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the INTERNATIONAL gliding magazine



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Winter 1973|4

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SOARING PILOT

the INTERNATIONAL gliding magazine

Volume 1 No. 4

WINTER 1973/4

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PRICE INCREASE

The publishers regret to announce that from Spring issue 1974 the cost of SOARING PILOT will be 30p. The cost of raw materials and wages has risen by 13% during the last three months and we therefore have no alternative but to make this increase.

Front Cover

Wave over Camphill, photograph by Malcolm Blackburn.

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THE EDITOR AND STAFF OF 'SOARING PILOT' TAKE THIS OPPORTUNITY OF WISHING ALL THEIR FRIENDS, BOTH AT HOME AND OVERSEAS, A VERY HAPPY AND PROSPEROUS 1974 AND TRUST THAT THE YEAR WILL BRING MANY HOURS OF ENJOYABLE GLIDING.

Flight Test
SF—28A Tandem-Falke

The SF—28A Tandem-Falke made its first flight in 1972 and by early 1973 15 units had been produced. Today that figure has been vastly increased and a waiting list of 8 months indicates the glider's popularity. Designer Egon Scheibe does not, as yet, believe there is any other economical method of constructing motor-glider's other than by using the more traditional types of material, i.e. wood, fabric and metal tubing and this policy is echoed by the Tandem.

Aesthetically the shape of the 28's are considerably more pleasing than their illustrious predecessors — the SF—25 series; the snub-nosed, compact looking Motor-Falkes now giving way to the more elegant lines of the conventional two-seat sailplanes, indeed the design is based upon the experience gained during the development programme of the Bergfalke gliders.

The first SF—28A to go into service with a British gliding club was delivered to the Coventry G.C. during October, 1973 and it was here, with their kind permission, that we were able to conduct the requisite flights to enable this test report to be prepared

Accessibility

A large one piece canopy, hinged to the right hand side of the fuselage covers both the front and rear seats and when closed leaves ample headroom clearance for even the tallest pilot.

The effort of climbing into a rather high, off the ground, front cockpit has been halved by the strategic placing of an inset foothold into the fuelage slightly ahead of the mainplane. Rear cockpit entry is also simplified by the use of a rubber footgrip on a strengthened section of the mainplane root. Climbing into either seat is literally quite effortless.

Comfort

Once seated in the Tandem-Falke it can be appreciated that the designer has considered the larger pilot, both in width and length. Ample space is available for more than necessary shoulder and arm movement, while adjustable rubber pedals help to cope with the longest legs It was found that the seating in the front cockpit offered more comfort than that of the rear; here it was decided that in order to achieve the correct posture, a cushion must be inserted to serve as an extra backrest.

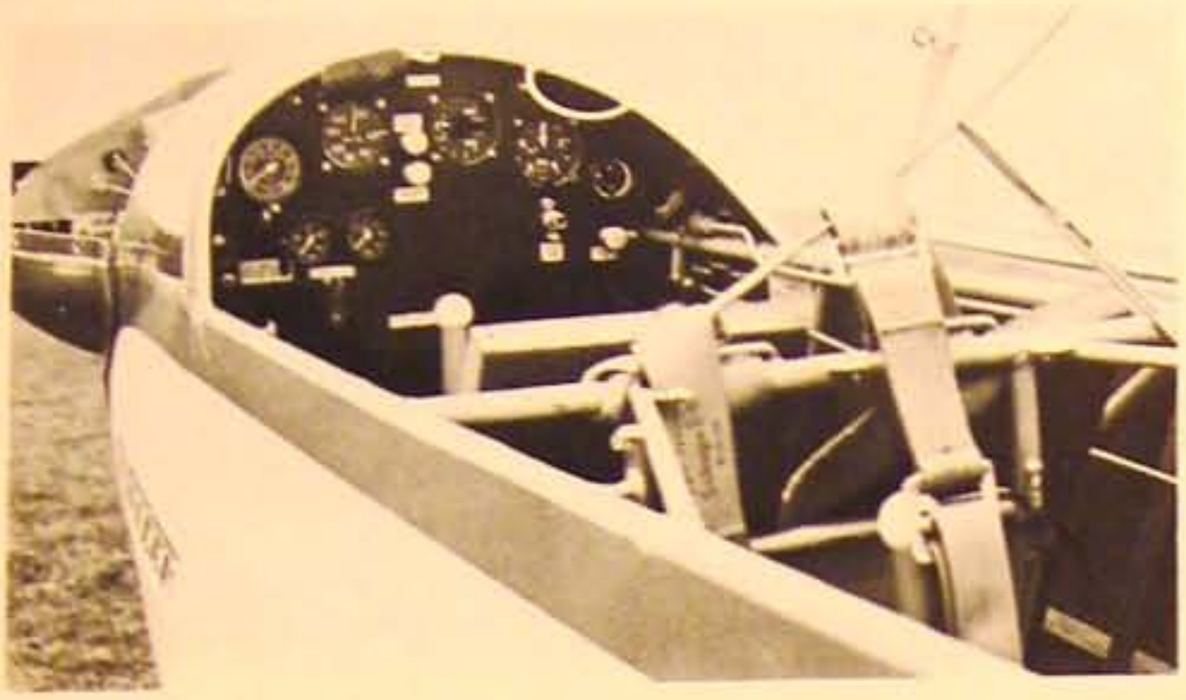


COCKPIT DESIGN AND INSTRUMENTATION

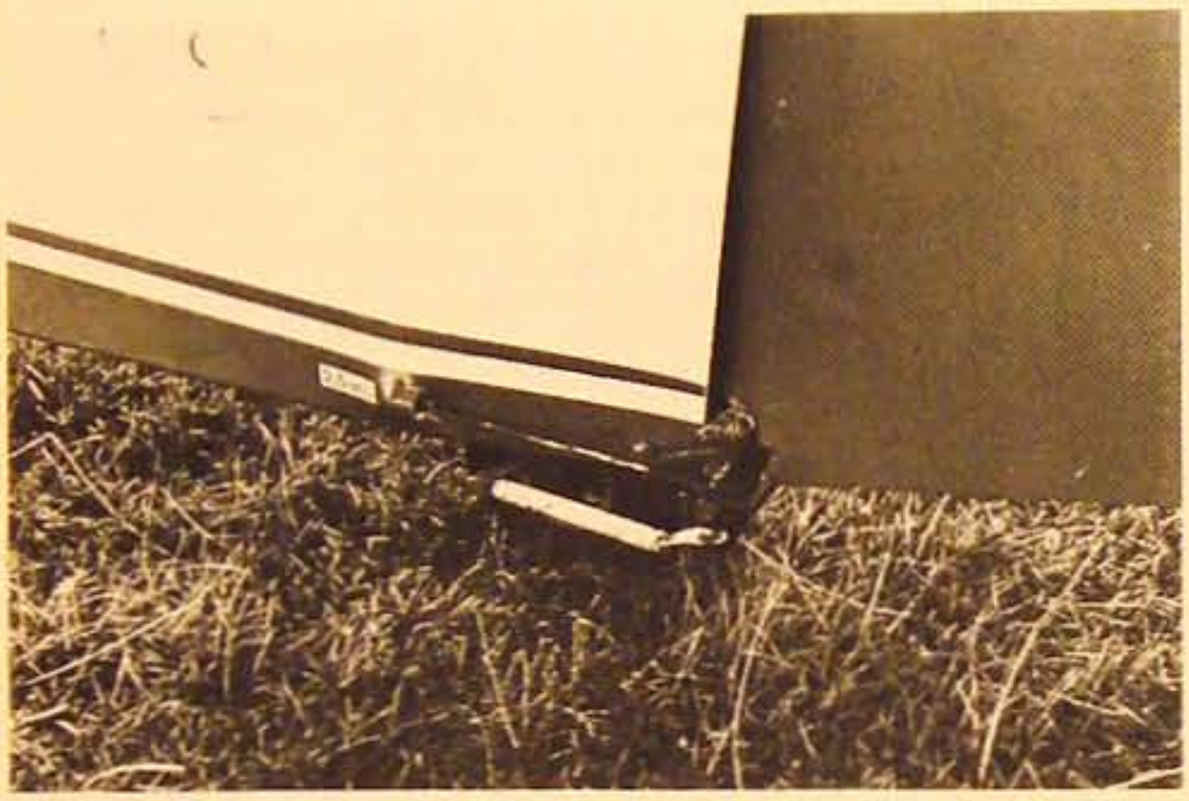
The cockpit ergonomics of the two-seat glider have always been of prime importance to the instructor, but never more so than now when glide angles are continually being stretched with the result that instructors are regularly expected to spend up to four hours each day in the cockpit. Therefore, it is only reasonable to expect, in the interests of safety, that accessibility comfort and vision must be of a very high standard. Bearing this in mind it was decided to examine these three considerations individually.

A further point to mention in the context of comfort concerned right rudder movement in the back cockpit. On full depression of the left rudder the right rudder movement forced ones boot edge against a metal support of the fuselage — this rubbing was negligible but definitely noticeable. It must be stressed that flying boots were being worn in this particular instance and they are obviously wider than shoes, nevertheless, although in no way a danger to flying it was irritable.

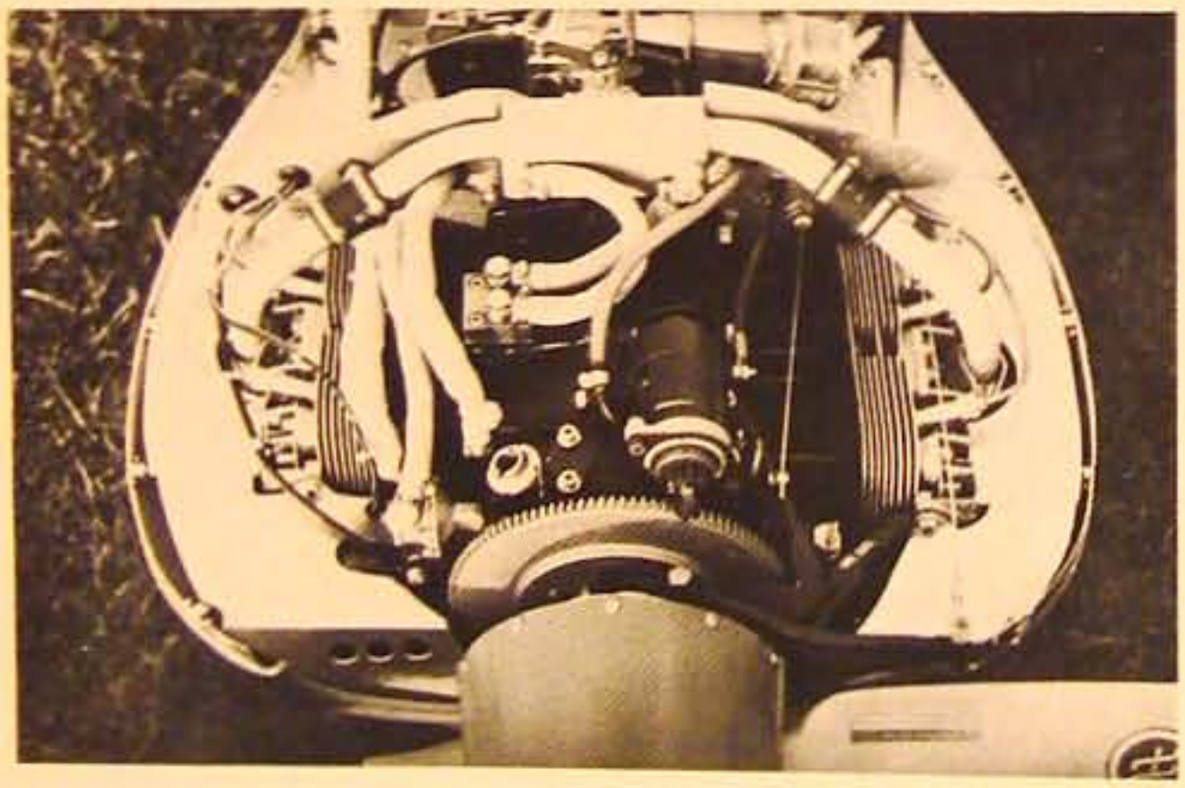
From the forward position the controls come to hand very readily and instruments are easily read without undue



Instrument Panel



Steerable Tail Wheel



'Power Pack'

straining of the neck muscles. The trim lever and petrol cock tap are situated to the right hand of the pilot and are also within easy reach.

The control columns in both compartments are large and give the impression of solidarity — large upright sticks topped with round knobs. It was felt that this type of stick would encourage a two-handed grip. In flight, the feeling when holding the stick could aptly be described as very comforting but although it functioned as well as any control column should, pilots who like to 'feel' their gliders in flight would find this particular stick rather clumsy and insensitive. Nevertheless, it should be remembered that the Tandem is primarily a training machine and this type of stick discourages 'twitchiness' so this in fact can be regarded as a further safety feature.

Stowage space behind the rear seat is nearly big enough to carry the proverbial kitchen sink. A fair sized overnight bag could quite readily be ensconced among sandwiches, flasks and barographs if so required.

Vision

In-flight vision cannot be improved upon. With the front pilot positioned ahead of the wing and the rear pilot seated over the main spar there is nothing to block either occupants view regardless of the direction in which they turn.

The only time that the line of vision is obscured occurs during taxying when forward visibility is completely blocked by the nose and engine cowling. In this position the pilot has to 'tack' when moving to and from the take-off and landing areas. This manouevre is considerably aided by a very effective rudder operated movable tailwheel.

Instrumentation

The SF—28A is fitted with a basic, although adequate, panel of instruments for both safe power flying and pure gliding under normal weather conditions — notable exceptions being Artificial Horizon and Turn and Slip Indicator.

Detailing the instruments, from left to right in the pilot's vision, the four large dials are:— Rev. Counter, which incorporates an 'engine on' time recorder, Air Speed Indicator, Variometer and Altimeter. The smaller faced instruments record Oil Pressure, Temperature and Fuel levels and Battery charging. All dials are neatly and concisely arranged on the panel with the exception of the compass which is affixed to the canopy roof, slightly ahead of the forward pilot.

The remainder of the console is taken up with Battery Master Switch, Starter, Choke Control, Carburettor Heater, Cabin Heater, Propeller Brake and Propeller Feather Control, while the throttle lies adjacent to the pilots left hand.

It was interesting to note that instruments are fitted **only** in the front flying position, this creating the unusual situation where the instructor **must** fly in the forward seat. This, in all probability, creating a disadvantage for both pupil and tutor alike. No problems should be forthcoming as regards to giving instructional 'patter', the engine noise being of such low level that normal conversation can be carried out with no difficulty.

A second instrument panel is an optional extra and the Coventry club have already decided to have one fitted. When flying from the rear seat it was found virtually impossible to read the Altimeter, which could create problems for the pupil, other than this all the other necessary 'gliding' dials are clearly visible.

Engine and Propeller

Traction for the Tandem is provided by a 60 hp Limbach SL 1700 EA unit which develops maximum power at 3,400 rpm — this power pack being based on well proven Volkswagen components. A 12 volt electric starter and alternator are fitted — gone are the days of the 'outboard motor' starting cord.

Access to the engine is extremely easy, one just removes the cowling and the whole motor is laid bare for inspection/servicing etc. Being of simple construction the motor fits easily into the bedding provided with ample room for getting hands and tools into and around the unit, even the battery has a transparent top so that persons carrying out Daily Inspections will be able to see if the electrolytes need topping up. This is just another example of making the job that little bit easier.

From the engine a powerful and extremely potent cabin heater is controlled. This innovation is definitely welcome in the colder climes of Europe. It was also noted that the forward fuselage was fitted with a small door which is designed to reduce engine cooling drag. Quite definitely it now seems that the draughtsmen have, in their own minds, perfected the shape of the motor-glider and are concentrating their energies on pilot comfort.



Propeller – Unfeathered



Propeller – Feathered

With the engine running the Tandem generates a slightly better performance than the Motor-Falke with regard to take-off, climb and top speed.

Forward propulsion is guaranteed by a Hoffman feathering propeller – a fixed pitch type can be fitted if required, but we feel that it is doubtful if many will be built this way. The advantages of the feathering propeller heavily outweigh the monetary gain of the cheaper prop. We were informed that the propeller can in fact be positioned to obtain a cruise setting, although this is not advertised by the manufacturer, the judicial placing of an extra washer will effect the change. Useful if you are doing a long trip as it increases the speed by about 10 kts, or the duration by about a half hour.

Take-off, Climb and Cruise

To those pilots unfamiliar with the motor-glider, acceleration from the standing start is extremely slow because of the low power of the engine. At the initial part of the take-off run difficulty is sometimes experienced in holding the glider on a straight course – this was not the case with the Tandem-Falke, even though the aircraft has a tendency to bounce on grass fields due to its large unsprung wheel.

Lift-off took place after a run of 450 ft. with the air-speed registering between 30–33 kts, at this stage it was imperative to keep the aircraft's nose down until a safe climbing speed had built up (43 kts.), when this is reached the stick can be eased back and the climb commenced with speed building up to a maximum 60 kts.

During the climb out the noise and vibration level is extremely low. Visibility in this attitude remains excellent, even from the rear seat. It is very easy to hold the aircraft exactly at 60 kts. during the climb, responsive controls making the change of aircraft attitude to keep the speed constant a very simple exercise.

On reaching the required flight level, in this case 2,400ft., the engine was found to give its best cruising performance at 2,300 rpm or 80 kts. At this speed it was calculated that with a full tank of 7½ galls. it would be possible to cover approximately approximately 280 miles.

During the high speed tests a maximum straight and level velocity of 92 kts. was reached with the engine noise still at an acceptable level, although vibration suggested that this speed was slightly too fast for comfortable flying. On the non-technical aspect of comfort we were impressed by the complete lack of draughts.

Gliding – Engine off

Once the engine has been stopped, the propeller is feathered manually by the pilot and then locked into position.

The suggested best gliding speed of 47 kts. proved to be too slow by 3 kts. for the air test team, it was found that 50 kts produced the best glide angle which was calculated to be between 1 – 26 and 1 – 27.

During the course of one flight, primary and further effects of control were carried out, the results were very crisp and distinct, leaving us in no doubt that any pupil of reasonable intelligence would have no problem in assimilating these basic exercises on this particular machine.

As the test flights were conducted late in the year we were unable to ascertain the thermaling capabilities of the SF–28A, all that we could establish was that the best circling speeds varied between 37–44 kts. Tight turns flown at 60 kts. proved to be the best speed for this manoeuvre.

At the lower end of the speed scale the low wing loading (6.5 lb/sq.ft.) shows its usefulness. The placarded stall is 40 kts., while the actual stall occured at 38 kts. Stall warning is very much in evidence with plenty of pre-stall buffet, control in-effectiveness and high nose attitude to point out the condition of flight.



Old and New SF–28A and Tiger Moth

Spinning the SF–28A needs gross mishandling of the controls during normal flight, although deliberate spinning can be induced without any degree of difficulty by the knowledgeable. Recovery is normal, quick and confident. We did feel that in the general context of spinning, attention should be drawn by instructors to pupils to the higher rate of spin perpetrated by motor-gliders in comparision to that of pure sailplanes.

Landing

A series of both engine-off and engine-on landings were carried out, but perhaps the latter was the more interesting of the two. After a 'touch-and-go' the engine was switched off half-way around the circuit. On the first glide approach it was difficult to appreciate how good, in fact, the glide angle was – from three fields out it seemed highly likely that engine would be required to make the threshold, however, this was not so and we glided over the fence with ample height.

Once the glider had touched down the powerful spoilers are very necessary to hold it there, the large span and big wheel tend to force the aircraft back into the air, which could put the unwary in a very embarrasssing position.

The powerful spring operated spoilers do a very good job both in the air and on the ground. As well as operating the spoilers further backward pressure on the control brings the wheel brake into use. With an engine-on landing it is even more important that the spoilers are held firmly open on touchdown otherwise real problems of ballooning could develop.

Finally, mention must be made of the strong outrigger wheels developed from the Motor-Falke, these proved to be very strong and shock absorbent, and are of course a must for taxying.

Span	16.3 metres	53.4 ft.
Length		26.8 ft.
Wing Area		199 sq.ft.
Empty Weight		860 lbs
Maximum load		440 lbs
Maximum all-up weight		1300 lbs
Aspect Ratio		14.5
Engine-on Performances		
Take-off run		500 – 650 ft.
Rate of climb (sea level)		7.2 ft/sec (430 ft/min)
Duration		3 hours
Maximum speed (sea level)		106 mph (92 kts)
Cruising Speed		81 – 93 mph (70 – 81 kts)
Range		280 miles approx.
Fuel capacity		7½ galls.

Coventry Clubs Utilisation Plan for the SF–28A

Ab-Initio Training

After an air experience flight in a 'pure' glider the pupil will fly for the next 4 – 5 hours in the motor-glider. By this time all the basic exercises will have been carried out including spins and the like. Concentration on circuit planning can be carried out to great advantage and I do feel this is an area that can do with a bit more polish.

Advance Training

This will consist of instrument flying under 'the hood' and should make for better cloud flying later. Field selection and attempt at landing in the field selected. My experience so far is that some odd fields are chosen and some could have been a 'bit interesting' had a real landing been necessary. Actual navigation flights of about 100 km. will be attempted.

I do not envisage anyone going solo on the motor glider as at present I am limiting the flying to PPL instructors, therefore, all training other than that outlined above, will be in 'pure' gliders. CLAUDE WOODHOUSE (C.F.I. Coventry G.C.)

(continued on page 33)



SCHEIBE TANDEM

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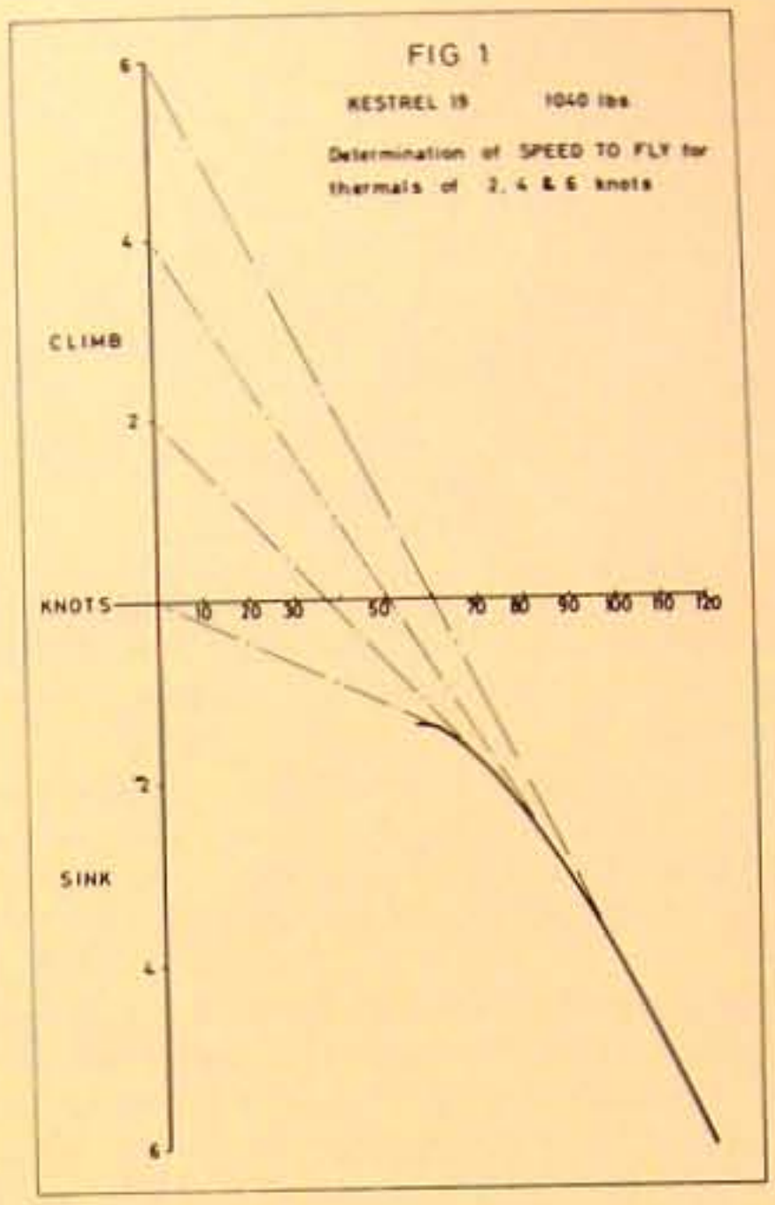
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TECHNICAL

A SIMPLE AIR DATA COMPUTER

by G. E. Burton



The basic piece of information required from an air data computor is an answer to the question, "are you flying at the correct inter-thermal speed given the input data of the expected next thermal strength and the ambient state of the air through which you are flying at that instant?"

The answer, is of course, given by the speed to fly ring fitted to the normal variometer, but then you have to compare the speed shown on your A.S.I. with the speed demanded by the speed to fly ring and make a correction, then a further comparison and so on – quite tedious with a tendency on the part of the pilot to smooth it all out and fly at a speed which he thinks is a mean of the variations called for.

A long time ago – I think it was just before the 1956 World Championships at St. Yan – Paul MacCready proposed the use of a calibrated leak of air from the pitot into the connection between the flask and the meter of a standard variometer. The effect of this was to cancel out the flow of air into the variometer flask as a result of the normal sink of the glider and the indication on the variometer dial became an indication of what the air above was doing: hence the Air Mass variometer: this was all very well but the idea did not really catch on because what you need to know when you are in a thermal is whether the glider is going up – not just the air surrounding it.

I am not sure whether MacCready extended the use of his leak to a variometer connected to a total energy venturi but this is just what Dr. Bruckner of West Germany has done: not only this but he has taken the idea one stage further and the result is a true – zero reading – speed to fly computor: by this I mean an indication whereby you fly at such a speed that you keep the needle of the variometer on a fixed point on its scale – the necessary corrections in speed are called for by the variometer itself and the A.S.I. need not be looked at. How does this happen?

Dr. Bruckner has spotted something which is very simple once it has been explained. The normal total energy variometer goes away from you when you change speed – by this I mean that if you increase speed – you get more sink so that if you are following the indications on the speed to fly ring you have to increase speed still more and so on.

The MacCready leak total energy variometer has just sufficient air leaked into it to cancel the effect of the gliders speed – you push the speed up and the needle remains at zero if you are flying through still air: hence there is no direct information as to whether you are flying at the correct speed.

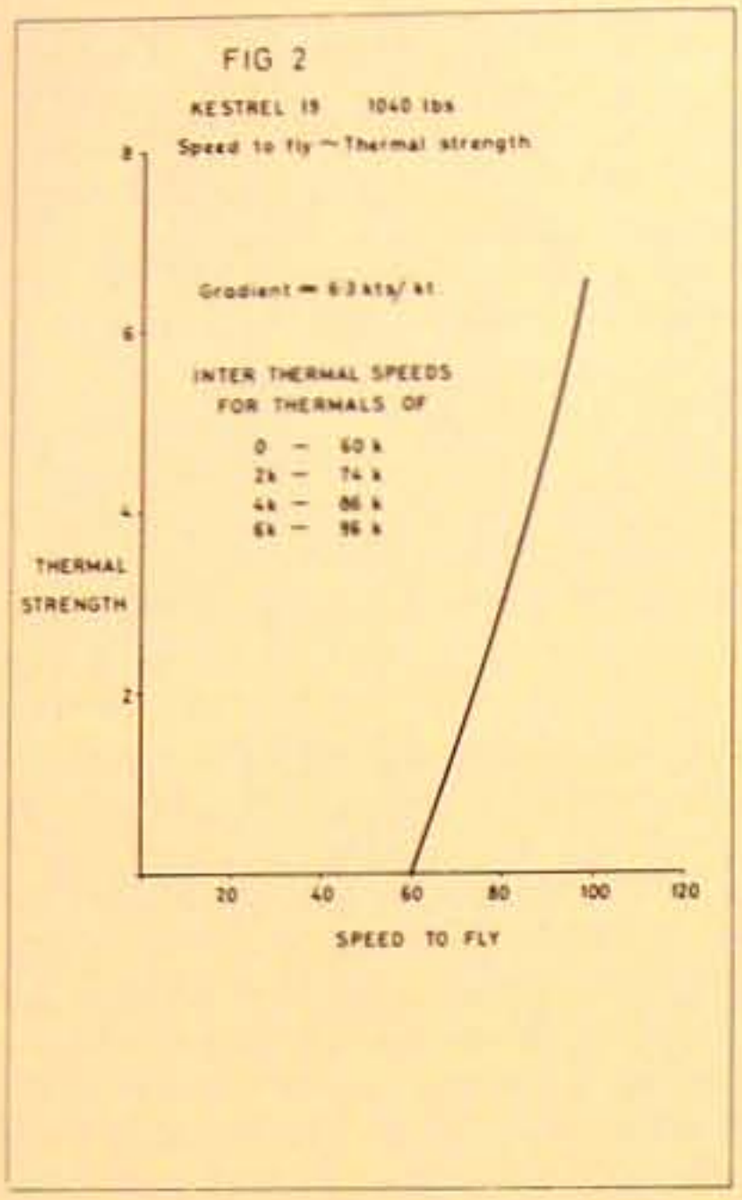
Dr. Bruckner has gone one step further – he leaks in **more** air from the pitot than is needed to correct for the effect of the gliders speed. The result of this over-correction is that now – if speed is increased, the variometer needle goes against you – it goes up and vice versa if you slow down. i.e. there is a speed which will maintain the needle on a given position, and deviations from this speed are shown by a deviation of the pointer from this position indicating what correction to make to bring it back to the correct point – a ZERO READER – the only trouble is the zero is not at zero – but more of this later.

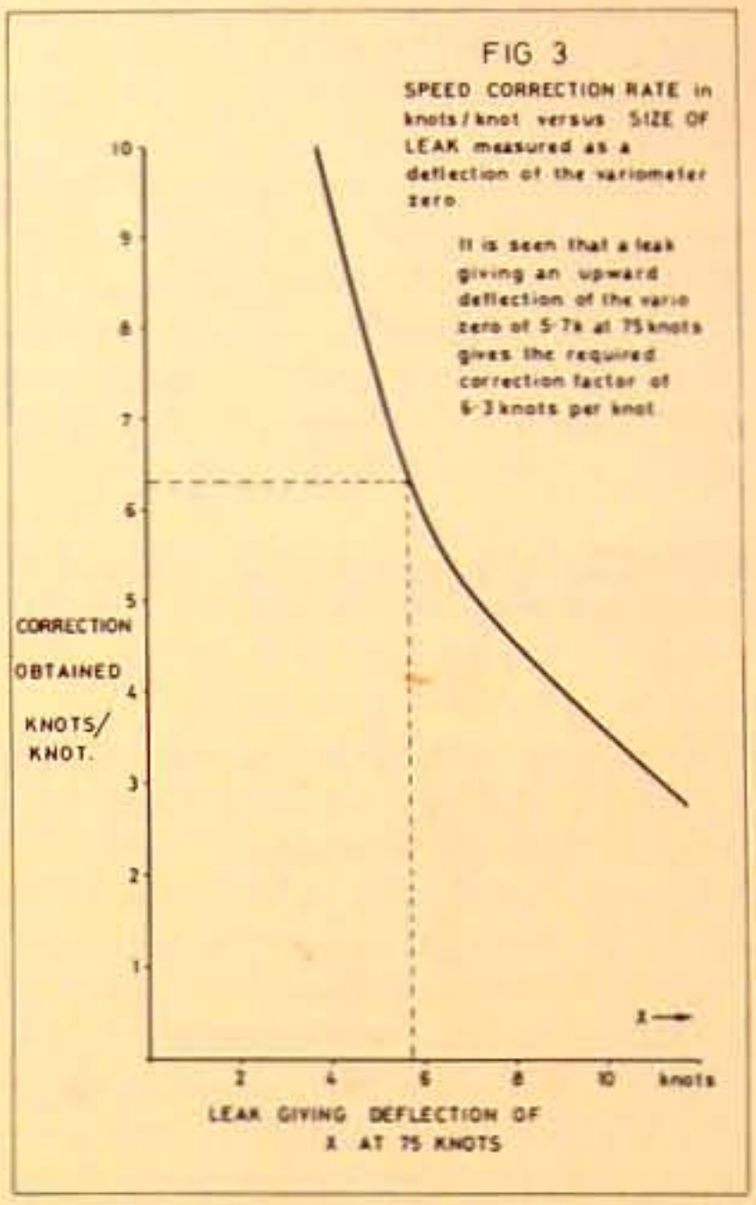
How do you calculate where this point is on the variometer dial for each thermal and how do you adjust the leak to the appropriate value? My approach to this problem is not the analytical one of deriving a formula which will give you the answer at a stroke – I like to put figures to simple logical thought and that is why the following approach has been used.

Taking the polar of the Kestrel 19 at a flying weight of 1040 lb. as the glider we shall use – a plot of the speed to fly in still air against anticipated thermal strengths shows the following values: thermals of 2, 4 and 6 Knots give speeds of 74 Knots, 86 Knots and 96 Knots. If these speeds are plotted against the appropriate "thermal strength" then it is seen (Fig.2) that the correction factor for air which is sinking or rising when flying at inter-thermal speeds is approximately 6.3 Knots per Knot: i.e. if when you are flying at say 80 Knots in still air, you should put your speed up to 86.3 Knots if you encounter air which is sinking at 1 Knot.

What we have to do is to find a leak which will call for this change of speed for each knot of increased or decreased sink in order to bring the variometer back to the same point: it sounds complicated but lets press on with some figures. First it is necessary to refer to the Kestrel polar I have used: this gives the corresponding sink versus speed points 1.4K at 60K, 1.85K at 70K, 2.4K at 80K, 3.1K at 90K, 4.0K at 100K. (Fig.1) Now we know that a leak which deflects the variometer to zero gives no indication of the correct speed to fly so it must need a leak of greater value than this.

Let us imagine using a leak which at a speed of 75K in still air deflects the vario to the +4K point. Measured in terms of the deflection of the variometer, this leak is deflecting the pointer by this 4K plus the sink of the glider at that speed





which is 2.05K. Hence the leak must be equivalent to 6.05K measured as a deflection of the variometer pointer. The variometer considered is the vane or thermistor type and is essentially a flow meter. Now at any other speed, the deflection of the pointer will be proportional to the ratio of the speeds squared. (pitot pressure is proportional to V^2).

What happens when the glider goes through air which is sinking at say 2K. First the needle goes down calling for an increase in speed. Let us calculate what happens if we increase speed to say 94.2K.

1. The deflection due to the leak is $(\frac{94.2}{75}) \times 6.05 = 9.55K$.
2. The sink of the glider at 94.2K is 3.55K.
3. The air is sinking at 2K.

Thus the needle settles at $1 - 2 - 3 = 4.00K$.
i.e. a leak which deflects the pointer to 4K up at 75K in still air calls for a speed of 94.2K when the air is sinking by 2K.
The correction is thus $\frac{94.2 - 75}{2} = 9.6$ Knots per Knot.
This is higher than the required 6.3 Knots per Knot. The correction rate decreases as the size of the leak is increased.

Now if the exercise is repeated for a number of different leaks, a plot can be made of the speed correction rate versus the size of the leak as measured by vario. deflection. The result is a rectangular hyperbola, and it can be seen (Fig.3) that a leak which gives an upward deflection of the vario. pointer of 5.7 Knots at 75 Knots forward speed is the correct size.

The calculation can be repeated for rising air and other values of rise or sink and it will be found that the 5.7K UP point is correct for the Kestrel 19 at this weight.

The question now arises as to what happens for other values of anticipated thermal. I had originally thought, after reading Dr. Bruckner's article, that it would be necessary to have different leaks for each thermal rate. However, it turns out that one leak is remarkably accurate for all normal thermal strengths: all that is necessary is to have a different point for the vario.needle to settle for the different inter-thermal speeds.

For the Kestrel 19 for 4 and 6K thermals, the UP points for the needle to settle are

For 4K UP $\left[(\frac{86}{75})^2 \times 7.75\right] - 2.8 = 7.4K$ UP

For 6K UP $\left[(\frac{96}{75})^2 \times 7.75\right] - 3.65 = 9.1K$ UP

For the normal mechanical variometer these are very near to the top of the scale so it would be convenient to be able to deflect the zero point back to the scale zero: this is easily done on an electrical variometer and the knob which does it can then be calibrated in terms of "anticipated thermal strength". The audio of the variometer can then be used as an audible indication of flying at the correct speed: with the Westerbauer variometer this indication is present whether one is flying too fast or too slow, but for the vario which gives audio only when climbing then the indication would only be heard when flying too fast: the vario can easily be modified to add a "too slow" audio signal or alternatively a 'PIEP' audio can be added in the pipeline, connected the reverse way round to normal: this has the advantage of giving a different quality of sound for the 'too slow' and 'too fast' signals.

How does one calibrate the leak? Dr. Bruckner suggests using a long capillary tube instead of say a needle valve to make the leak for several reasons: 1. It is easy to make small corrections of a known amount by cutting the length. 2. It is not so susceptible to dust particles. 3. It is easy to get double the amount of restriction by doubling the length of tube used: the reason that this is necessary follows.

Calibration of the leak is done by utilising the fact that the variometer is a flow meter and the A.S.I. is a pressure gauge: both are extremely sensitive so that care has to be taken not to damage them.

The capillary tube is connected to the variometer used without it's flask and at the far end is connected to the A.S.I. with a T-piece to a convenient tube to blow into. For the example in our calculation we need a deflection on the vario of 7.75 Knots for an indication on the A.S.I. of 75K. It takes a few seconds for the vario to settle so you have to hold the A.S.I. pressure at the 75K point whilst this happens.

When you have found the correct length of capillary you need to double it when the vario is used with a T.E. venturi or Brunswick Tube because these devices provide an ambient pressure which is below static by the same amount as the pitot is above it. A tap for switching the leak in or out then completes the set up.

I hope that this article has enabled the idea of Dr. Bruckner to be understood and used by glider pilots throughout the world and at the same time I would like to thank Dr. Bruckner for the original thought which has enabled the advance to be made.

the MIKE BOND column



Competition flying is an established part of the national and international gliding scene, the results of which determine the most professional pilots. A by-product of competition flying is the effect that it has on the design of machines which lesser pilots are likely to fly. Unfortunately, the majority of manufacturers, in search of sensationalism and international recognition are concentrating more and more of their efforts and resources toward the production of higher performance machines; and practically disregarding the club and 'fun' class. This would be an ideal proposition, providing that all and sundry are capable and competent pilots – alas, this is not the case, and it is a well known fact that the club two-seat training and early solo machines are the paying propositions, not the high performance exotics – although I hasten to add that at least one is a must for every club.

We have reached a state now where the club machine is in jeopardy of becoming a non-entity insofar as new models are concerned, and the ageing Swallows and K–8's are becoming the most sought after machines of all. Of course, not all manufacturers are disregarding the club class; Glasflugel announced the introduction of the 'Club Class' Libelle, and immediately, the company was inundated with orders, and forced to specify an 18 months waiting list; proof of the pudding indeed!!

Britiain for once is not lagging behind, in fact, one could say that we are leading the field; for not only do we have a new club/fun class machine on the production line, we have a machine which incorporates some rather pleasing and radical design features. It is, of course, the YS 55 – Consort, formerly the B.G. 135. Much has been said and written about this machine although unfortunately the majority has been detrimental, and has merely served to hinder its progress. My first encounter with a B.G. 135 was at The Midland Gliding Club, who had purchased their model from The Birmingham Guild. It was one of the earlier machines to roll off the production line, and was festooned with problems – to say the least. So much so that C.F.I. Ernie Ainscough had placed the machine 'unserviceable' pending major repairs. The glider's rudders had started to flutter alarmingly at high speeds, and it was noted that the whole of the leading edge of the mainplane was becoming detached from its bedding. On its initial landing, the tailwheel pierced a large hole underneath the fuselage, and when an attempt was made to remove the glider from the landing area, the large handle at the rear of the fuselage had buckled, rendering it completely useless. It was at just about this time that the Birmingham Guild stopped production and Yorkshire Sailplanes took over, with the promise that their modified version would be a world-beater. However, 'first impressions last', and as far as I was concerned, the B.G.135 became a dirty word.

Fortunately, during a visit to the Dishforth Gliding Clubs (incidentally, C.F.I. Barry Nowell insists upon me mentioning that his is the finest wave site in the country) this opinion was reversed in no uncertain fashion, for I was introduced to the Consort – the modified version of the B.G.135 to which Yorkshire Sailplanes had added the magical ingredient, experience, to an otherwise thoroughly well designed machine. When I offered my services to help rig the glider, I was politely told to "Sit back and watch", and then was astounded to witness two persons completely rig the glider by themselves. The whole effortless operation taking only 5 minutes from start to finish! This ability to rig a glider so easily must surely open up a completely new concept as far as potential syndicates are concerned. Hitherto, there has existed a need for a healthy four or five members to do the job. Indeed, many a Skylark 2 syndicate have elected not to fly their glider, rather than be bothered rigging when conditions for soaring were only marginal. Conversely, the Consort being a fun machine will influence its owners to rig at the drop of a hat.

The Consort should be of special interest to clubs as an initial cross-country machine. The ease of rigging, and handling does not necessitate the whole of the gliding club personnel to be dashing up and down the country, leaving a skeleton work force at the site to carry on as best they can. All too often, a club has to suspend flying in order to retrieve two gliders, or alternatively, the machines can be left until the cessation of flying, therebye subjecting them to possible damage. At its best, the club is minus two solo machines for the days flying.

I predict that this glider will herald the beginning of a new era of husband/wife syndicates; and what finer way of spending a weekend could there be, than one of the partnership going off cross-country, whilst the other follows with the retrieve trailer. As a result of not taking other persons along, there would be no earthly reason for chasing hot-foot back to the club; instead it offers the opportunity of spending the night at a pleasant hotel.

One small problem arises here, however, for if any madam shows lack of enthusiasm during her husband's purchasing negotiations, she should be immediately suspected of having an affair with the crew chief, and those days when the radio went dead for half an hour.....well.....

Keeping to the theme of retrieving, I make special mention of the trailer for the Consort – a mere 23'6" long, and a honey to tow. Being cylindrical in design it offers a new concept with regard to rear vision. When fully loaded it is light enough to tow behind the family saloon with ease, and by the most inexperienced driver!

The good design features of this machine are not limited to its ground handling, as it is a total delight to fly, and emphasis should be laid on the word 'delight', for it must truly fall into the 'fun' class as far as the pundits are concerned. Of all the pilots interviewed regarding the machines performance and handling, I have yet to meet one who has a bad word for it. As SOARING PILOT is to feature the Consort in a "TEST REPORT" during a forthcoming issue, I do not intend to dwell upon the finer points of the machine's capabilities, however, there are some points which do deserve special mention. Take for instance the cockpit; at last, this one is actually wide enough to unfold a map in!! The ample arm rests also provide a table for sandwiches and coffee. (I tend to be a home comforts man, even when flying) and there is ample room to stow the proverbial kitchen sink alongside the

barograph. The vision is second to none, and inspires confidence when stooging along ridges and dodging two score other gliders. The launch is straightforward, although there is a tendency to 'twitch' on the initial take-off when aero towing. This is pilot induced however, and is caused by a natural tendency to over-correct. No difficulty of this nature is experienced on succeeding flights, indeed, the Consort is an ideal initial aero-tow solo machine, for both the pilot and the tug pilot. Being so light, owners should request a small reduction in launch fees, as a result of the shorter launch time required!!

Special mention should also be made of the tremendously powerful dive brakes, which are of the trailing edge design (SEE VOL. 1, ISSUE 1). It is gratifying to note that even though they are powerful, they are in no way unsafe regarding a decrease in lift with operation; rendering them ideal for short field landings, and misjudged circuits — a trade mark of the inexperienced solo pilot. The technique of operating the brakes is slightly different to that of conventional types, for, if only opened partly, they tend to increase lift, and minor panic is experienced. With this type of brake, one has to be quite firm, and open them to their fullest extent, bearing in mind that the manoeuvre is quite safe, and closing them at the point of roundout. Incidentally, when I landed the machine at Dishforth, I patiently sat in the cockpit, awaiting the arrival of the retrieve party. After several minutes it was realised that none was forthcoming, and I removed myself from the cockpit. Waving to launchpoint only succeeded in causing the ensemble gathered there to wave back in gay fashion, gesticulating toward the large handle at the tail-end of the fuselage. They were of course thoroughly conversant with Consort, and were aware of its ease of ground handling. Surprisingly, pulling the machine back to the launch point single handed is simplicity itself. The wheels situated at the wing tips, coupled with the lightness of the aircraft make the retrieve child's play.

The Consort is an all-metal glider, with exceptions to areas where particular resilience to ground handling is required (e.g. wing tips, cockpit shell, and rear of cone) where laminated fibreglass is used, thus keeping repair and maintainance costs to a minimum, a most desirable factor of a club class machine. Externally a two colour hard cellulose finish is standard. The only problem that I can envisage with this machine is one of limited production, for although the glider is manufactured from sheet metal, it is not possible to pump them off the production line. In the meantime, however, if you have ordered one, I can assure you that patience will be well rewarded, and if you have not, well, you now know what to ask your wife to buy you for that belated Christmas present!!



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FICTION

Engine Trouble

by Douglas Baker

Dear Mum,

When Legger Lamb, a mucker of mine, dropped in on me and said how would I like to earn meself a nice easy five hundred bent oncers, I was all ears, weren't I? But as events transpired, it would've been better if I'd been stone deaf to his beguiling suggestion, cos I slipped up, as usual, and got meself another liberal helping of porridge. Know what I mean?

Legger would've pulled the caper himself, only he had a leg in plaster and an arm in a sling as the result of misjudging his footing on a top stair after misjudging his ventripotence in a pub.

He starts to clue me in: "Geezer named Gumpson is willing to pay the five hundred for a plane – "

"That's a lot of bread for a tool," I intercedes.

"I don't mean plane, tool," Legger elucidates, "I mean plane, air machine. He wants a plane nicked for getting himself out the country tomorrow on account of the law are desperate for his help in their inquiries. He's got to lie low, so he can't pinch it hisself. You interested?"

"Don't know," I replies. "Airplanes ain't exactly nickable commodities. Sounds a bit of a tall order."

"It's easier than what you think," he smiles. "There's some nice little two-seater jobs at Gruntley Airport. What you do, you hide in one tonight, then when the pilot gets in tomorrow, you shove a gun in his back and make him fly you to this big field alongside Dewdrop Farm five mile away. Gumpson's holed-up in the farmhouse and he's got the money all ready for you to collect. What could be simpler?"

"Having me collar felt could be simpler," I tells him. "But this sounds the kind of intriguing caper what might just come off, Legger. So I'll have me usual intrepid bash."

And have a bash, I did, mum, feeble and ineffectual though it was, like, in the end. I enlists the aid of Bogey Mann for transport purposes, don't I, and at one a.m. in the morning he runs me out to Gruntley Airport in his old van. It's a real dark night, nearly as black as my past, and we drives around the airport till we finds a quiet spot near no houses what's also close to a few airplanes on the other side of the fence.

"Hope you know what you're doing, Albert," Bogey says, as I gets out. "I reckon you ought to stick to robbing gas meters and leave the plane-nicking to the Cubans."

"I know what I'm doing," I tells him. (Infamous last words.) "See you, Boge."

I melts into the darkness, and Bogey swings his van around and rattles orf. The sound of its gasping engine fades into the silence, leaving the night to me and a distant owl.

I gets me cutters out, makes a hole in the wire fence and crawls through. The airplanes are just black shapes against a black sky, but I finds a promising two-seater and climbs aboard, making sure I'm in the back seat. Then I snuggles right down, turns me coat collar up and has a kip. So far so good, as the man said.

Next thing I know, the plane's shaking a bit and I opens me peepers to find it's morning and we're on the move. The plane's gathering speed. We're taking orf.

I listens to the sound of the quiet engine, just a faint drone in me ears, and knows I've picked a good 'un here. Then the plane stops shaking and we're airborne. From down on the floor I looks up and sees the clouds getting closer as we climbs. I can see that five hundred quid getting closer too.

Well, I gives it fifteen minutes, don't I, just to make sure we're well clear of the airport, then I sits up and puts the muzzle of me air pistol against the pilot's neck and menaces: "Nobody moves, nobody gets hurt!"

His head jerks round and he intones: "Stone the control tower!"

"Don't try nothing," I tells him, "or I'll blow your head orf."

"What's the idea?" he wants to know.

"Head for Dewdrop Farm," I orders.

"But this is ridiculous, there are buses running every five minutes – "

"Don't play it for laughs," I warns. "You're being hi-jacked."

He banks the plane and we starts losing altitude. After a bit, I sees the farm down below.

"Land in that field," I instructs him.

Down we goes and he makes a lovely smooth landing. I orders him out and when we're on the ground, I says: "Right, now start running and don't stop till you get to the other side of the horizon or I'll empty this genuine British Army revolver at you."

Orf he goes, running a bit awkward in his flying gear and I stands watching till he's just a speck on a distant hillside. Then I heads across to the farmhouse. Half-way there, I sees a door open and out comes this geezer.

When I gets to him I says: "I'm Albert Spraggin, Mr. Gumpson. Legger's been incapacitated, so I deputised for him and nicked the plane you want. You can fly out the country any time you like now."

Well, the rest of me chronicle's inenarrable, mum, but I'll do me best.

The geezer smiles and says: "It might've been better if you'd pinched one with an engine."

"Come again?" I says.

"What you've got there," he comes again, "is a glider. You've stolen a glider."

Well, I just stands there as if I was an idiot. A glider! It would mean nicking another plane to get the first one orf the ground!

I shakes me nut sadly and whimpers: Me luck can't deteriorate no more than this."

"Wrong," he says. "It's about to get worse."

"Is that possible?" I asks.

"'Fraid so. You see, I'm not Gumpson, I'm a police officer. We've just arrested Gumpson, and you might as well come along too."

So he was right, mum, me luck did get worse, protracting its chronic proportions. Never mind, you're in the same boat, ain't you? Another stretch in Holloway, they tell me.

Write and tell me about it. Till then, all me love.

Yours faithfully,

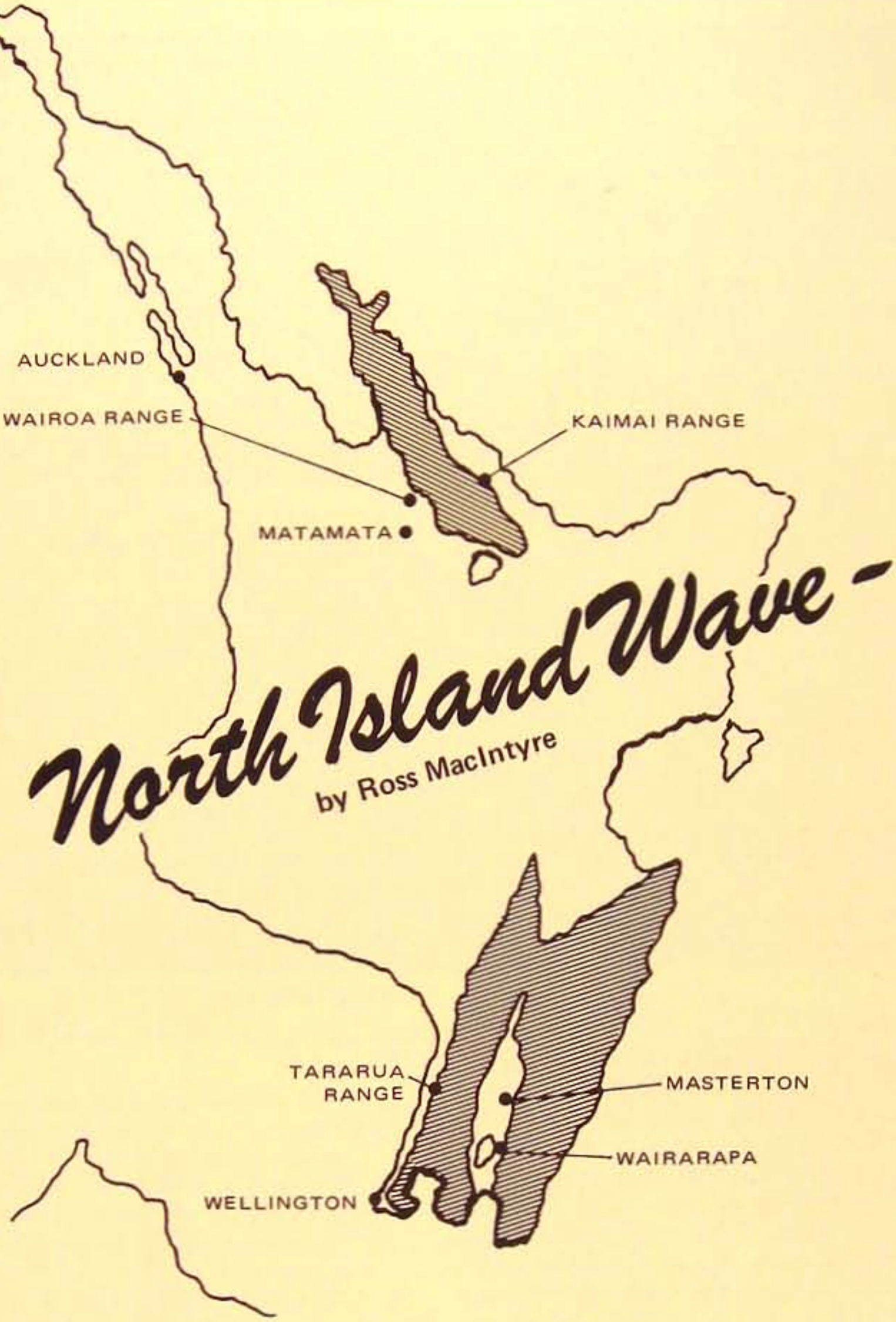
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North Island Wave -

by Ross MacIntyre

When overseas pilots talk New Zealand gliding there is a general tendency for the conversation to turn to stories of the South Island wave and the many exploits of Dick Georgeson. This is quite literally just half the story. The extent of the New Zealand wave system reaches well beyond the South Island and on particularly good days lenticulars can be seen developing anyplace between Auckland and Invercargill.

The thousand miles that separate these areas also generate thermals in abundance and offer many fine ridges which give exciting soaring, but after saying this it is the wave which really makes the gliding worth while.

New Zealands two main islands were labelled by Captain Cook with the imaginative names North and South Island, and if we liken these islands to two large ships lying line astern and heading north, the prevailing North Westerly airflow will hit their port bows. Being too big for the air to go around, it is forced to deviate over the top, then having climbed up one side of the mountainous superstructure will go over the top and down the other side, and then it bounces and bounces and bounces and.....

Somewhere about the bridge of the first ship we can find the little town of Matamata. Set in the green lushness of the Waikato dairying country, Matamata has been the base from which many fine wave flights have taken place. Ten kilometres east of the airfield one can see the Kaimai ridge which extends 30 km. or so to the north.

As Noel Johnson, K–6 owner and long time soaring addict says, "From here the Kaimai Wave is born. It comes in various forms; often clear and well defined lenticulars, but sometimes with low roll clouds hidden from Waharoa Airfield by the cop cloud. This wave has provided numerous Gold heights and quite a few Diamond gains. It has been contacted as low as 3,000 ft. and worked to over 30,000 ft."

Forward of the ridge a pressure wave often exists. This has the characteristic smooth feel of its big brother over the hill but, of course, does not go so high. When present, it is contacted, by using normal ridge lift and then moving up-wind into the pressure area. This condition often provides an interesting flight, the aircraft climbing smoothly up alongside the billowing cliff of the cop and in brilliant sunshine you can look longingly across the dazzling white towards the adjacent roll of the Kaimai Wave. Over the years a handful of pilots have jumped across and successfully established themselves in the main wave.

Situated somewhere around the poop deck of our Northern ship is Masterton, about 100 km. from Wellington. It is situated to the east of the rugged mass of the Tararua ranges which extend up to 500 ft, and are aligned roughly

north/south. The North Westerly wind blows stronger the closer one gets towards Wellington, (something to do with venturi effect between the islands and not, as is rumoured, because it is near to the seat of government).

Wave conditions here are fairly common. The New Zealand absolute altitude record of 37,288 ft. was created in this area by Doug Yarrall during March 1968. He reported that after an early flight he was most fascinated at the tremendous growth of the rotor cloud. "I had never seen anything like this before; awe-inspiring did not seem adequate to describe it. This must surely be the biggest wave formation that New Zealand had ever seen.

With the barograph well and truly switched on I took another tow to 2,800 ft. just after 4.00 pm. and began pushing towards the leading edge of the rotor in fairly rough turbulence. After 15 minutes of being buffetted around, we began a fantastic climb in front of the rotor with both varios. hard over on the up stops.

At 14,000 ft. the air smoothed out considerably and the lift settled down to a steady 8 knots. Things continued to go well up to 25,000 ft. at which stage the lift slowly died away to 300 ft/min. I was beginning to wonder if the top of the wave structure had been reached – but at 30,000 ft. the lift was still steady at the same rate.

By 33,000 ft. the temperature was down to – 40°C and ahead the almost vertical face of the lenticular continued to tower above. Suddenly the canopy iced up and it was blind flying from hereon, but with the altimeter showing 37,600 ft. (later ratified at 37,288 ft.) the wave seemed to have been drained of everything it had to offer. With the outside temperature now down another 15 degrees, it was brakes open and back home."

The flight duration (including descent) was a mere 2 hrs. 10 mins.



Masterton Ridge Wave

Although I have stated that it is usually rough at Masterton during wave conditions I do recall an occasion when it was just the opposite. John Cooper was asked to do a brief 600 ft. circuit for a film cameraman to get a particular shot of the glider landing. He took the tow, released on the down-wind leg, and then ran into smooth but patchy lift. He used thermalling techniques to get established and finally ended up at 12,000 ft., his climb limited only by the fact that his oxygen bottles were not connected. The film cameraman never did get that shot, it was near dark and three hours later when Cooper landed.

The two sites mentioned are by no means the only ones on North Island which experience wave, but they are the better known fields lying adjacent to the larger systems and are therefore ideal to illustrate the wave flying that is carried on regularly over North Island.

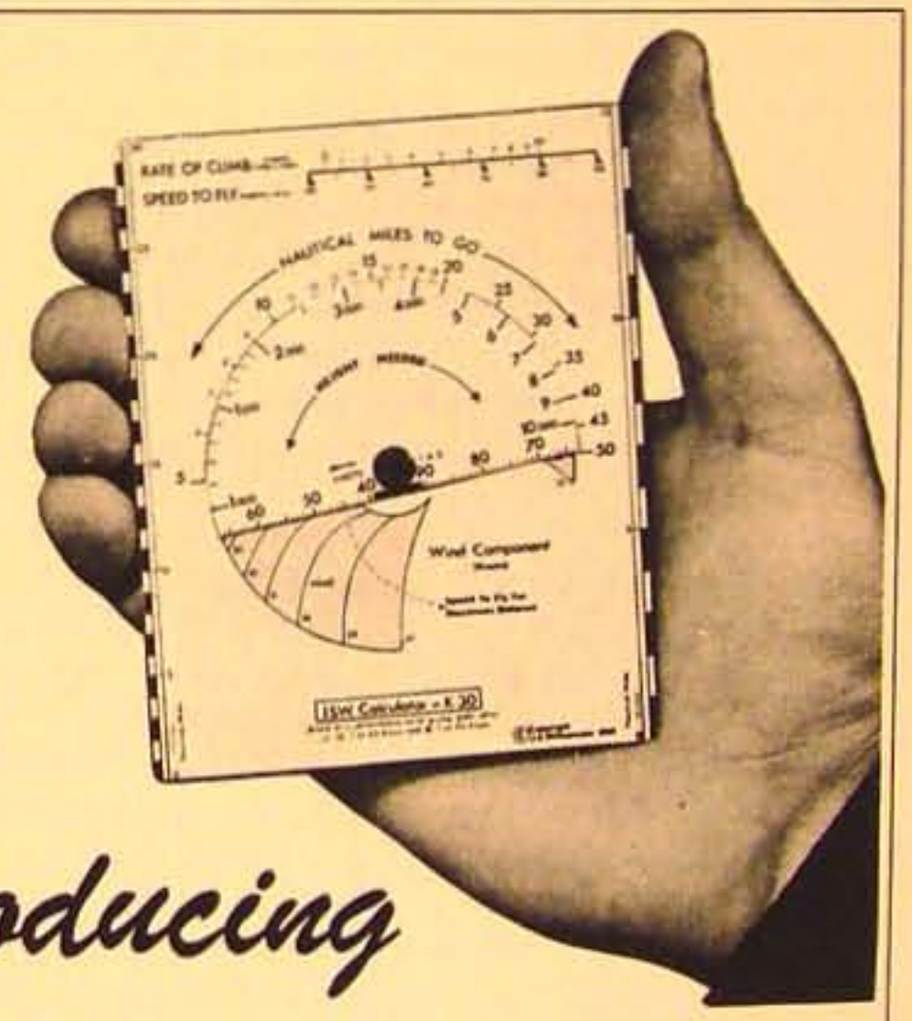


Wairarapa Wave

From Doug's account, the rotor was rough. Knowing both Doug and the Masterton wave it would have been bloody rough! Masterton airfield is nearly always subject to turbulent conditions when the wave is working as it is situated under the roll cloud of the secondary wave.

To contact the secondary wave one has to fly through the turbulence into wind until the front edge of the roll cloud is behind. This can be a hair raising experience, I can recall one occasion being aerotowed **around** the 80 ft. trees in a shelter belt a ½ mile from the airfield boundary with the Piper Cub at full power. We could not get above these trees and it would have been suicide to release. After this heart stopping period we crawled clear and later at 1400 ft. I released, and immediately found 2000 ft/min lift (measured on barograph).

From Masterton airfield it is also possible to contact what is known as the Wairarapa wave. Although I do not claim to be an expert on this particular system I have flown in it, and it is a very exhilirating experience.



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Standard Class Flaps

a U.S. point of view by Bob Buck

Soaring Pilot correspondent in the U.S.A.

It appears that there is considerable controversy among the leading gliding nations regarding the merits of landing flaps for Standard class machines. This agitation possibly being caused by the European lack of experience and exposure to flaps. At the recent CIVV meeting in Paris, a proposal by Germany went as far as to suggest that the flap ruling for the Standard class, which is being introduced this year, should be abandoned. This proposal, however, was not accepted and in the light of the meeting I believe that it will be up to the U.S., who have four Standard class 'flapped' machines – Schweizer 1–35, Nugget, Concept 70 and HP–17, to prove that flaps are a useful addition to the class over the next few years.

The U.S. flap experience began in the 1950's with the early Dick Schreder HP series and then the Briegleb BG–12 kit sailplane. The latest model, the Schweizer 1–35 will be in production this Spring and already great interest is being shown, particularly as it has been entered to fly in the Standard Nationals at Hobbs, New Mexico in July.

I was able to make a short flight in the 1–35 prototype last Autumn and even though the aircraft was far from production standards it was possible to envisage its potential. All comparisons were made against 450 hours in an H–301b Libelle and lots of off field contest landings.

In flight I was impressed by the European type roll rate. The rudder and fin area of the 1–35 is very effective, and above 45 kts(50 mph), there were no adverse yawing problems. It was very easy to manoeuvre into a thermal and "kick" around in those small and choppy ones. The pitch stability was far better than the present Standard sailplanes.

On landing, the flap lever was placed into its 35° "notch". This allows the flaps to be actuated between 35° and full flap in the flap's drag area. If one is undershooting, placing the flaps up against the 35° stop returns the 1–35 to K–8 performance and stall speeds. The approach is ample at 45 kts (50 mph) and once on the ground, at very slow speeds, say 25 kts (30 mph), flaps are moved to full negative and at the time you would normally squeeze the wheel brake, you're just about stopped!

The only glass sailplane that I have experienced a "near" similar situation was in a Kestrel where the flaps go to 30° +, (the max. lift configuration) and then speed brakes are used. Of course, with Standard class, we can't have divebrakes and flaps, so flaps take the full landing control.

So why flaps? Let us look at what they do. Flaps put the wing into it's maximum lift condition, which produces a slower stalling speed, giving slower approach and touchdown speeds. Using Kinetic Energy ($KE=\frac{1}{2}\ mv^2$) formulae, one sees there is a fair amount of energy to stop with the non-flapped sailplane compared with the slower landing touchdown and less KE of the flapped machine. The Std. Cirrus has approximately 1.74 the KE of the 1–35 using equal weights at touchdown 5mph above the stall!

Secondly, when one uses spoiler-divebrakes, the extension of these into the airstream **increases** the stalling speed, where flap extension **decreases** stalling speeds. And finally, the worry of the aircraft "sinking out" when flaps are retracted, is no longer a worry with the detent system at 35° of flap, preventing flap retraction into the maximum lifting region.

The U.S. licensing requirements are difficult, the 1–35 had to demonstrate spins with one wing full of water (160 lbs of ballast can be carried EACH side) with flaps down. The aircraft recovered in the FAA stipulated limits. The little "T" tail is strong enough to hold a 200 lb. person on the tip and the sailplane is about 50 lbs. lighter than its fibre-glass forefathers.

The U.S. is very aware of the superb workmanship and performance of the European sailplanes, but it now looks as if we have a competitive chance in the Standard class fields–so all that now remains is for the 1–35 and its partners to make the show.

ALCOR —

The first pressurized Sailplane

by Robert Lamson

(Reproduced by courtesy of 'Soaring')

I have been associated with the engineering and operational facets of aviation for over 35 years. While this activity has been directed primarily towards the military and commercial phases of aircraft operation, I have always maintained a continuing interest in soaring flight. As a professional working in the field, I am continually amazed by the outstanding accomplishments proven in design, construction, and flying of powerless aircraft in all parts of the world. The highly-refined production sailplane of today matches the highest standards of design and production found in the best military and commercial aircraft. The accomplishments in understanding and applying modern meteorology to soaring flight have stimulated further investigation of atmospheric wave and turbulence phenomena which has benefited commercial transportation around the world.

To me, probably the most outstanding single accomplishment in soaring flight was the altitude record of 46,266' set by Paul Bikle in 1961. Even considering the many records and accomplishments in powered flight, Paul Bikle's record is still amazing. This record accomplishment required the proper mixing of many different scientific disciplines. It took courage and a high degree of self discipline, which brought success where tragedy could easily have taken over. It is going to be difficult for anyone to beat the high altitude record that Paul Bikle set in unpressurized flight.

Alcor, as a pressurized high-performance sailplane, is not directed toward record making attempts. While pressurization relieves the serious physiological problems encountered in high altitude flight, this is a technical development worked out on the ground; operational accomplishments are not to be compared with Paul Bikle's pioneering flight.

The idea of designing and building *Alcor* as a pressurized high-performance sailplane was conceived about twelve years ago. At that time I was aware of some of the new and spectacular results showing with new aerospace materials. As a test pilot I was experiencing the many discomforting features of high altitude flying. It appeared that a sailplane might be a logical tool in which to try a new cabin environment control system. Along with pressurization there was a need for the elimination of window frosting, provisions for additional cabin heat, and the elimination of burden-some personal gear to give some reasonable comfort on long high-altitude flights.

The concept applied in *Alcor* is basically quite simple. The airplane, in effect, is a space capsule, sealed to zero leakage of cabin air supplied with pressure oxygen and/or an oxygen-air mix to maintain a predetermined cabin altitude. This is monitored by a simple cabin pressure regulating valve manually controlled by the pilot.

Design Concept

While the pressurization system in *Alcor* has drawn considerable interest and comment, it has possibly over-shadowed other very interesting refinements. For example, the specifications for the airplane, while committed in 1967, are not too different from some of the recent 20-meter imports coming from Europe. There is one exception — *Alcor* has a lower empty weight.

Emphasis in the design/development of *Alcor* was directed towards minimum sink capability. The reason for this is to allow operation in weak wave conditions at high altitude. To accomplish this, considerable emphasis was placed upon the use of high-strength, low-weight materials and new construction techniques. High-strength "S" glass fibers have been used extensively in the wing spar construction and in the diagonal glass cloth wrapping on the vacuum formed wing spar "D" sections.

The airfoil development utilized on this airplane is a full mathematical derivation and is optimized specifically to show minimum sink capability with only a slight compromise in maximum L/D. This work was performed by Winfried Feifel of the Boeing Company and utilized computer technology to accomplish the large number of mathematical computations involved. The airfoil section changes continually from the wing root to the wing tip. To hold the airfoil shape as computed under various flight loading conditions, the wing camber sheets are constructed of polyvinyl chloride foam glass sandwich material laid over a box spar. The wing was built from the inside out, so to speak. This construction was time-consuming and expensive but allowed full glass wrap-around on the wing "D" section giving high torsional stiffness.

The fuselage is a Sitka spruce/epoxy glass sandwich with tail and nose section each moulded as a one-piece assembly.

The canopy on *Alcor* is of the faired type; however, to handle pressurization loads, it should be noted that the fuselage cross section in the canopy area has a slight figure-8 configuration. The canopy is moulded utilizing a special technique which allows the incorporating of a double plexiglass canopy in the cockpit area. This is faired to a single plex fairing in the nose area which, in turn, is bonded directly to the fuselage and sealed. This allows a separate plenum chamber in the nose section that is the basis for a solar heating system.

Construction Techniques

Sandwich-type construction has been utilized quite extensively in building the *Alcor.* As stated above, the fuselage section is basically a one-piece Sitka spruce glass sandwich and moulded in such a way as to give high torsional rigidity in the tail section and ample capability in the nose section to handle pressurization loads. The sandwich materials used in the wing are basically polyvinyl chloride foam, 4 to 6-lb. density, with a vacuum forming system used to build the wing spar "D" section. The camber sheets behind the spar are made of a simple hand layup of polyvinyl/glass sandwich. There are a number of reasons for the selection of the epoxy glass and sandwich materials:

1. The high specific strength of "S" glass, while spectacular in the tension loading, is also good in the compression when utilizing certain epoxy formulations and can be further benefited by careful selection of the sandwich layup geometry.
2. Ability to form and/or mould to compound curvatures.
3. Ability to form in simple moulds with low pressure requirements.
4. Wood fiber/epoxy/glass sandwich has shown very interesting test results giving high torsional stiffness. This material application was utilized in building the tail section.
5. The spruce/epoxy/glass sandwich utilized in the nose section is laid up in such a way as to give a practical measure of thermal compatibility with acrylic canopy material, part of which is bonded directly to the nose section. The spruce sandwich method of construction of the nose section, together with the circular cross section and additional reinforcements for pressurization, provide a high measure of protection against nose-impact type accidents.

Cabin Pressurization

The cabin pressurization concept being applied in the *Alcor* development is truly a research effort. Much has been written about the physiological aspects of high altitude flight. Many accidents have occurred as the result of conventional oxygen system failures or misuse. A number of years ago Vic Saudek of the SSA presented a very interesting proposal to the OSTIV Congress, proposing two pressurized sailplane concepts. ("The Stratosail-plane Revisited," *Soaring,* June 1973.) This article discussed the need, as well as the many problems designwise in building such a vehicle. Unfortunately, the lack of supporting funds precluded the actual flight testing of his proposal.

The effort in the *Alcor* design problem was to develop a system that would be simple and adaptable to certain categories of sailplanes. In all cases the design committed must insure reasonable control over physiological and safety considerations.

Sometime ago, during a conversation with Rudy Allemann, A U.S. Champion and well-known Northwest competition pilot, he asked whether or not cabin pressurization investigations were worthwhile. I pointed out to Rudy that my conclusions had been that there were many additional benefits, apart from cabin pressurization and safety improvements, for extreme high altitude flight. These are related to lower altitude or middle altitude flying which certainly does occupy a good percentage of soaring activity. These benefits relate to cabin heat control, a reduction of cabin moisture, the reduction or elimination of canopy fogging. In addition, the oxygen content can be better matched to human needs — thus reducing fatigue and improving safety standards. The true objective is to enable long middle to high altitude flights in a safe and comfortable cabin environment with clear vision at all times.

Many accidents have occurred as a result of oxygen starvation at high altitude. This exposure has not been limited just to sailplanes. Side benefits from the pressurization system can greatly increase cabin comfort and make high altitude flight far more enjoyable.

The design problem in providing a simple reliable system is major, but, when examined in the broad perspective and utilizing new developments already proven in aerospace activities, the solution is not impossible. This design problem relates to the following:

1. Physiological considerations.
2. Cabin structural design considerations.
3. Mechanical considerations relating to system reliability.
4. Overall safety in all flight regimes.

The cabin pressurization has been given a preliminary check, and within twelve months it is hoped that a full system evaluation can be pursued. As designed, the *Alcor* pressurization system meets three basic requirements. These are:

1. Zero cabin leakage.
2. Cabin structure and canopy structural capability to cabin differential to 10 lbs. per square inch at ambient temperatures to -70° (3 lbs. per square inch — operating pressure).

3. A cabin oxygen level readout instrument allowing pilot monitoring of oxygen levels at all times.

The system basically utilizes 100% oxygen in the compressed gas or liquid form taken directly into the cockpit through an oxygen flow meter. The intended operation is as follows: Above 20,000 feet a special type of oxygen mask is worn and the cabin is initially pressurized to 10,000 feet. In contrast to conventional systems, the oxygen mask is worn for two important reasons:

1. To gather and discharge overboard, through the cabin pressure regulator, exhaled portions of carbon dioxide and water vapor. The mask, in this case, is not connected to the normal oxygen system but draws the oxygen air mix from the cabin environment with the outlet connected directly to the cabin pressure regulator.
2. The second reason for wearing this mask is for the emergency case, at which time the mask will function as with the conventional system with 100% oxygen coming from the emergency bottle worn by the pilot. At high altitudes the pilot monitors oxygen flow to meet the cabin differential requirements, always monitoring a certain level of oxygen partial pressure. The result of this arrangement is the gradual increase of cabin O_2 content with altitude. At 45,000 feet the pilot is drawing approximately 90% pure O_2 from the cabin through the mask, is experiencing a cabin altitude of 22,000 feet, and is breathing an O_2 level comparable to sea level conditions.

The foregoing description of the cabin pressurization and oxygen system is brief and can be detailed more precisely only after certain flight tests have been accomplished. These results will be reported in a later article.

Initial Flight Test Results

After nearly seven years of design study and fabrications, the initial flight test with *Alcor* was an important milestone. The special application of new materials, new airfoil sections, and certain complications in the control system to enable the pressurization objective, all placed a degree of importance and concern over the initial flight test phase.

The first flight was made on May 25th, 1973. This was made on auto tow with a straightaway landing since the spoilers were inoperative. This first flight showed the elevator control to be far too sensitive and, with a slight aft *cg,* created a degree of pilot-induced pitch oscillation. This was corrected and the second and third auto tows showed normal control response and sensitivity.

The first aero tows were conducted in early August with spoilers operating but the landing gear still in the fixed position. The flexibility of the long wing was somewhat startling as viewed from the cockpit. This deflection caused some binding of the ailerons and the roll response was somewhat sluggish. Another startling observation on this flight was the unexpected effectiveness of the solar heater unit in the nose section. This device, though shielded to only 20% of its effective area, produced a cockpit temperature rise of over 40°F. It may well be that the full effectiveness of this unit will produce a cockpit temperature rise at altitude greater than predicted.

The initial flight tests are now nearly complete. Assisting in this flight test program are Winfried Feifel and Harry Higgins. The basic stability and control characteristics are good. The ship thermals beautifully. Only partial stalls and/or stall entries have been accomplished in straight and turning flight. No rolling tendencies have been experienced. The elevator is fully effective at all times. Deep stalls, accelerated stalls, and spin entries will be delayed until dive tests are completed. The dive tests in turn will wait until a more thorough flutter analysis is completed. This work is now underway.

If all goes well, in the relatively near future the most important tests of all will be underway. These tests will carefully investigate and refine the pressurization and air temperature control system. In due time, at a conclusive point on this target program, a full story will be prepared.

Conclusion

As pointed out in the introduction to this article, the development of *Alcor* is not a record making effort, It is more an effort to evaluate new high-performance materials compatible in an extreme low-temperature environment and beneficial to the requirements for development of a simple workable cabin pressurization and cabin environment controlling system. This program is in the early stages of flight test. The airplane is showing high performance with reasonably good handling characteristics and performance capability of this sailplane. Later the structural integrity under pressurization loads needs to be evaluated. For safety reasons the cabin O_2 level must be properly controlled at all pressure levels. This will be checked carefully. The oxygen level must be low (near normal) at low altitudes and high at high altitudes. Finally, the workability of the proposed cabin environment control system must be checked to prove the real benefits to the physical safety and comfort of the sailplane pilot in all flight regimes.

The *Alcor* design has proven to be workable and test results to date are gratifying. The sailplane should be an excellent test bed for the interesting work ahead.

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World Championship Entry List as at 20th November 1973

Country	Pilot	Glider
AUSTRALIA	Renner, I.	Std. Cirrus
"	Bradney, M.	Std. Libelle
"	Mander, P.	Kestrel 19
"	Tabart, A.	Nimbus 2
AUSTRIA	Schubert, A.	Kestrel 604
"	Hämmerle, A.	Kestrel 19
"	Wödl, H.	ASW–15
"	Puch, S.	ASW–15
BELGIUM	Zegels, B.	Kestrel 604
"	Smet, H.	Nimbus 2
"	Bluekens, M.	Std Cirrus
"	Pissoort, J.	Std Libelle
DENMARK	Oye, S.	ASW–15
"	Sorensen, O.	Std Libelle
FINLAND	Wiitanen, M.	Kestrel 19
"	Nurminen, R.	Std Libelle
FRANCE	Mercier, M.	
"	Penaud, J-C.	
"	Cartry, J-P.	
"	Ragot, F.	
GT. BRITAIN	Burton, G.E.	Kestrel 19
"	Delafield, J.	Nimbus 2 (mod)
"	Fitchett, B.	Std Cirrus
"	Williamson, J.S.	Std Libelle
HOLLAND	Teunisse, P.	Std Cirrus
"	D. Paré	Std Libelle
"	Teuling, D.	Kestrel 17
ITALY	Cattaneo, M & Serra, S.	Calif A–21
"	Orsi, Adele	Kestrel 604
"	Piludu, F.	?
"	Perotti, N.	?
JAPAN	Fujikura, S.	Kestrel 19
MALAGASY	Weiss, J.	Std Libelle
N' ZEALAND	Heginbotham, P.	Nimbus 2
"	Timmermans, A.	Kestrel 19
"	Cameron, A.	Std Libelle
"	Gordon, W.	Libelle 301B
NORWAY	Bulukin, B.	Std Cirrus
POLAND	Kluk, S.	Jantar
"	Pozniak, H.	Jantar
"	Wujczak, S.	Std Jantar
"	Kepka, F.	Std Jantar
SPAIN	Orleans de Borbon, A.	?
SWEDEN	Andersson, G.	Std Cirrus
"	Pettersson, A.	Std Cirrus
"	Ax, G.	Nimbus 2
"	Wlassics, I.	Kestrel 17
SWITZERLAND	Wetli, R.	Nimbus 2
"	Frehner, H.	Std Cirrus
"	Nietlispach, H.	Std Libelle
USA	Johnson, R.H.	ASW–17
"	Moffat, G.	Nimbus 2
"	Greene, B.	?
"	Beltz, T.	?
W. GERMANY	Grosse, H-W.	?
"	Holighaus, K.	?
"	Ahrens, K.	?
"	Reichmann, H.	?

This list is not final. Argentine, Canada, Mexico and Yugoslavia have informed the organisers that they will be entering teams, but as yet have not put forward pilots names. It is also hoped that entries from the U.S.S.R. will be received.

World Championships Progress Report



ENTRIES
The number of entries received at the time of going to press was fifty nine. These are fully paid-up entrants. It is quite likely that further, late, entries will be received.

GLIDER HIRE
There are no problems with Standard class; a small surplus of Libelles exists. About six Open Class sailplanes are still required.

COMPETITORS BULLETINS
Six news bulletins have been produced and distributed to all competitors. The topics covered include: 1. General summary and cost estimates; 2. Accomodation; 3. General impressions of the Waikerie area; 4. Retrieving and road conditions; 5. Meteorology and radio; 6. Outlandings, bushfires, survival. Three further bulletins will be prepared and sent out giving up to date information on operations, radio frequencies and end entry lists.

AIRCRAFT SALES
Tommy Thompson has a list of Australian clubs and pilots who would be interested in buying any of the competing aircraft from overseas.

CONTEST BULLETINS
Readers are reminded that subscriptions to the daily news bulletins to be produced on site at Waikerie during the competitions, should be paid now. See advertisement on another page for details.

FEDERAL GOVERNMENT ASSISTANCE
The Army has been authorised to assist with catering by supplying equipment and refrigeration gear, including a mobile generating plant and two technicians for maintenance. The Army cannot, however, supply catering staff or aero-towing. The feasibility of using R.A.A.F. "Windjeel" aircraft for aerotowing has been studied. It has been established that the minimum climbing airspeed of the Windjeel, under the temperature conditions expected at Waikerie in January, will be in excess of the permitted towing speed of the sailplanes. The R.A.A.F. will not, therefore, be able to supply aircraft and pilots for towing. In view of the extra cost anticipated, a request to the Minister for Recreation and Tourism for additional financial assistance has been made.

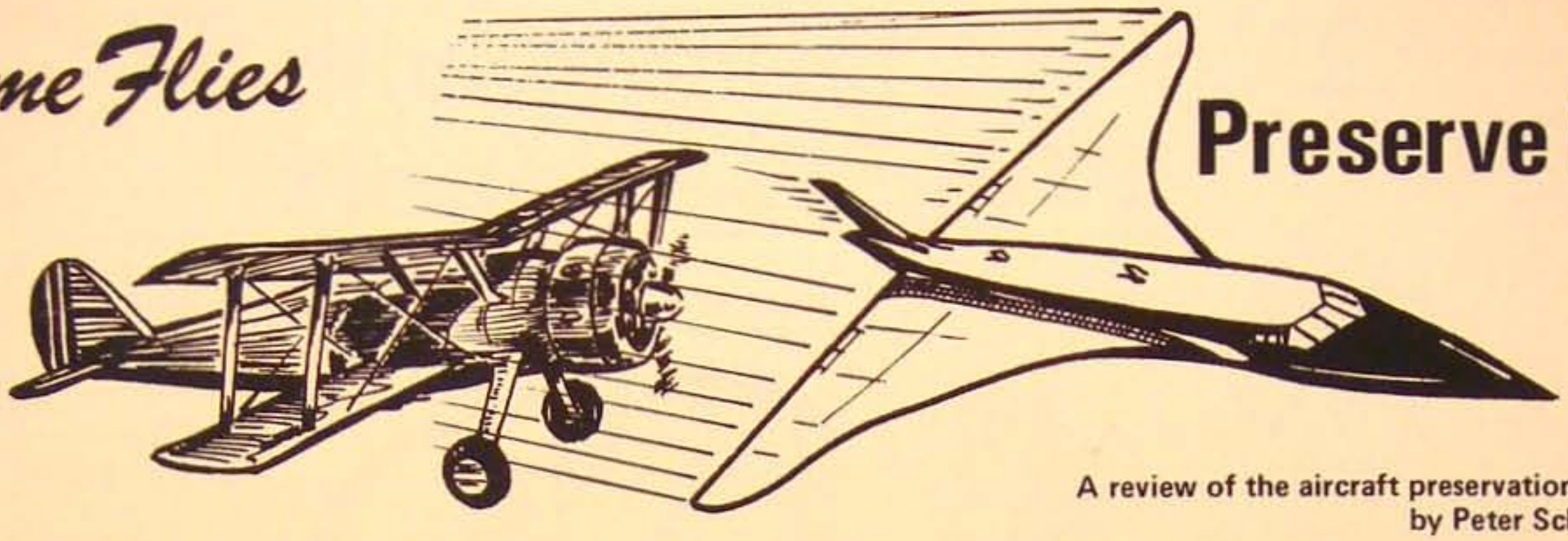
SCORING
Negotiations are in progress to obtain the use of a small computer on site at Waikerie to produce the daily scores. The public display information board should be completed by early October.

SITE
Rainfall at Waikerie has been above average and the aerodrome is in very good condition. Land lines for the Public Address system have been installed, and provision for 6 30 watt speakers is being made.

MEDICAL
The R.A.N. is providing a naval medical officer for a week's duty at Waikerie. It is hoped that the remaining weeks will be similarly covered by R.A.A.F. and D.C.A. Medical personnel.

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

Time Flies



Preserve it !

A review of the aircraft preservation scene — by Peter Schofield

The perceptive reader will already be aware that people do strange things with aeroplanes — other than when they are in flight. A Halifax bomber was recently lifted from a watery resting place in Norway and returned to this country; a tri-motor Junkers 52 arrived from Portugal as deck cargo; a pre-war Spartan Cruiser feeder-liner resumed its journey 36 years after its progress had been abruptly terminated by a mountain — this time carried by helicopter; while Spitfires, which on close inspection are found to be made of glass fibre, appear regularly outside cinemas. This, and other similar evidence reveals that an active aircraft preservation movement is at large.

What do we mean, in fact, by "preservation"? Perhaps the easiest answer is to regard anything as preserved if it remains extant when its age, inefficiency, unserviceability or general uselessness should have condemned it. There are many people who sincerely believe that an aircraft which can no longer fly regularly is not worth keeping. Who, then, keeps them and why?

They are preserved by a wide variety of bodies and for a variety of reasons. The development of aviation, like any other science, is worth studying for the light it may throw on future possibilities — a man ignorant of his past is half blind toward his future. The history of flight is also a human story, and the intense endeavours of its pioneers should not be readily forgotten. In other words, aircraft preservation shares a part of its philosophy with the whole museums world — to increase the awareness of each one of us by offering information and experience. But there are other, less high-minded reasons.

Very many people find a fascination in aircraft, but have been unable for various reasons to take up flying; others flew during or before the war but have not continued to do so. Such people welcome the opportunity to be with aeroplanes. And for many it's simply the hobby they fell into — it is their way of meeting people. But even for them, the contact with aircraft is helping to produce a climate of opinion sympathetic to flying, and who would say in 1974 that we can dismiss anything which brings a section of the public into our camp?

The forms which preservation take are varied. The British Aircraft Preservation Council, which acts as forum, mouthpiece and marketplace, has thirty-two member groups. Some are national Museums with an aeronautical arm: the Science Museum manages to display a sizeable portion of the National Aeronautical Collection in severely restricted space at South Kensington; the Imperial War Museum is busily digging itself into Duxford, a disused Cambridgeshire fighter station; the Royal Scottish Museum is setting up its Museum of Flight at East Fortune. The Services have their own collections — the R.A.F., of course, taking pride of place with their million-pound Hendon showpiece, and with over a hundred more exhibits in store or on occasional display at Henlow, Colerne, St. Athan and Topcliffe. The Fleet Air Arm At Yeovilton have the edge, though, in one respect: they are able to fly selected aircraft, and the sight of a formation of Firefly, Sea Fury and Swordfish offers something which no static museum can.

It is this ability to offer aircraft preserved in their own element which makes the Shuttleworth Collection at Old Warden an international Mecca; the word 'museum' could not possibly be applied here, when on any weekend you might be passed by a Triplane, a Boxkite or a Bleriot. What more is needed to convince you that there is a time-warp in Bedfordshire? Motor up to Strathallan in a few years time and you could be startled by a Defiant, a Battle, a Blenheim — already you'll find Spitfire and Hurricane there; this is Sir William Roberts collection, and ample proof of the efficacy of money in reversing the flow of exhibits across the Atlantic. Money also gave us the magnificent aircraft museum at Southend, again occupied by many airworthy machines; but here lies the danger — capital investment looks for returns, and museums rarely offer much of that. All the more credit, then, to dedicated enthusiasts like Peter Thomas at Staverton and Keith Fordyce at Torbay who put in efforts



PARCEL POST
A North American Sabre in Italian Air Force marks, reaches Dover en route from Italy.



FROM START.....
A 'Shagbat', or Walrus amphibian, found in a field near Aylesbury.

which could well earn them a fortune if otherwise applied.

And then there are the part-timers – the rash of preservation societies and enthusiasts' groups which infect the whole country with their activities. Some have managed to set up their own small museums, Newark and Tattershall being examples. Others have aircraft scattered all over, on loan to anyone with space; some were established with one specific aircraft in mind, some are former "spotting" groups who feel that they can contribute to aircraft preservation, some find their expression in digging up wartime relics. All of them form the eyes, ears and mouth of the movement. It is through them that information travels, material is found and people made aware of the significance of their old relics. Largely because of the influence of the Council, they work together with very little friction – even when the Northern Society persists in sending raiding parties into Yorkshire, or an enterprising scrap merchant sells an aircraft to two different groups in the same week. Perhaps more significantly we have largely broken down the barriers that could easily exist between a highly professional national museum and a group of happy amateurs: for example, national museums are quite capable of getting a Mustang, but they're not nearly as good as amateurs at polishing and painting it! The main activity at present is in "gap-filling": the Halifax came back from Norway because there aren't any others, the Shuttleworth Boxkite is a replica – courtesy of the 'Magnificent Men' film, RAF Leeming is accumulating Fairey Battle bits from all over the world, and if you find a Blackburn Skua, Les Cox will be knocking on your door before you put the phone down. Younger and smaller groups tend to obtain younger and smaller aircraft to fit their financial and spatial limitations. There are exceptions: the oldest surviving Viscount airliner is exhibited at Liverpool Airport thanks to the determination of one young man and the willingness of a small group of others to mortgage their immortal souls on its behalf.



TO FLY OR NOT?
The argument as to whether rare aircraft should be flown continues – here is one argument against.



MORE THAN THEY CAN CHEW
Great enthusiasm and public support brought this Lancaster back from Australia, but the problems of keeping it in the air were too much for voluntary part-time effort. Now it is with the R.A.F., relegated to guarding the gate at Scampton.

But what do all these people actually **do**? Well, first you acquire an aircraft. That's not too hard, most owners would rather have their aircraft safely in a museum after its useful life is finished.

Having chosen your aircraft, you will in all probability have to move it. Were you then in fact wise to accept that Vampire 11? Yes, we know everyone else has one, but it is in Manchester and you're in Cardiff, and your lorry driver friend will never be in when you call. Did you know it would cost £1,000 to move a Buccaneer from Lossiemouth to East Fortune, or £1,500 to take a Javelin from Newton to anywhere? And what are the laws about maximum width of load? Are you supposed to carry a 35-foot Rapide fuselage on a 17-foot tipper waggon? (Don't tell us, please, we did and prefer not to know) Aeroplanes are such a stupid shape – perhaps you should think about a helicopter museum. Yes, a non-flying aircraft can be an even greater liability than a non-functioning motor.

Reconstruction is the real test. Here enthusiasm is useless unless allied to skill, supported by space and money. To rebuild an aircraft even to static display standards can be a major operation. Are there any plans available? Too often the detail drawings vanished years ago, and someone must translate photographs and general knowledge into working drawings. Are essential parts missing? Engine, undercarriage, instruments – put out an all-points call. Don't be surprised to find a South African crawling around a Scottish scrapyard looking for a Spitfire propeller, or an American in this country hunting De Havilland 19 drawings. There are organisations who will undertake to recover the spares you need from wrecks in the jungles of Asia! So now you have all the parts or can make them then patience is your next requirement. A year, two, five years perhaps if it is to fly – this is where syndicates sometimes come to grief, one moves away, another becomes disenchanted, and the dream fades. Even if it is a non-flyer, the hundred and one detail jobs take time. One group has spent three years trying to find a firm capable of making a set of engine-beaters for an Avro Avian. Who knows how to sew up wing bags? Will someone be able to repair the propellor, sew up a new harness (what were German harnesses like anyway?), make up control cables, match the paint – and so on? Then what? If it flies, fine. It will live on an airfield, be maintained regularly. But if not, then it must be exhibited. So where's your museum? The problem besetting the whole preservation and museum field is, of course, lack of available space. Particularly in or near major population centres where it is virtually impossible to persuade companies or councils to forgo their opportunity for profit by making space available at nominal charge. And you cannot make a museum self-supporting at city-centre rents. So you go out and tour the stately homes, the folk museums, the amusement centres, offering your 'instant museum'. Yes, perhaps a 'Flying Flea' in the cellar; maybe a Meteor in the grounds. To some extent, then, the visiting public are being informed and educated, but the result seems so diffuse that it is easy to lose heart. Certainly it is almost impossible in that situation to display all the bric-a-brac each group collects, souvenirs, logbooks, propellors, engines. So you keep looking for a home of your own; you go to air displays with a sales stall, you collect and sell scrap paper, organise raffles, do anything except rebuild aeroplanes. But as long as the money is coming in you are nearer to the object of the exercise – the Great Blodwich Aeronautical Museum. When it is finished it will represent, proportionally, just as much effort as Hendon and will be making in its own area just as significant a contribution to an air-minded public.

Peter Schofield, Head of Science at a comprehensive school near Manchester, is Chairman of the British Aircraft Preservation Council and will welcome correspondence to 8 Greenfield Avenue, Urmston, Manchester M31 1XN



Club house, hanger and trailer park from air

Guide to Good Gliding Clubs — No. 1

It is commonplace knowledge that glider pilots, at one time or another during their flying career, generate the urge to try out their skills at sites other than their regular place of worship. The reasons for these migratory feelings are many and varied; he may wish to fly at a ridge site, try a hand at wave flying, or maybe feel that another location will offer a better chance to acquire that badge which always seems to elude him at his own club.

Once the decision has been reached to visit another club, what then can he do and expect? How does he go about arranging his safari? How much will it cost? Can he take his family? What local amenities are available to occupy the time of his non-flying wife and child while he is searching for that elusive diamond? To find out the answers to questions such as these we despatched out ubiguitous roving reporter, Mike Bond, into a wild and barren Shropshire in search of the Midland Gliding Club. This is where our story really bgins on a wintry Saturday not so very long ago.....

The Midland Gliding Club, Long Mynd, Church Stretton, Shrewsbury, Shropshire.

"The siting of the Midland Gliding Club is the most classic in England". This proud remark by a club member of many years cannot be far from the truth. Situated in isolated splendour at the top of the Long Mynd mountain, the clubhouse lies adjacent to one of the most impressive ridges in Great Britain. The surrounding area is kept under watchful surveillance by the National Trust, and the whole of the district is officially designated and "area of natural beauty". During my visit the tops of the hills were ablaze of purple heather, whilst the valleys were a lush green. From the air the contrast was fascinating.

The main road leading to the gliding site from Church Stretton demands special mention. Older cars regularly come to grief on its 1 in 7 gradient — its rate of ascent being comparable to a winch launch, while the bends are reminicent of a switch-back ridge. At some stages of the climb there is literally a sheer drop of many hundreds of feet on the offside. Beware also of the many sheep which stand about on the roadside. It is not unknown for visiting syndicates cars and trailers to find that they are unable to make the gradient, particularly front wheel drive cars with heavy trailers, but do not despair, the club are used to this problem and will readily help any stranded visitors by sending down assistance.

Facilities for Private Owners

Visiting syndicates should note that three trailers only are allowed at any one time. This is to ensure that both club members and visitors receive adequate attention. Confirmation of availability of space must be made in advance through the course secretary. It is no use just arriving on site and hoping that you can be "fitted in". The chances are virtually nil in this respect as The Mynd is a popular site throughout the year.

The trailer park is sensibly located behind the main buildings and thus sheltered from the prevailing wind. An anchored towing hitch is made available for club members, but if a space is vacant it can be used by visitors.

Workshop facilities are also on site and are comprehensive, but again prior arrangements are normally required to use them as space is limited to one aircraft only.

Barographs and parachutes are **not** hireable to private syndicates, unless they fly club aircraft, although chart smoking amenities are used by all. Willing help is always at hand for rigging and de-rigging, so two-men syndicates need not be deterred in this context.

One extremely important point to be noted is that **NO** caravans can be brought to the site by visitors, planning permission allows for five only and these lots are taken by members.



Carol Burnett about to solo in Club K8



CFI Ernie Ainscough preparing to give an advanced instructional flight to Brian Quennell

Accommodation

The Midland G.C. is self contained in respect of accommodation with bedrooms that can sleep a total of 42 persons. Two dormitories, each with 10 beds comprise the single persons accommodation while the remainder are private rooms intended more or less for family use. These rooms containing from four to six beds. Incidentally, it should be carefully noted that in all rooms, bunk beds are used, so don't plan a honeymoon here unless flying is your first consideration!

The whole of the building is centrally heated and I was assured that even in the most trying conditions the building remains toast warm.

From the hygenic point of view it was gratifying to note that all the washbasins were clean and soap was plentiful. Hot and cold water was instantly available. Showers are fitted in both the ladies and mens bathrooms and towels were readily on hand. The toilets were clean and it was gratifying to note that **soft** loo paper was in use!

The food is most palatable and acceptable, and indeed is promised to be even better when the new kitchen is completed. Beverages are available along with light snacks throughout the day, but orders should be placed for cooked meals.

Church Stretton also offers a variety of good inns and hotels where one can stay. Prices ranging from moderate to **very** expensive.

Flying

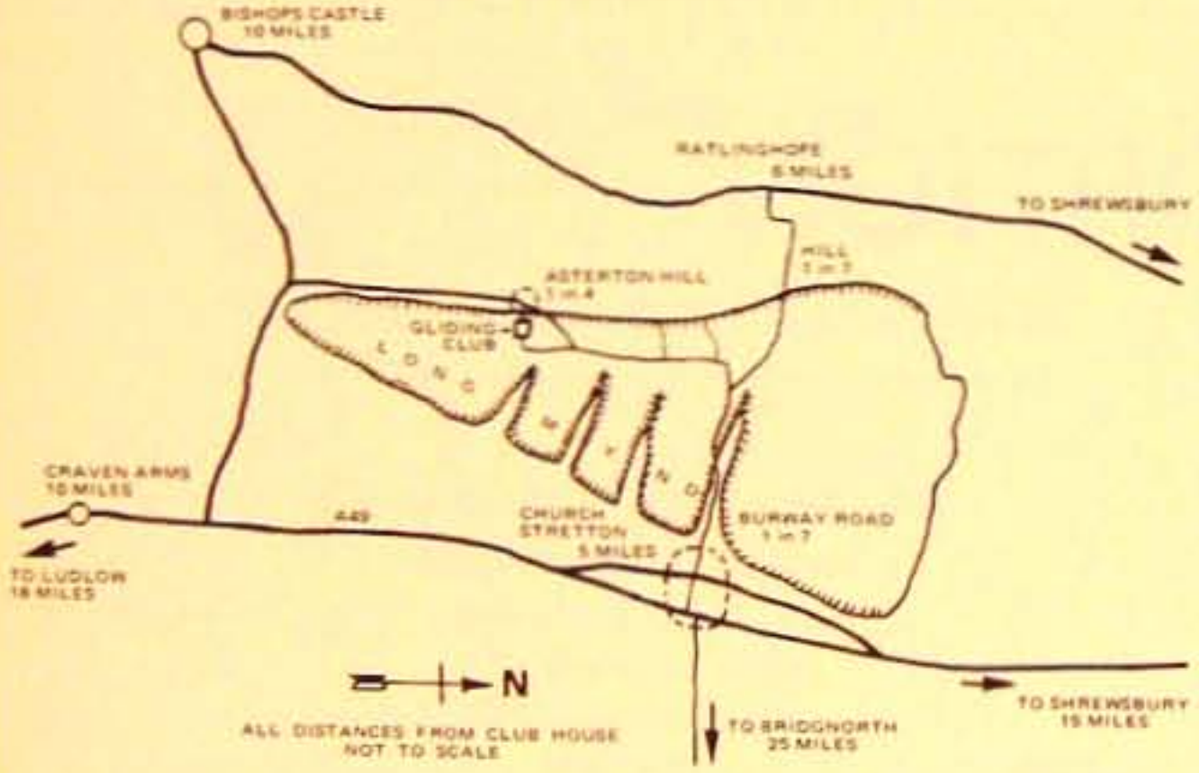
The club has a modern fleet of training machines, balanced well with adequate solo gliders., viz;

3 - K–13's., 1 - K–8., 1 - Olympia 2B., 1 - Olympia 463 and 1 - B.G.135.

The launch system incorporates the winch-retrieve method, which was observed to be far superior to the conventional tractor retrieve. This was reflected in the launching rate which was found to average one per three minutes. Being a region of 'natural beauty', ramblers tend to wander somewhat aimlessly along a gulley which bisects the NW cable run at right angles. To overcome this problem a volunteer is detailed to police this area.

The Mynd is also famous for its bungey launching – one of the few remaining clubs to operate this method. Visitors are well advised to partake in this type of lift off – if only for the sheer novelty of it.

ROUTES TO THE MIDLAND GLIDING CLUB FROM LOCAL CENTRES



Sadly, aerotows are not available from this site. This being the result of an agreement with the landowner who sold the club a section of the field, an agreement which stipulated that powered aircraft of all types were to be totally excluded from using the airfield. The committee bitterly regret this decision, and although they stand by it, they are doing their utmost to reverse it. To add salt to the wound, wave conditions are frequently in evidence but need an aerotow to be reached.

Flying Standards and Site Checks

Chief Flying Instructor Ernie Ainscough insists that all visiting pilots of below Silver 'C' standard undertake one or two check flights. This is obviously sound policy particularly as strict local flying rules are in force.

Most people who frequent the site do so with the specific intention of gaining their Silver 'C' duration on the ridge – 5 delicious mouth watering miles of it, and as often or not have never experienced the unique conditions associated with a hill top site. It is imperative, if this be the case, to familiarise ones self with the basic rules of ridge soaring. Much useful information on this subject including how to utilise the ridge to its best advantage can be gleaned from Derek Piggotts 'Gliding'.

Pilots who intend to go 'bungeying' are also required to be checked out. Usually one trip in a K–13 will suffice here.

A comprehensive colour coding system is in operation at the launch point, a certain colour denotes the ability of the pilot; thus in the absence of the C.F.I. an accurate assessment of all those flying is known to the instructor of the day.

Flying standards and safety observation were noted to be of a high order.

Courses

Weekly initial training courses are organised from 30th April until 30th October. Although the ab-initio course is the only one advertised, this should not deter the solo pilot who wishes to practise advanced soaring, as the resident instructor is qualified to teach all aspects of our sport.

Courses last for 5 days duration and are restricted to 16 flying members. They commence at 0900 hrs. on Monday and finish at dusk the following Friday. Members are invited to arrive on Sunday afternoon and are requested to make themselves known to the catering staff in the clubhouse. Supper and accommodation on Sunday evening and breakfast on the following Saturday morning are included in the course fee.

If more than two consecutive courses are booked the fee for the third and subsequent ones are halved. Meals and accommodation during the intervening weekend(s) will be provided free of charge. It is regretted, however, that week-end flying cannot be made available to course members.

A non-returnable booking fee of £5 per course must accompany each application and the balance of the fee becomes due for payment fourteen days prior to the course commencement. There is a £3 reduction per course if the fee is paid in full on application. Reduced fees are available to visiting private owners with their own gliders.

It is almost impossible to state how much flying you will get, as so much depends on the weather. Every effort will be made to ensure that full advantage is taken of good conditions and flying will normally only be curtailed in the interests of safety.

You may, if you wish, safeguard against loss of flying due to bad weather for a nominal charge of £1.50 per course. This entitles you to membership of the Rebate Fund, from which £3 will be paid for each day, excluding the first of such days, on which the club is unable to offer flying to you.

Members comments and reactions to new pilots and visitors.

Of the members interviewed all were agreed that there is no place on earth comparable to the Mynd. These comments apply to the site, the clubhouse and the atmosphere. Minor complaints of high charges were encountered although all were agreed that the extra payments were put to good use as the club offers rather more than average.

Visitors are made most welcome at the club, and as a rule prospective new members are looked after quite well. It was noticed, however, that one intending new member was treated a little shabbily with regard to the flying list, but in all fairness to a club of its size mistakes do occur and as soon as the incident was brought to light it was rectified. It should also be

mentioned that the new member in question merely stood by the retrieve winch and made no effort to begin conversation or to follow the progress of the flying order sheet, nevertheless in cases such as this encouragement from members is always very welcome.

Other Activities

Shrewsbury, the Salopian county town lies a mere 15 miles to the north, and here a wealth of interesting leisure activities await, they range from boating, cinemas, museums, ancient monuments, dancing and libraries to the latest that the countries leading stores have to offer. To the south of the site, Hereford, Ludlow and Leominster proclaim similar attractions.

Numerous riding academies also lie within easy reach of the Mynd, in fact many members and their families partake in this "strange" sport on non-flying days.

Without even leaving the club, one can become pleasantly engrossed in all types of chat while sampling the offerings a well stocked bar proffers for sale.

As mentioned earlier, the area is designated one of 'natural beauty' and a tramp over the heather is highly recommended. Opportunity for this venture could possibly be found when the wind is a little strong, or the cloud a little low. In fact, whatever your tastes, it is highly likely that they can be fully indulged in when flying is out of the question.

Opinion

Taking the club as a whole, a lot is extended to the intending visitor or prospective new member. It is, in the magazines opinion, a thoroughly professional establishment, ideally situated and well managed..The present members are most pleasant and helpful, and we have no hesitation in recommending it as a site well worth visiting. Be warned, however, it can be very cold on occasions, so be sure to take plenty of warm woolies with you.

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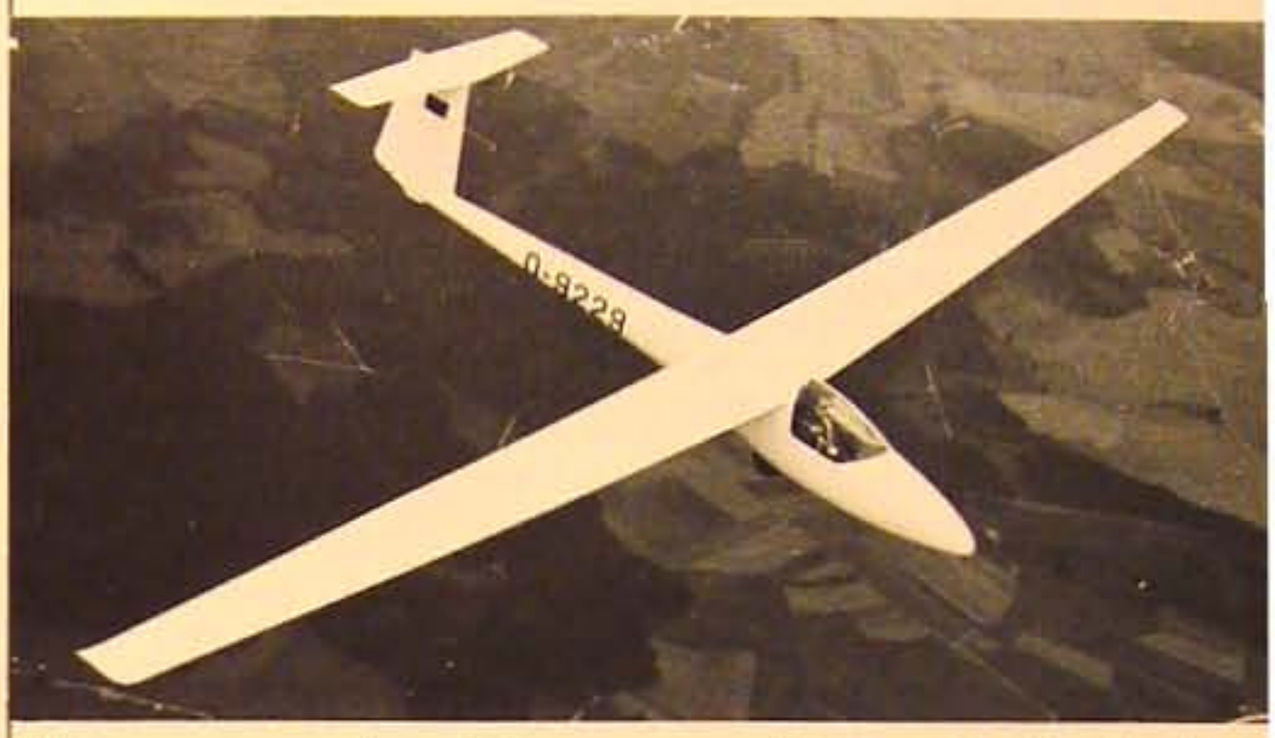
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Veteran Vintage

Vintage News compiled by Chris Wills

Vintage Glider Library
The Vintage Glider Club of Great Britain has been given a collection of historical photographs, 3 view drawings of pre-war foreign gliders and a number of books. Also included in the collection are early Thermik magazines which have in them considerable information on the wartime developments of pre-war German gliders.

Prints of photographs, photocopies of drawings and documents will be made available to all members at a small cost.

We should like to take this opportunity of thanking Peter Fletcher for entrusting us with this collection, which will enable us to have some interesting items available for viewing at rallies during the year.

Spring Rally 1974
This will be held at the Midland Gliding Club, Long Mynd, Shropshire. Dates yet to be confirmed.

International Vintage Glider Meeting — Germany
It has just been announced that the first International meeting will be held on the Wasserkuppe from 1st to 9th June. Initiated by the Oldtimer Club, Münster and organised by the Gesellschaft zur Forderung des Segelfluges auf der Wasserkuppe with publicity in Germany being provided by the Wasserkuppe Pilots' Association, the meeting is expected to draw a very large entry. Would vintage glider owners who intend to enter please write as soon as possible to Frances Furlong, The Hon. Secretary, Vintage Glider Club of Great Britain, Otford House, Otford, Nr. Sevenoaks, Kent. for an entry form. It is then hoped that a collective British entry can then be organised and a financial subsidy to assist travelling expenses applied for.

Old gliders in Yugoslavia
News was received at the end of August that all old gliders registered in Yugoslavia are now grounded although some of their Weihes were registered as late as 1960. No reason for the grounding has yet been given. News has also been received that old gliders in France are once again to be grounded, although it is not known if this is to be a permanent arrangement.

1939 Gull 3
John Ellis of Oxford says that his Slingsby Gull 3 has been flying again at Weston-on-the-Green, but has not been brought to rallies because it has no trailer. This machine is almost in its original form, the alteration being a one-piece canopy. Due to the outbreak of the war only one Gull 3 was built. It was hoped that the machine would be produced in quantity after the war. This did not happen. Instead the basically different Gull 4 was built in 1947. The Gull 3 was flown by Prince Bira of Siam, the famous racing driver, during 1944/45.

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British Gliding Association Inspectors Conference-3rd/4th November, 1973

A damp and fog-bound R.A.F. Dishforth, Yorkshire restricted the delegates at the BGA Inspectors annual get-together to an all talk and no flying weekend. Visits to Slingsbys and Yorkshire Sailplanes were organised and this provided the opportunity to look and examine some of the latest products of the British gliding industry.

The main theme of the first talk-in concentrated around the difficulties experienced in the detection of damage to glass fibre sailplanes. The panel of experts consisted of Ralph Jones, John Sellars, Roy Tetlow and Geoff Bailey-Woods — the chair being occupied by Ray Stafford Allen.

An issue that received considerable discussion time concerned leading edge cracks, relevant inspection problems and possible methods of improving upon the bonding of leading edge joints. Concerning the latter point, suggestions were put forward that bandaging or dowling during construction might help to overcome some of the problems now being experienced.

The use of an Intrascope was referred to as the only possible piece of present day technology currently available which could detect damage in a glass fibre structure. Ray Stafford Allen mentioned the possibility of one being purchased by the BGA for subsequent hiring to inspectors etc.

On the same subject it was agreed that details regarding any damage after incidents should be forwarded to Roy Tetlow for analysis, who would then send his findings to the C.T.O. for permanent recording. A suggestion, from the floor, that photographs should also be taken and forwarded to the C.T.O. was considered a good idea, but doubts were expressed as to whether this could be accomplished successfully.

Perhaps the most significant contribution to the meeting was made by Ralph Jones when he detailed a D.I. procedure to be carried out in the event of a 'glass' machine being ground looped, heavy landed etc. He highlighted the salient points of the glider which must receive particular attention and what signs to look out for.

A point which could not successfully be resolved was, after what degree of incident should a glass fibre sailplane be made u/s? Nobody could offer an answer other than to follow the broad guideline of commonsense. The root of the problem seemed to stem from the lack of information put out by the manufacturers, here it was suggested that perhaps they too were still learning!

Nevertheless, the general feeling of the delegates was dismay when it virtually became apparent, that if in any doubt consult the manufacturer/distributor. At this stage inspectors were visualising half their fleets grounded at the slightest hint of a heavy landing. It seems that this is a matter which must be resolved as soon as is humanly possible.

Glass fibre repairing courses were suggested, but these it seemed proved difficult to arrange as they had to be fitted in when convenient with Slingsbys. Roy Tetlow promised that he would make enquiries as to the possibility of Cranfield arranging similar courses.

The mention of courses brought up the question of the problems of the storage of materials, i.e. glass, resins etc. Ralph Jones intimated that mishandling and incorrect temperatures during storage can drastically effect the properties of certain materials.

The final session of the first day, after a light tea — consisting primarily of Newcastle Brown and Whitbread Tankard, was slightly less serious although an interesting debate on the legal liability of inspectors resulted in a promise that the BGA would look further into the matter.

The general discussion covered a host of subjects ranging from welding approval and engine courses to a report by the London Gliding Club representative on Lincoln Cloth which they have been experimenting with on the club K—13. To all intents and purpose it is turning out to be a complete success.

The evening was closed by a report on low quality approved aircraft material and the very delicate subject of poor workmanship by qualified inspectors.

After a morning visit to Yorkshire Sailplanes the Sunday was rounded off by interesting talks from 'Chalky' White of the R.A.F.G.S.A. and Howard Tyrone. So ended a quiet, if not altogether satisfactory, 1973 conference.

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Met. Letter to a Novice Glider Pilot



My dear Horatio,

Your letter fills me with some gloom. You have taken up gliding and just going from what you say I assume you have been well and truly bitten by the bug. I have seen the symptoms before – and only those with the strongest principles (and weakest Bank balances) have any chance of recovering. But although it will not now be possible to have any serious conversation with you, except on the subject of gliding, we do share a common interest in the weather.

You ask me if I can teach you some met. I very much doubt it. Even though I am a paid met. man, I don't know very much about gliding – anyway there are dozens of books and articles already available to help you – and don't you have Club instructors to give you some sort of formal teaching? At least they understand which aspects of the weather are of importance to you, at your particular stage of training at your particular site. I certainly don't feel like setting up in opposition to them but – I suppose, in the interests of the family, I can do something to point you in the right directions (both practical and theoretical) as I see them.

So let me say at once that the most important thing (met-wise) that you should be doing now is not poring too much over books and technicalities, but whenever you can and wherever you are, get outside and use your eyes.

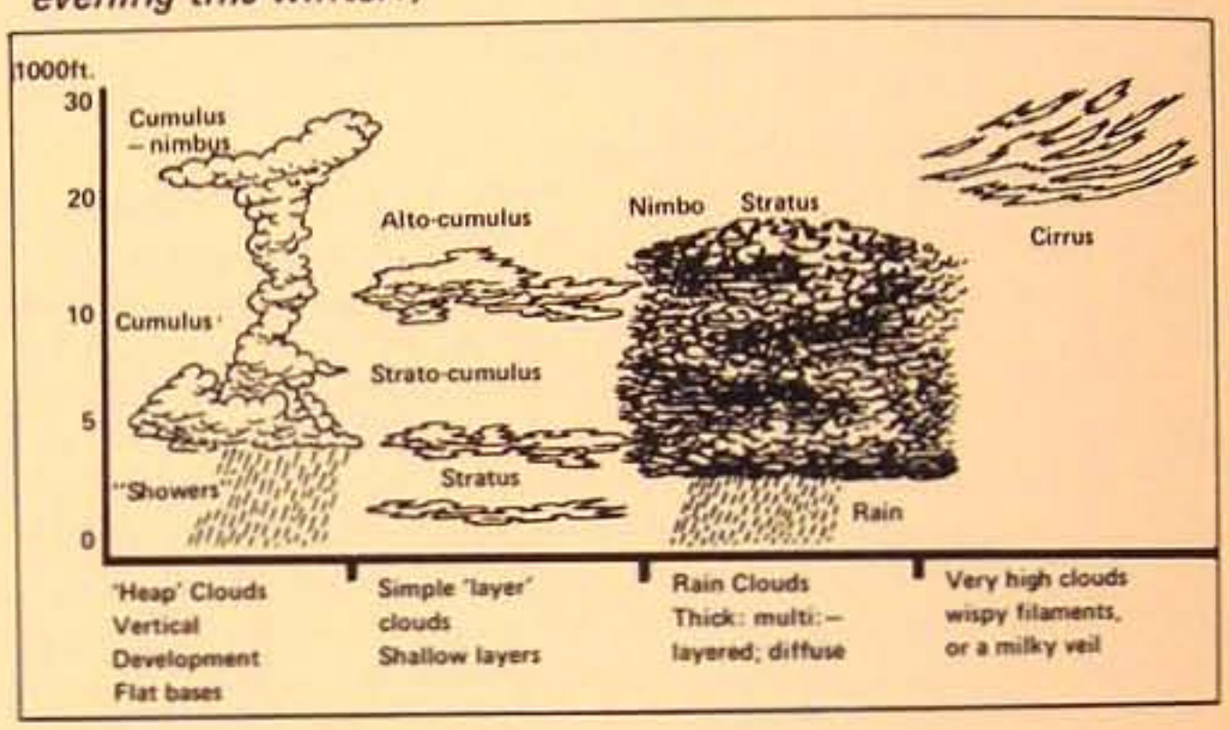
Look at the weather; become aware of the weather; get a feeling for the weather and its changes.

Whenever you go outside, just pause and reckon up the wind-direction. Estimate the visibility. Look at the clouds, and the rain. As you go on in gliding you will have to be constantly observing and interpreting the sky – so start at it now.

In practical terms, how do you estimate the wind direction? By looking at the windsock on the far side of the airfield? Have a care; check up by turning to face the breeze yourself so that both ears are flapping equally. If you happen to be in a smokeless zone, observe which way the chimneys are leaning – and on the Queens birthday the Union Jack above the local Labour Exchange can be a good guide. You certainly don't need expensive instruments to tell you what the wind is up to – use your own eyes.

You do, of course, need to know the difference between, N, E, S and W. Some of the older Club Committee members should be able to help you there if you are in difficulty; they might know of any local variations too!

After the surface wind – look at the way the clouds are moving. You will have to observe them by reference to something stationary (a pole, or the side of a house – but not another cloud). Is the cloud element you are looking at moving at all? It may not be, but if it is, how does the wind direction at cloud level differ from that at the surface – and why? (there's a nice little theoretical subject to chase up one evening this winter!)



And what kind of cloud are you looking at? Just the basic types are all that you need to worry about.

The really important point about cloud observing is to see what the clouds can tell you about the movement of the air, particularly the vertical air movement, at their level. As you will soon know, the fundamental thing that all meteorologists and all glider pilots have in common is a basic interest in knowing where air is rising and where it is sinking. I need'nt enlarge on the gliding aspects of this, but meteorologically one can say that all "weather" results from the vertical movement of air. This, coupled with the behaviour of the atmospheric moisture, is the real basis of all met.

Let me here, briefly mention three tedious theoretical points. They are absolutely basic to any real understanding of what goes on in the atmosphere – and are in every met. text book, so I can be very brief.

(a) Pressure decreases upwards in the atmosphere.

(b) If you vary the pressure on a gas you alter its temperature. This is a most important process in the atmosphere. Temperature changes of this kind are called 'adiabatic'.

(c) Water vapour is one of the gases which make up the air of our atmosphere. It is invisible, and is only present in quite small quantities compared to other gases like oxygen, but is the substance from which all clouds, mist, rain snow, hail etc. are formed.

The amount of water vapour that may be present in the air at any moment depends a lot on its temperature. The warmer the "air", the more water vapour it can support amongst its constituent gases. And at any temperature there is an upper limit to the amount of water vapour which can be present in the air – this is the 'saturated' value. Any physical process (such as cooling, by further lifting) which tends to increase the water vapour content of air above the saturation value for its temperature leads at once to condensation of the excess water vapour into minute droplets of visible liquid water.

So in the atmosphere we have.....

Vertical Motion >	Change of pressure level >	Adiabatic temperature change >	Variation in Relative Humidity >	Weather Changes
Up >	Lower pressure >	Cooling >	Increasing to Saturation and condensation >	Clouds form
Down >	Higher pressure >	Warming >	Decreasing below Saturation Evaporation >	Clouds evaporate

.....therefore all clouds are visible evidence that upward motion is occurring, or has occurred. Remember the motions which caused a particular cloud to form may very well have ceased by the time you see the cloud. What you will be really interested in is locating those clouds in which the upward motions are still taking place, or only just beginning. For the moment, however, just familiarise yourself with the general types of cloud – particularly the Cumulus clouds.

So my main advice to you at the moment, while you are a beginner at gliding, is learn to look at the weather whenever you can. It is a habit that you should get into from the start. You will not understand all that you see just yet, but you will reap the rewards increasingly as you progress.

When you tell me you have gone solo, and survived, I will write again,

I hope this is of some use,

Your loving uncle
Peter



P.S. Try a few of these to see how you are getting on. Mind you no prizes.

1. *Point toward the north.*
2. *What is the wind direction now?*
3. *Do clouds move with the wind?*
4. *Why don't you go gliding in heavy rain?*
5. *Do you have an adiabatic heating system at home?*
6. *Cumulus clouds are formed in rising currents of air. Does this mean they gradually rise further from the ground?*

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News from the Balloon World

The men who fly the great silver balloons in service with the RAF are a unique team: all of them qualified vehicle drivers yet led by officers drawn exclusively from the Marine Branch – the RAF's own 'navy'.

Based in the West Country, at the Air Support Command station at Hullavington, Wiltshire, the balloon operators belong to the station's Operations Squadron which is currently commanded by a Squadron Leader who was at one time the Second Officer of the *Queen Mary*.

With their enormous bulk, dependence upon lighter-than air hydrogen for lift and their elephantine 'ears' the balloons look out of place in the era of the aerocrats as they demonstrate that vertical flight is nothing new in the Royal Air Force, nor is it exclusive to the jump-jet Harrier. But balloons are far from obsolete: they form a vital link in the training of Britain's armed forces because they are an essential platform for parachute training.

From the draughty gondola, suspended from the 45,000cf balloon, trainee parachutists of all Services plummet into the 800ft drop which is their first experience of a real parachute descent. Reservists, also, make their annual training jumps from balloons and each year thousands of them take the plunge.

Cost and convenience are the reasons why the balloon stays a relatively unchanging, but important, link in the chain of parachute training. It costs only £3,000 for a new balloon, and an inflation costs a further £135 - as a result the operating charges for a balloon are minimal compared with flying a Hercules transport, the main alternative parachuting spring-board. And, of course, the balloon can be taken to the parachutists if needs be – an important point in the case of the Reservists – who are then dropped within a clearly defined area rather than strewn across the countryside.

Squadron Leader Mervyn Manson, who commands the Operations Squadron, explained that the balloons are flown from heavyweight specialist vehicles of which the most important is the truck winch based on a 10–ton chassis. When the mobile flights travel to their destinations anywhere in the country, they form a considerable caravan, with three truck winches, several lorries each carrying nine tons of hydrogen cylinders, and support vehicles.

"Hence the need for the airmen to be qualified drivers," he explained. "There is no specialist trade of balloon operator and the drivers who join the squadron undergo a special eight-week qualifying course here at Hullavington.

The men sometimes find their tasks a little odd at first, but they soon come round to thinking of the balloons as aircraft. They enter into the spirit of accepting the responsibility of providing the training for a very important element of the teeth of the Armed Forces."

Many of the balloon operators also take the option open to them of undergoing training at No 1 Parachute Training School at RAF Abingdon which leads to making their own descents from the unit's balloons.

Marine officers are chosen to command the squadron because of their professional experience of weather conditions, wires and ropes, tackles and lifting procedures. Additionally, some of the older 'salts' had experience of flying seaborne barrage balloons during World War II convoys.

The squadron operates six balloon teams. Two are located on permanent detachment at Weston-on-the Green, Oxfordshire, where they provide an aerial platform for students from Abingdon, and at weekend for local units of the TAVR. Another is similarly detached to Handley Common near Farnham, Surrey, where they take part in the training of regular soldiers

(continued on Page 33)

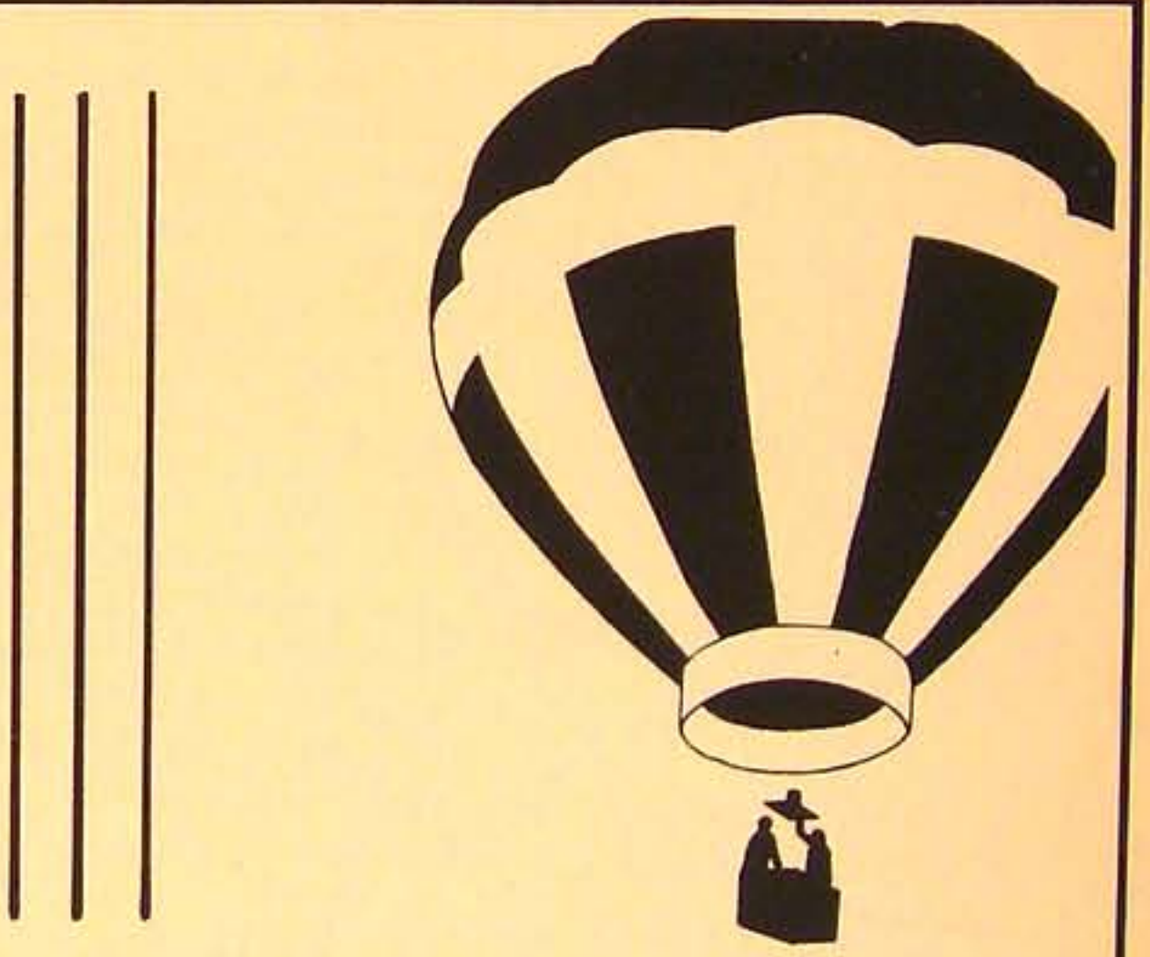
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Pilots Forum



METEOROLOGY ON THE CHEAP?

In the early 60's I had the pleasure of starting to forecast for gliding competitions. My interest started with an excellent week at Portmoak studying the lee waves over the Bishop Hill. I then went on to forecast various competitions and could not have had better tutors than Wally Wallington and Jock Findlater.

At these competitions we had the mobile met. unit, facilities for doing pilot balloons and an aircraft at our disposal to make upper air temperature ascents. In fact we had all the tools of our trade at our fingertips. All that was needed was the practical experience of satisfying the glider pilots in supplying them with the information they required — and of course getting the forecasts correct!

These facilities cost money but in return I believe the forecasts were reasonably good and quite a good reputation was made.

In the late 60's I went overseas. My interest in the type of weather forecasting for gliding remained and on my return I volunteered again to help out annually with at least one competition. Alas what a change there had been during my absence. Obviously the cost of supplying complete met. facilities was considered too high and in my opinion a period of 'met on the cheap' had arrived. Gone was the aircraft equipped for temperature reading, gone was the pilot balloon equipment and in some cases gone was the teleprinter, our main supply of information.

The deterioration in met. facilities culminated in my opinion at the recent Nationals and Daily Telegraph Euroglide competitions.

There was no teleprinter supplying upto the minute information, no aircraft equipped with temperature reading facilities, no upper wind measuring equipment and believe it or not — no specific office to work in. The only facility was a 4 mile drive to Odiham Met Office to obtain all the information. This meant a gap of far too long between the information gained at Odiham and that which should have been available at the time of briefing.

It was in fact like asking a cabinet maker to make a beautiful piece of furniture whilst only giving him a hammer and chisel.

This competition was bigger than any I had attended before and the operational tools of the forecaster were the poorest. In fact the met. facilities were more suitable for a weekend comp.

I am as keen as ever to do this type of forecasting but my plea is, give us the tools of our trade and I can vouch there will not be many complaints at the grid. Above all I enjoy the company of so many nice people and would like to continue to do so, but unless the powers that be think again about met. facilities for the major competitions, I will confine my offer of forecasting services to only small competitions.

Finally may I say that many people like myself were initially encouraged by the efforts made on our behalf to supply everything we wanted. Now I would be surprised if you manage to obtain any meteorologist to give up one or two weeks of his annual leave in order to do forecasting without proper facilities. How many new forecasters are forthcoming for these major competitions other than those talked into it by people like myself?? Very few indeed I should imagine.

Russell Johnson.
Met. Office,
RAF Station,
Wittering. 31st October 1973

Dear Sir,

I'm sorry that Mr. Purdie read innuendoes into my article on metal and glass structures, because they aren't there. An innuendo is an oblique hint or allusive remark, whereas I quoted actual occurrences, fully referenced. I tried to avoid accusations of knocking any specific types by omitting names, but they can be found in the references. I remind him that the article was a response to an earlier one which contained an unsubstantiated statement that Slingsby's had made a mistake changing to metal. (If they had stayed with it, they might by now have been taking full advantage of the currently increasing American interest in metal high performance gliders!)

The introduction of glass fibre construction coihcided with, but did not create, some notable advances in the aerodynamics of gliders. In the proper admiration for the resulting performance gains, there had been some reluctance to acknowledge that such perfection could be even slightly flawed. The highly unsatisfactory handling qualities of some earlier examples were apparently regarded as a fit challenge for pundits, until common sense prevailed, while inadequate airbakes are still with us for no good reason.

Hence a number of features, good and bad, have come to be associated with glass fibre with not a great deal of justification, yet the problem of hidden damage which is directly related to this material has gone practically unmentioned in the U.K. in public. There is less reticence in the U.S.A., which is why all my references to this problem came from there. Now one can read in the June-July 1973 "Sailplane & Gliding" an aritcle by Derek Piggott about glass gliders with the strong warning — "Judging from some of this kind of damage brought to light on C of A inspections, there may be a number of pilots flying dangerously un-serviceable machines all over the world." Hidden damage in other types of construction which is not detectable by reasonably alert but unskilled club members is uncommon enough to be the exception proving the rule.

As for trust in glue, yes, I trust wood glues (naturally!) and metal glues of the Redux type which are cured under heat and pressure. The latter have been developed since the 1940's and are reliable enough to hold civil airliners together. Cold-setting metal glues are not. Mention of the Nugget, at least the fifth glider type to use metal glue structurally, needs a description of the Laister Chem-Weld process to be relevent.

Yours sincerely,
John Gibson

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SCENE International

GREAT BRITAIN

British Nationals
The 1974 National Gliding Championships will be held from 25th May to 1st June at the London Gliding Club, Dunstable, Bedfordshire.

This will primarily be a two class unhandicapped contest, Open and Standard classes. Since the Sport/Club class of 1973 was so undersubscribed it has been decided to delete that event as a separate contest. But to cater for owners of gliders which do not fit well with either an Open or Standard grouping, (Such as SHKs, Phoebus, Open Cirrus, Dart etc), gliders of handicap 84% and above may opt to fly the Standard Class tasks. This group will be known as the Sport class, will use handicapped scores and will include the Standard Class gliders automatically who will thus be scored on two lists. Priority of entry will be from the Open/Standard class rating list, which is in preparation. Total gliders in the contest will be between 40 and 50 depending on the capacity of the site, and there will be a minimum of 15 gliders in the Open and Standard classes.

Euroglide 1974
The Daily Telegraph 'Euroglide' competition will be held from 17th – 26th August at the Bristol and Gloucester Gliding Club, Nympsfield.

This contest will be similar to Euroglide 1973, where about 20 European pilots will be invited to fly and will be subsidised by the Daily Telegraph. There will be 25 places for UK pilots, priority being from the Open/Standard class rating list. For 1975 rating, Euroglide will have equal status as the Nationals. If pilots wish, they may fly in both Nationals AND Euroglide. The general idea of Euroglide is to produce a contest similar in character to the well proven Hahnweide and Angers events on the continent.

22 metre Kestrel
The first official whisperings have reached our ears that Slingsby's are going ahead with preparations for producing a 22 metre wingspan Kestrel. This "stretched" version of the 19 metre model being scheduled to make its first flight in April this year.

Club Libelle
The prototype Club Libelle which is now flying successfully in Germany may also be produced by Slingsby's in the near future, although, at this stage negotiations are not yet complete with Glasflugel.

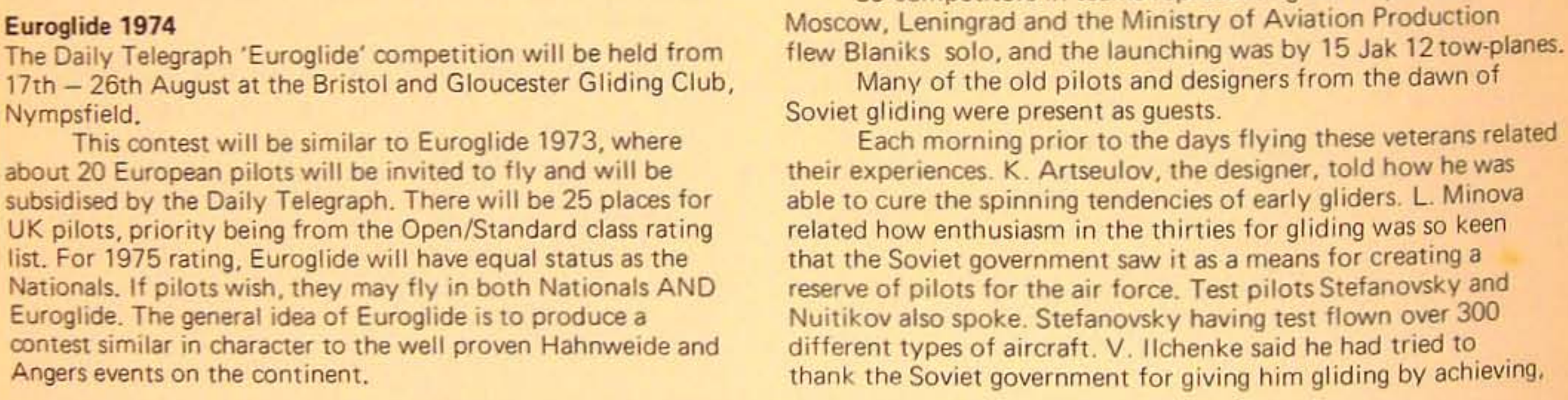
Designed to replace the K–6 and K–8 type gliders this machine should find a ready niche in the Pirat, Pilatus, Consort market. Price is expected to be in the region of £3,800 – £4,000.

U.S.S.R.
50 years of Soviet gliding was celebrated at the 35th National Jubilee Contest held at Oriel in August, 1973.

39 competitors in teams representing the Republics, Moscow, Leningrad and the Ministry of Aviation Production flew Blaniks solo, and the launching was by 15 Jak 12 tow-planes.

Many of the old pilots and designers from the dawn of Soviet gliding were present as guests.

Each morning prior to the days flying these veterans related their experiences. K. Artseulov, the designer, told how he was able to cure the spinning tendencies of early gliders. L. Minova related how enthusiasm in the thirties for gliding was so keen that the Soviet government saw it as a means for creating a reserve of pilots for the air force. Test pilots Stefanovsky and Nuitikov also spoke. Stefanovsky having test flown over 300 different types of aircraft. V. Ilchenke said he had tried to thank the Soviet government for giving him gliding by achieving.



The Club Libelle prototype

between 1935 and 1964, 15 National records, of which 8 were World records. For his two-seater distance record flight of 830 kms. in 1953, the FAI awarded him the Lilienthal medal. He hoped that he would not be the last of the Soviet pilots to achieve these performances. Further interesting tales were echoed by G. Malinovsky, he told how during the war he had flown troop carrying gliders and had fought for a whole year among the White Russian partisans. And so the reminiscences went on with the final day being occupied by Olga Klepikova, whose World distance record of 749 km. set up 34 years ago was still, despite many attempts, unbeaten.

Six days were flown during the contest and for the first time in National competitions men and women pilots were despatched separately and on different tasks.

Results

Men. 1st. Y. Kuznietsov — 2916 points
2nd. A. Boldin — 2709 points
3rd. Y. Rudyensky — 2686 points

Women
1st. T. Zagainova — 1875 points
2nd. M. Afriacanova — 1686 points
3rd. Eda Laan — 1525 points

Teams. 1st Moscow — 7003 points
2nd. Central Russian Federation — 6839 points
3rd. Lithuania — 6521 points

Translated from "Knilya Rodiny" by Chris Wills

SWEDEN



A confident Swedish Team for Waikerie.
Left to Right: Goran Ax, Pentti Ljunggren (Team Manager), Goran Andersson, Ake Pettersson.

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RHODESIA

Biggs wins again

Tim Biggs, flying his Nimbus ZS–TIM, won the Rhodesian open gliding championships last month for the second year in succession. Of the 12 events flown, he won 11 to amass a total score of 11 888 out of a possible 12 000. The championships, held from Warren Hills, Salisbury, ended on October 19. Ted Pearson of Rhodesia, was second, with 8803 points and Barry Turner, of Rhodesia, third with 8786 points.

The standard class championships went to Pearson, with 10 302 points. Second was Brian Bradley, of Britain, with 9 580 points and third was Jack Hartley, of South Africa, with 9 498 points.

The tasks flown were: 210-kilometre out-and-return Warren - Chigwell - Warren; 301-km triangle Warren - Sinoia - Chigwell - Warren; 301-km triangle Warren-Gadzema - Umvukwees - Warren; 301-km triangle Warren - Chigwell - Sinoia - Warren; 101-km triangle Warren - Tatagura - Wellesley - Warren; 512-km triangle Warren - Chatsworth - Umniati - Warren; 301-km triangle Warren - Chigwell - Sinoia - Warren; 500-km triangle Warren - Chartsworth - Umniati - Warren; 103-km triangle Warren - Lyddiate - Inkomo - Warren; 154-km out-and-return Warren - Banket - Warren; 102-km triangle Warren - Jumbo - Inkomo - Warren; 101-km triangle Warren - Tatagura - Wellesley - Warren.

A novelty feature was a sports event flown by 14 pilots in seven gliders, pilots alternating each day, sometimes flying the task and sometimes a shorter distance. This was won by John McGeorge (Ka6), with Harvey Quail second (Dart 15) and Mike McGeorge third (Ka6).

(Continued from Page 30)

of 16 Parachute Brigade as well as the TAVR units in the area.

At Hullavington one team operates balloons for the basic training of operators, and any special trials which may be found necessary. Two mobile teams are also based there and the range of their operations is nationwide literally from Land's End to John O'Groats, as required by HQ Para (V) Brigade for TAVR training.

The extent of the squadron's contribution to parachuting can be assessed by the fact that more than 11,000 descents were made from balloons during 1971.

Within the squadron the Parachute Collection and Distribution Flight makes sure that parachutes which are packed at Hullavington reach their destinations. Last year some 50,000 were distributed to balloon sites and airfields throughout the country.

(Continued from Page 7)

Conclusion

Without any shadow of doubt the Tandem-Falke is an excellent motor-glider and many eyes will be watching, with great interest, the progress of Claude Woodhouse and his team of instructors at the Coventry club.

Whether the SF-28A will find a ready market in the U.K. is debatable. During these economically difficult times the interest in the purchase of new motor-gliders is bound to be limited. Clubs that already fly motor-gliders may feel this is not the time to consider changing aircraft while others may decide that motor-gliders could be the answer to the fuel problem.

However, it is unlikely that a club which has decided to buy a new motor-glider will find anything more suitable than the SF-28A — which to date is far superior than any other machine of its type on the European market.

With the introduction of motor-gliders a few years ago, the expected rush to buy did not materialise, many reasons for this were put forward, ranging from the lack of enthusiasm to the limitations of the machines. These inhibitions now seem to have been conquered and motor-gliders are an accepted way of gliding life.

The cost of the SF-28A may seem prohibitive (around £7000) to most clubs — but will it be high tomorrow when one bears in mind devaluation, inflation and general rising prices? We feel those clubs who decide to buy an SF-28A will have bought more than a motor-glider — they will have made a sound financial investment.

Book Reviews

"PILOTS WEATHER" by Ann Welch, published by John Murray, Price £4.25

A new book by Ann Welch is an event to look forward to. This one is not entirely new in concept, being distantly related to the author's "Cloud reading for Pilots". But since this venerable ancestor was first published, 30 years ago, a great store of wisdom and new experience has been accumulated and is now the subject of this new publication.

The book is addressed to all who fly small aeroplanes. While this obviously includes glider pilots, its scope is wider than it would need to be if it only dealt with soaring weather. The text is balanced fairly evenly between the powered and the soaring interests, though each will find that some parts of the book are not directly relevant to them. For example, a simple British glider pilot may be somewhat surprised to find a satellite cloud picture of a Caribbean hurricane as the frontispiece. But this is not a book for anyone with small horizons.

The text is in four parts. The first two (relevant to all pilots) are on basic met: topics including some theory, some practical cloud recognition and some weather chart interpretation. Part 3 is on soaring weather (thermals, Cu, Cb, streets, waves), while Part 4, entitled "Flying out of trouble" is mainly, but not wholly, for powered pilots. In this last part the author's deep concern for safety in the air shows very clearly; it is beautifully written. Indeed the presentation is excellent throughout. There are a mass of visual aids. At a quick check I counted some 143 black-and-white cloud photos (only a few of which are sub-standard), 55 weather charts and 52 other diagrams.

So what is the real purpose of the book? Well, let it be said first that it is not a text-book of meteorology. It does in fact cover most of the ground, but there are a few topics (such as airframe icing, and the variation of wind with height) which need a somewhat fuller treatment. There are also some places where the met: men will wince, if not over an outright error, at least over some mis–leading or tendentious generalisation. But to judge it on these grounds would be wrong. For it is an intensely personal book in which the author is not trying to teach babes their ABC; rather, this is secondary education for pilots who already have had some met: instruction and some flying experience. In her own fluent style, and with some delightful, interpolated, excerpts from other sources she shows what the classroom mumbo-jumbo of meteorology is all about from the viewpoint where it matters most – the pilot's seat. If, in her enthusiasm, a few tiny meteorological bricklets gets dropped, this will matter little if the main message gets across – that Pilots' Weather is that stuff outside the window, in which ordinary people can fly in perfect safety and with knowledgeable enjoyment if they only develop a feeling for their element based on just a little theory, lots of observation, and a generous measure of that sensible judgement which can discern when the best place for an aircraft to be is inside its hangar.

Is it really worth £4.25? It does seem a high price, though I don't suppose it will in 5 years time. But if you cannot afford it yourself, do try and get someone to give it you. You will need your own copy, for it is not so much a Manual, more a Companion or a jealously guarded Bedside Book, which could be rather difficult to borrow.

P.G. Wickham

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What is there to say about the 1974 Soaring Society of America calendar that has not been said before? Made up of 15 full colour plates depicting various static and in-flight sailplanes and motor-gliders, this offering makes a worthy addition to the home or office of the gliding addict, in fact I would go as far as to describe this beautifully produced piece of artwork as being on a par with the much vaunted and sought after Pirelli masterpiece.

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