SAILPLANE & GLIDING

April — May 1971 30p




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SAILPLANE & GLIDING

OFFICIAL ORGAN OF THE BRITISH GLIDING ASSOCIATION

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Cover photograph: A K-6 near Lake McIlwaine, Salisbury, Rhodesia. *Photo by Mike McGeorge.*

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Lovely Libelles



The Libelles are coming! Seven in one container in January for low delivery charge, six more in July. Top performance, chosen by John Williamson for this year's Standard Class Nationals. Lightweight; average 410lb: two person rigging: Top value—Glasflügel hope to maintain price at 19,800 DM for this season. Two remaining available for July. £2,260 (at current rate).

FALKE—deliveries of Slingsby made Falkes have now started. Rising costs in Germany have forced Scheibe to raise the price of new orders to 34,500 DM. Our price on new orders will be similar but delivery charges are of course lower. The Falke is still top value for training or pleasure, £3,940. Write for details.

KESTREL—the 19M Kestrel is now in production, deliveries from June. Two piece wing, full span flaperons, fillets, new tailplane, top performance. Top value at £3,600.

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DOC

THE news that Dr. Alan E. Slater is retiring from the Editorship of SAILPLANE & GLIDING, and he and Rika Harwood are becoming Consultant Editors, gives one a kind of "Last of the Mohicans" feeling, for Doc has been associated with our magazine ever since it was handed over to the BGA by *The Aeroplane* in 1931, and became Editor of *The Sailplane and Glider* in 1933.

When I first met him, in 1933, *The Sailplane* was a slim fortnightly paper price 6d., taking the strong and at that time unfashionable line that gliding was a sport in its own right, and not merely a cheap way in to powered flying, and that our aim was to fly as long and as far and as high as possible. At that time speed in its own right was not in the picture, and did not enter until the Swiss brought it in for the first time in the 1948 World Championships.

The BGA at that time was controlled by people who did not have this particular vision, and the fact that the Editor of their own magazine was in conflict with them brought about a lot of friction. History has shown that Doc was right, and his advocacy played no small part in the subsequent restructuring of the BGA and the consequent development of British gliding along the right lines.

My effort to describe Doc is simplified by the fact that nearly everyone in the gliding world already knows him, for he is the only person who has been to every World Championships since they began, and before that to the 1937 Wasserkuppe Internationals.

I think the one word to apply to him is that he is an Original. It's pretty hard to accept that in this world of teeming millions there can be one man entirely unlike anyone else, but it does apply to Doc.

He started off in life as a doctor, but became interested in gliding in 1927 during which he visited the Wasserkuppe. He resolved to become the first British *ab-initio* glider pilot, and in 1930 obtained his A certificate at a course at Rossitten on the Baltic coast.

He duly earned his C certificate when, on August 6, 1932, he remained airborne over Dunstable Downs for more than five minutes.

In 1936, at the age of 41, he decided to give up doctoring and make his way in life with his pen, as Editor of a tiny gliding magazine with a circulation of under 1,000 copies. To do this, he took rooms in a farm on the top of Dunstable Downs, and in a wooden hut next door started amassing what is by now the greatest gliding library in the world, which also includes interplanetary subjects, space medicine and meteorology. This makes him the final Court of Appeal on any matter of gliding history.

As a musician, he can produce miracles out of a penny whistle, and no end-of-competition concert was complete without his rendering of *Eine kleine Nachtmusik* on this device. He also attacks the piano with gusto, and to this day even the technical difficulties of that dream of all true Romantics, Rachmaninoff's No. 2 Pianoforte Concerto, do not cause his stout heart to miss a beat.

For years his chosen method of transport was a push-bicycle, on which he performed logistical miracles, but later he transferred to an ancient open Austin Seven, which for many years chuffed its way uncertainly to all the corners of gliding Britain.

During the war, *The Sailplane* of course had to be suspended, but in 1944 it was taken over and restarted by Fl. Lt. Vernon Blunt, and Doc Slater was its Associate Editor until February, 1947. But after a year or two Blunt's views proved divergent, and in 1950 I started a competing magazine, *Gliding*, which became the official organ of the BGA. The Editor for the first issue was Jacques Cochemé, but he was then posted over-

seas, and I persuaded Doc to take over the position. The new magazine prospered, and in October 1955, *The Sailplane* and *Gliding* were merged, Blunt dropped out, and Doc remained as Editor.

BGA policy has always stood firmly behind Editorial independence, and Doc's unique touch has always tinged the pages of the magazine. In 1956 he, and we, had a vital stroke of luck, when Rika Harwood joined the staff (or, since she was alone, became its first member), and the combination of her technical perfectionism and Doc's literary abilities and historical knowledge, gave us an association as inevitably complementary as Gilbert & Sullivan or Marks & Spencer. It has been a unique partnership.

He wrote a regular column of "Gliding Notes" for *The Aeroplane* from 1947 until it went "commercial" in 1962, at the insistence of its new owners.

As the Gliding Correspondent of *The Times* his writings extended widely throughout the English-speaking world. His command of German and other languages gave SAILPLANE & GLIDING an international coverage and enabled it to become a gliding magazine with a circulation spread over 60 countries. (It was 61 until our subscriber in Christmas Island was posted elsewhere). The circulation has grown to well over 6,000 copies, and likewise the price has increased to 30p., but throughout the years the magazine has remained solvent, and has never required BGA subsidy.

In 1967 his work received international recognition by the FAI Award of the Paul Tissandier Diploma, and now Doc has honoured us by accepting Vice-Presidency of our Association.

Now that a new Editor has been found and appointed, Doc is content to retire in the knowledge that the new man, George Locke, also a glider pilot from Dunstable, will continue the magazine and no doubt will impress it with his own personality. Doc and Rika will help him to do this. (See also page 114.)

PHILIP WILLS

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CHAIRMAN'S REPORT 1970

YOUR Association, under the leadership of its past two chairmen, has, during recent years, carried through two tasks of immense importance. It has developed its organisation to match the requirements of growth in membership and activity, and has looked ahead in a carefully considered five-year plan, which has been submitted to the Sports Council and was well-received by them. In taking over the task of Chairman, it was a very great help to have guide-lines which have been so well set by my two distinguished predecessors and to know that a first-class team was available to carry on the work, both in the office and in the Executive Committee.

During the past year we have seen the new system coping with the usual run of problems in an effective way and without much fuss. There has, however, been one event of exceptional significance for our future where our influence was dwarfed by that of other interests involved—I refer to the Roskill Commission on the Third London Airport. We submitted written evidence, the lead for the Association being taken by the Airspace Committee. When the First Phase Roskill Documents were published Tony Deane-Drummond circulated copies of the parts dealing with gliding, and these were discussed at the Executive Committee. Roskill's cost/benefit approach attempted to quantify all the interests affected by the four short-listed sites. As might be expected, the cost of the damage done to gliding interests was worst for the three inland sites, particularly Cublington, but the financial figures were minute compared with the other massive financial assessments.

Accepting the Roskill basis of working, the financial assessment made for gliding was reasonable and we did not feel able to submit further evidence which would have any appreciable effect on the outcome. In view of the expense involved, therefore, the BGA did not apply to appear personally or be represented by Counsel during the public enquiry phase.

There is no doubt in my mind that there will be a long period of difficult and important work ahead for the Airspace Committee in seeing that the best treatment is won for the gliding movement during the developments which follow the final Government decision on the location and timing of the Third Airport. If there is delay, it is quite possible that developments in short and vertical take-off aircraft may alter the situation very considerably.

I have mentioned the Roskill Commission first, because the airspace question is the most fundamental to the future of the gliding movement. In everything else we can have our problems, make mistakes and sooner or later recover. But if we lose our airspace we are finished. This makes the past work of Nick Goodhart so important and the contribution of Tony Deane-Drummond during the 1½ years he chaired the Committee so valuable. Tony's effective representation helped us to minimise the effect of Amber 1 widening at Manchester and arrive at a sensible compromise at Luton.

David Ince has now taken over this vital job at a time when we are faced with an immediate and serious threat to our airspace. This is the plan to introduce two new Special Rule Zones. One of these would include Boscombe Down, Old Sarum and Middle Wallop; the other, Lyneham, Fairford and Brize Norton. By far the major part of the activities within these zones are military operations and training and test flying. Only a very small number of flights are genuine passenger transport. As proposed these represent a threat to the very existence of a number of major clubs, including one of the largest and most active gliding centres, and they would undoubtedly bring almost all high-performance cross country soaring and contest flying in Southern England to a complete halt. All this, and they are in no way connected with the safety of civil air transport operations in this country. The Airspace Committee is therefore faced with a difficult task in the months immediately ahead and in this it will be very fully supported. On the one hand, a solution must be found to the air traffic control problem; on the other, gliding without its air space is lost and certainly we cannot agree to

surrender air space in the manner and on the scale which is now being demanded of us.

World Championships are the cause of a great deal of hard work by a dedicated few and the experience of a lifetime for the envied team. No sooner has one championship finished than we are appointing a committee to organise our entry for the next. Some may (and probably do) ask whether we are justified in putting the effort and money into this branch of our activity. I am sure we should so as to give the fullest opportunity for the best of our pilots who are driven by a competitive urge to show what they can do against the toughest competition and in so doing to raise the sights of everyone who glides. There is no doubt that competition has taught us much and improved both our equipment and our knowledge of what can be done with it. In so doing. it has broadened the horizons of the movement as a whole and justified the effort put into it.

This year's World Championships saw a magnificent response from many people to the appeal for funds. Together with a first-class organisation and excellent supporting team, the four pilots were, thus, enabled to get in two weeks practice at Odessa and arrive at Marfa with some useful Texan soaring experience behind them. The many months of preparation were rewarded by a fourth and seventh place in a contest which was probably the fairest test ever of pilots and machines. Our thanks are due especially to the RAF for the splendid assistance they gave—without it the story would have been very different.

Some thought has been given to the future structure of international classes, and the articles in the October/November, 1970, S & G will have made everyone aware of some of the ideas in circulation. The Extraordinary General Meeting last October showed signs of a debate developing—if the wish becomes evident we should obviously make arrangements to discuss the matter and give our CIVV delegate the benefit of the distilled wisdom of the movement.

Whilst on the subject of high-performance flying, the past year has seen four records broken and these I should like to mention in this report. Bernard Fitchett set a new mark in the 500 km triangle—and becomes Number 2 in the select club who have achieved this still remarkable feat in the UK. John Fielden scored a double in the two-seater distance and goal (both of these UK records). John Delafield and L. S. Hood set new marks for 300 km. speed and gain of height respectively for the British National records in these events. [Hood's claim has not, to date, been homologated]

Safety is one of those things which gets increasingly important as more people take to the air. Our Safety Panel has for many years done vital work in keeping and analysing the record so that we can see how we are doing and learn the lessons which experience teaches, if we are attentive. John Ellis has steered this work since he took on the chairmanship of the Panel three years ago, and the Association owes him sincere thanks for a vital job well done. He hands over to George Turner for 1971.

Talking of safety leads one naturally to the subject of instructor training, and here 1970 has been of great significance in seeing the first year of training on the Falke. Bill Scull reports enthusiastically about the effectiveness and efficiency of this new device and it seems very clear that standards and the rate of achieving them are both going to take a great leap forward. The importance of this for the future of the movement can hardly be over-emphasised. Bill is also to be congratulated on some first-class work on teaching methods and visual aids.

What I have said so far has been about matters of general concern to the movement. We should also be introspective to the extent of enquiring after our state of health measured by the activity of the clubs. This in fact shows an encouraging trend, with membership and flying up in both cases. Further details are given in Joan Cloke's report on membership and activity.

Finally, I am sure I speak for everyone who glides in this country, when I say how glad we are to see Slingsby Sailplanes in business again, and producing an aircraft capable of holding its own in a national Open-class competition against the best imported ships. May success attend this reincarnation and all those who sail in her.

K. G. WILKINSON, *Chairman.*

Finance. Our accounts for the year 1st October, 1969, to 30th September, 1970, show an operating profit of £1,353.

Negotiations are still taking place with the Department of Trade and Industry for a grant toward those services performed for the Department by the Association.

The World Championships account to 30th September, 1970, shows a profit of £1,093 after charging depreciation on the ASW-12 bought for the Championships to this account.

Sales of BGA books and other items continue to show a good income to the Association.

J. LARGE

Magazine Committee. S & G has, I think, again kept up its high standards, the main burdens being keeping its finance straight in these inflationary times and finding help for Rika Harwood. (See also pages 82 and 114.)

Unfortunately, we have had to increase the price again this year and a further increase to 6s (or rather 30p) is necessary from the February, 1971, issue.

P. A. WILLS

Membership. The Membership structure of the Association is now as follows:

Full Members - - - -	67
Associate Members - - -	120

The 67 Full Members include three Members which have affiliated clubs as follows:—

Army Gliding Association with 2 clubs.
RAF Gliding and Soaring Association with 12 clubs.
Royal Naval Gliding and Soaring Association with 4 clubs.

Operations. During the year under review (the 1969 figures are given in brackets):—

Civilian clubs flew a total of 58,936 (51,179) hours from club sites from 241,070 (228,357) launches.
Club-owned gliders total 250 (243).
Privately-owned gliders total 329 (343).
The combined Services flew 19,342 (18,189) hours from 88,515 (92,200) launches.
Certificates were issued as follows:—
A and B endorsements including ATC 2,338 (2,637).
C endorsements 619 (382).
Bronze C endorsements 453 (455).
Silver C 239 (226).
Gold C 31 (23).
Gold C Distance 44 (18).
Gold C Height 77 (24).
Diamond for Goal 55 (24).
Diamond for Height 26 (7).
Diamond for Distance 11 (1).
(The ATC issued 1,654 (2,239) Proficiency Certificates and 1,380 (1,733) holders of these applied for A and B Certificates.)

Operation Sigma. The manufacture of the Sigma prototype continues, but the work is proving even more difficult than anticipated. The first flight is now predicted for the first quarter of 1971. Finance has become a severe problem due to the extended time scale and other problems; it is, however, important to remember that Sigma has always been financed on the principle that funds which would otherwise be available for general use in the gliding movement have not been tapped. This principle has been rigidly adhered to.

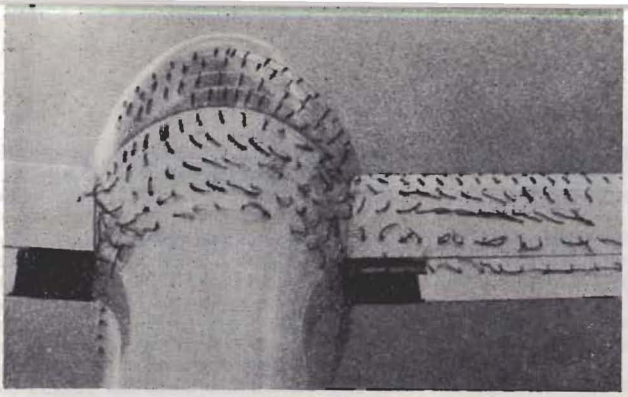
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SLINGSBYS: Progress to date

SLINGSBY SAILPLANES' budget for 1971 included design work on a new British sailplane, George Burton announced at a meeting of the Kronfeld Club recently. This was likely to be a self-launching glider of about the performance of an SHK.

Explaining the philosophy underlying the decision, George said that if the Falke became a commonly used glider training machine, winches would go out of date and private owners would increasingly need self-launching gliders. Slingsbys hoped that a prototype would be flying in two years.

Slingsbys had been bought by Vickers late in 1969 following the appointment of a receiver, and was at present engaged in producing, under licence, the Glasflügel Kestrel high-performance glass-fibre sailplane and the Scheibe Falke motor glider.

If the reborn Slingsbys had started on an original design right away, George said, a total of three years would have been necessary to develop it to the point of obtaining an Air Registration Board C of A, and no products would have been sold meanwhile. Slingsbys had to start producing gliders as soon as possible, which was why it was making the Kestrel and the Falke. The firm would not, however, be undertaking further contracts for the manufacture of gliders under licence.

A number of difficulties had been encountered with getting the Kestrel and the Falke into production which had necessitated a considerable amount of development work on Slingsbys' part, George said. Most German glider firms were very small and could not afford investment in jigging. Therefore the Germans made do with a minimum of jigging which resulted in components not being interchangeable.

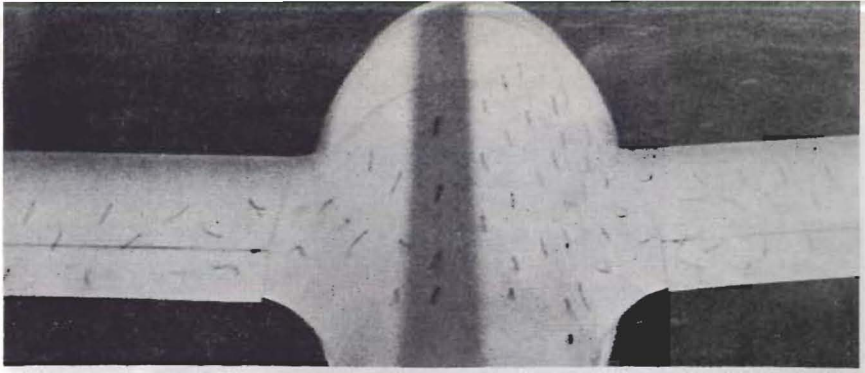
There was therefore a resultant lack of drawings which, apart from proving a serious drawback from the production point of view, was also unsatisfactory for certification purposes. In order to export Kestrels, an ARB C of A was necessary, and a full set of drawings was required before the C of A was issued.

A number of pilots had reported that Kestrels had a poor climbing performance in weak thermals. This led Slingsbys to undergo tests and conclude that one possible reason was that airflow breakaway occurred at the wing roots (see above). Wingroot fillets, which were developed in collaboration with Glasflügel, had therefore been added to overcome this. One machine was also built with a new canopy, but Slingsbys had decided to continue production using the old design.

The firm was also looking into the possibility of producing its own conversion of the Volkswagen engine for the Falke. The imported one was very expensive (nearly £800). A retractable engine like the American Nelson engine (which has been fitted to one of the Capstans) was likely to be chosen for the high-performance glider project.

Slingsbys are continuing to provide a spares service for all Slingsby gliders ever made; the spares side of the firm's business was showing a steady profit.

But, George emphasised, Slingsbys was not likely to live by gliders alone.



Opposite: *The Kestrel 17 before wingroot fillets were fitted (note black patches). Flow separation may have been increased by closeness of tufts.* Above: *Results after fillets have been fitted. Slight deflection of flaps may have induced some of the remaining breakaway. Both photos taken during flight.*

At the moment, about 50 per cent of the firm's work was on the construction of glass-fibre superstructures for submarines and the development of glass-fibre components for marine use. Much of the firm's work consisted of research and development in the glass and carbon fibres field, both in and out of gliding.

A picture emerged from George's talk of Slingsbys as a research-based firm in which gliding played an integral part of a complex research programme. For example, a single Kestrel was being built with a spar of carbon-fibre instead of glass-fibre. This resulted in a much stiffer wing, although it was only slightly lighter. The value of the carbon-fibre in the wing was about £8,000, and George said that it was not anticipated that a production model in carbon-fibre would be manufactured. The work was part of a research programme directed at producing carbon-fibre components for submarines.

There were no plans to produce a "club hack" of the K-8 type, George concluded. Torva might well fulfil that demand, he said.

★ ★ ★

SAILPLANE NEWS

Slingsby Falke

The first motor glider Falke built at Slingsby Sailplanes had its maiden flight on 8th February. This particular machine has a Scheibe-built fuselage, but all subsequent Falkes will be of entirely British manufacture.

The Falke has been fitted with a carburettor heating device to prevent ice formation, and this is available in kit form from Slingsbys.

Kestrel 17

The first five Slingsby-built Kestrel 17's are now nearing completion. Several modifications have been incorporated. The main one is a new wingroot fillet which, it is claimed, has cured the flow separation from which the earlier models suffered. A new tailplane (Wortmann section) is also incorporated. Other mods. include an instrument tray fitted above the main wingroot, an instrument panel with fairing to cover the pilot's feet, wingtip rollers and a single dive brake on the top surface only (to prevent air leakage) as well as the tail parachute. The flaps now operate in conjunction with the ailerons. The rate of roll is about three seconds, Slingsbys says, and with all these modifications, the Kestrel 17 should have an improved performance.

These machines, which will have full ARB Cs of A (for export purposes), are being offered by Slingsbys at £350 below the current list price of £3,350. No further 17m. Kestrels will be produced at Slingsbys, as the wing moulds have now been adapted for the 19m. Kestrel.

Kestrel 19

The moulds for the 19m. Kestrel are now ready and production is scheduled to start shortly after publication of this issue. Slingsby Sailplanes expects that 20



will be produced by the end of 1971. George Burton, managing director, will be flying the research 19m. carbon-fibre spar Kestrel in the Open Class Nationals at RAF Newton in May.

Std. Libelle

The seven Std. Libelles shown in the photograph arrived at Slingsby Sailplanes on January 29, and within a week were collected by their purchasers. Another six Std. Libelles are on order, two for delivery in June and four for July. Only two of these were still available at the time of writing.

Sigma

The Sigma team hopes that Sigma will reach the test flying stage by the end of April. The team remains confident that if the wind tunnel results are achieved in practice, a performance margin of the order of 20% over current production Open Class gliders (such as the ASW-12) will be obtained. Nick Goodhart comments that Sigma is "optimised for the larger, stronger thermal".

Emphasising that it is a research aircraft, Nick says that if the principle underlying its design is proved, that principle will be used to build a superior production glider. Sigma's position is somewhat analogous to the D-36, which proved so successful at South Cerney, and which was used as the basis of the ASW-12.

A production glider incorporating Sigma's principles would, however, differ to a greater extent from Sigma than the ASW-12 differed from the D-36.

Phoebus no longer manufactured

The Phoebus range of gliders manufactured by Messerschmitt-Bölkow-Blohm GmbH has been discontinued, as the company is now using its glass-fibre techniques in the production of its new light aeroplane, the Monsun. Spares and major repairs facilities are being maintained, states the UK agents, Cambridge Sailplanes, Swaffham Road, Bottisham, Cambridge CB5 9DU.

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Schleicher Price Increases

Price increases of between 10 and 15% were applied by Alexander Schleicher Segelflugzeugbau to its range of gliders and motor gliders in February.

John Jeffries, speaking for the UK distributor, London Sailplanes Ltd., said that there were two reasons for the increase—a wage rise in Germany for skilled workers in the type of industry which includes glider manufacturing, and the devaluation of the Pound and, more recently, revaluation of the Mark.

Ex-works prices, which do not include extras or delivery, are: K-8, £1,700; K-13, £2.400; K-6E, £2,100; ASW-15, £2,682; ASW-17, £4,224; ASK-14, £3,276; and ASK-16, £4,566. The price of the K-13 has nearly doubled since it was first imported about 1968, and the original price of the K-6E was about £1,100.

On delivery times, John said that new orders would probably be met as follows: K-8 by the end of 1971, K-13 early 1972, ASW-15 in spring 1972, and ASK-14 mid-summer 1971.

John said that the British market for gliders was now filled; sales had levelled off after the activity of the last few years when the demand for gliders during Slingsby's recent inactivity had been high. In addition, he felt that the prices of machines were getting further away from people's incomes, but he expressed confidence that this trend would soon be reversed.

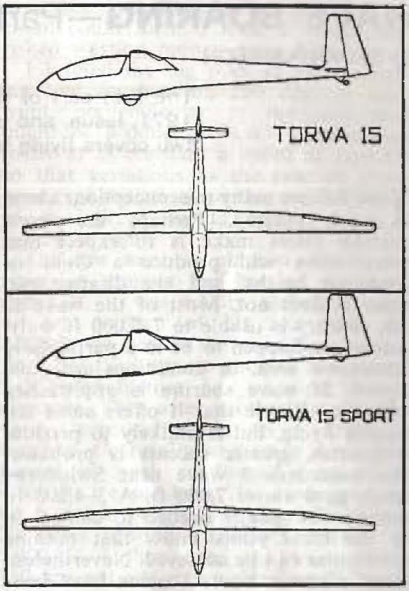
Torva Sailplanes

According to news received from Torva Sailplanes Ltd., the test flying of the first prototype is scheduled to take place at the end of March.

Two models of the 15 metre sailplane are to be produced—Torva 15 Standard, and Torva 15 Sport; the latter being the first to fly.

Both types possess a modified Wortmann high-lift wing section for low sink in circling flight and are of a glass reinforced plastic construction. The split spar rigging system, characteristic of glass-fibre machines, has also been adopted for Torva.

The Torva Standard, described as a moderately priced single-seater of good performance and appearance for use by clubs and private owners, has Schempp-Hirth-type airbrakes and a fixed sprung landing wheel. It should have an especially good climb rate and the maker's provisional performance figures are compared with those of the K-8B, because they want to emphasise its "stay-up ability".



The Torva Sport is the first British designed modern sailplane to be fitted with flaps which also act as airbrakes. Its excellent rate of climb and good inter-thermal speed (based on the "average British Goodhart thermal") should make it, according to the makers, a good competition glider. It has a retractable undercarriage.

The estimated performance figures are shown below.

Technical data Torva	Std.	Sport
Span, metres	15	15
Wing section, Wortmann Mod.		
Wing area, sq./m.	11.29	11.29
Aspect ratio	20	20
Max. L/D, kg./sq.m.	28	28
Empty equipped weight, kgs.	211	215.5
AUW, kgs.	317.5	317.5
Glide ratio—45 kts.	36:1	36.5:1
Stall, kts.	33	33
(flaps down)		30
Min. sink, m/sec. at 35 kts.	0.56	0.56
Sink at 55 kts. m/sec.	1.03	0.90
Max. Speed, kts.	108	108

WAVE SOARING—Part 2

By JACK HARRISON

The first part of this article was published in our February, 1971, issue, and discussed the theory of wave soaring. Part two covers flying techniques

THERE are many misconceptions about wave soaring. Perhaps the worst mistake pilots make is to expect that every wave will produce a Gold or Diamond height, and are disappointed when it does not. Most of the wave in this country is usable to 7–8,000 ft. only, unless you happen to be in a particularly favourable area, or conditions are quite superb. If wave soaring is approached with the attitude that it offers some enjoyable flying, but is unlikely to produce certificates, greater success is probable. The Lincolnshire wave near Swinderby rarely goes above 7,000 ft. A 3–4,000 ft. aero-tow is usually needed to contact it. So the local pilots know that nothing spectacular can be achieved. Nevertheless, many pleasant hours soaring have been possible.

THE LAUNCH

Aero-tow into wave

An aero-tow direct to the wave is by far the most reliable method of contacting wave. If aero-towing is available (and finances permit), I invariably take a high tow to the wave rather than have all the frustration, time wasting, and far less certain success of say, a winch launch to a hill.

Before I decide to launch, there must be some indication of wave. With a well marked cloud pattern, I can be reasonably confident of success. But I may just have an inspired hunch. I study the map and make a guess where the wave should be. The primary wave is relatively easy to pin-point. But the position of further waves downwind is more difficult and the cloud pattern becomes less distinct.

An aero-tow perpendicular to the wave system should at some point go through lift. If possible I have a tow to the primary. "In phase" hills can be treated in isolation, each hill in effect producing its own primary wave. If I cannot reach the primary, I have a tow into wind across the wave.

Release height

If the object of the flight is purely enjoyable soaring, then the tow should be as high as possible. It is a great advantage to release 1,000 ft. or more *above* cloud base. Lift does occur lower down, but it is far less workable. Above cloud base, the lift has usually settled down to make smooth and relatively straight forward soaring. In the absence of low cloud, the tow should be above the inversion. Below the inversion, the lift is often (though not always) broken, intermittent, turbulent and far more difficult. So my advice is normally to have a tow to well above cloud base, to say 3,000–4,000 ft. If, however, it is hoped to achieve a Gold or Diamond height, then the release must be as low as possible. If there is any doubt about releasing though, the advice is—don't. Unless the tow is to a hill, I would recommend never releasing below 2,000 ft. except in very rare circumstances. It might seem extravagant to have such high tows. From my experience, it can be a waste of money to try to economise with lower launches.

Aero-tow to hill

This is straightforward, and would often be an alternative to a winch launch. All that is necessary is to ensure sufficient height before releasing to be able to reach and use the hill lift. Getting into wave from the hill will be described later.

If a certificate height climb is hoped for, it is important to get a good low point on the barograph. Hill lift can be so powerful that, unless a positive low point is marked, there may be difficulty with the subsequent claim. It is not sufficient to pull out the air brakes for a few seconds. This will *not* mark the trace. Once you are certain that the hill is working, make a definite descent (or level off if you are not confident) and hold this low height (with the use of brakes) for a couple of minutes at least.

A quick dive and climb will not mark the trace. Time and time again, heights have been missed by a few hundred feet, which could easily have been achieved by going lower on the hill at the start of the flight.

Technique on Tow—Good wave

I will describe two typical launches—one into strong, easy lift, the other into indifferent blue wave.

From the airfield, I could see, some six miles upwind, what looked like a wave gap in the strato-cu sheet. Its position was about where I would expect the primary. Overhead was a thinning in the strato-cu, and I suspected another wave trough. The tug pilot was asked for a climbing tow to the gap upwind, leveling off if necessary to avoid going into cloud. When at the gap, he was to continue climbing in the clear, and I would release, I hoped, into lift.

Immediately after take-off, we were climbing rapidly in rough, broken lift. After a mile or so, the climb on tow became the more normal 4 knots. Soon we were at cloud base, 3,000 ft., by now some 4 miles upwind of the airfield. Then we hit some of the most severe turbulence in my experience, and soon were descending at 3 knots. I assumed that the tug pilot had throttled back to avoid cloud, but I learnt later that he was still at full throttle. It was quite obvious at the time that we were in strong sink, probably rotor. Suddenly we began climbing again and just cleared the front of the cloud at the wave gap. At 3,500 ft. with the vario at 8 knots, I pulled off. I had done so a shade too early, and had to push forward at 60 knots to get fully into the clear and into the best lift. I slowed down to 40 knots IAS with 7 knots on the vario. The lift had only just begun to decrease at 14,000 ft. when I had to break off as I had no oxygen.

I will discuss in more detail later exactly how I worked the lift.

Indifferent wave

The sky was clear with poor blue thermals. There was no visible indication of wave. But the wind was in the right direction, and the right strength. There was an anticyclone to the south-west of Britain, and I presumed that the lapse rate was favourable. Unfortunately, however, the humidity was so low that no cloud could form. I took a chance and risked wasting money on a high tow.

I briefed the tug pilot to do a climbing tow on heading 290 degrees (into wind, perpendicular to the hills that might be producing wave). I asked him to fly at as constant a speed as possible so that variations in the rate of climb were real variations in the vertical speed of the air. I would release when I judged it right.

The tow went as planned. Below the inversion, among the last of the day's thermals, it was mildly turbulent, with no real pattern of lift and sink. By 3,000 ft. we were in the smooth air above. At 3,200 ft. the vario showed 5–6 knots; 2–3 miles further on, we were barely climbing. Then after another 2 miles, the vario increased again to 6 knots. I watched it carefully, and when it was just passed its peak reading, I released at 4,800 ft. I eased back 200 yards, and set up a track parallel to the hills (some 30 miles upwind). The lift worked to 7,000 ft. I then used the wave for a 150 km out-and-return, landing 4½ hours

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later at sunset. My expensive gamble had paid off.

Wire launching

If the launch can be made directly on to the hill, this might be the ideal method, particularly if height gains are hoped for. A wire launch at a flat site requires a great deal of luck to succeed. Almost certainly, thermals will have to be used initially, so familiar thermal techniques will have to be used (described later).

BECOMING ESTABLISHED IN WAVE

This is perhaps the most difficult part of any wave flight. The techniques involved are unfamiliar to many pilots, so although wave can be a common occurrence at many sites, it may be infrequently used. I will describe in detail the methods I adopt by using successful flights as examples.

Good lift

At the start of the flight in good wave described earlier, I had released too early with the cloud still forming around me. So I had to press forward fast to make headway into a 35 knot wind. As it is vital not to get too far back and into cloud, I took no chances and flew forward too fast rather than too slowly. When I was positively clear of cloud at 3,500 ft. (base 3,000 ft.), I slowed to minimum sink speed. If the wind had been more than 40 knots, I would have flown at such an indicated air speed as to give zero ground speed. I fixed my position over the ground (the never failing village of Evenjobb; that place ought to make a good sunshine holiday resort!). It is not easy to see vertically downwards, so I normally use a couple of features on either side of me, and maintain position by reference to these. Flying directly into wind gave a few knots positive ground speed. The vario was steady at 7 knots.

With only 35 knots of wind, it was therefore necessary to beat along the wave. By the time I had reached 5,000 ft. the cloud pattern was quite clear, so tracking was easy. It was only necessary to turn out of wind by a few degrees to achieve the necessary forward ground speed of 35 knots. I went ¾ of a mile or so one way before turning back a few degrees to be flying "the other side of the wind".

I was by now passing cloud tops at 6,000 ft., and with very clearly marked lift there was little worry that I would completely lose it if I explored the wave. I flew at 40 knots at right angles to the wave and moved slowly forward. It was difficult to assess accurately the wind speed and direction, so constant reference to ground features was necessary. It must be remembered that as height increases the indicated/true airspeed relationship must be taken into account. At 10,000 ft. 40 knots indicated is nearer 50 knots true air speed. However, frequently, the true wind speed increases with height by roughly this same factor so no adjustments to IAS are required, for example, to maintain zero ground speed.

As I moved forward I watched the vario. In the smooth lift small changes in the rate of climb were readily apparent. I noticed where I had the peak reading and then set up the beat to pass through this point. Now I had established how far into/down the wave the best lift occurred. If the lift had



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decreased as I initially moved forward to explore, I would then have eased back by turning well out of wind, first one way then the other. Only in light winds (25 knots or less) would I risk a circle. When exploring, I always go forward first. It is easy to get downwind again if I have made a mistake. If I went downwind first and made a mistake, I might never get back into the lift.

I now explored along the line of the wave, maintaining constant distance in front of the cloud. The strength of the lift varies along the wave. So as I tracked, again I noted the vario. In smooth wave lift changes in rate of climb cannot be *felt* as easily as in thermal. I stopped where I had the best climb. In fact, I had a good visual guide as to where the best lift should be. I merely positioned myself directly downwind of the biggest lee slope of the mountain.

Sometimes, I explore the wave the other way round, tracking along the wave and then easing forward. With experience, both techniques can be used simultaneously. But a word of caution. If in doubt, don't explore. Stay with what lift you have.

During the climb, I made small, continual, explorations. all the way up to 14,000 ft. As I climbed higher, my positioning was made more by reference to the cloud than by ground features. At 14,000 ft. I broke off the climb and set off across country. Cross country techniques will be covered later.

Indifferent lift

The blue wave was far more difficult to use. At 4,800 ft. release, I slowed to minimum sink. The wind was only 25 knots, so considerable tracking was necessary. I noted my position and, guessing the alignment of the wave from previous experience of the area, set up a small beat of no more than ¼ mile. I just dared not leave the place where I knew there was at least some lift. Slowly, at a mere ¼ to ½ knot, I climbed. At 6,000 ft. the lift petered out. I had nothing to lose now by a little gentle exploring. I moved slowly forwards, then backwards, left and right, and observed results. I crept up to 7,000 ft., but not an inch higher. I then set off cross country. The waves upwind were better, and at one time, I climbed at 1½ knots to 8,400 ft., although in general I had to be content with ½ knot.

From thermal into wave

Another example brings out most of the major points. I was on the return leg of a small out-and-return thermal cross country. The cumulus at 4,000 ft. was streeting nicely. My track was 45 degrees to the wind. My technique was to fly the streets into the wind and then cross rapidly at right angles to the next one. Suddenly the street I was using collapsed immediately upwind of me and a hole in the cloud appeared. To my right, a band of what looked like overdeveloped cumulus linked my street to the next. I hesitated whether to cross the gap to the remains of my street upwind, or to turn 90 degrees and fly under the band of cloud to the next street. It wasn't far to the next cloud upwind, so I chanced it across the gap. To my surprise just upwind of the cloud street (in the gap) I was still in lift. It was broken but gave

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bursts of 2 knots. Although totally unexpected, I immediately recognised wave. Below cloud tops, wave lift frequently is rough and broken. The picture now became clear. The streets were collapsing, and instead wave bars were lining up across wind (Fig. 1, below).

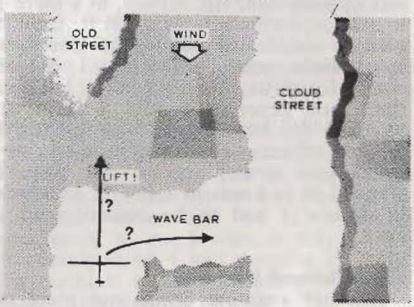


Fig. 1

I established my position over the ground. I was some miles downwind from any hills, but I guessed which ones must be producing the wave. Because the wind was so light at my height, 20 knots or less, much tracking was necessary. I stayed in front of the best bits of cloud as they formed. I would allow myself to drift back gently, and even threw a few cautious circles. But before I had drifted back too far (even though I might still be in lift) I would press forward, although at that stage there was no cloud upwind of me. Then as anticipated, more wisps of cloud would form, and with them, more lift. Slowly, and unsteadily, I climbed. I resisted the temptation to allow myself to drift back too far even with the biggest lumps of cloud. This would have been fatal, as I could so easily have found myself engulfed in cloud and in sink.

At about 5,000 ft. the lift settled down into pleasant, smooth, 4 knot wave. I then began to explore.

This thermal into wave flight was fairly typical. If ever I find lift immediately upwind of a cloud, I consider that it could be wave, and treat it accordingly. I try to work this type of lift by staying clear of the cloud. But some pilots favour a climb in a particular impressive cumulus, and then fly out into wind, and into wave. When these types of wave cloud are seen from above, it is easy to see how the alternative techniques can produce the same result. The cloud climb not only risks icing, but makes it all too easy to drift too far downwind.

I have explained at length how I work the wisps of cloud as they form. This is the crucial part of getting into wave from thermal. Lift comes in bursts. I cannot stress too much how vital it is to keep pressing forward, even though at the time you might appear to be leaving lift. Getting up to cloud base is, of course, necessary before pressing ahead in front. Normal thermal techniques are used. Often a few circles are needed, then flying straight into wind. Then a few more circles, and so on.

From hill into wave

On fortunate occasions, a wave coincides with the hill, and it is possible to climb straight from hill lift into wave. Once I realise that I am climbing higher than ordinary hill lift, I treat it as wave and adjust the beat accordingly to align with the hills I think are producing wave. It is often mistakenly thought that wave lift can occur on the upwind side of the hill. Wave is essentially a lee phenomenon. Hence, when wave is found coinciding with hill lift, this wave must have been caused by another hill upwind.

Usually, the wave does not so conveniently coincide with the hill. It may be off one end of it, or out in the valley. In this case, it is necessary to get enough height on the hill to be able to reach the wave, and still return to the hill if the wave doesn't work. It may be possible to thermal soar from the hill to the wave, but often more complicated techniques are needed. So here goes with another story.

Benarty Hill, Portmoak. The wave cloud was clearly visible three miles upwind over Loch Leven. I kept climbing as high as possible on the hill, going forward at 60 knots, but always just failing to reach the cloud. I had some good low points on that hill as I spent a frustrating two hours listening on the radio to some impressive rates of climb. The wave bar suddenly came back, towards the hill and to its left. From maximum height on the hill, I just managed to reach the broken (thermal type) lift at the right hand end of the

cloud. I circled, flew into wind, circled, and so on. Just as suddenly as the wave bar had moved back towards the hill, so it moved forward again. I had to dash with it at 50 knots. Now I was where I had been trying to get those previous two hours, over the Loch at 2,000 ft. After a further 20 minutes or so, I was climbing at 6 knots in front of the cloud. There had been just this one opportunity to get into the wave. I wouldn't have got another chance. An aero-tow direct to the wave would have saved all that frustration. Incidentally, I learnt an important lesson on this flight. I left lift at 12,000 ft. as the vario dropped below 6 knots. How I wished I had stuck it out instead of over-confidently trying cross country speed flying. That wave apparently picked up again to 8 knots a few thousand feet higher, and took one pilot to over 24,000 ft.

Cross country

Cross country flying in wave is an entirely different dimension from that in thermals. You can still be local soaring 100 kms from base. Fourteen thousand feet is a moderate height, corresponding to perhaps 4,000 ft. in thermal. It *is* no more than a number on a dial. 5,000 ft. can be lost in 3 minutes. I once called on the radio "descending through 10,000 ft. and getting worried". I wasn't joking. I was about to drop out of the bottom of the wave, and landing could have been 10 minutes away. The pundit who talks about cruising at 14,000 ft. at 100 knots is no more boasting than the pilot who talks about 10 miles wings level under a cloud street. The barograph trace (Fig. 2) shows a typical, successful cross country. (265 km triangle—3½ hours.)

Let us start at the point where we are established in wave, above cloud. The exploration techniques of tracking along the wave can be extended. It may be necessary to increase IAS in strong winds to make progress along the wave (ie., if the climb has been made at zero ground speed). The climb, at reduced rate, may be continued along the wave. Alternatively, speed may be increased to give a reduced, or even negative rate of climb. No doubt some mathematician can work out the ideal cruising speed, but as a (no doubt incorrect) rule of thumb, I fly at a speed to give me about 1 knot down. When I find a strong area of lift, I slow, and perhaps turn into wind and climb again. At all costs, I avoid flying so fast that I risk dropping out of the bottom of the wave.

In very strong winds, the heading required to track along the wave is only slightly out of wind, so the achieved ground speed is low. Care must be taken to avoid getting downwind of the lift. It is easy to forget and head directly towards expected lift, eg, a wave gap. I recall one occasion when I headed for a wave gap in a confused sheet of stratocu. I realised too late that the gap was jumping upwind. I should have tracked towards where the gap would be by the time I got there.

The line of lift is rarely straight. It usually has to be followed like a gently winding road. Sometimes there is a "road junction", and the decision must be made whether to cross upwind or slightly downwind to the next wave (Fig. 3). Usually it is better to go upwind.

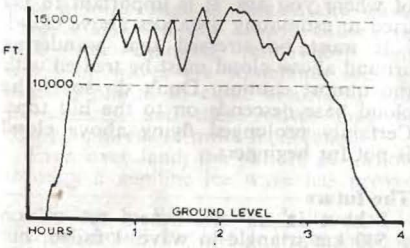


Fig. 2

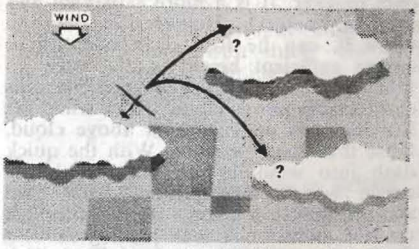


Fig. 3

After a climb it may be desirable to jump waves by flying directly into wind. The height lost can be quite phenomenal. I have regularly lost over 4,000 ft., and on one occasion it was over 6,000 ft.

There are two techniques available, with intermediate variations. Assuming that I have been climbing in the strongest part of one wave, by flying very fast directly across the wave I will arrive at the best part of the next wave. But on the way, I will fly through the strongest sink as well. Speeds of up to 100 knots may be necessary. Height loss is great. However, this technique has the advantage that you fly straight into the best lift, and the time taken to reach this lift is only a few minutes.

The alternative technique is to track to a weaker part of the wave, cross through the weaker sink, and into the weaker lift of the next wave, and then along to the strong lift. Height loss in this method is much less. But it is less easy to find the best lift, and the total time to get there is long (Fig. 4).

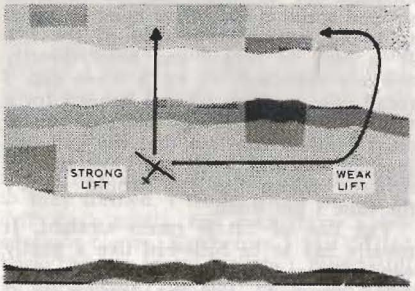


Fig 4

I tend to favour the quick dash with the large loss of height. The agony is over quicker. It is a more satisfying and exciting method. However, as up to 6,000 ft. can be lost, it is essential to ensure sufficient height at the start, so that the arrival at the upwind wave is comfortably above cloud. Thus, when the lift does not go very high above cloud, I use the "long" method. With the quick dash into wind, in the heavy sink between waves, the vario is often hard against the stop. Don't panic (although on one occasion I was picking landing fields from 8,000 ft. over Loch Tay). This is a good sign that the lift ahead must be strong. It can be very tempting to chicken out and turn back. Unless it is certain that the next wave cannot be reached, do not change your decision. A very long time may have been spent gaining sufficient height to be in a position to jump waves. Do not waste the opportunity.

Flying downwind has its problems. It is easy to fly straight through the wave lift as it will be crossed in a few seconds only. If I wish to fly downwind, and use wave lift on the way, when I am approaching where I anticipate lift, I turn, perhaps almost into wind again and allow myself to drift back only very gently. Only rarely have I successfully flown downwind directly into the lift, done a quick 180 degree turn and been perfectly positioned.

A long glide out with the wind has less success than might be expected. The lift and sink do not seem to cancel out, and the sink wins. So don't expect glide angles of 1:60.

Navigation

Map reading above large amounts of cloud can be very difficult. My technique is to establish my position very accurately over each wave gap. Speed flying techniques may have to be temporarily abandoned as I stop and wait over a gap, and find my position. Fortunately, of course, wave gaps are usually associated with lift at their downwind edge. Perhaps at the wave gap, only a few fields may be visible. It is essential to find exactly where you are. I once spent 15 minutes trying to identify on the map a bend in a road which ran through a wood, although my natural impatience made me want to press on and find better lift. Had I done so, I would almost certainly have become lost.

If regular fixes are obtained, it is fairly straightforward to use dead reckoning techniques. The drift/ground speed must be calculated so that when the next wave gap is reached, there is a reasonable idea of where you are. It is important to get used to estimating distances above cloud.

It must be stressed that wandering around above cloud must be treated with the utmost caution. Don't do so if the cloud base descends on to the hill tops. Certainly prolonged flying above cloud is not for beginners.

The future

I have in all seriousness set off on a 500 km triangle in wave. I failed, but that is another story. Sam St. Pierre has

several times flown from Dishforth to Edinburgh and back (450 kms), only failing to turn Portmoak for Diamond distance because of cloud cover. A flight from Lincolnshire to Inverness and back may be a dream, but is not impossible. But techniques will have to be developed for navigating safely above 8/8 cloud, and perhaps at night.

The geography of the hills is often reproduced in the cloud pattern. I have used radio assistance from the ground to compare the cloud gaps as I saw them from above with the cloud gaps as seen from below. It was pleasant to be reassured that cloud base was well above the mountain tops.

Undoubtedly, in the future, multi-channel radio will be more widely used. Unlimited possibilities will be opened up, for example, by the use of direction finding bearings from many stations. Air traffic control may be helping rather than hindering our activities by providing radar fixes. Instrument let downs at night will become common place. Competition organisers will have to use radio aids to prove that a pilot has rounded a cloud covered turning point. Thermal soaring will be in danger of becoming a forgotten art.

* * *

Comments by TOM BRADBURY: I was glad to see the problem of going downwind mentioned, because this often comes as a surprise to beginners, and it doesn't seem to have been written up before. However, I must leave the techniques for the experts to argue about. Here are some other points:

"Wave flying is essentially a lee phenomenon." In technical papers, waves are now often referred to as gravity waves, because they exist in many forms over a wide range of heights and wavelengths and are not always caused by hills. For example, remarkably long trains of waves are sometimes seen in satellite photos of cloud associated with jet streams, and these waves may be many hundreds of miles from land.

Even over land, the pattern of airflow through a genuine lee wave has proved to be more complicated than one would suppose from a glance at the commonly reproduced diagrams. In 1965, F. J. M. Farley described how the lift of a lee wave was found to extend further forward as he climbed, until at high level the lift was well upwind of the slope ("Line vortices over the Jura", S & G June, 1965, p. 214). This effect has also been observed in Scottish waves, and produces the surprising fact that one may be climbing above or even forward of the area where the low level air is descending.

O. K. Jones (1970 *Tellus*, Vol. 22, No. 5) set up a mathematical model to examine Farley's report, and computed not only similar wave patterns, but by altering the parameters produced some very strange looking shapes as well. In the same issue of *Tellus*, Robert R. Long has shown how a ridge may affect the airstream much further upwind than any soaring pilot would expect.

Evidently, we must keep an open mind on the pattern of airflow in hilly areas. Accurate observations may be worth more than theoretical diagrams, but we need more careful observations. These should really be made during the flight and jotted down on a knee pad, not reproduced from an over-enthusiastic memory some time afterwards.

I am impressed by the amount of unrecorded wave flying that goes on; there must be a great deal more useful knowledge about waves which should be shared more widely. If the data collection scheme described below proves successful, it may be possible to correlate the wave reports with synoptic charts and tephigrams, and with luck the full patterns could be confirmed by photographs from satellites.

* * *

Towards a good waves guide to Britain

In order to obtain data on the occurrence of wave in Britain, we are inaugurating a wave flights column in S & G, starting June. The support of *all* pilots who contact wave in Britain from 1st March onwards would be appreciated. A list of wave flights will be published regularly. It is hoped to correlate all the data covering, initially, the

Correction to Part 1: Wind direction in Fig. 4 should be left to right, not as shown.

12-month period from 1st March, 1971, to 28th February, 1972, and subsequently publish the findings.

The details required are indicated below. Forms on which to describe flights are available from the BGA office. Please send information for inclusion in the June S & G by 14th April.

Wave flights

Pilot's name:
Date of flight:
Type of glider:
Take-off point and time:
Launch or release height:
Location wave contacted (map reference):
Height wave contacted:
Height gained:
Wind direction at ground level:
Wind strength at ground level:
Did strength increase or decrease with height?
Source of wave, if known:
Was it primary or secondary, etc?
Cloud structure:
Duration of flight:
Remarks (strength, how discovered, rotor contacted, several waves used, cross country flight, etc):

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NOTES ON THUNDERSTORMS

GLIDER pilots are often tempted to venture where angels fear to tread, and this is particularly true where thunderstorms are concerned. Cu-nims offer the prospect of rapid climbs to Gold and Diamond altitudes and the opportunity to leap across large blue gaps. They also offer a wide range of unpleasant and potentially lethal phenomena, such as lightning strikes (fusion of control linkages is a very real danger in unbonded machines), ice accretion (which can be so heavy as to double stalling speeds and render a glider unflyable) and Apollo-esque rates of climb (which can suck a pilot helplessly to high altitudes and unconsciousness).

A recent aeronautical information leaflet published by the civil aviation department of the Department of Trade and Industry summarises the effect of thunderstorms on aircraft operations. Although aimed at powered aircraft, much of the information is of relevance to soaring pilots, and is reported as a warning to proceed with caution, if at all.

The leaflet describes thunderstorms as usually consisting of several self-contained cells, each in a different stage of development. New, growing cells are recognisable by a cumuliform shape with clear-cut outlines and "cauliflower" tops. The summits of more mature cells appear less clear-cut and are often surrounded by fibrous cloud. Cell development, which can be very rapid, may, however, be obscured by other clouds.

Within the storm, upcurrents and downcurrents of similar intensity and in close proximity with each other can often exceed 3,000 ft./min., and their horizontal extent may be as much as a mile and occasionally more. Recent research, the leaflet states, has measured sharp-edged gusts with vertical velocities of 10,000 ft./min., and the lateral growth of a thunderstorm system to extend six miles in 20 minutes. Individual cells may last for more than an hour and a storm system persist for several.

As a warning against an innocent appearance, the leaflet comments: "No useful correlation exists between the external visual appearance of thunderstorms and the turbulence and hail within."

Turbulence within thunderstorms, including up and downcurrents (both vertical and sloping) and gusts, reaches maximum intensity in developing and mature cells. Eddies, felt as gusts, also often occur some distance outside the thunderstorm cell itself, and the region around a cell or between adjacent cells is, therefore, likely to be turbulent. The leaflet emphasises that stress limits may be exceeded if abnormal pilot-induced loads are added to already high loads due to gusts. "In some instances, correct flying technique is difficult to achieve, and the indications are that the loss of control which may follow incorrect techniques is a more serious hazard than the risk of structural failure due directly to an encounter with turbulence. This is because the pilot is then faced not only with the problem of recovery, but also the risk that recovery manoeuvres are likely to subject the aircraft to great stresses that may lead to structural failure or serious deformation."

Although gliders move between conflicting pieces of air in a more leisurely fashion than powered aircraft, an "air-pocket" (thermal shear or what-ever you fancy calling it) can arrive as abruptly at 50 knots as at 500.

All is not safe in clear air, either. Anyone who has watched the activities of the club windsock will appreciate the dangers of making a predictable landing when thunderstorms are in the vicinity, particularly after being spewed out of the bottom of a cloud of low base and uncertain digestion. The leaflet states, coolly:

"Accidents have occured during the take-off, initial climb and final approach phases of flight, which were probably due in part, if not entirely, to the effect of a rapid variation in wind velocity known as a squall. Unlike the erratic fluctuations caused by gustiness, a squall gives rise to airspeed fluctuations of a more sustained nature and is, therefore, likely to be more dangerous. Gustiness is likely to accompany squall conditions. Thunderstorms frequently produce squalls and, although hazards exist at

all levels, it is in the lower levels where aircraft are engaged in taking off or approaching to land that squalls may have more disastrous consequences. Winds caused by the outflow of cold air from the base of a thunderstorm cell have been known to change in shallow layers of a few hundred feet by as much as 50 knots in speed and 90° or more in direction. Due to the effect of inertia, an aircraft in flight will tend to maintain its ground speed and squalls will, therefore, produce airspeed variations which can be large enough to be dangerous, particularly during the take-off, initial climb, final approach and landing phases of flight.

". . . In assessing what airspeed changes to expect, a pilot must consider the longitudinal component (of the wind). It should be remembered that an increasing headwind component or decreasing tailwind component will produce airspeed increases which, in the late stage of approach, when it is no longer possible to adjust airspeed, may result in overshooting the desired touchdown point. Conversely, a decreasing headwind component or increasing tailwind component will produce airspeed changes which may result in under-shooting the runway or landing area or, in extreme cases, could give rise to a stall."

On rain and icing, the leaflet is dour: "Recent flight research has revealed that water can exist in large quantities at high altitude where the ambient temperature is as low as −45°C. Rain, sometimes heavy, may, therefore, be encountered at all heights up to those altitudes and give rise to ice accretion and a possibility of the malfunctioning of pressure instruments."

The temperature range favourable for ice accretion in thunderstorms is from 0°C down to −40°C; ie, where supercooled water drops are in heaviest concentration. Below −30°C, however, a large proportion of the free water concentration consists of ice particles or snow.

Most recorded lightning strikes, the leaflet says, have occurred at levels where the temperature is between +10°C and −10°C (within plus or minus 5,000 ft. of the freezing level), although the risk exists outside this height band, particularly at the higher levels.

Static electricity, although not normally dangerous, has been known, on rare occasions, to discharge across a windscreen or plastic panel, causing it to break.

Instruments which may be affected by thunderstorm activity include magnetic compasses (rendered unreliable after a lightning strike) and air speed indicators, which may under-read as a result of heavy rain.

Last, but not least, errors in the indications of altimeters and vertical speed indicators can often be caused by pressure variations in the vicinity of thunderstorms: "There is some doubt as to the magnitude of these errors, but recent evidence has shown that they can be as much as ±1,000 ft. . . . Near the surface, periods of heavy rain are an indication of the likelihood of pressure variations and gusts." (*Aeronautical Information Circular United Kingdom* 76/1970, "Thunderstorms and their effect on aircraft operations", Aeronautical Information Service (AIS 1), Tolcarne Drive, Pinner, Middlesex, telephone 01-866 8781.)

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WASHOUT



By Platypus

IT was really a form of frustration that was to blame. Here it was, the last weekend of June, and I hadn't had a decent cross-country at a time when I'd usually done hundreds of miles. That was simply because I'd opted for a latish contest and my partners enjoyed the brilliant conditions of the early part of the season. Luck of the draw; but all the same, that did not prevent my pencils being chewed to matchwood as cumulus burbled past the office window, framed against a dazzling blue background.



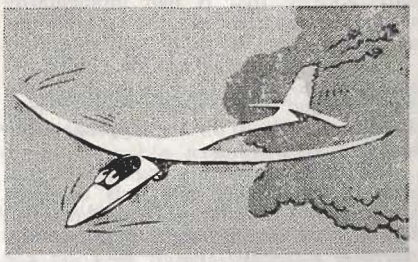
At last the glider, the pilot and the weather were to meet. It was like one of Nelson's tars finding his first woman after umpteen weeks at sea. Caution was thrown to the winds. The winds threw it back again, gusting to 40 knots and howling round the windsock to the accompaniment of millions of marble-sized hailstones that pummelled and rocked those gliders that some fools had been rash enough to rig. To hell with that. I was going to aviate. The gods of thunder and lightning could go hang.

The moment we saw a patch of blue sky large enough to make the aforementioned sailor's pants, we launched. First tentative, then successively brisker, updraughts bore us heavenwards as the wind at the same time obligingly whisked us out of controlled airspace into the flatlands of East Anglia. I had no plan but to get to, say, Cambridge, attain a vast height and, with luck, hack my way back home against the wind.

In fact, I had devised a nifty way of navigating in cloud (appended to the end of this little story) that turned out to be the only success of the day. I was delighted, after an hour-and-a-half out of sight of earth, to pinpoint an unmistakable landmark though a small hole in the cloud at 8,500 ft. Having satisfied scientific curiosity and personal pride, I headed for home, which was now about 50 miles away. I had also satisfied myself, unjustifiably as it turned out, that the wind speed and direction were as forecast at all times, all places and at all heights. On average, this was generally true, but at particular places it turned out to be a fallacy.

The return home was not so easy. I had bargained for the headwind, but the vast clogging-together of black cu-nimbs was demoralising. It was increasingly difficult to identify the up-and-coming cauliflower, head for it, locate its core and wring height out of it before hail and ice had taken their toll.

Eventually, after pursuing a ripe-looking cloud and being driven off by a totally silent but very purposeful bolt of lightning, I decided to glide it out.

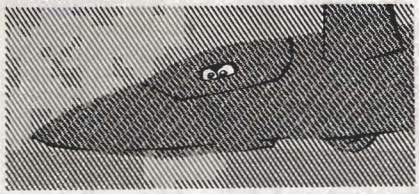


There was the question of finding a decent place to land. On the edge of the Fens, the low-lying fields were like row upon row of mirrors reflecting the broken sky. I rejected landing in any of these paddy-fields. It wasn't just the prospec-

tive nightmare of organising a retrieve. There was a real danger that on touchdown the wheel would sink in, possibly flipping the Dart over on its back. Even if that didn't happen, how would I be able to turn the wingtip single-handed into wind every time the squalls hit, let alone to tether it down? No, I had to land on a large, well-drained surface near to people/telephone/road—and facing into wind, of course.

Through the patches of broken cloud at 1,500 ft. I saw a village and felt confident that a usable field would be found near it. Then village, fields and sky were blotted out by a blanket of low cloud that doubtless represented the last belch of a departed thunderstorm. Despairingly I watched the altimeter unwind until it fell to 400 ft.; only then did I break cloud.

There were no indications of wind at all—no washing, no fires. What do you expect with all that rain? The few trees in that area gave no sign, their leaves heavy with water. Raindrops on the canopy compelled me to peer irritably



through the clear-vision panels. A bare minute remained for the search. I was only grateful that it had momentarily stopped raining, though the sink seemed as bad as ever.

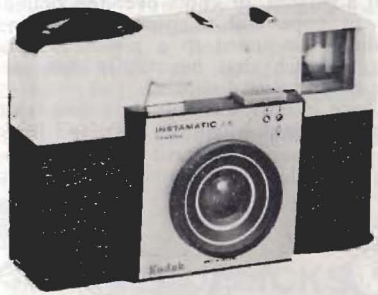
Then I saw it: The ideal field. A sportsground, all of 250 yards long, running up and down wind, give or take 30 degrees. Trees on the approach but less than 20 feet high.

The field was so big that the boundaries of the cricket field only occupied about a third of its area. White-flannelled figures were stealing some play between showers. I decided that if they did not see me and make obvious movements away from the centre of the field I would prolong my crosswind leg and drop into the adjoining field, which looked rougher but was without obstructions. (I only wish now that they had ignored me altogether!) As the bowler ran up I was sure that the batsman would swing, heads would turn and I would be seen. Sure enough, the ball pitched, the batsman struck out and heads turned. Figures stood transfixed for two seconds then made an orderly sprint to the edge as I pointed the nose at them with a dramatic waggling of wings. I felt positively smug at this coup; the ideal field and 22 brawny pairs of arms to manhandle and de-rig in any conditions. A nice long bomber-type approach at 65-70 knots, skimming over the little trees, touching down a third of the way up the field. Too easy.

It was only after covering a hundred yards on the ground (about four seconds) that I noticed that my wheel-brake was having no effect and that my groundspeed was still immense. A healthy loathing of groundloops made me pause a further second or two, then with a mere fifty yards left and a collision inevitable I forced the wing on the ground and kicked on full left rudder. The sportsground, however, was finely mown and very wet, like a greased billiard-table, so the wing-tip discovered what the wheel had already found out—there was hardly an ounce of friction in it. The rudder discovered (earlier than I had) that our airspeed was not as high as our groundspeed and that it could make little impression on our path over the ground. The astonished cricketers saw their uninvited guest whistle past them, turn through barely 20 degrees and without a pause pile noisily into their ten-foot high fence.



Fuller





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Two massive concrete posts reinforced with multiple steel bars were severed by the cockpit and starboard wing. Flannels rushed up with anxious queries of "Is he alive?" and were reassured by the pilot sitting up in the debris and swearing, "I am a . . . !"

After the early moments of shock I was able to stride about on sorely bruised but intact limbs (thank you, Sling and the invention of glass-fibre) to measure the 175 yards from touch-down to the fence (176 yards if you allow for the vital amount of "give" in those newly-appointed arrester-wires). The caretaker was very kind. "We were going to move that fence anyway." What you call making a virtue of a necessity.

Then, wetted finger up, I tested the wretched wind. No doubt about it. It had swung through 120°. A *downwind* component of nearly ten knots, coupled with a buxom 70 knots over the boundary to cope with a non-existent wind gradient, amounted to a pile of kinetic energy which that beautifully-kept surface could never dissipate.

There is only one moral to this tale: There are days when you shouldn't leave the ground.



★ ★ ★

CLOUD NAVIGATION SIMPLIFIED

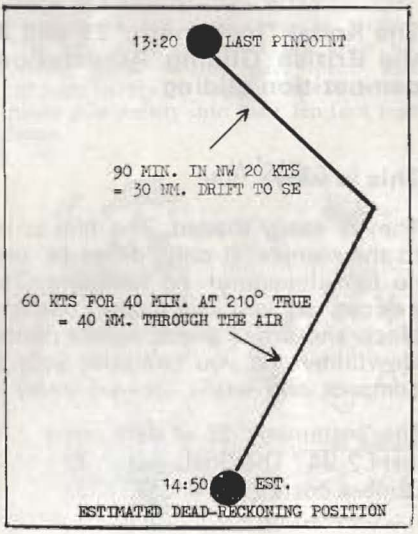
I have read about techniques of cloud navigation that required a two-seater, a computer and a P2 with an iron stomach and the brains of Francis Chichester. They fall down because they aim to reckon up lots of little bits of dead-reckoning at varying speeds and courses. They aren't on for hot and bothered—or rather cold and bothered—solo pilots of our class.

Our system for navigating in clouds consists very simply of two principles which the pilot should employ when flying straight and level.

(1) Steer a course which is as constant as possible and preferably at an angle which is easy to draw by eye on a map while being thrown around in rough, dark vapours. The ideal courses are therefore 0°, 30°, 45°, 60°, 90° and so on round the compass. A lubber-line on the compass helps.

(2) Fly at a constant 60 knots, or as near to that speed as possible. Why? Because that means that one minute equals one nautical mile through the air, which helps a great deal. (Theoretical Best Speeds are useless in cloud anyway, as in fact they are generally at any other time.)

When you lose sight of your last landmark, ie, shortly before disappearing into the murky upsuck, you note the time and place on your map. Any time not spent circling is spent flying in the general direction that you have decided on (say, 210°) and must be noted. The best thing is a referee-type stop-watch or chronograph that can be stopped and restarted. Thus, all the little bits of time spent flying straight can be accumulated.



After, say, a harrowing 90 minutes of cloud-flying since leaving pinpoint X in the diagram, you only have to draw on the map two simple lines.

(i) Firstly, a line representing 90 minutes' drift at the forecast wind velocity and direction (say, north-west, 20 knots).

(ii) Secondly, a line originating from the end of the first line, representing the accumulated time spent flying straight and level the course you were steering, say, 40 minutes at 60 knots (namely, 40 nautical miles).

The end of the second line is your estimated position. It works!

The system can be refined without much complication for competition and task-flying purposes. The point is that it is often more important to know where you are than to try to get to the point you're aiming at!

COMPASS FLICKS, ETC

By BRENNIG JAMES

WHEN circling, observe the behaviour of your compass. If you circle, as most people do, with 30° of bank, you will take about 20 seconds to get round.

If you turn to the right, you will note that the compass reads from SW to N most of the time, but flicks back from N to SW as you pass through a roughly south-easterly heading. Similarly, if you circle to the left, the compass reads easterly headings, but flicks back as you go through a roughly south-westerly heading.

The flick back point is a remarkably reliable indication of heading, and when cloud flying it is the basis of a useful way of coming out of cloud on course. Say you are circling to the right and you wish to come out of cloud on a south-westerly heading. This will be 90° or 5 seconds of turn after the flick back, so the procedure is: Wait for the flick, count three slowly, take off bank (two seconds), adjust speed to what you want and keep the horizon bar level for at least 10 seconds until everything settles down. You should now be within 30° of the course you want.

In my experience, a Cook compass often does not match up to what other pilots report about it, and I find that an ordinary E2A compass using this technique is all that is required.

When on a cross-country, I often hear people saying on the radio that they are in eight knots lift when all I can get is four knots. Since I never see them streaking across the sky at 100 knots, I don't think they believe it either. Without buying an expensive variometer with an averager, the solution is to use a watch and altimeter to obtain a true rate of climb. This turns out to be very hard work indeed. However, if you just note your altitude, fly three 20 second turns and read again, you will find that you have a rate of climb which is accurate to within ±20% and often within ±10%, which is all you require.

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WORLD CHAMPS IN YUGOSLAVIA—CIVV

YUGOSLAVIA'S offer to hold the 1972 World Gliding Championships is acepted by a meeting of CIVV in Paris on Marcn 5, attended by delegates from 25 countries. The meeting also agreed that the 1974 World Championships will include a championships for self-launching gliders.

Australia also presented a proposal to hold the next World Gliding Championships. Most delegates regretted that they were still recovering from the cost of going to Marfa and could not afford two long distance expeditions so close together. Therefore, the Yugoslavian bid was accepted.

In response to the need for organisers to have as much time as possible for preparation, the following venues were agreed: 1972, Yugoslavia at Vrsac (probably the first two weeks in July); 1974, Australia at Waikerie (last two weeks in January); 1976, Finland (summer).

Code Sportif

Discussion and voting took place on matters in Section 3 to 11 of the *Code* with the purpose of finalising the whole of Part D, Gliders. The important items are given below.

Section 7—Badges. It was agreed that the FAI should award a diploma to pilots who achieve, or who have achieved, a flight of 1,000 km. The diplomas would be presented by the FAI at the General Conference.

Section 8—World Championships. It was agreed that a "19 Metre World Cup" would be awarded to the highest placed glider in the Open Class whose span did not exceed 19 metres.

Section 9—Scoring Methods. It was agreed that this Section should state that the organisers of a World Championships shall be provided by CIVV with up to three different scoring systems. The organisers can select the system they prefer and may propose minor modifications to it.

Section 10—Championship Classes. This section will now have the above title and cover all classes in general instead of only Standard Class. It will also include a time scale to cover changes in Class rules—two years for minor and four years for major modifications or the introduction of a new class.

It was agreed that the 1974 Championships shall include a "Class" for self-launching (motor) gliders, with the total national entry increased from four pilots to five, with no more than two in any class.

Standard Class. Simple fixed-hinge flaps will be permitted in the Standard Class from 1974. The new definition on flaps is comprehensive and includes drawings of what is permitted. All references to speed-limiting qualities have been deleted. Dischargeable ballast in the Standard Class is permitted from 1972.

Section 11—Motor Gliders. It was agreed that gliding badges and motor glider records can be obtained on motor gliders provided that the engine is not restarted during the flight. A special barograph or recorder which ascertains when the engine is run is required for badges and motor glider records.

A separate register shall be kept of Motor Glider Records, and the starting point for such records shall be: National Records—Distance, 300 km.; height, 3,000 m.; speed, 60% of the 1970 National speed records. International Records—Distance 500 km.; goal, 300 km.; height, 5,000 m.; speed, 60% of the 1970 International records. In addition, glider records can be obtained on a motor glider provided that the engine *cannot* be restarted during the flight All the above flights must start with the crossing of a start line.

New Sub-Committees

It was announced that the CIVV Bureau had set up two sub-committees: Motor Gliders (chairman, Seff Kunz, West Germany) and Championship Rules and Classes (chairman, Ann Welch, Great Britain). The meeting agreed this, and 'Pirat' Gehriger asked that correspondence should go direct to the appropriate chairman between CIVV meetings.

CIVV Elections

'Pirat' Gehriger (Switzerland) was re-elected President. Seff Kunz (West Germany), Ann Welch (Great Britain), Pierro Morelli (Italy) and B. Jancelowicz (Poland) were elected Vice-Presidents.

ENTRIES OPEN/STANDARD CLASS NATIONALS

RAF Newton 29 May to 6 June

Pilot(s)	H'cap % Open	Std	Sailplane
Williamson, J. S.		88	Std. Libelle
Burton, G. E.	??		Kestrel 19
Garrod, M. P.		88	ASW-15
Goldsbrough, J. B.	80		Diamant 18
Fitchett, B.	84		Cirrus
Ince, D. H. G.		88	LS-1C
Costin, M. C.	84		Cirrus
Jones, R.		88	Std. Cirrus
Pozerskis, P.	84		Cirrus
Atkinson, G. B.	90		Dart 17R
Warminger, A. H.	84		Phoebus 17
Gough, A. W.		88	Std. Cirrus
Goodhart, H. C. N.		88	Std. Libelle
Zealley, T. S.		96	K-6E
Burns, Anne	84		Cirrus
Knipe, F. H.		96	K-6E
Farmer, A. T.		96	K-6E
Wheeler, J. H.		96	K-6E
Glossop, J. D. J.		88	ASW-15
Wilton Jones, M.		96	K-6E
Woods, L.	84		SHK
Wilkinson, N. A.		96	K-6E
Camp, G. W. G.	??		
Simms, J. A.		96	K-6E
Morrisson, S. A. J.		96	K-6E
Burton, A. J.		88	Std. Libelle
Lilburn, D. W.		96	K-6E
Tull, V. H. G.	80		Diamant 18
Sandford, R. A.		88	Std. Cirrus
Feakes, R.	84		Phoebus 17
Haynes, K. W.	84		SHK
Redman. S. J.	84		SHK
Carrow, D. D.	84		Phoebus 17
St. Pierre, A. H. G.		96	K-6E
Krzystek, T. J.		88	Std. Cirrus
Riddell, J. C.	84		Phoebus 17
Austin, D. C.		88	Std. Cirrus
Burgess, P. G., Rouse, J.		98	Dart 15

Handicap in the Open Class applies only for Nationals Entry List purposes.
Entry List correct as at March 17.

ENTRIES SPORT/CLUB CLASS NATIONALS

Husbands Bosworth 12 to 20 June

Pilot	H'cap % Sport	Club	Sailplane
Smith, M. J.	90		Dart 17R
Waller, R. S.		96	K-6E
Zotov, D. V.		96	K-6E
White, S. A.	88		Std. Cirrus
Withall, C. L.	90		Dart 17R
Hale, R. J.		100	Skylark 3
Dobson, B. F.	88		Std. Cirrus
Kahn, W. A. H.	90		Dart 17R
Orme, H.	88		Std. Libelle
Lee, D.		96	K-6E
Smith, Angela		96	K-6E
Hood, L. S.		96	K-6E
Deane-Drummond, A. J.	88		LS-1C
Stevenson, J. N.	88		Std. Libelle
Evans, J. A.		96	Olympia 419
Grenet, P.		96	K-6E
Bridson, D.S.		96	K-6E
Manley, N. K.		98	Skylark 4
Wilkinson, K. G.	88		ASW-15
Hogg, A. J.		96	Olympia 419
Saundby, R. P.	90		Dart 17R
Keogh, B. F.		96	K-6E
Harrison, K. A.		96	K-6E
Newall, R. W. B.		96	K-6E
Shephard, E. G.		96	K-6E
Edwards, A. W. F.		102	Olympia 463
Morison, S. M.	90		Dart 17
Shipton, Pamela		96	K-6E
Ellis, C. A. P.		100	Skylark 3
Simpson, C. R.	90		Dart 17R
Harrington, T. C.	88		ASW-15
Stanley, J. H.		98	Skylark 4
Hanson, D. F.		96	K-6E
Malpas, W. E.	??		
Wishart, R.		96	K-6E
Gill, C. J.		100	K-6CR
Oulds, T.		100	K-6CR
Paul, I.		98	Skylark 4
Gaunt, T. R. F.		100	K-6CR
Hardon, R. A.		100	K-6CR
Hors Concours			
Strachan, I. W.		96	SF-27M



THE NIGHT THE ROOF FELL IN

By RON COUSINS

ON the morning of Thursday, 30th December, after a night of snow and north-east winds, Peter Kingsford, ground engineer of the Kent Club, arrived to find the hangar wrecked. The roof of the 90 ft. x 105 ft. blister hangar, piled with heavy snow, had caved in over virtually the whole area, bringing down girders, sheeting and purlins on top of the club fleet, tow plane and a number of syndicate gliders. Only the sides and end walls were still standing. Crawling into the wreckage confirmed the extent of the catastrophe. The tangled mass of twisted metal was supported by the battered remains of eight gliders, smashed canopies and fuselages. Torn and twisted mainspars completed the depressing scene. Amazingly, amidst the devastation, a Skylark 2 and the tug (a Tiger Moth belonging to the Tiger Club) stood undamaged.

The normal reaction would be gloom and despondency, but the club's 150-odd flying members were immediate with their support. Local members rallied round, loaning equipment and forming working parties to clear the debris. Within three days, the roof had been jacked and propped (as shown in the photograph), the snow cleared and most of the gliders removed. Unfortunately, this required literally sawing off the wings of a T-21.

As soon as neighbouring clubs heard the news, offers of aircraft and general assistance poured in. Help from our many farming friends, in the form of storage space for our equipment, was also forthcoming. It was essential to co-ordinate all this activity, and this was achieved by channelling all correspondence and telephone calls through *one* person living locally; in our case the club chairman.

Instant notification to the insurance companies involved resulted in the assessor arriving on site the next morning, and their prompt actions enabled clearance to begin without delay.

It was important at this stage for the widespread membership to be fully informed as to the true extent of the damage, the management action which had already been taken, the programme for hangar repair and the re-establishment of flying. A letter was, therefore, sent to all members, an edited version of which follows:—

THE CLUB HANGAR

Aircraft state: T-21 "Rudolf" written off, replacement expected by end of February; T-21 "Cirrus" being repaired in our workshop; time about two weeks; club Skylark 4 to be repaired by Peter, ready mid- or end of February; Swallow extensively damaged, to be repaired by Peter and ready about end of April or early May. We sincerely regret the damage incurred by four syndicate-owned aircraft. One is written off and others may be in a similar state.

Flying: It has been decided that since so much work has to be done to get back into operation, it would be unfair for the few people left with aircraft to fly at the moment. *No* flying will therefore take place before 1st March.

Hangar decision: It has been decided to replace the damaged structure with *new* steelwork of similar design. This will be strengthened and before next winter will be cross braced and additionally stiffened to resist snow load collapse. This decision means that we can take immediate steps to proceed with the repairs which are vital for our summer operation *this year.*

Hangar action: A jig is being designed and built to manufacture the new arch members. We will manufacture at Challock all the new steelwork required. The steel and materials will be delivered to the club partly prepared for assembly and welding. Club members under the supervision of D. Manser will erect the replacement arch members, and time-tables and details of work required at weekends will be on the noticeboard.

Schedule: Jig, one week to 10 days; first arch members, 10 to 14 days; completion of steelwork for erection, end of February; erection, February-March.

Cost: With the plan outlined and with the continued support of members, a total cost of between £1,600 and £1,900 will repair our hangar. The outside commercial cost would probably have been £7,000-£8,000. Donations are already coming in from members and the committee will try all the outside sources possible to raise funds. Nevertheless, it will be necessary to find money within the club, and a decision to impose a levy for 1971 has regrettably been taken.

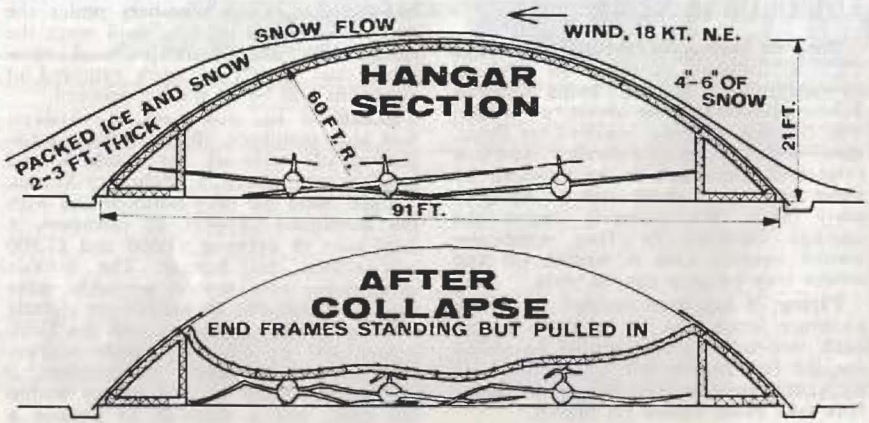
With certain carefully considered exceptions, all full flying members will be required to pay an additional £10 with their renewal subscription for 1971. As Chairman, I am most anxious that this decision does not prevent the willing but, unfortunately, not so well off members from renewing their subscription. A confidential approach to the committee from any such member will either result in the waiving of the levy or allowing the member to pay £1 per month over a 10-month period. Thank you everyone.

16th January

Chairman, Kent Gliding Club.



After propping up the hangar. Photo: D. Joss.



TECHNICAL NOTES

The hangar was originally constructed from reconditioned materials and erected professionally. The basic structural members were open lattice girders, 10 in. in depth and 3 in. wide. This prefabricated construction consisted of 3in. by $\frac{1}{8}$ in. mild steel flat bars with 5/16 in. diameter interlacings.

As far as we can ascertain, the snow accumulated on the south-west corner of the hangar, as shown, and produced a progressive collapse across the whole asbestos clad roof.

The new roof is to be clad in galvanised and painted corrugated steel sheet of 24 gauge thickness. It is considered that this will be a small structural improvement, since the steel sheet has more ability to distribute the snow load. Before next winter, we anticipate additionally bracing the roof arches by cross ties and struts.

It is understood that one way in which such hangars have been protected in the past is by the use of snow props from the hangar floor to the main arch members. Very little technical information is readily available, and it has not been possible, to date, to find any of the original stress calculations for this type of construction.

With the knowledge now gained, there is every possibility that this failure could have been prevented either by the use of props, or possibly by clearing some of the early snow from the hangar roof, although we do not know precisely how much snow actually fell on that particular night.

All the aircraft were insured, but the hangar was insured only for explosion and fire. An early investigation into insurance of the hangar against this type of collapse showed that a very high premium was necessary, but we are taking further advice on this subject.

We hope that this article gives sufficient constructive information to prevent any other club with this type of hangar from being hit by a similar tragedy. If it had not been for the technical facilities, equipment and the manpower provided by club members, that night could really have been called "The night the roof fell in".

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FORTHCOMING EVENTS

May 15-23.—Western Regionals, Nympsfield.
May 15-30.—German Nationals, Bückeburg, Germany.
May 29 - Jun. 6. — Open - Standard Nationals, RAF Newton.
May 29-Jun. 6.—Swiss Nationals, Langenthal, Switzerland.
May 29-Jun. 18. — Belgian Nationals, Saint Hubert, Belgium.
Jun. 12-20.—Sport Club Nationals, Husbands Bosworth.
Jun. 15-24. — USA Standard Class Nationals, Ephrate, Wash., USA.
Jun. 26-Jul. 4. — Lasham Regionals, Lasham.
Jul. 6-16.—USA Nationals, Williams County Airport, Ohio, USA.
Jul. 10-18. Dorset Regionals, Compton Abbas.
Jul. 10-23.—"Huit jours d'Angers," France.
Jul. 24-Aug. 1.—Wycombe Regionals, Booker.
Aug. 7-15.—London Regs., Dunstable.
Aug. 21-29.—Northern Regionals, Sutton Bank.

BGA NEWS

Annual Awards 1970

The British Gliding Association has pleasure in announcing the following awards for 1970.

California in England Trophy to a woman pilot for the longest flight: to Anne Burns (Surrey & Hants) for a flight of 389 km. on 25th May, Cirrus.

Douglas Trophy to the Club putting forward three flights by three different club members aggregating the largest cross-country distance: to the Surrey & Hants Club for the following flights:—

G. E. King—412 km. on 21st June, Skylark 4. C. D. Lovell—380 km. on 21st July, Phoebus 17. A. D. Purnell—508 km. on 14th August, Cirrus. Total distance —1,300 km.

De Havilland Cup for the greatest gain in height: to M. A. Horan (Midland) for a gain on 2nd May of 22,180 ft., Skylark 4.

Seager Cup for the best closed circuit performance in a two-seater: to R. C. Stafford Allen and Lynn Brown (London) —166 km. out-and-return on 9th August, Capstan.

Volk Cup for the longest closed circuit: to B. Fitchett (Leicester) for a 501.9 km. triangle on 21st June, Cirrus.

Wakefield Trophy for the longest flight: to A. D. Purnell (Surrey & Hants) for a 508 km. zig-zag Lasham, Merryfield, Great Yarmouth on 14th August, Cirrus.

The Frank Foster Trophy, Manio Cup and Perfect Trophy were not claimed and therefore no award was made.

FAI Sporting Code

The *Code Sportif* Section 3, Class D came into force on 1st January, 1971, and copies are obtainable from the BGA, price 25p. Some of the major changes are:—

1. **28% Rule.**— The 28% rule is abolished for Badge triangles. It is still in force for records.
2. **Diamond Goal.**— The Diamond Goal

can no longer be done in a straight distance flight. It has to be either a pre-declared out-and-return or a triangle of at least 300 km.

3. **Gold or Diamond distance.**— These may be claimed from an uncompleted triangle provided that 300 or 500 km., or more, is flown and the glider is landed not more than 10 km. off the line of the last leg. (In the case of an uncompleted out-and-return the flight becomes a zig-zag and can therefore be claimed as such.)

Mandatory Mods.

A list of mandatory modifications affecting each type of glider is now available to owners from the BGA office, price 50p. The list, issued every January, is circulated to all inspectors.

R. C. STAFFORD ALLEN,
Chief Technical Officer, BGA

New Record Claimed

British National single-seater Goal & Return. E. Pearson (in South Africa), 4.1.71, Std. Cirrus. 632 km. Subject to homologation. (This news came through A. Warminger, who telephoned us on his return from South Africa, and of course is the current holder of this record.)

New Editor S & G

George Locke has been appointed Editor and Production Manager of SAILPLANE & GLIDING as from 1st February.

George has about 400 hours in gliders, flies from Dunstable and has a share in an SHK. For some years, in the mid-sixties, he was editor of the London Club Gazette. Before he took up his appointment he was on the editorial staff of *The Pharmaceutical Journal.*

Both Doc Slater and Rika Harwood have become Consultant Editors. Doc will stay as Overseas News Editor and provide articles. Rika will stay with the magazine on a part-time basis from 1st April. We wish George every success.

Revision of Bronze C Requirements

The effectiveness over the past few years of the Bronze C in bridging the gap in knowledge and experience between the C qualifications and Silver C has recently been the subject of review.

It has been decided to make some changes in the ground examination, and set out more clearly the flying test standards. No change has been made in the number and duration of qualifying flights.

The syllabus, new question papers, and redesigned claim forms have been distributed to all CFIs.

The effective date for the revised Bronze C will be 1st May, 1971. Badge claims for tests completed after 30th April, 1971, will only be accepted on the new claim forms.

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1971 National Trophies

Trophies for the 1971 National Gliding Championships will be awarded as follows:

LONDONDERRY TROPHY to the winner of the Open Class.

PAN-AM TROPHY to the winner of the Standard Class.

FURLONG TROPHY to the winner of the Sport Class.

KEMSLEY TROPHY to the winner of the Club Class.

DART TROPHY for competition among pilots of whichever type of glider is numerically the strongest in the Sport Class. Awarded to the pilot of the glider of that type having the highest placing.

EON TROPHY as for the Dart trophy, but in the Club Class.

SLINGSBY TROPHY as for the Dart trophy, but in the Open Class.

SCHLEICHER TROPHY as for the Dart trophy, but in the Standard Class.

CENTENARY TROPHY to the competitor in the Sport/Club Class under 30 years of age at the start of the Championships and who scores most points on any two Championships days (using handicapped scores).

FIRTH VICKERS trophy to the compe-

titor in the Open/Standard Class under 30 years of age at the start of the Championships and who scores most points on any two Championships days (using handicapped scores).

Postal Strike

The recent postal strike has played havoc with the distribution of the February/March issue and we can only apologise to our readers at home and overseas for the non or late arrival of the February issue.

If you have written or sent money to us between January 16 and March 9 and have not had a reply by April 15, please write to us again as it is quite possible that some of the mail may have gone astray.

We would also like to thank numerous people, but especially Lemmy Tanner, for helping us with the distribution of a large number of copies. Thank you all for your help—it is greatly appreciated.

National Ladder, 1971

The first Ladder list for 1971 was due to be collated on 1st February, but owing to the postal strike no entries have been received.

Will Ladder Stewards please forward to me, within two weeks of the resumption of postal services, all flights they have received for the Ladder. A complete Ladder will be available as soon as possible.

Please note the 1971 handicap list in the last issue (p. 35) as some minor alterations have been made.

71 *Corwell Lane,* M. P. GARROD,
Hillingdon, Middx. *Ladder Steward*

Aviation Art Society dissolved. The Kronfeld Aviation Art Society, formed by 10 artists in 1966 under the auspices of the Kronfeld Club, has been dissolved. The Guild of Aviation Artists has been inaugurated and will hold its first exhibition at the end of June. Enquiries to the Secretary, Yvonne Bonham, 11 Great Spilmans, London, SE 22. Tel. 01-693 3033.

The Kronfeld Club will continue to hold its annual exhibition, open to all members. Details later.

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AIRSPACE COMMITTEE REPORT

TONY DEANE-DRUMMOND was forced to resign as Chairman on the 31st July due to pressure of other commitments.

During the early part of the year under his chairmanship, the committee was involved in two specific airspace problems, the SRZ/SRA at Luton and the experimental widening of Amber 1. These have already been reported in S & G (June-July, 1970, pages 196/197). Both have adversely affected operations from two important and long established gliding sites.

Although the introduction of the Luton SRZ/SRA on the 2nd April, 1970, further restricted flying from Dunstable, its worst effects have been mitigated by means of a system of communication and control between Luton ATC and the London Gliding Club. This enables gliders and tugs from Dunstable to use parts of the zone and area subject to the runway in use at Luton and specified weather minima. The Amber 1 experiment, which was to run for a trial period, has put Camphill under the eastern edge of the airway. As a result of BGA representations the base of the airway over Camphill was raised before the trial was introduced. It has recently been agreed that the period of the trial should be further extended until the spring of 1971. During this further period we must try to find a solution which will adjust the boundaries of controlled airspace, so as to remove the barrier to high altitude wave flying from Camphill created by Amber 1 East.

More recently we have been faced with a much more serious threat—with even more serious complications. This is the proposal to introduce one extended SRZ for Lyneham, Fairford and Brize Norton, and another for Boscombe Down, Middle Wallop and Old Sarum [see below].

Finally, there is Mediator—the new ATC system for the 70's. Information so far available suggests that with Mediator, the long-term gliding prospects in U.K. could be bleak—unless some reasonable means can be found to maintain freedom for our sport within a highly sophisticated ATC environment. This must be the Airspace Committee's principal and continuing objective.

D. H. G. INCE, *Chairman*

Latest News on SRZs

Plans to introduce the Brize Norton and Boscombe Down Zones will be discussed at the next CACAC (Civil Aircraft Control Advisory Committee) meeting in April or May. It is most unlikely that the Zones themselves will be introduced during the 1971 season.

Our proposals which have been presented to NATCS (National Air Traffic Control Services) include:

1. Boscombe Down to operate Monday to Friday only;
2. The reduction or removal of Lyneham as an SRZ;
3. The use of radio (130.25 m/cs—the present Lyneham frequency) for penetration of both Zones when operating.

GLIDING CERTIFICATES

DIAMOND HEIGHT

No.	*Name*	*Club*	*1970*
3/119	L. E. Rotter	Midland	19.10
3/120	M. Wilton-Jones	Fenlands	24.10
3/121	E. G. Wood	Clevelands	17.9
3/122	G. L. Kemp	Clevelands	17.9
3/123	P. R. Philpot	Bristol	19.10
3/124	Dorothy R. Thomson	USA	31.12

DIAMOND GOAL

2/357	G. K. Smith	Oxford	14.8

GOLD C COMPLETE

276	A. T. Letts	London	19.12
277	P. R. Philpot	Bristol	19.10
278	P. L. Sears	Cambridge	5.12

GOLD C HEIGHT

J. M. Worswick	Derby & Lancs	17.12
J. Beck	Clevelands	18.10
N. Revell	Newcastle	20.12
P. N. Lowenstein	Cambridge	5.12
A. T. Letts	London	19.12
P. R. Philpot	Bristol	19.10
P. L. Sears	Cambridge	5.12

GOLD C DISTANCE

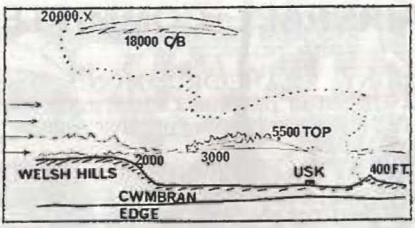
G. K. Smith	Oxford	14.8

IT WASN'T MY TURN

By IVOR SHATTOCK

ON 4th October I had just finished a packed lunch; the K-6 was there, the cable was coming, and there wasn't a pilot in the cockpit of the machine. So I went straight for the K-6 and, with two eager helpers, was lined up ready to go. All the morning I'd watched the wave system establish itself, amid 7/8 cloud cover which somewhat disguised the pattern. None of the ever-growing visitors' gliders seemed to do what was required, so a vacant cable was just what I wanted. Probably a circuit, perhaps a land-out, it would be a flight anyway—no sense in thick socks or anything like that. No wind at all, but the clouds scudding overhead—something's happening!

At 900 ft. I left the winch and teetered to the hill—all 400 ft. of it, and round and ill-shapen—but it helps delay the descent. I arrived at 500 ft. and twisted and turned and just soared my way to



1,000 ft. Soon 4 knots presented itself and I was glad I was in a tight-turning K-6. Soon after, the thermal lift was regular and a long line of it, crosswind, could be seen feeding into the main cloudmass. I worked up in height and also forward, the lumps of lift at 2,500 gave way to regular zero—some up, then a regular 2 with lumps of 6 knots. I was in.

The wave system worked well with steady 4-6 knots. Reaching 5,000 ft., I steered directly over our site and watched the activity down below, but the view was mostly obscured by the front edge of the now all too obvious wave system. It was the second wave from the lee

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edge and took me to my previous best site height of 10,800; then 11,600 ft. (site record of Eric Fitzgerald) and then beating the all-comers' (Chris Lovell) of 12,200 ft. At 13,000 I decided I could afford to experiment.

Notes I wrote in the air:

Notch on barograph at 11:06.
3 kts. at 12,000 over site. Large wave cloud above in front.
Radio u/s. Flying at 36 knots.
Oxy on at 12:05.
14:30 2 kts. at 12,600. Wave cloud above and behind (2nd upper wave system).
Peak at 13,300. Dive to 10,000 to primary wave over Pontypool.
3 kts. at 10,200. 14:55 4 kts. at 10,500.
5 kts. at 11,000 14:56! 3½ kts. at 11,600 14:59.
1 kt. at 12,000 15:03. Oxy to go on at 13,000.
PTO (The notes were written on a Thermojet Butane specification, handed to me before take-off).
3 kts. at 12,200. Upper wave?
3 kts. 13,500. Upper wave. Oxy on. Warm.
Check oxy. 15:30 OK. 2 kts. 14,000.
Try forward, fly 36 knots. *No* 2 kts. only.
Try along 1 kt. at 14,100. (The notepad shows that up to 15,000 ft. only 1-2 kts. were achieved.) Well out in front of all visible wave clouds. A big circle at 15,200. Canopy mists in circular flight (inside, when down sun). Face sun to clear.
In cloud (accidentally) 16,200 3 kts. Climbing to 20,000?
4 kts. at 16,000 still 4 at 17,000 16:00 (PTO again—small sheets—sheet 3).
17,200 4 kts. Canopy frozen. Can hear loads of gliders.
4 kts. 17,600. Full oxy on. Never been above 18,000 before. Notch on baro.
18,200 4 kts. 18,500 oxy 1/10th gone.
18,800 3 kts. 16:00 (still?).
Wot, no Green 1 Jets? 2kts. 19,000
3 kts. at 19,500 16:15. This is primary wave. All clear air in front down to 10,000 ft. Needles up (indicators on altimeter). It must be 20,000 ft.!
One up 18,800. Dive to a bigger Lennie to north.
Now *getting* cold. 2 kts. 16:25.
BRAKES OUT.
Here endeth the notes.

The dive was exhilarating too, seeing the two successive layers of cloud sliding upwards like a movie camera going below water.

On the ground the coldness of the aircraft made beads of moisture come out all over the heavier masses and the oxygen cylinder was like a fridge freezer door.

I wonder when I'll be up there again? It isn't my turn again next week; but then today—it wasn't my turn!

For the record

The hardest bit was getting from the first wave layer to the second. There was a slight shear which enabled me to fly to a point where the lower one coincided with the upper one and make the connection.

The same happens on the ground where our hill systems are in a V (vee). Wave formed by the left-hand leg (wind left to right) coincides with hill lift on the right-hand leg.

So far this has worked six times for me—the hill bit, I mean. Regarding the upper wave: it would appear, if my diagrams are correct, and my interpretation also, that the upper wave is formed, not by the hills which are trailing, but by the air waves themselves. Wind shear and moisture layers can confuse the issue, but from above all is so clear!

The next step? The third system. If the flat plate-like wave clouds have an angle big enough to support a glider, then up we go again.

It's difficult, though, discerning the upwind edge when they are like plates and the sun is reflected off them so that the texture too is like a plate.

KRONFELD CLUB

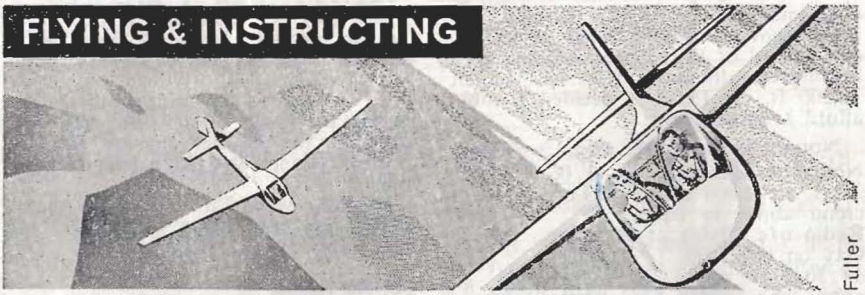
Diary of Lectures and Film Shows Wednesday evenings at 8 p.m.

April 21 Buying and selling aircraft, by A. J. McDonald (Shackleton Aviation Ltd.)

May 5 J. M. Bruce talks about the RAF museum and on being an aircraft historian.

The club is now open on Tuesday, Wednesday and Thursday evenings.

FLYING & INSTRUCTING



THE integration of motor gliders into the standard glider training syllabus has been exercising the minds of the Instructors' Panel for some time. One of the most experienced motor glider operators is the National Coach, who has produced the following paper. Although his experience has been gained mainly from the teaching of instructors, the basic facts of motor glider life are all contained therein.

R. A. NEAVES

★ ★ ★

MOTOR GLIDER OPERATIONS

When the two-seater motor glider is to be used for glider pilot training, it should be operated in such a way that all the knowledge, skill and airmanship that the student pilot gains will be entirely relevant to him when he later flies a solo glider.

A pilot trained in a motor glider will, by comparison with a pilot trained in the traditional manner, attend the gliding club for fewer days and for less time on each of those days. In yesterday's gliding club, one's knowledge was absorbed during the many hours spent at the club. In today's situation, the knowledge will only be gained if it is presented to the student in a much more organised way. This will require better organisation and instructors who are more articulate (see also "The New Pilots", by Ann Welch, p. 124).

RECOMMENDED PRACTICES

Instructional flights

No instructor should fly on consecutive instructional flights on a motor glider. If he does, he will either give good instruction at the expense of utilisation, or, achieve good utilisation at the expense of the instruction. If instructors fly alternately, they will be able to give pre-flight briefings and de-briefings.

Pre-take-off checks—Pupils

The glider pilot under training must use the same pre-flight mnenomic as in the glider. When trained in gliders, he may use the check 50 or 60 times before going solo. Since the approach and landing practice in the motor glider may be of the touch-and-go or roller variety, there will be fewer opportunities to practice the check, thus the instructor must take special care to ensure that the pupil has learned it thoroughly.

Pre-take-off checks—Instructors

Confusion may arise when considering pre-take-off checks. If the pilot is an aeroplane pilot, he is likely to use an aeroplane check, such as TMPFGH. The instructor must, however, monitor his pupil's CBSITCB glider check. This will tend to produce rather an unwieldy check in which certain items are duplicated (Straps, instruments, trim and canopy [hatches]).

Considering the aeroplane check TMPFGH, we have:—

T—Trim, Throttle friction device, Temperature:— Trim is included in the glider check. The throttle friction device is relevant, but may be less critical for a motor glider than for an aeroplane. Motor glider throttles are designed to give full power if the throttle linkage breaks. This means, incidentally,

that it is not necessary to keep a hand on the throttle. Temperature could be included in the glider instruments check.

M—Magnetos and Mixture:— There is only one magneto, and checks other than deadcut are not valid. The only mixture control on the motor glider is a choke. This must be in. If it is out, then the engine will fail to develop anything like its normal power.

P—Pitch:— The motor glider is likely to have a two position propeller as an alternative to a fixed-pitch propeller. It is either fully feathered (in which case the engine is unlikely to run) or set at its normal running pitch. Considerations are, therefore, pre-start rather than pre-take-off.

F— Fuel:— Includes cocks, contents, pumps and pressures. Cocks and contents are obviously critical and must, therefore, be included in a motor glider check.

G and **H**— Gills, Gyros, Gauges. Hoods, Hatches, Harness and Heaters:— Gauges can be included under instruments. Those others not already included in the glider check can be omitted.

From this I am inclined to devise a new mnenomic:—

C—Contro'ls
B—Ballast
S—Straps
I—Instruments
T—Trim
C—Canopy
B—Brake
Fuel C—Cocks
C—Contents
C—Choke
P—Pitch

Launch points

There appear to be two choices: Operating independently of or in conjunction with the glider operation. The former may be more efficient, but will fail to give the pupil an awareness of the problems of glider operations, and a convenient, separate launch point may not give a full view of the winching, auto-towing or aero-towing in progress. The motor glider *must*, therefore, take-off from a launch point already in use.

Take-off considerations

The two-seater motor glider will have a ground run and climb rate comparable with that of an aero-tow. The maximum possible take-off run should always be used so that the motor glider crosses the upwind boundary of the airfield at the maximum possible height. This height may be critical in an emergency, such as engine failure. If, during touch-and-go landing practice, the touch down is further into the field than usual, the height at the upwind boundary of the subsequent take-off would be less than that achieved in the original take-off. In that situation, the take-off should not be carried out, but the aircraft taxied to the original take-off point.

Climb-out patterns

On aero-tow, the climb-out pattern is the responsibility of the tug pilot. In the motor glider, it is the pilot himself who determines the pattern. It must be remembered by the instructor that he is not only trying to develop his pupil's skill and judgement, but also to instil airmanship for use in gliders.

During the climb-out pattern, the same criteria apply to the motor glider as to the aero-tow: Staying within gliding range of the airfield and maintaining an awareness of the position of the airfield. On aero-tow, the glider pilot can only hope that the tow remains within range of the field. In the motor glider, he can, of course, make sure that he does.

The procedure for the climb-out pattern is to climb straight ahead until the upwind boundary of the airfield is crossed. This part of the pattern will be carried out parallel to the glider launching, but not concurrent with a launch.

After crossing the upwind boundary

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of the airfield a turn should be made unless (a) you are too low to turn, or (b) the fields ahead offer a better choice of landing area than would a low circuit and a landing at the airfield. If the turn is not made after crossing the upwind boundary, then the reason for it should be made clear to the student.

It is desirable that the turn should be made towards the side which opens up the biggest area of airfield for an emergency landing. The situation at A in Fig. 1, will be better than that at B in the event of an engine failure.

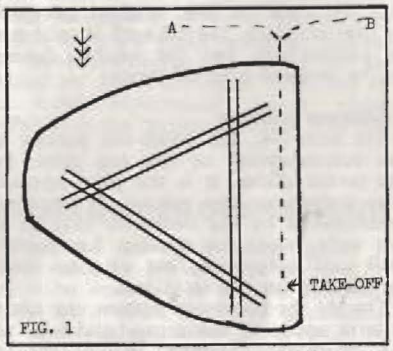


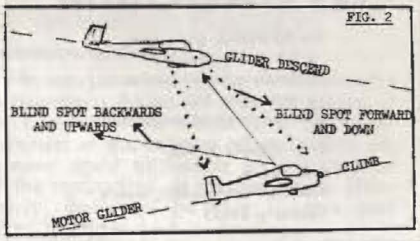
FIG. 1

In a crosswind, the turn should be made towards the windward side.

When flying from an aero-tow take-off point, it may be better to have an agreed direction of turn.

Having arrived at point A or B in Fig. 1, the next turn will be made into wind to keep the machine within gliding range of the airfield. Once circuit height has been achieved, the climb-out will continue with turns into wind, the distance from the airfield increasing as height is gained.

If the purpose of the exercise is approach planning or landing practice, the motor glider will at no time enter the circuit area and continue to climb. In particular, *no motor glider will continue to climb while going downwind in the circuit.* The situation shown in Fig. 2 offers possibly the maximum collision hazard.



The instructor must at all times try to inculcate an awareness of possible emergencies in his pupil. As a general rule, it will be desirable to simulate a launch failure at any time the instructor thinks his pupil is not in the correct position to the airfield during the climb-out pattern.

Engine restarting

If a series of climbs are required to get enough time in the air for the planned exercises, then there are two possibilities: Either keep the engine idling or restart it as required to regain the height lost.

The disadvantage of keeping the engine running is really a psychological one in that the pupil thinks he can always open the throttle to get out of trouble, a kind of thinking which the instructor must not, of course, allow to develop.

Therefore, the restarting method is preferable. If it is used, however, there are three points to note:—

(a) The aircraft must not be operated outside gliding range of the airfield;
(b) It must not be operated over undesirable terrain; and
(c) the restart must not be left until too low an altitude (as the engine may fail to restart and an outlanding risked as a consequence).

A combination of (a) and (c) or (b) and (c) might be critical. If you have fallen into trap (a) or (b), *first select a landing area and then try to restart the engine.* Discontinue attempts to restart the engine while you still have sufficient height for an organised field landing.

Simulated engine failures

These can be divided into two categories: (a) those carried out at such a height that a landing can be made at the airfield and (b) those in which an off-field landing would have to be made. Category (a) presents a circuit planning problem, while (b) involves the selection of a field, into which a "straight-in" or "dog-leg" approach would be made.

Many of the considerations for the off-field landing can be made before take-

off. It is emphasised that *the possibility of a genuine failure occurring after a simulated one. must always be considered.*

One further consideration concerning emergencies in this category is that a good approach into a bad field may be better than a bad approach into a good field. It may be necessary to discipline oneself to make the former rather than to risk a very low final turn. (I can think of a number of sites where if an aero-tow failed, a controlled crash is the only choice!)

Cablebreak and launch failure training

The motor glider has very few limitations when it comes to training glider pilots. One of the exercises in which it must be used with considerable thought, however, is in the simulation of cablebreaks. The student must be given sufficient training to show that he will instinctively recover from the nose-up attitude and regain flying speed before he opens the airbrakes, and that he can plan an approach from an unusual position and height.

The difficulty lies in getting the motor glider to a position which resembles a winch launch. One way of doing this is to make a normal approach using power, dive at the landing area and then zoom up in a climb path more or less like that of a winch launch. The element of surprise that occurs with a genuine cablebreak will be lacking, but planning the approach will still be a problem and, therefore, a useful exercise. The alternative is to fly an approach much higher and use power again, but only in a normal climb, to put the aircraft in the position you require. Again the element of surprise will not be there.

The only real value is in the approach planning practice, and from the glider training point of view it rather looks as if there is no substitute for genuine cablebreak practice. By the time the student gets this, however, he should have his approach planning sorted out.

Launch failure of the sort where the pilot gets himself to the wrong end of the field at too low a height can be given in the course of normal climbs from the airfield most realistically. Incidentally,

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launch failure is a common cause of accidents; with the motor glider there will be no excuse for lack of training in this exercise.

SUMMARY—

1. Remember that you are trying to train glider pilots.
2. Consider and endeavour to compensate for the "fewer days and less time" situation in the motor glider operation.
3. Alternate instructors on the motor glider in order to give maximum possible attention to each pupil.
4. Only concern your pupil with those items of the take-off check which are relevant to gliders.
5. Operate from the glider launch point.
6. Always use the maximum take-off run.
7. Plan the climb-out pattern with other traffic and possible emergencies in mind.
8. Do not operate outside gliding range of the airfield, even if you do intend to restart the engine. If you have to restart the engine, choose a field first.
9. Be aware of the possibility of a real failure after a simulated one.
10. Remember that you are in a self-launching glider. Using an aeroplane check may persuade you otherwise.

BILL SCULL

THE NEW PILOTS

By ANN WELCH

IT was marvellous how queues of frustrated pre-soloites at Lasham melted away within a few months of the Falke arriving. Unfortunately, like a new motorway, the Falke has not eliminated the queue, but simply shifted it somewhere else—into the cockpits of K-8's or Swallows. In many ways this is fine, because solo flying, and then soaring, is the whole object of gliding; that is when the fun starts. But while the new pilots are floating about in the bright sky, club committees could profitably be having a hard think—about instructors, buying more solo aircraft, teaching aids, and, not least, weekend fun competitions, so that the new pilots have more reason to go on flying and learning.

The Falke has certainly changed the life of an instructor—quite apart from what he teaches. In the "old days", the instructor could spend about 6 hours out on the airfield, of which about 2½ hours was spent sitting in a glider on the ground, and perhaps 1¾ hours in the air. The pattern tended to remain constant, with the student and instructor involved in a direct educational regime for, usually, several months. Now, with the two-seat motor glider, the instructor spends about 3 hours in the air, and about 3 hours on the ground in between flights with the pre-solo students; so he has time to teach them quite a bit while they are with him. But this time is really not so long, for in days or weeks, instead of months, they are solo. To really get home the facts of life about flying the teaching needs to be repeated and followed up; days and weeks are not enough. As a minimum months are needed to get a pilot basically safe, and able to look after himself, however good the instructing.

So the role of the instructor looks as though it will have to change. In return for double the flying on the days he flies, the instructor may have to accept that he will have to spend some days on the ground; not in the clubhouse, but out at the launch point caring for, and *teaching* the flock of solo pilots. Good instructors know this already, but to most club members an instructor on the ground is wrong. He is badgered to get into another two-seater, or to mend a cable.

Maybe club committees could help with a little PR exercise: To ensure that instructors doing the essential work of imparting wisdom to bunches of solo pilots at the launch point is known by everyone to be important. In a big club with 20 or more new pilots leaping eagerly into three or four K-8's, even one instructor may not be enough. It is not only a matter of general briefing and supervision, teaching the airmanship aspects of weather, or local soaring techniques, and carefully debriefing the less

successful, but of organising training exercises so that the flying has purpose, and the soloites do not just drift around learning almost nothing.

Most clubs have good checking arrangements for solo students, but with the new quick-training possible with a motor glider, they are not enough. Checks ensure that the pilot is not getting careless or lapsing into silly habits, but are not really geared to teaching. This has to be done by someone whose sole purpose is to find out what the new pilots have forgotten, or not learnt properly, and build in this learning with time to do it thoroughly.

We should also consider what is going to happen to these larger numbers of solo pilots when they start coming up to Silver standard. They are looking at the gliding scene themselves, and some are not sure that they can visualise a future for themselves in what they see. To a new enthusiast any serious look at the cost of private ownership for big time competitions is daunting; even Regionals or 300 km triangles seem rather far away—not from the viewpoint of skill, they know that with practice this will come, but from a mixture of cost and time. They want to fly for fun, but to some enjoyable purpose within their means—in K-8's or 6's, or Skylark 3's. Simple task flying should be a direct lead on from Silver distance training, and indeed some clubs, such as Dorset, do a great deal in this direction.

But if we want to keep a good proportion of today's new pilots, we need to provide opportunities on a wider scale. Clubs are not so far apart that inter-club flying could not be encouraged much more with, say, a free cuppa for the invaders. The host club would have to make an effort and spare some tow time for relaunching the visitors, but the gain would spread itself evenly in the long run. Getting around in this sort of way, with a welcome on arrival, could keep the fun in gliding, which for the less-than-pundit pilot risks becoming a somewhat scarce commodity.

A THIRST FOR FIRSTS

By GEORGE LOCKE

I HAVE come to the conclusion that I have a gremlin sitting on my shoulder. He's an evil little creature who delights in making something go wrong with many of the firsts in my gliding career. Looking back into the past with eyes bloodshot from long hours of peering into anti-cyclonic haze for signs of the next thermal, I can see my very first flight in a motorless, heavier-than-air flying machine. I can almost see the gremlin stepping on to my shoulder as I was strapped into the two-seater.

It was while I was still at school. I was a less than shining cadet in the RAF section of the Combined Cadet Force. Skinny and gormless, my main interest even then was literary. The poetry of the pen held me so enthralled that during a cadet force joyride in an Avro Anson, I was scolded for displaying a lack of interest by reading a Hank Janson novel. ("But there was nothing to see, sir. Just a lot of wing with rivets bobbling up and down.")

I did not react in such a blasé, disinterested manner when we visited the ATC gliding school at Detling, near Maidstone. Perhaps the gliding bug had already bitten. It was with an extraordinary amount of youthful enthusiasm that I was strapped (*sans* Hank Janson novel) into the cockpit of a two-seater for my turn.

We were launched—and we had a cable-break.

I forget what my reaction to the emergency was. Probably no reaction at all—ignorance being bliss and all that jazz. I recall seeing clearly the patchwork pattern of the fields below, reminding me of a quilt my mother had made from odds and ends of material during the war. I remember most vividly, however,

that as a result of the break, *I got a second go.* That was a triumph over my fellows of the same magnitude as, say, collecting the Dunstable-Lasham plate in a Primary. The second go was certainly not a cable-break, as the sections of quilt were far smaller.

Several of my subsequent gliding firsts were also characterised by cable-breaks, indicating that, to start with, my gremlin had little imagination. My first flight in Kenya (while doing National Service), my first flight at Dunstable after returning from Kenya and my first check flight after a snow-enforced lay-off in the winter of 1962/63 stick out in my mind. The gremlin missed giving me any treats for my first solo flights (Kenya and Dunstable), and my first thermal was nothing to write an epitaph about, either. My C went uneventfully (though my certificate number was K [for Kenya] 13). My five hours included a very marginal scrape back to the hill, but the gremlin was obviously reserving his best efforts for my first cross country.

This occured in an elderly Weihe in July 1963. My pre-flight briefing included a warning that crops would be dangerously high, the suggestion that a mown hay field would be ideal, an injunction not to leave the vicinity of the site unless I achieved 3,000 feet above my take-off point and an order to pick my field from at least 1,500 feet. It was an anti-cyclonic day with poor visibility and some rags and tatters of wind limping in from East Anglia.

I was dropped in a thermal at something less than 2,000 feet and climbed in it, hoping that I wouldn't achieve the dreaded 3,000 feet. Unfortunately, I exceeded that height by several hundred nasty feet. The Englishman's traditional sense of honour prevented me from chickening out. Besides, there were other gliders at my altitude and somebody was sure to rat on me. So I gritted my teeth, stiffened my upper lip, set the nose westwards and t-turned my b-back on the f-field.

Somewhere west of Bicester, I ran out of lift and sank to 1,500 feet. I surveyed the quilt for a suitably large and hospitable patch. The choice was quickly narrowed down to several acres of tweedy-looking field which seemed to be ideal. My inexperienced eye analysed its contents—ripe-ish grass which would be about six inches high. A foot at the most. There was no sign of any wind, but I approached from the west, anyway.

I skimmed smoothly over the surface of the grass. Suddenly, there was a jerk. Everything disappeared. It was like diving into a swimming pool filled with straw instead of water. The glider touched bottom after a second or two and ground to a halt. I opened the canopy amidst a shower of settling grass seed and got out. The grass was 5 feet high, with numerous stalks peaking at 6 feet. The tailplane was about 50 yards behind the rest of us, neatly if unorthodoxedly derigged. The Weihe's wings were level; the grass was so thick that it acted as a deadman, and the machine was invisible from the edge of the field. I guess I was lucky not to have ground-looped. If it hadn't been for the perfection of the approach, I undoubtedly would have done so.

The farmer laughed his head off, and declared that it was special, experimental grass. None like it in the country.

The next time the gremlin struck was on the first day of my first Regionals at

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Dunstable. The task was free distance beyond Husbands Bosworth, cloud-base was about 2,000 feet, and I was the last of the queue. The day was composed largely of clag dashed with a few dingy cumuli without the guts in them to become cu-nims. Being last, I didn't have much choice but to follow everybody else, with the general plan in mind to get out of the airway and into cloud as soon as possible. The machine was a K-6; the Weihe having retired to Devon.

The plan worked. I got a nice high climb, and glided it out into the drizzle north of Northampton. I realised that I wouldn't be able to make Husbands Bosworth, though, and resisted the temptation to stretch the last half-mile out of the glide. I picked a nice field from 600 feet—pasture, with a bit of a ridge in the middle of it. There was a herd of cattle at the upwind corner, so I craftily lobbed in on the downwind side of the ridge, out of the sight and the tiny little minds of the cows. I tethered the machine, convinced myself that since the cows hadn't seen me, there was a good chance that they wouldn't come to my end of the field before I got back, and slunk off to find a telephone and the farmer. When I returned, it was raining steadily, and the cows were in a wide circle round the K-6, munching their way steadily towards it.

I took up station and wished my crew would hurry up. The cattle were keenly interested in the machine, and inspected it closely. They were not the placid kind of cows that one associates with well-laden udders and flowers in their mouths. They were young and spry, rather akin to spring lambs in their attitude to life. One or two danced under the upper wing. One scratched its rear end on the pitot.

My worst moment, however, was when one approached the tethered wing purposefully and jumped over it. The world stopped still, sadistically giving me time to absorb every detail of the catastrophe. First, the creature gave an awful lurch. During this, its forefeet transferred from a position before the leading edge of the wing to a point in space two or three feet over the trailing edge, about mid-aileron. The cow's body convulsed again and the forefeet smashed into the grass beyond the trailing edge. At the same time, the rear legs rose into the air. They hovered for hours, it seemed, as though the cow was carefully choosing the section of wing most likely to emit a satisfying crunching sound when they landed. Then the legs jerked, some hitherto undiscovered principle of mechanics came into operation, and the entire cow came finally to rest behind the wing, without having touched it.

I think it was only justice that I scored a thousand points that day.

The gremlin had another gentle little bash at me the first time that I scored nought in a contest. I was discouragingly close to home, and scraping desperately away at 500 feet above a field quite suitable for landing. My partner waited with the trailer in the road alongside the field. Eventually the thermal fizzled. I made my approach, and landed. A few seconds before touchdown, I saw some tall, slender posts with a wire stretched across them, designed to keep cows from wandering. I could do nothing but clobber the wire. It snapped, and we came to rest unharmed. Afterwards, I pointed at the fence posts—painted a rust colour with little white tops to them—and asked my partner why he didn't warn me over the radio.

"I thought they were flowers," he said.

And now, here I am at S & G, in the middle of producing this issue, the first since joining the staff. As I write (24th February), the bulk of the last issue is still waiting to be mailed and the Post Office strike shows no signs of coming to an end. I suspect that the strike was not brought about by Mr. Tom Jackson and his colleagues' efforts, but by my gremlin anxious to provide a memorable introduction to this new phase of my gliding career.

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INTERNATIONAL GLIDING RECORDS (correct as at 17.3.71)

Single-Seaters

Distance	W. A. Scott (USA), 26.7.70, ASW-12	1,153.82 km.
(jointly held)	B. W. Greene (USA), 26.7.70, ASW-12	1,153.82 km.
Height Gain	P. F. Bikle (USA), 25.2.61, SGS 1-23E	12,894 m.
Absolute Altitude	P. F. Bikle (USA), 25.2.61, SGS 1-23E	14,102 m.
Goal Flight	H-W. Grosse (Germ.), 4.6.70, ASW-12	1,032.2 km.
Goal & Return	W. A. Scott (USA), 3.8.70, ASW-12	860 km.
100-km. Triangle	W. Neubert (Germ.) (in USA), 5.7.70, Kestrel 22 m. ..	155.06 km/h.
300-km. Triangle	A. Roehm (Germ.), 4.6.67, BS-1	138.30 km/h.
500-km. Triangle	M. Jackson (S. Africa), 28.12.67, BJ-3	135.32 km/h.

Multi-Seaters

Distance	J. Kouznetsov & J. Barkhamov (USSR), 3.6.67, Blanik ..	921.95 km.
Height Gain	S. Josefczak & J. Tarczon (Poland), 5.11.66, Bocian ..	11,680 m.
Absolute Altitude	L. Edgar & H. Klieforth (USA), 19.3.52, Pratt-Read G1 ..	13,489 m.
Goal Flight	P. Antonov & A. Oplatchko (USSR), 24.4.64, Blanik ..	702.74 km.
Goal & Return	J. Lincoln & C. Crowl (USA), 23.5.70, SGS 2-32	651.13 km.
100-km. Triangle	W. Briegleb & K. Briegleb (USA), 31.7.69, 2-32	111.30 km/h.
300-km. Triangle	B. Stevens & H. Keartland (SA), 10.1.70, 2-32	104.47 km/h.
500-km. Triangle	Helmut & Heinz Sorg (Germ.) (in SA), 7.1.64, K-7	83.74 km/h.

Single-Seaters (Women)

Distance	Olga Klepikova (USSR), 6.7.39, Rot Front 7	749.20 km.
Height Gain	Anne Burns (GB) (in SA), 13.1.61, Skylark 3B	9,119.0 m.
Absolute Altitude	Betsy Woodward (USA), 14.4.55, Pratt-Read-195	12,190.2 m.
Goal Flight	Tamara Zaiganova (USSR), 29.6.66, A-15	731.60 km.
Goal & Return	Susan Martin (Australia), 6.2.70, Libelle 301	656.04 km.
100-km. Triangle	Yvonne Leeman (SA), 4.1.66, BJ-2	110.19 km/h.
300-km. Triangle	Yvonne Leeman (SA), 14.1.66, BJ-2	106.18 km/h.
500-km. Triangle	Anne Burns (GB) (in SA), 25.12.63, Std. Austria	103.33 km/h.

Multi-Seaters (Women)

Distance	T. Pavlova & L. Filomechkina (USSR), 3.6.67, Blanik ..	864.86 km.
Height Gain	A. Dankowska & M. Mateliska (Poland), 17.10.67, Bocian	8,430 m.
Absolute Altitude	Anne Burns (GB) & J. Oesch (in USA), 5.1.67, 2-32 ..	9,519 m.
Goal Flight	I. Gorokhova & Z. Koslova (USSR), 3.6.67, Blanik ..	864.86 km.
Goal & Return	P. Majewska & R. Sokolowska (Poland), 14.7.68, Bocian ..	467.2 km.
100-km. Triangle	Y. Leeman & M. Human (SA), 27.12.67, Kranich 3 ..	90.95 km/h.
300-km. Triangle	O. Manafova & V. Lomova (USSR), 12.6.64, KA1-19 ..	74.31 km/h.
500-km. Triangle	T. Zaiganova & Lobanova (USSR), 29.5.68, Blanik	69.6 km/h.

1,000-km. FAI Diplomas

At the CIVV meeting on March 5, 1971, it was agreed to issue FAI Diplomas to pilots who achieve, or had achieved, 1,000-km. flights. So far the following pilots have exceeded that distance:

1	A. H. Parker (USA), 31.7.64, Sisu 1A	(distance)	1,041.52 km.
2	H. W. Grosse (Germany), 4.6.70, ASW-12	(goal flight)	1,032.02 km.
3=W.	A. Scott (USA), 26.7.70, ASW-12	(distance)	1,153.82 km.
3=B.	W. Greene (USA), 26.7.70, ASW-12	(distance)	1,153.82 km.

Pilots are reminded that the new Sporting Code Section 3, Class D, dated 1st January, 1971, states under paragraph 2.1.5 (d): No side of a triangle may have a length of less than 28% of the total distance of the course when the flight is made to obtain a record.

New records have to exceed the old ones by:

Distance	10 km.
Heights	3%
Triangles	2 km/h.
Straight Goals	5 km/h.

Conversion factors:

Multiply km. by 0.621 to get statute miles
Multiply km. by 0.54 to get nautical miles
Multiply km. by 0.539 to get knots
Multiply km/h. by 0.621 to get mph
Multiply metres by 3.28 to get feet

SUBJECT TO HOMOLOGATION

BRITISH NATIONAL

Single-Seaters

Goal & Return	E. Pearson (in SA), 4.1.71, Std. Cirrus	approx. 632 km.

BRITISH NATIONAL RECORDS (correct to 17.3.71)

Single-Seaters

Distance	P. D. Lane (in Germ.), 1.6.62, Skylark 3F	741	km.
Height Gain	G. J. Rondel, 18.6.60, Olympia 2B	8,870	m.
Absolute Altitude	H. C. N. Goodhart (in USA), 12.5.55, 1-23	11,500	m.
Goal Flight	H. C. N. Goodhart, 10.5.59, Skylark 3	579	km.
Goal & Return	A. H. Warminger (in SA), 13.1.66, Std. Austria (see opposite)	602	km.
100-km. Triangle	E. P. Hodge (in Rhodesia), 1.11.70, Diamant 16.5	126.4	km/h
300-km. Triangle	J. Delafield (in SA), 22.12.69, Phoebus 17	110.6	km/h
500-km. Triangle	Anne Burns (in SA), 25.12.63, Std. Austria	103.3	km/h.

Multi-Seaters

Distance	J. S. Fielden & Vera Fielden, 14.8.70, Bergfalke 3	421.5	km.
Height Gain	R. P. Saundby & B. Roberts, 7.6.64, Blanik	5,410	m.
Absolute Altitude	Anne Burns & Janie Oesch (in USA), 5.1.67, 2-32	9,519	m.
Goal Flight	J. S. Fielden & Vera Fielden, 14.8.70, Bergfalke 3	421.5	km.
Goal & Return	A. H. Warminger & R. Tucker (in SA), 4.1.69, 2-32 ..	362	km.
100-km. Triangle	E. Pearson & A. Martin (in SA), 7.1.68, Kranich 3 ..	83.52	km/h.
300-km. Triangle	A. H. Warminger & R. Tucker (in SA), 29.12.68, 2-32 ..	72.3	km/h

Single-Seaters (Women)

Distance	Anne Burns (in SA), 31.1.61, Skylark 3B	524	km.
Height Gain	Anne Burns (in SA), 13.1.61, Skylark 3B	9,120	m.
Absolute Altitude	Anne Burns (in SA), 13.1.61, Skylark 3B	10,550	m.
Goal Flight	Ann Welch (in Poland), 20.6.61, Jaskolka	528	km.
Goal & Return	Anne Burns (in SA), 6.1.66, Std. Austria	545	km.
100-km. Triangle	Anne Burns (in SA), 12.1.63, Skylark 3B	84.0	km/h.
300-km. Triangle	Anne Burns (in SA), 31.12.65, Std. Austria	93.6	km/h.
500-km. Triangle	Anne Burns (in SA), 25.12.63, Std. Austria	103.3	km/h.

Multi-Seater (Women)

Absolute Altitude	Anne Burns and Janie Oesch (in USA), 5.1.67, 2-32 ..	9,519	m.

UNITED KINGDOM RECORDS (correct as at 17.3.71)

Single-Seaters

Distance	H. C. N. Goodhart, 10.5.59, Skylark 3	579	km.
Height Gain	G. J. Rondel, 18.6.60, Olympia 2B	8,870	m.
Absolute Altitude	G. J. Rondel, 18.6.60, Olympia 2B	9,300	m.
Goal Flight	H. C. N. Goodhart, 10.5.59, Skylark 3	579	km.
Goal & Return	J. S. Williamson, 30.8.64, Olympia 419	441	km.
100-km. Triangle	G. E. Burton, 14.6.69, SHK	95.4	km/h.
200-km. Triangle	J. S. Williamson, 7.6.69, Dart 17R	74.7	km/h.
300-km. Triangle	H. C. N. Goodhart, 22.5.69, SHK	71.9	km/h.
400-km. Triangle	A. D. Purnell, 19.4.69, Cirrus	66.36	km/h.
500-km. Triangle	B. Fitchett, 22.6.70, Cirrus	60.9	km/h.
100-km. Gl. Speed	K. A. Harrison, 13.4.69, SHK	128.4	km/h.
200-km. Gl. Speed	I. W. Strachan, 2.6.63, Skylark 4	114.3	km/h.
300-km. Gl. Speed	E. A. Moore, 27.5.57, Skylark 2	92.1	km/h.
500-km. Gl. Speed	H. C. N. Goodhart, 10.5.59, Skylark 3	90.7	km/h.

Multi-Seaters

Distance	J. S. Fielden & Vera Fielden, 14.8.70, Bergfalke 3	421.5	km.
Height Gain	R. P. Saundby & B. Roberts, 7.6.64, Blanik	5,410	m.
Absolute Altitude	R. P. Saundby & B. Roberts, 7.6.64, Blanik	5,800	m.
Goal Flight	J. S. Fielden & Vera Fielden, 14.8.70, Bergfalke 3	421.5	km.
Goal & Return	B. J. Willson & H. Daniels, 27.7.69, Blanik	324	km.
100-km. Triangle	B. J. Willson & H. Daniels, 19.4.69, Blanik	77.57	km/h.
200-km. Triangle	B. J. Willson & H. Daniels, 20.4.69, Blanik	64.63	km/h.
300-km. Triangle	B. J. Willson & H. Daniels, 15.5.66, Blanik	55.8	km/h.
100-km. Gl. Speed	D. B. James & K. O'Riley, 27.5.57, Gull 2	96.5	km/h.
200-km. Gl. Speed	J. S. Williamson & D. Kerridge, 9.4.55, Eagle	56.2	km/h.
300-km. Gl. Speed	W. A. H. Kahn & J. S. Williamson, 14.4.58, Eagle	69.2	km/h.

Single-Seaters (Women)

Distance	Anne Burns, 10.5.59, Skylark 3B	454	km.
Height Gain	Anne Burns, 10.5.59, Skylark 3B	5,100	m.
Absolute Altitude	Anne Burns, 10.5.59, Skylark 3B	5,600	m.
Goal Flight	Anne Burns, 12.4.58, Skylark 3B	309	km.
Goal & Return	Anne Burns, 26.5.63, Olympia 419	215	km.
100-km. Triangle	Anne Burns, 14.6.69, Cirrus	80	km/h.
200-km. Triangle	Anne Burns, 22.8.64, Std. Austria	69.3	km/h.
300-km. Triangle	Anne Burns, 28.6.66, SHK	60.2	km/h.
400-km. Triangle	Anne Burns, 5.8.67, SHK	60.6	km/h.
100-km. Gl. Speed	Rika Harwood, 27.5.57, Olympia 2B	83.0	km/h.
200-km. Gl. Speed	Anne Burns, 2.6.63, Olympia 419	85.5	km/h.
300-km. Gl. Speed	Anne Burns, 12.4.58, Skylark 3B	63.9	km/h.

FIG.1.

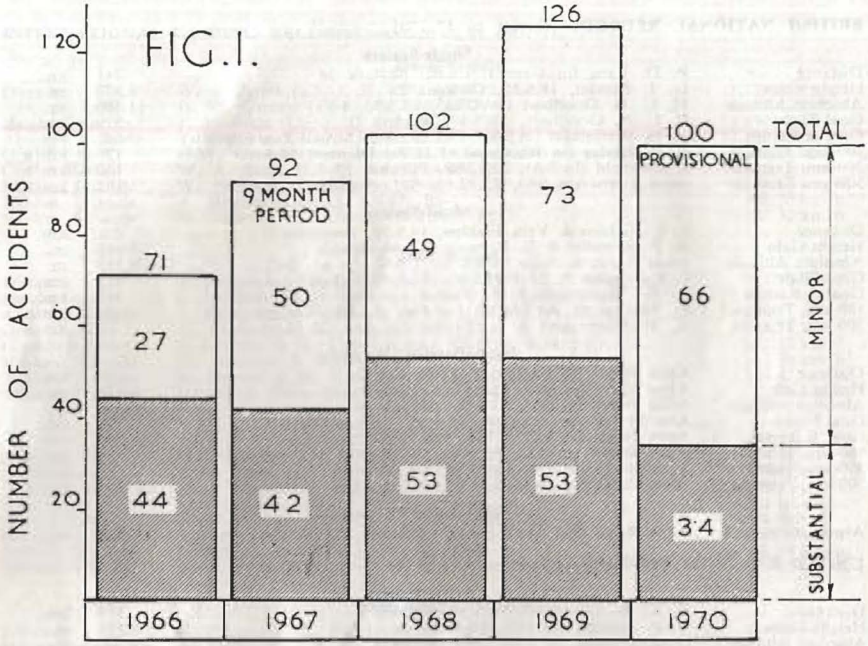
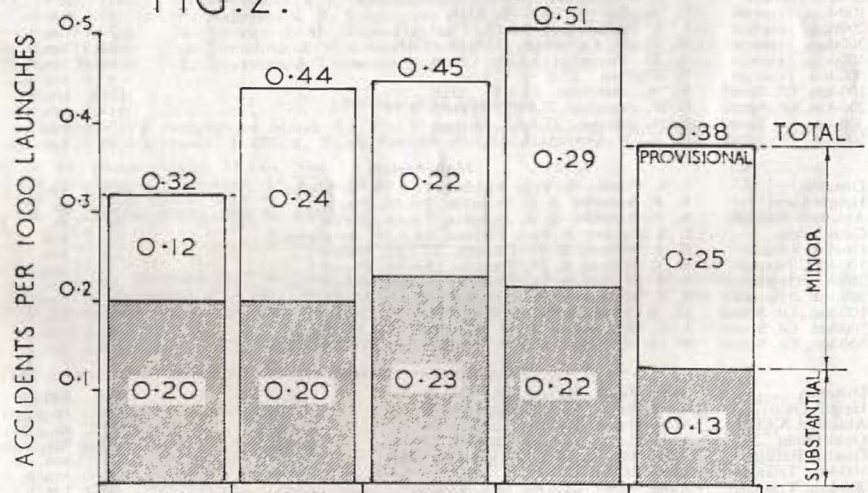


FIG.2.



	1966	1967	1968	1969	1970
TOTAL LAUNCHES	223550	209659	226644	247088	261739

1970 SAFETY RECORD "ENCOURAGING"

THE provisional accident statistics for 1970 were very encouraging, said John Ellis, chairman of the Safety Panel, in his annual report. There were 100 accidents to gliders in 1970, 26 fewer than in 1969. The improvement in the safety record was emphasised by the accident rate figures: 0·38 per 1,000 launches against 0·51 in 1969. There were over 14,000 more launches in 1970 than in the previous year.

There was a marked decrease in "substantial damage" accident reports, from 53 in 1969 to 34 in 1970.

The main reason for the low accident rate in 1970, John Ellis said, seemed to be a marked decrease in reported field landing accidents, especially during competitions.

A very heavy concentration of accidents (28) occurred at the instruction/supervision area of "under 10 hours P1", more than in 1969. The report gave a breakdown of causes as follows: Launch-failures 5; misalignment on finals 5; air-brakes open but unnoticed 4; misuse of airbrakes/elevator 4; hill soaring beyond experience 2; undershoots 2; heavy landing 1; mid-air collision 1; spin off failed launch 1; stall (?) on finals 1; and miscellaneous 5.

The RAFGSA figures were once again not included, but showed "similarly low figures this year", John Ellis said.

The indications were that accident reporting generally remained as good as ever. There was, however, one small sour note—an S & G competition article detailed one accident and a near collision, neither of which had been reported at the time the Safety Panel figures had been prepared.

It remained to be seen whether or not the rate would be as good in the years to come, John Ellis continued. Trends were as difficult as ever to forecast. However, several points required special attention:

Fatalities and Injuries — **Fig. 3**

	1966	1967	1968	1969	1970
Fatal	1	5	5	2	3
Serious	9	7	6	3	3
Minor	5	1	1	4	15

1. Supervision and instruction of the inexperienced solo pilot was still apparently the worst area.

2. Much more attention to launch-failure training was necessary. All pilots coped fairly well with straight breaks, and this was no longer a great problem. However, the more subtle power-failure cases seemed to be glossed over by many clubs.

3. A new approach to the "air brakes open but unnoticed" problem, which no amount of education had stopped, was necessary. "It would seem that a technical solution may be the only answer."

4. The present recommended cable/rope/parachute combination for wire launching continued to cause real problems when it becomes entangled with various parts of the glider. "Again, a 'technical' solution is required. In this case, one can say with a reasonable amount of confidence that this is imminent."

5. "Clear air collision in thermals remains a real risk. Avoidance is, as always, a matter for discipline and mutual trust between thermalling pilots and an appreciation of the problems of the less experienced by the pundits. It is possible that many pilots never got near another glider until they start soaring solo. There might be a case for including 'joint circling' in the basic syllabus."

6. More and more pilots were visiting other sites. "Of course, one wants to encourage interchange, but it behoves clubs to make sure that their guests get value for money. From a safety point of view, this means that visitors who haven't flown ridge or wave or wire launches or aero-tows, etc, expect to get the appropriate dual checks and proper briefing on all aspects of local conditions before they fly solo in their own gliders or the club's. This not only protects the visitor, but also the club.

John Ellis retired as chairman of the Safety Panel at the AGM on 27th March, 1971. George Turner, CFI of the Swindon Gliding Club, succeeded him. Other members of the panel are Naomi Christy, Roger Neaves, Bill Scull and Ray Stafford-Allen.



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BRAKES OPENING ON LAUNCH

EVERY year the gliding movement pays out about £2,000 in repairs for one type of accident, the good old brakes-out-on-take-off, or brakes-coming-open-on-the-launch. I know it is a training matter, and that it can't happen if you do your cockpit check properly, but the fact remains that it does happen, and goes on happening.

It is true that the Skylark seems to be more or less immune from this trouble, because the lever in the cockpit sticks out and prods your knee if the airbrakes are not locked, but the Swallow and the Olympia do not give you this warning, and these two machines seem to be the most common victims of this type of accident.

There is a solution to this problem, and it is a fairly simple one. It is the one that was developed by Derek Piggott for the Capstan, and it consists of fitting a bungey, or spring, somewhere in the brake system to pull the brakes shut. Originally, you may remember, the Capstan had some trouble with its brakes, because the overcentre lock in the wings is very sensitive to changes in temperature. On a hot day you may find that the lock is very stiff while on a cooler day the lock may more or less disappear. This led to people thinking that the brakes were locked when in fact they were not. Also the lock is so arranged that flexing of the wings under normal loading causes the stiffness of the lock to decrease, so that it is possible for the brakes to jump out when the machine hits a bump if the lock is a bit on the slack side.

Derek's idea, as stated above, was to fit a bungey to the system to hold the brakes shut, and in fact it works very well. The bungey has to be strong enough to hold the brakes shut, even though they are not locked, at all speeds up to the fastest you expect to get on aero-tow. I have this system on my own Capstan, and I feel that it is a most valuable Mod.

The effects of it are:

1. You cannot take-off with the brakes open. The bungey shuts them, though it does not necessarily lock them.
2. Even if you do take-off with the brakes unlocked, they will not come open on the launch, or at any other time, unless you exceed the speed for which the bungey is designed. In the case of the Capstan, they will re-lock themselves as soon as you hit a little bump, though I do not claim that one would arrange this with every other type of glider.
3. On the approach, the air loads and the bungey loads more or less balance out, and the control is far more pleasant to use, since the lever does not try to fly back and open the brakes for you.
4. If the brakes are accidentally opened at high speeds, they do not slam out anything like so violently as they do with no bungey fitted.

Disadvantages? Well, you could say that you cannot leave the brakes out for parking. This is not true, though, because the only reason for leaving the

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brakes out is to lock the wheel brake on, and this you can do as well as ever by lashing the brake lever with the harness. In fact you must do it this way, if the wheel brake is to do its job. (I will not enter into argument with people who seriously believe that a machine is less likely to blow over if they leave the brakes out!)

The only other criticism that I have heard against the use of an airbrake bungey or spring in the Capstan was that it might make things more difficult for a pupil who goes on to fly a machine without it. He would then have brakes which tried to open violently when he unlocked them. This might upset him if the trainers he had flown did not have this tendency. But isn't that really saying that because some machines have tendencies that we dislike, all machines must have them.

There you have it. On the one hand, some £2,000 a year for repairs (which you have to pay in the end, no matter what the insurance situation may be!) and on the other, complete immunity from this trouble at a cost of perhaps 50p per glider. Isn't it worth it.

I would go further and say that it is time that we thought about producing a Requirement along these lines.

An approved scheme already exists for the Capstan. The Technical Committee is prepared to consider for approval schemes for other aircraft. In fact, development of some is at present under way, and details will be published when all the relevant facts are available.

R. C. STAFFORD ALLEN,
Chief Technical Officer, BGA

DEVELOPMENT COMMITTEE REPORT

"WHEN facilities are there people use them" (Outdoor recreation in the British Countryside—Wye College). Conversely, and obviously, when facilities are not there people cannot use them. This is the situation that threatens gliding in this country in the future.

In the last few years gliding club development has shown a pattern which gives us considerable concern. From the rapid and healthy growth of the 1950's, when clubs increased from 39 to 68 in ten years, we have moved into a period of slow and difficult formation. Gliding club activity and membership has not faltered. A total of 4,996 members in 1961 has increased to 7,733 in 1969. But the number of new clubs being formed has not kept pace. The total of clubs now stands at 79. This is well below the number needed for the demand which we know exists.

The problem is one of sites, and to a large extent reflects the rise of land values and the disposal of surplus Ministry of Defence airfields. Of forty "open" civilian clubs only seven own their own sites. Seven have reasonable leases and twenty-six have little or no security. One is under notice to quit and others

could find themselves dispossessed at any moment. This is particularly true of gliding clubs operating on Ministry of Defence airfields. Many of these airfields are unused and are likely to revert to their original owners or be auctioned. Other disused or little used airfields have acres of idle land, part of which could provide the greatly needed sites for gliding clubs. Few clubs are able to finance the purchase of airfields and if gliding is to continue to develop, help from the government is needed, possibly by making redundant airfields available at a nominal rent on a long term tenancy. Additionally there seems to be no good reason why in many parts of the country active airfields should not afford facilities, under proper safeguards, to civil gliding clubs.

It may be that in the future, gliding, except for "off peak" times, may not be available to the many people who would like to take part. In our Five Year Plan for gliding we have forecast that unless new sites could be found within the next few years there will be an unprovided potential membership of 1,000 people.

The Five Year Plan, which highlighted these problems, was finally completed in the early part of the year and was approved by the BGA at the 1969 AGM. It has been submitted to the Sports Council and is now under discussion.

During the year Naomi Christy, our Development Officer, visited 24 clubs and sites and travelled thousands of miles. She has taken part in many negotiations, helped and advised clubs on the numerous problems of club management, supported the officers of the Association and guided government grant applications through the machinery of priority committees and government departments. She also found time to carry out a great deal of work on the Five Year Plan and other reports. She has become a welcome visitor throughout the country and we are grateful for all her practical, capable and, fortunately, cheerful work.

The first weekend conference on gliding club organisation was held in March, 1970, at the London Gliding Club. There seemed to be enthusiasm for the event and we hope to run similar conferences in the future.

The new procedure for government grants appears to be working reasonably well through the Regional Sports Councils and gliding clubs have continued to receive grants for land, equipment and buildings.

JOAN CLOKE, *Chairman.*

BOOK REVIEW

Introduction to Meteorology. By FRANKLIN W. COLE. Published by John Wiley & Son, Inc., New York and London. Price £4.40.

THIS new American book was written for college students with no previous knowledge of meteorology and little or no knowledge of physics or mathematics. Its first half is a comprehensive step-by-step explanation of the physical laws of the atmosphere. All is beautifully explained in simple terms, and everything is covered—from the heat balance in the atmosphere to the jet stream and its influence on the formation of depressions and anticyclones.

The control of our weather by the waves in the jet streams is a fascinating subject which will be new to many readers. This is the "trigger" mechanism for the formation of high and low pressure systems in our part of the globe, and it was hardly dreamed of twenty years ago. It has now become the basis of our long-range weather forecasting.

The illustrations and drawings are excellent and include many satellite and astronaut photographs of weather systems and cloud cover. Some readers may be put off by the few pages of mathematical equations, but in most places these are used only to back up the verbal and diagrammatic explanations, and so can be skipped by the lay reader.

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I found that I needed to read this book bit by bit and digest it slowly. After the first reading I was beginning to realise that my lack of basic knowledge had always made it difficult to explain to pupils even simple weather phenomena without running the risk of being caught out by an awkward question! The book now made many things clear to me for the first time, and I am sure that it will prove of very real value to anyone who is keen to know more about meteorology. It does not deal in detail with the small-scale effects, such as thermals and lee waves which we use for soaring, but these are covered in other publications. It does, however, explain so many of the things which are usually taken for granted in the other text books that it makes this volume quite invaluable to the serious student.

A.D.P.

CORRESPONDENCE

SEALING AIRBRAKES

Dear Sir,

In a recent issue of "Instructor" there was a comment about an accident caused by taping airbrakes to seal the gap.

If a good spring seal cannot be installed inside the brake compartment, a good alternative is to use a non-setting plastic material to fill the slot after the brakes are closed. I have seen plasticine and toothpaste used; perhaps Crest would not only fill cavities but prevent them! There are many other materials which may be suitable. Incidentally, toothpaste is quite effective for removing small abrasions and scratches from canopies.

Ottawa, Canada. JOHN FIRTH

THE BRIGHT SPOT

Dear Sir,

For many years I have been mystified by two particular optical phenomena. Whenever I have mentioned them, hoping for enlightenment, all I have ever received has been a polite stare of unexpressed sympathy. Ann Welch has now mentioned one of them (S & G, August, 1970, page 297), so I am emboldened to appeal to your readers for help so that I may not take these mysteries like shadows to my grave.

The bright spot around your shadow on the ground:— I have not detected it outside the range of about 1,000-1,500 ft. I had presumed it was due to diffraction, but Ann says only your own shadow has the spot, so presumably I was wrong. I do know, however, that the best time to observe it is when your pupil is keeping a good watch out and practising steady circling. Come to think of it, that may explain both the small number of sightings and the polite stares.

The Brocken Spectre:— Apparently a Mr. Brocken walking once upon a hill espied his shadow on a fog bank and wondered. Had he relied for help on the book in which I found this above reference he would still be wondering, as I am. The basic subject came to me accompanied by a twinge of *La Disorient* (the mystic East?) as once I circled in and out of the shade of a cloud and noticed that my shadow held a constant apparent size. The "spectre"(?) seemed to be at a distance of say about one average thermal radius or diameter. The photo I took doesn't help in this matter of establishing the exact size, since I have very low competence of 50% IFR on a turn indicator and exposure meter, even in a gentle Skylark. I don't believe the spectre's size was simply the size of our shadow as it emerged through the bottom of the shallow sea-breeze-front cloud, since the inside of the cloud seemed dense enough to be shadowless.

Here's hoping for a simple layman's enlightenment from your most insighted oculists.

Dickson, Australia. RUPERT P. BROWN

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16.4×(distance in mm.)−(launch point height−landing point height).

For example: Home site 500 ft. amsl.; landing point 200 ft. amsl.; distance 55 km. (=110 mm.). Maximum launch height=16.4×110−(500−200)=1,804−300=1,504 ft. Therefore, maximum launch height is, say, 1,500 ft.

If the landing point height had been 700 ft. amsl., then maximum launch height equals 16.4×110−(500−700)=1,804+200=2,004 ft. Therefore maximum launch height is, say, 2,000 ft.

I hope this will be of some use to people attempting their distance in 1971.

Stratford-upon-Avon, Warwicks. MARTYN D. WELLS

EDITORIAL NOTE:— The constant 16.4 is obtained by dividing the value of 1 km. (32.8 ft.) by 2 for direct measurements on a 1:500,000 map. If a 1:250,000 map is used, the constant would be 8.2 and the distance represented in mm. on the map four times the number of kms. flown.

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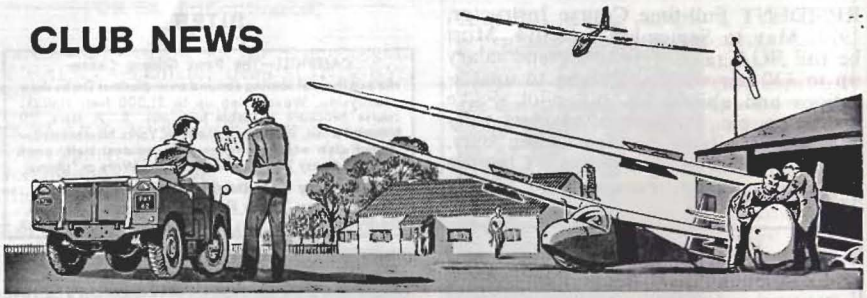
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It will, of course, be understood that the British Gliding Association cannot accept responsibility for the claims made by advertisers in "Sailplane and Gliding".

CLUB NEWS



WE apologise for the brevity of this issue's Club News, due to the lack of post. The bad beginning to 1971 reported last time has continued, with the London Club suffering a hangar fire which could nearly have proved disastrous, and with the recent news of the death of Brian Dalby of the Doncaster Club in a Condor accident.

The thermal soaring season has dawned very early. Two Silver C flights were made from Booker to Lasham, on February 19 (Chris Rollings) and February 22 (Richard Aldous), and must surely be among the earliest of their kind.

Copy and photographs for the June-July issue should reach me by April 14, and news for the August-September issue by June 9; typed double-spaced on foolscap. Please remember to add your name, address and telephone number to all copy, to be sent to me at 11 Great Spilmans, Dulwich, London, SE22. Tel. 01-693 3033.

YVONNE BONHAM (Mrs.),
Club News Editor.

10th February.

AQUILA

THE club's first annual dinner was held at the Social Club, Rodney House, Bicester, on December 8, 1970. The event was well attended, and we were pleased to see so many new members joining in. The club's three trophies were presented at the dinner. The Civil Service Sports and Social Club Trophy for the outstanding flight of the year went to Malcolm Lassan; the President's Cup for the most promising novice to Jim Hackling and the Eric Robertson Trophy for the member who has done most for the club to our chairman, Dennis Spencer.

We have acquired a new winch to help our launch rate, and are now awaiting planning permission for our new hangar. We also hope to be able to provide aerotow facilities this summer. The club fleet consists of a T-21, a K-7 and a Swallow, and we hope to obtain an Olympia or a Skylark as a second solo machine.

The owner of our new site at Turweston is thinking of extending his grass drying operations, so that the grain crops on the airfield will be replaced by grass.

E.A.C.

BLACKPOOL & FYLDE

WE have now signed a contract and paid 10% deposit towards the purchase of Cock Hill Farm, Fiddlers Lane, Chipping, Preston, Lancs. Thus we have secured this freehold site at last, and have great hopes for the soaring possibilities that it will offer (see S & G, February 1971, p. 48).

This is a very big transaction for us. After much careful thought, we have convinced ourselves that we can afford to buy a second dual trainer, so we have bought a Blanik from the RAFGSA.

We are now calling in the loans that members have promised to us, in order to complete the farm purchase at a date suitable to the farmer, Mr. W. Jolly. The next stage will be for us to survey the site in detail and to plan and cost the development work, while our treasurer recovers his balance. We cannot say when we will be able to start flying, or to build a hangar. Unfortunately, the Lancashire Education Committee has said (as we feared it would) that it cannot make a grant contribution to help us.

Meanwhile, our waste paper mounts

up well. Dick Seed's cartoon calendars produced a small surplus and Eric Ripley's efforts on the Christmas raffle produced a very healthy profit. Flying has continued, thanks to the mild winter we have enjoyed, and several members have soloed instead of merely getting rusty, as usually happens at this time of year.

Our membership list is wide open for once, with the Blanik and T-21 to help us cope, but we expect to have to close it again soon, if applications continue to arrive at the present rate.

K.E.

The recreational grant offered by the Department for the Environment was £10,000; "we gather that we have distinguished ourselves by landing the largest recreational grant ever".

Newsletter

BURTON & DERBYSHIRE

SINCE the last report, about three years ago, we are able to show considerable progress in many directions.

Under the continued chairmanship of John Whitely, flying operations are in the capable hands of Chris Duthy-James and his team of seven instructors. Our activities are centred on the old Church Broughton aerodrome, located 12 miles west of Derby on the A516. Flying takes place on Saturdays and Sundays, and visiting gliders by road or air are welcome.

The club fleet comprises a T-21 and a K-13, which together ensure a smooth progression from *ab initio* through first solo to advanced tuition and ultimately solo cross-country flying. In addition, six syndicates operate from Church Broughton, with a Sky, Skylark 3F, Skylark 4, Olympia, Dart and Std. Libelle.

Since its arrival from Camphill in May, 1970, the Sky has been put to good use by its new owners, having two new Silver heights and a 5 hours to its credit, as well as extended local soaring. The Olympia has also gained two 5 hours and a number of Silver heights.

Silver C's have been completed by Pete Ellison with 5 hours in the Olympia and Ken Brett with a flight to Spitalgate in the Skylark 3F. Numerous Silver heights have been achieved in the K-13.

Our two-drum winch is now assisted by a syndicate-owned Auster tug, which has also paid frequent visits to our near neighbours, the Staffordshire club, while they are temporarily without a tug. The Auster has also made it possible to embark on some serious wave searching and excursions to the hills of Dovedale have been made, but so far with little success. Weak local wave has been located, notably by the Libelle group.

December saw our first home-bred lady solo pilot, Marian Toft, who has found time, between making very much appreciated supplies of tea, coffee and soup, to learn to fly.

Owing to structural deterioration, we have moved from the big RAF hangar to a small blister hangar, accessible directly from the A516. Good work has been put in by members in recent months to make the accommodation secure and habitable. Eventually, heated workshop facilities will be available.

January 15, 1971, saw a gathering of some 80 members, wives and friends at a local hostelry for the annual dinner and dance, successfully organised by Martin Toft.

Our series of winter lectures, under the auspices of the educational authorities, have commenced at the John Porte school, Etwall: Every Thursday evening; visitors are welcome.

Rumours of an M1/M6 link motorway, passing through the airfield, become more persistent. Although details have not been published, a date of 1974/75 is mentioned as the start of construction if plans are approved. However, for the time being, fettling is the order of the day on trailers and gliders in anticipation of another good year of soaring.

P.W.

CORNISH

THE year opened sadly for our club with the news of the death of one of its three founders, Major Ted Berry, CBE, of St. Ives. Ted had done very much for the club in the early stages of its evolution. Although he was not known by many newer members, they have reason to be grateful to him for many of the present facilities that in the

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early days were so hard won and are now part of every member's inheritance. The whole club still rests firmly on many of Ted's corner stones, both in principle and fact.

On February 21, a brilliant blue sky and warm winds encouraged all the gliders to soar happily. Pete Arthur gained his 5-hour duration in the Avia. Pat Wybrow also flew his Diamant 18 well down the coast and back again.

George Collins visited Waikerie in Australia in January and met John Homewood there. They both had some very good flying in some hot ships.

They just missed Brian Wotton, who was there the day before they arrived, but met Wally Wallington and Peter Hanneman.

G.T.C.

COTSWOLD

LAST year's club statistics for the Cotswolds were good, and this year's promise to be even better. We now have a ridge to call our very own, right on the top of Cleeve Hill. Intrepid expeditionary parties, who have sallied forth on bleak winter days with a borrowed winch and brave smiles, report that the hill worked well up to 1,100 ft., and conditions on those occasions were not ideal. We reckon that 15 to 20 knot westerlies should put the sky within reach, and winds with a few degrees of north or south in them should still be good.

We have regretfully parted with our faithful (and fun) T-21, and are looking for a K-7. A double-decker bus has appeared on the site since last we were in print. Gaily decked in yellow and black paint, it should make a clear reference point for anyone flying overhead who may be (sshh . . .) lost, and will be a welcome sight as it appears on the horizon to homing pilots, weary after 5, 50 or 500 kms.

We hope to have three more instructors shortly, and we look forward to welcoming any visitors who come to sample the joys of our guaranteed thermals and the peace of the Cotswold countryside. You don't *have* to land, but if you have come from further afield than Land's End, Yarmouth or York, we promise you a sticky bun.

G.H.

COVENTRY

OUR annual dinner and dance was held at the end of 1970 at the De Montfort Hotel, Kenilworth. Our guests included the television actor John Bennett, himself a glider pilot. He gave an extremely amusing after-dinner speech on his gliding experiences.

Flying has not been too active lately because of bad weather. Time has meanwhile been used in "poshing-up" our equipment for the June Nationals. We have recently acquired an extremely well equipped ex-Civil Defence vehicle which we are to use as a control unit and soup kitchen—a great improvement on our prefabricated box on wheels.

There has recently been a spate of vintage gliders at Husbands Bosworth, and yet another one has found its home here. A new syndicate has been formed for "Jacob's Ladder". This glider is familiar to several old members of the club, as some of them have either flown it or have actually been in its syndicate at one time or another.

There will be great excitement in the spring as during the weekdays the RAF is to use the airfield for some training exercises with its "jump jet" Hawker Harriers. The local residents will think we have some new fangled vertical tug aircraft!

V.M.

DONCASTER & DISTRICT

WE learn with great regret that two prominent Doncaster club members were involved in a serious accident while flying a Condor aeroplane from Redhill on Feb. 25.

Brian Dalby died shortly after reaching hospital and Bob McLean, the club's ground engineer, will have to spend some time in hospital to recover from his injuries.

IMPERIAL COLLEGE

WINTER is a time of warm firesides, dreams and reminiscences—at least for some! We seem to have spent a lot of time in draughty surroundings mending trailers and fitting side reflectors. The results of all this energy were two

trips for the Skylark—to Portmoak and the Long Mynd. Wave was contacted on both occasions, but it was not of epic proportions. After having extracted our trailer from snow-bound Dunstable, our very enjoyable stay at Portmoak over Christmas was warmed by the sure knowledge that the rest of the country was shivering. We are planning to visit Aosta in August.

December saw a very lively annual dinner, at which Ray Stafford Allen proved to be a very entertaining speaker. There was much laughter, and some surprises, over the presentation of our trophies, and we were very pleased that Mike Matthews of University College Gliding Club was able to come and receive the Brunt Trophy.

Paul Minton returned from Australia to discover us in the midst of C of A work, so we've not heard all his experiences down under, but we are eagerly awaiting them.

C.E.H.

KENT

AS briefly reported in the last issue, the New Year started disastrously with the collapse of the hangar roof, due to snow, with severe damage to most of the gliders inside (see page 110).

We are now looking forward to the première of a film about the club made by the Canterbury Cine Club which stars Gilbert Lawrence, an instructor with a Silver C, as a new member, and describes his subsequent training. Some exciting air-to-air shots were made using the two T-21s.

With the soaring season just around the corner, two new Dart 17R syndicates have been formed and Ron Cousins, our competition-minded club chairman, has ordered a Std. Cirrus.

Taking a last look at the past season, the longest flight from the site was made by Cyril Whitbread, when he landed his Skylark 4 near Peterborough, a distance of approximately 220 kms. The only pilot to fly in from another site was Don Snodgrass, who popped in on us from Lasham. We would all like to see a few more this year, so if you find yourself over the Kent countryside, do drop in at Challock.

R.J.H.

LONDON

FIRE broke out at the back of the club hangar one Monday night in January, starting at the tail of a derigged Tiger Moth. Fortunately there were a lot of people up and about at the time, and at great risk two burning Tiger Moths were removed and the fire extinguished, but not before a fuel tank and fire extinguisher in one cockpit had exploded. Gliders were extricated through thick smoke and none were damaged. The club staff and numerous members are to be congratulated on their efforts, as another five minutes would have seen the entire fleet and clubhouse alight.

The year 1970 topped 6,000 hours flown for the first time—a record. This extremely encouraging figure, we hope, will help to reverse our backsliding finances, although we will not know the facts until April. Flying so far this year has been limited by relatively poor weather, although there have been a few occasions with wave.

This winter we resumed regular weekend lectures, films, etc., the programme being devised by Barbara Deans. Attendances at weekends have improved as a result.

Work on an extension for a spray booth on the south side of the workshop began in January. The booth, the first building work since the garage was constructed several years ago, will assist Dave Paton's operations a good deal. A private owners' hangar is also scheduled. Planning permission for it has been granted, but money remains the major problem and the project is unlikely to go ahead for some time.

M.P.G.

PETERBOROUGH & SPALDING

THE end of February saw us firmly installed in our new hangar, complete with its generator and lighting. Work has been started on our new mini-clubhouse, an 8 ft. by 24 ft. structure running alongside the hangar and giving a panoramic view of the field of operations.

The application for a government grant to purchase our Bocian is going

forward with the full backing of the BGA and the Central Council for Physical Recreation and reaches committee stage in March.

A second two-seater is still a must to make us a viable organisation. The syndicate obtaining this has been formed.

One of the club's limitations last year will be alleviated, as we have five senior pilots attending the assistant rating instructors' course early in the season.

The first annual dinner was a resounding success, 82 attending. We were pleased to welcome visitors from several neighbouring clubs.

The next, semi-official, function is Brian Bourne and Julie's wedding (congratulations to them both), followed by (but not on the same evening) a film show of aeronautical interest.

J.V.L.

SOUTHDOWN

OUR annual dinner and dance was held this year on February 5 at Drusilla's in Alfriston. Guests of honour were our President, John Furlong, and his wife. Everyone enjoyed an impromptu mannequin parade, can-can and knobbly knees contest by several male members. The evening was a big success, and we were grateful to Joyce Head for organising it.

An innovation this year was a children's party run by the Social Committee in the clubhouse. The children enjoyed a film show, games and a huge spread of cakes and sandwiches, a few of which they left for members to finish off after flying.

Flyable days have been infrequent lately. On Boxing Day, eight members struggled on foot to our field on top of Bo-Peep Hill. The Land Rover was the only vehicle able to make its way up the snow-bound road. The reward was half-an-hour each of gentle soaring on the north-east ridge in the K-13, over a Christmas card scene of skiers and tobogganers.

K.I.P.M.

SURREY & HAMPSHIRE

FOG—nothing but fog. It's been one of the worst winters for it. But for the Falke, which can profitably use the thin sandwich filling of clear air between the 500 foot cloudbase and the earth/mud below, we could have done only about 150 launches. However, the days lengthen and the first tentative circles are being thrown.

We have added another Phoebus C to the fleet. Our first one flew over 300 hours in six months' service during 1970.

Airspace problems are looming around Lasham, with Boscombe Down, Fairford and Brize Norton rumoured to be introducing military zones. Most of our cross-country flying involves skirting those airfields.

C.L.

ULSTER & SHORTS

DOES anybody in your club fly half an aircraft? We've someone who does.

On Jan. 31, amid great excitement, a car was spotted towing a flying wing along the Long Kesh peritrack. RAF officer Brian Connolly, newly posted to Aldergrove, was arriving with his 12 m. Fauvel AV-36. He had brought it from Germany and was airing it for the first time in the UK. Lifted in one piece

The Fauvel AV-36 flying wing on the approach.



from its small open trailer, the "thing" was soon airborne behind our Auster. We're glad to have this, our second privately-owned aircraft, joining Gordon Mackie's SF-27m. It adds distinction to both the hangar and the circuit.

Its arrival was a major event in a satisfactory if unexciting winter season—unusually mild, with many calm, clear January days. Wave off the Mournes was contacted in the circuit by several members on January 10, best flights being a deliberately terminated 66 minutes by Bob Rodwell in the Skylark 2 and 56 minutes in the same aircraft by "Prof" Stevens.

The previous weekend, Roy Pollitt, our new treasurer, had made 56 minutes on a day of zephyr easterly breezes, in what appeared to be weak wave off the Isle of Man. Roy broke off the flight from about 2,000 ft., and only when in the circuit did he realise that he had misread his watch and would miss the hour needed for a Bronze C leg. Monica Galloway, realising his mistake, had frantically been trying to call him from the control caravan but, unfortunately for Roy, the Skylark was without its radio that day.

CFI Grenville Hill and instructor Joe Taggart were leading the C of A programme on the tug at the time of writing. The wings are being re-covered in Joe's garage and the rest of the aircraft in the hangar for, we hope, an aeronautical rebirth in March.

Finally, a remarkable milestone. Club veteran Carl Beck completes 40 years of gliding in March, and is a walking, flying, participating record of the entire history of Irish gliding and, for that matter, of British gliding too. At the AGM on January 28, Carl was made an honorary life member. No more subs—ever! Will Carl's gliding costs go down? Not a bit of it—the money he now saves on us is earmarked to increase the number of clubs in Britain at which Carl flies as an occasional visitor or associate member.

R.R.R.

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.

AUSTRALIA

SUE MARTIN (Libelle 301) won the Standard Class and Dick Curry (Boomerang) the Sports Class at the Australian National Gliding Championships, held at Benalla, Victoria, from December 28, 1970, to January 10, 1971. Sue Martin was the only woman competitor. Malcolm Jinks (17.5m. Diamant) retained his Open Class title.

The World Standard Class champion, Helmut Reichmann, flew *hors concours* by invitation, and made the fastest times on most days. He flew a 17m. Kestrel in the Open Class, alternating with a Std. Libelle in the Standard Class, and would have won decisively had his flights been scored. He broke the German National 500 km. triangle record on one day, covering the course Benalla-Conargo-The Rock-Benalla in 4:17:1. Although Martin Simons and John Rowe beat the time for the 500 km. Australian National record, they were not carrying barographs, so only Malcolm Jinks, who

completed the course in 4:57:8, was able to claim it.

Most of the contest tasks were 300 km. triangles, although there were two 500 km. triangle days and a couple with shorter tasks.

Conditions were, in the main, moderate to good, with a depth of convection of 6-7,000 ft. There were no 12-15,000 ft. days, although on the record breaking 500 km. day, convection depth reached 9,000 ft. The last contest day was marred by the encroachment of stable air, and everybody had to land out. A total of 2,000 hrs. covering 68,000 miles were flown during the contest.

Helmut Reichmann won all but one of his Open Class days when Martin Simons (also flying a Kestrel) beat him by 6 seconds round a 300 km. triangle. Ingo Renner, a German immigrant flying a Phoebus in the Standard Class, beat both the Standard and Open classes on one day, including Reichmann. He also participated in the breaking of another German National record when Hartmut Lodes (Reichmann's crew chief) flew with him in a Blanik round a 300 km. triangle outside the contest tasks. Lodes will claim a German National two-seater record.

Among features used for the first time at Australian championships were turning point photography and visual starting gates.

Contest days flown: Standard Class, 12 days; Open Class, 12 days; Sports Class, 12 days.

Final leading results

OPEN CLASS: 1, M. Jinks, 17.5m. Diamant, average score 961; 2, J. Blackwell, Libelle, 940; 3, A. Tabart, Kestrel, 912; 4, Sue Martin, Libelle 301, 844; 5, M. Howland, Libelle, 842; 6, I. Renner, Phoebus 15, 833.

STANDARD CLASS: 1, Sue Martin, Libelle 301 (fixed flaps), average score 904; 2, M. Howland, Libelle, 900; 3, D. Jones, Libelle, 894; 4. I. Renner, Phoebus 15, 891.

SPORTS CLASS: 1, R. Curry, Boomerang, average score 965; 2, J. Buchanan, Boomerang, 960; 3, V. Kasak, BG-12, 932; 4, P. Kayne, K-6, 879.

Australian Gliding and
C. E. WALLINGTON



Helmut Reichmann and his wife Hilda.

World record O/R attempt just fails

Bert Persson, of the Alice Springs Gliding Club, failed by 8 miles to break the world out and return distance record on Boxing Day. He flew 567 miles in a Libelle, but ran out of daylight and landed in a claypan (dried-up lake) well after dark. During the latter part of the flight, he had called Alice Springs airport on the radio asking it to switch on runway lights as an aid to navigation, which it did. On landing, however, he hit a post and did some damage, but the machine is flying again.

He and Tom Bird were planning further record-breaking attempts for the early part of 1971. They already hold a number of Australian National records. They hoped to make use of sheerline conditions prevalent in central Australia at that time of the year, in which a slow-moving easterly current of about 10-15 knots meets a higher, faster, westerly current. An inversion occurs at about 10,000 ft, and thermals break through the inversion to provide lift above the sheerline.

About 11 hours soaring is available, from about 8.30 a.m. to nightfall.

RHODESIA

TIM BIGGS of South Africa won both the Open and Standard classes at the Rhodesian National Championships, flying a Std. Cirrus. Rhodesian National Champion was Bob Moore, flying a Std. Austria. Ted Pearson won the Chic Brydges Memorial Trophy for the fastest time in any event and also his own Ted Pearson Trophy for the fastest time over the longest task. There were 14 competitors, including A. 'Doc' Martin, Hugh Keartland and Ted Pearson from South Africa and Rod Kendall from New Zealand.

There were 12 contest days out of a possible 13, held from October 12 to 24, 1970, at Warren Hills, near Salisbury. Conditions were mixed, with the early days giving pilots samples of thunderstorms, strong winds and low cloud bases. The weather improved about October 19, after which three 300 km. triangles and a 436 km. out-and-return were set.

MALCOLM RUSSELL

SOUTH AFRICA

THE South African National Championships were run, as usual, in conjunction with the Competition week, and flying took place on alternate days. This time the even dates were set aside for the competition tasks and the odd dates for the championships. They were held at Tempe airfield, Bloemfontein, from Dec. 26 to Jan. 9. The championships were, for the first time, divided into three Classes—Open, Standard and Limited. Two tasks were set on each day, one for the Open-Standard and one for the Limited Class.

The 36 entries included Yvonne Leeman as the only woman pilot to take part and visitors from France, Germany and Rhodesia. Alf Warminger from the UK flew in the competition and shared a Std. Austria with Dave Bradley who is resident in South Africa.

The weather conditions prior to the contest had been very poor and excessive rain had turned the normally desert-type ground into a luscious green. This meant that the salt pans were waterlogged and unsuitable for landing. However, cloud-base did not seem to be affected to any extent, and more often than not, was at the 13-14,000 ft. level—about 8,000 ft. agl. Thermal strength at the beginning of the contest was somewhat below normal and averaged about 2-3 knots.

On some days airspace restrictions were imposed at briefing and flying was restricted to a maximum of 15,000 ft. asl. Tasks were flown on every day except the last, when high cirrus made a task impossible. In all there were 7 championship contest days.

On Jan. 5 a 330 km. championship triangle was set, but the strong wind and over-development plus thunderstorms on the second leg, forced all 34 pilots taking part on this day to land out—this is almost unheard of in South African Championships. Bobby Clifford did best with 300 km., giving his bride-to-be Carol Foster an easy retrieve.

In general, the tasks were relatively modest with 100, 200 but mainly 300 km. triangles. The only 500 km. out-and-return was set on a competition day (Jan. 4) but only 15 aircraft attempted this task while the rest opted to try for national records, three of which succeeded. Kees Goudriaan (Holland) and Jimmy Harrold (Rhodesia) broke their national 500 km. triangle records, while Ted Pearson broke the British National out-and return record (632 km.) in a Std. Cirrus. Alf Warminger, on the competition task, was unlucky this day and covered all but 8 km. For this effort he won the Cologne Cup; it also brings up his total 500 km. flights to eight. The youngest competitor, age 16, landed near the TP on this task and his mother had to drive 400 miles on the round trip to fetch him.

G. Eckle, one of the German visitors flying a BS-1, kept the overall lead in the Open Class until the last day when he failed by 2 km. to complete the task. This made "Bomber" Jackson, BJ-4, the overall winner and National Champion, followed by P. Eich, BJ-4, and K. Goudriaan third.

The Standard Class was won by Ted Pearson, Std. Cirrus, followed by Bobby Clifford, ASW-15, and Tim Biggs. Std. Cirrus.

Keith Anderson won the Limited Class in a K-6E, winning every day but one.

NOTE: Owing to the postal strike this news was telephoned through by Alf Warminger on his return from South Africa.

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