (m) | 36.2 |
| Empty weight (kg) | 260 |
| Max take-off weight (kg) | 380 |
| Glide ratio at 94km/h (51kts) | 38 |
| Min sink (m/sec) at 83km/h | 0.6 |
| Max speed (km/h) (rough air) | 200 |

## NEW GLIDERS IN THE LATEST 'JANE'

GLIDERS appearing for the first time in *Jane's All The World's Aircraft* in the 1971-72 edition include the following:

*Czechoslovakia*: VSB-66-S Orlice Standard Class sailplane (see above).

*West Germany*: RFB Sirius II two-seater with ducted fan auxiliary engine; Nimbus 2; ASK-16 two-seater motor glider.

*Japan*: Tohoku Cumulus tandem two-seater;

*Rumania*: IS-7/12 two-seater; IS-18 16m single-seater; IS-28 two-seater; IS-29B and D high performance single-seaters.

*Switzerland*: Pilatus B-4.

*United Kingdom*: Sigma; Torva.

*United States of America*: HP-16.

(*Jane's All The World's Aircraft*, published by Sampson Low, Marston & Co Ltd, 1971, price £12.50.)

## NEW POLISH TWO-SEATER

THE SZD-35 Bekas tandem two-seater basic trainer has been produced as the result of an agreement between Poland and East Germany and is intended to replace the rather outdated present home fleet. It is also regarded as a potential export earner, and thus certain British civil aviation requirements have been incorporated in the design.

Construction is conventional; mixed wood and glass fibre, with particular attention being paid to ease of repair and maintenance. The first prototype was flown in November 1970 and the second prototype in March 1971. Deliveries of the production version are scheduled for the end of 1972.

TECHNICAL DATA

| | |
|---|---|
| Span (m) | 15.9 |
| Wing area ($m^2$) | 19.8 |
| Aspect ratio | 23.6 |
| Empty weight (kg) | 310 |
| All up weight (kg) | 510 |
| Glide ratio at 84km/h | 27.4 |
| Min sink (m/sec) at 74km/h | 0.82 |
| Stalling speed (km/h) | 62 |
| Max speed (km/h) | 200 |

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*Phone: Honiton 2940*

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**TRAILERS**

## BUTTERFLY — 13m GLIDER IN KIT FORM

BUTTERFLY, a single-seater, high performance 13m sailplane with an anticipated glide ratio of 36:1 intended for home construction has been designed by Wolfgang Ketterer of Germany.

It features a cantilever mid-wing of glass reinforced plastic fitted with Schempp-Hirth type brakes on the top surface only. The fuselage (pod and boom type) is of tubular steel with the front part encased in a glass fibre shell while the rear part is of riveted light metal without frames or stringers. The GRP V-tail is mass-balanced.

Butterfly has been designed for weak weather conditions; good flying characteristics and ease of handling have been emphasised. A prototype has not, as yet, been built; cost is estimated to be about DM15,000. Details from W. Ketterer, Aachen, Oppenhoffallee 173, West Germany.

TECHNICAL DATA

| | |
|---|---|
| Span (m) | 13 |
| Wing section FX66-S-196 | |
| Wing area ($m^2$) | 8.58 |
| Wing loading ($kg/m^2$) | 29 |
| Aspect ratio | 19.7 |
| Empty weight (kg) | 140 |
| All up weight (kg) | 250 |
| Glide ratio at 87km/h | 36 |
| Min sink at 70km/h (m/sec) | 0.6 |
| Stalling speed (km/h) | 65 |
| Max speed (km/h) | 220 |

## COBRA 15 AVAILABLE IN BRITAIN NEXT YEAR

DALTRADE Ltd has taken over the agency in Britain for Polish gliders from Norco Aviation Ltd. The Cobra 15 will be available in 1972, with a demonstration model (based at Booker) due to arrive after Christmas, 1971. The price of this Standard Class glider which finished second and third in the World Championships at Marfa will be £2,800 landed in the UK. Instruments include two variometers, ASI, turn and slip and compass. An oxygen system can be supplied for £110. (For technical data, see S & G, October 1970, p358).

The Cobra 17 will not be produced. The Pirat and Bocian are still in production, and the Foka 5 will continue to be built until the Cobra is in full production (possibly about March, 1972). The price of the Foka 5 is £2,310 landed in the UK with instruments. The Bekas two-seater (see p500) will not be available for 12 months.

Details from John Strugnell, Daltrade Ltd, 110 Cannon Street, London, EC4, telephone 01-623 5464, or at home evenings telephone Bourne End 23458.

## MODIFIED VERSION OF SPERBER BEING DEVELOPED

THE RF-55 motor glider, a modified version of the RF-5B Sperber (S & G, August 1971, p310), is being developed by the Sportavia-Putzer Co. in response to demands from the USA and other export markets for a powered sailplane which can fulfill FAA registration requirements. A Franklin 60hp 2-A-120-A engine, approved by the FAA, is being fitted and tests are now being carried out. The company expects that the performance will probably "largely correspond to that of the Sperber." Technical data for the latter is given below.

| | |
|---|---|
| Span (m) | 17.02 |
| Wing area ($m^2$) | 19 |
| Aspect ratio | 15.25 |
| Wing loading ($kg/m^2$) | 35.79 |
| Empty weight (kg) | 460 |
| Max takeoff weight (kg) | 680 |
| Power unit, Sportavia-Limbach SL 1700 E | |
| Power (hp) | 68 |
| Max power loading (kg/hp) | 10 |
| Rate of climb, power on (m/sec) | 3 |



*RF-5B Sperber*

# NEW FROM GQ

## LIGHTWEIGHT GLIDER PARACHUTES





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

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

YOUR CONTACT: R. N. V. CHERRETT

**RFD-GQ LIMITED.**

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RFD-GQ

# GENERAL & BGA NEWS

## 1972 NATIONALS AND THE 1974 BRITISH TEAM

SELECTION of the British team to compete in the World Championships in Australia in January 1974 will be made following the *1972* competitions and *not* in 1973. Tom Zealley, Chairman of the Flying Committee, says that this is necessary in order to provide sufficient time for the gliders selected by British team pilots to be acquired, instrumented and practice-flown. "It is felt that aspiring British team pilots should be aware of this."

The decision was ratified by the Executive Committee on November 10. (See also p505.)

The structure of the 1972 Nationals will be unchanged from that of 1971; the Open and Standard classes will be held at Shobdon airfield from May 27 to June 4 and the Sport and Club classes at Dunstable from August 5 to 13.

Each of the four classes will again be considered of equal rank, and pilots may only compete in one championship.

Entries must reach the BGA office by January 31, 1972, and must be accompanied by the deposit fee of £3 together with the pilot's first and second choice for the two championship events.

## MOTOR GLIDERS: C OF A AND AIRFIELD LICENSING EXEMPTIONS

CERTAIN motor gliders have been granted exemption from the general purpose Certificate of Airworthiness by the Department of Trade and Industry, provided that they are operated by specified gliding clubs. These clubs, 14 in number, have been granted exemption from the regulations so as to permit training to be carried out in motor gliders at their unlicensed airfields.

The machines to which the CofA exemptions are applicable are, the Department states: Scheibe SF-25; SF-25B Falke; SF-27; SF-27M; Slingsby T-61A; Slingsby Twin Cadet Mk 1 and Schleicher ASK-14.

The clubs are Cornish; Coventry; Doncaster & District; Dorset Flying Club and Aviation Centre; Lakes; Lasham Gliding Society; London; Norfolk; Scottish Gliding Union; Ulster & Shorts, West Wales Gliding Association; Worcestershire; Wycombe Gliding School; Yorkshire and the British Gliding Association (which operates a Falke for the National Coach).

The BGA will be able to issue instructor ratings.

## AIRSPACE MAJOR ITEM ON EXECUTIVE COMMITTEE AGENDA

THE subject of airspace occupied much of the BGA Executive Committee meeting held on October 13. The difficult problem of the Lyneham and Brize Norton areas was still unsolved and occupied much of Airspace Committee Chairman John Ellis's time. It was


## BGA CHRISTMAS CARDS

Our Christmas Card for 1971 is taken from a most attractive black and white photograph of a Libelle slope-soaring over snow and pines in the U.S.A.

Approximate size 7"x4½". Price 50p for a packet of 10 cards and envelopes. Postage and packing 8p for the first packet and 5p for each additional packet.

Order your cards now to avoid disappointment later! Also ask for our latest "What to Buy" leaflet for details of useful Christmas gifts.

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decided that his presence at the important conferences on national air traffic control should be supported by that of the National Coach, Bill Scull. The recent expulsion of the "Aquila" civil service gliding club from the disused airfield at Turweston provided another uncertainty for the future.

The German Aero Club's proposal that a European Club Class competition be instituted was discussed, and it was agreed that the idea should be supported in principle, although for obvious reasons the administrative arrangements would have to be made by Continental organisations.

It was confirmed that the AGM of the BGA would be held in Buxton, Derbyshire, on March 25, 1972, and that the annual ball would be held at the Palace Hotel. Stan Armstrong, of the Derbyshire & Lancashire club, is in charge of the local arrangements.

## BRITISH TEAM PLANS

PLANS for the British team to fly at Vrsac next July are taking shape under the managership of Gerry Burgess.

Nick Goodhart hopes to fly Sigma in the Open Class and George Burton will fly the 19m Kestrel with the carbon-fibre spar. Bernard Fitchett hopes to be able to obtain a Std Cirrus, while John Cardiff will fly a Std Libelle, bought by the BGA from Slingsbys.

Mike Garrod will be the team's Met man, John Large the team treasurer and Chris Simpson deputy team manager.

The Rover Company is loaning the team four Range Rovers for a period of two months from the end of May, and Frank Irving is making his own Range Rover available in addition.

"We are working on the assumption that all the team will be participating or flying *hors concours* at the Open/Standard Class Nationals at Shobdon," Gerry Burgess says.

## STEVE WHITE WINS NATIONAL LADDER

STEVE WHITE of the Airways club has won the National Ladder for 1970-71, with a record total of 6,309 points, thus winning the Enigma Trophy. He achieved this total from four flights:

**Electechniques, Selsey, Stroud, Glos.**
**Tel: 045-36 3129**

Solid state glider radio, single channel, 130.4 MHZ. Complete with Microphone and aerial plug. Price: £49.50. Send for details.

A 500km triangle UK record flight, a height gain of 24,300ft, a 303km triangle and a 210km triangle.

Chris Lovell, Surrey & Hants club, was second with 6,025 points. As he made his flights in club gliders, he wins the L. Du Garde Peach Trophy.

There were 178 pilots from 12 clubs producing a total entry of 394 flights.

The ladder for 1971-72 is now under way, and entries should be sent to Michael P. Garrod, 71 Corwell Lane, Hillingdon, Middlesex. A proposed change in the scoring of cross-country flights (not height gains) is to be discussed by the Flying Committee and Ladder Stewards will be circularised if any change is made.

| *Leading pilots* | | *Club* | *Pts* | *No of flts* |
|---|---|---|---|---|
| 1 | S. A. White | Airways | 6309 | 4 |
| 2 | C. D. Lovell | Surrey & Hants | 6025 | 4 |
| 3 | A. D. Purnell | Surrey & Hants | 4886 | 4 |
| 4 | M. P. Garrod | London | 4040 | 4 |
| 5 | J. J. Ellis | Airways | 3926 | 4 |
| 6=M. D. Till | | London | 3238 | 4 |
| 6=P. Pozerskis | | London | 3238 | 4 |
| 8=B. Rood | | Coventry | 2952 | 4 |
| 8=K. Haynes | | Coventry | 2952 | 4 |
| 10 | J. R. Jeffries | London | 2941 | 4 |
| 11 | P. Partridge | Coventry | 2892 | 4 |
| 12 | S. G. Davies | Airways | 2880 | 4 |

## AUTUMN MEETING OF MEMBERS

ABOUT 35 attended the Autumn Meeting of Members of the BGA, held at the Kronfeld Club on October 25.

Ken Wilkinson outlined the progress being made towards motor glider legislation satisfactory to the BGA (see p503), Bill Scull reviewed his activities as National Coach with the Falke, John Ellis detailed the airspace erosion situation, especially in regard to the proposed Lyneham–Brize Norton SRZ, Philip

Wills described development towards a new BGA headquarters ("we are actively pursuing the question of decentralising from London"; building offices at Booker was a possibility) and Joan Cloke explained the new Sports Council administration of local grants. Regional activities were also discussed.

## RECORDS HOMOLOGATED BY EXECUTIVE COMMITTEE

THE following records were homologated by the BGA Executive Committee at its meeting on October 13:

*British National* 300km triangle speed, M. Simons, Kestrel 17, 114.6km/h, 24.1.71 (in Australia).

*United Kingdom* 500km triangle speed, S. White, Std Cirrus, 77.4km/h, 28.4.71; 500km triangle (feminine), Anne Burns, Cirrus, 67.9km/h, 28.4.71; goal-and-return distance, D. Lee, Std Libelle, 520.5km, 18.7.71; 300km triangle speed, R. Jones, Std Cirrus, 81.9km/h, 17.7.71.

*United Kingdom (motor glider)* 100km triangle speed, I. Strachan, 57.3 km/h, 13.6.71; 100km goal speed, I. Strachan, 85.7km/h, 16.7.71 (SF-27M).

## MOTOR GLIDERS ALLOWED IN BRITISH COMPETITIONS

IT was agreed at a BGA Flying Committee meeting on October 24 that motor gliders could enter BGA competitions as full entries provided that during the competition the engine was completely locked after self-launching. The recommendation has been ratified by the BGA Executive Committee.

## SOARING GROUP AT SLEAP?

A NEW soaring group hopes to start at Sleap airfield, 10 miles north of Shrewsbury. Launching will be by aerotow. The site is occupied by the Shropshire Aero Club, and visiting glider pilots are asked to contact Sleap tower on 130.4MHz for landing permission. Private owners wishing to operate from Sleap should contact Ian Paul, Fairfields, Cross Lanes, Oscroft, Nr. Tarvin, Chester, Cheshire, telephone Tarvin 40787 (evenings).

## RIKA HARWOOD AWARDED TISSANDIER DIPLOMA

THE Tissandier Diploma has been awarded to Rika Harwood, in consideration of her long association with gliding in general and as Associate Editor and Production Manager of *Sailplane & Gliding* in particular.

## REGIONALS, 1972

AT the time of going to press, the following Regional Competitions had been fixed for 1972:

Booker, May 13 to 21; Nympsfield, June 10 to 18; Sutton Bank, June 24 to July 2; Compton Abbas, July 8 to 16, and Lasham, July 22 to 30.

## NEWSPAPER OFFERS TO SUPPORT 1974 TEAM SELECTION CONTEST

THE *Daily Telegraph* has offered to support a special competition to aid selection of the 1974 British Team (see p503). This is likely to take place in late August and to be limited to about 15 entrants.

# GLIDING CERTIFICATES

### DIAMOND GOAL

| *No.* | *Name* | *Club* | *1971* |
|---|---|---|---|
| 2/400 | M. Pocock | Bath/Wilts | 18.7 |
| 2/401 | B. W. T. Rood | Coventry | 18.7 |
| 2/402 | R. W. Harding | London | 18.7 |
| 2/403 | T. A. S. Rosie | Southern Commd. | 18.7 |
| 2/404 | D. I. Lewis | USA | 1.8 |
| 2/405 | D. Bowden | London | 2.5 |
| 2/406 | I. C. Woodhouse | Coventry | 18.7 |
| 2/407 | B. B. C. Watson | Dorset FC | 17.7 |

### GOLD C COMPLETE

| *No.* | *Name* | *Club* | *1971* |
|---|---|---|---|
| 311 | B. T. W. Rood | Coventry | 6.8 |
| 312 | A. A. Vincent | Essex | 8.8 |

### GOLD C HEIGHT

| *Name* | *Club* | *1971* |
|---|---|---|
| B. W. T. Rood | Coventry | 6.8 |
| A. A. Vincent | Essex | 8.8 |
| G. G. Szabo-Toth | Bristol | 19.10.70 |
| A. F. Murray | SGU | 1.10 |
| P. Wildbur | Surrey/Hants | 1.10 |
| T. G. Armstrong | Fulmar | 30.5 |
| M. T. Carr | Surrey/Hants | 1.10 |
| P. Lazenby | Yorkshire | 7.10 |

### GOLD C DISTANCE

| *Name* | *Club* | *1971* |
|---|---|---|
| R. J. Steward | Burton/Derby | 17.7 |
| M. Pocock | Bath/Wilts | 18.7 |
| B. W. T. Rood | Coventry | 18.7 |
| R. W. Harding | London | 18.7 |
| T. A. S. Rosie | Southern Commd. | 18.7 |
| D. Bowden | London | 2.5 |

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| 2925 | D. S. Currie | Thames Valley | 16.8 |
| 2926 | R. C. Malings | Bicester | 17.7 |
| 2927 | D. A. Head | Surrey/Hants | 25.8 |
| 2928 | D. R. Morris | Dorset | 27.8 |
| 2929 | S. Warren | London | 27.8 |
| 2930 | J. B. Ashmore | Doncaster | 27.8 |
| 2931 | N. K. Brown | London | 27.8 |
| 2932 | I. T. G. Godfrey | London | 28.8 |
| 2933 | J. C. Cornish | Southdown | 30.8 |
| 3011 | D. P. Campbell | SGU | 17.7 |
| 3012 | J. Hirst | Surrey/Hants | 16.8 |
| 3013 | P. A. Ramsden | Surrey/Hants | 18.7 |
| 3014 | R. L. Calmels | London | 30.7 |
| 3015 | K. B. James | Coventry | 1.8 |
| 3016 | G. F. Johnson | Four Counties | 30.7 |
| 3017 | R. J. Brocklehurst | Avro | 16.8 |
| 3018 | E. C. Wright | Wrekin | 17.8 |
| 3019 | M. H. Hassell | Thames Valley | 13.7 |
| 3020 | S. J. Cushing | Essex | 30.8 |
| 3021 | J. E. Selman | Imperial College | 16.8 |
| 3022 | G. A. Young | Bicester | 5.9 |
| 3023 | P. Charnell | Kestrel | 4.9 |
| 3024 | K. W. Picton | London | 30.8 |
| 3025 | C. A. Harlow | Wrekin | 27.8 |
| 3026 | W. A. Hughes | Derby/Lancs | 25.4 |
| 3027 | A. E. Jennings | Surrey/Hants | 12.9 |
| 3028 | B. J. Powiecki | Polish | 5.9 |
| 3029 | S. Knox | SGU | 18.7 |
| 3030 | W. J. Cummings | Wrekin | 27.6 |
| 3031 | I. Lancaster | Bicester | 11.9 |
| 3032 | R. Bourne | Yorkshire | 4.9 |
| 3033 | T. Jackson | Surrey/Hants | 11.9 |
| 3034 | C. E. Griffiths | Surrey/Hants | 12.9 |
| 3035 | J. P. Sutherland | Four Counties | 11.9 |
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| 3037 | F. G. Wilson | Phoenix | 9.9 |
| 3038 | R. J. Cohen | Eagle | 22.7 |
| 3039 | S. T. Johnston | Two Rivers | 13.7 |
| 3040 | K. S. Whiteley | Cambridge | 12.9 |
| 3041 | R. P. Bond | Chilterns | 11.9 |
| 3042 | D. K. Allen | Anglia | 11.9 |
| 3043 | J. Murray | Four Counties | 24.7 |
| 3044 | Janet Walford | Thames Valley | 11.9 |
| 3045 | J. Dyer | Surrey/Hants | 12.9 |
| 3046 | P. S. King | Thames Valley | 12.9 |
| 3047 | T. Gore | Worcestershire | 12.9 |
| 3048 | B. B. Essam | P'bro/Spalding | 15.9 |
| 3049 | L. J. Garey | Enstone | 15.8 |
| 3050 | J. Bailey | London | 25.8 |
| 3051 | J. Mast | Bristol | 12.9 |
| 3052 | S. E. B. Field | Two Rivers | 15.7 |
| 3053 | M. P. Osborn | Cranwell | 11.9 |
| 3054 | M. H. Smith | Kestrel | 12.9 |
| 3055 | J. W. Robertson | SGU | 23.9 |
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| 3057 | A. S. King | Norfolk | 9.9 |
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| 3059 | T. A. Smith | Two Rivers | 5.9 |
| 3060 | D. C. Parrish | Bicester | 12.9 |
| 3061 | D. F. Snelling | Norfolk | 12.9 |
| 3062 | P. J. Rowney | Two Rivers | 5.9 |
| 3063 | R. T. Bromage | Cotswold | 29.7 |
| 3064 | C. I. Cowley | Four Counties | 1.10 |
| 3065 | L. S. Joiner | Angus | 10.10 |
| 3066 | D. J. Lawrence | Surrey/Hants | 7.10 |
| 3067 | A. Cole | Surrey/Hants | 25.8 |
| 3068 | K. Hartley | Bannerdown | 17.5 |
| 3069 | J. D. Owen | West Wales | 16.5 |
| 3070 | R. B. Smith | Norfolk | 2.5 |
| 3071 | J. McBeth | Northumbria | 1.6 |
| 3072 | R. W. Hill | Norfolk | 1.5 |
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# OVERSEAS NEWS




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

## JUSTIN WILLS HIGHLY PLACED IN ITALIAN CHAMPIONSHIPS

FOREIGN visitors to the 1971 Italian Nationals, held at Rieti from August 2 to 14, included one from Britain, Justin Wills, youngest son of former world champion Philip Wills. He finished second in the Standard Class, and Jochen von Kalckreuth, a German competitor, writes in *Aerokurier* of "the outstanding performances of Justin Wills in his Libelle, who in his first experience of mountainous country became stronger day by day". The Italian Brigliadori won in this class; but Pronzati, who started as the favourite, had the bad luck to take an unsatisfactory turning-point photograph on the second day, and this put him back to finish in third place with his Phoebus A.

Temperatures were the highest for ten years, the Met man, Plino Rovesti, said; they reached 32-35°C (90-95°F) daily, and cockpit temperatures reached 45°C (113°F) before take-off. Thermals were correspondingly good, and two no-contest days out of 12 were not due to weather, but simply to give the pilots a rest.

Walter Neubert from Germany, who looked like winning last year's World Championships till he landed too far from civilisation, made no such mistake this time, and won the Open Class with a total score of 9,794 points in 10 contest days—nearly 98% of the maximum possible. He flew a Glasflügel 604, in which he made the fastest flight of the meeting—109km/h round a 156km triangle. Walter Vergani of Italy, who had the large-span Nimbus 2 made available to him, finished a close second with 9,570 points, and von Kalckreuth was third with a 17m Kestrel.

On the last day Neubert and von Kalckreuth flew together on a distance task, starting with a flight to a turning-point 104km to the north in just over an hour, then turning south, using strong thermals plus strong slope winds along the mountains. At the Matise Massif the thermals stopped at 4pm due to the moisture from adjoining lakes, but they found wave lift and carried on till Vesuvius hove in sight, finally landing 100 metres from the coast in the red glow of sunset after seven hours' flying. They had to throw away 1,000m of height because their maps showed them

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There were 25 entries in the Open Class, 18 in the Standard, and a specially created "first competition participation" Class for the single Spanish visitor, Prince Orleans-Bourbon (*Aerokurier*, October 1971).

| | | |
|---|---|---|
| *Open Class* | | |
| W. Neubert (Ger) | Glasfl. 604 | 9794 |
| W. Vergani | Nimbus 2 | 9570 |
| J. v. Kalckreuth (Ger) | Kestrel 17 | 8039 |
| dall'Amico | Libelle 301 | 7714 |
| Fontana | Cirrus | 7617 |
| A. Schubert (Aus) | Diamant 18 | 7616 |
| *Standard Class* | | |
| L. Brigliadori | Libelle | 9344 |
| J. Wills (GB) | Libelle | 8757 |
| A. Pronzati | Phoebus A | 7983 |
| T. Chiesa | Libelle | 7974 |

## ZEGELS WINS STD CLASS IN BELGIAN NATIONALS

BERT ZEGELS, who recently won the Open Class of the Coupe d'Europe, won the Belgian Nationals Standard Class with a Libelle 301. Louis de Dorledot (ASW-12) won the Open Class and Jan Evens beat his only rival in the Club Class. Six contest days were achieved from the seven tasks flown from St. Hubert between May 29 and June 6.

For the first time in Belgian championships a triangle of more than 300km was set, but nobody got round owing to altocumulus being more extensive than forecast. The slow Fauvette, flown by Pierre Louis, made the longest flight of the day because it delighted in weak thermals—248km. Ten others made 225-km to the second turning point at Trèves. Those in the Open Class got 1,000 points each, but Zegels in the Standard Class beat them with 240km.

Other tasks included a 204km triangle, 211km triangle, a cat's cradle (best distance 348km by Zegels), an out-and-return in which the best distance achieved was 94.5km and a 116km triangle.

## 813km CAT'S CRADLE IN FINLAND

A CAT'S cradle flight of 813km was achieved by Juhani Horma of Finland (Phoebus C) during the Nordic Championships, held at Räyskälä, Finland (site of the planned 1976 World Championships) from June 25 to July 4. The startline had opened at 11:30, but the sky looked good as early as 09:00, so 1,000km may have been possible. Second best distance was 741km, by Ake Pettersson.

There were six tasks, and four pilots from each of Denmark, Sweden and Finland completed. Mathias Wiitanen of Finland (Phoebus C) won, with Walter Hansson of Sweden (Libelle 301) second.

AKE PETTERSSON

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## WOMEN'S CLASS AT EAST EUROPEAN CONTEST

A STANDARD CLASS for women was added to the "Contest for the Socialist Countries" this year, in addition to an Open Class and a Standard Class for men. It was held for the first time in Hungary, at Dunakeszi near Budapest, from July 3 to 15. The previous four were held between 1954 and 1969 in either Poland or the Soviet Union. Besides the countries mentioned, teams came from Czechoslovakia, East Germany, Rumania and Bulgaria. Competitors numbered seven in the Women's Standard, 16 in Men's Standard, and 12 in the Open Class.

Of the machines taking part, the Foka predominated, but four of West German design took high places, flown by Soviet pilots. Various mishaps lowered the scores of some competitors: Irmgard Morgner of East Germany broke her machine landing out on the third day, but on the last day shared first place with P. Majewska of Poland and put up an East German record.

Matousek of Czechoslovakia won the Standard Class because the two Russians, Link and Kusnezov, were deprived of their first day's points for cloud-flying.

The Standard Class had eight tasks, the Open seven and the Women five. The weather was extremely hot, putting a physical strain on the competitors (*Flieger Revue*).

| | | |
|---|---|---|
| *Standard Class: Women* | | |
| 1 Wimmerne (Hun) | Foka | 3860 |
| 2 Majewska (Pol) | Cobra 15 | 3692 |
| 3 Hudcova (Cze) | Orlik | 2712 |
| *Standard Class: Men* | | |
| 1 Matousek (Cze) | Orlik | 5460 |
| 2 Link (Sov) | ASW-15 | 5430 |
| 3 Kuznezow (Sov) | ASW-15 | 5232 |
| *Open Class* | | |
| 1 Muszcsynski (Pol) | Cobra 17 | 5686 |
| 2 Rudensky (Sov) | Phoebus C | 5108 |
| 3 Kmiotek (Pol) | Cobra 17 | 5006 |

## WORLD OUT-AND-RETURN RECORD CLAIMED

KARL STRIEDECK (USA) is claiming a new world out-and-return record of 885km. after a flight on November 7 in his ASW-15. The flight, which utilised three ridges of the Appalachians, took 8½ hours.

## AMERICAN GAINS 1000th DIAMOND BADGE

MICHAEL R. OPITZ, from Stratford, Connecticut, has earned FAI International Diamond Badge No 1,000, the 200th pilot to do so in the USA.

## RUSSIAN RECORDS BROKEN

TWO Russian national 300km triangle speed records were broken on May 31 from Oriel aerodrome, the Soviet gliding association's gliding centre. Eda Laan in a Foka 5 exceeded the women's record by over 10km/h with a speed of 88.6 km/h, while Yevgeny Rudyenski broke the national record by 13km/h, at 106.24km/h. He flew a Phoebus C. Thirteen pilots were trying the task, and two others broke the previous records.

Part of the success was due to the intensive training of the team—each pilot flew an average of 70 hours and 3,500km.

At an earlier training camp, held in April at the Kishinyevsk aviation sport club, Eda Laan, a 22 year old Estonian girl, broke the women's national two-seater speed round a 100km triangle record in a Blanik. She rounded the course at 83km/h, 5km/h faster than the existing record, held by Olga Manafova. The latter had, however, the previous day broken the Soviet national record for the 100km triangle by flying the same course at a speed of 96.2km/h in a Foka 5. The camp concentrated on flying this triangle.

Translated by Chris Wills from *Krilya Rodiny*

## CHAMPIONNAT DE FRANCE

MOULINS was for the second time the site of the French National Championships, starting just after the end of the Coupe d'Europe contest at Angers and lasting from July 26 to August 7. There were six contest days.

Of the 13 entrants, in the Open Class,


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11 flew the Phoebus C, but Labar's Kestrel won and Vaneeche's Cirrus came second. In the Standard Class, with 39 entrants, there was a multiplicity of types, including 13 of the Squale, but two Libelles headed the final list, flown by Cartry, champion, and Hersen, runner-up. Nine tugs, of Commodore and Abeille types, launched the competitors in 40 minutes.

Labar, the eventual winner in the Open Class, started right down at the bottom, owing to the malfunction of his camera on the first day, making his turning-points unidentifiable; in spite of winning three subsequent tasks, it was only on the last day that he reached top place in total scores. The Standard Class winner, on the other hand, held top place in the overall totals throughout the contest, though he, too, won on only three days.

Except for one out-and-return for the Open, all the tasks were triangles, the longest being 409km for the Open and 315km for the Standard on the third day; just under half got round in each class (*Aviasport*).

## WK-1 WINS EAST GERMAN CHAMPIONSHIPS

A CZECHOSLOVAK visitor, Joseph Smolke, won the East German championships in the WK-1, a new Standard Class glider. Rainy weather marred the contest, held at Neustadt-Glewe in June. Only four tasks were flown: the same 160km out-and-return three times and a 350km triangle. Only one task was completed, the first out-and-return.

The 34 German contestants all flew Fokas and Udo Elke (who flew in the 1968 World Championships in Poland) became East German champion. There were four other visitors, from Hungary and Rumania (*Flieger Revue*).

## HOSSINGER SECOND IN SWEDISH NATIONALS

ROLF HOSSINGER, the Argentinian pilot who was world champion in 1960, came second in the Open Class Swedish Nationals, flying a Phoebus C. This was the first time he had competed in his native country. Göran Ax (Phoebus C) won the Open Class, in which there were eight entries, while Gunnar Karlsson and Ake Pettersson (both Std Cirrus) came first and second in the Standard Class (26 entries).

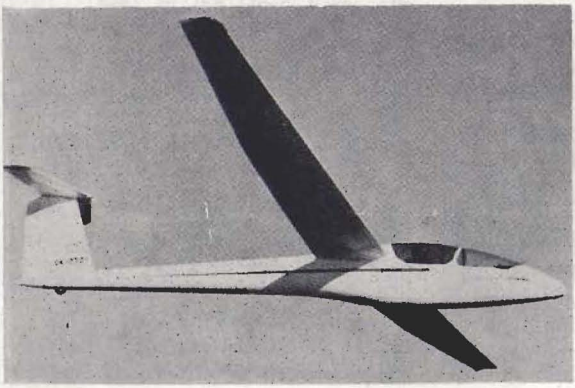
This was the first time the Nationals, held at Eskilstuna from June 11 to 19, had been divided into two classes. There were seven contest days out of a possible eight, and the best day featured a 300km triangle in which six pilots exceeded the Nordic record of 92km/h. Fastest was Göran Ax at 100.25km/h.

Göran Ax, Ake Pettersson, Gunnar Karlsson and Per-Axel Persson (5th in the Standard Class) have been selected to fly in the next World Championships.

AKE PETTERSSON

## ITALY'S FIRST 500km TRIANGLE

ENZO CENTOFANTE flew a 543km triangle in 9:35 on a date not given, using thermals and some wave lift. He started and finished at Bolzano and flew over mountainous country (*Volo a Vela*).



*The new Czechoslovakian high performance Standard Class sailplane, the WK-1 (see S&G, August 1971, p311)*

## WEST GERMANS VISIT RUMANIA

RUMANIAN thermals have their peculiarities, according to Klaus Harnach, who describes in *Aerokurier* how a party from the Wasserkuppe took part in the Rumanian Championships meeting. They were invited in return for a Rumanian visit to the "Pilotenvereinigung Wasserkuppe", a body which goes all out to foster international relations. (Vrsac, the site of next year's World Championships, is close to the Rumanian border.)

Thermals from the nearby town started at 11am and rose to 4-5,000ft while there were still none from the airfield. Then they stopped suddenly at 4-4.30pm, and if you had only 2m/s climb you could be in the last thermal of the day.

After six contest days, the military suddenly clamped down on all further flying. The East Germans took the first two places: Hans-Werner Voss with 4,688 points and Udo Elke with 4,658. Nicolas Milhaila, with 4,494, became the new Rumanian Champion, a rank previously held by M. Finescu, and Zoltan Nagy with 4,167 became "Vice-Champion". Yuri Kuznetzov, the "always smiling" Soviet pilot, came next. Rainer Wienzek, with an ASW-15, performed well among the West Germans. *(Aerokurier)*

## KLUK BECOMES POLISH CHAMPION

SIX tasks were flown in the 1971 Polish Championships at Leszno. Stanislaw Kluk won with 4,993 points in a Cobra 15; Franciczek Kepka was second with 4,914 in a Foka; followed by Henrik Muszcynski, 4,844, Cobra 15; Jan Wroblewski, 4,801, Zefir 2. Pelagia Majewska, holder of a World Women's record, took 11th place. (*Flieger Revue.*)

## NEVADA AGAIN FOR USA NATIONALS

THE site of the 1972 US National Soaring Championships will be in Nevada, at either Minden or Reno; tentative dates have been set as July 4 to 13. The Standard Class championships will be held at Marfa, late June or early July.

# OBITUARY

### TOBY ASHWELL-COOKE

EVERYONE in the exuberant days of 1930 knew Toby Ashwell-Cooke. It was the general view that he did more than anybody else to get the London Gliding Club set up in its present milieu at Dunstable Downs. The embryo club benefitted particularly by his understanding of money matters. His fellow members made him vice-president. He died on September 29 last and at his burial at West Wittering parish church on October 4 it was good to see that in spite of his many years' illness his contemporaries had not forgotten him nor his wife Georgina who has nursed him devotedly.

John Raymond Ashwell-Cooke was born on January 15, 1907, and was educated at Bromsgrove, Worcs, and St Catherine's College, Cambridge. While up at the University he learnt to fly with Marshalls. He made his mark at the Gliding Lunch in London on December 4, 1929, and from then on was in the thick of the fight, being a power in both the London Gliding Club and the British Gliding Association. His gliding certificate was No 10. He has written an excellent account of those days in "Motorless Flight", a book which he edited and which was published in 1932. He did not give up power flying and won the Isle of Man air race in 1932. He managed to find time to be a house agent but his great coup was to bring the new aeronautical monthly *Aeronautics* into being in August 1939 with Major Oliver Stewart as editor and Newnes as publishers. During the war he became Wg Cdr, RAFVR, and was given the MBE for his work on gliders. In 1945 he joined BOAC and by 1947 was sales and advertising controller. The onset of Parkinson's Disease forced his early retirement in 1955, though he retained for many years control of the family stocking firm of Ashwells in Nottingham. To the last he retained his high spirits and all his afflictions could not quell his lively intelligence. T.J.



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# BOOK REVIEW

**Pilot's choice—a soaring odyssey.** By GREN SEIBELS. Published by Soaring Symposia, 408 Washington Street, Cumberland, Maryland 21502, USA. Price $6.95.

I HAD high hopes of "Pilot's choice" when it touched-down on my desk. I had read some of Seibel's work in *Soaring* magazine and had been impressed by the humour and humanity of his writing.

Much of the book is finely written, and, yes, the humour and humanity are there in abundance. I think we all enjoy reading about other people's harrowing scrapes, and Seibel's account of ridge-soaring along heavily forested, unlandable slopes in Virginia in deteriorating conditions is superb nail-biting stuff. After the reader has read the book, I feel sure that he will return to it time and again, whenever he has an odd moment, and read a chapter here, a snippet there. Highly recommended—and it matters little whether you fly in America or not.

Structurally, however, the book is really no more than a series of very readable reminiscences and observations on various facets of the soaring scene. There is little continuity; no solid skeleton of a theme on which to mould the flesh. Occasionally a narrative thread appears, and one starts on the next chapter expecting it to be continued and developed, only to find that the author has changed to another topic and does not return to the narrative at all.

For example, he describes vividly the hard and desperate struggle to get his new glider, a Libelle, delivered in time to enter his first Regional contest, a struggle which he wins by the skin of his teeth. Then, in the next chapter, which I expected to contain an account of his experiences in that contest, I find a discussion of the motivations behind competition flying. He only returns to competition experiences with the 1969 Nationals at Marfa, having skipped that first Regionals.

If "Pilot's choice" were a solitary example of this kind of structural malaise, I would not be discussing it at such length. However, it is a fault common among gliding books which try to cover the whole field. A typical example is Philip Wills's book, *Where no birds fly*. Far more satisfactory are the books which concentrate on a particular aspect of the sport, like history in Ann Welch's *The story of gliding* and learning to fly, as in Derek Piggott's *Gliding* (of which a third edition has just been issued).

It is perhaps, however, unfair to cry out for perfection, and in Gren Seibels we have a genuine talent who manages to evoke much of the mood of gliding. He is, I understand, working on another book—I look forward to it. G.L.

# CORRESPONDENCE

## OXYGEN

Dear Sir,

Two points should be added to Dr Saundby's full and lucid exposition of oxygen in high altitude gliding (see S&G, Oct, p356).

Firstly, it should be realised that all basic respiratory physiology has been based on experimental work on young healthy male volunteers, often 18 and 19 year old students. Dr Saundby mentions the importance of health but fails to mention age. Recent work done on gaseous exchanges in the lung suggests that the degree of oxygenation falls with age as distinct from health. Thus a healthy 20 year old male has a haemoglobin saturation of say 98% whereas the "healthy" 45 year old may

have a saturation of only 90%. Incidentally, respiratory efficiency is markedly reduced by sitting still for several hours. Many glider pilots are physiologically middle-aged. From the respiratory physiologists' point of view many are "healthy" only in that they are not actively ill. Sub-optimum health adds to age-produced oxygen deficiency.

The second point concerns cold. Apart from causing discomfort and frost-bite, cold has little effect on the overall oxygen consumption of the body but, however, can lead to shivering and this greatly increases oxygen requirement (to as great a degree as would severe exercise). If a physiologically "pre-senile" glider pilot of say 50 years old begins to shiver even at the altitude of 10,000ft he may become anoxic. Shivering should be regarded by any glider pilot as a possible indication for terminating a high climb.

*Chandler's Ford, Hampshire.* DR A. J. WATSON

## FLAPS . . .

Dear Sir,

I would like to add two further comments to your report of the pilots' meeting which took place at Angers to discuss the CIVV Standard Class proposals.

First, the viewpoint expressed by the majority of the pilots that they did not want to have to change their present highly satisfactory Standard Class gliders for a new and more expensive variety was understandable. I would have thought that the German manufacturers would have welcomed the opportunity of a new market and the German pilots who spoke did not explain why the manufacturers supported their view.

Second, as reported in "Sailplane & Gliding" the restrictive nature of the proposals upon design (see S&G June 1971, p207) was universally rejected. Several pilots pointed out the resemblance of the permitted flap designs to those used on the HP series of gliders and declared that it was all an American plot! It is unfortunate that, as detailed, the proposals would prevent the use of one series of aerofoils which have been designed recently showing a marked performance increase over the non-flapped types: I refer to the FX67-K-150 series developed by Dr Wortmann (reference "On the optimisation of aerofoils with flaps", *Soaring*, May 1970). G. E. BURTON

*Slingsby Sailplanes.* *Managing Director*

## . . . AND FLAPS

Dear Sir,

In answer to David Carrow who, in the last issue, suggested putting the Kestrel wing sections (Wortmann FX67-K-150/170) on the Standard Class Torva, I would point out the following:

(1) Present Standard Class rules prohibit the use of flaps. In its unflapped form, the Kestrel sections have both a lower lift coefficient and a more restricted drag bucket than the specially modified section we have used. Our present section gives a remarkable rate of climb and good penetration at average cross-country speeds, both of which would be adversely affected.

(2) We have proved that a camber-changing flap extends the good penetration of our wing section to even higher speeds, and are indeed aware that the Kestrel sections may be slightly better. However, when flaps are allowed in the Standard Class from 1974 onwards, airbrakes are not allowed as well. Although the Class rules will make no reference to speed limiting ability, it is clear that any glider from a country with a responsible national airworthiness authority must have flaps which function as a speed limiting device also. Although we have yet to prove the point in practice, calculations suggest that quite small flap deflections will be enough to speed-limit with our present section. The monumental failures of pilot and structure to provide this function on conventional sections will thus be avoided.

The only way to use the Kestrel sections on a 1974 Standard Class glider would be to ignore the speed limiting requirements altogether, and to seek certification in Liberia, or under some other "Flag of Convenience", which this Company has no intention of doing! J. L. SELLARS

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# CLUB NEWS



MEMBERS of Derbyshire & Lancashire club are compiling a history of the club. One of the main effects of this column is that a reader can look back through the years and see the development of a club from infancy. It is perhaps time, therefore, in this era of increasing sailplane sophistication, training evolution and battles for free airspace and site security, to remind our many correspondents of the type of news we think helps to make this one of the most interesting sections of the magazine.

News of site acquisitions and improvement, changes in operational policy and fleet (both gliders and tugs), major personnel changes (such as new CFI's and full-time staff, special courses and task weeks, expeditions to other clubs, matters of interest to visiting pilots, work on buildings and improvement of amenities, details of flying achievements over a period (but not, please, a detailed listing of certificates and solos), individual flights of general interest—events which help to show how your club ticks.

Copy and photographs for the February/March issue should reach the Editor, S&G, British Gliding Association, Artillery Mansions, 75 Victoria Street, London, SW1, telephone 01-799 7548, not later than December 1 (early because of Christmas).

Copy and photographs for the April/May issue should be sent to the Editor not later than February 16th.

### AQUILA—temporarily at Gaydon

AFTER the most successful flying year Aquila has had, we once again have airfield problems. Planning permission for a clubhouse/hangar was turned down on the grounds of Turweston being a safety hazard to our American allies, although we are in free airspace (up to Amber 1) and well out of their control zone. We are all very grateful to the Ashton University club and Gaydon for letting us join them until we can get things sorted out.

Before we stopped flying at Turweston, we had an influx of new members following articles about us in local newspapers, and hope this latest upheaval will not discourage them.

Earlier in the year some members went on an expedition to Camphill where they had a thoroughly enjoyable week.

E.A.C.

### BATH & WILTS — tug and expeditions

A TUG provided on indefinite loan through the courtesy and generosity of a club syndicate has livened things up considerably at Keevil. It did more than 50 launches in the first four weekends, and in the winter will be able to tweak gliders from the nice little field at the foot of our west wind soaring slope at Roundway.

Expeditions have recently been made to Haverfordwest (sailing, surfing and soaring) and Long Mynd (in search of wave).

Our new runways are still abrasive, but lighter wire and slower retrieving has put our wire costs back within reason. As an alternative, the "mark two" pulley system is about to be rolled out.

R.J.C.

### BLACKPOOL & FYLDE — site purchase completed

ON October 1 we completed the purchase of Cock Hill Farm, our proposed new site (S&G, February, p48). With the largest single expenditure behind us, we hope to complete initial development plans in time to transfer our operations to the new site by Easter 1972.

This will make us, I am told, only the eighth club in the country to own the freehold of its own site and we offer our sincere thanks to all those whose help has made this possible.

D.W.S.

### BORDERS (Milfield) — courses for members

COLIN GOULDING continues as our guide and mentor and we hope that soon, and in spite of his many other commitments in gliding, he will become our CFI. It was a fortunate day for us when a young ATC instructor, Michael Charlton, came our way and dropped anchor, for we are now in that fortunate position of having a progressive system of training. Many instructors have come from afar to help us in these early stages —Colin, Mike, Ken Hall and Bill Winthrop from the ATC and Charlie Donaldson from Portmoak, to name but a few.

Next summer we hope to be able to run more courses for our members and others; we can offer accommodation in one of the many castles here. We now have 26 members, three of whom are solo, and hope to purchase another two-seater more sophisticated than our present T-21.

G.A.W.

### BURTON & DERBY — new CFI

JOHN EKMAN has now taken over from Chris Duthy-James as CFI. The instructor force is being increased by three. We are, however, suffering from a shortage of pupils but hope to remedy this with some local publicity.

Cross-country achievements from Church Broughton include one of 300km by Ray Steward to Weston Zoyland via Peterborough.

Several members last April attended a lecture organised by the Derby branch of the Royal Aeronautical Society entitled "The pursuit of the ultimate in glider design" by Frank Irving, which included details of Sigma.

A number of members have taken or are planning visits with their gliders to other sites.

We all regret the events causing the Leicester club to cease operations, but are pleased to learn that most members have joined alternative clubs, and we welcome those who chose to come to Church Broughton.

P.A.W.

### COVENTRY — road repaired

ALL visitors to Husbands Bosworth will be extremely delighted to note that the dreaded road has at last been repaired and it now bears a strong resemblance to the M1. There are no nasty, sneaky potholes to get your trailer or caravan stuck in.

We have said a very sad farewell to the K-2B, gone to Scotland after 10 years of excellent service with no prangs at all. This move marks the beginning of club fleet modernisation and it is hoped to replace the K-2B with a new two-seater.

Many members have made the pilgrimage to Shobdon to sample the Hereford wave—no contact to date but rumours have it that we are to open our branch club at Shobdon!

V.G.

### DERBYSHIRE & LANCASHIRE — sheep bit the K-8

THE summer produced quite a crop of first solos, creating fiercer competition for seats in the two Swallows. One or two early solo pilots had a go at bending them and one of them attacked both in one week, but in all instances damage was minimal and pilots were unscathed. Both Darts suffered undercart damage and the Libelle took a knock in a heavy landing following an abandoned winch launch. The K-4 had

one prang and a sheep bit the K-8, but apart from these minor skirmishes we have had a fairly trouble-free summer.

Our summer courses were again an outstanding success, the last one being in September when a group from Aquila descended on us with two aircraft. A lot of fun was had.

Alan Beckett has now been appointed deputy CFI and we wish him luck and success in this new capacity.

A new engine has been installed in the "Bodge" winch and when it first went into operation gave a few ultra-high-speed launches; we are the only club in the country that operates swept-wing gliders!

John Collins and Peter Hubbard are collecting a history of the club; John looking after the journalism and Peter compiling and collating the photographs and illustrations. If anyone has any photographs or even an interesting memory of life at Camphill, please contact us. P.H.

### DEVON & SOMERSET — airfield levelling started

WORK progresses with the hangar and workshop and we aim this year to hold our AGM in the site clubhouse for the first time. Airfield levelling has commenced with the removal and sale of turf from the first 10-acre strip. This now has to be graded and seeded.

The influx of pilots now capable of flying cross-country has revived the consideration of obtaining a more sophisticated solo club aircraft.

The first issue of "North Hill News", started by Janet Halfacre and colleagues, has appeared. A.E.R.H.

### DONCASTER — Falke in swamp

OUR annual general meeting was held on August 14, and the annual dinner and dance on November 26.

Our big flying days were July 17 and 18 when a total of 700km was flown by only four members.

The Falke has been in continuous use for training and cross-country checks and has speeded up our *ab initio* training programme considerably. On September 13, due to engine failure shortly after take-off, it landed in a nature reserve swamp. Both instructor and pupil were unhurt and there was only minor damage to the aircraft. Before flying was allowed to take place on the following Saturday all available members were recruited to haul the Falke out of the swamp.

A.P.M.

### DORSET — second task week

OUR second task week, from August 22 to 30, was something of a disappointment this year—only three of the nine days provided competitive flying conditions. About a dozen gliders entered, and top scorers were father and son team Joe and Terry Linee, flying an Eagle together.

Tom Groome flew his Olympia 2B to North Hill in Devon on a remarkable 5½ hour flight to make him our first member to gain his complete Silver C in one flight.

I trust that readers of the last issue's notes will forgive someone for omitting the word "Silver" in the reference to Phil Tiley's record, which was thereby made to appear even more remarkable than intended. (Apologies—Ed.)

M.L.B.

### ESSEX & SUFFOLK — not the club's year

BECAUSE of the poor weather of early summer and the unfortunate writing off of our new Auster tug in a cornfield adjacent to the strip in August, 1971 cannot be said to have been the club's year. As the K-7 was damaged at the same time, we have been involuntarily grounded at Whatfield for two months. However, this did not mean the end of all our activities as the Essex club at North Weald offered us reciprocal membership and use of their facilities while awaiting another tug and the return of the K-7.

We now have another Auster in operation and have also acquired a K-2 to help train the increasing number of *ab initio* pilots who are joining.

Our annual dance will be held at the Colchester Garrison's Officer's Club on March 10. M.L.



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### LONDON—ten years of tipping

THE most noticeable change in scenery during the summer has been the west side of the airfield; 10 years of tipping has almost filled the 75ft valley which used to exist on the south side of the buildings. Some 18 months to two years will see the ground level, seeded and in use, and will permit some re-organisation of the immediate surroundings to the club buildings and considerably more space for launching and landing. The valley across the field has been a contributory cause of many accidents in the past, and to a large extent this hazard will be eliminated before long.

Soaring during September was better than usual; the best day being the 13th, when two Gold C triangles were completed—probably the latest date that a 300km flight has been made from the site.

Hours and launches are keeping pace with last year; there has been a substantial increase in aerotows, largely done by the Condor which, in spite of undercarriage cracks and a failure in the engine mounting caused by the field's surface, has clocked up more than 400 hours. Three aircraft are on a shortlist for a third tug next year—Pawnee, Citabria and Commodore.

M.P.G.

### NORTHUMBRIA — waves

OUR new club Capstan had an excellent introduction to soaring at Hedley; our wave system was working on its first day. The last aerotow of the day ended with the Capstan and the Auster tug, with engine throttled right back, both soaring along the only lenticular in the sky.

Wave has been seen on the majority of midweek days, very frustrating as we at present only operate at weekends. An exception was Wednesday October 6, when we flew for the benefit of local television and wave was worked to over 10,000ft.

With the start of the University term we have a welcome addition to our instructor numbers—Lynne Watson, a medical student fresh from an instructors' course at Lasham. J.R.G.

### PETERBOROUGH & SPALDING — memorable month

AUGUST was a memorable month. Not only did the club buy the Bocian, but a Skylark 4 and Capstan, both syndicate-owned, joined the fleet. The T-49 will provide important back-up facilities to our two-seat operations at Postlands and will, we feel, be a popular feature. To recap, we now have two two-seaters and three high performance solo machines.

The flight booking scheme has been extended to include Sundays. The Bocian recorded 586 launches between April 17 and the end of September, and the average training flight time was 26 minutes. The actual flight cost including the aerotow (by Beagle Terrier) to 2,000ft works out at 6-8p per minute.

Eighty guests attended the buffet-dance on October 1.

Thanks to the generosity of four members, we are building a Tarran sectional building destined to be the first stage of our new clubhouse complex


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and sited alongside the existing hangar. Some essential items of equipment have already been donated. J.V.L.

### SCOTTISH GLIDING UNION — Whitbread Award winner

ROSIE BETTERIDGE claimed the Whitbread Award for achieving her Bronze C before her 19th birthday, and a number of other Bronze and Silver C legs have been achieved.

September and October provided a few wave days, widely spaced by drizzle and drear Scotch mist; the best day was October 1 when eight people achieved heights of between 13,000 and 18,200ft, with a further 20 between 4,000 and 13,000ft.

There are several new gliders at Portmoak, notably three Libelles and a Falke. Somebody keeps muttering "Kestrel" but not loud enough for Slingsbys or their bank manager to hear. The Olympia 2B has been sold (although it remains at Portmoak) and members wait with bated breath for its replacement. M.C.B.

### SOUTHDOWN — first flight to Challock

THE August bank holiday Monday brought a new first for the club when Jim Cornish flew the club Olympia 460 from Firle to Challock to complete his Silver C. Although Kent members have flown in to Firle on several occasions, this is the first time we have visited them since they moved to Challock.

The solo members' course in September was a great success, the wind remaining E/NE for most of the week to give us some hill soaring in addition to good but rather smoky thermals produced by stubble fires. Five members completed Bronze C, simulated and real field landings were practised, everybody had some soaring and we all enjoyed the week.

We had one aero-towing expedition to Redhill this year, when about a dozen pilots were passed out for solo aerotows and enjoyed the novelty of flying from a large flat field. K.I.P.M.






### STAFFORDSHIRE — site purchase

AN extraordinary general meeting was held on August 13 when it was announced that the club now had sufficient funds to purchase a new site at Morridge. Plans for the site and further fund-raising for buildings were discussed. Since then working parties have been active and several acres have already been drained and smoothed.

Target date for commencement of flying operations is April, 1972. When we are operational we hope to see many visiting aircraft dropping in, particularly from the Dumfries and Essex clubs who helped in the most practical way.

Club membership was well down in the early part of the year but is now climbing up rapidly with the result that the Capstan flies until grounded by the failing light. C.J.R.

### SURREY & HANTS — 300kms in September

AFTER a pretty duff August, September produced five consecutive cracking week-end days, which included three 300km triangles on September 11 and 12, the first we can recall having ever been done in September.

Our Portmoak expedition was a grand success as usual, but wave and thermal activity was not so frequent as in previous years. The middle Sunday provided a magnificent east wind wave up to 4,000ft, contacted initially from thermals, then by late starters from 700ft tows. It all came to a sudden end with a rapid spread of 8/8 stratus at 600ft. The last glider was on the ground but five minutes when the fog rolled in! We did 600 hours from 300 launches. The one

good wave day brought an assortment of Gold heights, both with and without barographs, but the only Diamonds were achieved by those who had done it before.

C.L.

**TRENT VALLEY — wanted: portable building**

DURING the past few months we have had one or two changes in aircraft and personnel. The Bergfalke II is now a thing of the past as it got caught up with the shock rope and landed sideways, bending the fuselage. Enough cash was produced out of the subsequent insurance claim and a whip round among the members to purchase a nearly new Blanik complete with a hotel of a trailer.

In 86 flying days we have completed nine A&B's, 17 Bronze C legs and four Silver C legs.

After being conspicuous by its absence for most of the summer the Auster returned to the airfield on October 3 after completing its C of A. Foggy conditions were against aerotows so Roy Andrew took it away again after giving three launches. The conditions when he came again on October 17 were too windy so once again we were thwarted.

During this winter we hope to beg, borrow or purchase a clubhouse. We would be interested in anyone or club who has a surplus building (portable) they want to get rid of. B.J.G.

**WYCOMBE AIR PARK — veteran car and aircraft rally**

SUNDAY, September 26, was a very successful day at Booker when we held the Veteran Car and Aircraft Rally. Approximately 30,000 people visited it, and once again the Upward Bound club at Haddenham was most hospitable when we arrived with a selection of gliders, the Falke and a tug. Another expedition was made to Shobdon early in October. Although nobody managed Gold height, Ken Merron made Silver distance and a good time was had by one and all.

John Strugnell returned from Poland where he experienced some marvellous flying and whetted our appetites by reminiscing about excursions to the heavens and beyond! K.W.W.

**YORKSHIRE — airfield improvements**

THIS autumn most of the airfield has been ploughed, levelled and re-seeded, leaving a very small area on which to land and take off. However, members and visitors have managed to tow out and launch without too much inconvenience and by next spring we should be feeling (literally) the advantages of a much improved surface.

Wave has returned at last and several flights of over 12,000ft have been recorded. The Four Counties club was on an extended visit at the time of writing; so far they had logged six Silver legs and 150 hours.

New arrivals among the private owners' fleet are two Libelles, a Dart 17R and a Mucha Standard.

Ralph Mitchell has joined the staff as full-time ground engineer. S.V.G.

## SERVICE NEWS

**CHILTERNS (RAF Abingdon) — Shobdon wave safari**

AS the soaring season drew to its close club members joined a wave safari to Shobdon along with members from Bannerdown, Airways, Thames Valley and Kestrel. The elusive wave was as elusive as ever but some good thermal soaring was enjoyed. We would like to thank the Herefordshire Flying Club for making us so welcome.

Jock Manson returned from a spell in the Persian Gulf to take over as CFI, a role in which we all wish him the greatest success.

Future plans include the building of a new club bar, a facility which has been sadly missed over the last months.

P.M.

**CRUSADERS (Cyprus) — record year**

FLYING hours and total cross-country distance for the gliding year ending September 30 were club records, although the magic 1,000 hours and 2,000km respectively were not quite reached. Best cross-country flight during the summer

was by Len Barnes, who flew the Olympia 401 on a 200km round trip from Prastio via Mt Olympus (6,400ft asl), the highest peak in Cyprus.

An advantage of our lower latitude (35°N) is the continuance of thermal soaring throughout the winter, and members live in hope of celebrating Christmas with a Silver height or Bronze leg. The advent of regular aerotowing also heralds the exploration of lee waves, as yet undiscovered in Cyprus by gliders.

Visitors, both service and civilian, are always welcome; our base airfield is Kingsfield airstrip, Dhekelia, 40km SE of Nicosia and 20km W of Famagusta.

G.W.G.C.

**FULMAR — navy club closes**

THE Royal Naval Gliding and Soaring Association club at Milltown (Murrayshire) ceased to exist at the end of September but Fulmar gliding club will continue to appear in print as the RAFGSA have started a club on the same site using the same name. At the time of writing they have taken delivery of a K-7 and expect further aircraft in the near future.

The civilian members have formed the Highland Gliding Club and have purchased the Fulmar Swallow. They too will operate at Milltown and both clubs hope to have George Iley as their CFI.

During the last months of the RNGSA club there were two noteworthy wave flights, one by John Higgins to 9,000ft and the other by Trevor Armstrong to 12,000ft for a Gold gain.

It only remains to thank all who helped initiate Fulmar Gliding Club and improve it over the years, especially the instructors and officials. Names come readily to mind but are too numerous to mention. Thank you, one and all.

H.D.

**HUMBER (RAF Lindholme) — new equipment in use**

WITH the soaring season virtually at an end our list of achievements is disappointingly small. In fact we wonder sometimes if the season ever really started around Lindholme. On some of the better weekends weatherwise, we actually found ourselves without an airfield due to service commitments and


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the launch rate has been adversely affected by various ground equipment unserviceabilities. However, we have managed many new solos and several worthy attempts at Silver distance and duration.

Our new winch is now in use; we have a new tractor and a recently acquired double-decker bus is being converted to a launch control point and snack bar.

Derek Butler has succeeded Yorky Kitchener as CFI; the latter having been posted to North Luffenham.

Rod Whitter, John Davies and Paul Goddard spent some happy hours with the Crusaders in Cyprus in August and can't speak too highly of the welcome they received. Thank you, Crusaders, and we assure you of a similar welcome at Humber should you ever be in our area. J.R.L.

## SOUTHERN COMMAND (Watchfield) — move to Upavon

IN November we desert the friendly though rough fields of Watchfield for the plains of Salisbury by moving to Upavon. It will be something of a homecoming, for up to March, 1971, Netheravon was our base.

We are looking forward to our move to Upavon. The prospect of ridge soaring for the newly converted and the reinstatement of our sorely missed tug, the Jackaroo, are exciting.

We trust that all within the vicinity will come and visit us. We have a large crew of instructors (19) eagerly awaiting the arrival of new blood.

The last months have seen the ranks of solo pilots swollen by 13, including three women. Achievements include several Diamond, Gold and Silver legs. J.R.A.

## TWO RIVERS (RAF Laarbruch) — German motor glider licences

WITH Con Greaves as our new CFI, we have broken several club records, including the achievement of more than 1,000 flying hours. Our weekend-only flying was supplemented in July by a successful soaring expedition to Kamp Lintfort (a German club on the outskirts of the industrial Ruhr), lasting two weeks. Every day was soarable, and several Silver legs were obtained.

As a result of the expedition, close social and flying connections have been built up between Kamp Lintfort and ourselves which has resulted in Vince Mallon and Simon Field gaining their German "Motor Falke licences".

Although local soaring conditions have finished for the year, Two Rivers, undaunted as ever, are off to Zell-am-See in Austria for three weeks of wave soaring. Among the gliders going will be our K-7, making its first appearance with the club. Does anybody want to buy a good T-21? D.W.

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## WREKIN (RAF Cosford) — TP photo tragedy

A GREAT deal of flying has been done since our last report. Ben Goodman completed a Gold distance to St Mawgan, while George Ross flew to Beccles on his Gold distance. He was retrieved, lauded and honoured (by the drinking of his beer) only to find that his turning point photographs, on a black and white film, had been developed as colour and the whole film ruined.

In July Chris Waller flew the first 300km triangle from this site.

Thanks to our tug, many cross-country hours have been done on our ridge sites —the Brown Clee hills, Wenlock, The Wrekin and some visits to the Long Mynd. The club pundits have evening soaring trips on Ironbridge chimneys where they climb or crawl, depending on the lift, to 2,000ft for a final glide to base.

We have four new assistant instructors, but by the end of the year, four of our instructors will also have left, for various corners of the world. C.P.

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