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June — July 1968

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Associate Editor and Production Manager: Rika Harwood

Magazine Assistant: Nicky Stothard — Club News Editor: Yvonne Bonham

Advertisement Manager: Peggy Mieville

Committee: Philip Wills Chairman, G. Harwood, M. Bird, G. Locke

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Cover photograph: The T-53 flown by Derek Piggott over the Yorkshire countryside. Photograph by Laurence Hill.

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JAMES E. YATES III, of Chula Vista, California, is claiming a new world distance record. On 15th April he flew a Schweizer 2-32 two-seater (flying solo) from the Diamond C Soaring Ranch, a few miles north of Boulevard, California, which is about 50 miles east of San Diego, near the Mexican border, to Culberson County Airport, Texas. The elapsed time was very close to 10 hours, giving an average ground speed of approximately 109 km/h.

Anticipating good weather for this date, preparations were made the night before for an early start. Take-off was shortly after 7 a.m. by aerotow. Release was made a few miles east of the airport, about 1,000 ft. above 4,647-foot-high Mt. Tule, where weak wave lift was encountered. The wave was dying but permitted a long, slow climb to 19,800 ft. From that altitude a downwind glide to the east carried the pilot across the Imperial Valley to beyond Yuma, Arizona.

The lower air was quite unstable on this day and was producing dry thermals by the time he descended to 7,000 ft. between Yuma and Gila Bend. From there on, the rest of the flight was carried out in thermals. Steady tailwinds of about 15 knots prevailed throughout the day, and cumulus clouds developed later in Arizona with bases at 9,500 ft. a.s.l. near Mt. Lemmon just north of Tucson.

With cloudbase rising further and the clouds being fairly close together, he was able occasionally to fly straight and level, slowing up in lift to regain altitude lost whilst cruising at 193 km/h. between them. Some thermals he did stop to circle in pegged his 1,000 f.p.m. vario. (10 knots). His ground speed for the 193 km. between Mt. Lemmon and Lordsburg, New Mexico, averaged 152 km/h. Some overcast east of Lordsburg near Deming weakened the lift to the point where he turned back to near Lordsburg before heading south toward



the border to get by the overcast. Cloud streets to the east were subsequently reached, enabling good progress again to the north end of the Franklin Mountains north of El Paso.

Good altitude was in hand at El Paso, which he had declared as a goal for a new 940 km. world goal record, but he decided to overfly it. Lift got weaker after that, and he got lower as he progressed, working choppy thermals and zero sink. He was quite low over the highway between Sierra Blanca and Van Horn, Texas, but hung on to weak lift and let the wind drift him over the hills west of Van Horn, which he cleared by 200 ft. Some zero sink over the town enabled him to reach Culberson County

airport, three miles east, where he landed at about 5.20 p.m. (Pacific Standard Time), some 15 minutes before sunset.

So ended the second flight in soaring history to exceed 1,000 km., the first being Alvin Parker's current record flight made on 31st July, 1964, from Odessa, Texas, to Kimball, Nebraska.

James Yates, 32, is a contract computer programmer by profession, and manager of the soaring schools operated by Otay Aircraft Corp., at Brown Field, Chula Vista, and at Diamond C Soaring Ranch, California.

The above flight is, of course, subject to homologation by the SSA and FAI (Distances and speeds given are approximate figures.)

MORE ABOUT VARIOMETERS

By E. DOMMISSE

The Zero Reading Electric Variometer with Electrical Compensation.

The Conventional Vario in Use

The conventional vario reads what the sailplane is doing. If we fly at minimum speed of, say, 70 km./hr., and the vario reads 1 m./sec. UP, then we are climbing at this rate. Naturally, if we increase speed the vario will read less UP or even DOWN as the sink increases with this increase of speed.

In a glide, the sailplane will lose height at a rate related to the glide speed. If, because of the average rate of climb, our best inter-thermal glide speed is 120 km./hr., the sailplane will sink at, say, 0.08 m./sec. This is in still air. If we glide through air which is sinking at 1 m./sec., the vario will read $0.85 + 1 = 1.85$ km./hr. Our best speed at which to glide now becomes, say, 140 km./hr. But at 140 km./hr. the sailplane sinks at, say, 1.2 m./sec. and the vario will now read 2.2 m./sec. DOWN. If sink now increases and the vario reads 4 m./sec. DOWN, the pilot has to fly at, say, 200 km./hr. This results in a further increase of DOWN reading on the vario, and the pilot might become somewhat confused. He must keep on remembering

that his best glide speed is still only 120 km./hr. He would hardly know for certain whether he should persist in increasing speed or what the really best speed should now be. If at 200 km./hr. the vario, instead of reading 3.25 m./sec. DOWN, which is the rate of sink in still air for this speed, reads 1 m./sec. DOWN, the sailplane is flying through rising air of 2.25 m./sec. If the pilot now reduces speed to 70 km./hr., the sailplane will sink at only 0.7 m./sec. and the sailplane will gain height at $2.25 - 0.7 = 1.55$ m./sec.

We probably all know these little shortcomings of our variometers, and the constant mental calculation and thinking which we must do to interpret this instrument. Let us now investigate a zero reading variometer.

The Zero Reading Variometer

In a glide with loss of altitude, air is constantly flowing into capacity through the vario. Suppose we now leak air from a pitot source into capacity at the same rate that it wants to flow in due to loss of height resulting from the rela-

tive glide speed. The vario will read zero *in still air*. To do this mechanically through a small jet is most complicated if we also consider that the rate of flow must be related to the polar curve of the sailplane in which the unit is used and must be capable of exact calibration for all speeds for that particular sailplane.

My suggestion, perhaps in ignorance, is that the matter can be more easily solved electrically.

For the BS-1 the electric compensator for sink given to an electric variometer would be for sink as against speed according to the following table:

m./sec.	km./hr.
<i>Sink</i>	<i>IAS</i>
0.700	70
0.550	80
0.560	90
0.630	100
0.700	110
0.750	120
1.000	130
1.200	140
1.450	150
1.700	160
2.000	170
2.300	180
2.750	190
3.150	200
3.600	210
4.100	220
4.600	230
5.300	240
5.900	250

On an electric vario, the current flow must be found and measured for each indication of UP or DOWN reading.

A speed sensor is then made to give the same and exactly opposite current for each increment of speed corresponding to the rate of sink for that speed as per the above table.

These two opposing currents will keep the reading of the vario on zero for all speeds and corresponding rates of sink providing it occurs in *still air*.

If the air is rising or descending, this rate of UP or DOWN will over-ride the zero reading on the vario and the reading will be a correct reading of what the *air* is doing.

If we now fly with this instrument in still air at 110 km./hr., the sailplane will actually sink at 0.7 m./sec., but the vario will read zero. If the air is rising at 0.5 m./sec., the vario will read 0.5



m./sec. UP. It must now be remembered by the pilot that the sailplane is not climbing at 0.5 m./sec. but flying at a reduced rate of sink of $0.7 - 0.5 = 0.2$ m./sec. DOWN at 110 km./hr. If the speed had been 140 km./hr. the vario will still read 0.5 m./sec. UP but the sailplane will be sinking at $1.200 - 0.5 = 0.70$ m./sec., etc.

The dial of the vario must now be coloured red below 0.550 m./sec. UP and green above this. The pilot then knows that if the needle is in the red, the sailplane will still be sinking, and that if the needle is in the green, the sailplane will be climbing *providing* he flies at minimum speed, and that the rate of climb is always that indicated minus the rate of sink of the sailplane related to its speed. When climbing in a thermal, this speed will always be the minimum between 70 and 90 km./hr. for which the average rate of sink is, say, 0.6 m./sec. If now the vario reads 2 m./sec. UP while the pilot circles at about 80 km./hr., the rate of climb of the sailplane would be about 1.4 m./sec.

It is not possible to theorise on the best dial presentation or means of overcoming this discrepancy before an actual instrument is in use. There are various means that suggest themselves; for the time being, two instruments can always be used, the second one being a vario which shows the actual rate of climb or descent of the sailplane.

On an Inter-thermal Glide

The best inter-thermal glide-speed depends on the rate of climb achieved. Thus, for an achieved rate of climb of 2 m./sec., the best glide speed would be 125 km./hr. in still air.

At 125 km./hr. in still air, the vario will read zero. If the air descends at 2 m./sec., this will show as a DOWN reading of 2 m./sec. Against this DOWN reading, a scale can be set which gives the best speed for such a DOWN. Let this speed be 170 km./hr.

If the vario reads 2 m./sec. DOWN, the pilot increases speed to 170 km./hr. The vario reading will remain at 2 m./sec. DOWN regardless of this change in speed for as long as the air is descending at 2 m./sec. Therefore, now, as the vario reading changes, the pilot can change to the best corresponding speed without having to "chase" the vario reading. As soon as the vario reads above zero or goes into the green, speed is reduced, and as the reading goes down into the red, speed is increased. The pilot has no calculation to do and very little mental arithmetic or reasoning, especially if he flies with a second conventional vario and uses this in conjunction with the zero reading vario.

To make a Zero Reading Variometer

It would be possible to make a mechanical device. The greatest problem here is to make a bleed valve which would metre the correct leak of air to the vario to keep the reading zero at all speeds. To make a bleed valve that will keep a vario at a zero reading for one speed is fairly easy.

It might be far more easy to do the job electrically. The first requirement is to find the current required for each reading on the electric variometer. This, I take it, will be a linear scale in milliamps.

It is now required to make a speed-sensor. In essence this would be an ordinary air-speed capsule and linkage. A means must now be found to make and incorporate with this an electric circuit which will give an electric current equal to and opposite to that of the electric variometer for each increment of speed. If the sailplane to which this is to be fitted sinks at 0.7 m./sec. at 70 km./hr., then the current required to give a reading of 0.7 m./sec. on the variometer must be found and the speed sensor must counteract this current exactly. In the same way the current for each rate of sink against the corresponding speed of the sailplane, according to

the polar curve of the sailplane, must be obtained from the speed sensor.

If some means can be found to vary or adjust this current through the various stages of the range of the speed sensor, then the unit would be perfect and it could be calibrated exactly against the vario and be adjusted for sailplanes with different polar curves.

An Electric Total Energy Device

As described elsewhere, it is pointed out that the existing mechanical types of total energy compensators do not work too well. On the first practical flying tests it might be an advantage to use an ordinary compensator on the zero reading vario to see first how successfully the instrument works; if this works well, the next step would be to try and build an electric total energy.

This would be essentially the same as the speed sensor, but now the unit should react to rate of change of speed. The greater the rate of change of speed, the greater the current generated to compensate the electric vario, and if the speed is constant, no current must flow.

The amount of current would, perhaps, be a difficulty. In practice, the compensator causes the vario to give exactly half the reading which it gives without compensation. Thus, if the vario reads, for the duration and intensity of a change of speed, an average of 5 m./sec., the compensated vario will give a reading of only $2\frac{1}{2}$ m./sec. for the duration of the rate of change of speed.

The simplest solution here would perhaps be to make the compensator so that it would generate at least half the current required by the extreme requirements of the vario and supply a means to amplify or reduce this current in a simple manner. Hereafter, the complete unit can be easily calibrated.

Conclusion

Let us now compare one further difference in the reaction of the two types of compensated varios:

In the conventional type, if a pull-up is made from high-speed flight into exactly horizontal flight, the speed will fall off but altitude will remain constant. The compensator will cause the vario to give an ever-diminishing DOWN

reading. If a thermal of slightly rising air is traversed during this operation, the vario will merely read less DOWN, which must be interpreted by the pilot to be an actual UP reading. In short, the compensated vario is, in this case, incorrect and the pilot would do better with an uncompensated vario for this particular case. The difficulty is that it is very difficult to hold, or to know that an exactly level flight pull-up is being made.

With the zero reading vario, the fact that level flight is being maintained will mean that the vario will read zero, but because speed is falling off the speed sensor will force it to read UP. At the same time, the compensator, also because speed is falling off, will force the vario to read DOWN. In a correctly calibrated vario the reading as a consequence will be zero on the vario for a level flight pull-up from high speed. It is now of little importance if this pull-up is level or not; if the air has vertical movement, the zero reading variometer will show the exact strength of this vertical movement of the air.

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LONDON AIR CENTRE

H. R.H. The Duke of Edinburgh has consented to be the first President of a Trust to establish an Air Centre which would house, in London, various voluntary organisations concerned with British aviation. The plan for this project is now actively pursued by the Council of Trustees of the Air Centre.

The Duke of Edinburgh is Grand Master of the Guild of Air Pilots and Navigators and Patron of the Air League.

The scheme has become possible through the generosity of Mr. Geoffrey Edwards, a 48-year-old former RAF Officer and an ex-test pilot, who has established a Trust with an initial capital of £100,000, for the purchase or endowment of an Air Centre in which the two primary occupants would be the Guild of Air Pilots and Air Navigators and the Air League.

A Council of Trustees to administer the fund and consider ways and means of increasing it, has been set up under the Chairmanship of Dr. Kenneth G. Bergin, past Master of the Guild of Air Pilots and Air Navigators and a former Vice-Chairman of the Air League. The other members of the Council are Marshal of the Royal Air Force Sir Dermot Boyle, Mr. C. Farndell (Master of the Guild of Air Pilots and Air Navigators), Sir Archibald Hope (Chairman of the Air League), Mr. W. A. H. Kahn (British Gliding Association), Sir Basil Smallpeice and Mr. R. A. Smith (Chairman of the British Light Aviation Centre).

The donor states that his idea "is to lay the financial foundation stone of an Air Centre which could house those flying organisations which are in need of accommodation and will benefit from close association and saving of overheads".

He adds: "The two initial beneficiaries as far as my donation is concerned are the Guild of Air Pilots and Air Navigators and the Air League in the sum of £50,000 each; any further funds which are forthcoming will, of course, be available for the project as a whole, which, in my opinion, can be for the general benefit of all organisations using it."

EARLY MOTORISATIONS

PPETER RIEDEL, one of the early soaring pioneers, now with Pan American Airways at Karachi, brings reminiscences from the year 1936 of two early motorised sailplanes in which the motor was perched in the open high above the centre-section and worked a pusher airscrew.

First, the Drone, developed by Robert Kronfeld from a motorised version of C. H. Lowe-Wylde's BAC-VII of 1932. Peter Riedel writes:

"It shows Lord Sempill (then still the Master of Sempill) just after his landing on Berlin-Tempelhof airport on 3rd April, 1936. In the picture are shown from left to right: a beautiful English girl friend of mine; myself; a Lufthansa Captain whose name I forget; and Lord Sempill."

This was the termination of a flight by the late Lord Sempill all the way from England. He had to cross the Channel against a strong wind, so flew as low as he dared over the waves. He related afterwards that he was so close above them that the Drone rose and fell in the vertical currents as each wave passed underneath.

The photograph was taken by the late Hans Schaller.

The other photo, showing a motorised Condor, was sent from Berlin by Walter Exner, formerly of the London Gliding Club, who became agent for it and said the selling price was RM 2,715 to British buyers (from memory, this would be about £200: Germany operated an export subsidy at that time). It was published in *THE SAILPLANE & GLIDER* for April, 1936.

The unusual feature of this machine was that the engine was designed for quick installation and removal in an alleged time of 20 minutes, being attached by only four bolts. The idea was that, after a cross-country flight, the retrieving team would bring along the motor instead of a trailer, and the pilot would fly back to the competition site early next morning.

Since this machine never got into the news again, we wrote to Peter Riedel recently to ask whether the scheme really worked. He replies:

"Yes, your question is justified. My motorised Condor (18 h.p. Kroeber motor, 2 cyl., 2 cycle) never was used the way I had originally planned to do. To install the motor took much longer than I had foreseen. Also the fuel supply was too limited, since we never took time





to develop a system of storing the bulk of the fuel inside of the fuselage and pumping it up for replenishing the small gravity feeding tank above the engine. The basic idea was not bad, but it would have required much effort in improving it and simplifying the installing and removing operations. Being busy with airline flying (and girl friends), I just

never found time to do this. So the motor soon was stored away somewhere and I used the Condor just as a normal soaring plane only. Late in 1936 I left Germany for a new airline job in Colombia, South America, and that was the end of all such experimental activities for me."

A. E. S.



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FLYING THE T-53

By DEREK PIGGOTT

NO one would say that the T-53 is beautiful, but it does have a look of purpose and character which seems more acceptable with familiarity. Anyway, it seems likely to become a common sight at gliding clubs and schools for many years to come.

Since the original prototype flew, early in 1967, almost everything except the outline shape has been revised for ease of construction and saving in weight.

The production prototype has completed its test programme and has been handed over to the Air Training Corps for their evaluation trials. It is hoped that they will find it suitable for their training scheme and that eventually it will replace all the other types of glider in use for Cadet training.

The T-53 was designed to meet the need for an easily maintained, all-metal two-seater trainer suitable for initial and advanced training.

The ATC version is fitted with a nose skid in place of a nose wheel, and has a special fixed forward portion of the canopy to allow operating with the main canopy removed. Normally, the forward canopy will be in one piece eliminating the join which can be seen in the photograph (see front cover).

The T-53 has all the good features required of a modern, tandem two-seater trainer. Apart from cost, it has only one real competitor in Europe. Most of the other two-seaters can be criticised for heavy ground handling, or for not providing handling characteristics and air brakes similar to the solo machines in common use. Many of them are also cramped and uncomfortable, and some are difficult and expensive to maintain.

The new T-53 has ailerons of reduced chord and a conventional tailplane and elevator in place of the all-moving tail on the original. Reducing the chord of the ailerons has improved the previously rather high stick forces without detriment to the rate of roll. Changing from 45° bank to 45° bank now takes less than 4 seconds, yet once in the turn the T-53 is very stable and will circle hands off.

The change of tailplane design and the adoption of a spring trimmer in place of the usual tab result in major savings in weight compared with the all-moving tail, and are not because of any problems on the first aircraft. Weight saving in the tail is doubly valuable as it enables the minimum cockpit load for solo flying to be reduced. The minimum cockpit load is now only 130 lb. (i.e., a 110 lb. pilot plus parachute) and any variation of front pilot weight and instructor's weight below the maximum total is acceptable.

The general flying is absolutely straightforward. The stall is very docile, with a clear warning buffet starting at about 37 kt. At the Maximum All Up Weight of 1,130 lb., the stall occurs at 34 kt. (R.A.S.). Normally the stall is straight, but the aileron and rudder are both effective during the stall and will control any tendency for the wing to drop.

The spin recovery is good and even after five turns it takes only half to three-quarters of a turn to stop the spin.

A major improvement has been mounting the air brakes into separate



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slots in the top and bottom surface of the wing. This prevents the usual air leakage through from the bottom surface which is a serious cause of loss on many gliders. It also helps to improve the feel of the air brakes and prevents snatching when they are opened at high speed.

Time alone will show whether the nose wheel arrangement is here to stay. The limited experience on the Peak 100 and the first T-53 showed, I believe, that it promises to be more satisfactory than a skid and far less liable to damage. The sprung main wheel is now a "must" for any modern two-seater since it makes the roughest ground bearable for the instructor sitting almost on top of the wheel. After landing the T-53 on the factory field for the first time, I could not help wondering how I had survived some 20,000 landings in other gliders without complaint.

My only regret is that this is a tandem two-seater instead of side-by-side. This is not because of any change of policy on the part of Slingsby's or the BGA but the ATC were only interested in a tandem machine and therefore tandem it had to be.

* * *

Construction Methods

Many people will want to know why Slingsby's have chosen to make all-metal gliders instead of from wood or glass-fibre. Comparing wood, metal and glass-fibre structures highlights both the manufacturers' problems and those facing the gliding movement of the future.

Wood: Wood is probably least expensive for prototype construction, requires very little expensive jiggling for production, but involves a large amount of skilled labour for assembly. (For example, 1,500-3,000 hr. for a typical single-seater.)

Greatly in its favour is its ease of repair and the very localised damage caused in even a serious accident. A wooden glider is seldom a write-off and, if well cared for, will have an almost indefinite life.

From the manufacturer's point of view, however, with the very big proportion of the cost being labour, the cost of production keeps rising and there is little hope of keeping the price down.

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Glass-fibre: No one who has examined the latest glass-fibre gliders would dispute that this material enables better shapes and finish than any other. However, it is not a cheap material, nor can it be used for aircraft structures by unskilled or semi-skilled workers.

The life of a glider only begins when it leaves the factory, and if it is difficult or expensive to repair, the insurance rates will soon be adjusted or loaded to cover the extra cost.

Both construction and repair are an extremely skilled business if local, extra strong or stiff areas are to be avoided. It is relatively easy to fill up damage with glass-fibre, but perfect adhesion and careful matching of the material is essential if the repair is to restore a wing, for example, to its original strength.

The hazard of unskilled repairs can be imagined. Even accepting the expense of sending the damaged component back to the manufacturers for repair, there is, unfortunately, the very real prospect that they may have ceased glider production in favour of motor cars or some other commodity. The last issue of S. & G. lists more than 15 new high performance machines, most of which must have cost at least £10,000 for the prototype and tooling. How many of these firms can hope to sell enough to cover these costs?

Metal: Although metal construction involves the expenses of press tools, the man hours involved in assembling production machines are considerably lower than for wooden gliders. Thus the cost of production is not so sensitive to fluctuations in the costs of labour.

Many minor repairs are both cheaper

and quicker with metal than with wooden construction. Major repairs will obviously cost more, but are not out of the question for a competent metal enthusiast. With the present generation of designs, elaborate jigging is not essential and therefore they may prove economic to repair for many years to come.

Metal construction is far less vulnerable to the effects of an extreme climate, particularly if a proper anti-corrosion treatment has been used during assembly. (Special care is being taken with anti-corrosion measures on the T-53 and HP-14.) Since the majority of light aircraft all over the world are of metal

construction, repair and servicing can be carried out at any local flying club, rather than requiring 'specialist glider repairers.'

Summing up, it looks as though for sheer economy of major repairs, the wooden glider will remain superior. Metal offers an attractive alternative, being less prone to minor damage, and easier and less critical to repair than glass fibre. It should also prove less expensive to produce in quantity. Only further experience will show whether any particular method of construction is best suited to the needs of the gliding movement.

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MORE ABOUT THE DIAMANT 18

By DENIS BURNS

DURING a brief stay in Switzerland, together with Frank Holoubek of the RAE, as guests of the executive director of the Flug und Fahrzeug A.G., Dr. Caroni, Anne and I had the opportunity of flying this very advanced sailplane at Altenrhein aerodrome.

The Diamant really is an all glass-fibre sailplane, in that every part of it, control surfaces, flaps, etc., are all made of that material, including the main wing spar, the only other material being the metal of the anchorages necessary for the various mechanisms and sundry end fittings for the spars, etc. A sailplane like the Cirrus, for example, has quite a few sections of wood fillets joining parts of the metal work to the glass-fibre. This has been firmly eschewed in the Diamant.

The fuselage and overall layout is virtually the same as in the smaller sailplane, shown us by René Comte at our last Nationals, in that the original "push-pull-and-twist" sidelever has been dispensed with and one flies the machine in the conventional manner with a central floor-mounted control column.

There is no provision for parachute arrested landings as the dive brakes are considered adequate, as indeed they are in my opinion.

A major novel feature is the flaps which are capable of being adjusted for negative incidence for high speed flight, somewhat depressed for thermal circling and fully down for approach and landing.

The flap operating mechanism is a lever and notched quadrant affair, with each position marked with a specific airspeed as well as the flap angle (positive or negative) as an aid to the pilot in selecting the optimum setting.

On the day Anne and I flew the 18-metre the weather was pretty foul, with virtually nil horizon and visibility about 1 mile horizontally. It speaks well for the handling, therefore, that despite the extremely supine flying position, neither of us had any grave misgivings, except perhaps a little on tow when the tendency to get too low (in order to keep

the towplane in full view) has firmly to be resisted.

Let it be said from the start that the lightness of the controls on the 18-metre version are a revelation and this applies especially to the flap mechanism. I have a long remembered vision of struggling with the flap mechanism of the BJ-2 in South Africa, finding the flaps virtually immovable at any speed over 50 kt. On the Diamant one can move them in an instant with the greatest ease to any position for speeds up to 80 kt. at any rate.

I suppose this is what one can expect of the Swiss who have a tradition for high quality precision mechanisms. The undercarriage, too, is a sheer delight as one can whistle it up and down with one hand with the greatest of ease.

The only criticism I would offer is that the fuselage, being extremely slim, and the flying position being fairly supine, one feels a little restricted and on a long

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flight might get claustrophobic. However, this may only apply to the over 50, over 13 stone and over 6 foot brigade. For the young, slim, budding pilot of the future all would be well no doubt. In other words, I would judge it an aircraft that a John Williamson might thoroughly approve of, but a Heinz Huth or a Philip Wills might not like for long flights.

Despite this it is extremely easy to fly in circling flight and is no trouble at all to land, as one merely notches on full flap down for the approach and flare, using the dive brakes to adjust the descent in the normal manner.

There is a wheelbrake lever also, which is easy to operate, but how long the brake shoes would last if this were used indiscriminately I do not know.

Performance-wise it is difficult to comment except that, as with other modern superships the glide angle looks phenomenally flat right up to 90 kt. or so.

It is very much a connoisseur's glider and for such constructional excellence one has to pay a stiffish price of slightly over £3,000 now that the £ has been devalued. However, I would still say that

it might qualify as a "best buy" even at this price, because one certainly gets a beautifully engineered job.

This is to be expected as the Diamant is unique in being the only glider that has been designed and made by a major aircraft construction company (apart from the Phoebus, made by Bolkow).

After the flying we had a look around the construction bays at Altenrhein and were suitably impressed by the Swiss efficiency exhibited. Enduring impressions remain of a main spar under construction of, what appeared to my ignorant eye, an almost unbelievable fragility and of a canopy "open and parked" mechanism that only the Swiss could construct for the price.

It remains for us to say how pleased we were to meet Dr. Caroni and how much we enjoyed his hospitality. Especially, also, we enjoyed the company and discussions with Paul Spalinger, the FFA Technical Director, and Herr Dubener, the designer in charge of Diamant operations.

Altenrhein certainly has reason to be proud of its Diamant.

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74

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DURING the summer period until September, the club is only open Tuesdays, Wednesdays and Thursdays, 6 p.m.-11 p.m. Wednesday remains the club night with a lecture or film show on the first Wednesday in the month. However, that does not mean that there will be nothing arranged on the other Wednesdays as several of our other member organisations, including the Tiger Club and Art Society, are going to hold their Open Evenings on Wednesdays in the future.

The Lecture Room has now been let to a commercial organisation during the daytime which should put us on a steady financial basis.

Visitors to London are always welcome whether they be from the country

or overseas. Membership rates are still £2 annually; country or overseas, £1.
Y.C.B.

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June 5 "Why Fly", by Ian Scott-Hill, Traffic Manager, BEA.

July 3 "Concorde and Others", by Geoffrey Quill of BAC and Spitfire fame.

Aug. 7 The 1968 World Gliding Championships — the British Team reports with slides and film.

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WORLD CHAMPIONSHIPS

46 ENTRIES OPEN CLASS

Comp. No.	Pilot				Country				Sailplane
1	Rudolf Hossinger	..	..	..	Argentina	..	..	..	Phoebus 17
2	Luis Urbancic	..	..	..	Argentina	..	..	..	HP-14
3	Malcolm Jinks	..	..	..	Australia	..	..	..	Diamant 18
4	John Rowe	..	..	..	Australia	..	..	..	Kestrel
5	Harro Wödl	..	..	..	Austria	..	..	..	BS-1b
6	Alf Schubert	..	..	..	Austria	..	..	..	BS-1b
7	André Litt	..	..	..	Belgium	..	..	..
8	Bert Zegels	..	..	..	Belgium	..	..	..
9	Milan Svoboda	..	..	..	Czechoslovakia	..	..	..	Vega VSB-62
10	Jan Satny	..	..	..	Czechoslovakia	..	..	..	Vega VSB-62
11	Paul Franzen	..	..	..	Denmark	..	..	..	SHK
12	Carsten Thomasen	..	..	..	Denmark	..	..	..	Zugvogel 3a
13	Juhani Horma	..	..	..	Finland	..	..	..	SHK-1
14	Seppo Hämmäläinen	..	..	..	Finland	..	..	..	Kotka IHV-3
15	Jean-Claude Gombert	..	..	..	France	..	..	..	Edelweiss C30-s
16	Michel Mercier	..	..	..	France	..	..	..	Edelweiss C30-s
17	Luis Juez	..	..	..	Spain	..	..	..
18	Miguel Ara	..	..	..	Spain	..	..	..
19	Joop Jungblut	..	..	..	Holland	..	..	..	Phoebus 17
20	Aart Dekkers	..	..	..	Holland	..	..	..	Diamant 18
21	Dimitrije Maras	..	..	..	Yugoslavia	..	..	..	Meteor
22	Vasilije Stepanovic	..	..	..	Yugoslavia	..	..	..	Meteor
23	Charles Yeates	..	..	..	Canada	..	..	..	Cirrus
24	David Webb	..	..	..	Canada	..	..	..	BS-1b
25	Horst Rakowski	..	..	..	Germany, East	..	..	..	Foka 4
26	Udo Elke	..	..	..	Germany, East	..	..	..	Foka 4
27	Rolf Spänig	..	..	..	Germany, West	..	..	..	BS-1b
28	Heinz Huth	..	..	..	Germany, West	..	..	..	ASW-12
29	Alan Cameron	..	..	..	New Zealand	..	..	..	Cirrus
30	Peter Heginbotham	..	..	..	New Zealand	..	..	..	Phoebus 17
31	Jan Wróblewski	..	..	..	Poland	..	..	..	Zefir 4
32	Mirosław Królikowski	..	..	..	Poland	..	..	..	Zefir 4
33	Richard Schreder	..	..	..	USA	..	..	..	HP-14
34	Richard Johnson	..	..	..	USA	..	..	..	HP-13
35	Rudi Seiler	..	..	..	Switzerland	..	..	..	Diamant 18
36	Robert Wetli	..	..	..	Switzerland	..	..	..	Diamant 18
37	Göran Ax	..	..	..	Sweden	..	..	..	Phoebus 17
38	Göte Olsson	..	..	..	Sweden	..	..	..	Zugvogel 3a
39	Nandor Opitz	..	..	..	Hungary	..	..	..	A-15
40	Istvan Kunsagi	..	..	..	Hungary	..	..	..	A-15
41	Nicholas Goodhart	..	..	..	Gt. Britain	..	..	..	HP-14c
42	George Burton	..	..	..	Gt. Britain	..	..	..	HP-14c
43	Walter Vergani	..	..	..	Italy	..	..	..	BS-1b
44	Georgio Orsi	..	..	..	Italy	..	..	..	Cirrus
45	Vladimir Czuvikov	..	..	..	USSR	..	..	..	A-15
46	Jewgienij Rudenskij	..	..	..	USSR	..	..	..	A-15

(Pilots and/or gliders may be changed up to 12.00 hours on June 8th)

LESZNO — 9th-23rd June, 1968

56 ENTRIES STANDARD CLASS

Comp. No.	Pilot	Country	Sailplane
51	Rafael Frene	Argentina	Phoebus 15
52	Luis Stanley	Argentina	Phoebus 15
53	John Blackwell	Australia	Foka
54	Erich Schreibmaier	Austria	Std. Austria SH
55	Johann Fritz	Austria	Std. Austria SH
56	Henri Stouffs	Belgium	
57	Georges DeFosse	Belgium	
58	George Münch	Brazil	Foka
59	Guido Pessotti	Brazil	Uripema ITA
60	Aleksandr Dimitrov	Bulgaria	Foka
61	? Stanczew	Bulgaria	Foka
62	Jaroslav Vavra	Czechoslovakia	M-35
63	Frantisek Matousek	Czechoslovakia	M-35
64	Niels Sejstrup	Denmark	Std. Austria SH-1
65	Ole Didriksen	Denmark	Ka-6CR
66	Matias Wiitanen	Finland	KK-1 UTU
67	Lauri Liljamo	Finland	KK-1 UTU
68	Jean-Pierre Cartry	France	Edelweiss S30-s
69	Jean-Claude Penaud	France	Edelweiss S30-s
70	Jorge Sole	Spain	
71	Angel Anglada	Spain	
72	Eduard van Bree	Holland	Foka 4 or Ka-6E
73	Dick Réparon	Holland	Ka-6E
74	A. Sunderajan	India	Foka or Kartik
75	Thorhallur Filippusson	Iceland	Foka
76	Thordur Hafidason	Iceland	Foka
77	Isamu Oda	Japan	Foka
78	Suburo Fujikura	Japan	Foka
79	Wolfram Mix	Canada	Edelweiss
80	Manfred Blauert	Germany, East	Foka 4
81	Bernd Nolte	Germany, East	Foka 4
82	Rudolf Lindner	Germany, West	Phoebus 15
83	Hans-Werner Grosse	Germany, West	ASW-15
84	Birger Balukin	Norway	Std. Austria SH-1
85	Tor Johannessen	Norway	Vasama
86	Anthony Fowke	New Zealand	Ka-6E
87	Ross Reid	New Zealand	Ka-6E
88	Edward Makula	Poland	Foka
89	Jerzy Popiel	Poland	Foka
90	Emil Iliescu	Romania	Foka
91	Mirces Finescu	Romania	Foka
92	George Moffat	USA	Elfe S-3
93	Andrew Smith	USA	Elfe S-3
94	Urs Bloch	Switzerland	Elfe S-3
95	Hans Nietlisbach	Switzerland	Phoebus 15
96	Sture Rodling	Sweden	Std. Libelle
97	Per-Axel Persson	Sweden	Std. Libelle
98	Ziya Aydogan	Turkey	Foka
99	Pal Szereday	Hungary	Foka 4
100	? György	Hungary	Foka 4
101	David Innes	Gt. Britain	Dart 15w
102	John Williamson	Gt. Britain	Dart 15w
103	Leonardo Brigliadori	Italy	Std. Libelle
104	Giovanni Perotti	Italy	M-300
105	Jurij Kuzniecowa	USSR	Wega 2
106	Anatolij Zajcew	USSR	Wega 2



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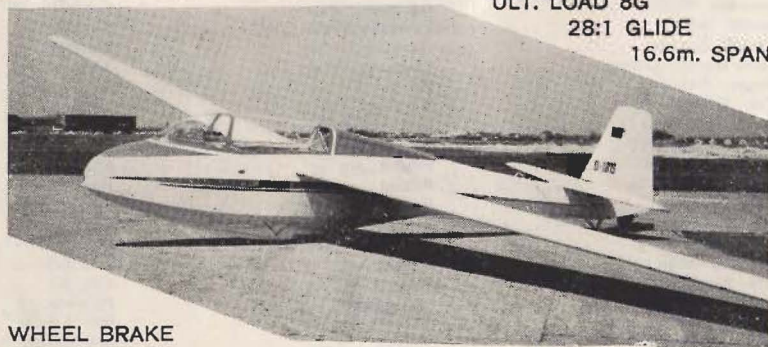
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PLACINGS IN PREVIOUS WORLD CHAMPIONSHIPS

Pilot	Country	1965	1963	1960	1958	1956	1954	1952	1950	1948
Wróblewski	Poland	1-O								
Spänig	Germany, W.	2-O								
Makula	Poland	4-O	1-O	2-O	5-O					
Williamson	Gt. Britain	6-O	8-O							
Goodhart	Gt. Britain	7-O	11-O	4-O	2-O	T-1				
Cartry	France	8-O								
Yeates	Canada	9-O	9-S	—	12-O					
Penaud	France	10-O								
Stouffs	Belgium	11-O	27-S							
Hossinger	Argentina	12-O	5-O	1-O	33-O					
Svoboda	Czechoslovakia	15-O								
Vergani	Italy	16-O	24-S							
Petroczy	Hungary	17-O								
Johnson	USA	18-O	4-O	15-O	—	—	—	Ss-24		
Smith, A. J.	USA	19-O								
Niedispach	Switzerland	20-O	19-O	—	—	Ss-8	T-4			
Frene	Argentina	21-O								
Chuvikov	USSR	22-O								
Webb	Canada	28-O	9-O							
Blackwell	Australia	38-O								
Hämäläinen	Finland	41-O								
Popiel	Poland	4-S	2-O	3-O						
Burton	Gt. Britain	5-S								
Lindner	Germany, W.	8-S								
van Bree	Holland	10-S	31-S	20-S						
Fritz	Austria	11-S	8-S	9-S						
Wödl	Austria	12-S	5-S							
Wiitanen	Finland	13-S	14-S							
Huth	Germany, W.	14-S	1-S	1-S	3-S					
Schreder	USA	15-S	3-O	16-O						
Brigliadori	Italy	16-S	4-S	21-S	—	T-11	Ss-32	Ss-29		
Persson	Sweden	17-S	—	22-S	2-S	Ss-12	Ss-6	—	6	1
Sejstrup	Denmark	18-S	10-S	4-S	17-S					
Bloch	Switzerland	19-S								
Réparon	Holland	21-S								
Horma	Finland	24-S								
Johannessen	Norway	28-S	23-S	18-S						
Jinks	Australia	29-S								
Filuppsson	Iceland	36-S								
Stepanovic	Yugoslavia	37-S								
Cameron	New Zealand	41-S								
Ara	Spain	—	6-S	13-S	—	Ss-7	Ss-8	Ss-9		
Juéz	Spain	—	7-S	5-S	—	Ss-2	T-8	T-1		
Münch	Brazil	—	13-S	2-S	—	Ss-16	Ss-39			
Mix	Canada	—	26-S							
Oda	Japan	—	30-S	27-S	36-S	Ss-31				
Opitz	Hungary	—	—	—	11-S					

O=Open Class; S=Standard Class; Ss=Single-seater; T=Two-seater. Only pilots who have flown in World Championships before have been listed. There will be, therefore, 55 pilots new to World Championships flying.
Table compiled by Rika Harwood

FLYING TALK

By ROGER BARRETT

1968 Competition Rules

BY the time this issue comes out, competition pilots will be able to purchase copies of the 1968 *BGA Competitions Handbook* from the BGA, price 2s. Principal changes made to the 1967 rules are:

1. New Task:—A sixth task has been introduced—"Out-and-return race with alternative turning points". The task-setter will specify up to four turning points which will all be about the same distance, and within a 45-degree sector, from the base airfield. Pilots may choose during flight which one they are going to use for their out-and-return. The idea behind this task (which was tried experimentally last year) is twofold:

- (a) to provide extra interest and decision-making for pilots by getting them to assess the best route while airborne, and
- (b) to help the task-setter on days when localised clamps (CuNim, Spreading out, etc.) are forecast.

In the latter case, in the past task-setters have felt obliged to set tasks which did not involve turning points, in case any of them were clamped—and this led either to distance tasks or straight goal races—both with possible long retrieves. Quite often, with hindsight, it would have been possible to set a closed circuit task. It will be possible to set the new task on these "awkward" days, for if one of the turning points is clamped, pilots can go to another.

2. Handicapping:—The 1968 handicapping policy has already been covered in S. & G. (December-January, pages 459 and 483): Handicaps are in 2% steps, and are defined as representing relative cross-country speeds after climbing in an "average British thermal" of about 2½ kt. Previous to this, handicap percentages had been crude increments to total marks, and due to the split between speed and distance marks, were not capable of more exact definition, and so it was not possible to give them to any accuracy. For similar reasons, several anomalies arose where gliders of dif-

ferent performance were flying against each other. Now, anomalies have "minimised" by applying the handicap much earlier in the scoring process, recognising its new definition as a function of cross-country speed.

Thus in speed scoring, handicap is applied to achieved speed *before* squaring to apportion the speed marks. As before, all finishers get the same distance marks.

In distance scoring, handicap is applied *before* "X" is subtracted—this leads to "X" being set for the 100% glider (Skylark 3) and not the best glider as previously. The scoring formulae automatically compensate for glider performance, with the result that although only one "X" figure is set, Minimum Scoring Distance varies with each glider, depending on handicap. Thus if "X" were set as 20 km. a Skylark 3 would have to go 20 km. to score, whereas an Olympia 2 would have to go 20/1.25 or 16 km. and an SHK 20/0.86 or 23.2 km. The fairness of this, especially on marginal days, is obvious.

Scorers may think that these new ideas will make things much more difficult for

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SF27M	powered high-performance single-seater with retractable power plant.
LSPATZ III	the cheap popular single-seater for training and performance.



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them. This is not so. All that happens on the scoring sheets is that the "Handicap" column occurs earlier than before. (See example in the "Plain Man's Guide" section of the *BGA Competitions Handbook*.)

The Flying Committee is very conscious of the complications in the BGA Scoring System. At present, it believes the consensus of opinion to be that such complications are necessary to get fair scoring under the difficult British weather conditions. Any constructive proposal for simplification (for 1969) will be welcomed, however.

* * *

TURNING POINT PHOTOGRAPHS

New country will be covered during the Open Class Nationals, and the Organising Committee are keen to have up-to-date photographs of potential turning points.

Cross-country flying will probably be done in the required area between now and August, and copies of any photographs taken will be gratefully received.

Particular points of interest are:

1. Any flyovers, roundabouts and service areas on the M1, M5, A1(M), A1 or any other dual carriageway. (Such as parts of the Fosse Way—A46.)
 2. Any distinctive disused airfields in the following areas (the airfields themselves need not be very "individual" as long as nearby features, such as railways, roads, etc., make them unambiguous):
The area 10-20 miles east and south of Cambridge, as far as Ipswich.
The Cotswolds, including the Oxford area and the Severn Valley.
The area 10 miles or so N.E. of Shrewsbury.
The Lincolnshire Wolds, from Boston to Grimsby.
 3. Any distinctive villages and country houses, if good "lead in" features are present so that they are not too difficult to find. Areas as in (2) above, plus Derbyshire and Yorkshire, from Nottingham to Leeds.
- Please send to: Ian Strachan, c/o RAF Syerston, Newark, Notts.

LADY VIKING

By GORDON BENNETT

The Viking Mk. I was built in 1938 and is the sole surviving example: it is now owned by Louis Glover and flown from Husbands Bosworth.

LADY VIKING is courageous, tough, eccentric. Something of a conqueror. Very distinctive looking. Once seen, properly seen, never forgotten.

Surprisingly, her heightometer is dead accurate. You can check it against the altimeter if you like. You have an altimeter because of Airway's, QNH's and Flight Levels and things. Her speedometer is accurate, too, in m.p.h. going round in ever-decreasing circles. You have to remember how many times round the needle has gone, of course, but if in doubt you can always check against the ASI.

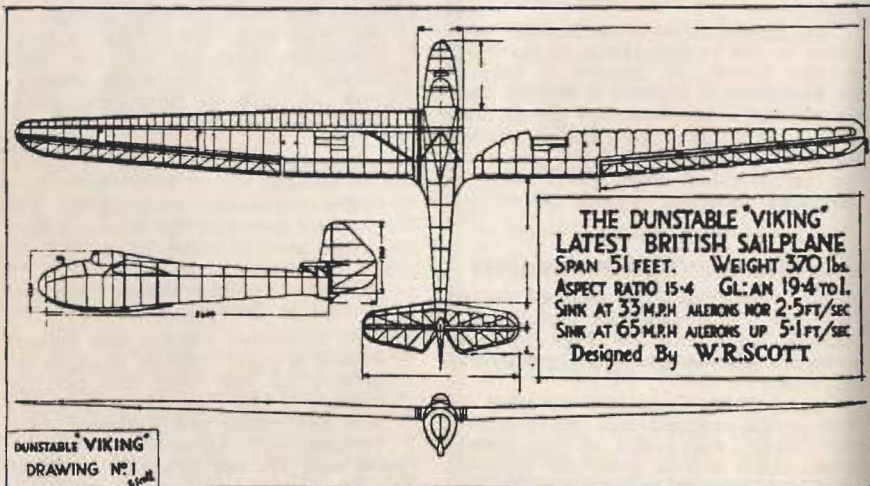
Most, perhaps all gliders except one, go where you tell them to. If you point your nose on the most precise heading, the nose stays there, subject to thermals or turbulence tipping a wing. But in clear, calm, still air, Lady Viking will sniff around, gently browsing her way through the air, maintaining a general direction which seems more her own than yours. It is as if she reads your thoughts and good-naturedly, but reluc-

tantly, condescends to be coaxed along the course you wish to maintain.

However, in full sideslip all her single-minded fury shows itself, and with a directness and precision which is most heartening, she will carefully adjust her approach height, just as if she was possessed of the modern advantage of airbrakes. She does have spoilers. Little ones. They look very pretty. On the field landing I was part of the other day, she did not even bother to pop them out. Scorned them, she did.

She did make a mistake when we set off from Husbands Bosworth on Sunday, 7th April, this year, imagining the upper wind to be northerly, which would have blown us to Dunstable. In the event, the wind turned out to be north-easterly and, after tacking along the M1 to Northampton, it became apparent that downwind would be the best bet for Silver distance.

Although not too terribly impressed by noisy machines that whizz round in circles whilst remaining in the same place, yet Lady Viking managed to





recognise Silverstone (although she did not manage to see a racetrack at Towcester), and in great deference and respect turned west to avoid intruding upon whoever lives and thunders in Upper Heyford.

Lady Viking, being a proud Lady, thinks she can do well enough without going into cloud, otherwise there would have been an exciting 200 ft. or so in cloud at this point, before bumping the bottom of the Airway. Luckily the Powers-that-Be have expressly forbidden such ancient persons to strain their fragile bones in such misty situations as Lady Viking might have contemplated had she not been so proud. To make sure that Lady Viking will never be tempted to overcome her pride, someone has removed her blind-flying instruments. Also she does not allow her passengers to carry parachutes. I think she thinks them a kind of cheating. So, unless some misguided pilot of the future is possessed of a positive death wish, the feelings of Lady Viking and the Powers-that-Be will be respected in this matter.

As take-off on this particular flight was at 15.00 hrs. and it was now gone 17.00 hrs., Lady Viking seemed not too certain of staying up much longer and, after fruitless investigations under deceptive-looking clouds, began to feel attracted earthwards. Picking a nice field, cross-wind, with a long approach over Over-Kiddington, Lady Viking showed her sideslips to everyone who was looking, which turned out to be no one, and skimmed across the young barley which was just showing through the Oxfordshire earth.

The farmer came to see us, driving across his field in a large car, which made Lady Viking far less embarrassed

about her tiny, tiny skid mark than she would otherwise have been. "Run out of air did you?" said the farmer, "or thermals or something?"

"Yes," we said.

Later my parents, who happen to live near by, came along in response to a phone call and congratulated Lady Viking on bringing me so far so safely.

I must say Lady Viking was a very pleasant, if slightly eccentric companion on the flight and I'm very grateful to her for helping me on with my Silver C. The only drawback was my cold feet—I mean really cold feet, and my hands. However, I had inadvertently brought along some fur gloves. I hope Lady Viking enjoyed the few peppermints she received in her bottom when I eventually managed to tug them out of my pockets.

BGA NEWS

New Committee Chairmen

The following Committees are headed by new Chairmen:

Instructors' Panel	-	-	Roger Neaves
Powered Glider Committee			Ann Welch
Safety Panel	-	-	John Ellis

Accidents

Clubs and Private Owners are reminded that serious accidents, which must be reported to the AIB (Accidents Investigation Branch) within 24 hours, should also be reported to the BGA within this period. See Laws & Rules, page 15, paragraph D.2.

Unfortunately it appears that some Clubs and Private Owners are not ob-

serving this rule, causing embarrassment to the BGA staff and Safety Panel members when contacted by the Board of Trade for information on accidents they do not know have happened.

A revised edition of *Laws & Rules*, incorporating new and amended regulations, has now been published and is available from the BGA at 6s., postage included.

GLIDER IN THE SKY

(A new W. D. & H. O. Wills colour film by their cameraman, Bob Lomax, and Ann Welch.)

This is a 20-minute, 16 mm. sound film showing a cross-country flight by several gliders from Lasham to Nympsfield and back from the pilot's eye view.

The flight is made in a Capstan two-seater, the photographer sitting in the two seats alternately, so that one gets the impression of being in the aircraft as one of the crew.

During the flight one of the gliders lands in a field and for a few moments one sees some of his problems.

The film ends with an exciting final

glide. The commentary is informative to the non-gliding audience and convincing to the glider pilot.

The film is a most welcome addition to the all too meagre list of good gliding films and is available, free of charge, direct from Sound Services Ltd., Wilton Crescent, Merton Park, London, S.W.19.

Failed Triangles

From enquiries received at the BGA it seems that a number of pilots are unaware of the modification to the requirements for Gold and Diamond distance made by the FAI in 1965. If a triangle has been attempted but the course has not been completed the pilot will *not* be disqualified provided that the distance flown exceeds 300 km. (500 km.) and the landing point is not further than 10 km. from the line of the last leg.

Correction to page 124, APRIL-MAY issue, 1968. The second line at top of left-hand column should read: "If A goes twice as fast as B, then he must be four times as good."

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DIAMOND GAIN OF HEIGHT

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3/67	W. Stachowiak	Polish AFA	4.10
3/68	J. H. Blackmore	N.A.E. Ae.	29.5
3/69	M. T. Hill	Midland	30.11
3/70	J. F. Goudie	Scottish	25.12
3/71	P. J. Kelly	Eagle	15.11
			1968
3/72	J. D. Greenhill	USA	27.1
3/73	A. W. Gough	Bicester	11.3

GOLD C COMPLETE

No.	Name	Club	1967
189	W. Stachowiak	Polish AFA	4.10

GOLD C GAIN OF HEIGHT

Name	Club	1967
W. Stachowiak	Polish AFA	4.10
D. H. Scarfe	Eagle	31.10
T. N. McGee	Scottish	3.12
J. F. Goudie	Scottish	25.12
J. G. Smith	Scottish	16.12
A. E. Stenhouse	Airways	2.5
P. J. Kelly	Eagle	15.11
C. E. Andren	Scottish	3.12
B. Walker	Bristol	28.10
G. Appleyard	Cleveland	1.10
		1968
R. B. Walker	Ouse	27.1
J. D. Greenhill	USA	27.1
L. P. Smith	Scottish	28.1
M. Wilton-Jones	Fenland	5.3
C. J. N. Waller	Scottish	5.3
J. A. Fox	Four Counties	6.3

GOLD C DISTANCE

Name	Club	1967
M. Simons	London	7.8

SILVER C COMPLETE

No.	Name	Club	1967
2141	C. H. Shield	Norfolk	3.9
2142	J. A. Stenton	Post Office	12.9
2143	C. H. Lett	Coll. of Aeron.	4.8
2144	J. E. Fricker	Essex	16.12
2145	M. J. Chick	Bristol	28.7
2146	P. V. Prowse	Cornish	7.9
2147	R. J. Richardson	RAE & Lasham	20.8

2148	M. F. F. Moss	Leics.	10.9
2149	C. A. Hayes	E. Midlands	7.10

			1968
2150	R. Strange	Dorset	28.1
2151	J. D. Greenhill	USA	27.1
2152	M. J. Wood	Chilterns	4.3
2153	K. E. Panton	Norfolk	5.3
2154	D. H. C. Vickery	Fenland	4.3
2155	J. Ward	No. 2 GC	11.3
2156	S. J. Easton	Fenland	14.3
2157	C. J. Woodier	Wrekin	3.3
2158	W. W. Dickson	Crusaders	10.3
2159	J. A. Fox	Four Counties	6.3
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FOUR REASONS WHY THE VORTEX-RING THEORY IS NONSENSE

By HAROLD DREW

IT is entirely without diffidence that I embark on the task of exploding the Great Vortex-Ring Myth. For some time now the pundits have been airily proclaiming that many, if not all, thermals are in the form of vortex-rings. They state this with arrogant conviction and support their statements with much so-called evidence from their personal acquaintance with thermals. Many modest non-pundits are deluded by this talk, and, basing their tactics on this fallacious theory, don't do as well as they should. Meanwhile, the pundits, who curiously enough ignore all this nonsense once they are airborne, just work a thermal in the good old-fashioned way.

A thermal is, of course, nothing more or less than a rising column of warm air drifting across the countryside, and nothing can be simpler than that.

Starting with the *reductio ad absurdum* approach, let us consider a vortex-ring clambering into the heavens on a day when cumulus is forming. When the top of the ring reaches condensation level, moisture will condense and, since the top of the ring is a rather wide circular belt, we shall be confronted with a sky decorated with ring-shaped cumulus clouds; this, to say the least, is at variance with the facts.

How often have we watched a stack of gliders working the same thermal. New arrivals come in low and endeavour to work up as others depart from much greater altitudes. If the thermal is a vortex-ring, the low newcomers will arrive long after the powerful vertical air current at the centre of a vortex-ring has departed upwards. All they are going to find is a few eddies. How often have you come in at a few hundred feet well under a guy circling at a respectable altitude and found good lift? No vortex-ring can support a tall stack of circling gliders. Yet tall stacks are a common sight.

One day, when the thermals are popping and it isn't your turn to fly, take

your binoculars to a Portland cement plant, or, if you happen to be in Texas, to a carbon black plant. Such outfits release a plume of gas and vapour heavily laden with fine particles which can neither evaporate nor condense. If the wind is moderate, the plume will rise at a small angle to the horizontal and will be compact and visible for miles. Sit down a mile from the plume and across wind from it. Every now and then a thermal will rise from the fields and encounter the plume. This part of the plume will then take on a nearly vertical motion. Watch the movements of the billowing particles. I doubt whether you will observe any signs of a vortex-ring.

How often have you flown under a street of cumulus? If a street is a line of vortex-rings, what should we expect to experience? We should expect to be flying through powerful lift one moment and sink the next moment. Does this happen? It rarely does. We can often fly a street without hitting appreciable sink at all. We can hold our altitude constant, speeding up in the strong lift and slowing down in the weaker lift. Obviously such thermals are fed mainly from the sides of the street and in no way resemble vortex-rings.

Workers of the sky, unite. When we hear talk of vortex-rings in the sky, let us feel free to indulge in loud and disrespectful merriment.

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THE VORTICIST'S REPLY

By FRANK IRVING

THE world would indeed be a dull place if all disputation were conducted on a rarified intellectual plane. There is nothing like a good outburst of inflammatory emotion ("arrogant conviction . . .", etc.) to stimulate discussion. Harold Drew's forthright statements, presented with all subtlety of the proverbial sledgehammer attack on a walnut, have the merit of arousing one to examine a few basic ideas and to attempt some explanations.

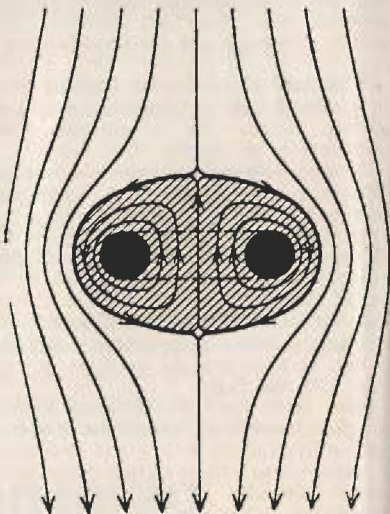
The idea that thermals might have a vortex-ring structure originated a long time ago (see *The Story of Gliding*). This concept was revived at Imperial College by Betsy Woodward *et al* about 10 or 12 years ago. Both experiment and theory suggested that the vortex-ring idea gave a good description of an isolated thermal bubble, and a large amount of work has been done to develop this concept, both at I.C. and elsewhere.

It is important to realise that vortex-rings were originally adopted by meteorologists as an hypothesis which seemed to give a satisfactory explanation of some aspects of thermal and cumulus behaviour. I doubt if any meteorologist has ever suggested that *all* thermals can be regarded as vortex-rings, or that any form of convection (e.g., under cloud streets) must involve vortex-rings. Being professional scientists, they have developed a wariness about excessive generalisation. So if, as Harold suggests, some gliding pundits have embraced vortex-rings with excessive fervour and regard them as the one explanation of all convective phenomena, that is not the fault of the original advocates of the theory. They would doubtless be the first to disown such an unwarranted extension of ideas developed in a tank of Imperial College water.

In talking about vortex-rings, one has to appreciate that this is simply the way in which an applied mathematician formalises and describes the motions which will occur in a flattened symmetrical bubble rising through a surrounding fluid. All that he is saying is

that if isolated thermal bubbles occur, the corresponding mathematical abstraction involves a vortex-ring. The meteorologist then goes on to perform a few small-scale experiments which indicate that this concept has some points of contact with reality. In fact there exists a film of such model bubbles which, in the absence of any indication of scale, might be anything from small puffs of cumulus to atom-bomb explosions.

The vortex-ring is only one type of abstraction: another mathematician might prefer a different representation consisting of a disruption of "doublets"



The diagram is reproduced from "Fundamentals of Hydro and Aeromechanics" by Prandtl and Tietjens (1934). It shows the steady streamlines due to a vortex-ring of a particular core thickness. For convenience, it is drawn as if the ring were stationary, with the surrounding air moving past it. The region shown shaded is encompassed by a closed streamline and therefore forms a "bubble" moving with the ring.

(forgive the jargon) over the cheese-shaped region encompassed by, and including, the ring. The mathematical expressions lead to the same overall flow. This latter abstraction can be helpful, for it immediately suggests that a spherical thermal bubble is rather unlikely. Such a bubble would involve a single "doublet" at its centre, and the local velocity would then be infinite. Much as the glider pilot might yearn for such splendid lift, nature tends to dislike infinite velocities. However, there may be occasions when the spherical bubble is a helpful idea: it is easy to work out the associated velocities—provided one keeps away from the centre—whereas vortex-rings are devilish things to contemplate in detail (see HORACE LAMB, *Hydrodynamics*).

So the bubble is what one envisages as the physical reality and the vortex-ring is the description of a simple flow pattern which will satisfy certain idealised laws of fluid motion and will contain a closed streamline corresponding to the bubble (see diagram). Nor does the vortex-ring concept imply a unique shape for the thermal bubble; if the cross-section of the ring is large compared with its diameter, the section of the bubble is oval with its shorter axis along the axis of symmetry of the ring. Various "aspect ratios" of bubble can occur, depending on the geometry of the ring. If the ring is of small cross-section compared with its diameter, the bubble carried along with it is also ring-shaped, as displayed by Philip Wills's smoke rings at BGA Council meetings.

When an isolated thermal bubble reaches condensation level, the moisture in the upper part of the bubble will con-

dense. The diagram suggests that the cloud will be dome-shaped, since it is the whole shaded region which is ascending. The fact that one sees cumulus-shaped cumuli does not disprove the vortex-ring theory. It merely suggests that the geometry of the ring is such that the bubble of air carried along with the ring is roughly the shape shown in the diagram.

Harold then goes on to discuss stacks of gliders, implying that he visualises the vortex-ring thermal as a very thin flat affair. The diagram suggests that the bubble may not be particularly flat and, moreover, the region of useful lift may extend above and below the bubble. Some rough calculations suggest that a bubble providing a typical British rate of climb (e.g., Nick Goodhart's "standard" thermal) could provide useful lift over a height band of about 1,500 ft., or enough to provide quite a reasonable stack.

One has to be careful about smoke. First of all, even if vortex-rings have some relevance to real thermals, nobody would claim that a natural thermal will have the elegant symmetry of the mathematical model; it is more likely to be quite an irregular affair. Also, one never knows where the smoke is being inserted into the picture, and the visual impression will tend to become rather confused by the fact that smoke is usually being fed-in continuously. So, in many cases, one would not expect to get much visual impression of a vortex-ring. Harold might reasonably claim that one ought to get some such impression in a few cases. (One up to Harold!) Might it not be better to consider the case in which a large chunk of the bubble is obviously made visible by a cloud? I suspect that some clouds do show signs of vortex-ring motion, often distorted by wind-shear. The swirling motions at the edges are certainly associated with vorticity.

In talking of cloud streets, Harold should appreciate that a vortex-ring is simply a way of representing a simple bubble, and one could envisage other patterns of convection with different mathematical representations. The ring is a fairly simple representation of what, in practice, is doubtless more complicated in detail. Also, its configuration is stable. One has to be quite careful

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in proposing mathematical models for various flows, since vortices may interact with one another to give very odd results. For example, one might think of idealising a long sausage-shaped thermal as two or more vortex-rings stacked vertically. But a pair of vortex-rings leads to an amusing result, as the skilled smoker can demonstrate. The rearward ring passes through the annulus of the leading ring, and itself becomes the leading ring, so that the process repeats. Perhaps some thermals are like this, but the effect seems rather quaint.

What is quite certain is that the motion of any shape of thermal in a substantially tranquil atmosphere will involve vorticity in the mathematical sense. If a cloud street is envisaged as a long lane of lift, one can equally visualise it being bounded by walls of vortices. Such a system might well require careful analysis to determine stable situations. Whether Harold likes it or not, thermals inevitably introduce vorticity: this is really a matter of semantics, since vorticity is defined in the context of the type of fluid motion under consideration. Wrapping up the vorticity in rings is a neat way of looking at blobs of convection.

So those who agree with Harold might do well to pause before "bursting into loud and disrespectful merriment". Descriptions of complicated phenomena usually start from some simple idealised concept, in this case the single bubble described by a vortex-ring. If single bubbles exist, it is extremely difficult to avoid having a vortex-ring in the picture. Instead of scoffing, it would be more useful for glider pilots to attempt to describe and classify more complicated forms of thermals, and to try to incite mathematically-minded meteorologists to provide a model of the flow.

EDITORIAL NOTE.—One reason for proposing the "vortex-ring" structure was that sometimes, when gliders were stacked in a thermal, the one at the top could climb no higher while those lower down continued to climb up towards him, thus showing that the thermal as a whole did not rise as fast as its own core.

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A DAY WITHOUT A SCRAPE

By DON SNODGRASS

With this flight Don is the seventh pilot to complete the 500-km distance in Gt. Britain. Five flights have been done from the Norfolk area to Cornwall; one from West to East by Andy Gough, and two up North by Nick Goodhart and John Williamson. Don's description is followed by an account of the 8th 500-km distance flight by Alf Warminger.

THE morning of Sunday, 14th April, 1968, dawned in East Anglia without a cloud in the sky and with just a whisper of last night's Easterly still blowing. This was my sixth visit to try and catch the Northeaster, four times in the spring and twice in September in recent years. The day before had been Easterly all right, but a layer of cloud coming in from the North Sea almost blanked the convection out, also it had been very cold.

This morning, however, was warmer and at 8 o'clock the bedroom window at the "Railway", North Elmham, shook gently with the rising Easterly and I reckoned we should be at Horsham St. Faith Airfield before the time of 9.30 suggested by our genial host, Alfred Warminger. At 9.15 we were on the airfield eating eggs and bacon in the lee of the car, sheltering from now quite a fresh breeze pointing almost in the direction of Cornwall.

Prompt to time, Alfred arrived and after a minor diversion caused by him measuring me a goal 600 kilometres away instead of 500 (next stop Gander) we were ready to launch behind the Tiger just after 10.30 and, I thought, just at the right moment because the first tiny puffs of cumulus were just visible well inland.

Release point was Wroxham, six miles upwind, and I released at 11.10 at 3,000 feet with the most picturesque part of the Broads right underneath. We went on track and first picked up lift at about 1,200 feet on the western edge of Norwich. We played the early thermals carefully but had little difficulty in making good progress, passing Shipdam Airfield with Swanton Morley in view, scene of many pleasant flights, then Watton and across the wooded Brecklands, next the

Fens looking like slabs of chocolate, to Ely. By now it was possible to climb quickly to cloud base at approximately 5,500 feet but it did not seem worth while to me to go into cloud.

The wind seemed to be between 090° and 120° all day except when one got down into Cornwall when it was almost round to due south. St. Neots and Bedford duly turned up and then Silverstone could be seen to starboard. We were able to cross the airway comfortably within the prescribed limits. Finmere with the wood in the middle of the airfield, then Bicester and to the north of Oxford. Then we got a little south of track to the northern edge of the Lynham Control Zone and skirted this between Hullavington and Chipping Sodbury and then flew on between Bristol and Bath.

By now conditions had become somewhat claggy, visibility during the middle part of the flight was never good and for



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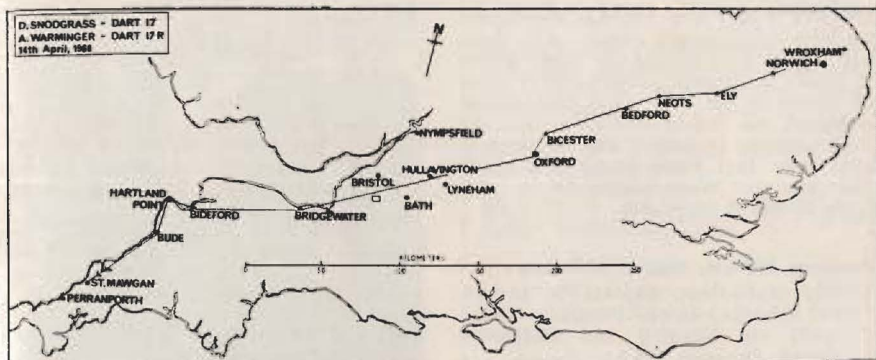
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a few miles we were uncertain of our position, though knew this was south of track and at this point we wanted to keep it this way. Some good lift was picked up over the Mendips and also the sun was visible as patches in different directions, and for the first time I began to think that 500 km. might be "on". Now we were in sight of one of the best landmarks in England, the Cheddar Reservoir, though the coast was still invisible. Sedgemoor was crossed easily and Bridgewater went past, and then that part of the track was ahead that I did not anticipate particularly enjoying, the edge of Exmoor and Devon ahead before one reaches the hospitable Cornish fields.

By now it was 4.30 and the wind was so southerly that the tactic was to creep in the general direction of the goal using every available piece of lift that came along. At this time we wandered all around a small town, since identified as South Molton, before contacting good lift which took us up to 4,000 feet once more.

After what seemed an age, Bideford appeared. We were well north of track by this time and were not even allowed to cross behind Hartland Point because the best pieces of lift were always on the coast and marked by thin cloud. We had just passed Bude after the slowest part of the trip, heading due South and making little ground speed, when I was delighted to see Alfred's Dart half a mile or so away.

We now carefully flew along sometimes as much as two miles out to sea

past Port Isaac Bay; and the Camel Estuary finally appeared after I had begun to think that somebody must have filled it in. We arrived at St. Mawgan with 2,000 feet in hand and did a regulation circuit, being made to feel respectful by the size of the place. A BOAC approach was made during which we were enlivened on the radio with some amusing exchanges between George Collins and Alfred near Perranporth about where (if anywhere) he was to land.

RAF St. Mawgan gave us a good welcome, though the Controller rightly pointed out the airfield is PPO. No nonsense about leaving the glider in the open—you are to go to Hangar X, where the Dart reclined gracefully between two Shackletons in a new, heated, side opening hangar reminiscent of London Airport. Charge for the service was one-tenth of a penny per sq. ft., 600 sq. ft. = 5s. for the night, hardly dear!

All day it was possible to hold a comfortable flying height and during the last and rather more difficult portion over Devon and Cornwall at least the sun had come out fully and consequently there was always some lift to be found and the scenery by this time was truly magnificent.

Elaine was following nobly with the trailer, though we lost radio contact just before Bedford; but the friendly voices of Anne Burns. Harold Drew, "Number 15"?, among others, relayed messages, and she arrived hot and dusty just before midnight (and just after I'd turned in) though not expected before the morning.

The distance was 520 kilometres, the

time 7½ hours (72 km/h.), the glider (ex-Nick Goodhart) Dart 17; how beautifully she goes and the same applies to Nick's instrumentation. A hearty word of thanks to the boys up in East Anglia—Alfred, his family and crew—not the least pleasant feature of the day was to hear later that Peter Bryan had made 300 km. to Weston-Super-Mare, also from Horsham St. Faith.

Previous 500-km. flights in Britain

1. Nick Goodhart, Skylark 3, 12.4.58. Ely (Cambs.) to nr. Penzance (Cornwall) via Edgehill and Boscombe Down. Distance 513 km.
(See S. & G., June, 1958, page 124.)
2. David Ince, Olympia 419, 13.4.58. Lavenham (Suffolk) to nr. St. Just

(Cornwall). Distance 507 km.

- (See S. & G., June, 1958, page 149.)
3. Andy Gough, Skylark 3, 21.5.58. South Cerney (Glos.) to Heerlen (Holland). Distance 560 km.
(See S. & G., Aug., 1958, page 191.)
4. Nick Goodhart, Skylark 3, 9.5.59. Lasham (Hants) to Portmoak (Scotland). Distance 579 km. (Current distance and goal records.)
(See S. & G., Aug., 1959, page 187.)
5. John Williamson, Olympia 419, 7.8.61. Upavon (Wilts) to Ayton (Scotland). Distance 507 km.
(See S. & G., Oct., 1961, page 274.)
6. Alfred Warminger, Olympia 419, 14.4.62. Reepham Town (Norfolk) to Perranporth (Cornwall). Distance 515 km. (Declared goal.)
(See S. & G., Aug., 1962, page 258.)

* * *

SAME DAY—FOR FUN

By ALFRED WARMINGER

I TOOK off from Norwich Airport at 11.20 a.m., 20 minutes after Don Snodgrass, releasing at 1,000 metres up wind over Wroxham, I dared not go any closer to the coast, the skies being completely clear upwind of Norwich with an inversion at 2,000 ft. probably going even lower the nearer one got to the sea.



The Dart on Aerotow.

Turning on a S.W. heading I flew to the lee of Norwich, getting my first indication of lift at 1,500 ft. above the Easton show ground. With every mile of progress made inland, conditions improved, and once past Watton it was possible to relax on 3-5 kt. thermals. The Thetford forest area was no problem to cross as cloud base rose to 4,500 ft. and the run over the Fens from Feltwell past Ely and on to St. Neots was a joy—5,000 ft. under cloud streets, occasionally hopping across to the next southerly line in order to counteract the drift from a wind that was moderate to strong from the east.

Even so, I drifted north of track, finding navigation difficult with the visibility, which deteriorated to 4-5 miles in the Chipping Norton area. Here I had my first real scare, encountering 8/8ths. clag and Hobson's choice of pressing on. From a low of 1,200 ft. above ground I climbed up eventually to cloud base and then on to the vicinity of Cheltenham.

Still in clag, 5 miles north of track, I flew south to Nympsfield, arriving there at 600 ft. above the site; fortunately for me a 463 was thermalling nearby.

From then on conditions were again good and I headed towards Weston-Super-Mare. Cheddar Gorge provided a beauty to nearly 6,000 ft. which took



L. to R.: Crew member, Don Snodgrass, Elizabeth Collins, Alf Warminger, and another crew member.

me well on my way to Devon. Clouds here were flat, diffused, few and far between and I contented myself with flying at 50 kt., changing course to the next likely-looking area.

When abreast of Bude, time 5.15 p.m., I sighted a familiar aircraft in the sky and found Don in weak lift at about 2,500 ft. With the wind now S.E. and plenty of sea air in it, the thermals were scarce as well as weak. Don still had 30 miles to go and was obviously pleased to see me. We took our time, gradually edging further to the S.W. but also drifting out to sea over Port Isaac Bay. Eventually from 3,800 ft. we set course for St. Mawgan.

Saying Adieu to Don as he left for Mawgan, I was greeted by George Collins on 130.4 flying alongside in a Cessna. The final glide was fraught to say the least but, fortified by George's presence, if not by his sound advice, I cleared the Perranporth A/F boundary by 200-300 ft.

Some Quickies

1. The flight was on the same day as my previous 500-km. run in 1962, though the weather was even better on that occasion.
2. Radio communication was superb; through other gliders relaying, this enabled both ground crews to keep in touch right to the final glides. Many thanks in this connection to Anne, Chuck and "Jackdaw".

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INTERNATIONAL GLIDING RECORDS (Correct as at 15.3.68)

Single-Seaters

Distance	A. H. Parker (USA) 31.7.64, Sisu-1A	1,041.52 km.
Height Gain	P. F. Bikle (USA) 25.2.61, SGS-123-E	12,894 m.
Absolute Altitude	P. F. Bikle (USA) 25.2.61, SGS-123-E	14,102 m.
Goal Flight	W. A. Scott (USA) 23.7.63, Ka-6C	873.75 km.
Goal & Return	S. H. Georgeson (NZ) 6.1.65, Dart 15	730.62 km.
100-km. Triangle	H. M. Linke (Germ.) (in USA) 30.7.67, Libelle	138.30 km./h.
300-km. Triangle	A. Roehm (Germ.) 4.6.67, BS-1	138.30 km./h.
500-km. Triangle	E. Katinszky (USA) 19.8.67, Libelle	121.485 km./h.

Multi-Seaters

Distance	Y. Kuznetsov and Y. Barmakov (USSR) 3.6.67, Blanik	921.954 km.
Height Gain	S. Josefczak and J. Tarczon (Poland) 5.11.66, Bocian	11,680 m.
Absolute Altitude	L. Edgar and H. Klieforth (USA) 19.3.52, PR-G1	13,489 m.
Goal Flight	P. Antonov and A. Oplachko (USSR) 24.4.64, Blanik	702.744 km.
Goal & Return	E. Minghelli and R. Semans (USA) 26.6.67, Prue 11A	590.42 km.
100-km. Triangle	S. Kluk and A. Wyrzanowski (Poland) 2.9.64, Bocian	107.78 km./h.
300-km. Triangle	V. Tchouvikov and J. Logvin (USSR) 1.8.64, KAI-19	92.562 km./h.
500-km. Triangle	Helmut and Heinz Sorg (Germ.) (in SA) 7.1.64, Ka-7	83.74 km./h.

Single-Seaters (Women)

Distance	O. Klepikova (USSR) 6.7.39, Rot Front 7	749.203 km.
Height Gain	A. Burns (GB) (in SA) 13.1.61, Skylark 3B	9,119 m.
Absolute Altitude	B. Woodward (USA) 14.4.55, PR-195	12,190.2 m.
Goal Flight	T. Zaiganova (USSR) 29.7.66, A-15	731.595 km.
Goal & Return	A. Dankowska (Poland) 6.7.67, Foka	591.6 km.
100-km. Triangle	Y. Leeman (S. Africa) 4.1.66, BJ-2	110.19 km./h.
300-km. Triangle	Y. Leeman (S. Africa) 14.1.66, BJ-2	106.18 km./h.
500-km. Triangle	A. Burns (GB) (in SA) 25.12.63, Std. Austria	103.33 km./h.

Multi-Seaters (Women)

Distance	T. Pavlova and L. Filomechhina (USSR) 3.6.67, Blanik	864.862 km.
Height Gain	A. Dankowska and M. Matelska (Poland) 17.10.67, Bocian	8,430 m.
Absolute Altitude	A. Burns (GB) and J. Oesch (in USA) 5.1.67, 2-32	9,519 m.
Goal Flight	I. Gorokhova and Z. Koslova (USSR) 3.6.67, Blanik	864.862 km.
Goal & Return	D. Zachara and M. Olszewska (Poland) 29.7.63, Bocian	419.3 km.
100-km. Triangle	W. Kaminska and E. Sawon (Poland) 19.7.65, Bocian	88.64 km./h.
300-km. Triangle	O. Manafova and V. Lomova (USSR) 12.6.64, KAI-19	74.31 km./h.

SUBJECT TO HOMOLOGATION

Single-Seaters

500-km. Triangle	M. Jackson (S. Africa) 28.12.67, BJ-3	approx.	138 km./h.
Goal & Return	K. Striedieck (USA) 3.3.68, Ka-8a	approx.	760 km.
Distance	J. E. Yates (USA) 15.4.68, 2-32 (flown solo)	approx.	1,095 km.

Single-Seaters (Women)

Goal & Return	Y. Leeman (S. Africa) 28.12.67, Phoebus	approx.	622 km.
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Tentative claims for homologation have been filed with the FAI for these flights.

New records have to exceed the old ones by:

Conversion factors:

Distance	.. .. .	10 km.	Multiply km. by 0.621 to get statute miles
Heights	.. .. .	3 %	Multiply km. by 0.54 to get nautical miles
Triangles	.. .. .	2 km./h	Multiply km./h. by 0.539 to get knots
Straight Goals	.. .. .	5 km./h	Multiply km./h. by 0.621 to get m.p.h.
			Multiply metres by 3.28 to get feet

The Flying Committee has decided that all British National and United Kingdom records will be officially recorded in metric units so as to fall into line with the FAI.

BRITISH NATIONAL RECORDS (Correct as at 15.4.68)

Single-Seaters			
Distance	P. Lane (in Germ.) 1.6.62, Skylark 3f	741	km.
Height Gain	G. J. Rondel, 18.6.60, Olympia 2b	8,870	m.
Absolute Altitude	H. C. N. Goodhart (in USA) 12.5.55, 1-23	11,500	m.
Goal Flight	H. C. N. Goodhart, 10.5.59, Skylark 3	579	km.
Goal & Return	A. W. Warming (in S. Africa) 21.12.65, Std. Austria	602	km.
100-km. Triangle	A. W. Warming (in S. Africa) 21.12.65, Std. Austria	115.1	km./h.
300-km. Triangle	A. W. Warming (in S. Africa) 6.1.66, Std. Austria	99.3	km./h.
500-km. Triangle	Anne Burns (in S. Africa) 25.12.63, Std. Austria	103.3	km./h.

Multi-Seaters			
Distance	L. Welch and F. Irving, 14.5.55, Eagle	408	km.
Height Gain	P. Saundby and B. Roberts, 7.6.64, Blanik	5,410	m.
Absolute Altitude	Anne Burns and Janie Oesch (in USA), 5.1.67, 2-32	9,519	m.
Goal Flight	W. Kahn and J. Williamson, 12.4.58, Eagle	312	km.
Goal & Return	A. Gaze and Rosemary Storey, 7.8.59, Eagle	273	km.
100-km. Triangle	G. Camp and Delphine Gray-Fisk, 21.8.64, Eagle	63.2	km./h.
300-km. Triangle	B. Willson and H. Daniels, 15.5.66, Blanik	55.8	km./h.

Single-Seaters (Women)			
Distance	Anne Burns (in S. Africa), 3.1.61, Skylark 3b	526	km.
Height Gain	Anne Burns (in S. Africa), 13.1.61, Skylark 3b	9,120	m.
Absolute Altitude	Anne Burns (in S. Africa), 13.1.61, Skylark 3b	10,550	m.
Goal Flight	Ann Welch (in Poland), 20.6.61, Jaskolka	528	km.
Goal & Return	Anne Burns (in S. Africa), 6.1.66, Std. Austr'a	545	km.
100-km. Triangle	Anne Burns (in S. Africa), 12.1.63, Skylark 3b	84.0	km./h.
300-km. Triangle	Anne Burns (in S. Africa), 31.12.65, Std. Austria	93.6	km./h.
500-km. Triangle	Anne Burns (in S. Africa), 25.12.63, Std. Austria	103.3	km./h.

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

UNITED KINGDOM RECORDS (Correct as at 15.4.68)

Single-Seaters			
Distance	H. G. N. Goodhart, 10.5.59, Skylark 3	579	km.
Height Gain	G. J. Rondel, 18.6.60, Olympia 2b	8,870	m.
Absolute Altitude	G. J. Rondel, 18.6.60, Olympia 2b	9,300	m.
Goal Flight	H. C. N. Goodhart, 10.5.59, Skylark 3	579	km.
Goal & Return	J. S. Williamson, 30.8.64, Olympia 419	441	km.
100-km. Triangle	G. E. Burton, 20.8.67, Dart 17a	85.9	km./h.
200-km. Triangle	J. Firth, 20.8.64, Skylark 3f	71.9	km./h.
300-km. Triangle	H. C. N. Goodhart, 25.6.57, Skylark 3	66.3	km./h.
400-km. Triangle	Anne Burns, 5.8.67, SHK	60.6	km./h.
100-km. Gl. Spd.	M. Bird, 4.8.62, Skylark 3f	114.3	km./h.
200-km. Gl. Spd.	I. W. Strachan, 2.6.63, Skylark 4	114.3	km./h.
300-km. Gl. Spd.	E. A. Moore, 27.5.57, Skvark 2	92.1	km./h.
500-km. Gl. Spd.	H. C. N. Goodhart, 10.5.59, Skylark 3	90.7	km./h.

Multi-Seaters			
Distance	L. Welch and F. Irving, 14.5.55, Eagle	408	km.
Height Gain	P. Saundby and B. Roberts, 7.6.64, Blanik	5,410	m.
Absolute Altitude	P. Saundby and B. Roberts, 7.6.64, Blanik	5,800	m.
Goal Flight	W. Kahn and J. Williamson, 12.4.58, Eagle	312	km.
Goal & Return	A. Gaze and Rosemary Storey, 7.8.59, Eagle	273	km.
100-km. Triangle	G. Camp and Delphine Gray-Fisk, 21.8.64, Eagle	63.2	km./h.
200-km. Triangle	A. Gaze and Rosemary Storey, 30.4.60, Eagle	43.6	km./h.
300-km. Triangle	B. Willson and H. Daniels, 15.5.66, Blanik	55.8	km./h.
100-km. Gl. Spd.	B. James and K. O'Riley, 27.5.57, Gull 2	96.5	km./h.
200-km. Gl. Spd.	J. Williamson and D. Kerridge, 9.4.55, Eagle	56.2	km./h.
300-km. Gl. Spd.	W. Kahn and J. Williamson, 12.4.58, Eagle	69.2	km./h.

Single-Seaters (Women)			
Distance	Anne Burns, 10.5.59, Skylark 3b	454	km.
Height Gain	Anne Burns, 10.5.59, Skylark 3b	5,100	m.
Absolute Altitude	Anne Burns, 10.5.59, Skylark 3b	5,600	m.
Goal Flight	Anne Burns, 12.4.58, Skylark 3b	308	km.
Goal & Return	Anne Burns, 26.5.63, Olympia 419	216	km.
100-km. Triangle	Anne Burns, 25.7.59, Skylark 3b	60.0	km./h.
200-km. Triangle	Anne Burns, 22.8.64, Std. Austria	69.3	km./h.
300-km. Triangle	Anne Burns, 28.4.66, SHK	60.2	km./h.
400-km. Triangle	Anne Burns, 5.8.57, SHK	60.6	km./h.
100-km. Gl. Spd.	Rika Harwood, 27.5.57, Olympia 2b	83.0	km./h.
200-km. Gl. Spd.	Anne Burns, 2.6.63, Olympia 419	85.5	km./h.
300-km. Gl. Spd.	Anne Burns, 12.4.58, Skylark 3b	63.9	km./h.

THE HIGH PERFORMANCE SAILPLANE AND THE STANDARD CLASS

By HEINZ WEBER

Translated from *Aero Revue*, March 1968, by Rika Harwood

YESTERDAY, today, tomorrow — Time does not stand still. Every day new ideas are being born and brought to fruition. The objective of yesterday's Standard Class was to develop a practical glider with good value for money, and one which could be home-built from kits and repaired by clubs or groups.

Club and group construction has become practically obsolete, as nowadays nearly all gliders are factory-built in a long or short series production run.

With the Ka-6, probably the Standard Class glider most numerous built, which is relatively cheap yet has good flying characteristics, we have probably come to the end of the possible developments in the customary wood construction now almost out of fashion.

As a matter of history, the Ka-6 set a standard against which other gliders are often measured for comparison. It has won World Championships, and has broken records, and flown innumerable cross-country miles and hours. Indeed, even in today's glass-fibre era it is at the summit when the price/performance relationship is taken into account, and just so in the future, the Standard Class will still need a glider with high-performance in the air and offering good value for money.

It stands to reason, therefore, that the Standard Class must keep in step with progress. Casein glue, spruce and birch plywood are giving way to epoxy resins and glass-fibre. This last is costly, and the improved gliding angle is rapidly outclimbed by the soaring price.

The retractable landing wheel is relatively the least expensive way of increasing performance (according to Holighaus, the Cirrus designer, about 600 Swiss Francs when in production). Apart from the better gliding angle, especially at high speed, it also gives greater ground clearance and thus better safety in the landing phase. A further

advantage is the increase in the angle of attack when being launched, resulting in diminished stresses on the lower parts of the fuselage both in launching and on landing. This point by itself is enough to justify its adoption; and indeed it would be against all common sense not to accept the idea of a retractable wheel, considering the high standard of flying technique nowadays which prevails just as much in the Standard Class.

Fundamentally, the Standard Class should remain in the future limited to a 15-metre span. The key words should still be—cheaper, easier to ground-handle, to transport and to hangar. These modern 15-metre gliders are quite light and easily rigged and de-rigged by a crew of only two or three. As they continue to be produced in increasing numbers, so will their value for money be maintained.

In principle we should allow everything which is inexpensive but is of great use. For instance, variable aileron droop for slow and fast flying. For assistance in landing the Standard Class glider should have plain flaps which act as brakes, but no brake parachute. The justification for this ruling is that everything should be considered in the light of the best possible effect. It is all the same whether well-tried traditional construction methods, such as those of Schempp-Hirth, are involved or whether new paths are being trodden, for example, in brakes which are of the spoiler type as on the Standard Elfe and LS-1.

Should the fitting of flaps result in improved performance—it assists slow flying—then it is to be welcomed and not spurned. The main point is that a cheaper and safer solution is the result of judgement. Expensive accessories belong in the Open Class where anything or everything is allowed—except, of course, an engine!

In principle one may say that airbrakes of the spoiler type are to work on both surfaces and must provide adequate braking power. As qualifications for the OSTIV Prize, the Standard Class glider should have, as before, for consideration the price/performance comparison, the flying qualities, the degree of seating comfort, the ease of rigging and de-rigging, adequate payload and stowage space. In these respects even today the Ka-6E would be fully up-to-date.

I am aware that there exists no "Ideal", only a basis for comparison. For this reason I have drawn my price/gliding-angle polar. On it are taken into account not only the very important fast and slow flying performance but also the equally important handling, landing and circling qualities. If we now examine the price/gliding-angle polar and take as an example a basis of 10,000 Swiss Francs—a gliding angle of 30:1, then we can read out thus:

Gliding angle increase of	Extra Cost	Increase in Distance/ Performance
%	%	%
10	30	5
25	80	12
30	120	15
40	130-160	20
50	230+	25

All this, however, is nothing like so good in the raw reality because all gliders do not climb at the same rate. Although this tabulation may seem open to question, yet we can see that it gives us a point from which to start. The cost alone justifies the retention of the Standard Class, and in the case of the 15-metre Phoebeus it shows up in the relatively inexpensive performance increase on fitting a retractable wheel. The dotted line connects together five high-performance gliders.

The 17-metre Phoebeus has already demonstrated in keen competition flying that, above all these, it is, as a high-performance glider, not only good value for money but also of high class. The Standard Libelle and the LS-1 are also ready for entry into the field of competition.

The 17-metre Phoebeus has revealed a new horizon, and points a way for the future. As with many other sports with

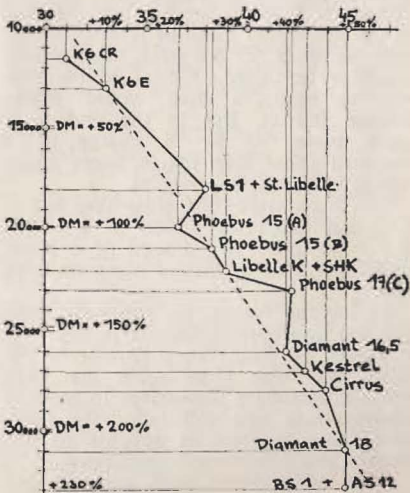
different classes, we have come to realise that the "Mini" class of below 15-metres, once quite popular, now has no real chance of success. This glider, too, has proved that increased performance is possible with small outlay, thus leading to better results simply and with no problems.

Looking to the future, we should perhaps envisage a 17-metre Class as well as the Standard and Open Classes. This would embrace, in principle, the 17-metre Phoebeus (but fundamentally without flaps) or, for example, a clipped 17-metre Cirrus.

Too many Classes? I don't think so, but rather more and fresh possibilities. So far as the question of value for money is concerned in high-performance gliders we are aware that aircraft with flaps have always been expensive, both in manufacture and maintenance. Added to which, they are slightly more complicated to fly.

The Phoebeus and Cirrus both show a new way here which we must not fail to follow. I have constructed the price/gliding-angle polar from such data as is known to me; even if the gliding angles shown are not quite achieved in practice, the prices are approximately correct.

Whatever the gliding angle may be, let us not forget that the flying charac-



teristics play an important part, while the pilot factor will still, in the future, always be decisive.

I want to give designers this list of desiderata. The simplest possible and uncomplicated construction; light weight; easiness of rigging and de-rigging. Especially important—a short landing run, but without brake parachute, like, for example, the 16.5-metre Diamant. Comfort and good all-round vision, like the Cirrus and LS-1. Fowler flaps are not an absolute necessity to achieve good performance. We must remember that the opportunities for breaking records are scarce and are almost always confined to a small band of élite class pilots.

The majority of pilots, including those in the top class, need a cheap and easily-managed mount, something like the 17-metre Phoebeus.

I myself am not in the top class as a pilot, and we are, most of us, in the class of "everyday users"; but although numbers at the peak are increasing and the general average is on the upward grade, yet it is quite certain that modern gliders mostly have a greater potential than we have the skill to achieve.

Hans-Werner Grosse wrote recently that only when one has fully explored the flying qualities of a Standard aircraft should one look at the "Super Birds", sometimes called the "Plastic Vultures". I think he has hit the nail on the head—the machine is often better than the pilot. All the same, most people would prefer to fly a Cirrus, in the same way as many a man would prefer Brigitte Bardot. But in the end it is much better to be in charge of a Standard glider than that a Super glider should be in control over us.

For the present—the glass-fibre age is here and today we dream of a Cirrus just as yesterday we dreamt of a Ka-6, which is not to be looked down on even now.

As for the future, we can only hope that the appropriate experts in the FAI or OSTIV (or both) keep abreast of the times. We must hope again that they will accommodate themselves to modern circumstances and will tailor the Standard Class as soon as possible to suit today's and tomorrow's conditions.

Pilots have always been pioneers and

planners for the future. We shall hope it will always be so and that we shall not fail in our endeavour.

* * *

STANDARD CLASS RULES

By LORNE WELCH

I am not at all clear what Heinz Weber is really advocating in his article. In one part he argues that the Standard Class should be kept cheap and simple and then goes on to suggest that retractable undercarriages and flaps should be permitted since these result in an increased performance for a comparatively small increment in price.

To my mind any major alterations in the Standard Class rules would be a mistake; the existing rules are producing a good type of aircraft which has by no means reached the end of its development. This should be encouraged, stipulating that the rules will remain basically unchanged for several years.

To understand the present situation, it is necessary to consider the reasons behind the formulation of the existing rules.

Most sporting activities involving the use of vehicles, whether motor boats or sailing boats or cars or motorcycles, have strict rules defining or limiting the characteristics of the vehicles. This is essential because there is no natural limitation to their performance; the more powerful a motor vehicle the faster it is, the longer a boat the better it goes.

Gliding is almost unique as a competitive sport because it has a genuine Open Class with absolutely no limitation on the characteristics of the vehicle, other, of course, than the prohibition of an engine. This state of affairs can exist only because there is no natural law of favouring an extreme type of craft; it does not pay to make it very big or very small, and not having an engine, matters of power do not arise. Consequently, the performance is limited only by the wits of the designer and the constructional materials available. However, refinements such as retractable

undercarriages and more complicated methods of construction inevitably increase the cost of the aircraft.

It was because of this tendency for the cost of the aircraft to increase that the Standard Class was introduced in 1958. It was intended that unrestricted competition would continue in the Open Class, but a simpler and hence cheaper type of aircraft would be used in the Standard Class. It was realised that it would be quite impractical to attempt to restrict the competition to aircraft costing less than a certain amount, as defined by the manufacturer, and that it was equally impractical for an expert to assess the cost of an aircraft by looking at it. All that could be done was to decide which features of modern gliders were expensive and then to limit or restrict these features. Hence the limitation of the span to 15-metres and the prohibition of flaps and retractable undercarriages. At the same time, in an effort to encourage more practical gliders, a landing wheel, as distinct from a skid, was made mandatory, and effective airbrakes were demanded.

In formulating these rules it was decided that, as far as possible, the

decision whether a glider was, or was not, eligible to compete as a Standard Class glider should be determined by the direct observations of a measurer and not be dependant on paper work.

The present rules, with only slight modifications, have been in force since 1958; they have led to a very good breed of aircraft but one which is now subjected to criticism from three fronts.

Firstly, there are those who hold that by permitting retractable undercarriages and flaps a significant improvement in performance could be achieved at small cost. I am not convinced by this argument. One has to draw a line somewhere, and if one permits retractable wheels and flaps, why not allow a few feet more span, since this is the cheapest way of improving the performance. What then distinguishes the Standard Class from the Open? Whatever their proponents may say, retractable undercarriages and flaps add cost and complication, and since one can get good performance without them, why allow them in the Standard Class?

In complete contrast to this criticism is the school which considers that the Standard Class rules encourage the development of impractical aircraft. In particular, objection is taken to the supine seating position, the unsprung undercarriage with poor ground clearance, and inadequate wing incidence resulting in a high take-off speed. I feel that there is a good case here, and that minimum cockpit dimensions and minimum wing incidence rules could be introduced without difficulty and would lead to more practical aircraft of only slightly inferior performance.

Finally, there are those who wish to permit fully deflected flaps to be accepted as airbrakes. They argue that combined flaps and airbrakes are no more expensive (or even cheaper) than conventional airbrakes, and the advantages of flaps in terms of slower circling and approach speeds can be obtained for no extra cost. The weakness of this argument is the fact that, as far as I am aware, no one has yet produced combined flaps and airbrakes which are really effective at high speeds as well as low. The OSTIV requirements call for the full extension of the airbrake at Vne in less than two second in order

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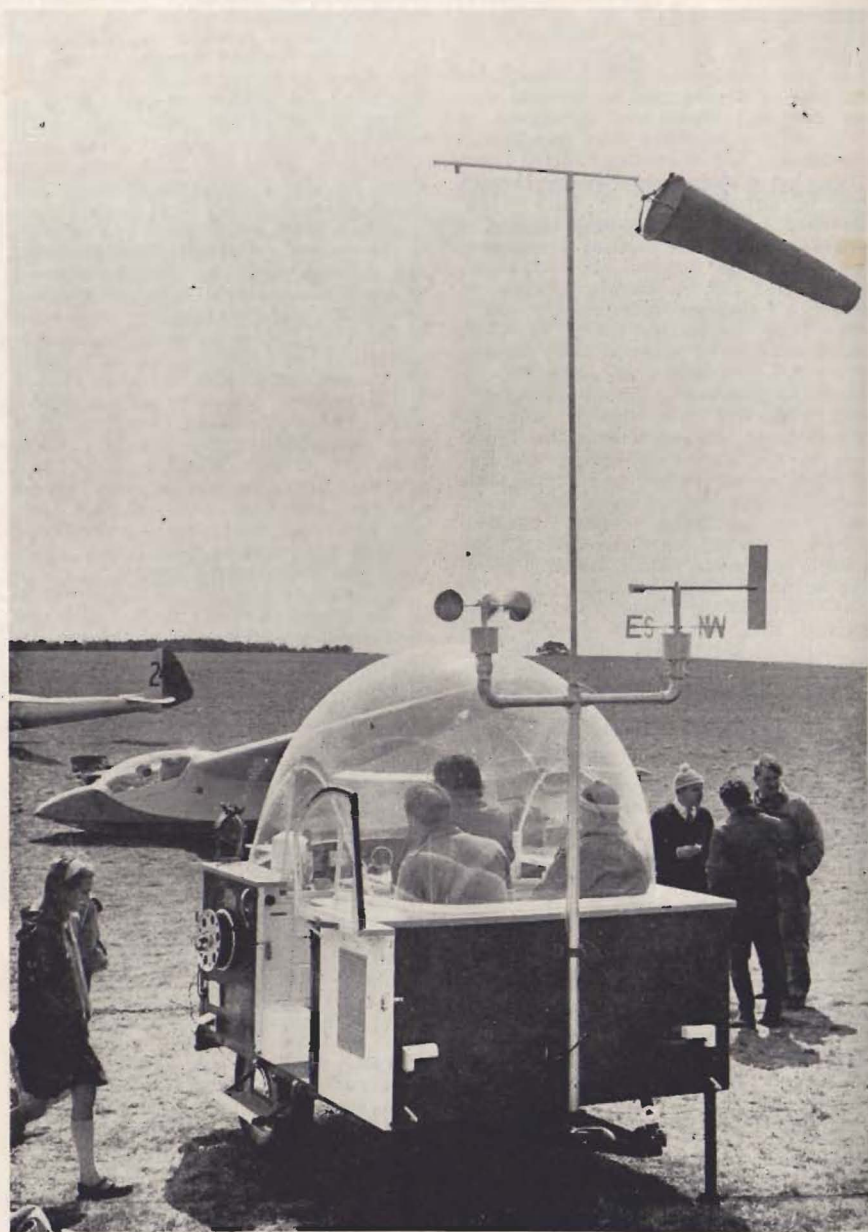
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to provide for emergencies when cloud-flying or doing aerobatics. If this requirement, which seems very reasonable, can be met by some type of combined flap and airbrake then this arrangement should be accepted for the Standard Class. But it must prove itself first; the development should be done

in the Open and not the Standard Class.

To sum up, I feel that it would be a mistake to loosen the Standard Class requirements; they should remain as they are or possibly be tightened by imposing minimum cockpit dimensions and minimum wing incidence requirements.

THE NORTH HILL BUBBLE

About six months ago the Devon & Somerset Club purchased a surplus perspex helicopter canopy for 50s. and two of the club stalwarts, George Moore and Peter Cooper, set to work to convert this into what has proved to be a first-class control unit for launching. Using a Jaguar axle, Austin wheels, angle-iron, sheet metal, piping and wood, they are to be congratulated on their efforts, the result of which is little short of professional.

The canopy is mounted on a chassis with conventional tow-bar equipment which also forms the base for a mast supporting a windsock, anemometer and wind vane, indications from the two latter being electrically reproduced on the fascia of the control desk inside. This fascia is mounted something like the dashboard of a car and includes a barometer, windspeed and direction indicator, loudspeaker (which can be switched either to the winch telephone line or VHF radio on frequencies 129.9 or 130.4) and compass. A large chronometer is fixed at the side. The operator sits on a swivel chair based on a circular metal mounting.

Apart from knee-room, the desk is blocked in with drawers and cupboards for electrical apparatus and records and there is a bench-type seat at the rear of the canopy with a foam cushion top. One of the attractive features of the interior is the floor carpeting and decorative finish. Perspex racks for pilot records, drawers and cupboards are all labelled with Dymo lettering. Access is by folding steps which can be telescoped back into the unit when moving.

Viewed from the outside, the unit is compact and the right height for all-round visibility. The front is equipped

with cunningly hinged flaps and signal panels and there is a drum of telephone cable attached to one side, one end of which is permanently connected to the desk handset and the other floating for outside connection to the nearest field-point. The field-points accommodate the various positions of winch and launch point. An Aldis lamp is also mounted on the front and can be operated from its metal gantry or removed for hand use. With this unit, what used to be the log-keeper is now virtually flying controller, and it adds immeasurably to the efficiency of this job that it can be done under cover, at the right elevation in the correct position with adequate electrical and mechanical aids. There is also the advantage that the Bubble is the obvious focal point for flying operations and even for visitor enquiries. The value of this equipment is estimated to be between £700 and £800.

A. E. R. HODGES.



Photos by Gainsborough Studio.

THE SLINGSBY T-49C — Nelson Powered Capstan

By DEREK PIGGOTT

FOR many years now Slingsby Aircraft have been itching to be asked to put an engine in or on the T-49 Capstan. Now, thanks to American enterprise, not only has this been done, but the first aircraft has more than 15 hours of test flying and is now awaiting approval by the Air Registration Board.

Charles Rhoades, of Irwin, Pennsylvania, ordered this Nelson Powered Capstan as a result of his enthusiasm for the Nelson Hummingbird. He owns two of these all-metal, tandem two-seaters which have a fully retractable Nelson engine, making them a completely independent, self-launching soarer of quite high performance.

He believes that self-launching gliders are essential in the USA where there are very few gliding clubs and where the average enthusiast will not put up with the fumble and complications of normal glider flying.

In addition, he has taken over the manufacturing rights of the Nelson engine and he is particularly keen to see it put to good use on gliders. With this in mind, he asked Slingsby's to fit the

Nelson on to the T-49. He is also interested in a Nelson powered version of the T-53, since there is considerable sales resistance to wooden aircraft in many parts of the world.

At present there is a very limited stock of Nelson engines, and Mr. Rhoades is saving them for powered gliders and other projects which he thinks are worth while. However, recently he visited Europe in order to organise the manufacture of the engine on the Continent and by this means to make it available in quantity at an economical price.

The engine is fully approved as an aero engine for both helicopters and normal aircraft. In America it is keenly sought after for small hovercraft and sno-cats. Unlike the McCulloch missile engines, which were designed for a rather limited life, the Nelson is approved for 800 hours between major overhauls. This must make it relatively inexpensive for normal operating as there are no valves and very few other parts requiring maintenance compared with the normal 4-stroke engine.

Readers may remember the article in



The Motorised Capstan.

the August, 1962, issue of *SAILPLANE & GLIDING* suggesting a scheme for mounting an engine on the Capstan. I feel I must point out that, until recently, Mr. Rhoades had never seen the article. Of course, when I was asked to help with the test flying, I was most enthusiastic!

The T-49C is just a normal T-49 glider with the engine mounted on four struts above the fuselage at the centre of gravity. Remarkably little work has been necessary to modify the Capstan to take the loads of the engine, and although the engine is not intended to be derigged daily, it is only about half-an-hour's work to remove it and have a normal glider. However, remounting is not so rapid.

The Nelson engine is a 48 h.p. two-stroke with twin ignition, self-starter, generator and all mod cons. Its basic weight of 68 lb. enables a really worthwhile payload of 460 lb. to be carried as a non-aerobatic, normal category aircraft, or about 260 lb. for Semi-Aerobatic Category and cloud flying.

For the engine starting controls and instruments, a small detachable panel is mounted on the centre control console at the bottom of the main instrument panel. The only other controls are the throttle lever, which is fitted on the same shaft as the elevator trim lever, and the fuel cock.

The appeal to the American enthusiast should be immediate since he need not recruit a great team of helpers or a tow-plane before being able to fly. Furthermore, rigging and derigging is very quick and easy, so that the aircraft may be kept in the trailer at home whenever it is not in regular use.

Even without modifications to the undercarriage, to make unaided taxi-ing possible, the pilot and one other person can manage on smooth ground or concrete. There is seldom any need to taxi between flights when training circuits are being carried out. With the help of the small wingtip wheels, no help at all is needed for the take-off.

The take-off in still air takes about 160 yards on a runway, or 200 yards from smooth grass. There is no swing, either on the ground or in the air, and no rudder is required to cancel out the effects of the engine at any time. (The natural stability of the T-49 is much

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more powerful than the slight yaw caused by even full power.) The exceptional forward view ahead makes it tempting to start to climb much too slowly, so it is best to make a deliberate effort to reach 50 knots and retrim before gaining much height. At this speed, the rate of climb is 300-350 feet per minute at maximum load, which is roughly the same as aerotow launching. Of course, the rate of climb can be doubled by using what to gliders would be poor lift.

The stalling speed is 1-2 knots faster, but otherwise it is difficult to say what difference the addition of the engine makes to general handling, either power on or off. Apart from the noise and the fact that it is possible to climb at any time there is little or no difference from flying a normal Capstan.

The stall is docile and it will not spin for more than 1-1½ turns even C.G. aft. There is virtually no change of trim fore and aft with power, except with full air brakes.

The maximum level-flight speed is almost 80 knots indicated (84 knots or 95 m.p.h. true) and it will cruise happily at anything between 40 and 70 knots using about 4 gallons of fuel an hour. (It runs on 80 octane mixed with two-stroke oil.)

The engine can be stopped and re-started in the air by pressing the button, and it starts very easily at all times whether hot or cold.

In order to simplify the difficulties that power pilots seem to experience using air brakes for the first few times, a simple attachment enables the air brakes to be set in a "half-brake, landing" posi-



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tion so that the pilot can use his air-brake hand to operate and adjust the throttle.

Glider pilots will have no such problems and will prefer to select a constant throttle setting and use the air brake as if in a normal glider. Even with the special half-brake position, the aircraft cannot maintain height in level flight, and the real power of the T-49 air brakes can be demonstrated by making a full throttle approach and landing. (This still gives a steeper approach than on many light aircraft.) Of course, in this case, closing the air brakes after touch-down results in an immediate leap back into the air.

In spite of the comparatively low rate of climb, the advantages of the aircraft for teaching approaches and landings is immediately obvious. We made five approaches and landings in a 30-minute flight trying to determine the minimum safe speeds for various types of approach.

The general handling, view and comfort are superb, and scepticism about the trim changes, power on and power off, have proved completely unfounded. I have never flown an aircraft with so little effect of power on either directional or fore-and-aft trim.

Only the problems of noise remain to be solved, and we are waiting for exhaust mufflers and alternative propellers to arrive from America to see what can be done. At present the exhaust stubs are unshielded and only a few feet from the top of the fuselage, making it extremely noisy for everyone. (Try sitting five feet away from your car engine revving at full throttle with the exhaust pipes removed!)

Obviously this kind of conversion could be attractive as an interim powered trainer, since many clubs already own a T-49. For soaring with the engine stopped, however, I doubt if the performance is really good enough for British type conditions. But for training in thermal or wave conditions it cannot help but be more effective than any glider, since even when the lift is too weak to soar, it can be used for practising centring.

At last we have an aircraft which has good handling characteristics and powerful brakes, so that it is possible to form a valid opinion as to the likely amount of

dual conversion required for glider flying after basic training. In the case of conversion to aerotowing in a glider, this is obviously (after you have flown the T-49c) the minimum number of flights needed to get accustomed to aerotow—certainly not more than 3-5 launches.

One intriguing possibility is to use the powered version for both aerotow and winch launches. This avoids the need for another two-seater glider but also eliminates the time consumed on cable breaks, since after carrying out the cable break procedure and touching down, an immediate overshoot and climb is possible. Perhaps the best method of training might be to take a winch or aerotow launch for the first circuit of each session towards the end of training, and to keep the engine running at low power so that it can be used for the overshoot from practice cable breaks. In this way, the pupil would become accustomed to the glider type of launch more gradually so that he has ample experience by the time he is ready for solo.

There are several other windfalls from the engine-on-top configuration. Far from being an embarrassment, the wing tip on the ground is an encouragement to keep the aircraft moving and not stop and block the landing area for a long chat. This means a change of instructional technique from prolonged discussions and debriefing after each landing.

Once a decision is made to design a machine for our particular needs, there are no difficult compromises caused by trying to obtain a good glide and power performance, or from trying to make inexpensive conversions of existing gliders. The way is then open to using engines in the 100 h.p. range which would give very high rates of climb. This would greatly reduce the noise in the vicinity of the site besides improving the take-off and speeding up the whole training.

One thing is abundantly clear: a good powered trainer is unlikely to be made in the next five years unless manufacturers are encouraged financially, or until they feel sure there is a worthwhile market for their products. At present they feel it is probably safer to turn out a simple, conventional light aircraft, than to risk any new venture, which might only have a limited market.

JUST A FIELD LANDING—WITHOUT A FIELD

By H. R. JARVIS

In reply to S. M. O'Brien's request for more "home material", in his article "Just a Downwind Dash" in our last issue, the author offers his experiences on "The Day I Completed my Bronze C".

I ARRIVED at Odiham airfield on a rather dull April day, expecting the usual exciting and extremely frustrating day's gliding. I had over-slept that morning due to the previous night's activity and, as I expected, I received a long stream of abuse from the CFI about young solo members, what it was like in the old days, and if it happens again . . . and so forth. Ignoring all, I informed him that I had only one step left to complete my Bronze C—the much-dreaded field landing check. After looking sadly at the sky for some minutes, he pronounced that today was the day, or words to that effect.

The normal club activity continued with the normal frustrated cries of the harassed Duty Instructor, who had, by the way, been to the same activity the previous night as I had, and therefore had to be handled with care. In the end the winches which wouldn't start were started, the tow bar on the Land Rover which wasn't fitted was fitted, and the winch cable which wasn't attached was attached, and the glider and winches moved to their respective positions on the airfield.

Gliding started and it was found to be "soarable" by the two-seater, and the usual cries were heard from the solo pilots: "Well, the sky was dead when I was up." Then my turn came and I hopped, or should I say squeezed, into our high-performance high-wing, highly-used Grunau Baby.

My cockpit checks completed, I signalled that I was ready to go. The CFI then came up and said that he was off to select an area for me in which to attempt my field landing. I headed skywards to admire the view or ride the thermals, depending on how my luck held. I released at 1,000 ft. and decided it wouldn't be a bad idea if, just for practice, I picked out a few suitable fields

around the airfield. After losing 300 ft. and having found only one rather uninviting field, I began to realise the problems involved. As a result I began to look forward with a mixture of thrill and dread to the field landing that was soon to take place.

I returned to the problem of landing my fast-sinking craft, which I succeeded in doing, although I say so myself, rather accurately back at the launch point. The CFI approached with the shadow of a smile on his lips and the spark of sadistic expectancy in his eyes, and attempted to explain the whereabouts of the area in which the landing was to take place. He did this with much arm-waving and finger-pointing, and all that I gathered from the conversation was it had a vague resemblance to a rubbish dump which no ace glider pilot, let alone myself, would even look at. It was an area of grass on the outside of the perimeter track. The aim was, he said, to land in it and stop before the peri track. However, he advised me to have another flight and look at the area from above.

This I did, and from on high it didn't look too bad. However, as I sank lower, I noticed unfriendly hedges and trees and, to crown it all, telegraph wires on the approach. With a mixture of stunned bewilderment and rising panic I landed back at the launch point.

After checking that I had found the correct field, "Chiefy" strapped himself into the two-seater next to me. The T-21 had rather a fatherly feel about it, after the Grunau, and I began to lose my dread of the forthcoming ordeal. Meticulously carrying out the cockpit checks, we then leaped heavenwards. Dropping the cable, I inspected the landing area again. As I was doing this, the stick was dragged from my hand with a cry from the CFI: "Keep alert, you've just passed through lift." We circled a few times

but could not find it again, and as we were getting rather low, headed for the field.

By now I was concentrating so much on the "pearls of wisdom" flowing from Chiefy and the aim of the exercise, that all my misgivings had left me. As height decreased, the pitch of the CFI's voice increased. Thoughts flowed through my head: "where's the field?", "mind the hangar". "watch those telegraph wires we're too low". A calm voice then said "get those spoilers out". The telegraph wires shot past only inches below us and we touched down in the field. On and on we rolled across the peri track and on to the grass on the other side. My heart sank; we had overshot the minimum distance mark; I had failed! But no, Chiefy turned in his seat and said that I must now try it alone in the Grunau which, he assured me, would stop far quicker than the T-21. My heart rose again, I had passed the first hurdle.

The T-21 was returned to the launch point and the time had now come for me to try the field landing alone, and up I went. Could I do it? I was sure I could. The ground shot past below me and disappeared. The next thing I knew I was at 1,100 ft. I hit lift and circled, attempting to find that elusive centre that instructors talk about. I had reached the conclusion, after many attempts to find it, that there is no such thing as a strong central lift, or if there is, it is not at the centre of the thermals I circle in. However, I stayed put at 1,100 ft. for three turns and then began to lose height.

At 500 ft. I aimed for the field. I looked at it and decided I was too high. I circled slowly and at 300 ft., started the approach. The trees and hedges seemed to move below me at ever-increasing speed. "Keep the speed steady," I kept telling myself, "hold the wings level"! The telegraph pole I was aiming for seemed frighteningly low for the height I had. It came closer. I spotted the CFI's car out of the corner of my eye—no doubt he was watching me closely!

The following events occurred with such rapidity it is hard to recall them. The telegraph wires passed so close that I could almost hear the messages being passed. I found I had my air brakes full out, the ground swooped up to meet me. I floated, sank and rolled to a halt just

10 ft. from the peri track. I relaxed as my wing touched the ground; I was down, I had made it.

Chiefy approached screaming blue murder at me for making the last 360° turn, as I had come in too low. "Was he going to fail me?" I crossed my fingers and my toes and waited. He then told me how terrible my flight had been from start to finish. My morale, so high only moments before, sank lower and lower. I decided the time had come for a decision. I asked if he wished me to do it again. "No," he said, "that'll pass you." My toes uncurled.

I had completed the final leg of my Bronze C. I was now ready for cross-country flight. My next field landing would be in a real field, and as the CFI pointed out, these are simple to find. They must be at least 100 yards long, with a field at each end for undershoot and overshoot, have no cows or crops in them, and for good measure, be next to a road and have a gate for access, be next to the telephone and have a pub around the corner. These are, of course, ten to the dozen around South-East England!

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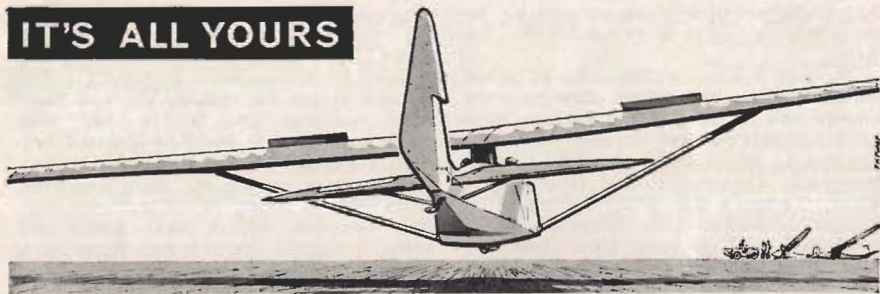
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IT'S ALL YOURS



THERE is no doubt that anyone who flies almost every day for a year or more develops an ability that never really leaves him. Few people are lucky, rich or determined enough to do this, but in few sports is it as important as in flying.

A fortnight's ski-ing, a summer's week-end dinghy-sailing, or a few hours at water ski-ing, and enough skill is developed to have another enjoyable go at any time for years afterwards—but not in flying or gliding.

For this reason, flying infrequently is most discouraging for the inexperienced pilot. He finds himself continuously waiting about for dual checks, with progress dismally slow.

There are many reasons why a student pilot does not fly regularly, but the most usual one is lack of money. The problem is that this situation is getting worse since the price of flying is now competing with an all-round price rise, out of much the same income or pocket money. But frustrated pilots, or accidents, benefit no one.

Some clubs run members' courses for pilots at different stages of progress. These cover concentrated dual in order to get solo, or conversion on to, say, Skylark from Swallow, or field landing training before going cross-country. There is usually a fee for such courses, but its members have an instructor and aircraft to themselves for the period of the course, and save money in the long run because progress is positive.

It would be valuable if more clubs ran concentrated progress courses for their members, since both clubs and students benefit. Most clubs have bottle-

necks somewhere in their training which even a couple of Monday-Friday special courses during the summer could probably clear, and improve flying safety into the bargain.

* * *

The New Era

Under the new BGA structure it has been agreed, I think rightly, that committee chairmen shall not serve for more than five years. All of us who had done more than a five-year stretch already were asked if we were prepared to stop or continue; and, having looked after INSTRUCTORS for 20 years, I decided that it was certainly time that someone else had a go.

With mixed feelings—divided between the loss of working with good friends and a delightful sensation of freedom—I have handed over to Roger Neaves. Roger has been on the Panel for several years, has run a club as CFI, and is a BEA Comet pilot. In turn, the work of Safety Officer, which Roger did, is going to John Ellis, also a member of the Instructors' Panel. Both have excellent qualifications for the job and also my best wishes.

The development of instructional standards has ranged from nil, in terms of no qualifications and no standards or syllabus when I took over in 1948, to the present, when there are 400 rated instructors, plus a further 460 u/t or not yet qualified, in the BGA orbit. Throughout this period, during which hundreds of voluntary and individualistic instructors have worked with the BGA Panel to produce a national training system, gliding has changed enormously. Much of

its success today is due to the unselfishness and enthusiastic hard work of the BGA instructor.

* * *

Powered Gliders

There is a fine future for any sort of simple flying, and the powered glider *could* be the answer. But a lot of aspects need to be carefully considered, not least of which is noise.

Having now taken over the chairmanship of the BGA Powered Glider Committee, I feel that the very first thing to be done is to decide what sort of animal we are prepared to harbour in our midst. I am sure that we should concern ourselves only with aircraft which have glider characteristics and which can be operated within gliding clubs as far as possible interchangeably with gliders. Aircraft which do not meet these requirements or needs are aeroplanes, and already adequately catered for.

The biggest bottleneck in gliding, and particularly in training, is getting off the ground, and in this respect the self-launching two-seater trainer could provide a real breakthrough in anti-frustration; but only if it can be used in conjunction with a glider at any time during a student's training. Quite apart from this, the possibility of having really high-performance gliders able to launch themselves and go off to find suitable weather would be more than welcome.

* * *

Pilot Selection, or what do you think you're getting?

Nearly 100,000 people wrote in asking to learn to fly under the 1968 Wills Flying Training Scheme, and some useful information is beginning to emerge on simple and inexpensive ways of sorting out potentially good pilot material. Over the three years that the Scheme has run, more than a quarter of a million applications have been received for flying training, and the progress of the top 270 who will soon have completed training can be followed in detail.

When available, this sort of information may be useful in gliding clubs which have more applicants for flying membership than can be taken; at present, selection is carried out by the purse, by frustrations or by a mixture of both. Neither is very satisfactory for reasons

which are not hard to find. The introduction of any system of selection based on potential competence is difficult, but if clubs are to continue to operate to a considerable extent on voluntary work by their own members, they may need to give priority in some way to people who are likely to become both competent and useful. Like the floating voter, many people now learning to fly gliders have no strong allegiance and will change to skating or any of the many sports easily available without a second thought.

It takes some two years' active gliding before a member is capable of becoming an instructor or an executive in his club, and the proportion of people reaching this stage who are also prepared to take on the work is small—often for good reasons. The problem of any future voluntary "staffing" of gliding clubs is one which needs urgent consideration, if only to ensure that potentially good people are recognised and encouraged, and not lost unnecessarily through frustration or feeling that they are wasting their time.

* * *

Wills Glider Pilot Competition; or Win a Swallow glider for your club

155 new pilots have started training in the first stage of the 1968 competition, among them seven girls. One of these, June Daniels in the Southern competition, is the wife of one of last year's competitors who tied with winner Noel Ellis at the semi-finals, but lost the toss to go to the Finals as representative of the Cornish club. In the North the situation is reversed; P. E. Gillett, competing this year, is the husband of Jill Gillett who reached the semi-finals last year. Forty-five clubs have managed to enter pilots in spite of the restrictions on flying due to the foot-and-mouth epidemic.

ANN WELCH

Thanks.—It is just 11 years since Ann Welch began this feature, and in all that time she has always found something fresh to say in helping to raise the standard of gliding instruction in this country. The Editors would take this opportunity of expressing their gratitude to Ann for her good work, and best wishes to Roger Neaves who will now carry it on.



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FIRST INTERNATIONAL CONTEST, 1937

By A. E. SLATER

OFFICIALLY, it could not be called a "Championship", but it was, nevertheless, the first of a series of 11 contests which will culminate in Poland this year with an entry of over a hundred sailplanes from thirty-one countries.

This 1937 meeting, held at the Wasserkuppe in Germany, had twenty-seven entries from seven countries—five each from Great Britain, Germany and Poland, four each from Switzerland and Czechoslovakia, three from Austria and one from Yugoslavia. (A single entry from Italy had been cancelled.) Many machines had two alternative pilots.

You can read full details of the flying in *THE SAILPLANE & GLIDER* for 1937 (if you have got it). In the present account the flying will, of course, be mentioned, but it would be a pity to miss an opportunity of including items of the "Now it can be told" category.

The annual German meetings on the Wasserkuppe mountain, which started in 1920, had not excluded foreign participants. A Russian party came in 1924, two Frenchmen a few years later, and a strong Polish team in 1932 with machines of their own design.

The London Gliding Club had a Professor sailplane on the entry list in 1930, and another British entry was by a queer character who posed as a gliding expert but had never been seen to fly. (He would announce a demonstration, strap himself in the seat, and then say the wind was wrong or something.) Neither machine left England.

In 1933 the then chairman of the BGA announced that a British team would be sent to the Wasserkuppe that year, but did little about it, and the actual gliding people took no notice.

So not until 1937 did a British team match itself against other nations. Lord Wakefield subscribed £500 to a fund, most of it being swallowed up by insurance.

As aero-tows were to be laid on when the wind did not allow bungy-launching, and hardly any British pilots had ever

been aero-towed, the London Club arranged some aero-tow practice meetings at a small private airfield near Fenny Stratford. At one of these gatherings many of the proposed team turned up. An entirely new type, the King Kite, had been produced by Slingsby to G. Mungo Buxton's design; there were to be three of them, and Philip Wills was to fly one, having handed over his Hjordis to others. Unfortunately, R. G. Robertson (Britain's third Silver C) undershot in it after an aero-tow, and instead of going into the hedge, tried to get over the top and so stalled the Hjordis on to bare ground.

At this time the proposed British team had been, provisionally:

J. Neilan and P. M. Watt, King Kite;
P. Wills, G. M. Buxton, King Kite;
D. Hiscox and Mrs. Price, King Kite;
R. Robertson and G. Smith, Hjordis;
W. Murray, J. Dewsbery, Falcon 3.

After the Hjordis incident, Robertson faded out and Wills took the machine back lest worse should befall it. But he was not yet done with the King Kite, for when he test-flew it and put it into a spin, for some agonising moments he could get out of neither the spin nor the cockpit. (You can read about it in his book, "On Being a Bird".)

Buxton could not come, nor could Dewsbery, who was replaced by J. S. Fox. In the new distribution, Watt shared one King Kite with John Neilan and another with Gerry Smith.

Flt.-Lt. "Willie" Watt had less gliding hours (20) and more aeroplane hours (2,600) than any other member of the team, but (or and) did particularly well in the contest. Later, he unfortunately lost his life early in the war as a passenger in an aeroplane which was trying to land in fog.

For the trip to Germany, Philip Wills fixed us up on the Wilson liner Accrington, leaving Hull for Hamburg on 26th June with the five trailers on deck. It took practically a whole morning, starting at 5 a.m. on the 28th, to get everything through the customs at Hamburg.



First British gliders to enter Germany, unloaded at Hamburg.

The convoy then caused traffic jams in the city, till we emerged along the same route I had followed by bicycle on my first visit to the Wasserkuppe just ten years before.

At a wayside restaurant, a party of German naval officers kindly mapped out a route for us to include two of the famous new Autobahns, on which our trailers could travel at 60 to 70 m.p.h. without jack-knifing. At Elze, near Hanover, a perfect overnight parking-place for the trailers was found—a covered market square, complete with night-watchman.

The practice week at the Wasserkuppe went smoothly. Maj. J. E. D. Shaw had lent his Avro Cadet and its pilot McMurdo for aero-towing. Each national team was allowed a Hitler Youth for general assistance, and we had one named Mark. He took his duties seriously, and started pointing out to our pilots where the best slope-lift was to be found in various wind directions. But something happened to him, for after some time he left under a cloud. Our guess was that he became so demoralised by the British team's happy-go-lucky methods and entire lack of

discipline, that he caught the infection and had, perhaps, been cheeky to his superiors or something. He had obviously enjoyed his stay with the British team, but in his place came a poker-faced youth who gave no hint of what he really thought of us.

There were, of course, Swastika flags all over the place, and when all the national flags were run up for the opening ceremony, Britain was represented by the Red Ensign instead of the Union Jack, apparently to match the other national flags which tended to be predominantly red.

As to the Hitler Youth, our Team Leader, Professor David Brunt, was most impressed with their good manners, under strict disciplinary control. He was not referring to our Mark but to the way they would, upon entering or leaving the dining hall, turn to face the occupants and give the "Heil Hitler" salute. It was in such contrast to the growing indiscipline of modern youth, etc., etc.

Professor Brunt was amusing on the subject of the Team Leaders' dormitory, where nearly everyone spoke a different language—"There's just one of each of us" (the expression "one off" had not yet come into use). As the only Professor of Meteorology in the British Empire, his advice to the British team



John Neilan in King Kite, with John Sproule of his ground team, and Joan Price, its alternative pilot.

was mainly meteorological, and almost confined to the large-scale distribution of stability and instability over the weather map of Germany as a whole. This was not realised by Joan Price. One day, on leaving her first thermal, instead of looking round for the next likely source of lift, she turned due north and sank to earth. "Professor Brunt," she explained, "said conditions would be better to the north."

The German authorities laid on free board and lodging for everyone, as well as refunding their travelling expenses on German soil. On arrival I was generously put on this free list, so my only obligatory expense was £5 for the sea voyage, and even that was later refunded by *The Times*.

The Press arrangements at the Wasserkuppe were in charge of a keen Party member called the "Presse-Chef" (odd that such a zealous patriot should consent to be described by a couple of French words). He appeared to have no previous connection with gliding. Most of the Press men, on the other hand, were genuine gliding enthusiasts who had been at the job under the previous regime. It was one of them, not the Presse-Chef, who told me there was a daily Press conference and I would be welcome.

Welcome? The Presse-Chef took a dislike to me from the first. When he read out a message from Herr Reichsminister Goering, which, of course, everyone was expected to take down verbatim, I just leaned back in my chair. He retaliated by first reading out only the leading scores of the previous day, then pausing, then adding (in

German). "And now for the benefit of our English colleague I will give the rest of the scores." I then got one up on him, unintentionally, by dropping a colossal brick. Someone had landed at Marienbad. Forgetting that it was a Bohemian Spa much patronised by King Edward VII, I innocently asked where it was. The result was an angry explosion from a blonde woman journalist (also new to gliding). It was, in fact, in the irridentist part of Czechoslovakia containing many Germans, about which much Party propaganda was being made, leading the following year to the Munich agreement.

This Presse-Chef came back into circulation a few years ago to the accompaniment of much sneering from the edition of a German aviation magazine.

Then there was Jill from the *Daily Sketch*, the only other London newspaper represented. She was very pretty, and was delighted when, one morning, a Yugoslav presented her with a freshly-picked bouquet of wild flowers. We mutually sought each other's company because (a) she thought a *Times* man would be useful to know, and (b) I thought someone who had just made 15 gns. from a gliding article in the *Sketch* could give some useful tips.

Jill's journalism had the popular touch. She would come up to Prof. Brunt and ask: "May I quote you as saying . . . ?" And our youngest pilot, Flt.-Lt. Bill Murray, looked acutely embarrassed when she told him: "I hope you don't mind, but I have called you the Baby of the Team." She was particularly happy to have left behind



*Falcon III
ready for
solo launch*

in Luton an infatuated admirer who had become an intolerable nuisance, until, in the final week, what must he do but turn up on the Wasserkuppe. Thereafter, any male who spoke to Jill became conscious of a suspicious eye watching him in the offing, and if he failed to take the hint, "Two's company" would quickly become "Three's none".

Opening Day came on Sunday, 4th July, with all the teams lined up with military precision for the opening ceremony. On the order to dismiss, all were to rush madly to the great hangar, and the first to get his machine to the starting point would get the first launch. They soon found themselves in two columns, each headed by a German machine, but the one which had the Falcon III behind it kept unaccountably stopping.

So Kurt Schmidt had the first launch in his Atalante, the prototype of the later Mü-13. At 9.50 a.m., a buzzard was seen circling in front of the bungy-launch in what appeared to be the first thermal of the day. Schmidt was at once catapulted into it and circled up to the first cumulus cloud of the day. He had designed his machine for optimum climbing rate in thermals rather than inter-thermal glides, and Philip Wills, who followed it some way, found himself outclimbed in each thermal, but caught it up again on the way to the next.

Next to be launched were the Germans Hofmann and Dittmar, Fox flying solo in the Falcon III, and then Willie Watt in the first King Kite launch. He was evidently fired by Schmidt's example, for, on feeling lift, he put the machine into a slow turn. Down went the inner wing, the King Kite executed nearly two turns of a slow spin, and Watt "landed on his toes", as he put it, without injury, a short way down the launching slope. There was a rush of Press photographers down the slope, followed by a rush of officials to frustrate them. I managed to get a good picture, prepared to pretend an ignorance of German if anybody interfered.

The Kite was badly wrecked, and the Germans insisted that we should get our insurance company's consent before any more King Kites were launched. This was quickly achieved by phone. Another King Kite went into a spin later in the



Flight Lieut. Watt explains his route to Jill of the "Daily Sketch".

meeting, but high up; it made several revolutions before John Neilan, the pilot, found a way of stopping it, whereupon he deliberately put it into another spin to make sure he had got the right technique. Oskar Ursinus, "father" of German gliding and convener of the first 1920 meeting, watched this performance with mounting horror and excitement. Ursinus was easily excited, and was almost equally upset when, on another occasion, he was horrified to see Philip Wills courting bad luck by being launched in an unusual hat. This was not, however, the flight during which it was Kitty's turn to be horrified when a Czechoslovak emerged from cloudbase out of control and narrowly missed her husband.

Well, this first day brought the longest flights of the meeting when three pilots flew 351 km. to Hamburg: Mynarski of Poland, Dittmar and Hanna Reitsch of Germany. Mynarski took 8½ hours. Another woman pilot, Emi von Roretz, made 194 km. to Hameln, and this still stands after 31 years as the Austrian National Women's Distance Record. Wills came 10th with 80 km., and 19 others failed to reach the 50 km. scoring minimum.

A "snifter" operated from 5th July onwards — name of Peters, with a Minimoa. It turned out that he knew the Wasserkuppe's airflow better than any of

the participants, and on occasion, when he had played about in lift all over the place, the first competitors to be launched went straight to the bottom.

Only Hofmann scored on this day with 34 km. distance and 300 m. height. Points were given either for distance and height combined, or for duration, on a fixed scale; but height and distance were multiplied by a "day factor" depending on the three leading performances. As this was such a difficult day, the factor was 2.5, and his 12 points were raised to 30.

Neilan had a poor launch and had to ground-loop his Kite to avoid trees, whereupon the fuselage broke neatly in half in the middle. The German workshop staff were splendid; they not only joined it up again overnight, but did the same for a Polish machine that broke its back in an up-hill landing.

On the next flying day, 8th July, the Daily Prize was for longest duration by a non-Silver C pilot, so Murray was first off, solo in the Falcon. As points could only be earned till 15 minutes before sunset, he looked like winning, but the wind faded and other machines with

better performances outlasted him. To conform to the rule that everyone must leave the site within an hour, all the duration contesters moved to another convenient west slope four miles downwind.

Sandmeier of Switzerland, who was rumoured to have been trained in Germany, made the longest cross-country, 202 km.

Friday, the 9th, was a specially good day for the British team. Wills, Watt and Neilan all went across country, and Willy Watt won the Daily Prize for gain of height, 2,330 m., and would have won the absolute altitude prize for the whole contest if he had not started his climb from well below the Wasserkuppe summit. Of course, I made much of this win to the Press, to the annoyance of Herr Presse-Chef, who made out that it was unconfirmed; and, in fact, it was only after three days of comparing barographs that Dittmar was found to have climbed only 25 metres less. Watt landed at a military airfield at Jena and was most hospitably entertained by an English-speaking officer, who showed him round the University and sat up with him till his team arrived at 2 a.m.

The only cross-country next day was a most remarkable one by Heini Dittmar. He used a succession of three cold fronts, penetrating each one from back to front and then shooting downwind at 90 m.p.h. to the next. He went 177 km. and nearly reached Leipzig.

After a day's rain, glory came the way of the British again. Early in the year FAI had decided to recognise two-seater gliding records, so off went Murray and Fox to that downwind slope, and stayed over it for 9 hours 48 minutes to put up the first officially-recognised two-seater duration record. Of course the *Manchester Dispatch*, which had entered the machine, was delighted: it was a "world record" for them, although the Presse-Chef explained rather testily next day that it was only an "international" record.

They did not, however, win the Daily Prize, as the Austrian pilot Frena got himself launched before them and eventually won the Duration Prize for the whole contest.

The best cross-country was 218 km. by Hofmann. Neilan went 40 km. This was





*L to R, the
women pilots;
Emi von Roretz,
Hanna Reitsch,
Joan Price*

the day Wills wore the wrong hat, and sure enough, on landing from the first launch, he found his tow-bar cracked and could not get back in time for a second try.

Next day Fox and Murray were launched at 6.30 a.m. in an attempt to beat their record, but the wind let them down. However, they were still in the running for the final "total duration" prize, so the Falcon went repeatedly down to the bottom by air and back to the top by road, flown by each pilot in turn.

Willie Watt made the longest British flight of the meeting, 179 km. to Cheb in Czechoslovakia. This involved his team trying to cross the frontier in the middle of the night; they got through the German customs and then had to settle down in No Man's Land to sleep until the Czech side opened at 5 a.m. They swore that they saw a dummy tank, with two pairs of legs sticking out underneath, disappear at a smart trot into a wood. Breakfast in Cheb cost them 9d. each.

Wills flew to Bayreuth, the same route as Kronfeld's world record of 1929.

A few items from the social life of this period might be mentioned. The Swiss, always eager to liven things up, produced some issues of a comic news-sheet called "Der Gummihund" (the bungy-hound) in which no one's dignity was spared. The picturesque Yugoslav team, who brought their Polish Komar in tow of a sort of mini-bus, sang softly to a

guitar of an evening.

But the main musical event in the Hotel der Flieger, where people congregated when off duty, came one evening when it was suggested that each national team should sing something. The Swiss led off with a lovely song in four-part harmony, the Germans did something similar, and then it was the turn of the British. After a long-drawn-out attempt to think up something that everybody knew, the choice fell on "For he's a jolly good fellow". This the British party proceeded to sing in three different keys simultaneously. Half were in one key, nearly half in another, and Willy Watt, with a twinkle in his eye and an air of not letting the side down, sang at the top of his voice in yet a third key. After that we were actually asked to try again, and produced "On Ilkley Moor baht 'at", not too badly, and even broke into the usual two-part harmony for the last two lines.

A touching event was when Oskar Ursinus, having noticed that the official breakfast included no marmalade, ceremonially presented the British team with a potful.

Among many temporary visitors from Britain was Fred Slingsby. He was specially impressed with the sleek lines of Hanna Reitsch's Reiher, especially the canopy, which formed part of a continuous curve from the nose to the centre-section: the same pattern was soon adopted for his Gull I, and eventually for the King Kite too.

Now back to the flying. On the 14th distances were moderate except for Hofmann, who went about twice as far as anyone else. It was the turn of John Neilan and Dudley Hiscox to fly the remaining Kites. Neilan, after the spin already described, calmly went off across country for 56 km. The duration duel continued, Frena winning with a 2½-hr. flight which won him 1.1 points. Mynarski tried an optional Triangle.

The 16th was Polish day. Baranowski far outflew all the others with 302 km. to the outskirts of Berlin, and Zabski reached the greatest height of the Contest with 2,816 metres (9,239 ft.). Wills got stuck over that duration slope, Neilan made 77 km., and Watt 154 km. after a delayed start owing to a trolley knocking a hole in his leading edge.

The final day, Saturday 17th, was rather poor except for Sandmeier and Hanna Reitsch, who both exceeded 200 km.

The final night, after all was over, was somewhat riotous. Outside the British team's quarters there were calls for "Sprudel" (literally "soda-water" but actually the Germans' nickname for Sproule). Somebody got at the official microphone and broadcast gibberish all over the site. People banged on the wooden walls of the Flieger Hotel shouting "'raus" ("come out"), and a terrified Jill rushed into my room for protection (I was still up, doing a last instalment for *Flight*).

The German Nationals were held shortly afterwards, but although many magnificent flights were made, I heard that the meeting seemed tame by comparison.

Some Final Placings

1. Dittmar (Ger)	Sao Paulo	1662.5
2. Hofmann (Ger)	Moazagotl	1427
3. Späte (Ger)	Minimoa	1325
4. Sandmeier (Swi)	Spyr III	1127
5. Schmidt (Ger)	Atalante	1116
6. Reitsch (Ger)	Reiher	1104
12. Watt & Hiscox (GB)	King Kite	440.1
14. Wills (GB)	Hjordis	270.5
16. Murray & Fox (GB)	Falcon III	217.3
21. Neilan & Price (GB)	King Kite	127.3

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Artillery Mansions, 75 Victoria Street,
London, S.W.1.

BOOK REVIEW

Cloud Studies in Colour, by RICHARD SCORER and the late HARRY WEXLER. Published by Pergamon Press, Oxford, London, etc. Price £2 5s.

THERE are 130 colour pictures in this book, with as much variety in the colours as in the cloud types. Most are taken from ground level, and a few from mountain tops or aircraft. Each one (except those on the cover) is accompanied by a physical explanation of how the cloud came to look as it does.

There is, of course, much gliding meteorology to be picked up from these explanations. For instance, the sub-cloud inversion is mentioned alongside No. 47 (an aerial photo) as being due to air subsiding between the cumulus clouds; when it does form, most thermals are unable to penetrate it.

There are several other sections in the book—one on "Cloud Names" is illustrated by 17 black-and-white photos. A section on "Types of Motion", with many diagrams, is almost pure gliding meteorology.

The same two authors have already published "The Colour Encyclopaedia of Clouds" to which this is described as a companion book. Harry Wexler, before he died, was Director of Research at the U.S. Weather Bureau. He was in charge of the analysis of photographs from the earliest Weather Satellites, and before that he had done a prophetic painting of what the Earth's clouds would look like from outer space—it included wave clouds at Bishop, California, and cumulus streets in the trade wind regions. "Dick" Scorer has been a familiar figure at gliding meetings during the last twenty years, pursuing his researches into waves and thermals, until he became Professor of Theoretical Mechanics at Imperial College—a post which has allowed him to carry on with meteorological research but not, unfortunately, at gliding clubs.

A.E.S.

CORRESPONDENCE

THE KATZMAYR EFFECT

Dear Sir,

With reference to Charles Ellis's intriguing letter, it may be of interest that Katzmayr tried oscillating an aerofoil in pitch in a steady airstream. He found it did no good, but rather the reverse. These tests are recorded in R & M 969.

Thurleigh, Bedford.

JOHN INGLESBY.

BACKING THE BRITISH TEAM

The following letter has been passed to us by the "Evening Standard"

Dear Sir,

I enclose a cheque herewith for 10s., which I am sure you will pass on to Mrs. Ann Welch. If 9,999 people follow my example, then she and the British Gliding Association will receive £5,000; a little more than their requirements to send a gliding team to the World Gliding Championships at Leszno, Poland.

It is about time that we helped people such as these to boost Britain for a change. Let us plaster the Union Jack everywhere and carry on the grand work of our footballers and cricketers.

Pinner, Middlesex.

LESLIE C. W. GREEN.

HOW MANY KIRBY KITES?

Dear Sir,

As a proud owner of a Slingsby Kite (Mk. 1, 1937 vintage), I am particularly interested to discover how many of these rare birds are still flying. Or, if not flying, still in existence. If any of your readers can help in this direction I shall be most grateful for any information received.

Incidentally, in order to avoid confusion, my own Kite is the one roosting regularly with the Coventry Club at Husbands Bosworth.

3 Church Lane, Blisworth, Northampton.

D. ASHMAN.

OBITUARY

SIR JOHN SALMOND

MARSHAL of the Royal Air Force

Sir John Maitland Salmond, GCB, CMG, CVO, DSO, who died on 16th April, at the age of 86, was senior Air Marshal of the RAF. He had been connected with flying from pioneer days. As Capt. Salmond he took off from Upavon on 13th December, 1913, alone in a BE-2 tractor biplane, 70 h.p. Renault engine, to attack H. G. Hawker's altitude record of 12,900 ft. In spite of extreme cold he reached 13,140 ft. As Maj.-Gen. Salmond he became GOC of the Royal Flying Corps, France, on 3rd January, 1918.

Sir John was connected with the Southdown Gliding Club for many years as President, and was never merely

a figurehead. In 1946 the club discovered he was living within sight of the flying ground at Friston on the coast near Seaford. He agreed to accept office as President and was a source of strength in the development of the post-war club during the late 'forties and early 'fifties. He proved his versatility in dealing with successive crises, financial and connected with land. With the many calls on his time, he did not participate on the flying field, though on the first occasion that he flew with the Southdown the writer recalls it was a most miserable winter day when a restricted circuit only was possible to 300 ft. in light rain at Friston—Sir John was delighted with the flight. He was never too busy to meet the officers of the club and to assist them, and we never failed to catch renewed enthusiasm from this most distinguished airman. When a move was

necessary from Friston to the present Southdown site near Firle Beacon the club was able to establish itself at this Sussex beauty spot because of two reasons—the goodwill that had been accumulated as the Southdown had operated already for a number of years on the prominent Friston site without causing any nuisance, and the influence of Sir John Salmond with local land-owners and farmers.

He will be sorely missed by his many friends in the flying world.

D. C. SNODGRASS

J. LAURENCE PRITCHARD

CAPT. J. L. PRITCHARD, Secretary of the Royal Aeronautical Society from 1925 to 1951, died on 23rd April, at the age of 83. Being in at the early days of aviation, he never forgot the outlook of those times when birds, gliders and aeroplanes were regarded as equally worthy of study; this was shown in his favourite lecture on bird flight which he used to give at the Society's

branches, when he would reiterate that aircraft designers had still something to learn from the birds and even from gliders. His book on Sir George Cayley, which dealt with all Sir George's other engineering activities as well as gliders, was a classic.

Laurence Pritchard gave space in his office for the British Gliding Association when it was first formed. He must have watched much gliding in those early days, before I knew him by sight, and he was one of the distinguished guests at the gathering at Reigate in 1938 which became virtually the opening meeting of the Surrey Gliding Club.

A.E.S.

ALEXANDER SCHLEICHER

It is with great regret that we learn as we go to Press, that Alexander Schleicher, the founder of the world-famous Schleicher Segelflugzeugbau factory, died unexpectedly in his 67th year on the 26th April, 1968.

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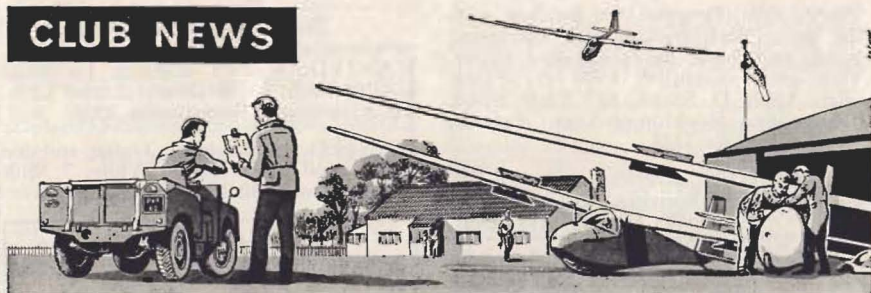
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PUBLICATIONS

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CLUB NEWS



WITH the best Easter for some years reported from many clubs, the soaring season is obviously well under way. We welcome for the first time in these columns the Thames Valley Gliding Club, operating from Wycombe Air Park, Booker, and the Humber Gliding Club, who operate from RAF Lindholme, Doncaster. Reports for publication in the August-September issue should reach me, typed double-spaced on foolscap, by the 12th June and reports for the October-November issue by the 14th August. Please note my change of address as from May to: **11 Great Spilmans, Dulwich, London, S.E.21.**

23rd April

YVONNE BONHAM (MRS.),
Club News Editor

BATH AND WILTS

SINCE we lost the use of our clubhouse, communication for pilots who have landed out has been extremely difficult. Amazingly, this only seems to have spurred people on and the number of cross-country attempts is considerably higher at the time of writing than it was at the same time last year.

Local residents have been most helpful. Some from as far afield as Trowbridge have driven to the site to report aircraft landed. The parents of our youngest flying member, who is still at school, kindly keep a telephone watch for us, and have made the journey out to the field on numerous occasions.

Easter weekend saw some excellent soaring conditions and our local helpers were kept very busy. Five Silver C legs were flown; the best efforts were by Liz Wiltshire, who took the Skylark 3F as far as Tavistock, collecting her height on the way, and David Wright in the Grunau, who declared Moreton Valance, but went from aerotow, so the one per cent rule may just foil this very good effort.

K.N.S.

BLACKPOOL AND FYLDE

WE were very pleased to be accepted as a BGA Full Member club, and to see Jack Aked taking part in Council meetings. We believe that our present size warranted this move, and that we are soundly based to continue our steady growth.

Thermals appeared early this year, and we have been contacting them since mid-February. The 3rd March was a good day, when in the course of a check flight with the CFI, Dick Seed, made five full-blooded spin entries without loss of height, then settled to more gentle circles and climbed away. The weekend of 6th-7th April was extra good, with little wind and cloud base at 5,500 ft. The same conditions held for Easter weekend, though with more wind and lower cloud. The T-21 landed out twice, quite unintentionally; at least our de-rigging experience came in handy.

Three pupils have gone solo recently, Bill Barcroft, Jack Crossley and Eric Norton, and the last two quickly turned in C flights.

We are preparing a grant application for the farm site near Fair Snape Fell,

based on a full valuation of the farm, and quotes for buildings. We have bridged a ditch, and made a gap in a hedge to give a safe landing run in case of a low cable break on our trial west run. We haven't yet tried any more winds beyond the south-west that we proved last autumn, but now intend to try west and north-west before the hay starts growing. This should prove our claim that it will make an outstanding soaring site, and justify the outlay of major expenditure.

K.E.

BRISTOL

AT our AGM we re-elected all our long-suffering club officials with one exception: Guy Harris has bravely agreed to become our Hon. Treasurer, a job beset with pitfalls for the unwary and entailing many hours of unpaid work. Good luck, Guy!

Colin Pennycuik once again bagged the lion's share of the trophies. We are sorry to be losing him this year but he's off to Kenya, where no doubt he will soon learn how to outsoar the vultures.

1968 has already afforded us plenty of soaring opportunities, but there is no noticeable eagerness to spend five hours "on the beat" as in days gone by, when everyone flew Prefects and Grunaus. The "endurance test" as such, sitting it out with not too much height to spare, numb hands, frozen feet and gently fraying nerves, is becoming a thing of

the past. Today's fledgelings, in Skylarks and Ka-6's, prefer to wait for a nice warm summer's day with lots of lovely thermals to play with. They actually expect to enjoy their five hours! What new-fangled heresy is this? Progress?

The lucky people who are coming to our Regionals will be happy to hear that our paragon of efficient organisation, Mick Harper, has recently married Jane, whose talents in this direction match, or may be surpass, his own. However, they are almost sure to be short of volunteer helpers, so if you have intelligence, initiative and drive, and can't think of a way to spend your one and only fortnight-a-year, we could make some suggestions.

E.M.S.

CAMBRIDGE

CAMBRIDGE University Gliding Club made the best of the excellent weather over Easter. Silver C requirements and cross-country flights kept a number of people dashing in all directions.

Ian Pringle completed his Silver C with a flight to Cranfield in Bedfordshire in the club's Swallow and Cecil Wilcox gained his five hours and Silver height. David Ware took the recently acquired club Skylark 4 to Dunstable and on one day wave soaring was possible on the boundaries of Cambridge airport. Two club pilots went solo.

Siegfrid Neumann had two remarkable days' soaring with over seven hours' flying time on each day. One flight enabled him to lap the "Slazenger triangle", Buntingford, Ridgeway, Cambridge, twice, making a total distance of 200 km.

Friends of Heinrich Stalkropper will be pleased to hear that he has made a remarkable recovery from his recent accident. His glider is almost ready to fly again and its trailer has been successfully recovered from beneath the fifth arch of the Thetford Road bridge and looks little worse for its mishap.

R.G.T.

COVENTRY

CERTAIN changes in the Club's organisation structure took place after our AGM on 30th March; Bill Grose taking over as Treasurer from



Tony Pentelow and Joy Jones working on the "do it yourself" hangar.

Derek Harris, and Ron Gardner and Keith Nurcombe taking the places of Frank Neal and Ray Stevens, who have retired from office.

Due to considerably increased operating costs over the past few months coupled with an increase in price of fuel, very reluctantly entrance fees, annual subscriptions and launching charges have had to be raised to offset the same.

The last few weeks have seen an encouraging start to the season's cross-country flying, with 3 Bronze C's and a Silver C distance, also three 100-km. triangles being achieved during the week-end 6th/7th April. Keith Nurcombe also took his Skylark 4 to Dunstable to regain the trophy on a very good soaring Friday, and on the Sunday we broke all previous records for aerotows with two Tigers.

Easter weekend was a mixed bag of weather, but Ron Gardner made the Devon & Somerset Club on a Gold C attempt to Plymouth.

We are now operating a second hired Capstan for the summer season, and hope our third Tiger will be back from C. of A. in a few weeks' time.

Finally, on Saturday, 13th April, we held a belated Christmas party, which has been delayed due to the closure through the foot-and-mouth outbreak, and a good time was had by at least 60 people—in fact so successful was the out-of-season party that most people would now prefer to have a Spring party, as they seem to get a bit tired of so many during the festive season!

B.F.

DERBY AND LANCASHIRE

ON Saturday, 24th February, we at last began operations again on Camphill. At 5.05 p.m., when the wind had moderated, Capstan 2 was launched, and our four-month wait was over. On 9th March the Christmas/Welcome Home party was held and was a tremendous success. Because of some inexplicable failure of communications, the many friends we had hoped to see from Doncaster did not make it, although we were glad to welcome those who did arrive.

Four months with no flying does terrible things to a bachelor, but life is

now much simpler as Don and Joy are now both called Harris—Mr. and Mrs. Congratulations.

Whilst having to make an away landing Pete Dance wrote off Swallow 1 and broke a leg, but is mending nicely and may soon be in a position to attack the other two.

The hard winter did not seem to harm the field and full credit must go to Ted Neighbour for his drainage scheme, and all the hard work involved (one member paid seven visits to the osteopath as a result of it!).

ALEXANDER McCASKIE

Alex, who died on 6th April, when his Dart 15 crashed just outside the field perimeter at Camphill, was one of the friendliest and most dependable, most likeable people. He will be remembered, certainly for all the work he did as Technical Officer, but mainly for himself as a person. He was the rare combination of a man who loved to fly sailplanes, and who also loved to work on them. His stocky figure walking in and out of the workshop was an integral part of life at Camphill, and new members would feel quickly at ease when in his company.

One of Alex's characteristics was that, when tackling a problem, he would immediately separate that which was possible from that which was not, and would then proceed to carry out the possible with a few cheerful words.

It is difficult to comprehend that Alex is no longer with us, and we extend our deepest sympathy to Mrs. McCaskie and family.

R. H.

DEVON AND SOMERSET

ON returning from the sunny West Indies at the end of February and encountering a temperature drop of 50°F, the first news from the club grapevine was the sad information that Berenice Wykes, one of our very few lady fliers, had come to grief on her first solo. The vertebrae which she fractured and the glider she flew were identical with the ones which your scribe fractured and flew last July. Berry, although a little "plastered", is progressing well and we

all wish her a speedy and complete recovery.

The prevailing wind in the last six weeks or so has been either just west or east of north and we have been a bit frustrated at North Hill when provoking gusts from the west have tempted us to change ends (the north-westerly giving us a better launch) only to find the easterly as strong as ever when all is ready for the first launch from the new position.

Gerry Leat ran a successful course during the second week in March which, despite indifferent weather conditions, produced some C's and a Bronze. Quite a few members have also been to courses at Lasham on subjects varying from Instructors to Aircraft Inspectors. The potential, both technical and flying, is therefore building up to satisfy future requirements. A "ladder" scheme has been introduced whereby points are allocated for notable flights. John Fielden, our erstwhile National Champion, is hoping to give a display of glider aerobatics at the Devon County Show at Exeter on 16th, 17th and 18th May in the Dart 15, accompanied by a team demonstration of rigging and de-rigging.

The club has now legally acquired Wheelbarrow Lane, which will eventually become the main access.

ESSEX AND SUFFOLK

AFTER several months' "rest" we have again started flying from Wattisham RAF Station with the RAFGS (Anglia Gliding Club) and from our own site at Whatfield, which lies about 2½ miles north of Hadleigh in Suffolk. Our fleet remains the Ka-7, Ka-6 and Tiger Moth, together with a privately-owned Turbulent. During the lay-up period the club hut has been water-proofed, lined and decorated. Meanwhile other parties have been working on the Ka-7, Ka-6 and trailer.

As usual we shall be delighted to welcome any visiting pilots or private owners who would like to fly with us (sea-breeze fronts are not infrequent). Anyone wishing to visit us can, if they wish, phone the CFI at Colchester 81342.

E.R.

KENT

ALREADY we have a host of flying achievements to report and for the second successive year Easter weekend has been a good one, this time with two Gold distances and one Diamond goal to its credit. On Good Friday Ron Cousins (Dart 17r) declared Canterbury Cathedral to Dunkswell and got there in 4½ hours, with 4,000 ft. to spare—this excellent flight completed his Gold and also gave him his Diamond goal.

On Easter Sunday Ian Napier (Skylark 4) did his Gold distance from Redhill to Boscastle in Cornwall, unfortunately narrowly missing his Diamond goal. Congratulations also to Don Connolly who used the Portmoak wave to get Gold height on two occasions during his visit there with the "Redhill Dart", reaching just over 13,000 ft. on both occasions.

The first notable flight this year was Robb Judd's Silver duration on the ridge in his Skylark 2, done in very difficult conditions but capped by the fact that he stretched it to six hours five minutes. April 6th was the first good soaring day and Philippa Buckley set the cross-country season off to an excellent start with a 140-km, out-and-return to Redhill.

We should see a spate of cross-countries this year as at least ten pilots have recently had their final field landing checks two miles away on Judith Roger's farm. This is proving to be a much more satisfactory system than using a corner of the field, as it ensures that the check is not done in familiar surroundings and this helps to eliminate the initial reluctance on a first cross-country to leave the site and land out.

We were pleased to have Ray Stafford Allen with us early in April running a successful four-day aircraft repair course.

M.H.

LINCOLNSHIRE

HERE we are now well established at Bardney Airfield, ten miles east of Lincoln. The Blister hangar is now complete with doors to house our expanding fleet. This season's new arrivals include three syndicate machines, a Gull, an

Olympia 2B and the much polished Ka-6E, proud possession of Messrs. Bradley, Mawer, Tartellin and Thwaites.

Our congratulations go to Tony Moore and Phillip Thwaites, who have, in the short time we have been flying since the foot-and-mouth restrictions were lifted, achieved Silver height and distance, and Silver distance flights respectively, both flights being from Bardney to Rearsby.

We take this opportunity to welcome Ron Ward to our club. Ron, who brings our body of instructors to six, has just returned from Canada.

Our now centrally heated, ex-control tower clubhouse has had many hours' work spent upon it through the winter and extras now include flush toilets, hot and cold running water, a licensed bar and kitchen facilities plus staff second to none.

We are operating winch and auto-pulley launching systems at weekends and Wednesday afternoons, and are always pleased to provide a snack and a delight to visitors, so if you are in the area—glide in, you'll be welcome.

Our CFI and Treasurer, Jack Nicoll, has his foot in plaster following a fall from a ladder. We wish him a speedy recovery; meanwhile, his flying duties and Skylark 3F are being shared by others, suitably qualified.

R.S.C.

MIDLAND

THE four months' suspension of our operations because of the foot-and-mouth epidemic came to an end on Saturday, 9th March.

On 16th March we held our annual Dinner-Dance at the Long Mynd Hotel. Over 120 members and guests supported what proved to be a most enjoyable evening. During the evening the club trophies were presented. The holders for 1967 are Tim Corbett—the Siam for the distance and the new Ladder Trophy; Ron Rutherford and Peter Marsch jointly—the Sheffield for gain of height; John Brenner—the Hardwick for out-and-return; and Frank Batty—the Maxam for service to the club.

Mrs. Hardwick then presented to Bob Neill a very fine pair of binoculars for which members had subscribed as a token of thanks to Bob for his service

to the club, particularly during his 14 years as Chairman.

With the objective of an interchange of ideas between the members and the committee an informal general meeting was held on Sunday, 24th March. The meeting began with Pat Moore explaining his recent study of Club and National statistics. This produced several interesting topics, including Pat's contention that the average cost of flying for the club pilot is the same as that for the private owner. Other matters of general interest were discussed. It is intended to hold further such meetings at suitable intervals.

The weather since we resumed has not been very kind. Easter was even more dreadful than usual. The K-13's are proving popular with ab-initios and experienced pilots alike.

K.R.M.

NEWCASTLE AND TEESSIDE

ANOTHER AGM has come and gone, but this one was different because we were delighted and honoured to have with us our Vice-President Philip Wills and Kitty, together with sons Christopher and Justin.

Philip presented to the club the Wills Trophy, which is a silver platter bearing an engraving of Lillienthal's Hang Glider, and was designed by Chris Wills.

This trophy is to be an inter-club competition effort between the Newcastle and Teesside club and the Northumbria club.

The next day being Sunday, Philip and Kitty, Chris and Justin made the trek up the road to a snowy but sunny Carlton Moor, and very pleased we all were to see them.

We've been having an awful lot of "weekend" weather these last two months, but Dick Stoddart has opened the soaring season for us with a magnificent Diamond Goal flight into Oxfordshire. A great way to start "cracking the whip"!

T.S.

NORTHUMBRIA

THE T.A. have started to "level" our west field. This will curtail flying in east winds, but the site improvement will be worth the inconvenience. Com-

ment has been made on the suitability of one of the army vehicles as the basis for a new winch.

The Olympia has emerged from a major C. of A. resplendent in a new blue and white colour scheme applied by the capable hands of the club's finish expert, Dick Corker. He has now turned his attention to his own syndicate's Skylark 2 recently returned from Slingsby's.

The Easter weekend started with a Dinner-Dance on the Thursday evening, followed by four days of friendly competition between private owners and pilots flying the club Jaskolka. We hope to stimulate an increase in cross-country flying this year and, by setting a task to Carlton Moor, collect the plate presented by Philip Wills for competition between the Newcastle club and ourselves.

J.R.G.

OUSE

WE at Rufforth often think back to April. A remarkable month! It started with the hyacinths covered with snow, and the daffodils bent double. Out on the airfield the winds blew with Arctic cold. Yet we did a lot of flying. Our launch rate was high and seven members got their Bronze C durations, including two Silver C heights.

At Easter we flew extensively on four days. On Easter Saturday, when there

was motor-racing at Rufforth, the Skylark and Capstan were taken to Dishforth, where Gerry Kemp and his merry men extended welcome, participation and hospitality. Good thermals, good flights.

Easter Monday, despite the biting wind, was a busy day, with early arrivals sweeping out the control bus at 06.50 hours and the hangar flights, silhouetted against a glowing copper-pan sunset, taking place after 20.00 hours. The Capstan and a T-21, two Swallows, a Skylark and a Blanik, kindly lent to the club by Harvey Coule, of Wakefield, were in constant use. There were many red faces that weekend—but only from sun and wind!

Early in 1968 Richard Walker, in our Skylark, flew two miles high from neighbouring Dishforth, and got his Gold C gain of height. A great start to what we feel is going to be a great year for the Ouse club.

Our young pilots, under the watchful eye of CFI Wilf Couley, are training hard for the famous Wills "Swallow Competition".

A.H.S.

OXFORD

OUR AGM in March passed, surprisingly, without a murmur at the increase in subscriptions including raising the winch launch fee to 5s., the first ten minutes of flying time remaining free.

The present core of extremely keen ab-initios has been flying in the mornings earlier than ever, thanks to the few unfailing instructors to produce the anticipated A, B and C certificates.

Easter weekend was more soarable than usual and produced some interesting flying, in particular for John Adams, just elected to continue as CFI. On Sunday afternoon at 16.00 hrs., following a rapid thermal climb in the AS-K13, he decided that although it was late, a Gold C distance to Perranporth in his Dart 17R was on. By 18.30 he was "down" at Bude, 160 air miles away and cursing the sea breeze. The real crunch came when he found the barograph had been silent, even the pundits get caught out, hard luck.

Club history was made the next day when Stan Green in the club Skylark 2B



Brett Atkinson, the Social Chairman of the Ouse Club.

became the first to make good use of wave conditions prevailing over Weston on the Green to latch on at 2,000 ft., and climb to 7,000 ft. plus, several thousand feet above cloud level. We are hoping this is a foretaste of things in store for us during the coming season.

C.J.T.

PERKINS

SINCE Spanhoe Airfield became non-operational in November, we have been searching for a suitable alternative. Several prospects investigated proved fruitless, until we happened to make contact with a Mr. J. W. E. Banks, who had just developed an airfield at Postlands, situated four miles N.N.E. of Crowland in Lincolnshire.

We are deeply indebted to this gentleman, who not only welcomed us with open arms, but has allowed us to store the club aircraft on his premises for six months. This will allow us to use the usual soarable summer months to investigate site possibilities, as there is the chance that this Fenland area may not be a favourable soaring one, and will obviate the chance of re-fitting our hangar unnecessarily.

Otherwise, the site is extremely promising, two grass runways extend for half a mile in each direction and all the surrounding area is flat pasture land owned by our host, who has allowed us to position our winch in the adjoining fields, enabling us to have 1,250 yards of cable out on the most-used east-west runway, and practically a mile of cable out on the other north-south one. Three privately-owned powered aircraft also use the airfield, so aero-tows are a future possibility.

Two of our members, "Ozy" Ozols and Tony Fidler, went on a ridge soaring expedition with our Skylark 2 to Sutton Bank over Easter, but unfortunately during the period of their stay the wind persisted to come from the east. Luckily for "Ozy", however, he managed to obtain his Silver C height the previous weekend.

The B.P. group, in an effort to modernise the club fleet, are in the process of negotiating to acquire a canopied high performance two-seater sailplane so that we can give the ab-initios practical experience of cloud flying, and the

composite problems. If negotiating proves successful, this will allow the T-21s to be replaced by another medium performance aircraft.

J.V.L.

SCOTTISH

AS of recent years the BGA meetings coincided with our bumper wave week. Whilst SGU representatives trotted off to London, visitors from RAFGSA, Booker, Dunstable and other clubs made so many note-worthy flights that our office ran out of claim forms.

It is interesting to record that not only height flights took place but also cross-countries. Chris Wills even set off for home in his Ka-6 whilst his partner took the trailer. They were last heard of south of the Forth . . . ! Vic Carr managed an out-and-return to Loch Katrine in a flight which embraced good thermals plus wave and sea breeze to make quite a memorable trip.

On the home front young Ian Barr has created club precedent by having to be checked for solo winch launches after first going solo on aero-tow.

The advent of May brings phase one in our development of Portmoak when the adjacent Portmoak Farm officially becomes club property. Do come to visit us soon, there will be more fences to remove and plenty of ditches to fill . . .

One sad feature is the loss of Wellburn, the cottage which has provided eating, sleeping and office accommodation when the SGU first moved from Balado, but it cannot now be a part of our new project.

Douglas Mackay, who took up gliding with us as part of the Duke of Edinburgh Award Scheme and consequently completed his Silver C before leaving school, has been named pilot of 1967 by Airwork Training Services, Scone. He is the first Scot to be thus honoured.

M.B.R.

SOLENT

SINCE our first report in these columns last autumn, we have become airborne, and due to the generosity of Britten-Norman Ltd. we have the free use of Bembridge Airport.

Our aircraft is still a hired T-21, to which we hope to add a Grunau shortly; we have bought a winch from Booker and have plans to build our own soon.

Cable retrieving proved a great problem at first as the airfield is badly waterlogged, but our members devised and built an endless belt retrieve system which is a great success.

On 11th February we had our first taste of aero-tows when Peter Ward brought over the Tiger Moth from Sandown. The Islander Flying Club have offered to modify their Auster for towing and we hope that this won't take too long. Behind the airfield is a ridge that should work on both S.E. and N.W. winds but this is still to be explored.

On behalf of the club members, I would like to take this opportunity to thank the Committee and the Instructors under Tom Burt, our CFI, who have put in so much work to get us airborne within four and a half months of formation.

D.D.

STAFFORDSHIRE

WE reached the end of our fifth year of operation on the weekend of the 6th and 7th April, and experienced flying conditions which were quite unbelievable. Hardly any of the aero-tow flights, in which we are specialising now, lasted less than 40 minutes, and Instructors were encouraging the ab-initio pilots to find patches of sink and to circle in it so that the Capstan could be got back on the ground within the allotted time for the flight.

On the Saturday Roy Ibbs flew his second Bronze leg, and club Secretary Norman Bartlett got his C. On the Sunday Bill Mason and Ted Barker both got their Silver C gain of height, and Frank Townsend declared an out-and-return to Derby, but only managed to get back as far as Church Broughton.

Also on the Saturday we invented a new fumble—losing the joystick on the P2 side of the Capstan. It was removed to make way for all the impediments of a free-lance photographer collecting material for an article on gliding for a woman's magazine. Next Saturday we are expecting a visit from Radio Stoke-on-Trent for a programme on gliding, and as we are expecting a second Cap-

stan on hire for the summer on that day, the loss of a joystick here or there will not matter all that much.

The second Capstan will help us in our training programme for young people which is to be held mid-week and for the new members which we expect as the season advances.

R.B.L.

SURREY AND HANTS

OUR cross-country season started on the 16th February this year when Chris Lovell did a modest out-and-return of 65 km. This must have been a good omen for things to come as on the 6th April Julian Temple set out on a 500-km. triangle in one of the club's Dart 17r's. Unfortunately he had to abandon the task on the second leg as the weather was deteriorating, but he got back to Lasham after having flown 360 km.

The Easter holiday has also, for the first time in years, been good for cross-country flying.

On Good Friday, eight out of the nine available club gliders flew a total of 1,184 km., several on Gold distance attempts; although no one completed, there were several near misses.

Easter Saturday was not a cross-country day from Lasham but some local soaring was done in the late afternoon. We were pleased to welcome Barry Goldsbrough after his successful 300-km. goal flight from Sutton Bank in his Sky.

The most outstanding flight on Easter Sunday was carried out by Chris Garton, who flew a club Dart 17r to Cam-bridge and back, via Halton both ways. The first leg was flown into a 20-25-knot headwind, even so he completed this 300-km. trip in 4:15:00. Five of the club's gliders totted up 855 km. but the total distance covered by Lasham-based aircraft totalled 3,100 km. Although the day was a classic for downwind dashes to Perranporth, which was declared and reached by Geoff King and Paul Thompson, several pilots opted for triangles and both George Burton and Wally Kahn raced round a 200-km. triangle, breaking the existing record handsomely, only to find on more careful measuring that they had not allowed enough to cover the 28 per cent rule!

Thermal activity on Easter Monday started rather late, but the day was made interesting by some unexpected wave (seldom seen at Lasham) and Anne Burns took good advantage of it by climbing to 8,900 a.s.l. in it.

Don Snodgrass, who has spent many Easter holidays at Swanton Morley waiting for a 500-km. chance, had his patience finally rewarded when he reached his declared goal at St. Mawgan on Easter Sunday. (See separate article on page 209.)

The club's second Dart 17R has already been put to good use and this, together with a Land Rover for club retrieves, should, weather permitting, add to our cross-countries.

Let us hope that the season will continue as it started. So far Lasham-launched gliders have covered 8,874 cross-country kilometers. Can any site beat this?

R.H.

SWINDON

WITH four Silver duration flights completed already this season, we are off to a very good start. These have been achieved by David Hart, Peter Trenchard, Graham Hinder and John Bundy. The last three of these were all local soaring flights, while the first was flown at Portmoak, where David also reached 10,000 ft. in wave.

The elusive South Marston wave has also been flown at last. After all the talk by our wave "experts" it took one of our younger members to fly it to almost 7,000 ft.

In March we held our ninth annual Dinner and Dance, where we welcomed our new President, Charles Morrison, M.P., who, in spite of an arduous evening arrived at the airfield for his introduction to gliding the next morning.

We are interested in the possibility of using diesel tow vehicles and we would appreciate information from any other clubs who are operating them.

E.J.W.

THAMES VALLEY

WE feel very ashamed to say we have never subscribed to Club News before, at least not as an individual club.

We are now in our fifth year of existence and in that time have formed the basis of a sound fleet of gliders, those being two Skylark 3G's, an Olympia 2, a Ka-7 and the arrival of a K-13 is eagerly awaited.

Our club, with the Airways and CISAVIA, operate a centre which provides launching and training facilities. This has proved very successful, especially since we introduced aero-tow launching only, and dispensed with the winches.

Gliding must be getting easier, our Silver C's last year totalled nine, with at least 30 legs gained; not to mention about 20 Bronze C's and two weeks in March at Portmoak which have brought in a flood of Gold C heights.

We hope this year to see more members of other clubs, especially when Booker has its second Regionals in August. So don't forget to come along.

R.

UPWARD BOUND

THE Upward Bound flying machines have been making their customary early-in-the-year cross-country journeys — on trailers bound for C. of A. renewal.

In the meantime ab-initio pupil training has been business as usual. Perhaps the shorter daylight hours, the lower temperatures and gustier wind conditions of the months immediately each side of Christmas do reduce our launch rate, but there is always an appropriate lecture or lesson to be given to the young people who are reaching towards their first solo adventures.

We read recently of the double-decker bus converted by the Ouse club. Bob Somerscales, our Chairman and king mechanical deviller, completed a like project last summer. Our bus was originally a single-decker vehicle. To the topside has been added a control box from which signalling and flight logging is carried out.

Inside, the back portion of the bus has been transformed into a classroom complete with blackboard and notice-board for association and club notices. The centre part is now our canteen, equipped with four-plate gas stove. The front end serves as a temporary rest centre for pupils.

The flight board hangs outside by the sliding door and shows the flying order (instructor and pupil) by aircraft. The vehicle is painted a red and white (and yellow) checker pattern.

Bob Somerscales was also responsible for Bob's Banger, a glider retrieval Special. Originally a Ford 8, the body was removed and the chassis chopped until a wheelbase of around 60 inches resulted. A single well-sprung tractor seat was fitted to humour elderly spines and a specially constructed vestigial red body covers the noisy parts.

V.W.J.

UNIVERSITY OF EAST ANGLIA

DESPITE a literary silence of some eight months, gliding has continued to flourish among the flat wastes and concrete pyramids of the University of East Anglia. We are now faced with our perennial problem — the end of yet another financial year, and the ensuing loss of members. This time it will be more difficult to recruit newcomers, as the scale of charges has had to be increased, and so gliding will be beyond the pocket of some of our potential members. However, we will have more people in the university to find newcomers to our ranks.

Flyingwise, progress is just round the corner. Clive Avery was stopped by bad weather from soloing on the last week-end of the spring term, but both he and John Wood should be solo by the time this is printed.

Thanks to John Jeffries and his merry men, and to Instructor Mike Watson, we were able to fly the Norfolk club K-13 at Dunstable before Christmas.

The soaring season at Tibenham began on 28th January, when the Norfolk club Instructor, Dennis Cooper, kept the Swallow up for 17 minutes. However, none of the university pilots have benefitted from more than a few minutes extended time yet. Nigel Mutimer has completed his first Bronze leg (so much more difficult without a ridge) and Keith Panton did his five hours in the K-13 while it was at Dunstable, so completing his Silver C.

M.J.C.

WEST WALES

OUR present fleet consists of a T-21b, Capstan, Olympia 463, Skylark 2 and Auster Tug. We also have in the hangar, privately owned, a Dart 15 and an RF4. There is a Pirat on order for the club, with delivery due in May.

February saw some soaring and the first field-landing of the RF4. Certainly noteworthy in that the machine took four hours to de-rig, and then had to be carried down a narrow farm lane, with the tail carried above the CFI's head, allowing just half an inch clearance either side of the elevator!

In March, E. Johnson did his five hours on the cliff in the 463 and P. Williams joined him, in the Skylark, for two hours. Maximum heights of 2,500 ft. were reached and both flew back to the airfield afterwards. Not bad for a 250-ft. cliff.

The beginning of April saw our first real soaring, with flights of up to two and a half hours and heights of 4,200 ft. off the wire, and now we are looking forward to the summer and the height(s) of the soaring season.

J.D.O.

SERVICE NEWS

BANNERDOWN

AT the time of writing, the unstable north-easterlies have decided to blow on the reciprocal. tall cu. floats by office window and cloud streets appear all over. Naturally it is mid-week, so what else can we do but dive into statistics and record that during the period we flew 456 launches for 48 hours, which was not too bad considering the high winds which arrive at week-ends.

The new Bocian appeared in the middle of February and has been much in demand, proving to be a sociable bird in spite of the tandem seating, and a good thermaller, too, although we wonder what would happen if there were two sets of instruments . . . ! A rare and interesting experience is in store with the arrival of the refurbished primary, which we are sure will be a huge attraction.



Club members have converted the bus into a mobile clubroom with kitchen facilities, etc., downstairs, and office and signalling equipment upstairs.

The big day came on 2nd March when we rolled out the Bannerdown Doubledecker to take its place beside 07 runway. Virginia Warriss, wife of comedian Ben Warriss, cut the ribbon and was Bocian-borne in no time with CFI Pete Dawson to look at the circuit and a vertical view of the Warriss' Vineyard Restaurant right near the camp.

Maintenance-wise, Peter Dawson has been driving us on and is also responsible for repossession of the Daniels autopulley with which we hope to augment the launch rate. In addition, a large Jaguar has appeared, fully converted, to give the first M launches at Colerne for five years.

P.H.

BICESTER

ANDY GOUGH took a small wave soaring expedition to Portmoak early in March and got his Diamond height, thus completing his Diamond badge. During the same period Fred Plumb did his Diamond height, Paddy Hogg and Jock Wishart obtained their Gold heights and over the Easter weekend Paddy completed his Gold with an excellent goal flight to St. Mawgan. Dave Langford obtained his Silver C in three days and young Andy Gough has

done his Silver height and distance legs so is hard on the heels of his father.

Flying hours and launches are well up on last year and totals so far are 6,690 launches and 1,167 hours, which is an increase of ten per cent.

A.E.B.

CLEVELANDS

Report on a Lee Wave Flight on 20th April

Pilot: A. St. Pierre. Aircraft: Ka-6E. Attempted 520-km. out-and-return, Dishforth-Portmoak (Loch Leven)-Dishforth for 500-km. distance Diamond. Launched by aerotow (Auster) at 10.15 to 2,000 ft.

Contacted standing wave lift and climbed on course. Operating height 6,000 to 12,000 ft. Able to cruise at times at 90 kt. without losing height. Best rate of climb: over 1,000 ft. per min. at Consett, west of Newcastle, where reached maximum height of 14,000 ft. Above cloud, broken, all the way. Reached East Fortune airfield, just east of Edinburgh in 2 hr. 45 min. By this time the cloud had increased to nearly complete cover below. Unable to continue because cover was complete ahead, cloud base known to be about 2,000 ft.—and hill tops 2,000 ft. Waited 1½ hours. for cloud to clear. Cloud had meanwhile

closed in behind—all set to descend through hole and land at East Fortune.

Eventually, no sign of clearance ahead but cloud broke a little behind, so turned back. Return journey into better weather, no real difficulties. Landed back at Dishforth. Actual distance flown 450 km.—believed to be longest out-and-return in UK. Total time airborne 7 hr. 8 min.

From RAF Newsletter

EAST MIDLANDS

WITH the exception of the restrictions due to the foot-and-mouth outbreak, general winter weather and high winds, the last few months have seen some good flying by the club. An expedition to Portmoak for two weeks in March, with the SHK and Ka-6E, produced two Diamond heights, 105 hours, almost 2,000 miles cross-country flying, not to mention the odd Gold height, all of which were flown in superb wave conditions.

Back at Swinderby (near Lincoln) we have had some excellent spring thermals and even a wave flight to 7,500 ft. from a wire launch. We hope that this augurs well for the summer!

Basic training progresses satisfactorily and the first of three ab-initio courses planned for this year was held at the end of March. Every effort is being made to better our all-time record in 1967 of 36 first solos.

Our ground equipment has changed somewhat from last year; we have adopted car launching as the primary launch method, with the winch as secondary. We use two F 100 trucks for towing and results so far are highly satisfactory and certainly fewer fumbles occur; the cost and charges are greater but members seem happy to accept this for the better results achieved.

J.D.

FENLAND

THE club saw February out with a barbecue to say farewell to our retiring CFI, Colin Elliot, who was presented with a cigarette lighter guaranteed to produce small thermals!

The main event in March was a two-week expedition to the Long Mynd

which was most successful. "Wilt" Jones achieved his Gold height (13,000 ft.) in the Bocian, nine Silver duration legs were completed together with sundry Bronze legs.

After much deliberation the club Committee decided to raise the winch launch fee from 2s. 6d. to 3s.—the first increase in fees for some years, but costs were finally exceeding income.

Our M.T. expert, Tony Weldon, is leaving us to concentrate on power flying, strange fellow. This vital function is being taken over by Dave Vickery.

Soaring conditions have allowed us to start cross-country flying again, two 50 km. being completed. So far attempts to go further have not yet met with success. Two more members have survived the fortnight at Bicester and joined the instructors ranks.

Lastly, the clubroom bar has been given a new look and made larger. Mel Brown is now in charge.

R.G.J.

FOUR COUNTIES

AT the end of February the club had its most successful expedition yet. Six members at Portmoak for two weeks with the Olympia 2B and Ka-6CR, plus very strong winds, provided the correct combination for some excellent wave soaring.

Congratulations to Chris Waller, Hamish Brown and Terry Slater on reaching 19,000 ft. and the magic Diamond height. Also congratulations are due to Alan Fox, "Woody" Woodier and Rath Tomlinson on obtaining their Gold C height. Silver C legs were easily obtained by many of the club members. Lots of thanks to members and staff at Portmoak who helped to make this expedition such a success.

It was a very happy birthday indeed for our youngest member, Trevor Gorely, who was 16 years old on the 28th March and who that day completed the required flights to make him a solo pilot. Two days later he had a launch and calmly managed 30 minutes, which gave him his C certificate.

This, of course, is not the end of the story, because just eight days later he obtained a Bronze C leg and then the second Bronze C leg the following day.

Frantically working on his Air Law he successfully passed the written examinations. Not content with his achievements, he went cross-country and yet again was successful. Congratulations, Trevor, on your Silver C distance just two weeks after going solo.

Ian Smith made a noble effort on an out-and-return Gold distance but fell short by 50 km. after being airborne for seven and a half hours.

There have been so many Bronze and Silver legs obtained it is an impossible job to mention them all, but well done to all those concerned.

C.B.C.

FULMAR

OUR CFI, Jim Gunter, had to leave us in January after four years with the club and Denis Shepherd has taken over the reins.

During our long winter, flying was uneventful but a steady intake of new members kept the T-21 busy. Our only wave flight of note was Bob Kerr's climb to 12,000 ft., just missing his Gold height.

A party took the Swallow and Skylark to Portmoak in February in search of five-hour and Gold height legs but the weather was again unco-operative. This led us to seek a ridge nearer home and the Skylark successfully soared Ben Aigan, ten miles S.S.E. of the airfield. We hope the next nor-wester will bring the first of many five-hour legs.

H.D.

HERON

A VERY successful task week was held by the Heron Gliding Club at the Royal Naval Air Station, Yeovilton, in Somerset, from Tuesday, 2nd April, until Friday 12th April.

Sixteen pilots of Bronze C standard attended and seven Association gliders were available. The Devon and Somerset club kindly lent us their Swallow for the period.

The geographical position of the Fleet Air Arm bases, where gliding clubs exist, generally prevents cross-country flying, due to convection being killed off by sea breezes. It was decided to hold the task week at Yeovilton—the

most inland of the Naval Air Stations.

The weather was exceptional and without it the week would not have been the success that it was—although on the first day spirits and visibility were reduced to zero whilst a blizzard raged across the airfield.

Task flying took place on seven days of the eleven available, Ralph Jones and "Robbie" Robinson set the tasks with the aim of achieving Silver C qualifying legs.

Fifteen distance, eight height and five duration legs were obtained and nine Silver Badges completed. Ricky Knight completed all three legs in one flight but had to wait until Friday before he was able to gain his height in a Dart.

All launches—and some retrieving—were done by aerotow. A total of 244 hours and 4,213 cross-country kilometres were flown from 44 cross-country flights.

Everyone enjoyed themselves immensely and we hope that next year we will be able to do it again.

T.J.T.

HUMBER

IN the first year since the formation of the Humber Gliding Club at Easter, 1967, over 3,000 launches and 350 flying hours have been completed.

Ground equipment has been built up from the original diesel winch and tractor by the addition of another winch and an auto-tow vehicle which was converted from a prime mover of an articulated lorry. Also well under way is the conversion of a double-decker bus into a mobile winch, with sleeping facilities on the upper deck with a view to future club expeditions. Our 22-foot caravan has given excellent service during the winter as a control point, providing warmth and hot food and drink.

During the year there have been 25 first solo/re-solos. As the majority started with little or no previous experience they are making good use of the soaring season. Already five Bronze C's have been completed and one Silver C height obtained. With the recent arrival of a Ka-7 our members are looking forward to further achievements and cross-countries during the summer months.

D.H.K.

MENDIPS

THE weather has been kinder to us just lately and some good flights have been made. Our Bocian has arrived and has been well used, giving some of us experience in a "hotter" ship. The northerly winds which give us ridge soaring have still not been much in evidence but have produced three Silver duration legs. There was also one other good afternoon when three aircraft were on the ridge—one doing a duration, the other two giving soaring experience to members.

The "Mendips Construction Co.", a branch of the gliding club, is still in business, as we are in the throes of building an annexe to our hangar to house our winches, at present parked in the open.

For a very long time we have been endeavouring to obtain the services of a tug and early in March was a red-letter day when a Chipmunk arrived on the airfield for a very full afternoon's aerotowing.

We never get really good thermalling conditions at Weston-super-Mare, so during the summer we are planning some expeditions to the old airfield at Merrifield, about 30-odd miles inland, in the hope of getting some really good flying in.

J.P.T.R.

RAFGSA

DURING the first two weeks of March, 1968, the RAFGSA mounted an expedition to Portmoak. The expedition consisted of 13 pilots and six gliders from RAFGSA clubs in England, the biggest contingents being from the Four Counties club and the East Midland club (see club reports). Right from the start, conditions were exceptionally good, and during the visit five Gold and six Diamond climbs were attained (provisional figures). Several pilots used the wave systems to carry out long cross-country flights, and though no one completed a 500-km. triangle, Jack Harrison flew round a 200-km. triangle which unofficially beat the national record by 14 minutes. Practically every member of the expedition reached 16,000 ft. and a few reached

19,000 ft. The six sailplanes were flown for a total of 300 hours in the two weeks.

A.L.B.

WREKIN

SINCE the last issue of S. & G. we have managed to do a fair amount of flying with all the serviceable aircraft being put to good use. There has been plenty of wave in the skies around Cosford but it has been too far away for us to reach from a winch launch.

T-21 339, our canopied trainer, has at last been given a new colour scheme, and the Sedbergh can now be seen zotting about the area in red and white instead of silver and dayglow.

During our soaring week at Easter, our CFI, Norman Smith, deserted us and gave the excuse that he was going to be married. A likely story, but nevertheless we at the Wrekin send our congratulations to Norman and Sue Hedges, his wife, and wish them every happiness.

SF-26 is back in flying order after its mishap last year and once the Tutor's major has been completed we shall have nine aircraft operating from the strip this summer.

The Club's first two C certificates of the year have been gained by Chas. Nightingale and "Scotty" Haig. The first week in April brought us a few more gains. Chas. Nightingale got one leg of his Bronze C and John Hunt gained the first leg of his Bronze C and also his Silver height.

C.B.B. P.H.

CRUSADERS (Cyprus)

THE Annual Statistics printed in the February issue did not do our club credit. Our actual hours and launches were much higher than those printed. Our Secretary went to great lengths to ensure accurate figures. I assume the reason for the difference in the figures is that September in the UK is considered the last soarable or flyable month.* While in Cyprus the winter months are soarable. Last October alone produced 198 hours with 2 Gold C and 4 Silver C heights, 1 duration, 13 Bronze C legs and 5 C certificates.

More recent achievements include the conversion to the Olympia 401 by Gerry Cooper and John Allerton who have come all the way from Maharraq for a month's gliding. Several other members have progressed to the Swallow.

Although we are in the middle of our soaring month we have so far only had one good thermal day up to 7,500 ft. and one day of low level wave to 6,000 ft. The rest of the period being very stable.

It may be of interest to clubs operating piano wire for launching to mend cable breaks by using the link of a chain, size approximately 1 in. long by $\frac{1}{4}$ in. circumference, each end of the broken

wire is passed through the link and wound round itself in the normal manner. J.A.S.

*The figures quoted in the statistics were correct. They state quite clearly that the period was from 1st January to 30th September. The October figures should be shown in this year's figures. The reason for the change to September is purely to give us more time to collate the information as some clubs are late in forwarding the necessary details, and also to fall into line with the end of our financial year. [BGA SECRETARY]

OVERSEAS NEWS



We would be pleased to receive news for this section from every country in the world where soaring is done.—A. E. SLATER, *Overseas News Editor*.

ARGENTINA

NATIONAL CHAMPIONSHIPS.—These were held at Pehuayo from 28th January to 5th February. Hossinger (the 1960 World Champion), flying a Phoebus, was the winner among 48 participants. The numbers of each sailplane type entered were: 15 Ka-6, 7 Austria, 5 Vasama, 4 Skylark, 45(?) Sky 34, 4 Blanik, 3 Zefir, etc. (The figure for the Sky is obviously a misprint.)

A handicap system was used for marking, the coefficients being: Phoebus and Std. Austria SH, 0.72; Std. Austria, 0.73; Skylark 4, 0.79; Vasama, 0.80; Zefir, 0.83; Ka-6 and Pirat 0.88; Skylark 2, 0.91; Blanik, 0.92; Sky 34, 0.96; Bocian, 0.98; Mucha Standard, 1.00.

The first task, a 147½-km. Triangle, was won jointly (after applying handicap) by Rizzi with a Sky at 87.34 km/h.

and Hossinger with a Phoebus at 116.45 km/h. 27 completed it.

The remaining five tasks were: 200-km. Triangle completed by 12; 166-km. Triangle completed by 37; 285-km. Out-and-Return, also completed by 37; 211-km. Triangle completed by 40; and Free Distance, won by Hossinger with 248 km., with even the 19th competitor making 142 km.

Leading Final Results

1.	Hossinger	Phoebus	5489
2.	Caro	Vasama	5021
3.	Mendiburu	Ka-6	4850
4.	Milani	Ka-6	4775
5.	Urbancio	Ka-6	4696
6.	Frene	Ka-6	4621
7.	Honda	Ka-6	4582
8.	Macarron	Skylark 3	4554
9.	Rizzi	Sky 34	4498

Aviasport

CANADA

IT is mid-April, and the flying season is well and truly under way as this is written. So are the preparations for our team's trip to Leszno. At least two, and maybe three, of the boys will pick up their new European sailplanes, practise, fly them in the contest and then bring them home—they'll have something to bring home, even if they do not qualify for the official hardware. They will certainly try.

An idea of Walter Piercy's, the 1966 and 1967 President of Soaring Association of Canada, has resulted in a \$4,000 boost to the World Contest Fund. Can't tell what he did—it's a secret. Still, the fund is pitifully low for a country as wealthy as this, and we do not enjoy Government support such as some countries do.

This year's Nationals will be held at Rockton, Ontario, with the Sosa Gliding Club doing the work. A remarkable achievement, bearing in mind that none of their members even competed last year. Dates are: 23rd July to 1st August.

The first local contests planned are for the Victoria Day long-weekend contest, 18th to 20th May. One will be held at Pendleton, Ontario, by the Gatineau Gliding Club, assisted by the Rideau Gliding Club, and another one is believed to be brewing at Calgary, organ-

ised by the Cu-Nim Gliding Club, one of the largest in the West.

Last year's actual and this year's expected influx of new members has had an acute shortage of two-seaters suitable for training—you can't find a good one with a light!

Several new clubs were established late last year and early this year, and the total number of clubs in the country is over the 30 mark. Another three are known to be in the pre-incorporation stages. Any individual or group having a serious interest in gliding may write to the Soaring Association of Canada, P.O. Box 2006, Station D, Ottawa, Ont., or to the writer's organisation at Box 26, Station D, Toronto, Ont.

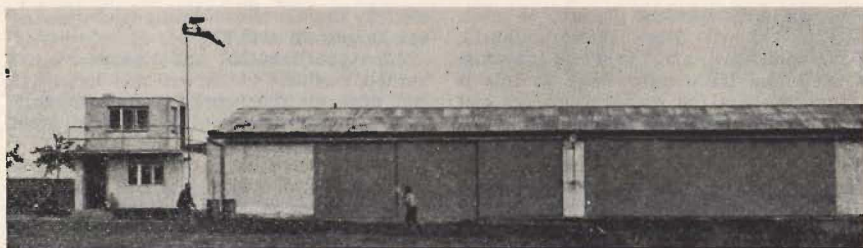
Apart from the new sailplanes to be picked up in Europe by our team members, there are a number of new sailplanes on their way for an even higher number of pilots. These include a Phoebus 17, a Pirat, a Dart, one or two Ka-6's, a T-53 and a few less spectacular types.

Skyway Air Services of Langley, B.C., are renewing their offer of a \$1,000 prize for a sailplane flight across the Canadian Rockies. The flight must start at Fort Langley gliderport, cross the mountains and terminate at Pincher Creek (preferably), or points East. Any takers?

The weather's fine. Let's get 'em up there!
ONTARIO.



(See next page—Czechoslovakian news.)



CZECHOSLOVAKIA

The Baroun Gliding Club, about 30 km. from Prague, is prospering once more after recovering from the effects of a disastrous hurricane in spring, 1967. It completely destroyed their hangar and the aircraft inside were either written-off or severely damaged. Photographs show the hangar just after the hurricane, and the new one erected in its place.

J. EDGE.

FRANCE

DURING 1967, seven new gliding "associations" brought the total number up to 96, with 7,500 "adherents". They put up 128,979 hours' flying from 3,038 winch launches and 224,187 aerotows, in which the tugs flew 28,320 hours. The increase over the 1966 figures was 27.2% in gliding hours, 15.2% in towed flight, and 14.5% in tug flying. Of the total flying, pilots under 21 were responsible for 35.3%, over 21 for 36.2%, military pilots 23%, and foreigners 5.8%.

In cross-country flying 650,676 km. were covered—more than double the previous year's figure; of these, 415,628 km. were in closed circuits and 235,048 km. in distance and goal flights; pilots under 21 years covered 155,248 km.

Gold C altitudes, 57 (including 20 foreigners), distances 74 (no foreigners); Diamond Altitudes 36 (16 foreign), Goals 76, Distances 8 (1 foreign). There were 997 sailplanes operating on 30th September, the most numerous being 130 Bivaje and 120 C-800 (an "ancien" type).

During the year 2,300,000 F. were given in subsidies for buying gliders, and 51,192 F. were spent on 388 bursaries for young beginners.

Aviasport.

IRELAND (Dublin)

THE 1968 cross-country season got off to an early start with a 38-mile flight to Tullow on 3rd March by Gerry Connolly in the club Ka-6. On 7th April Stanley Dunne, in his Ka-6, went 125 miles to Cork in a five-hour flight. This broke Dave Hooper's previous record of 104 miles. In the training area, five first solos were made, including Nuala Hegarty, our first lady soloist in quite a while.

It is now probable that the 1968 Irish Championships will be split into two sections. Each section will be either a whole week or a long weekend. Hopefully, this will guard against a complete washout by the weather as happened last year, and if the weather is good for both sections, more pilots will have a chance to compete.

Despite selling the club Terrier earlier this year, it now looks as though aerotows will be available. The Irish Aero Club are investigating the use of a Cessna 150 for tug duties. If this can be done, it will fill a big gap in our launching facilities that was created by the sale of the Terrier.

R.H.

ITALY

AT the various gliding centres, the total hours flown during 1967 were:

Aosta, 1,452; Bergamo, 1,100; Bolzano, 470 including a Diamond climb; Cremona, 71½; Ferrara, 286; Gorizia (Trieste), 420; Milan, 589½ including 42 distance flights; Padova, 444; Turin, 2,342; Verona, 86; Vicenza, 422 (including visits elsewhere).

Varese: 4,691 hours, made up of 3,737

by the club, 233 by others, 711 training. Two-seater feminine records were set up for 100-km. Triangle at 68 km/h., and Out-and-Return, 257 km.

Centro Nazionale at Rieti: Total flying at the Centre, 5,006½ hours, of which 1,046 hours were with motor. Four professional gliding instructors' certificates were gained, 6 Silver C's were completed and 4 legs towards Gold C. Apart from certificate flights, 3,848 km. were covered in Triangles and Out-and-Returns. Wave flights were: one to 10,300 m. (33,800 ft.), one to 6,300 m., and 22 to between 2,000 m. and 3,000 m.

Vola a Vela

MEXICO

GLIDING Clubs are being started at Mexico City and Puebla. The first Mexican national record has been set up by Rafael Traboada, holder of Mexican gliding licence No. 3. Taking off from Puebla, 2,150 m. (7,054 ft.) a.s.l. in a Ka-6, he flew 80 km. (50 miles) to a landing near the Pacific at Cuantla, 1,500 m. (4,921 ft.) a.s.l.

Aviasport.

NEW ZEALAND

CENTRAL DISTRICTS CHAMPIONSHIPS.

—Poor weather over the Easter period, following a disastrous storm only two days before, caused these Championships to be rather less than a resounding success. Luckily only minor damage to one glider was caused by the storm, although roofs were blown off houses and trees by the thousand were toppled—not to mention the tragedy of the ship "Wahine".

Only two days of competition were possible.

FRIDAY, 12TH APRIL.—No-contest day. Task: Free distance. Only one glider out of the dozen in the contest passed "X". This was Gordon Hookings of Auckland in the Skylark 4.

SATURDAY, 13TH APRIL.—1st contest day. Task: 93 km. speed triangle. Turn points, Masterton-Featherston-Ruakakaputuna. (Believe it or not, there is such a place, pronounced "Rooa-cocka-pooh-toona".)

Four completed the task in slow time. Winner's speed 36 km/hr. Kosoff landed just one paddock short of home.

Next day it rained again.

MONDAY, 15TH APRIL.—2nd contest day. Forecast: Stable conditions with a faint possibility of wave. Faint nothing—it became a fully fledged wave during the day—but in a reasonably gentle form. Thermals reached to 3,500 ft. and later 4,000 ft. Task: Distance around a 90-km. triangle, Masterton—Mt. Bruce—Featherston. Pilots who contacted the wave soon were around 6-8,000 ft. over the 1st turn point—the markers could not be seen from a greater height. First to complete one round was Peter Heginbotham. But the winner was Doug Yarrall in the SHK. The wave at Masterton is his playground. It was here last month that he reached 37,800 ft. from a low point of 800 ft., giving him the NZ height and gain-of-height records. He was on his 5th time round when he decided it was cold and near dark. He landed back at Masterton after 450 km. Gordon Hookings, with 3½ times around the triangle, was next—300 km.

Final total was nearly a dead heat.

- | | |
|-------------------|------|
| 1. G. Hookings | 1395 |
| 2. P. Heginbotham | 1390 |
| 3. A. Cameron | 1179 |

After the prizegiving, Gordon Hookings took delivery of Peter Heginbotham's Phoebe. Peter is getting a new 17-metre Phoebe for the World Championships.

ROSS MACINTYRE.

SOUTH AFRICA

REPORTED ABORTED.—In the report of the South African Nationals, page 133, April-May issue, there is one, to my mind, dismal error.

I completed the 100-km. triangle on the 9th January and scored 950 points for second place. The story of this flight might be of some interest to your readers, being the experience of one of the less skilful and intrepid glider guiders at this competition.

It was obvious that considerable over-development was to be expected and after a reasonably early start I was at the first turning point in good time. The lift was strong and turbulent. Back

towards Tempe several storm cells were spewing rain. A big, black and frightening storm front stretched from this turning point towards the second one at De Brug railway station.

Ah! thought I, a quick run along the front of this to De Brug (as I thought then, glinting in the sunshine ahead). Take the photos and home and dry. Imagine my consternation when arriving at this station to find that it was not De Brug but the next one back along the line to Bloemfontein.

De Brug was behind the storm front. Curses! This after belting along the front at maximum rough air speed working the brakes like a Henley oarsman, in-out, in-out, to save myself from being sucked into the storm, and shaking like a jelly with terror.

The gods smiled and a tiny gap opened and through a curtain of rain the pan behind De Brug station was seen to be in sunshine. Hell for leather through it, through rain, hail "Donder and Blitzen", terrible sink and colossal turbulence. Now only 1,500 ft. above the ground over the pan and, yes, it worked. Strong, rough lift. Wonderful! Photos taken, look back towards Tempe. A horrid sight, solid black. Where was the hole I'd come through? Worked up to 3,000 ft. above the ground and back to the storm. Followed the railway line through the rain. Worse this time! Or was it just that I was more terrified? Out in front of the storm at 1,000 ft. and still 10 miles to go. Impossible! Then the dust, a huge curtain, half the Orange Free State being sucked into the air. No question now, can make it easily. Tail wind about 40 knots and Tempe in sight. But now, oh so low, I let the wind blow me over the last couple of miles, over the fence at 200 ft. and again we are suddenly lifted up and over the control at nearly 1,000 ft. The dust has caught me up! Dear God, how do I get down? Well I did. Just! Approached at 80 knots and landed across the runway. Didn't even reach the other side. Willing helpers were waiting to hold the wing tips. Another well-meaning idiot motioning me to get out. Oh dear me no! I lost the canopy of my old Eagle in a storm like this. In any case it was raining. In my state of jelly I would have simply dissolved.

Well, after going through all that you must sympathise with my feelings when it was reported that I aborted.

BRIAN COLE

SOVIET UNION

NEW SAILPLANE.—During 1967 a new Standard Class glider, the Vega-2, has been going through its tests. It has been developed from the Amur (1960) and Vega-1 (1963). The construction is all-metal and is based on the A-15 with a lower fuselage and larger V-tail.

The Vega-2 has easily removable wing tips (NACA section) and can also be fitted with a 17.5-m. wing for record flying, etc. With the 15-m. wing it complies with the Standard Class requirements.

The testing was done in two stages—electronic equipment was installed which photographed and noted down all flight conditions, and then a number of comparison flights were carried out with other gliders. The team involved in this included Veretennikov, Chuvikov, Blinov and Durnov.

Several prototypes were built so that improvements could be made as they went along. A reduction of 25 kg. in weight was obtained and also performance was increased by improved workmanship on the wings.

The cockpit of the Vega-2 can accommodate pilots of all sizes, the taller pilot being in a more semi-supine position.

The glider has been designed for mass-production and many modern methods are to be used with this in mind.

Another flapped version is also under construction; this should improve the soaring capabilities even more.

Principal Data, Vega-2

Span - - -	15 or 17.5 m.
Wing area - -	11 or 12 sq. m.
Flying weight -	330 or 350 kg.
Max. L/D - - -	36 or 41
Min. sink - - -	0.65 m./sec.
Max. speed - -	340 km./h.

V. SPIVAK, A. KOLESNIKOV and
V. DADASHEV.

Condensed and translated from
Krilya Rodiny by C. WILLS.

WEST GERMANY

HEinZ HUTH radioed a distress signal over the Alps: "Stand by for emergency landing. I am being attacked by eagles." Two giant Alpine eagles were buzzing the glider at about 9,000 ft. Huth wrestled with the controls as one of the eagles slammed into the wing of the glider. Stunned and bleeding, the eagle fell to earth; but its partner continued to attack.

Huth, who was practising for the World Gliding Championships, managed to land his damaged glider near Magadino, Switzerland. He said: "I had a special prototype glider of glass-fibre. If I had been using my usual wooden glider the eagles would have broken the wings." *Daily Mirror.*

Victor Boin Contest

This one-day free distance contest was held on 27th April at the Air Force Gl.Cl. base near Eindhoven, Holland, with 53 participants. Dick Réparon (Ka-6E) won with 345 km. Second, van Bree (Ka-6E) 305 km. Third Bleukens (Belg.) 290 km.

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