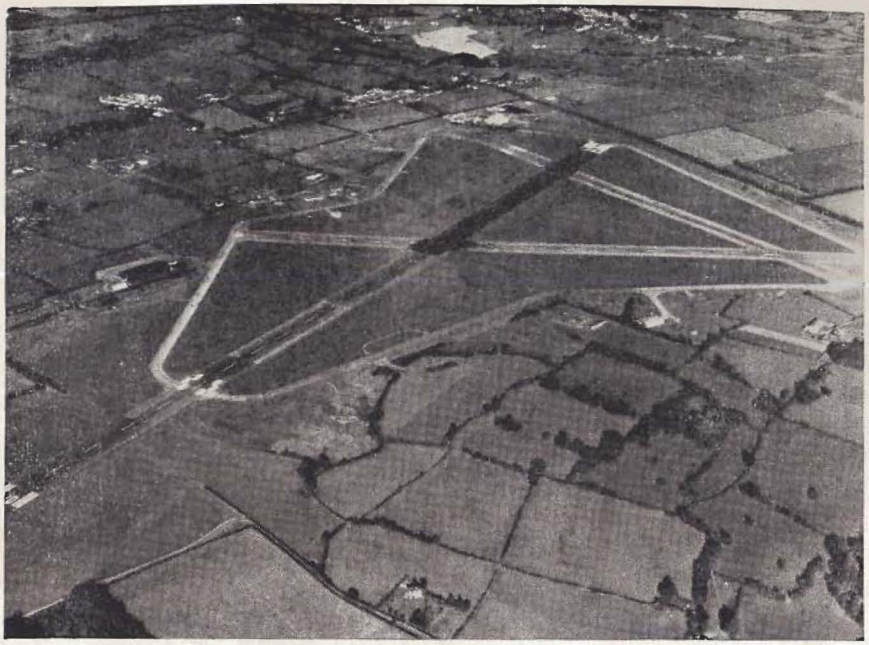
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Cover photograph: Dick Georgeson flying a Skylark 4 near Lasham. *Photo by Charles Brown.*

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TECHNICAL IMPRESSIVENESS

By KEITH CHARD

THREE of the most impressive things at South Cerney were the flying of the Polish pilots, the aerodynamics of the German gliders and the structures of the American machines.

This is not the place to comment on the flying except to point out that the Open Class was won in a machine conforming to the Standard Class rules and against machines of such formidable reputation as the D-36 and Sisu. The Foka and, indeed, most modern Standard Class machines, do not comply with the spirit of the Standard Class, which was intended to encourage the development of good, but cheap, machines for club use. Unfortunately the rules have not encouraged this and have led to the development of rather exotic machines within the set of rules. The limitation in span imposed by these rules has the effect of producing machines of relatively high wing and span loadings, that are at their best in moderate to strong conditions. Surprisingly, the contest days at South Cerney were days of strong (6 knots) thermals and the highly loaded machines, including the Standard Class, did very well.

D-36

Aerodynamically the Akaflieg Darmstadt D-36 was the outstanding glider present. The design of this machine made no concessions to either cheapness or to club use. Plain flaps of 17% chord are used to increase the useful speed range of the wing. The section of the inner portion of the wing was designed by F. X. Wortmann to take full advantage of the flap. For penetration the flap is deflected upward by 10° so that at $C_L=0.3$ the profile drag coefficient is $C_{DP}=0.0047$ ($R=3\times10^6$) and for thermalling the flaps may be deflected down by 10°, and in this condition at $C_L=1.2$, $C_{PD}=0.009$ ($R=1\times10^6$). Such a combination of performance at high and low speeds cannot, at the present state of the art, be obtained without the use of flaps. On the D-36 the whole wing is effectively flapped as the ailerons, which occupy a slightly larger proportion of the chord than the flaps, are deflected so that the trailing edges of all sections of the wing are level. It is interesting that, if the optimum flap deflection is used at all speeds, the angle of attack of the wing and therefore of the fuselage remains constant, making it possible to fly the fuselage at zero angle of attack where it has minimum drag and causes minimum disruption of the flow over the wing root.

The front section of the canopy is permanently fixed to the fuselage, and this feature, in conjunction with the removal of the pitot tube to the top of the fin, makes it possible to attain laminar flow over the first three or four feet of the fuselage. Due to the increasing local Reynolds number, transition to turbulent flow occurs after this section even on a smooth surface, and so the detachable section of the canopy can be fitted here without penalty. Close behind the pilot, the fuselage cross-section is reduced so as to have the minimum surface area immersed in



Photo Anne Ince

Typical of the refinement of the D-36 is the air intake for cockpit ventilation. Internal ducting leads forward to the cockpit and there is an outlet near the tail which can be seen in the next picture.



Photo Anne Ince

This picture shows the flaps which, surprisingly, terminate outboard of the fuselage side. Also one of the pitot tubes is visible just above the registration number.

turbulent boundary layer. As the fuselage is at zero incidence, the interference of this contraction on the functioning of the wing root is apparently negligible. (This appears to be in marked contrast to Sisu, where the fuselage contraction occurs behind the trailing edge of the wing). A T-tail arrangement has been adopted; the tailplane is fixed and has a small elevator — due to the effect of the flaps on the trim, large elevator deflections are not required and therefore the tailplane drag is small even without the use of an all-moving tail.

The structure is a balsa-wood and glass-fibre reinforced plastic composite, generally in the form of balsa planking covered, on the outside only, by glass cloth and resin. Under the balsa planking there are closely spaced lightweight balsa ribs and frames. The main spar booms consist of many long glass rovings laid in resin. The advantage claimed for this form of construction is that the skins do not buckle under load and so the aerodynamic shape is not spoiled. Unfortunately such a structure is very flexible in both bending and torsion, rather heavy and liable to become very weak at high temperatures — possibly even at the temperatures achieved on the upper surfaces in the direct sunlight in a temperate climate. The flexibility of the D-36 wing makes the recovery from a spiral dive interesting; at high speed the torsional flexibility of the wing leads to ineffective ailerons (due to the twisting of the whole wing in the opposite direction to the aileron), so that ailerons are not sufficient to bring the wings level — however, if the stick is pulled firmly back at 90 kts. the increased dihedral, caused by wing bending, effects recovery!

PHOEBUS

Phoebus, successor to the renowned Phoenix, is a Standard Class machine with a glass-fibre and plastic structure and with an outstanding finish. In this case the structure is not so obviously flexible as the D-36. The wing section has been designed by R.Eppler for very high lift and for a large proportion of laminar boundary layer on the upper surface. Again a T-tail is used but, in this case, with an all-moving horizontal tail without either trim or anti-balance tabs. This arrangement produces stick forces that are almost zero at all times and may sometimes be reversed from the normal



This view of the Phoebus shows the T-tail with all moving horizontal portion. Note the tailplane mass-balance. The airbrakes can also be seen.

Photo Anne Ince

sense — an arrangement that might well be dangerous in the hands of inexperienced pilots. The front fuselage is very neat and short and is contracted aft of the pilot in a similar manner to the D-36. Internally the cockpit is of reasonable size and should prove comfortable.

HP-12

The American machines are outstanding because they prove to reluctant, conservative designers, steeped in wood aircraft lore, that metal glider structures can be very light and can also have an immaculate surface free of wrinkles and rivet heads.

For simplicity and effectiveness Dick Schreder's HP-12 is the most superbly engineered aircraft that I have ever seen. The unequipped weight is only 342 lb., yet the wing is so thin (it has a Wortmann FX 61-163 section) that it would be even heavier than the machines we are used to if conventional wood construction was used. The spar is built up of ½-in. plate booms with thin gauge webs. Ribs are spaced 8 in. apart and the skins are 0.025 in. clad alloy. All assembly is by riveting and solid rivets are used almost exclusively, as access to the inside is possible in most cases (there are holes in the spar web). Spin dempling is required for countersunk rivet heads in the thin wing skins.

The airbrakes deserve special mention as they take the form of simple flaps which will rotate to 90° deflection. The total flap area is large and terminal velocity is 90 kts. with full deflection. As the Standard Class rules do not permit "lift augmenting flaps" the flaps on the machine at South Cerney had been arranged so that the outboard section (of approximately 8 ft. span) deflected up-



The contraction aft of the very neat front fuselage is shown in this picture of the Phoebus.



The HP-12:— Note the horn balance on the elevators and the wheel fairing of soft rubber sheet. The endplates on the wingtips are solely for keeping the aileron mass-balance of the ground.

wards when the inner section (of approximately the same span) deflected downwards. However, if both sections are arranged to deflect downwards, small flap deflections may be used to improve the thermalling performance. The simplicity of this arrangement and its dual function should give food for thought to the Standard Class rule-makers.

It is difficult to be sure about the freedom from buckling under flight loads, but those who flew it were not aware of skin buckling, nor does the performance, which is clearly very good, seem to suffer from this cause. The machine can be very easily fitted with a small piston engine and propeller in the nose, and in this form can be used as a self-launching glider, although there is obviously some penalty in performance. It is worth mentioning that the surface of the machine at South Cerney was not filled with microballoons and, in fact, the finish had been applied in a total of three days' work.

SISU

The Sisu is a very different machine. Its structure lacks the simplicity of HP-12 and its detail engineering is "fussy". The designer had clearly been concerned by the possible loss of aerodynamic efficiency due to skin buckling, and so spanwise stiffeners are riveted to the wing skins. Rigging is slightly complicated by having fasteners at the end of each stiffener.

The spin recovery characteristics of Sisu are sufficiently bad that it is not spun deliberately. This is probably the

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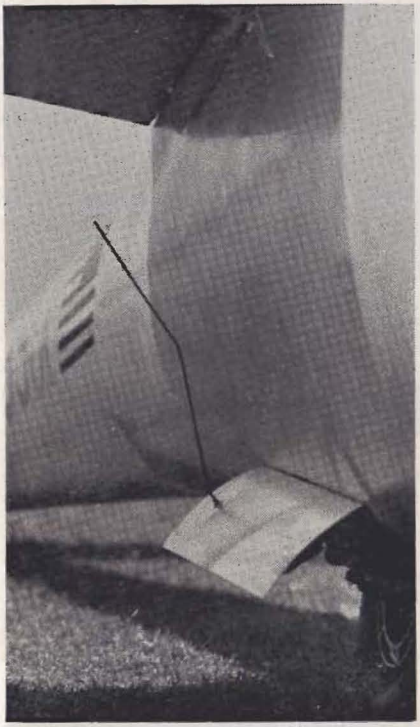


Photo Anne Ince

The radio aerial of the Sisu is attached to the undercarriage door. Note also the vertical sides of the fuselage near the wing and the fuselage contraction aft of the wing.

consequence of having a V tail, and similar characteristics often, but certainly not always, occur on V-tailed aircraft.

The wing of Sisu has a slotted Fowler flap inboard of the ailerons. This arrangement has a similar, though probably not so marked, effect as the Fowler flaps on BJ-2, which is described below. The finish of the Sisu was immaculate, but it had been achieved at the expense of considerable effort by the use of microballoon/epoxy resin filler. The version brought to South Cerney was known as Sisu 1B and had an increased span to make it more suitable for British conditions.

BJ-2

The BJ-2 is interesting as the result of designing exclusively for South African record-breaking conditions. As a high wing-loading is optimum if the thermals are strong, this has led to a design philosophy where weight is of very little consequence. However, if carried to extremes this philosophy leads to high stalling speeds as well as high rates of sink. The high sink rate is not important because the thermals are so strong, but the high stalling speeds cause the turning radius to be very large, and prevent circling in the strongest part of the lift. The solution adopted is a very effective slotted Fowler flap which raises the maximum lift coefficient to 2.2. The resultant stalling speed is thus only 32 kts. and this for a machine of 15 metres span weighing 950 lb. (max. all-up). This machine has been so successful in South Africa that its successor the BJ-3 (see page 415), due to fly next year, carries the same philosophy to even greater extremes. A point of interest is that the BJ-3 will have air-brakes despite the fact that the drag 'chutes on the brakeless BJ-2 are effective and reliable. One problem encountered has been getting rid of excess height gained before crossing a start line.



The BJ-2:— The part span slotted Fowler flaps are shown clearly.

OTHER GLIDERS

Many other machines should be noted for their progressive features. The Swiss Standart Elfe has a very thin wing with sections designed by W. Pfenninger (13.3% thick at root, 10.5% at tip) that undoubtedly works very well: this degree



Photo Anne Ince

The trailing edge airbrakes of the KAI-14 are shown here. The Swiss Elfe has a very similar arrangement.



Photo Anne Ince

The KAI-14 with its bubble canopy. A sleek Foka type canopy was sometimes used. Note the slender fuselage and small wing chord.

of thinness is made possible by metal spar booms. It also has a trailing-edge airbrake, pivoted near the middle of the airbrake chord (with the wing running spanwise). The KAI-14 has a similar system and, like the HP-12 flaps, this has the advantage of simplicity and also avoids discontinuities on parts of the wing where laminar flow might otherwise exist.

The Austria SHK has a new Eppler section with less rear loading than the Phoenix/Phoebus sections. Like the Standard Austria, the shape of the wing really is what it is intended to be.

The Boomerang uses Wortmann sections. Like Phoebus, the all-moving tail has no anti-balance or trim tabs.

The Russian KAI-14 featured a very high aspect ratio, with attendant high loading. As the range of useful speeds was probably not very wide, the performance of these machines in thermals must have been relatively poor. Construction was all-metal, but the standards of finish were well below the other metal gliders.

The Edelweiss was mainly remarkable for the slimness of its fuselage and for a smooth surface produced by its sandwich construction skins.

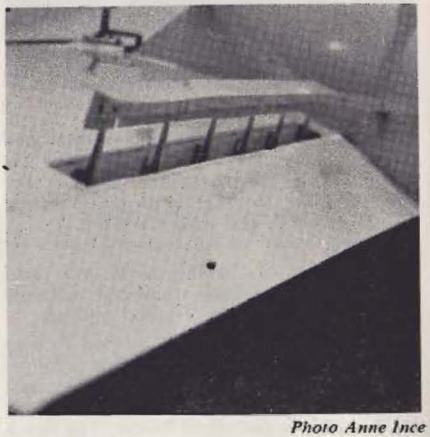


Photo Anne Ince

The airbrakes of the Libelle are located very near to the flap hinge.

DESIGN TRENDS

It is interesting to consider the features of the aircraft at South Cerney to see which are useful and will continue to be



Photo David Scallon

The sleek nose of the Edelweiss is in part made possible by mounting the instrument panel on the canopy.

used, and also to predict lines of future progress.

By far the most interesting possibilities arise from the use of flaps. Essentially flaps widen the range of speeds over which a glider has good performance, thus permitting use of higher wing-loadings which give better penetration, but without penalising the thermalling performance. If the flaps are part-span slotted Fowler flaps, as on the BJ-2, the widening of the speed range is very considerable, but this is achieved at the expense of a high minimum rate of sink (because the induced drag is increased by the uneven downwash pattern). If full-span plain flaps are used, the increase in speed range is less marked, but the min. sink is not penalised. Consequently it is likely that both types of flap will continue to be used, but that plain full-span flaps will prove more useful for competitions where weak conditions are frequently encountered. Fowler-flapped machines will undoubtedly be used to break records in good conditions. It is worth considering the possibility of full-span Fowler flaps, with ailerons replaced by upper-surface spoilers; this arrangement may achieve the best of both the others.

In the Standard Class, widening of the speed range will be restricted by the absence of flaps, but a certain amount of progress will be made by the use of improved wing sections. These will be thinner than most current wing sections (between 12% and 15% of the chord) and will make greater demands on structural techniques.

Wing loadings will probably continue to increase, but only in step with widening of the speed range — otherwise thermalling performance will be too poor. In the temperate climates, span loadings are unlikely to increase above the current range of 0.22 to 0.35 lb./ft.^{2}, or otherwise the minimum sink will be impaired. This restriction will put a big premium of weight reduction for Standard Class machines where the span is limited. Aspect ratios will increase as wing loadings are increased without corresponding increases of span loading.

T-tails and V-tails have become very popular abroad, and both have the advantage over the normal arrangement if a landing in tall grass or crops occurs. However, many V-tailed aircraft have marginal spin recovery, and T-tails may ultimately be better, provided that they do not incur a large weight penalty.

Retracting undercarriages were common in the Open Class and must improve performance a little; however, they are expensive for what they achieve, and should continue to be barred from the Standard Class. Contraction of the fuse-

lage behind the cockpit has come to stay, despite the structural complications.

Light alloy structures will become increasingly common, particularly when thin, high aspect ratio wings are used, because light alloy structures are the most efficient way of dealing with high axial loads due to bending. Light alloy sailplanes will be welcomed in many countries for their climatic resistance. It is also probable that the weight penalty of the T-tail arrangement will be negligible for an all light alloy structure.

Finally, it is worth observing that most of the outstanding machines were the result of efforts by individuals or small groups, and that these machines come from countries where design and construction of gliders in this way is almost commonplace.

FIRST CROSS-COUNTRY

By RHODA PARTRIDGE

IF there'd been a cine camera among my instruments recording my expressions it would have been as good as a Chaplin silent. Launched on my first cross-country attempt and scraping around the Mynd at 500 ft. Got it! Don't lose it. Where was it? Here it is! It's a good one, it's a honey, cloudbase, here I come! It's easy, steady 6 up: 3,000, 4,000, wisps of cloud. The Malverns. The compass says 15 when I point at them. Staverton, here I come.

It's a piece of cake, 60 knots under a cloud street. Silver C for me, for me, Tra la! Darling little 463. That was Ludlow. There's the Clee. Ron says there's always lift on the Clee. There'd better be, the altimeter's going round the wrong way. The sky looks a bit empty. Never mind, Ron says . . . I hope he's right. Search carefully, all over, specially down wind. Try that quarry thing, there must be, Ron said . . . There isn't — now what? That town, a lot of factory roofs. A football pitch. If the factory roofs don't, I'll land on the football pitch. Whoosh! There it is. Now concentrate, you nut — it's a narrow one, you're flying too fast. Pretend it doesn't matter (but it does). You've lost it. Search again. Where's the football field? My God! It's got two teams on it. One in red and white. One in blue and white. Oh well, there'll be another field. No sink, turn and drift and search and look at fields and get a bit and lose a bit and what will they do to me if I break the 463? They love it, so do I. Does it slope down? Go all round and look. What about that little one over the road? Pretend I was launched out of it and do a circuit. Of course I can make it. Darling little 463. Dead on, gently now — thistles, we're down, we've stopped. My God! Quick! Bullocks.

That is what the cine camera would have recorded. The next six hours deserved a top camera man. You know about keeping off small boys and getting a policeman to control the crowds? Well, after 30 minutes of chasing the two-year-old steers off, I lifted up my head and cried "Help! Help! Help!" — and no one came. There were 20 steers and the field was small. After another 30 minutes I again howled for help. This time a dear man in a nearby house heard and came to my aid and phoned the Mynd and brought me a beautifully laid tray of tea and sandwiches. And a road man with a magnificent belly supported by a huge belt came over to me and said, "Ar! Queer bird to find in a field." I didn't tell him my name because I suspect that he was a wag. No one else came. After four hours a cattle lorry stopped at the gate and put ten more steers into the paddock. They were delighted and galloped round and round with their tails up. So did the twenty old inhabitants — while I circled the glider. At last, six hours after my elegant landing, Phil and Bob arrived with the trailer and large grins, and we packed the 463 in and we had a magnificent dinner and a beautiful bottle of Nuits St. Georges '59 and I'd only got 20 miles — but what the hell — it was a bit of a giggle.

THE B.G.A. STUDY GROUP

By THE CHAIRMAN

IN the June-July issue of SAILPLANE & GLIDING I described the structure of the British Gliding Association, and gave my view that it was this that had enabled us to acquire the freedom from official control which has made it possible for British gliding to grow on its present lines. In the last issue I also expressed the belief that, particularly as a result of the success of the World Championships, the time had arrived when we should review this structure, which has served us well for over 30 years, to see if changes were now needed to cope with the requirements of the future.

This whole subject was discussed at length at the July Council Meeting. Points that came out included the enormous increase in the time-consuming responsibilities of voluntary Committee Chairmen; the work of the office has more than doubled in the last four years; the size of the Council must continue to increase; to retain our freedom we must make sure that the development of instructional and safety services keep pace with the increasing size of the movement.

To enlarge on only one of these problems: sixteen years ago, when I became Chairman, it was possible to do the B.G.A. work and still give full time to the job which earned one's living. Now it is not — one or the other must suffer. No one should be asked to prejudice his career, even for the good of gliding. So if we are to continue to attract spare-time people of the right calibre, some re-organisation is really crucial. I take it as axiomatic that continued control by non-professional competent enthusiasts is a fundamental necessity.

Any revision of our structure must take time. We must try and foresee the future, the way we should wish British gliding to grow; we must examine our philosophy — why do we want to glide? What sort of people do we wish to attract to gliding? What is the value of gliding to the community?

The Council has accordingly set up a Study Group, and David Carrow as Vice-Chairman has been appointed Chairman of this. He was asked to draft Terms of Reference, which have now been approved, as follows:—

> "To examine the present function and structure of the British Gliding Association and to recommend any changes that may be found desirable."

Other members of the Group are: Bill Mackworth Young (Assistant Treasurer), Lionel Alexander (Cambridge University Club and Chairman of Sites Committee), Bryan Jefferson (Derbyshire and Lancashire G.C. and member of Council), and Chris. Simpson (Leicestershire Club).

The Group is representative of the post-war generation and its members are drawn from as wide a geographical basis as is practicable, consistent with rather frequent meetings. They are planning that one or more individual members should visit all sites of Full and Associate Clubs during the next twelve months for discussion, and an itinerary will be worked out in due course. They will also take evidence from all major B.G.A. Committee Chairmen, Elder Statesmen, and anyone else who feels he has something to contribute.

They hope to make a preliminary report to Council in the Spring, perhaps in time for some discussion to take place at the next Annual General Meeting in March; and a final report and recommendations towards the end of 1966. Any structural revisions will, of course, have to be agreed by the whole Association, possibly in 1967.

I know I can ask everyone to help the Group in their extremely difficult task, and no holds barred. Any new set-up must carry the goodwill and endorsement of everyone, for we must hope that it will serve our needs as well and as long as has our present one, so we are thinking now in terms of the year 2000!

WAVES AT WAHAROA

By LEWIS HALE

An aeroplane crash on the Kaimai Range in New Zealand, N.Is., alleged to be caused by a lee wave system, was described in SAILPLANE & GLIDING *for February, 1964, p. 66. Mr. Hale here describes the local wave systems and soaring flights made in them, and his references to the crash show that it was due not to wave but to the normal downcurrent in the lee of a mountain.*

I BELONG to the Piako Gliding Club, based at Waharoa Airfield some seven miles to the west of the crash site. We regularly soar both westerly and easterly waves over perhaps a twenty-mile beat. The easterly wave is generated by east to north-east winds caused by a low-pressure area usually travelling in a S.E. direction some hundreds of miles north of New Zealand.

Best height in an easterly wave so far is 10,650 feet, gained in a Rhönlerche two-seater trainer (Grunau performance). This easterly brings what the locals know as "bad" weather, wind and rain. The wave often "clags" in, and the wave gaps disappear and hasty descents are made. We have seen as many as three waves (easily recognised as such) in an easterly. Usually we aero-tow over to [the] primary [wave].

The westerly wave is most spectacular. I have not personally flown in it so the idealised diagram below is a little uncertain as to lower cloud structure (i.e. in rotor vicinity). From the ground, the higher clouds often resemble sponge-cake — many laminations, but not always. On 2.4.63, 30,000 ft. was reached twice, once in a Ka-6 and once in the Weihe, Philip Wills's old machine (incidentally, now domiciled at Waharoa and owned by two Piako G.C. members), and 15-20,000 ft. reached on a number of occasions. This from a ridge averaging 2,000 ft. in height.

There is little doubt that waves from some 1,500-ft. hills upwind combine at times with the main wave. One of our pilots on one occasion soared about five waves in this series, reaching 11,000 ft. in clear air. This wave sometimes augments normal hill lift on the main range and boosts it from the usual, say, 3,000 ft. to up to 8,500 ft. Conversely, it at times completely subdues it.

There is something like 20 miles of readily soarable hill, so five hours and Silver distance flights aren't too difficult to achieve. Gold distance is awkward in our part of the country, however, unless done by triangle, and so far we haven't managed it, our only Gold pilot getting his in waves in the Wairarape near Wellington.

EDITORIAL NOTE.—Mr. Hale encloses the official report of the aeroplane accident, which has now been published (No. 25/3/1338, R. E. Owen, Government Printer, Wellington, N.Z.). The basic cause was that the aeroplane drifted to leeward of the mountain range owing to the wind across the range being 70-80 kt. instead of the forecast 25 knots; it made a descending turn towards the mountain

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preparatory to a landing approach, then got into a downcurrent of 2,000 ft./min. and hit the mountain 327 ft. below its top, the pilot evidently thinking he was to windward of the mountain. His altimeter was over-reading to an estimated extent of 150 ft., so this was a minor contributory cause.

The report states: "There is evidence that additional power was applied during the last few seconds, and it is thought that an abortive attempt was made to regain height" (p. 13). Yet the writer still doesn't seem to have grasped that it was the downcurrent, not mere "turbulence", that prevented the pilot from avoiding the mountain, for on the next page the Report states: "This downward current carried the aircraft below the level of the crests of the range where, under the conditions prevailing at the time, the aircraft encountered an area of extreme turbulence in which it was impossible for the pilot to regain effective control and recover height."

Among the "Recommendations" in the final section are:

"93. The Court recommends that a critical examination be made of existing safe altitudes for air routes in New Zealand, and that such an examination be made in conjunction with meteorological experts and those who have made a specialised study of vertical air currents such as the gliding fraternity."

"94. For flights by DC3 aircraft" (the type involved in the accident) "it is recommended that where the forecast wind velocity is 30 knots or greater at planned cruising level the minimum safe altitude for any route be increased by 1,000 ft. If the forecast wind velocity is 55 knots or greater it is recommended that the flight be cancelled."

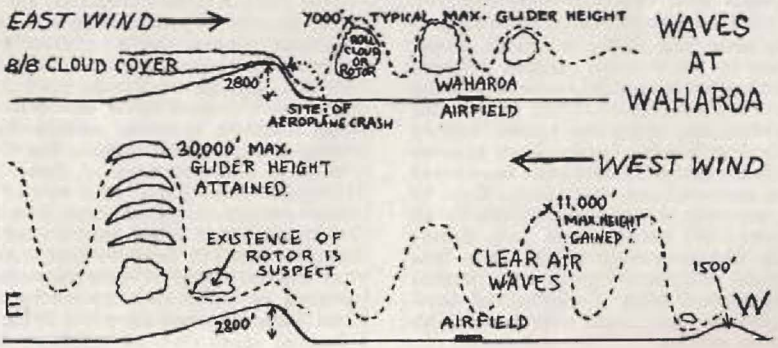
Unless the said gliding fraternity can make themselves heard to some effect, we may well be back at the old "safe altitude" mentality of the pilot who says: "All I ask is to be told how high I must fly to avoid having to learn all about those tedious currents and things — I never could understand them anyway." —ED.

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IMPRESSIONS, VIEWS AND OPINIONS of The World Championships

By RICHARD H. JOHNSON

THE British Gliding Association and the British people certainly have reason to be proud of their masterful conduct of the 10th World Gliding Championships. Everything about the contest and associated operations was efficiently done by enthusiastic and highly competent personnel. The staff, from Ann Welch's top job of Contest Director to Mrs. Fred Slingsby's kind management of the laundry pick-up station, could not have been better or more considerate.

I do wish to comment on the contest scoring rules, for I think the present World's Championships rules are, with two exceptions, quite good.

The first exception is the designated start system for speed tasks. This designated start take-off system has not been used in the United States as yet, and several things can be said both for and against it. The points I can see in its favour do not appear to be of much significance. They are :

(1) The pilot does not have to choose a start time and hence the subsequent start board gamesmanship is eliminated.

(2) The start-line and turn-point observers do not have to man their stations quite as early each day.

(3) It reduces the number of restarts that are due to pilots taking off too early.

In my opinion, those points against the designated start system considerably outweigh those in its favour. They are :

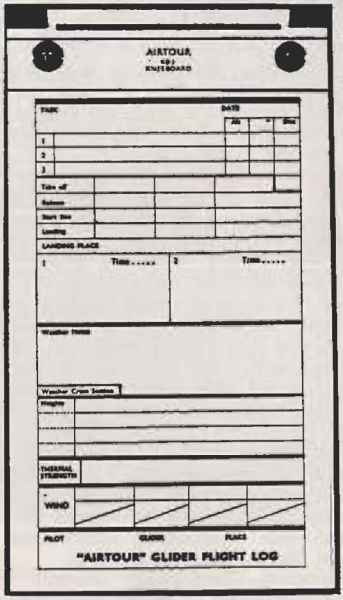
(1) By launching all the sailplanes at one time in the shortest possible interval, *air traffic congestion problems are significantly increased,* both around the airfield and along the course. Inflight collision is probably the single greatest hazard that a contest pilot is exposed to, and anything that can be done to reduce this risk should be done by all means. We were perhaps lucky during the Championships in that only one actual collision occurred, because there were quite a number of near-collisions that could have been much more serious.

(2) The pilots flying the lighter, more soarable sailplanes are not permitted to start early, and hence to possibly make up in distance their speed performance disadvantage they have competing with the more heavily loaded "lead sleds".

(3) The number of tow planes required is greater, and their utilisation is poorer because most of them can be used to make only about 4 to 6 tows per day. This increases the towplane and pilot procurement problem, and also increases the cost per tow.

(4) The start-line and turn-point observation problems are increased because there is usually a considerably more dense grouping of the sailplanes as they pass the start line and turn points.

(5) *The Competition Director can and does greatly influence the outcome of the competition.* By delaying the start time until the heavy sailplanes can stay airborne comfortably, or not permitting contest flight attempts at all on the weaker days, the heavy machines can be considerably favoured. I do not wish to sound critical of the championships Competition Director, for she is an outstandingly fine person for whom I have only the highest regard. However, though not intentionally or willingly on her part, I am sure there is little doubt that she did significantly influence who the competition winners would be. During the Championships there occurred four flyable, though admittedly poor days, on which contest flying was possible, but attempts to make contest flights were not permitted because the Competition Director declared these "No Contest" days. On at least two of the above-mentioned four days, I believe sufficient pilots could have passed the required 60-km. mark to qualify them as contest days. If only moderately strong or better days are to be used for a contest, then the pilots flying the heavier speed class of sailplanes have



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a distinct advantage over those pilots flying Ka-6 and lighter class machines. To intelligently choose the type of sailplane in which to enter a designated start type of competition, a pilot would have to know in advance whether contest flying would be permitted on weak days, or would only moderate or strong weather flying be used.

The second exception has also to do with speed tasks, and it is the present World Championship practice of giving speed points in proportion to the *square* of a pilot's average speed. This places a heavy emphasis on speed and promotes the creation of a heavy, fast breed of racing sailplanes that are nicknamed the "lead sleds". Not that I am against these record and racing machines, for I have flown and enjoyed them myself. However, these sailplanes generally are of limited thermal soaring capability and are seldom suitable for general club flying and year-round soaring. My question is: do we want to promote the creation of a special racing class of sailplanes, or should it be possible to seriously compete in contests with lighter, more soarable machines that are safer and suitable for year-around general operation? The sailplane designed to maximize speed on short races during the best two hours of the best month of the year certainly is going to differ from one designed for more general flying in weaker average conditions.

Although it was tried some years ago, we do not presently use the "speed squared" factor in our U.S. National Competitions, and I do not think we should. If we do, then why should we not also square the distance points on distance days? The preliminary contest rules for an earlier 1950's U.S. Nationals did essentially this, in that they provided 1 point per mile up to 100 miles, 2 points per mile for the distance between 100 and 200 miles, and 3 points for every mile beyond 300 miles. However, this was not actually put into practice because the S.S.A. Contest Board requested that the contest sponsors change the distance point allotment back to the then prevalent 1 point per mile.

THE ALL-GLASSFIBRE "DIAMANT"

The HBV-Diamant is an all-glassfibre high-performance sailplane incorporating the newest technical concepts. Its great advantages are easy ground handling, pleasant flying characteristics, low maintenance (no more rubbing those wings!) and excellent performance. The Diamant is suitable for club flying as well as for record-breaking and competition flying in all weather conditions. It is stable in turns, hence easy to roll (45°/45° in less than 4 seconds according to OSTIV).

DEVELOPMENT.—Fuselage and elevator were developed at the Swiss Federal Institute of Technology in Zurich (Prof. Rauscher), conceived by Dipl. Ing. T. Bircher and Dipl. Ing. V. v. Voornveld. A prototype of the fuselage was built in 1962 and tested with Ka-6 wings. Wings were designed by Dipl. Ing. W. Huetter and built by Ing. E. Haenle.

FUSELAGE.—Monocoque in epoxy-glassfibre sandwich with Airex foam inserts. Small cross-section (3.57 sq. ft.) and aerodynamically refined shape. Good flying stability is achieved by long tail arm (elevator 15.3 ft., rudder 15.8 ft.). Fixed (optionally retractable) lifting grip at rear end of fuselage. Retractable landing gear with fibrecone springs; brake; wheel amongst the 707's and taxi-ing non-dimensions 300 x 100 mm. Tow release fixed on the landing gear.

WINGS.—Glassfibre — balsa shell without ribs. Huetter aerofoil. Aerofoil flaps adjustable from +20° to −7°. Ailerons superimposed on flaps with smaller movement. No hinges or levels protruding. Flaps and ailerons mass-balanced. Dive brakes (8.2 ft. long) near trailing edge. Embedded metal thread near wing-tip for tie-down or fastening of wings on trailer. Optional containers for water ballast in wings, 2 x 6.5 U.S. gallons. Clearance of wing tips to ground (landing gear out), 2½ ft.

ELEVATOR.—All-plastic pendulum elevator in "T" arrangement. Mass-balanced in control mechanism. Span 9.2 ft., area 12.8 sq. ft. Assembly by means of one conical bolt. Automatic connection of control. Spring trim in fuselage.

CONTROLS.—Exclusively control rods with ball bearings. Longitudinal bearings in nylon.

COCKPIT.—Pilot in semi-reclined posi-



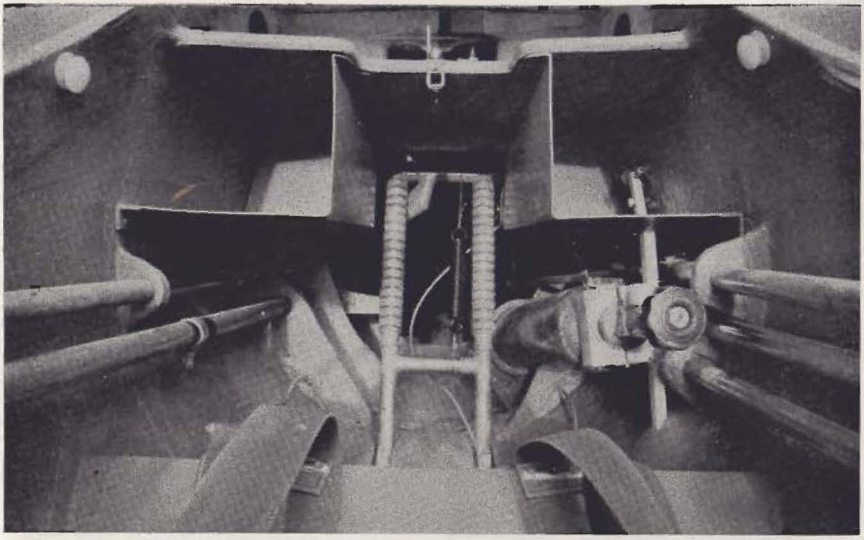


Photo: T. Heimgartner

Inside of fuselage showing simplicity of monocoque construction. In centre: springs of extended landing gear.

tion with adjustable headrest. Adjustable pedals. All controls arranged on sides: on right-hand side control stick, landing gear, trim; on left-hand side aerofoil flaps and dive brakes combined with wheel brake. Instrument panel far forward (less tiring for eyes), with remote adjustment for altimeter, etc. Standard panel for seven instruments; larger panel optional. Excellent support for legs and feet. Large one-piece canopy. Good forward and lateral visibility. Ventilation from cockpit front. One lateral window. Ample space for tall pilots and for additional accessories, such as radio, oxygen, etc.

FINISH.—Smooth resin finish, scratch-resistant. Will maintain given profile and not crack or warp. Little maintenance. Colour white.

ASSEMBLY.—Wings are attached by means of one quick-connection lever. One pair of connecting bolts for controls. For elevator, see above.

CERTIFICATE.—Swiss type certificate (export airworthiness certificate) includes cloud-flying.

Technical Data

Span, 49.2 ft.
Length of fuselage, 24.8 ft.
Height of rudder, 4.26 ft.
Wing area, 105 sq. ft.
Aspect ratio, 23.8.
Empty weight with standard equipment, 375 lb.
Flying weight, normal, 575 lb.
Flying weight, maximum, 640 lb.
Wing loading, normal, 5.5 lb./sq. ft.
Ditto with water ballast, 6.3 lb./sq. ft.
Performance at 575 lb. flying weight:
Max. L/D, 39 at 54 m.p.h.
Min. sink, 1.9 ft./s. at 47 m.p.h.
Sink, 6.6 ft./s. at 97 m.p.h.
Stalling speed, 36 m.p.h.
Placard speed, 157 m.p.h.
Max. rough air speed, 95 m.p.h.

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The above particulars are supplied by M. René Comte.



THIS year a new departure is to be made with the Club's Annual Dance. It is to be held entirely on the Club's premises, there will be a cold buffet supper, wine included, and music laid on for dancing afterwards. Make a note of the date, Friday, 22nd October, at 8 p.m. Tickets will be available from the bar and other usual sources at 15s. each, and should be booked in advance, so that adequate catering can be arranged. There may be a few tickets sold at the door but latecomers may be disappointed. For those on diets who don't wish to eat there will be "dance only" tickets. This should be the party of the year — don't miss it.

Pat Foster has now taken over the food side of things, and has a full range of delicious snacks available. It should be even better in the near future, for the plans for a separate food bar and improved kitchen facilities are about to be implemented.

The Annual Aviation Art Exhibition, to be opened by Marshal Sir Dermot Boyle, G.C.B. K.C.V.O., at 8 p.m. on 3rd November, will be open until 30th November. The judges will be David Shepherd and Roy Nockolds. The Wednesday evening lectures will be held as usual during the exhibition, but in another place, to be announced later. Nine thousand people visited the exhibition at South Cerney during the World Championships, and we hope that this one will be just as successful. Entry forms may be obtained from Mrs. Bonham, 14 Little Brownings, London, S.E.23.

The Club's Annual General Meeting is to be held on Wednesday 13th October. We hope that as many members as possible will attend to hear the report on our first full year of operation after refurbishing the premises. There will be a film show afterwards.

D. S.

Diary of Lectures and Film Shows
Wednesdays at 8 p.m.

Oct. 6. General Aviation Safety Committee. Talk and film by John Ward.
„ 13. ANNUAL GENERAL MEETING. Film afterwards.
„ 20. Film: "The Mosquito".
„ 27. Fine Names and Fair. How aeroplanes got their names. By Gordon Swanborough White.
Nov. 3. Opening Art Exhibition by Sir Dermot Boyle, G.C.B., K.C.V.O.
„ 10. Buster Keaton film.
„ 17. The Capstan. By National Coach John Everitt.
„ 24. Hurricanes. By "Wally" Wallington.

CELLULOID SOLO

By T. QUINN HALL

THEY say that gliding is one of the most delightful forms of sporting flying. They also say that film making is one of the most exhilarating forms of creative art. Having just completed a week of combining the two, I can categorically state that the combination can sometimes be frightening.

Over a drink in the B.B.C. Club last November, Charles Lagus of Zoo Quest fame suggested to me that it would be interesting to make a film which would try to display the psychological relationship between instructor and pupil, and the reactions of the pupil to his new environment, in the process of learning to glide. Developing this idea, he went on to suggest that this could be done by tape-recording everything the pupil and instructor said in the air; recording on film each flight, using telephotolensed cameras on the airfield plus cameras carried in the instructional aircraft and a chase aircraft; and finally, by recording the opinions of the pupil and instructor individually as to how the instruction was proceeding at intervals during training. The mass of data which would be obtained in this way could then be analysed and edited into a film which would display the instructor/pupil relationship.

The idea was fascinating, and in the discussion which followed the basis of a practical approach to the problems involved began to appear. A canopied aircraft would be required to prevent wind noise affecting the microphones. Launching would have to be by aerotow to enable a chase aircraft to be used. Both the instructor and pupil would have to be used to appearing in front of the cameras, as camera shyness could affect the results it was desired to obtain. The first two requirements meant a departure from the normal process of glider training as practised in this country in which low-performance aircraft and winch-launching are used. The third pointed straight at myself as the instructor, as I had already made a number of gliding films with Charles, and it was at this point that he nominated the third member of our party that evening, Richard Wade, a commentator and script writer, as the pupil.

Since for some time I had been of the opinion that training by aero-tow, using high-performance two-seaters, would produce better pilots, this opportunity to check my theory was attractive. However, my agreement to take part in the film was not without some trepidation, as it was obvious that the final result might brand me, in the most public way possible, as either a bad instructor or a most unsympathetic personality.

Once the programme suggestion had been agreed by the "Powers that be", preparations were put in hand for filming to be carried out on the 3rd to 11th May. A Slingsby Eagle was obtained, and the B.E.A. Gliding Club at Booker agreed to let us use their site and provide the tug and camera aircraft. Inevitably the original suggestion had to be modified to meet the financial limits imposed by the programme budget. The cost of filming every flight would be too great, so a series of planned flights was laid down to cover the general flying sequences, thus reducing the amount of *ad hoc* filming to the minimum. As a matter of policy it was also laid down that the programme should be linked to the World Gliding Championships and make some reference to gliding as a general sport. These changes in the original plan reduced the emphasis on portraying the instructor/pupil relationship, but ensured that, if it proved to be impossible to convey this by the medium of the cinema, a programme would still be obtained. The final change came when Charles, who was to have directed the film, was sent to the West Indies and, being unable to return in time, had to be replaced by another Director. If the programme proves to be a success it will say a lot for the ability of Bob Thorpe to "pinch hit", for, unfortunately for him, he had no flying experience and had to take over another man's conception without the background knowledge on which it was based.

The week's filming opened badly with weather barely fit for operating an Eagle out of Booker. Strong winds made turbulence on take-off acute and we were frequently treated to a close view of the two valleys over which the wind direction forced us to fly. These made excellent escape routes when we were caught in the downdraught in the lee of the low hills which formed their sides. With the weather unfit for instruction, filming was limited to staged flights, with Richard as passenger, and various ground sequences. We were, however, tape-recording the conversation on these flights and the first one, which was also Richard's first flight in a glider, produced

a tape which on replay was hilarious as we encountered turbulence so acute as to surprise both of us. It was not until the last three days that the weather became really suitable for both filming and flying and we were able to get on with the main part of the programme. In three days of concentrated effort we filmed the entire programme, re-shooting the sequence already shot in order to preserve continuity, the change in the weather being so marked.

Richard Wade went solo on the last day after some twenty-five purely instructional flights plus another twenty passenger flights for filming purposes, and for what may be the first time ever, a genuine first solo was recorded on film from start to finish. Needless to say he didn't know he was being filmed, or that I had done a commentary on it, until after he had landed. The most interesting result from my point of view was that my opinion, that the technique of instruction used would produce a better pilot in a shorter time, appeared to be fully justified. Both Roger Neaves, the C.F.I., who did a progress check, and John Ellis, the senior instructor who did the solo check, were of the opinion that Richard had achieved a standard of airmanship considerably higher than they expected from pupils who, having been trained in the normal way and flown solo for some time, were being checked out for solo aero-towing. The next stage will be to teach him soaring, and I'm happy to say the gliding bug has bitten him hard enough to want to carry on.

The last day's flying also produced the event which made me open this article with the statement that flying and filming combined could be frightening. I had taken a cameraman up in the front seat of the Eagle to film the pupil's view of various manoeuvres, one of which was to be a spin. With the camera running, we entered the spin at just over three thousand feet, with the intention of doing three or four turns. After approximately one turn the cameraman's elbow tripped the canopy release and the canopy snapped open. For some unknown reason the rear canopy, which is locked by the front one, did not open as well and by great good luck the airflow did not force the front canopy back off its hinges as the spin turned into a spiral dive.

Flying left-handed, I grabbed the rear spreader bar of the canopy, pulled it down into place and held it there while I got the aircraft back to level flight. When we were once more level, and I

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had re-locked the canopy with the cameraman's assistance, I explained to him what had happened. His comment provided much needed light relief. "I thought you had opened it to give me a better view!"

The final programme as shown to the public was of course more a general programme on gliding than a portrayal of the pupil/instructor relationship. This was due to the overriding requirement that the programme should cater for the widest cross-section of the viewing public and not solely those interested in gliding or psychology. Coupled with programme time limitations this led to the sequences on actual instruction being truncated to an extent which prevented the actual progress made by the pupil being illustrated. From the point of view of the gliding movement this is unfortunate, as the value of all-through aero-tow training has been under debate for some time. Although the training of one pupil is too small a sample to permit of generalisations, I would suggest that the results obtained in this one instance are in my opinion sufficiently good to warrant a club embarking on an exploratory programme involving perhaps a dozen pupils to obtain data on the actual cost/pupil progress relationship. If the progress made by Richard is representative, and assuming that the limited amount of instruction given on the passenger flights allows half of them to be counted as instructional time, then it would appear that for something like 35 actual instructional flights a pupil would be obtained whose flying standard was sufficiently high to enable him to fly relatively high-performance aircraft not merely safely but with a high degree of precision. The cost involved therefore should equate with something like 150 flights using winch-launching and low-performance aircraft as the instructional medium. If this were borne out by results over a large number of pupils, then I would suggest that the saving in time of training would reduce the present wastage rate of members who become fed-up with lack of facilities and slowness of training; also the wastage rate due to broken gliders; and the two together should result in a financial gain to the Clubs.

WORLD CONTEST—1965
"FLYING TO NO AVAIL"

By "PADDY" KEARON

This is the day which the author's valiant effort nearly won for Ireland.

ON 10th June the task was a triangle race South Cerney–Lasham–Sherborne–South Cerney. The met. forecast was good and it was expected that a large proportion of the field would complete the task. Competitors were to be on the grid at 10.30 hours and were advised that thermal conditions would be suitable for a start from 11.00 hrs. However, high cloud obscured the sun and thermal conditions did not develop. Competitors sat on the grid while the thermal "snifters" sought in vain for lift. The morning dragged on without any significant improvement, but at 12.15 hrs., rather surprisingly, the decision was made to launch the Open Class. From remarks made immediately before take-off, and on the RT subsequently, it seemed that many pilots regarded the launch as a waste of time, as apparently there were no thermals.

I was towed off at 12.27. On being dropped off tow, I set off, in company with my team mate Mike Slazenger, towards Blakehill Farm airfield on track, but found nothing better than reduced sink. Our intention was to try to reach Swindon, which we hoped would be producing thermals, and as improved conditions were promised we could go on from there. However, we could not find any lift strong enough to keep us airborne, and after scratching around for some time, we were both forced to land, in different fields, near Blakehill Farm airfield.

My crew had me in sight throughout and gave me a very rapid retrieve. I was soon back on the grid closely followed by Mike Slazenger, John Williamson, and Nick Goodhart, all of whom had landed out. I found that most of the competitors had landed back at South Cerney. I quickly reappraised the met. situation, took out the horizon batteries to save weight, and selected a new time (14.45 hrs.) from the gaps available on the board. An improvement was still promised.

I discussed the situation with Mike and we agreed that he should select the launch time immediately after me. We agreed that we should set off together to Down Ampney airfield immediately off tow in the hope of finding a thermal to give us sufficient height to get to Swindon.

After release, we set off immediately but found no lift — not a sniff. Our crews were close underneath ready for a rapid retrieve and re-light. We kept going roughly on track but found nothing; and, by the time we reached Down Ampney, John Willy and Nick, both of whom had started some time before us, had sunk to a few hundred feet, John Willy at Fairford and Nick Goodhart at Down Ampney airfield. As there was smoke rising beside Fairford airfield we went there and found weak lift which enabled us to maintain height. This eventually petered out to reduced sink, and Charlie Yeates, of Canada, who had been with us, turned back in the direction of South Cerney, apparently for a re-light. By this time it was necessary for me to decide whether to stick to my original intention to go on trying right down to the ground or whether to return to South Cerney. If I left it any later I would be too low to get back. John Willy was already informing his crew that he was landing out. I decided to go on trying, but I felt very pessimistic. I flew over to Down Ampney, informing Mike, who was still in the weak lift at Fairford.

When I arrived over Down Ampney I was down to 400 ft., but Nick Goodhart was even lower and appeared to be scratching the surface of the airfield with his port wing-tip. I asked him on the RT what he had, and he said in a



Photo: Sally Thompson

Competitors waiting on the grid.

rather strained voice: "Little better than zero". I said "Coming to join you," and he replied "Don't! The thermal won't bear the weight." In spite of this warning I was forced in desperation to come in over him and found zero. Nick's crew then turned up and started to drive up and down underneath us in an effort to trigger off the thermal. Unfortunately (or fortunately, according to one's point of view), they ignored my urgings to burn the trailer so as to produce more lift; nevertheless, the lift built up to half a knot and took me eventually to 1,600 ft., by which time Mike had joined Nick below me. I told the others that I was going, and set off for Swindon and found lift over the railway yards, after having lost some height in looking for it.

The lift over the railway yards, which was smelly, eventually became stronger. In it I climbed until it became weak and confused, and I had the impression of being up against the inversion. I decided that it was time to go on again. By this time Nick and Mike were at my height, having reached me when I was bumping up against the inversion. I had spent some time trying to gain all height possible before setting off for the sunny area which could be seen far to the south.

We flew south together, finding not a ripple or hint of lift. All was perfectly smooth, but we pressed on towards the sunshine and cumuli. We were spread out in a ragged line abreast; we passed over Marlborough, which produced nothing, and eventually reached the sunshine at the lip of the Downs at Pewsey without a sniff of anything, and very low.

I think that we were all confident that we would find lift as soon as we reached the sunshine, but we must find it quickly or we'd be on the ground. We searched desperately along the lip of the Huish Downs without success. I was on the right and further west along the sunward facing slope, which I felt sure would be producing, but we found nothing, and all reported to our crews that we were landing. Mike selected a field close to Pewsey, and Nick and I were making for it when I hit weak lift on the approach at less than 300 ft., which I reported to Mike and Nick, but they said they were committed to land and could not reach me. I circled in the weak lift lower than I have ever circled before. Presumably I was at no greater height than Nick had been when I had been horrified to see him circling at Down Amoney. As I was not gaining any height, I called Mike and Nick and asked them if they could establish which way I was drifting. I was too low to establish this for myself. Nick, who had landed about three fields away, replied that he could not say because I was out of sight behind some buildings. The lift eventually increased, and after a long battle, which left me wet with perspiration, I managed to scratch up to 500 feet. From this relatively secure position I relayed Nick's and Mike's instructions to their crews. After a pain-



fully slow climb in weak lift I reached 1,400 feet and thankfully set course to the south.

As I set course, I thought of the very large element of luck that affects gliding competitions. Mike and Nick were on the ground and I was leaving them, but the situation might easily have been reversed, or we might all have been on the ground — or all in the air. It depended to a large degree, when very low, of having the luck to hit lift at the last moment.

I passed close to Upavon airfield, where I again found very weak lift and eventually made my way, with the help of a number of very weak thermals, via Tidworth to Thruxton, and eventually west of Middle Wallop and then south of that airfield. This is quickly written, but it was a long, scratchy, exhausting business. It had taken me a long time.

When I reached Tidworth I was very low and not far from the line of cu which we had seen originally from Swindon. The part nearest to me (the northern edge) appeared to be in a decaying state, and at my height I was afraid to press on towards it. I was torn between staying in the sunshine or going under the ragged cloud. I now wish that I had gone under the cloud, as subsequent events were to establish that this was the northern edge of the cloud associated with the sea-breeze front. At the time I did not believe that it could be the sea-breeze front although I could hear John Willy (who had re-lit) and George Burton, far behind me south of Swindon, discussing this possibility. To me, to whom it was close, it seemed too far inland, lacking the "curtains" normally associated with these conditions; furthermore, the mass of cloud seemed to be too large and ragged and apparently decaying. How wrong I was!

I continued to "scratch" painfully to the south-east and then east, when, from what I now know, I could have been romping along in the sea-breeze front which was close to the south of me. South of Middle Wallop I was, of course, far off track, and must get to the east and a little to the north. I struggled past Chilbolton, and when south of Barton Stacey I heard Nick on the RT again — airborne once more after a re-light.

I eventually reached strong lift within sight of Lasham near Preston Candover and climbed to 3,600 ft. — intoxicating height! I ran into Lasham and rounded the turning-point. Base told me on the RT that I was first round the turning-point. As it was already after 7 p.m., it was not likely that anyone would catch me up — ahead of the field in a world contest! I was elated. I had to discipline myself into not shouting "Up the Republic!".

I set off back to the cloud I had left, but before I reached it I was into strong, smooth lift. I put up the speed and still continued to climb at six knots. I steadily increased the speed to 100 knots, steering west, and as I passed Micheldever I met John Williamson coming out of the side of cloud going at 100 knots in the opposite direction. He was a magnificent sight rushing along at 100 knots and saying on the RT that he was still climbing at six knots. Our closing speed was therefore over

200 miles an hour, and we quickly passed each other going in opposite directions.

As I mentioned earlier, after my first launch I had taken out my horizon batteries to save weight, and in doing so the turn-and-slip leads must have been disturbed, because when I switched on the turn-and-slip it would not work. I was therefore forced to remain out of cloud, and to do so I had to keep my speed well over 100 knots to avoid being sucked in. In the excitement of the re-light I had not checked my turn-and-slip. Within a very few minutes I was over Andover, still going at 100 knots to the west, but by now the front stretched to the N.N.W., and to follow it I would have to go far off track, which ran west-sou'-west. I decided to keep towards track and continued to steer west in very heavy rain which I ran into at Andover.

The remainder of the flight consists of a straight glide to Salisbury, Old Sarum airfield, where I landed at 19.30 hrs. — almost five hours' scratching. From information obtained on the RT from Wally at base I knew that I was the first around the turning-point at Lasham, and from base when I reported in on the telephone after landing at Old Sarum, I learned that I was the winner for the day. Naturally I was thrilled with this because, apart from the personal satisfaction, I was delighted that those in Ireland who had entered the team would have the satisfaction of winning one day. My elated crew were close behind and had the aircraft in the trailer before I had got through to South Cerney on the 'phone and returned to the airfield.

However, on returning to South Cerney I discovered that insufficient competitors had passed the 2X point for it to be a Contest Day. In consequence I received no points. Dick Georgeson told me that he had passed 2X, but had gone back on track to select a large field, and landed ½ kilometre short of 2X. He said that, had he known what was at stake for me, he would have pressed on to land beyond the magic point, and, generous fellow that he is, there is no doubt that he would have done so.

As all competitors were launched within 20 minutes and re-lights were available almost on demand, one wonders about the 2X rule in a World Contest with a rapid launch organisation. However, although I was disappointed, I was not really downcast. I received a great deal of sympathy and commiseration from the other competitors, some of whom asked me, "Was it worth it?". My reply was, "Yes, certainly; although most of it was a desperate struggle and gained no points, it was flying for fun, and a flight I'll never forget."

The next day I was presented with a special prize — a stainless steel garden spade for 'scratching".

LEE WAVES ON MARS

By A. E. SLATER

"FALL-OUT" is the modern name for a discovery which was made for one purpose and then turns out to be useful for quite a different purpose. The term finds its use in trying to get public money for an apparently useless piece of research.

In the 1930's, gliding's chief "fall-out" was the realisation by the airliner designers of the usefulness of streamlining for economising fuel. More recently, investigations into standing waves in the lee of mountains, made to help glider pilots, have been applied to the prevention of aeroplane accidents in mountainous country. This particular "fall-out" is now spreading through the Solar System, for R. A. Wells, of the Department of Physics, Space Structure Research, University College, London, has used it in a letter to *Nature* (14th Aug. 1965, p. 735) to explain the shape and position of some of the infrequent clouds seen on Mars.

Mr. Wells has spent a year analysing reports of Martian clouds during the past century, and has found that "many white clouds are observed to form over bright

desert regions bordering long dark areas and to remain stationary in these positions for some time". He quotes Dr. R. S. "Dick" Scorer's classic papers on lee waves, and concludes that the "dark" areas of Mars (often suspected of being vegetation) are elevated regions, though their slopes must be very gentle because they cast no visible shadows. Mr. Wells mentions especially the Sabaeus Sinus, a dark strip running E-W, where "lenticular" clouds have been seen over the adjoining deserts, either to north or south, parallel to its length. Its N-S width is 250 miles and he assumes the summit ridge to be 10,000 ft. high, with slopes of only 1° leading up to it from either side.

In a "Mars Project" worked out by Wernher von Braun and published ten years ago, von Braun had 70 men going to Mars in ten ships, three of which would glide down through the Martian atmosphere to its surface. These would be "flying wing" gliders with a span of 450 ft., area 24,500 sq. ft., and weight 165 tons on Earth but only 63 tons on Mars.

Up to now, most estimates of the Martian atmosphere have given it a density only 1/12 that of our own, while gravity on Mars's surface is only 3/8 of that on Earth. Multiplying by the square roots of 12 and of 3/8, one obtains the result that a terrestrial glider would have a flying speed and sinking speed 2½ times their value at home. Actually this could be less because the lighter loading, due to decreased gravity, would allow a lighter structure.

The atmosphere of Mars contains practically no oxygen, so fuel cannot be burned in it. How, then, can one travel around? It does not seem to have occurred to these space project people that the answer is a sailplane. (Yet von Braun actually attended a gliding course at Rossitten on the Baltic coast a few years after I was there.)

As I explained at a recent lecture to the Kronfeld Club, there should be strong thermals on Mars. Theoretically, on Earth, a temperature difference of 1°C. in the surface air should be enough to start a thermal, according to Professor Georgii. (The late Professor Idrac actually found in North Africa that vultures would circle overhead whenever his thermometer showed a 1°C. rise in the surface air — this was in the 1920's, before human soaring in thermals began.) But on Mars, in the tropics, the dark areas are about 10°C. hotter than the adjoining deserts, no doubt owing to their greater absorption and lesser reflectivity of the Sun's radiation. So thermals should be powerful.

The "canals", if they exist, are thin straight lines of dark material, joining the dark areas; there should therefore be a thermal "street" above each one.

Alas, for all these speculations! The "Mariner 4" Martian probe, which took photographs of the planet as it passed by on 15th July, showed it to be covered with craters like the Moon, so von Braun's great flying wings would be knocked to pieces on landing. Furthermore, when the probe was just about to pass behind Mars (as seen from the Earth), and again when it first re-emerged, the extent to which its radio signals were bent and weakened by passage through the Martian atmosphere showed, it is claimed, that the atmosphere is far less dense than hitherto supposed; the pressure, formerly estimated as about 83 millibars, is now estimated at between 10 and 20 mb. This means that an earthly sailplane would have its forward speed and sinking speed increased 4½ to 6½ times, needing thermals of about 3 m/sec. to keep up. The contrast between the dark and bright areas should be enough to provide this, but the probe's photographs show no sign of "canals".

How to launch the sailplane? Could it be "kited" up by the wind without mechanical assistance? Martian clouds rarely appear to move faster than 15 m.p.h., so that astronomers, ignorant of the fact that a cloud can remain stationary while the wind blows through it, took that as the typical wind speed. (The area of cumulus over England, shown in a satellite photo published in SAILPLANE & GLIDING for June 1963, p. 160, would look like a stationary cloud sheet to a Martian astronomer.) Now, as a result of the probe observation, the winds are estimated to blow "very strongly", because they would have to do so if such a thin atmosphere is to raise the Martian dust storms so frequently seen from the Earth. But the pilot would have to be pressurised.

RADIO LOCATION

By PHILIP WILLS

ONE of the main uses of radio is for the pilot to tell his team where he is. It is important therefore to devise a scheme enabling him to do this quickly and with fair accuracy; and if he wants to, to keep the information private between himself and his team. (I am a little against this, except possibly in World Championships, but no matter.)

No system at all can be catastrophic. After a feverish search on his map, at a time when he is desperately struggling above the middle of nowhere, he may declaim (I have declaimed) he is two miles south of West Wanborough, and his team may rush to a point two miles south of West Warnborough, which is thirty miles away. Kitty and I have also had our misunderstandings between Newbury and Blewbury, but managed later on to patch our marriage up again.

A very good and foolproof scheme is based on the use of the B.G.A. plotting tape. This consists of a transparent cellophane adhesive tape, with a red line painted along one edge, marked 1 to 10 at inch intervals. (Sorry about the inches, but we live in a barbarous country which has not yet come round to the metric system.) Immediately the course for the day is announced, say a triangle from A to B to C to A, the tape can be stuck in automatically straight lines (no ruler required) along the three legs on the map. To preserve anonimity, A can be located at any required number on the tape, say the number 2. Then, on a quarter inch map, A3 will be four miles on course on the first leg. The retrieve-car map (which must, of course, be the same projection) is taped in identical fashion.

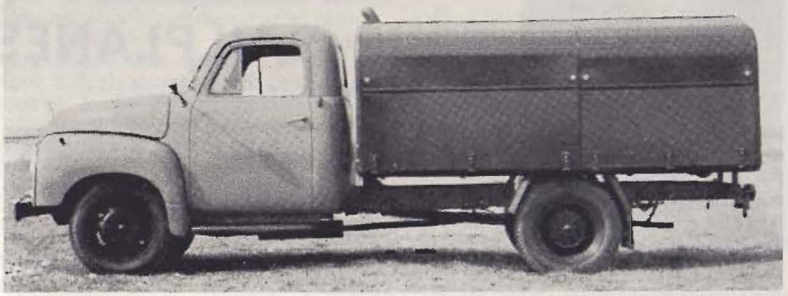
From now on life is easy. "Four miles south of B6 three thousand feet climbing" is an instant location. Also it clutters up the ether for the minimum of time, and gives one's team all necessary information.

Stripping the tape off is not 100% successful, unless the map is varnished or otherwise surface-protected: it should be tried immediately the day is over. If the surface starts to peel off, one has to stick the tape back in place, and leave the line on the map. But maps are cheap, and change so rapidly that this is not too serious a drawback, compared to the very great advantages of the system.

THE TOST WINCH

SOME details of the Tost winch were given in SAILPLANE & GLIDING for June-July, 1965, by Peter Ross in an article "Some Facts about Winches" (pp. 239-246). The manufacturers, Messrs. Richard Tost, 8 München 15, Thalkirchnerstr. 62, W. Germany, send the following further particulars of the forms in which the winch can be supplied:—

1. The winch can be completely built from plans. When selling the plans and license together (700 DM), the manufacturer supplies 22 pages of drawings





and 22 pages of building instructions; also the guillotine and guillotine springs are supplied. The winch can then be built completely, and no parts have to be supplied from the manufacturers.

2. The winch is supplied in 3 versions:

(a) built on a LKW Opel Blitz 1.75 (see photo);

(b) to be built on any heavy duty car chassis or to be stationary;

(c) as a trailer to be fixed to a vehicle with hydraulic fixing installation.

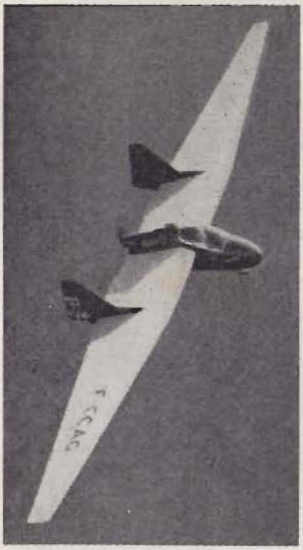
3. If so desired, the winch can be supplied with Oldmobile engine of current make, new from factory, and with tropical radiator.

4. The winch is, for reasons of economy, also available as single-drum in the first instance, and can, without great extra cost, later be made into a two-drum winch.

5. All parts can be obtained singly, especially rollers, winding-on gear, guillotines, etc., and can be incorporated in other types of winches (not Tost) for modernising purposes.

6. The winch as such is protected by Patent. (See letter in this issue, p. 452.)

The firm encloses testimonials showing that the Juist gliding centre has made 53,589 launches in 7 years with two of its two-drum winches, and Unterwössen Alpine Gliding School has made 90,000 launches since 1954, including 60,000 with the present winch, installed in 1957.



AV 45-N.01

SELF-LAUNCHING SAILPLANES

FAUVEL AV 45

Single Seater

FAUVEL AV 221

Two Seaters

Power turned off, these are

TRUE SAILPLANES

Max. Glide: 1:27 & 1:25

Min. Sink: 0.82M/S (2.68 ft/s) AV 45
0.92M/S (3 ft/s) AV 221

"SURVOL" Sarl

30 Chemin de la Roubine

CANNES-LA-BOCCA (A.M.) FRANCE

NORTHERN REGIONALS

DONCASTER—4th-10th July

By J. A. STIRK

AS all the previous "Northerns" have been held at hill sites, it was quite a change to see this competition at a very flat, flat site.

All launching was by aero-tow, and it was unlikely that a competition would have resulted had any other type of launching been relied upon.

Out of a possible 7 days, four competition days were held, all in very similar sort of weather.

SUNDAY, 4TH JULY.—A ridge of high pressure to the west was causing a cool northerly airstream over the whole country. Unfortunately a layer of strato-cumulus persisted, and only weak convection occurred under this layer.

The task set was Free Distance beyond a cross-wind control point at Bardney (63 km.). Five competitors passed the turning point, one landed there and 15 of the 17 competitors scored.

Leading distances:—

Bailey	Olympia 2B	128 km.
Smallwood	Skylark 4	118 km.
Gaunt	Skylark 4	80 km.
Lilburn	Skylark 4	80 km.

MONDAY, 5TH JULY.—A thick layer of cloud with little convection underneath. A task set, but cancelled.

TUESDAY, 6TH JULY.—A weak cold front was forecast but proved so weak that it could be seen only on the synoptic chart. The weather proved to be the same: weak convection under a layer of strato-cu with a north-westerly blowing at 15 knots.

Free Distance was declared. Possibilities were a straight run to the east coast or attempt to fly further south round The Wash into East Anglia.

Leading distances:—

Paul	Skylark 4	115 km.
Griffiths	Skylark 4	100 km.
Glennie	Skylark 2	97 km.

WEDNESDAY, 7TH JULY.—The Northerly persisted with the thermal-limiting strato-cu included. The forecast, however, gave hope of improved convection, particularly to the south.

A race to Dunstable was set (180 km.) at 11.00 hrs. Conditions looked reasonable and everyone was launched, but by 12.00 only 4 competitors (20%) were still unheard from. It was later found that these four had reached better conditions further south and managed to keep going. At 5.30 the weather cleared again for just half-an-hour and those still patiently waiting were quickly launched and disappeared in the direction of Dunstable. The Eagle managed 61 km. and the local Gull 4 53 km., landing at 7.48 p.m.

Leading distances:—

Smallwood	Skylark 4	148 km.
Bailey	Olympia 2B	125 km.
Ash	Skylark 4	123 km.

THURSDAY, 8TH JULY.—With exactly the same forecast a race to Boston Airfield was set (91 km.). At last we saw the sun and everyone quickly disappeared. Eight competitors arrived at Boston, but only seven crossed the finishing line, one circled the airfield three times without crossing the line.

Best speeds:—

Speight	Skylark 4	74 km./hr.
Paul	Skylark 4	69 km./hr.
Hayes	Gull 4	54 km./hr.

On Friday, 9th, a provisional clearance did not arrive until 4.00 p.m. and on Saturday heavy continuous rain ruled out all flying.

In spite of hardly seeing the sun during the whole week, everyone seemed to enjoy this Competition and a keen sense of competitiveness developed.

Our thanks go to the Derbyshire and Lancashire Club for a great deal of equipment and assistance, to the Tiger Club and the G.S.D. for extra tugs and to all the many other helpers.

FINAL RESULTS: NORTHERN REGIONALS

Final Place	Pilot(s)	Contest Day 1	2	3	4	Total Points	Comp. No.	Sailplane
1.	W. Bailey & D. Westerside	1000	664	613	612	2889	31	Olympia 2B
2.	T. Smallwood	758	366	624	778	2526	327	Skylark 4
3.	J. Griffths & M. Wilson	31	825	418	787	2061	269	Skylark 4
4.	G. Glennie	296	876	80	806	2058	152	Skylark 2
5.	L. Ash, J. Speight & N. Gaunt	441	0	500	1000	1941	309	Skylark 4
6.	E. Neighbour & D. Pillars	167	908	0	863	1938	201	Olympia 2B
7.	M. Wood & I. Paul	0	1000	0	936	1936	2	Skylark 4
8.	J. Hayes & S. Hayes	440	0	161	894	1495	298	Gull IV
9.	C. Christianson	238	758	0	136	1132	312	Harbinger
10.	D. A. Wilson	336	574	202	0	1112	360	Eagle
11.	D. Lilburn & A. Coulson	441	228	0	441	1110	3	Skylark 4
12.	R. Simpson & B. Wise	88	25	0	619	732	202	Skylark 2
13.	J. C. Iceton & J. C. Banks	211	0	0	373	584	69	Olympia 2B
14.	J. Tarr & J. Bower	94	274	0	0	368	45	Dart
15.	F. Knipe & R. Pick	193	35	0	—	228	98	Skylark 4
16.	C. Banks & R. Stothard	207	—	0	0	207	341	Blanik
17.	A. J. Watson	0	0	0	145	145	211	Ka-6
Hors Concours								
(13)	J. Muncaster	0	474	10	242	726	24	Blanik

COVENTRY REGIONALS

HUSBANDS BOSWORTH—10th-19th July

By W. FAY

"THE wettest July for ten years," said the weather experts, and they were right!

After what had seemed an eternally depressing summer so far, a small crowd of enthusiasts gathered at Husbands Bosworth on Saturday, 10th July, for the first Regional Competition of the Coventry Gliding Club at its new site.

Briefing the first day produced thick cloud and rain with no task, but the super-optimists were not to be depressed: "Gives us a chance to settle in," they said. By Tuesday evening, 13th July, they must have been well settled in, as the cloud had got lower, the rain had got heavier and the wind had got stronger!

Wednesday the 14th produced the first ray of hope, with sunshine and cumulus in a north-east wind predicted for the afternoon. The task set was distance, along a line through Gallows Hill, but nobody made X. Thursday morning had us all once more wearing the longest faces, as our Met. man told us that to all intents and purposes the complex depression which had produced the previous five days' bad weather, and had cleared the previous afternoon, was now being drifted back over the site in a southerly wind.

However, Friday morning showed that the depression must have seen enough of us, as by mid-day the sky was improving rapidly, and the task set was a race to Nympsfield. Conditions improved

rapidly over the Cotswolds and four made it, the fastest time being achieved by Mike Smith in a Skylark 4. Saturday saw hazy sunshine and weak thermals, producing an out-and-return to Edgehill, most getting beyond X. Several competitors gazing up from fields awaiting their crews at teatime around Daventry were astonished to see Mike Smith very gently edging his Skylark 4 home, to win the day in a sky that had long since appeared lifeless.

A notable achievement on this day was Lou Frank flying the Club Skylark 3 on his first competition task, achieving second place under very difficult conditions. Twelve miles from base on the return flight he was actually 300 ft. higher than Mike Smith in the same thermal, but unfortunately mistook Daventry Towers for Rugby, and landed out.

Sunday, 18th July, produced well-streeted small cumulus in an easterly wind late afternoon, and the task set was a triangle, Sywell-Deenethorpe-Husbands Bosworth. Unfortunately the sky looked better than it was, and the cumulus appeared to be dying just as fast as it reached the site, due to warm air moving in from the west. Several competitors landed out, but nobody made X, and this therefore failed to give us enough contest days to make it a competition.

The trophy very kindly offered by the *Coventry Evening Telegraph*, to be presented to the winner, was not awarded as it had been agreed that this would be for a minimum of 3 days' competition flying; but we have high hopes of a presentation at our next year's Regional Competition.

THE BEATTY-JOHL 3

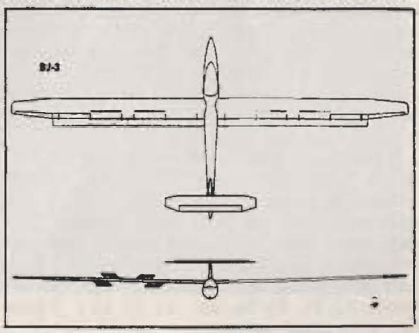
By DIETER SCHMITT

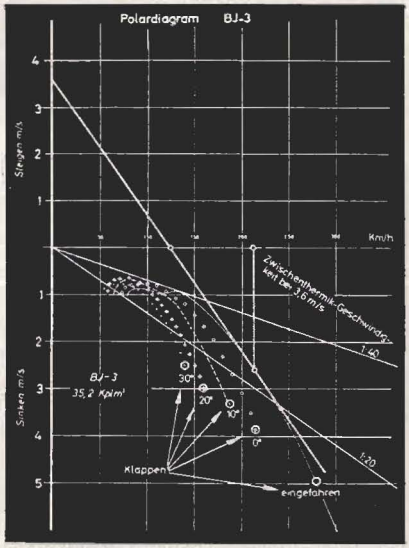
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IN South Africa one can fly in thermals on 300 days in the year, and on many of these days the average rate of climb reaches 3 metres a second, often even more. Such outstanding meteorological conditions demand a sailplane whose design is from first to last laid out to take advantage of them. This requires good high-speed performance — with the necessary structural strength that goes with it — at relatively good gliding angles. Good slow-flying properties are, however, also necessary; for one must first achieve a good climb before making a fast glide. This problem can be solved by adjustable flaps, though construction costs are high. Thus a designer must in every case decide for an aircraft in the Open Class. In Wilfried Johl from Swakopmund the South Africans now possess a very capable designer. Like his successful BJ-2 — holder of several world records — the BJ-3 is being built by Pat Beatty of Johannesburg. This time he is using metal construction. All the experiences with the BJ-2 were taken into account in designing the BJ-3, and once again its outline shows the characteristic handwriting of Wilfried Johl.

In the BJ-3, Johl intended to create a high-performance aircraft specially suited to South African weather. Thus the interthermal speeds reached had to be well above 200 km/h., so that the maximum permitted speed is 280 km/h. (151 kt.) — a performance well worth having for many a power-driven machine. How Wilfried Johl solved this problem will now be described.

First of all comes the consideration that in practice a sailplane is rarely flown at the best gliding angle. Whereas we in Europe, in the presence of moderate and weak thermals, have hitherto flown at near the speed for best gliding angle, that is not the case in the strong thermals of South Africa. But, as already said, even



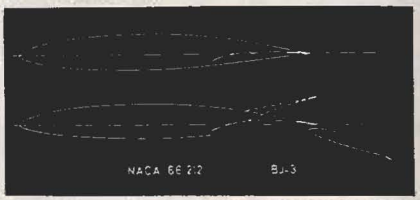


Zwischenthermik - Geschwindigkeit bei 3.6 m/s = inter-thermal speed for 3.6 m/s. average climb rate. Klappen, eingefahren = flaps, pulled in.

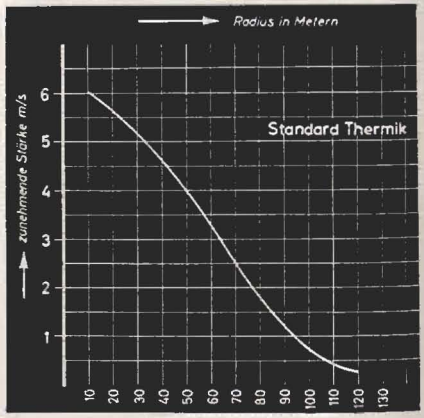
at an average climb of half a metre per second, which frequently happens with us, the inter-thermal speed of our average types is not 80 km/h., i.e. at the best gliding angle, but about 90-100 km/h. (49-54 kt.), at which the gliding ratio of these types becomes about 26-28. As the polar of the BJ-3 shows, an aerodynamically highly efficient aircraft has been designed which, owing to the very high strength of the structure, allows inter-thermal speeds to be flown, even in strong turbulence, which lie far beyond our customary limits of about 150 km/h. In order to attain this goal, the designer had to abandon the idea of going beyond a best gliding ratio of 40; for this would seldom be made use of, except, e.g., when gliding it out from the final thermal.

To achieve good climbing performance, i.e. a low value for minimum speed, Fowler flaps are proposed for 80% of the span and 40% of the chord. With a 30° deflection the minimum speed will be brought to just under 55 km/h. (29.7 kt.), and the minimum sink 0.75 m/s. at 65 km/h. (2 ft. 5½ in./sec. at 35 kt.). These are very good values.

In general, the design was naturally based on the mean meteorological conditions in South Africa. One can construct a picture of the standard thermal from the accompanying diagram. In more favourable weather situations the curve is displaced upwards. To achieve good high-speed performances, W. Johl chose the laminar section NACA 66.212, which with its 12% of the chord is very thin and



certainly makes the addition of the complicated Fowler flap difficult. Its minimum drag coefficient of 0.0032 extends over the region of lift coefficients of 0-0.4; this embraces a speed range of 125-280 km/h. (67½-151 kt.), the latter being the maximum permitted speed. This, and the high wing-loading of 35.2 kg./sq.m. (7.21 lb./sq.ft.), as well as the clean aerodynamic shape, make possible the high inter-thermal speed of 212 km/h. (114 kt.), adjusted to sea level and corresponding to an average climb rate of 3.6 m/sec. (710 ft/min. or 7 knots). The gliding ratio at this imposed speed is still 25. At 190 km/h. (103 kt.) it is 30. When one also remembers that in South Africa the cloud base is often 3,000 to 4,000 metres (9,800-13,000 ft.) above ground level and the



South African plateau is about 1,500 m. (5,000 ft.) above sea level, then an average flying altitude of 3,000 m. can be held. At this pressure height, however, the true airspeed is not 212, but 245 km/h. (186 kt.). With these performances quite new standards can be achieved.

Not only, however, are the expected performances of the BJ-3 extraordinary, but also the way Johl has set about building up the structure. As with the BJ-2, the Fowler flaps can be extended at an angle of 0°. One can then change the angle to 30°. In each half-wing they are in two parts. For better control of the gliding angle in difficult situations (field landings in Africa) and in cloud flights, the double braking parachute of the BJ-2 is not incorporated, but powerful double braking flaps are proposed. The normal ailerons are kept very small and suffice at high speeds. Therewith the Fowler flaps can be pulled out very far. In addition, on the upper surface of each wing, towards the root, coupled to the normal ailerons, another aileron is proposed, which can only turn upwards (as a spoiler).

As a result of the differential movement of the various ailerons, the following will be achieved: as greater movements will automatically be needed at slower speeds, the upper-surface ailerons will come more strongly into action. They are so coupled to the Fowler flaps, when the latter are extended at slow speed, that with their upward movement the slot between flaps and the wing's trailing edge is enlarged, and thereby in this zone the lift produced by the flaps — each according to the amount of its extension — will be reduced. In this way there arises an additional rolling moment. Furthermore, if an upper-surface aileron is raised on only one side, the negative turning moment is cancelled out. With the control stick in the neutral position, both the upwardly-movable ailerons are held down, so that no reaction on the stick is produced. The accompanying table shows how the differential movement is carried out.

The wing is made of dural. The leading edge, serving as a torsion tube, is secured with round-headed rivets to the wide spar — wide because of the thin wing-section.

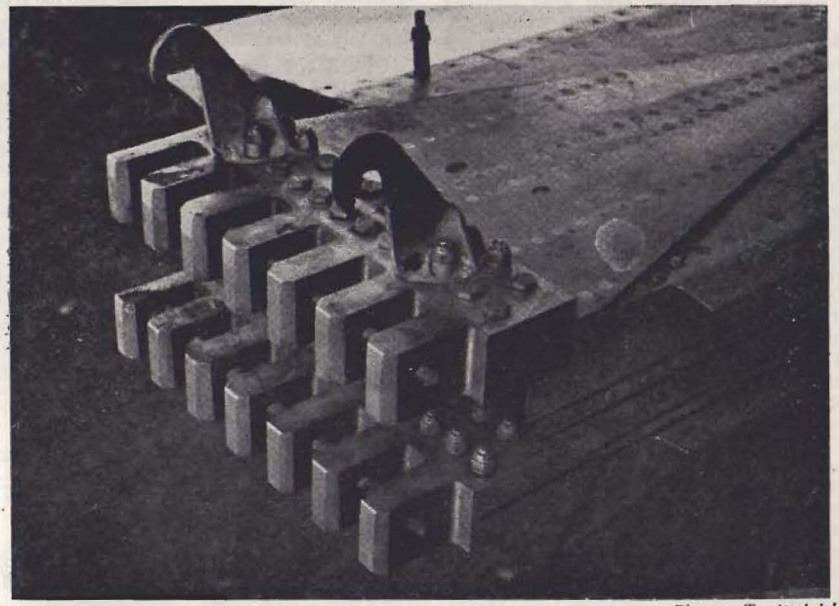


Photo: T. Kudnick

Wing root fitting of the BJ-3.

Since only round-headed rivets are used throughout in constructing the wing entirely of dural, the work is thereby made easier and takes less time. To achieve a highly efficient upper surface, polystyrene foam is spread on the finished wing structure, and the exact profile is ensured by an apparatus specially designed for the purpose. Glass-fibre mats are applied to the upper surface to achieve a fine polish. Thus the load-bearing parts of the wing consist entirely of metal, and glass-fibre material is employed only for the improvement of the upper surface. With the high air temperature and solar radiation in South Africa it is too risky to use glass-fibre material on the load-carrying portions.

Only the forward portion of the fuselage in front of the wing is constructed as a glass-fibre shell; the whole of the remaining fuselage is a dural shell. In order to keep the production costs of the aircraft as low as possible, normal commercial dural sheets and standard U and T shapes are used, and unfortunately they have to be cut to the right size.

The construction of the flaps is similar to that of the wing. Their spar consists of steel tube with attachments welded on. Glass-fibre material is again used for the profile form. To try out the construction method, the flaps were made first. These, and the forward part of the fuselage, were already finished by the Spring of 1964.

The landing gear has a large balloon wheel, with brake, and is of course retractable. It lies behind the centre of gravity. To avoid damaging the fuselage when running over the ground, close behind the nose of the fuselage there is a streamlined skid-block, which can also serve as a brake. There is no additional retractable skid such as the BJ-2 has. The large blown canopy opens upwards to the rear. It is not lined up with the fuselage contour, but the transition is nevertheless very smooth.

The damped elevator is set on top of the strongly swept-back rudder fin, as with the BJ-2. All control surfaces, as well as the Fowler flaps, are actuated internally. No doubt this is not altogether simple with such a thin wing. Unfortunately three narrow guides for the Fowler flaps stick out backwards from the trailing edge of each half-wing. Their drag is insignificant.



Photo: T. Rudnick

This photo and the photo on the previous page were both taken during August. Pat Beatty is seen here working on the fuselage.

With much effort Pat Beatty has meanwhile made such progress with the construction that the first flight can be expected in the middle of this year. Unfortunately it was not possible to see this "runaway" at the 1965 World Championships; however, the many-times champion of South Africa, Boet Dommisse, will come to England with the BJ-2. For all that, the BJ-2 was also specially built for South African weather conditions, so that good high-speed performances are hardly to be expected. Without doubt this new BJ-3, which Pat Beatty is building near Johannesburg, is an aircraft whose performances will be reached for the first time. But I hope that, with such a gifted and original designer as Wilfried Johl, the experiences with the BJ-2 and BJ-3 will lead further to a BJ-4.

BJ-3 Data

Span, 16.15 m. (53 ft.).
Length, 7.5 m. (24 ft. 7 in.).
Wing area, 12.26 sq.m. (132 sq.ft.).
Ditto including flaps, 15.98 sq.m. (172 sq.ft.).
Aspect ratio, 20.
Empty weight, 431 kg. (950 lb.).
Wing loading, 35.2 kg/sq.m. (7.21 lb/sq.ft.).
Ditto with flaps, 27 kg/sq.m. (5.53 lb/sq.ft.).

Gliding ratio without flaps:

Km/h.	*Knots*	*Ratio*
130	70	40
190	103	30
235	127	20
280	151	11

Minimum and maximum speeds and minimum sink for various flap positions:

Flap posn.	*Speed range km/h.*	*Min. Sink m/s.*	*at km/h.*
Nil	85-280	0.85	90
0°	75-215	0.77	100
10°	65-190	0.70	80
20°	60-160	0.70	75
30°	55-140	0.75	65

All these values are calculated, so that small differences are possible.

Wing profiles: NACA 66.212 from wing root to the end of the Fowler flaps; NACA 0009.64 at 0.8 at wing tips.

Deflections of the ailerons on moving the control stick to the right are:

RIGHT WING		LEFT WING
Normal aileron raised	*Upper-Surface aileron raised*	*Normal aileron lowered*
5.5°	1.0°	5.25°
11.0°	4.0°	10.5°
17.0°	9.0°	16.5°
23.5°	17.0°	21.0°
29.5°	27.0°	25.5°

The upper-surface aileron on the left wing is not deflected.

At high speeds, small deflections of the normal ailerons are sufficient; the control load is thereby small.

THE 1964 AIR CENSUS

By NICHOLAS GOODHART

OWNERS of gliders may remember that in July 1964 they were asked to fill in Air Census cards; these cards have now been digested by the M. of A. and the results were issued in June 1965.

Only 72% of glider returns were received, this being a marked drop over the previous years. It appears, however, that glider owners were not to blame for this as the postal strike happened to coincide with the date when the cards were sent out and many may not have been received in time for the census. In any case, and as in all previous years, glider owners did better than the powered aircraft fraternity.

The figures below culled from the three summer census so far held are of interest:

Unfortunately, these results do not cover a long enough period to indicate any very clear trends with regard to gliding. However, it is clear that commercial air traffic is increasing rapidly; this increase can only be accommodated by an increase in controlled airspace or by using existing controlled airspace more efficiently. It is this latter approach which we are trying to get the Ministry of Aviation to adopt.

	July 1962	*July* 1963	*July* 1964
Average number of aircraft in controlled airspace plus advisory routes over U.K. during the period 11.00–20.00 :			
All days	22.9	25.6	30.0
Sat. & Sun. only	27.6	27.7	33.6
Percentage of controlled aircraft below 10,000 ft. ...	48.3%	42.5%	47.8%
Gliders as a percentage of total uncontrolled traffic at the week-end	30.2%	50.6%	41%
Number of hourly reports from gliders during the census	1,001	2,993	1,649



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AP745

A DART TO TEXAS

By PHILIP WILLS

"Philip Wills, longing to have another bash at Texan air, wants to bring a 15/17 metre Dart to Marfa, July 1965. If someone will undertake to buy it after the meet, will sell at factory price. Harner Selvidge has more details."

The above advertisement appeared in the February 1965 issue of *Soaring*, the U.S. gliding periodical, and a few days later I was rung up in my London office from Colorado Springs by John Brittingham. At the end of what must have been a ruinously expensive phone talk, the trip was on.

On 9th August, 1965, after a fascinating trip via Houston and Marfa, 15/17 Dart 9E was handed over by Kitty and me to John at Blackforest Gliderport, Colorado Springs.

Only in the gliding world could it go as easy as that.

Easy? I dug out my 1959 file detailing all the procedures I had had to go through when doing a similar trip with the Skylark 3 and Gale Abels. Heavens! For export to the U.S.A. I must get a Certificate of Airworthiness from the Air Registration Board and a Certificate of Registration from the Ministry of Aviation, for a glider which did not yet exist, and was only likely to be delivered about a fortnight before it must be shipped to Houston. And I must be pretty damn sure it was going to be a good glider at that, for I have a thing about remaining friends with people I sell my gliders to. I placed my order.

Hard work and lots of overtime on the part of Slingsby Sailplanes produced 9E at South Cerney at the end of the first week of the World Championships. In how many other countries would there have been a hope of getting a C. of A. in a fortnight? I phoned Hugh Kendall of the Air Registration Board and he willingly gave up his Bank Holiday week-end to come over and run through the flying tests. He professed himself as extremely pleased, and gave us the name of the local Inspector, who duly came over the following week. The C. of A. was issued. Another reason for not emigrating.

One final week-end at Lasham in which I feverishly tried to fettle the ship to record-attempt standards. Barograph stowage. Get the Total-Energy Vario right — I failed. Trailer snags. Like a dog settling in its basket, it takes time to get everything just right. I didn't have enough time to do it. But I ran the trailer down to London Docks on 24th June, saw it consigned on the "Rendsburg" to Houston and went back to book our air tickets. We were committed.

* * *

On 16th July Kitty and I were transported at nearly half the speed of time to Houston. Nine hours by the clock, sixteen by God. In the usual daze induced by this discrepancy, we marched like automatons into the airport building, to be met by John Miller, his wife Dolores, and Herb Kuhn.

John had written offering us the loan of a tow-car for the 600-odd miles from Houston to Marfa, an offer so absurdly generous that one could only gasp and accept it. During the week which followed, before the Dart was safely arrived and cleared, he and his friends scaled such heights of generosity and kindness as to leave us gasping for words of thanks. Indeed one must try and thank him adequately now, for in the next world he is bound to go to Heaven and I shall see him no more.

On the next day (Saturday) we went to a local airfield to witness the opening ceremony marking a new phase in the development of the U.S. Civil Air Patrol. There we were met by Colonel and Mrs. Mason (who were during the war close friends of our very own Mac — Vice-President Air Chief Marshal Sir Theodore McEvoy). As head of the C.A.P. he has started a scheme by which boys and girls can get gliding courses to a stage rather more advanced than our own Air Training Cadets. John arrived in his Skylark 4. Another pilot arrived in a (I think) Schweizer 2-22. A file of young men and women were drawn up in the blinding hot moist sunlight. We made speeches. Cameras clicked. We repaired to a mess for cold beer and coke. A host of new folk were introduced and were instant friends. Good luck to this potentially important new scheme.

That afternoon we went out to the gliding club started and run by John and his friends at a small airstrip called the

H & H ranch attached to a country club north of Houston. The gliding movement in the U.S. shows some strange differences to our own. Here, if we can find a site, our main troubles are over. An advertisement in the local paper brings up to a hundred potential members to an inaugural meeting, money is put up, committees formed, and the club is on its way.

In the U.S. sites are easy, but money and membership is not. So the usual form is for three or four enthusiasts to club together, put in a large sum, purchase equipment which they jointly own, and then start operations and wait for people to come in, which they do, but rather slowly. At Houston, and later at Blackforest Gliderport, Colorado Springs, we found clubs with sites and facilities which in England would have saturated the membership and produced waiting lists within two years, each with memberships of under fifty. Interest appears to be growing, but it is a slow business in comparison.

From H & H I did two flights in John's Skylark 4 over Houston and the surrounding countryside. It was the only time I was cool outside the air-conditioned houses and cars whilst we were there.

Houston must cover almost the area of London, but its population is less than a quarter. Outside the skyscraper centre, single-storey houses sprawl in their own gardens in every direction. It is a town built round the motor car, and rendered viable by innumerable motorways and Laocoon-like flyovers.



". . . Laocoon-like flyovers."

Its airport is one of the busiest in the U.S., and so handles much more traffic than London. But there is no nonsense about permanent I.F.R. — you can fly where you like, though if you want to land at the main airport you must have radio. But, for the rest, you must just keep your eyes peeled — and of course keep out of cloud. It works, of course.

At last the "Rendsburg" arrived, and the Dart was cleared, with every help from the U.S. Customs. On the morning of Friday, 23rd July, we set off in John's Diesel Mercedes, air-conditioning at full blast, for the 600-mile haul to Marfa.

* * *

Passing through "L.B.J." country, near Austin, where placards at the roadside blazon the President's fame, and where an enterprising real-estate agent is selling lots of one square inch each at $25 a time to all-comers, we spent the night in a motel at Ozona, and reached Marfa at lunchtime on the Saturday.

For miles beforehand we had been driving along a straight road through high flat country that looked like a moonscape: dry and silvery-grey in colour, sparsely dotted with mesquite scrub and cactus under a blazing blue sky. Only the road itself seemed to offer a landing to any passing glider. Then dry brown mountains crept over the skyline; we approached them, wound over them, and descended to a 5,000 ft. plain on the other side, almost ringed by mountains on the circumference. It is, in fact, a landscape a little reminiscent of the Mackenzie Country in New Zealand, but perhaps more austere and certainly hotter and drier. Soon a vast wooden hangar loomed up about a mile on our left, and we turned off the high road and drove up to it.

During the war the airfield was the site of a large Air Force Training Unit, with thousands of personnel, and the small township eight miles further on experienced quite a boom. Now all that is left is the concrete bases of dozens of hutments and this large hangar, with a mess of runways, all but the main one becoming overgrown with mesquite and cactus. Amongst a few trees on the shady side of the hangar flitted swallows and tiny grey humming birds. A herd of



". . . around the airfield, mesquite and cactus to the distant mountains . . ." Marfa Praesidio Airfield. Cathedral mountain in the distance.

antelope could occasionally be spotted grazing amongst the distant runways. The local flies looked ordinary enough — but they pricked one smartly if left to settle on any exposed flesh. All round the airfield, mesquite and cactus to the distant mountains — a misjudged approach here might be an expensive adventure. The temperature in the nineties — but at this altitude, dry. Marfa itself has relapsed to a small town — "Pop. 4,599" as the signboard at the approach meticulously announces, though surely this can only have been true at one moment of time — and the influx of the gliding camp was quite an event.

Within the hangar, up to twenty sailplanes, most of them seeming to be gleaming Austrias and Sisus — some competition for the Dart! Out of the hangar came striding Fritz Kahl. Fritz is the sort of man you would expect to find running a meet of this sort — large, cheerful, capable and kind. He owns a ranch and runs the Municipal Airport, which houses fifteen or more privately-owned aeroplanes, mainly owned by local ranch-owners. In a country where week-end distances run up to a thousand miles, and where most ranches have their own landing-strips, the small aeroplane is used as we use a week-end motor car — and is probably no more expensive to run. And now gliding has come to Marfa, he is determined to develop it, and it is exactly the sort of sport suited to a community of this size.

Fritz led us into the Ops. room and introduced us to a bewildering number of people, a few of which we knew — like Red Wright, many of whom we had heard of — like George Moffat and Ben Greene, and some new ones. Then he said the words I dread — "Of course, there's nothing I need tell you — you have had so much experience." I hastily explained that the only lesson one learns is that one never knows enough, and I

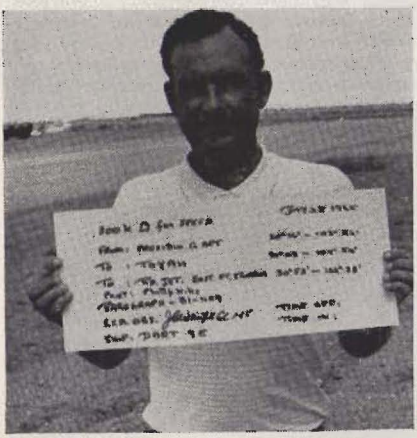
was sure Marfa had much to teach me. I spoke a mouthful. We were to find again, as we had at Odessa five years earlier, that sudden transfer from England to great heat at 5,000 ft. induces remarkable slackness in one's flying.

After two hours in which everyone rallied round and helped fit the American radio and oxygen equipment which John Brittingham had sent down, I was towed off for an evening's flight. The sky was terrific, and a high cloud over Mt. Livermore to the north was producing shafts of rain. Pretty strong lift whisked me up to cloudbase at 12,000 ft. This sounds wonderful until one remembers the ground below is 5,000 ft., but nevertheless one feels pretty free to fly around over the forbidding territory below, with wide areas of lift, and along the edges of the cloud to the west a curtain of dust seemed to show upcurrents strong enough to suck fair bits of Texas up into it. After an hour I landed again, to be told by Fritz that conditions were very sub-standard for Marfa.

Further outlook exciting!

For the past four days George Moffat, Ben Greene and Dean Svec on their Austrias had been attacking the 500-km. triangle world record. Result — twelve completed triangles, but none quite fast enough. Wow!

But alas, we were to be disappointed. From our day of arrival, the summer rains started to come in, and only on one day were conditions even nearly up to Marfa standards, although by English ones most days were sensational.



Ben Greene. Turning points by co-ordinates!

I decided to go at it gently, and tackle first the 100 km. and 300 km. triangles and the out-and-return. On Sunday the 25th I set out on a 300-km. triangle, Marfa–Van-Horn–Toyah and return, which was a consoling course since most of it followed roads providing some fair chance of a landing. The 211 miles took me five hours, and the second leg took me over the Apache Mountains, which looked even more moon-like and inhospitable than anything we had seen before.

It quickly became clear that in these large rough thermals with many narrow strong cores, the quick rate of roll of the 15-metre version of the Dart was of far more value than the reduced circling speed together with slower roll of the 17-metre version, so we only used our tips once whilst we were at Marfa. On any record speed attempt, one naturally never starts until conditions are strong anyway. But at the end of the trip, in the green, open country of Colorado Springs, without the urgency for speed, our tips went on and stayed on; 17 metres for distance or fun, 15 for speed, was the logical outcome.

The next day the weather was poor, and we dreamt up a 100-km. triangle to a ranch S.W. of the airfield, north to a bend on the main road west of Marfa, and back. It is quite difficult to find a course with photographable turning-points in this wide landscape, and this proved not to be one. It didn't matter — my time was 1.40 hours.

The third day's forecast was not good, but the met. facilities were somewhat primitive, consisting mainly of "actuals" from a number of reporting stations hundreds of miles away, so we declared a 430-mile out-and-return flight west to El Paso, on the Mexican border, and Kitty set off accompanied by Al. Cameron, of the New Zealand team at South Cerney, a small warm team representative of the British Commonwealth.

The route ran along the same highway north of west to Van Horn, then over the Sierra Blanca, a 7,000-ft. peak, then parallel to the Mexican border and the Rio Grande. I thought the Sierra Blanca would produce lift, but it didn't. I des-



Sierra Blanca. Jack Frost Ranch strip 8 miles to the left of the road

cended rapidly in its lee, and found myself eventually suspended some 700 ft. above a strip marked on my map (rather unsuitably, I thought) as Jack Frost Ranch, a haven of refuge surrounded by howling nothing — sandhills, mesquite, cactus, and all. I resolved to stick to Jack Frost, if necessary until sundown. Fortunately I was able to radio this to Kitty, who could see me from the road 8 miles away, apparently in a suicidal situation. Two vultures below me kept my spirits up (the fact that they could find lift below me, not that they were vultures). Jack Frost slowly boiled up in the sweltering sun, and an hour later I was up to 7,000 ft. again and on my way. But clearly the out-and-return was off.

Twenty miles short of El Paso, with the green irrigated strip of the Rio Grande on my left, the desert air came to an end, and ahead lay stable mountain air coming from the west. I could have turned north, as had the German team flying a Zugvogel the day before, and continued in that direction, and there was one great temptation to do so, for I should have liked to get the name of their landing-place in my log book — a town called Truth or Consequences. But clearly this bore no relation to the task I had declared. So I landed at the small town of Fabens, and from there we motored down through damp fields of cotton and maize to the Rio Grande — which is here a sad dry ditch, all the water having been stolen for irrigation, and walked more than half-way over the bridge to say we had been in Mexico. And so home to Marfa.

Wednesday 28th produced the best weather of the trip, approximating what we had come for. I declared another 300 km. triangle, Marfa-Toyah-Fort Stockton, and set off at the same time as George Moffatt, essaying another 500-km. course. Five weary hours later I waffled back, and as I crossed the finishing line so did George. A little advice called for.

Well, said George (who was a fount of help and wisdom throughout), this record flying is quite different to competition flying, in which the most important thing is to finish the course. In record flying you simply battle on — if you hit weak lift and wait to use it you will lose the record anyway, so it's all or nothing. You rush on, and if you don't find anything better you land, for there is no reason to continue.

Oh, said I, obviously this is the right philosophy, but it sounds rather bold, over this particular landscape.

Pooh, said George, the ground is not as bad as it looks, and actually in desperation if you slow down you can almost always find lift somewhere even at the last few hundred feet.

Oh, said I thoughtfully, being pretty monosyllabic by now, in a battered sort of way.

So —

The next day really wasn't much good, so George and I traded ships. When we landed, we both agreed that if one could marry the handling qualities of the Dart to the high-speed performance of the Austria SH one would have the perfect sailplane.

But the following day seemed reason-

ably good locally, so I declared the standard 100-km. triangle course, Marfa-Fort Davis-Alpine. Before crossing the starting line I decided to run the first leg in the new style. I climbed to 10,000 ft., flashed across the airfield at 8,300 ft., on my way like an arrow north to the Twin Mountains, beyond which, in a valley running up into the Davis Mountains, lay the first turning-point: since I could not get my Total Energy working properly, it was difficult to decide when lift encountered was strong or not, and I proudly battered through one or two possible patches. Lo and behold, here were the Twin Mountains, ten miles on course — but I was below their tops, which were only 1,700 ft. above our airfield. Oh well, now for George's get-you-home service.

I battled and battled, getting lower and lower. No dice. Oh, George! Me for the mesquite. With 500 ft. to go I saw a green narrow strip perhaps 1,500 yards long running into wind amongst the cacti flashing below. I landed on it and got out. It was grass, as short and firm as a lawn, dusted with wild flowers with a resinous scent. Thank my lucky stars, and hooray for radio.

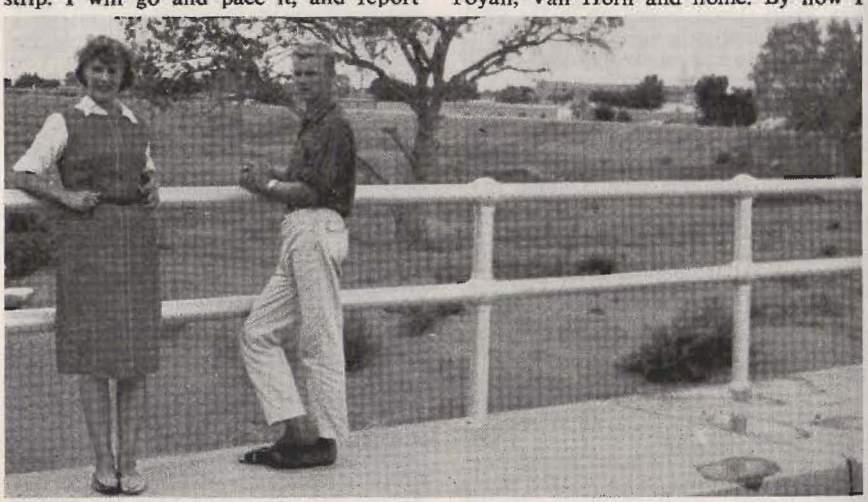
"Anyone reading Nine Echo?" — "Loud and clear" — "George, will you tell Kitty I have landed on a good grass strip. I will go and pace it, and report back if it's good enough for an aero-tow retrieve."

An so, thank heaven, it proved to be. The aerodrome was only eight miles away, but heaven knows how long it would have taken to get a trailer to me over the intervening bush.

Within five minutes a small aeroplane was circling round, mysteriously shouting at me through a megaphone. This later turned out to be not a tug but an aircraft of the Border Patrol, which flies up and down the Mexican border in these parts to prevent smuggling and the like. As it shouted at me in American, I couldn't quite make out its message, but no matter, for in another ten minutes Dave Johnson and John Brittingham arrived in the former's aeroplane, and in half an hour I was up and away. Now for the task.

Conditions now were fairly good and Anne Burns's record was only 52.2 m.p.h. But again I was foiled. Five times my wretched T/E led me to pull up and circle in lift that turned out to be too weak. On a 100-km. flight each wasted circle costs one around half a mile an hour. I averaged just under 51 m.p.h. Anyway, we were coming along.

Saturday, 31st July. Fairly good conditions. Another 300-km. attempt, the first course but back to front — Marfa, Toyah, Van Horn and home. By now I



". . . the Rio Grande — which is here a sad dry ditch . . ." Kitty and Alan Cameron in Mexico.

was getting the idea, and after the first two legs was going strong, and well ahead of Anne's 53.84 m.p.h. But one mistake on the last leg dished me again. There is no recovery in record flying from a single mistake.

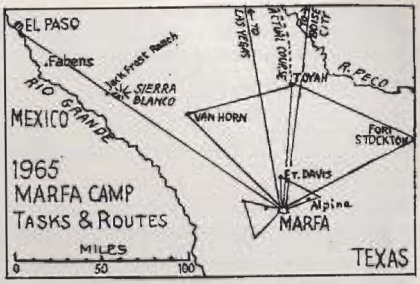
Now the evening storms were frequent, and people started to leave. On the Monday, Len Niemi traded his beautiful Sisu — his tenth and last — for the Dart, and I flew the most impressive glider I have ever flown.

Until the Sisu, the Dart had the best handling characteristics I had ever met. Flaps up, the stability and handling of the Sisu is closely similar to the 15-metre Dart, light and quick in roll, stable in yaw. Flaps down, she handles like the 17-metre version of the 15/17 Dart, slower in roll. But the startling thing is when one puts up the flaps, and so effectually alters the angle of incidence. The result is the glider leaps forward and at around 75 knots gives the impression of flying almost flat against the horizon. It is, of course, a trick, but the subjective impression is extraordinary, and the high-speed capabilities of the Sisu seem even more wonderful as a result.

I believe the performances of the Sisu and Austria SH are roughly similar, but when the two aircraft and the Dart were together at these speeds, the Sisu appeared to be flying flat, the Austria in a shallow dive, and the Dart in a steep one. Soon we shall see the effect of the retractable wheel on the Dart 17R, with reduced wing incidence. It will help.



Retractable wheel on Dart 17R.



The other novel sensation in the Sisu is that you are conducting around the sky a piece of machinery equal in value to a Rolls-Royce. It tends to caution. It would, I think, inhibit me somewhat.

Tuesday was hopeless; clearly it was time to set out on the 600-mile trek north to Colorado Springs. So when Wednesday dawned fairly hot and clear with forecasts of a light southerly wind, we dashed out to the airfield, said our goodbyes, and by 10.15 I was in the air. Kitty hitched up for the long haul north in the blazing sun, alone with trailer and radio through darkest Texas, New Mexico and on.

I had taped two alternative courses on my maps, one slightly west of north, to Las Vegas, 300 miles on the more or less direct route, and one further east to a prospective record goal at Boise City, 465 miles away, where Ben Greene had landed the year before. There did not seem (and was not) the smallest chance of achieving this, but one has to try.

Kitty had sternly forbad the tips, for landing reasons, for the 50 miles north of Toyah were said to be (and were) pretty unlandable, and if one nevertheless had to try, the chances of finding a line of cacti 15 metres apart were better than finding one 17 metres apart. The early morning lift was light, and within ten minutes I was thinking her wrong, down to 600 ft. over my green strip in the wilderness eight miles north. But on this occasion I struggled away, the Zugvogel close behind on a 500-km. Diamond attempt along the same course to Tucumscari. With conditions improving, but alas a slight head-wind, we sailed over the rather forbidding Davis Mountains, whereupon the Zugvogel and both retrieve cars deflected north-eastward over the irrigated lands around Pecos whilst I continued sternly on course over and



Photos by Philip Wills

The Davis mountains.

beyond Toyah. The cumulus became sparse, and the threatened 50 miles ahead were perhaps the most desolate track I have yet covered. But there was always one lone cumulus ahead to go for, and each time it lifted, like a single life-belt on the moon, and at last, 100 miles out and 2½ hours on my way, I approached Arno, civilisation and the road again — there was Kitty below, waiting for me.

"It's pretty frightful down here, I can't have the air-conditioning on because it makes a noise on the radio, and it's very hot!" The temperature was in the late 90's. Poor Kitty. We travelled along companionably together, me a mile above her, and after a while I said, "Did you feel a bump? We have just crossed into New Mexico."

We were averaging 40 m.p.h. as the upper wind was now slightly behind, but clearly any possibility of records was out of the window. It remained to get as near to Colorado Springs by air as we could.

So far I had kept pretty close to the left-hand track to Las Vegas, but now conditions ahead towards Carlsbad looked none too good, and I was forced right, away from the road. I tried to get a message across to Kitty that, if she lost me, she should diverge if possible towards the east. She never got it. The nature of the country below changed completely, from miles of moon-like scrub, over the squares and dunking pumps of an oilfield, to an endless green chessboard — enormous rough grass fields, cut into rectangles by dirt-roads unmarked on my map, the odd farmhouse in a small clump of trees every few miles.

Within half an hour, for the second time in my life, I was completely lost. When Alice was dragged by the Red Queen flying over the chess-board, how could she tell if the square below was Queen's Knight Three or King's Bishop Five? I couldn't, and as the upper wind was perhaps 5 knots behind me from the south, and the surface wind, when last marked by a plume of smoke, appeared to be 15 knots from the east, after two hours in suspension between the two my circle of uncertainty was some 30 or 40 miles across.

I had lost Kitty; I had lost myself; I was exceedingly miserable. Cheerful natter from the Zugvogel indicated they were fairly near, and had followed a course keeping car and glider in sight of each other almost all the way. Sensible chaps! I confessed my plight to them, and they tried to help — I was beyond aid.

At last I came to a road and railway running S.W.-N.E. There were two identical such, parallel to each other but 40 miles apart. I plumped for the wrong one, gave it up in despair, turned along it and came to a town and airfield. Ahead was the advancing grey cloud of a gathering thunderstorm. There seemed no purpose in struggling on through it, since my goal was at least 750 kms., and I was not two-thirds of the way along it with, at most, an hour and a half to go. So I gave it up, and circled down from 6,000 ft. to land at 5.45 p.m. at Portales, New Mexico, 275 miles from Marfa, in seven hours' flying time. Overhead the cheerful Zugvogel chattered bravely on its way, with about 70 miles to go to its goal. Good luck to it — I hope it got there, as it certainly deserved.

Kitty was located 100 miles away to the west. She hasn't quite forgiven me yet.

Fritz's words keep ringing in my ears — "Of course, there's nothing I need tell you—you have had so much experience." Bah!

* * *

On the Thursday we motored the remaining 400-odd miles to Colorado Springs, in another world. The town, a noted tourist resort, lies in a valley at 6,000 ft., the western side formed by the ramparts of the Rocky Mountains, towering up to the 14,000 ft. of Pike's Peak, the eastern side a gradual slope up from 6,000 to 7,000 ft., nearly as green as England after record summer rains. Nine miles to the east, on the top of this slope, lies the beautiful Blackforest Gliderport, presided over by Mark and Ruth Wild. East of this again the country rolls to the horizon, green and starred with wild flowers, like an enormous version of our South Downs. To the north of the gliderport lies the Black Forest it is named after, a large area of pine trees.

The air at this height is clear and crisp, though hot enough in the broad glare of the sun. Each day cumulus formed, at first over the mountains, then spreading eastward over us, with bases rising to 12,000 ft. Through much of the year giant waves occur, and in the Fall and Spring months glider pilots come from all over the States for their Height Diamonds. John Brittingham talks of the day he covered 140 miles in the first hour in his 1-26, and dreams of the day when in the Dart he will set off in the early morning wave, couple up with thermals two hours later and 300 miles on his way, and then settle down for a real distance flight. Certainly Marfa and Blackforest are the places for dreams like this. May they come true!

There is not much more to tell. Three wonderful days at Blackforest included some blissful local flying, a visit to the Rodeo (Cowboys, oddly, like their steaks well-cooked: on being presented with a large rare hunk of meat, one is said to have remarked in disgust: "I've seen 'em hurt more'n this, and get better!"), a barbecue at Mark's beautiful home when we met the Gale Abels again and talked over the Good Old Days.

A talk with Captain Robert Schuette, who is developing a gliding club at the new Air Force Academy, having first been infected by a course at Lasham whilst he was based at Greenham Common — how wonderful to feel that amongst all the wasted work, one can suddenly train one man who will more than repay all the come-and-go ones.

The Dart, sleek amongst the training gliders, ready to show what she can do in one of the most favoured gliding spots in the world.

John Brittingham running us up to Denver in his Comanche, landing amongst the 707's and taxiing nonchalantly in their hurrying shadows to the parked ranks of little private aircraft, as if in a motor car. And hurrying into our jet, back through time, back to New York, Boston and home.

Goodbye, John, Dave, Mark, Fritz, and all our old and new friends. Come and see us when you can. We shan't be able to repay your kindnesses, but we will certainly try.

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LONDON REGIONALS
31st July - 8th August
by Rika Harwood



SOARING had only just been possible on one or two days in the fortnight preceding this contest; it was therefore not surprising that on this lovely sunny morning of Saturday, 31st July, 22 out of the 23 pilots had finished rigging and were ready to take the air as soon as possible after the opening briefing at 12 o'clock.

Mike Fairman announced a crosswind race to Husbands Bosworth and back, 71 km. each way. X=24 km. First take-off 12.30.

Peter Wickham predicted moderately strong thermals with good cumulus clouds base 4,000 ft. tops to 7,000 ft., with a risk of over-developing to the north and temporarily spread-out in the afternoon. Wind 270°, 15 kt. To save time, all pilots agreed to be streamed for take-off in the order of the ballot.

Anita Schmidt, our missing 23rd pilot, delayed by a car breakdown, flew in from Lasham, landed, took the details of the task and took the air again. It was not long before the air was filled not only with gliders, but also with the eternal cackle of radio activity. Very few hung back, and those who could get in a word edgeways announced their crossing of the start-line.

Eight completed the task; three landed on the way back, and another four landed at the turning-point. Nearly all the rest came down in the Northampton area. The wind was a little stronger than forecast and also some spread-out did occur in the turning-point region.

However, those pilots who managed to stay high in this region were not unduly worried.

Chuck Bentson won the day with 46.2 km/h.; he only got low once, near Sywell, together with Terry McMullin, who took some time to recover from 700 ft.

Leading Places

	Pilot	*Sailplane*	*km/h.*
1	Bentson	Skylark 4	46.2
2	Warminger	Olympia 419	45.9
3	Dimock	Dart 17R	44.6
4	Zeally	Ka-6	43.4
5	McMullin	Skylark 3	37.8
6	Ellis	Skylark 3	35.4
7	Fitchett	Dart 17	35.3
8	Tull	Skylark 3X	34.7

Sunday, 1st August

With a warm front to the north and probably layer cloud coming in from the Midlands, Peter Wickham forecast good convection up to 7,000 ft. with strong thermals but narrow cores, but warned of possible spread-out. Wind 280° 15 kt. up to 5,000 ft. In view of this a rather flattish triangular race was set, first 37.3 km. to Steeple Morden in the north-east, then 72.1 km. W.S.W. to Bicester and the final leg of 40.4 km. almost downwind back to Dunstable. X=24 km. First take-off 11.00 hrs.

Anita Schmidt was first across the line at 11.32, but a little later she landed back, reporting that although it was soarable she could see showers along the route and would wait until they had cleared. Chuck Bentson and Humphry Dimock came across the line soon after



they were launched at 11.42 and 45, deciding to go while they could, while others hopefully ridge-soared waiting for an improvement. It came immediately in front of the next shower and another eight pilots went away with it. From then on to the first turning point the going was good and 12 pilots got round, but they had to make up their minds where to go next as with the showers the dead patches had also arrived. Some good climbs were made to about 8,000 ft. Chuck won the day again with the longest distance, 97.4 km. McMullin and Tull landed back at Dunstable after rounding the turning point and four landed at Steeple Morden.

Leading Places

1	Bentson	97.4
2	Dimock	83.8
3	Ismail	82.0
4	Ellis	78.8
5=McMullin		69.0
5=Tull		69.0

Monday, 2nd August

Rain poured down, briefing was delayed to 12.30, and Peter Wickham announced "It is raining, official." No task.

Tuesday, 3rd August

Pilots were kept waiting for briefing as the weather was "interesting". During this time Mike Fairman gave the task as a race to Nympsfield, 120.1 km. (75 mls.) . . . and you can fly back if you wish.

Then Peter Wickham arrived with his "interesting" weather. With yesterday's fronts now over the North Sea, the country was in a N.W'ly airstream, 300°, 15 kt. There was still some muck to the north of us and some low stratus in the east, but with a tendency to break towards the west. The difficulty was that the air was so moist that it would fill any gap in the strato-cumulus quickly. No sea-breeze effects were expected from the Bristol Channel, as the sea would be warmer than the land.

First take-off was announced for 11.00 o'clock but only towards 1 o'clock did a break seem likely, and soon launching commenced. Lift was rather weak, cloud-base rather low and gaps few and far between. All but one pilot landed out and nine failed to make the required 16 km.

Alf Warminger in his Olympia 419 made the best distance, 53 km. He managed to scrape in mostly mediocre lift as far as Oxford, but the thermals were so sluggish that he had to give up and land.

Peter James, who is known as a good "scratcher", made only 40.5 km. and Humphry Dimock went 36.6 km. after climbing away from 300 ft. at Halton, where he saw a couple of birds circling.

Leading Places over 30 km

	Pilot	*Kms.*
1	Warminger	53.0
2	James	40.5
3	Dimock	36.6
4	Ellis	32.3
5	Tull	30.3

Wednesday, 4th August

Again the weather did not look very promising. But according to Peter Wickham the 7/8 thin upper cloud would disperse later in the day; there would also be increasing amounts of strato-cumulus. Wind 260°, 15 kt. He hoped it would break enough for a task to be flown, and this was set as a race to Ipswich via Steeple Morden, total distance 125 km. Most pilots did not even rig until noon, spending their time instead around the starting board changing their take-off times. Mike Fairman cancelled the task at 2.15, but not until four or five pilots had taken off and were in fact staying up under the overcast; they were recalled over the radio. No sooner was this done than Peter's expected break arrived and it was sunny for the rest of the afternoon.

Thursday, 5th August

Steeple Morden, Ipswich and on to Swanton Morley, total 205 km., was announced at the 9.30 briefing. Peter Wickham explained that there would be two periods, one early with patches of stratus but reasonable conditions between 11.30 and 2 o'clock. However, a cold front crossed the country much quicker than originally forecast, so the task was hurriedly changed to a straight race to Swanton Morley, 140.9 km. X=24 km. The problem would be to get away from the local area, but the better conditions would spread into East Anglia and there would also be a chance of cu-nims developing. Wind 210°, 25 kt. at 3,000 ft. and 30 kt. at 5,000 ft.

A number of pilots required more than one launch. Terry McMullin fell back on the ridge to wait for the next thermal. He found this very frustrating as he could hear a lot of others over the radio on their way.

Chuck, after having cleared the airway, went into cloud for the rest of the way, except for one check over Waterbeach, his best climb being 8,000 ft. He did his final glide on dead reckoning and was rewarded by being the only one to get to Swanton Morley. Alf Warminger, who had been near Chuck, did not climb quite so high and fell short of the goal.

John Argent, who had taken the third launch, his partner having had the first two, started rather late from Dunstable but did well by going 102 km. Nine pilots scored; the rest failed to make X.

Leading Places

	Pilot	*Kms.* Swanton Morley
1	Bentson	123.2
2	Warminger	102.4
3	Argent	87.2
4	Pozerskis	65.0
5	Tull	44.3
6	Ellis	

Friday, 6th August

Moderate but narrow thermals with a cloud base of 4,000 ft. and less chaotic than yesterday, 4-5 knots this time, were forecast for today's task, which was an out-and-return to Rearsby near Leicester, 200 km. X=16 km. Wind 250°, 15 kt., and further north 20 kt. There would still be upper cloud from a depression over France and this extended north as far as Dunstable.

This turned out to be another very difficult day which produced feeble and distorted thermals with an occasional "better period" in between. Ralph Ismail won the day with 41.1 km. and only two other pilots passed 30 km. A certain amount of pair-flying was tried this time and Alf Warminger and Terry McMullin, who had joined Humphry Dimock in his thermal, but above him, managed to scrape away, but Humphry had to land near Bletchley. McMullin managed one more thermal than Alf and this gave him another 12 kms.

Leading Places

	Pilot	*Kms.*
1	Ismail	41.1
2	Ellis	39.1
3	McMullin	34.6
4	Tull	25.8
5=Pilots		22.8

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Saturday, 7th August

At last this morning looked as if better things might be in store for us, and as on the previous Saturday, gliders were rigged and ready well before briefing, waiting with an air of expectancy around them.

An 188.3 km. triangle, Husbands Bosworth-Edgehill-Dunstable was set. X= 24 km.

Another front having gone through, Peter announced that it looked straightforward today, with good cumulus which would be deeper in the north, 7-8000 ft., with moderate thermals. There would be a risk of strato-cumulus in the north after midday, but otherwise—no problems. Wind 280°, 15 kt.

On the whole pilots selected their times between 12 and 1.30 until they realised that the weather was really as good as it looked and this started another rush, this time to bring times forward, especially as George Scarborough, who was local-soaring , announced over the radio: "Cloud streets working, base 2,500 ft. already, you can't go wrong."

Launching was quick and efficient, but some came back for later crossings, and there was one short period which looked as if it was not too easy to get going. In all 15 pilots completed the task with speeds varying from 47.9 to 33 km/h.

Vic Tull in his home-built Skylark 3x won the day. McMullin, who came second, took a long time to get away. He managed to make pretty good speed to Northampton and then had to slow down near the first turning-point. Along the second leg he found some over-developed clouds and the gaps were rather large, but on the whole he thought the weather had turned out better than forecast, especially as the wind had dropped.

Ken Wilkinson, one of the earlier leavers at 11.45, averaged 1,000 ft. per minute and accepted only 6-kt. thermals after that as far as Northampton; he also slowed down here as there was a little spread-out. Between Edgehill and Banbury he got down to 1,800 ft. and spent 25 minutes recovering. His last climb was at 7 kt. and he final-glided 14 miles from 3,500 ft.

Humphry Dimock really started racing with inter-thermal speeds of 80 kts. but found he was overdoing it and slowed down first to 70 kts. and then to 60 kts. until he was down to 50 kts. at the first turning point. He then discarded a 2-kt.

thermal which he should have used and took time to get going again; this made him too cautious afterwards.

Ray Stafford Allen, who had taken 3½ hours to the first turning-point and then went like a bomb, got down to 1,500 ft. at the second turning-point and was rather worried by a blue patch ahead of him, but Cardiff and Fitchett were just ahead and so he joined them and climbed to 5,000 ft. near Finmere, where he started his final glide. He had been airborne 6 hr. 5 min.

Alf Warminger was slow on the first leg and thought he would have done better with a later start.

Chuck Bentson, who was first back, only had to be careful around the first turning-point. He started on a second go at about 4.30 but turned at Northampton at 7 o'clock, landing back at Dunstable at 7.30.

Keogh, who had landed at Halton, found on his return that his tailplane pin was left in the field; this delayed him but he managed to make the first turning-point after his second launch. Keith Chard, also after a second go, turned Husbands Bosworth at 7 o'clock and managed another 5 or 6 miles. Anita Schmidt was too cautious and landed after 6 hours between the first and second turning-points.

Flyingwise this was easily the best day of the whole contest. Mike Riddell, who was not in the competition, declared Little Rissington-Great Yarmouth for a Gold C Distance and Goal, which he completed.

Leading Places

	Pilot	*km/h.*
1	Tull	47.9
2	McMullin	47.4
3	Bentson	47.0
4	Wilkinson	45.9
5	Grime	45.6
6	Warminger	45.3
7	Dimock	43.2

Sunday, 8th August

For the final day the weather chart showed high pressure over most of the country, but with a band of layer cloud over the Midlands moving slowly towards Dunstable. Weak thermals were forecast by 11 o'clock. Wind 270°, 5 kt.

As Mike set the task, a race to Lasham via Thame, 94.2 km., he pointed out that although good conditions were expected during the afternoon along the route, the task would be cancelled if nobody had gone away by 1.30 so that we could have the prizegiving at 4 o'clock. Otherwise prizegiving would be at the Kronfeld Club the following Wednesday.

Pilots selected launches around 11.00-11.30, and most of them left at once and did not bother to cross the start line. These included Chuck and Terry McMullin. Chuck made his way slowly to Thame and found some improvement soon afterwards; he was the first to reach Lasham. Terry followed some time later; he had quickly got round Thame but spent ages over the sewage farm near Reading at 400 ft. Then he was rewarded with a good climb to 5,500 ft. just south of the airway, giving him a fast final glide into Lasham and winning him the day with 48.7 km/h.

Alf Warminger, who had decided to wait, was still struggling over Dunstable, and he must have been rather worried when he heard that Chuck was on finals. However, Alf eventually went over the start line and spent some time rounding Thame, then climbed to 6,000 ft. over Chalgrove to final-glide from there. He was the last to reach Lasham, several hours after Chuck and Terry, and no doubt his Olympia 419 was a great help in the very weak conditions. He only used two thermals.

Ken Wilkinson decided to try for his Gold C rather than flying the task; he landed about 160 km. away near Bath.

The day was divided into two or three bright patches, and a few pilots managed to get away in each. Humphry had gone away in one of these, together with Peter James and a few others; they all got round Thame, but the weather just did not last long enough.

Chuck beat Alf by three minutes and so became the well-deserved winner of this most enjoyable week with its many pitfalls as far as the weather was concerned.

Leading Places

	Pilot	*km/h*	*Dist. km.*
1	McMullin ...	48.7	94.2
2	Bentson ...	40.4	94.2
3	Warminger ...	39.5	94.2
4	Cardiff ...		55.8
5	James		44.7

FINAL RESULTS: LONDON REGIONALS

Place	Pilot	Sailplane	July 31	Aug. 1	Aug. 3	Aug. 5	Aug. 6	Aug. 7	Aug. 8	Total Points
1.	C. Bentson	Skylark 4	1	1	8	1	11	3	2	27
2.	A. H. Warminger	Olympia 419	2	9	1	2	5	6	3	28
3.	T. A. McMullin	Skylark 3	5	6	8	10	3	2	1	35
4.	V. Tull	Skylark 3x	8	6	5	5	4	1	8	37
5.	H. R. Dimock	Dart 17R	3	2	3	10	10	7	9	44
6.	G. L. Pratt, A. R. Ismail, P. W. James	Skylark 3F	17	3	2	10	1	11	5	49
7.	C. A. P. Ellis	Skylark 3	6	4	4	6	2	13	17	52
8.	J. Cardiff	Olympia 463	9	5	8	9	9	12	4	56
9.	K. G. Wilkinson	Skylark 4	14	8	6	10	5	4	17	64
10.=	C. C. Donald	Skylark 3	11	7	12	10	6	14	6	66
10.=	T. S. Zeally	Ka-6	4	12	12	10	8	9	11	66
12.	P. V. Grime	Skylark 1	12	15	9	10	7	5	11	69
13.	P. Pozerskis	Skylark 4	12	12	11	4	5	17	11	72
14.	D. O. Burns, Anne Burns, H. J. Shaw	Std. Austria	17	10	12	7	7	8	17	78
15.	B. Fitchett, K. Moseley	Dart 17	7	15	10	10	11	10	17	80
16.	R. Stafford Allen	Capstan	10	13	12	10	11	15	10	81
17.	J. Argent, H. Scrivener	Skylark 4	18	15	7	3	11	21	7	82
18.	A. Marshal, J. B. Bellew	Ka-7	12	15	12	8	11	19	12	89
19.	G. Senior, K. F. S. Chard	Skylark 2	15	15	12	10	5	20	13	90
20.	A. Wilson, S. Tomlin	Skylark 3B	16	12	12	10	11	16	14	91
21.	Anita Schmidt	Olympia 463	13	12	12	10	11	18	16	92
22.	Rika Harwood, H. S. Mettam	Skylark 3B	12	14	12	10	11	21	15	95
23.	B. Keogh	Skylark 4	19	11	12	10	11	21	14	98

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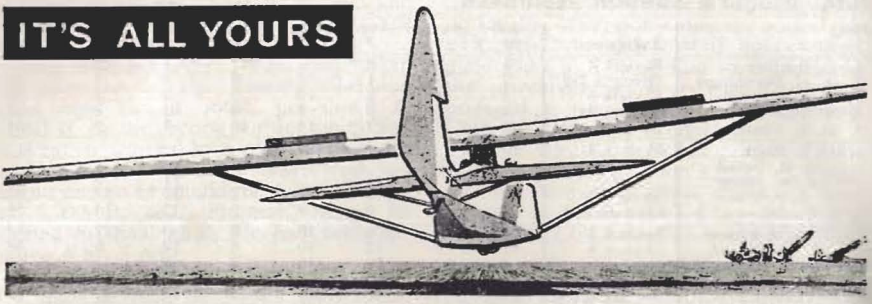
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IT'S ALL YOURS



Preparation for Flight

THIS is the uninteresting title of an important part of gliding. It is also an aspect of training which is too often taught superficially, with the result that many pilots carry our a perfunctory waving of the stick, a quick twiddle of the altimeter knob, a detailed positioning of the trimmer lever to some quite arbitrary position in the slot, and are off. If stopped in the tracks of this ritual, it is likely to be discovered that the pilot does not know how the trim tab works, nor has he realised that he cannot see all the control surfaces when strapped in the cockpit.

The unimportance often attached to cockpit checks is usually due to the rush and hurly-burly of launch points — once flying has started all energies are devoted to getting into the air, keeping up the launch rate, and getting through the list. The teaching of Preparation for Flight needs to be divided into two quite separate phases. The first, before the pupil starts to learn anything in the air — Ground School Lesson 1 — and the second, before every flight that he does — the cockpit check.

Ground School Lesson 1

This lesson should be regarded as an integral part of instruction, with at least an hour allowed for it. The pupil might expect to have to pay for it, provided that it was done well. It should not take place at the launch point, with its distractions, but at the hangar. The purpose of this first lesson is to demonstrate the glider, what it is made of, how it should be handled, how it can be damaged, and how it works. This should include how the cockpit controls operate the surfaces, including the trimmer. The pupil should be taught to work out for himself which way the surfaces move when the controls are operated. It should be explained why it is sensible to always check the correct operation of the controls, and how to do it.

Time should be spent in explaining the proper locking of the canopy, the way the harness is adjusted, and the working of the airbrake mechanism. If seat and rudder pedals are adjustable the pupil should sit in the aircraft and discover the position he will want to use. The instruments should be simply explained, particularly the operation and purpose of the altimeter. If the pupil is interested, some information can be given about the parachute and the barograph, why they are carried and how they are used.

If this lesson is given well, the pupil will start his flying with an understanding of, and confidence in, the glider, which will let him concentrate his efforts, when he gets into the air, fully on the flying.

However difficult it may be to devote plenty of time to this first lesson with a new pupil, it is important that time should somehow be found. At this stage, the pupil is both enthusiastic and receptive to new knowledge, and can fully absorb the lesson. If it is skimped, or left until at the launch point and about to fly, the pupil will start learning with an incomplete background of basic knowledge. It is possible that this lack will not be overcome until much later, and it may well be a contributory factor to any accidents he has during his early solo flying. It is not so important that this lesson is given by the instructor who will subsequently fly with the pupil, as that it is given by

an instructor who is interested in the ground school side of training, and who is willing to spend time and his patience in the pupil's interest.

Cockpit Check

A proper cockit check should be insisted upon from the first flying lesson. Even if other launches are held up, the cockpit check should not be rushed, however slow the pupil at doing it.

The B.G.A. cockpit check is designed to cover the sequence of pre-flight checks in a logical order, and should be taught in preference to ones which do not cover all the equipment now used. The check is CB SIT CB. The first group — controls and ballast — may involve work outside the cockpit. For example, the control surfaces cannot be seen when sitting in a Capstan, and it may be necessary to fetch some ballast weights. The next three items — SIT — straps, instruments, trim, are self-explanatory. The last two, CB again, are items which can be altered up to the moment of take-off. If it is windy, the brakes may be needed; if not, the canopy will be kept open.

Until the habit of carrying out a proper check is ingrained, the pupil should be made to do it fully before every launch, even if this requires someone outside the aircraft to check on the control surface movements. Later the full control check need be done only on the first of three consecutive dual flights, provided that before every flight they are checked for full and free movement.

The check list should be put on the instrument panel as an aid to the pupil. Engraved plastic check lists can be obtined from Master Mascots Ltd., 11 High Street, Chapel-en-le-Frith, Stockport, Cheshire, at 2s. each or 18s. per dozen.

* * *

Now that exotic ships are becoming more easily available, F.F.I.s will have to consider the introduction of a pre-landing check if beautiful smooth bottoms are not to be ground in the mud. The considerations for the future are SPEED — flaps may lave limiting speeds for their use; FLAPS, WHEEL, and if desired to round everything off, BRAKES. Perhaps someone can think of something more elegant than SFWB?

ANN WELCH.

"KEEP A GOOD LOOK-OUT"

AFTER every collision or near-collision, somebody is bound to say that the sure way to avoid such happenings is to "keep a good look-out" — just that and nothing more. But is it?

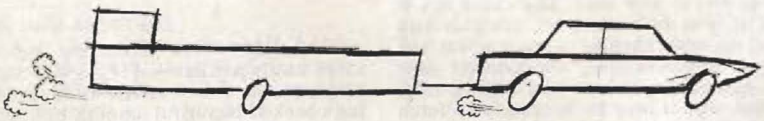
To a seafaring nation, "keeping a good look-out" means scanning the horizon. That is all you need to do in a ship, because you and any other ship are both travelling at the same level and each is going the way it is pointing — namely, towards some point on the horizon, which is itself at the same level as seen from both ships

But a glider does not travel towards a point on the horizon except on the infrequent occasions when it is in zero sink, such as in weak thermal, or over a slope in stable air. At all other times the glider is travelling towards either the heavens above or the earth beneath, and neither of these regions is confined to the horizon. Moreover, at such times the place the glider is pointing at, which is a degree or two below the horizon, gives no indication of where it is going.

The first collision in British gliding history happened at Sutton Bank on 31st July, 1938, during the Yorkshire Club's

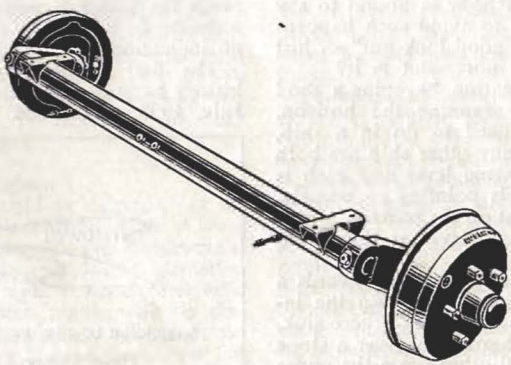
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"Advanced Course" (likewise the first of its kind in British history). To quote THE SAILPLANE & GLIDER (Aug. 1938, p. 193): "W. C. 'Billy' Sharpe was flying the club Grunau at a lower level than W. R. Horsfield in Scud II when they turned towards each other. But they must have been in different vertical currents, for they both arrived at the same spot at the same level. Scud II touched the Grunau's wing-tip and then charged into its fuselage just in front of the tail."

It was lunch time, and all the rest of the gliding crowd was in the clubhouse with the single exception of the late A. O. Pick, who was well up above, putting up a new British duration record of 13 hrs. 27 mins. He saw the Grunau "flutter down like a piece of paper" into the bracken on the hillside; but Sharpe, though uninjured, lost his memory of the incident, and the public made off with so many bits of wreckage as souvenirs that no one ever discovered how the Grunau had managed to hold together during its descent.

Horsfield lost the nose of his Scud, and his legs were dangling in the open. He had survived being in the front line in the first world war, and thought it odd that the end should come in this way. A moment later, the next world receded again as he found he still had elevator and aileron control; so, rather than attempt a Lilienthal-type landing, he made for some tree-tops in a small wood, from which he subsequently shouted down that he was doing his five hours and hadn't "landed" yet.

From the description it is obvious that each pilot, as he started his turn, could have seen nothing on the horizon, however "good" his look-out may have been, so he didn't bother to look again.

Somewhere around 1949, at the request of *The Aeroplane*, I compiled (but have lost) a list of all British glider collisions to date. There were about half-a-dozen of them, and in every case but one a machine had, either certainly or very probably, started turning towards another one at a different level and had then met it at the same level.

In two cases, over a slope in unstable air with strong thermals, the lower pilot had felt a sudden surge of lift and instinctively thrown his machine into a turn; then, to his surprise, he hit another machine which he had thought was well out of the way higher up. One collision was only slight. In the other, the upper machine, a Gull, was hit on the underside and its pilot lost his elevator control. He found himself in a gradually steepening descent, so steered for a clump of bushes and, just before reaching it, threw the Gull into a steep bank and pulled up his legs. He was unhurt.

Since that time, any further collisions have happened at distant clubs and I have been unable to get a first-hand account. But it may well be that some were due to the same "empty horizon" trouble but that nobody thought of it as a possible contributing cause.

After all, when a glider pilot starts turning it is usually because he has struck lift; he is then travelling, not towards the horizon, but towards the sky. That is the place to have a "good look-out" at.

There have been a number of complaints of "near misses" when an allegedly ill-mannered pilot has charged into a crowd of circling gliders and nearly hit somebody. Yet ill-manners may not have been entirely to blame. When you approach a thermalful of gliders, it is no good having a "good" look round the horizon, because you are going down and they are all coming up. The glider you are going to hit, or to near-miss, is not on the horizon; it is way down below.

A. E. SLATER.

SOARING YEAR BOOK

1965

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CONSTRUCTION OF A GLIDE-ANGLE COMPUTER

By LEM TANNER

THE past issues of SAILPLANE & GLIDING have carried a great deal of discussion about final-glide computers and their merits. Very few articles have outlined the constructional details, and available computers appear to be limited in their application. In general they are constructed for one type of aircraft only. I decided therefore to construct a computer which would not only give gliding angles and speeds-to-fly, but would also be easily adaptable for any type of glider.

In the following constructional details I have not allowed for any built-in safety margin, but one could be incorporated by adjusting the polar curve or reducing all the still-air gliding angles by one.

For the worked examples in this article I have used the polar curve for the Skylark 3F shown in SAILPLANE & GLIDING for October 1964.

Requirements

(a) To give range possible from known heights in various winds.
(b) To show speed-to-fly between thermals for various thermal strengths.
(c) To provide solutions to arithmetical problems.
(d) To be adaptable for any type of aircraft.
(e) To be simple to use and cheap to construct.

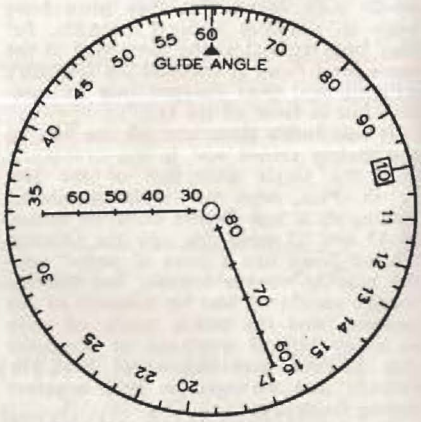
Materials

(a) One circular piece of Perspex.
(b) Two rectangular pieces of Perspex.
(c) Five small nuts and bolts.
(d) Polar curve of required aircraft.

Construction

Since all glide-angle computers are basically slide-rules, the first requirement is to etch a logarithmic scale on the circular piece of perspex (piece A). See figure 1.

Having done this, bolt piece A to one of the rectangular pieces of perspex (piece B), and mark off the same scale, arranging for 25 to be at the top edge. Marking the scales takes the bulk of the time for construction and must be done accurately. All the distance/time or factor



problems are done with these two scales, using 60 and 10 as respective datums.

The glide-angle curves are produced on the third piece of perspex (piece C). On the face of piece A mark off the speed-to-fly scale as shown in Fig. 1. The lines are angled to avoid congestion of the glide-angle curves. Bolt the three pieces together now in the reverse order of that shown in Fig. 2, pieces B and C being bolted through the corners to stop them moving. Now, from the polar curve diagram calculate the Gliding Angles for the various speeds on the speed-to-fly scale on piece A. Provided that the axes of the polar are in the same units, this is most easily done with the computer. (Conversions from ft./sec. to m./sec. to kts. can be done directly by putting datums in suitable positions on piece B.) From the polar; at 50 kts. the rate of sink is 1.8 kts. To find the gliding angle,

(a) set 18 on piece A against 50 on piece B;
(b) against 10 on piece A (the factor datum) read off the gliding angle on piece B=27.8.

Do this for all the required speeds.

To start plotting the curves on piece C, set the gliding angle lubber-line on piece A against 27.8. Make a dot now on piece C directly over the 50-kt. mark on the

speed-to-fly scale on piece A. Follow this procedure for all the selected speeds. This should produce a series of dots in a regular curve. Join the dots, at first with a Chinagraph so that the curve is accurate, and then etch it in. This is the still-air-curve, and all the other curves depend on it.

To plot the glide angles in various winds it isn't really necessary to go into reams of calculations involving lines all over the polar curve. Again use the computer. Consider a 10-kt. tail wind when flying at 50 kts.

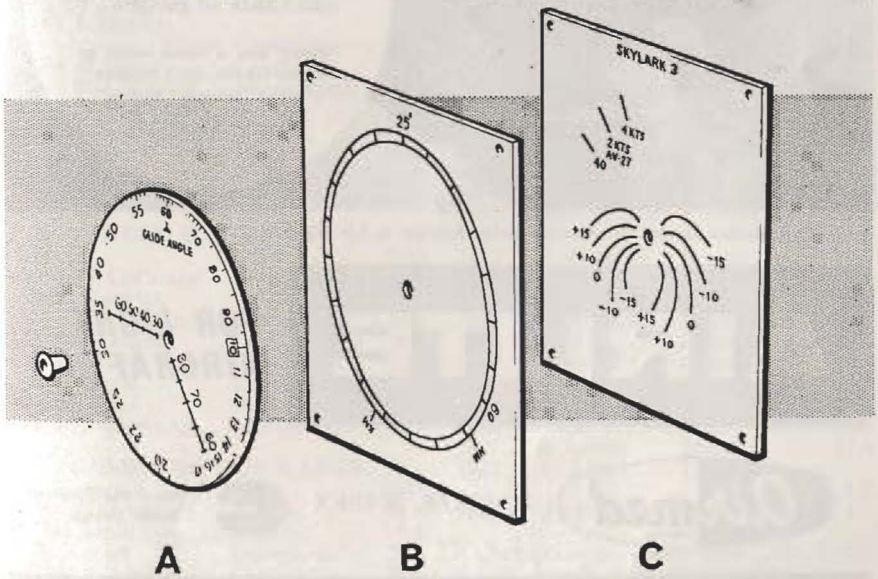
(a) Rotate piece A until the 50-kt. mark lies under the still-air curve on piece C.
(b) Read off the gliding angle on piece B, 27.8, against the lubber line on piece A.
(c) Against 27.8 set the figure 50 by rotating piece A.
(d) Against 60 on piece A read off the new gliding angle 33.3. The figure 60 comes from the ground speed. With a 15-kt. tailwind, read the gliding angle against 65.
(e) Set the glide angle lubber line against 33.3 and mark a dot on piece C over the 50-kt. mark on the speed-to-fly line.

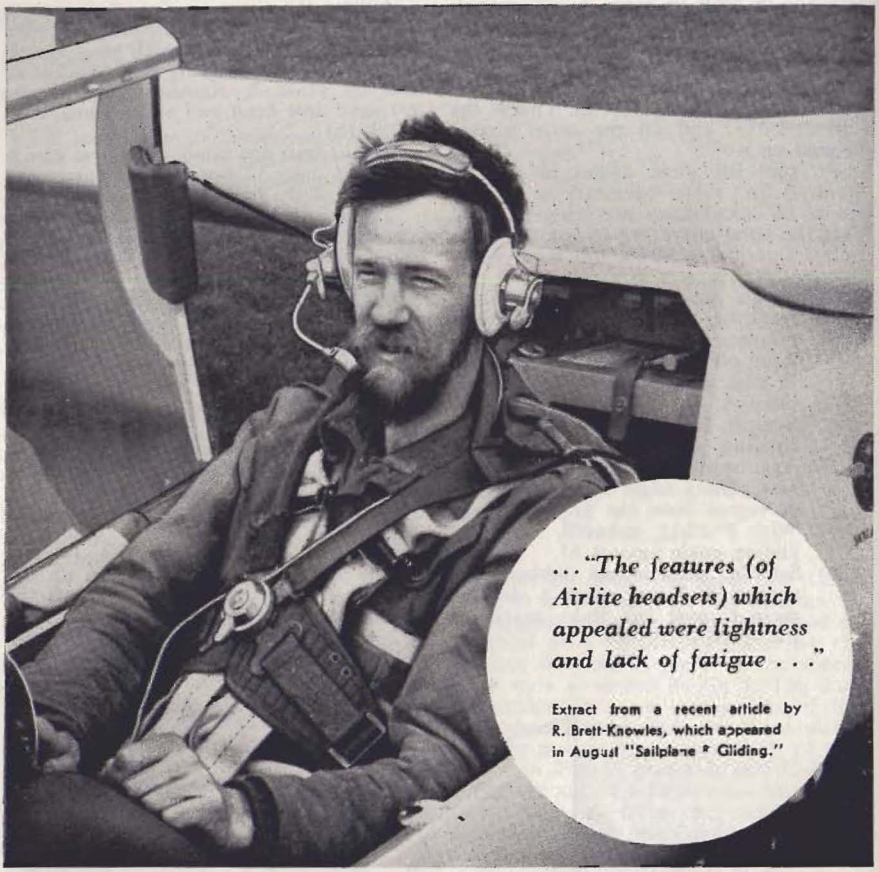
Follow this sequence for all the winds and speeds-to-fly, remembering (d). We now have a computer which gives ranges on piece B from heights in thousands of feet on piece A. Requirements (a) and (c) have now been met and it remains to fulfill (b).

To do this, one could of course etch a table on piece C, but this is unnecessary as most of the figures are etched already.

The speeds to fly between thermals are obtained from the polar curve by drawing tangents to the curve from appropriate points on the vertical axis of the graph, and reading the speed at the point of contact. E.g. from 2 kts. climb, the tangent touches the curve below 48 kts. and crosses the speed axis at 27 kts. The speed to fly between thermals is 48 kts. and the average speed overall is 27 kts. in still air.

Back to the computer. On piece C it will be noticed that there is a large space between the etched curves. Rotate piece A until the figure 40 is at the left-hand side of this space. Etch a line on piece C over this 40 mark and label it 40 (40 is a purely arbitrary number and has no significance except that it is just below the normal cruise speed). We know that for a 2-kt. thermal the cruise speed is 48 kts.,





The author testing the Airmed Airlite headset in his glider

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so over 48 on piece A etch a line on piece C and mark it 2 kts. and under it mark "av. 27 kts.".

Follow this procedure for the various thermal strengths, and whenever 40 on piece A is lined up with 40 on piece C the speed to fly can be read directly off of the scale on piece A together with the average speed in still air.

All the etched marks can be made to stand out by filling them with black paint, except for the higher speed scale and its associated curves. These should be of a different colour to avoid confusion of speeds and scales. The computer can now be assembled in the order shown in Fig. 2.

To convert to other types of aircraft, merely manufacture more pieces C.

The total working time is about twelve hours and the cost negligible. All the requirements have been met and the result is a highly accurate computer of wide application. In practice it is simple to use, and I have found it very useful for scratching locally and even for doing sums!

GLIDING CERTIFICATES

DIAMOND FOR GOAL

No.	*Name*	*Club*	*1965*
2/176	J. N. Cochrane	Surrey	20.5
2/177	S. Warwick-Fleming	Moonrakers	19.6
2/178	A. J. Burton	Surrey	19.6
2/179	R. W. B. Newall	Bicester	19.6
2/180	M. Medland	Bicester	19.6
2/181	P. A. Martin	Leicestershire	26.6
2/182	R. S. Waller	Cambridge	26.6
2/183	J. Pickett-Heaps	Cambridge	26.6
2/184	H. Orme	Laarbruch	26.6
2/185	B. J. Willson	Bannerdown	5.6
2/186	G. R. Paddick	Surrey	19.5
2/187	J. E. S. Temple	Surrey	19.6
2/188	R. Jones	Bath	26.6
2/189	G. A. Cornell	Northamptonshire	26.6

GOLD C COMPLETE

		Club	*1965*
135	J. N. Cochrane	Surrey	20.5
136	S. Warwick-Fleming	Moonrakers	19.6
137	P. A. Martin	Leicestershire	26.6
138	J. Pickett-Heaps	Cambridge	26.6
139	H. Orme	Laarbruch	26.6
140	R. Jones	Bath	26.6
141	E. J. Meddings	Moonrakers	4.7

GOLD C DISTANCE LEGS

Name	*Club*	*1965*
R. W. B. Newall	Bicester	19.6
M. Medland	Bicester	19.6
P. A. Martin	Leicestershire	26.6
J. Pickett-Heaps	Cambridge	26.6
H. Orme	Laarbruch	26.6
B. J. Willson	Bannerdown	5.6
G. R. Paddick	Surrey	19.5
J. E. S. Temple	Surrey	19.6
R. Jones	Bath	26.6
G. A. Cornell	Northamptonshire	26.6

GOLD C HEIGHT LEGS

	Club	*1965*
R. Jones	Bath	7.6
J. R. Clark	Cheviots	20.6

SILVER C CERTIFICATES

No.	*Name*	*Club*	*1965*
1605	K. R. Turner	Farnborough	22.5
1606	E. A. Stokes	S. Soc. Dayton	29.5
1607	Joyce E. Boyer	Yorkshire	16.6
1608	T. M. S. Birch	Yorkshire	13.6
1609	L. J. Birch	Staffordshire	10.6
1610	Angela M. West	London	19.6
1611	C. R. Brown	Cambridge	23.5
1612	V. F. Griffiths	Bristol	20.5
1613	R. A. Frith	Derby & Lancs.	7.6
1614	R. H. Powell	Bicester	7.6
1615	D. A. Holland	Southdown	7.6
1616	D. R. Fitt	Bicester	7.6
1617	J. Bushnell	Cambridge	19.6
1618	M. Bialkiewicz	Polish	27.6
1619	C. O. Hancox	Fenland	19.6
1620	G. Tilley	Kent	19.6
1621	J. A. Simms	Bicester	27.6
1622	R. G. Lloyd	Far East Air Force	1.7
1623	A. Beckett	Derby&Lancs.	1.7

Correction to August issue: No. 1599, A. M. Rose's club is Yorkshire.

THE POLISH NATIONALS

Translated and abridged by J. Z. Mikulski from "Skrzydlata Polska"

THIS year's Polish National Championships took place at Leszno from 27th June to 11th July. Thirty-seven pilots took part, including two women, all flying the Foka type, and one pilot, J. Popiel, flew *hors concours* in a Zefir 3. J. Wroblewski, previous National Champion (and present World Champion) defended his title. The very poor weather conditions allowed only five contests to be flown.

JUNE 27TH.—Opening day; weather too poor for a contest.

JUNE 28TH.—A wedge of high pressure from the Azores; sky clear at first, then cumulus development reached 3-6/8. Up-currents 2-3 m/sec.

Task: 217-km. triangle via Przylep and Lwowek. Take-offs from 10 a.m. but the majority only crossed the start line around 12 o'clock. The first leg was difficult owing to high wind (40-50 km/h., 260-290°, at 2,000 m.) and three came down. On the second leg conditions were easier in spite of a strong cross-wind and only one came down. On the last leg, in spite of flying downwind, many were in a critical situation at low height, but only three were forced down. The task was completed by 31 plus Popiel, who made the best time, 3 h. 1 min. (at 72.1 km/h.). Makula was the winner at 65.6 km/h.

Everyone flew very cautiously in the difficult and variable conditions and, Makula said, it was necessary to go away from the track to keep up or to get better conditions. General opinion of competitors: task well suited to the weather.

JUNE 29TH.—High winds; no task.

JUNE 30TH.—High pressure centred over Czechoslovakia. Weather clear: blue thermals. Surface wind variable; upper wind 20-30 km/h., 230-270°.

A 537-km. triangle was intended to be set, via Lubien and Olesno; but this was cancelled and replaced by a race to Lubien and return, 382 km. First take-off at 10.30 a.m., but competitors hesitated before departure; they went away in rather large groups, one of them containing at least 21 Fokas. Seven landed on the way to Lubien and 29 reached it. Popiel, although he had passed it and was on the way back, returned to land at Lubien to avoid a field landing.

At about 4 p.m. two gliders collided (Kochanowski and Dankowska); one baled out and the other force-landed. The best distances were by Pieczewski (261 m.) and Adamek (260), and ten landed at Konin [the table shows that 18 went 255 km.]. The general impression of the pilots was that the task was too difficult and unsuited to the conditions.

JULY 1ST.—No task; bad weather.

JULY 2ND.—Poland under the influence of a weakening wedge from the Azores. At first the weather cleared; then convection clouds developed in the afternoon and increased in amount, giving possibility of precipitation in the evening. Thermals gradually disappearing in afternoon; strength under cumulus 1-2 m/s. Wind W.N.W., 35 km/h.

Task: race to Rychwal and back, 228 km. Take-offs began at 9.30 a.m. and this time pilots did not wait but left promptly, the first gliders crossing the line at 10.06. Altogether 35 started, including the Zefir 3; the two pilots involved in the collision did not fly, as the incident was still being investigated. All reached the turning-point, but on the return leg six came down, including Wroblewski, who landed on Leszno airfield 150 metres short of the finishing line. First back was Dziuba, but the winner was Pieczewski again, at 86.8 km/h. However, the best time of the day was 2 h. 29 min. by Popiel in the Zefir (91.5 km/h.).

Competitors thought the task too easy for the day's conditions.

JULY 3RD.—Bad weather; no task.

JULY 4TH.—Poland under influence of a weakening "low" centred over northern Finland. Cu 2-5/8 at 5,000 ft.; Alto-cu 3-5/8 at 6,500 ft.; shower in afternoon. Thermals intensified by local conditions, 1.5-3.5 m/sec.; inside clouds 4 m/sec. Wind 25-45 km/h.

A planned 307-km. triangle was cancelled in favour of a race to Ostrow and return, 184 km. At first conditions looked

easy and 35 reached the turning-point, but on the way back 24 landed. Only 10 got back to Leszno, including Popiel in the Zefir. Julian Zobro was the winner at 68.1 km/h. (Popiel made 4th best speed at 56.4 km/h.).

General opinion: the task was well selected but difficult owing to change in weather conditions.

JULY 5TH.—Out-and-return Jelenia Gora (333 km.) declared but it was a no-contest day. JULY 6TH-9TH, bad weather, no flying.

JULY 10TH.—Poland on edge of a low-pressure area centred over S. Finland. Cloudy with showers. Wind 25-50 km/h. Thermals weak and low, 1-2 m/sec., inside clouds 4-5 m/sec. Cu and Strato-cu 5-5/8, base 2,300-3,300 ft. Freezing level 5,600 ft.; moderate icing. A most interesting and dramatic task, with plenty of emotional moments, etc.

Race to Lodz, 198 km. Take-offs started 12.30. Most competitors crossed the start line immediately, as soon as possible after take-off. One competitor, Krolikowski, was out of luck, remaining still at Leszno after three attempts. (His previous placings had been 7, 3=, 6 and 2). Ten others did not get away. One of the last to take off was Makula, who waited a full hour for weather conditions to improve. Only five reached Lodz. The winner was J. Prokop (65.5 km/h.).

JULY 11TH.—Closing ceremony.

Leading Total Scores

1.	E. Makula (Katowice)	4,344
2.	F. Kepka (Bielsko-Biala)	3,708
3.	R. Jakob (Poznan)	3,606
4.	H. Muszczynski (Ostrow)	3,407
5.	J. Wroblewski (Bydgoszcz)	3,407
6.	K. Gorzkiewicz (Gdansk)	3,401
7.	J. Prokop (Stalowa Wola)	3,254
8.	S. Wielgus (Warszawa)	3,241
9.	M. Krolikowski (Warszawa)	3,234
10.	J. Pieczewski (Lodz)	3,091
11.	A. Kmiotek (Warszawa)	3,020
12.	J. Adamek (Warszawa)	2,878
13.	A. Witek (Kielce)	2,809
14.	L. Kucinski (Rzeszow)	2,719
15.	J. Dyczkowski (Lublin)	2,672
HORS CONCOURS		
	J. Popiel (Jelenia Gora)	3,582

Of the women pilots, P. Majewska finished 25th (her best placing was 8th on July 4th), and A. Dankowska 30th.





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THE WALLINGTON SCORING SYSTEM IN ACTION

By RON WATSON

AT the London Regional Competition in August, 1965, the Wallington scoring system was used. Subsequently the scores were re-worked by the system used at South Cerney for the 1965 World Championships, and the following notes point up some of the (minor) snags which arose and make a comparison of the two systems, as seen in this competition.

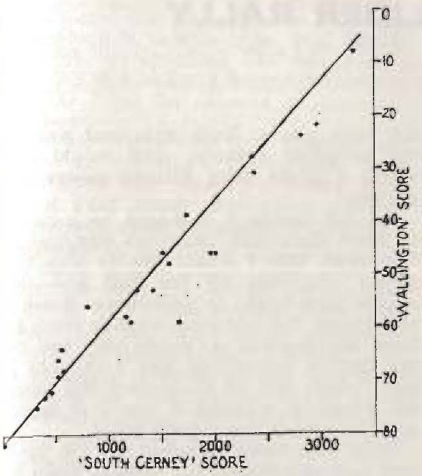
The original proposal by C. E. Wallington (SAILPLANE & GLIDING, Dec. 1964, p. 432) appeared to be aimed primarily at producing a simpler system of scoring than that which we have been using for some years, and was at some pains to show that the system, while simpler, produced a similar result. Personally I would support the Wallington system as being based on better fundamental principles and as producing a fairer result. Certainly it is simpler, but the computation of scores is not difficult, once you get down to it, and the small extra time taken by the South Cerney system would be amply justified if it could be shown to produce a fairer result. The Wallington system is supported by a sound argument, but I have yet to hear of any argument to support the fundamental basis of the South Cerney system.

There was some initial difficulty in accustoming oneself to the idea of penalty points, but this rapidly disappeared with the days; such a system has long been in use for scoring motor rallies.

The most awkward problem was how to score pilots whose performances on any one day were so close as to be indistinguishable. If the second and third pilots are indistinguishable, the traditional method is to mark them 1, 2, 2, 4, on the basis that 4 is 4 because he has been beaten by three others; but the gap between 1 and 2 is, by the principles of the Wallington system, worth no more and no less than that between 2 and 4, so that a more logical system is to mark them 1, 2, 2, 3. This is what we did at the London Regional. Arguing, however, that although we cannot distinguish between second and third, they were not exactly equal, leads to the conclusion that there were three gaps above the fourth, who is thus rightly scored 4, and that the second and third, because we cannot determine which is which, should be scored 2½ each, leading to 1, 2½, 2½, 4. One pilot in the competition, however, suggested that the correct interpretation of the Wallington argument leads to the conclusion that the fact that two pilots had landed close together suggests it was more difficult ahead of them and so this gap is a larger one, leading to scores of 1, 3, 3, 4. As a matter of interest I computed the scores on all four bases and, as might be expected, there was very little difference in the results. It is difficult to find any argument overwhelmingly in favour of any of these variants, but I have no doubt we shall have plenty of argument.

More interest arises from a comparison of the results under the Wallington system and those under the South Cerney system. The largest difference arises from the "2X" rule which turns two of the days into "no-contest". Pilots who did badly on these days would thus have been better off under the South Cerney system. Largely as a result of this there are a few fairly large changes, mostly in the middle of the order. (One pilot would have risen six places and one would have fallen five; the first three are unchanged.)

Consequently a comparison was made of the five days which would have been contest days under the South Cerney system and the scores actually obtained on the five days. The table gives these in full. One noticeable change is the margin by which the winner wins on deletion of the two days. The most noticeable difference between the two systems is the position of glider 708, which would have been six places higher under the South Cerney system. This glider scored on only two of the five days, and although placed 7th and 10th, the scores by the South Cerney system are 855 and 814. The graph shows a comparison of the scores by the two systems. The correlation is 0.969. The line drawn joins the best possible scores (8 by Wallington, 3,370 by



South Cerney) to the worst possible scores (82 by Wallington, 0 by South Cerney). Most interesting is that there appears little curvature in the relationship as one might have expected.

Whether or not low-performance days such as day 3 and day 5 should be included in the scoring of a contest will remain a matter of argument; certainly it is not a material part of the Wallington system to include them. To anyone who was at Dunstable there can be little doubt that to fly 50 km. on day 3 was not a matter of luck, but of considerable skill. The only question is whether we wish or not to encourage this kind of skill.

Finally, I should like to point to the results on day 4, a race to Swanton Morley, when the Wallington system could be seen to be achieving fairness. Only one pilot reached the goal and only five pilots exceeded 2X; their distances were 65, 87, 102, 123 and 141 km. These pilots all agreed that the latter part of the track was comparatively easy; to have given them a great advantage over the 18 pilots who only flew short distances would not correctly have reflected the skill involved in their achievement.

London Regional Results by Wallington and South Cerney Scoring Systems

		Day 1	*Day* 2	*Day* 4	*Day* 6	*Day* 7	*Total*	
1.	Bentson	1–1000	1–478	1–235	3–974	2–616	8–3303	1
2.	Warminger	2–995	9–257	2–199	6–929	3–612	22–2972	2
3.	McMullin	5–884	6–293	10–0	2–984	1–657	24–2818	3
4.	Tull	8–848	6–293	5–82	1–1000	8–149	28–2372	5
5.	Dimock	3–976	2–389	10–0	7–878	9–138	31–2381	4
6.	Cardiff	9–384	5–303	9–1	12–793	4–268	39–1749	8
7.=	Elliss	6–857	4–355	6–41	13–760	17–dnf	46–2013	6
7.=	Pratt	17–138		10–0				
	Ismail		3–378					
	James				11–813	5–193	46–1522	11
7.=	Zeally	4–958	12–87	10–0	9–833	11–85	46–1963	7
10.	Donald	11–366	7–279	10–0	14–754	6–183	48–1582	10
11.=	Wilkinson	14–209	8–268	10–0	4–946	17–dnf	53–1423	12
11.=	Grime	12–261	15–0	10–0	5–937	11–85	53–1283	13
13.	Pozerskis	12–261	12–87	4–127	17–255	11–85	56–815	16
14.	Stafford Allen	10–371	13–40	10–0	15–656	10–98	58–1165	15
15.=	Fitchett	7–855		10–0	10–814			
	Moseley		15–0			17–0	59–1669	9
15.=	D. Burns	17–138						
	Anne Burns		10–179	7–36	8–861			
	Shaw					17–0	59–1214	14
17.	Argent	18–91		3–158		7–160		
	Scrivener		15–0		21–152		64–561	18
18.	Marshal	12–261				12–79	66–543	19
	Bellew		15–0	8–20	19–183			
19.	Wilson	16–159				14–48		
	Tomlin		12–87	10–0	16–280		68–574	17
20.	Anita Schmidt	13–214	12–87	10–0	18–202	16–9	69–512	20
21.	Rika Harwood	12–261				15–32		
	Mettam		14–21	10–0	21–152		72–466	21
22.	Senior	15–191						
	Chard		15–0	10–0	20–159	13–50	73–400	22
23.	Keogh	19–0	11–117	10–0	21–152	14–48	75–317	23

1st Column, Placings according to Wallington's system. Figures in front of "–" denote Wallington's system, after "–" system as used at South Cerney; dnf = did not fly. Last column, placings using the South Cerney system.

VISIT TO A MOTOR GLIDER RALLY

By PETER ROSS

WHEN I arrived at the little airstrip of Schärding-Suben on the river Inn near the German town of Passau in Bavaria on 19th June, the four-day meeting of the Second Austrian International Motor Glider Rally was in its third day. Extensive flooding of the Inn valley and high winds had made thermals rather scarce, although the weather was fine and sunny.

The day's task was a 180-km. triangle with prizes awarded not for speed but for fuel consumption.

Soon a sound like an angry bee was heard in the distance and the first of the competitors arrived within gliding distance. The buzzing stopped and a brightly painted Motorspatz side-slipped neatly in to a spot-landing on the waterlogged strip. Soon the sky was full of the odd sound of aerial motor-scooters as the remaining competitors crossed the dead air over the damp fields by the river to a safe landing, and lunch at the nearby hotel.

Flying the Motorfalke

After lunch I was offered a flight in the Motorfalke, which is a development of the Scheibe Bergfalke tandem two-seater. Having a tailwheel it was easy to push back to the end of the strip (taxiing would have overheated the front-mounted air-cooled engine) and we climbed into the roomy cockpit after pushing forward the one-piece canopy which hinges along its lower front edge. Apart from the throttle, rev. counter, ignition switch and fuel tap, it might have been a glider cockpit, and the view over the nose was just as good as in most other two-seaters.

One brisk pull on the starter cable and the little engine burst into life. The noise was tremendous and when, after a 30-second warm-up, the throttle was fully opened, the buzz-saw shriek made conversation impossible.

After 23 seconds we unstuck, and just 1 min. 48 seconds after opening up for take-off we had reached 100 metres. From there until 500 metres (1,640 ft.) we climbed at a steady 320 ft./min. at an indicated 43 knots. Turns with power on felt very similar both with and against the propeller rotation, and would not worry a glider pilot without power experience.

At 800 metres I managed to indicate to Herr Hartmann, Scheibe's demonstration pilot, that I would like to stop the motor. He shut off the fuel and the engine soon began to slow down. Being a two-stroke, the vibration when it starts to four- and eight-stroke seems very bad on the flexible mountings, and I thought it must surely fall off altogether! But when the vibration stopped it was still there, and the silence was a great relief.

Herr Hartmann switched off the ignition and re-trimmed for normal flight at an indicated 39 knots. Unfortunately thermals were not very obliging, and this, combined with a highly optimistic and rather insensitive variometer, made soaring difficult. (You try soaring with a one-metre zero error!) Rate of roll is good for a two-seater, and steep turns felt just like in a normal glider. Rate of sink with the unfeathered propeller is naturally a little higher than one is used to, and the propeller flicks over as the speed is increased for steep turns.

When down to 200 metres Herr Hartmann switched on fuel and ignition and gave another pull on the starter cable; the propeller, aided by the airflow, spun even more easily than before, and we were at once back in the cycle of noise and climb. Another fumble in weak lift and it was time to join the circuit. With Herr Hartmann pulling full spoiler from



the left-hand seat (ours was the prototype — production models have dual spoiler controls), the approach felt similar to a T-21, but with rather a longer ground run resulting from the absence of any tail-skid drag.

At the prizegiving that evening the results of the day's competition were announced. The winner, a Krähe fitted with a Puch motor car engine, covered the triangle using 1.8 gallons (62 m.p.g.), and no doubt this would have been better had there been more thermals. The best two-seater used 2.2 gallons for the two-hour trip. The Krähe has the lowest performance of the motor gliders at Schärding and has a rear-mounted engine driving a pusher propeller at the wing trailing edge. It looks rather like a cross between a Grunau Baby and an SG-38.

An idea of the utilisation obtainable from these aircraft is given by the performance of the two two-seaters on that day. Starting at 8.30 and finishing just before six o'clock, they each did six flights and over five hours (nearly 60% of the available time). Fuel is normal lowest grade motor spirit.

The three separate designs amongst the seven aircraft present were fitted with one of three different engines. One was an adapted motor-cycle engine (the Brändl), and the Puch is a practically unmodified four-stroke engine from the Austrian Fiat 500. The Hirth (which started life as the Solo) was the only one designed specially for motor gliders. Powers ranged from 23 to 27. The variation was accounted for partly by what the pilot told you it was really giving compared with what the engine company rep. was claiming, and partly by the confusing number of ways of measuring horse-power. There is b.h.p., DIN, SAE and P.S., but the main thing is that they seem to be pretty reliable, start easily and are cheap to run. The weight varies from rather heavy for a motor car engine with cooling fan, ducting, electric self-starter and battery, to reasonably light (55 lb.) and very compact for the Hirth engine with wire rope pull starter.

What is the future for motor gliders? To be present at Schärding was to feel that a new development in light aviation was starting. The Germans, who started the world gliding by their experiments in 1919, seem to have found a means of providing flying to a far greater number of people than ever before, without the limitations and frustrations present in so much of present day gliding, and have bridged the ever-increasing gap between the power and the glider pilot. Of course present-day motor gliders are crude and noisy devices, but they are cheap and practical. They are the pioneers and stand comparison with the open Dagling and the Maurice Farman Shorthorn.

They will never take the place of the high-performance single-seater, but they might reduce the drudgery of training, convert more power pilots to the joys of soaring, and make cross-countries possible to many who cannot spare the time and energy which gliding demands today.

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OBITUARY

H. G. C. BUCKINGHAM



IT was in 1938 — almost on the eve of the Second World War — that Horace Buckingham became Chairman of Elliotts of Newbury. From that time onwards although aviation was destined to be a relatively small part of his own life, Elliotts have been continuously involved in aircraft development and manufacture.

Horace became a Director of Elliotts in 1921, and in those early years it was largely through his efforts that the firm managed to secure a foothold in the furniture industry. Then came the outbreak of war and a contract from Airspeeds against which Elliotts delivered the astonishing total of 100 Oxford fuselages within the first 12 months.

Following this initial success, Elliotts continued throughout the war to manufacture sub-assemblies for many different types of aircraft, including the Horsa, Hamilcar and Tiger Moth and for the immortal Spitfire and Mosquito.

It was in the post-war years, however, that Horace came to the fore as a manufacturer of sporting gliders. Seeking to use his firm's wartime experience, he entered into co-operation with Chilton Aircraft to build a modified version of the Meise. Production of this aircraft — known as the Olympia Eon — started at Newbury in 1947, and more than 150 (itself a record, never surpassed in this country) were subsequently built.

This time action undoubtedly provided the British Gliding movement with its first and most satisfactory post-war sailplane available in quantity, and made a real contribution to the progress of high-performance soaring at the time.

Early in the 1950's began what was certainly Horace's greatest achievement in gliding — his Olympia 4 series culminating with the incomparable 419 and leading on to the present 463 Standard Class sailplane. It is certainly no reflection on the technical advice and support available to him to say that throughout this whole development the ultimate decisions were Horace's alone and that it was always he who forced the pace.

That these decisions were right, no one who has flown aircraft of his Olympia 4 series or seen the outstanding performance of his 419's in British Nationals and World Championships since 1958 can surely doubt.

Following the initial success of the 419, Horace decided to concentrate on a new lightweight Standard Class sailplane — the 15-metre 460 series. Development of this aircraft ran into very considerable trouble but Horace continued to persevere with it often in the face of severe criticism.

Three years later, in 1963, he had the satisfaction of seeing it represent Britain in the World Championships Standard Class and winning League 2 in the British National Championships. His 463 had arrived at last and it continues in production today.

Aggressive, impatient, creative, with unbounded energy, Horace was a true leader, and in his factory one could always see and feel the loyalty, the enthusiasm and the action which he both provoked and inspired. For those fortunate enough to have known him as a friend in his later years there was yet another side to his character — his impish and quite delightful sense of humour, his gentle kindness and consideration, his unswerving loyalty and his big-hearted and generous nature.

Now in his 65th year, in the year of his 465, Horace has gone. How better can we hope to remember him save in seeing the continuation of the work which he started? Perhaps eventually

in the development of a new line of sailplanes to bear his name — sailplanes which will fly in many parts of the world, but especially over the Berkshire Downs and across the Vale of Kennett where he lived and worked and made his home. DAVID INCE

ALEX DAWYDOFF



WE regret to report the death on 1st August of Alex Dawydoff, editor of *Soaring*, the monthly magazine of the Soaring Society of America, a post which he took over only in June last year. He was aged 61, and had been working until only a few days before the end, when he developed heart trouble.

He was born in December, 1903, at Leningrad (then St. Petersburg) and came to the U.S.A. in 1921 with his mother. In 1928 he started gliding on imported German machines. Around the end of the war he spent a year re-designing and building a Kirby Cadet for the then proposed New York State Aviation Vocational Training Program. He came to Cologne in 1960 as Public Relations Representative with the U.S. team at the World Championships.

Mr. Dawydoff was widely known as an aviation journalist. He was Technical Editor for *Air Trials* and *Air Progress* magazines, and later became Managing Editor of *Flying* magazine. His book, "Airplanes of the World", published in 1953, has run into 9 or 10 editions and is still going strong.

The Clouded Sky

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BOOK REVIEW

Soaring International Year Book 1965, edited by RICHARD MILLER. Published by Richard Miller, Soaring International, Box 77334, San Francisco, Calif. 194107, U.S.A. Obtainable from B.G.A. price 17s. 6d., or 18s. 6d. including postage.

REFERRED to by some as "The Mystery Man from America", Richard Miller was one of the most striking phenomena which helped to give character to the recent World Championships. Tall and statuesque, he seemed to be everywhere at once, looking almost dazed at all the fascinating things going on around and the extraordinary people taking part, many of whom found themselves booked for his forthcoming anthology of the best gliding stories.

Meanwhile he has produced this "Year Book", which covers a lot more than a year, as it has many historic photographs and even an article on Sir George Cayley. Alvin Parker writes on his 1,000 kilometres, L. Niemi on the Sisu, L. Yund on one-class soaring in the 1-26, J. Aldrich on shear lines, K. Ristin on Scandinavian soaring. The two longest chapters are by Mr. Miller — a history of soaring and a review of present-day sailplanes of the world. A collection of "provocative paragraphs" includes one from the 1933 SAILPLANE & GLIDER.

Altogether a well-got-up collection full of interest.

Since writing the above, we are delighted to hear that Richard Miller has been appointed editor of *Soaring*, the official magazine of the Soaring Society of America.

A. E. S.

CORRESPONDENCE

PETROL v. DIESEL ENGINES FOR WINCHES

Dear Sir,

Mr. Ross gives fuel economy as a ground for the use of diesel engines in winches ["Some facts about winches", Sailplane & Gliding, June 1965, p. 239]. The engines as used by us, according to detailed research from users' reports, use an average of 300 g. of petrol per launch. A diesel engine, with acceptable acceleration forces, uses more than double on diesel fuel, according to extensive trials made by us. Therefore, in the right choice of the petrol engine, his argument no longer holds with regard to cheapness. With the diesel engine there remain the necessity and disadvantages of the great performance requirements, the great weight, the large dimensions, and the incomparably higher capital outlay.

The side-by-side multiple drum installation recommended by Mr. Ross was discarded by us as far back as 1953 as being unsuitable. Reasons: Cable drums should be so positioned as to be "flying", i.e. open on one side, as otherwise when the cable jumps off the drum almost the whole of the cable will be entangled. With a flying-positioned drum, the cable cannot get knotted and can be easily rewound and disentangled.

We cannot overlook the fact that, in the sketch of a standard winch at the end of Mr. Ross's article, the roller arrangement with guillotine installation is our own patented symmetrical azimuth roller system; the use of this without our agreement is not permitted.

München 5, Thalkirchnerstr. 62, W. Germany RICHARD TOST FLUGZEUGGERATEBAU

STANDARD CLASS IN FUTURE NATIONALS

Dear Sir,

I support the remarks of Tony Deane-Drummond and Simon Redman in the August SAILPLANE & GLIDING concerning the future of the Standard Class in British

Nationals.

From my experience one can have virtually the same performance from a Standard Class machine as from an Open Class one at a considerable saving of £.s.d. For example, most Standard Class gliders cost between 10 and 20% less than Open Class machines. The owner of a Standard Class glider will therefore pay less insurance premium than a similar person who owns the more expensive Open Class type. It is also common for a 15-metre machine to obtain more height off a winch or car launch than the heavier 18-metre types. This in itself reduces the necessity for aero-tows for the 15-metre type and consequently results in an appreciable saving in flying fees.

It is therefore obvious that a considerable saving in both capital outlay and running expenses can be made by owning a Standard Class machine in preference to an Open Class type. Why is it, then, that we as a nation still seem to prefer the Open Class glider when right now there are two excellent Standard Class types built in Britain? Surely, it is that in competitions the Standard Class is held in less esteem than the Open Class? This attitude will most probably only be changed when the whole structure of the Nationals is altered. The responsibility for this must rest with the British Gliding Association.

I'm therefore going to suggest that the Nationals in 1966 be organized so that positive encouragement is given to people to fly Standard Class. I suggest that the composition of the Nationals be as follows :

1966:	*Open Class*	*Standard Class*
	50 entries	30 entries
1967 and thereafter :	*Open Class*	*Standard Class*
	40 entries	40 entries

Each Class should be tasked and scored separately and there should be two National Champions declared at the close of the contest — the Standard Class being declared first, as in World Championships. The entries for the Nationals should be determined from the existing rating list and slight variations in the numbers in each Class given above should be permitted. The scores gained in each Class should count 100% towards rating points. In accordance with Simon Redman's suggestion the Regionals will provide pilots with a chance to gain competition experience, as they in fact do at the present.

There will obviously be objections to this scheme, but whatever these may be it is high time we dug ourselves out of the 18-metre rut and really made an attempt to produce experienced Standard Class pilots. We will be needing some in future World Championships.

R.A.F. Binbrook, Lincoln. JOHN DELAFIELD.

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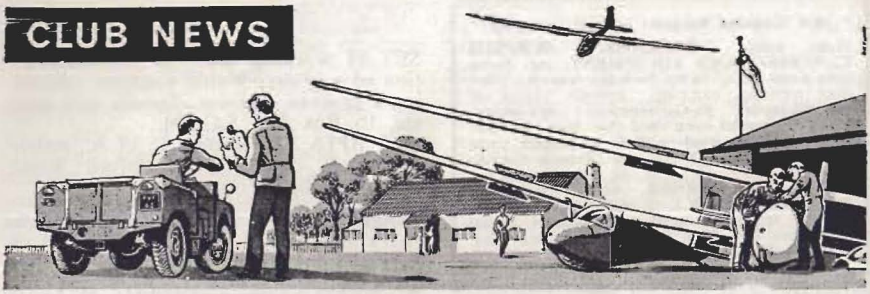
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CLUB NEWS



ALTHOUGH on the whole we have had a poor summer, there seems to be no shortage of pilots who were in the right place at the right time, as will be seen from the many people who have flown one or more legs of their Silver or Gold C's. Congratulations to them all.

Copy for inclusion in the December-January issue should reach me, typed double spaced, not later than Wednesday, 13th October, at 14 Little Brownings, London, S.E.23.

23rd August, 1965.

YVONNE BONHAM (Mrs.).
Club News Editor.

BATH (Keevil)

PROBABLY one of our most important acquisitions where ground equipment is concerned is the recent installation of our telephone. No longer do we have to rely on the co-operation, although greatly appreciated, of members' families in receiving phone calls from cross-country pilots to relay them to retrieve crews as they call in. You may like to make a note of our number



Taking a well-earned breather. From l. to r., C.F.I. Owen Harris, Deputy C.F.I Gordon Mealing and Vince Griffith.

in case you wish to contact us at weekends, Keevil 411.

Our two-seater list grows shorter as our single-seater list grows longer. We appear to be getting members off solo faster than new members come along. Probably the result of somewhat unfavourable weather up to the present time.

Two more of our lady members have gone solo, Liz Wiltshire and Margaret Cullis, and Margaret did exceptionally well to get her C in the Grunau within a few weeks of going solo.

Len Denny, Bill Davis and Charlie Derrick have all gained Silver C legs.

Ralph Jones has obtained Gold C height and distance with diamond for declared goal to Great Yarmouth from Nympsfield.

One of our members who soloed earlier this year is Phil Cottle who when "at work" flies Viscounts. Phil is having difficulty in working a steep climb. It has been suggested that he should have a portable tape recorder in the cockpit which, when he reaches 100 ft. shouts "rotate". We have reason to believe that some passengers are in for an exciting few minutes if he ever operates the other way around. K. N. S.

BLACKPOOL AND FYLDE

ALTHOUGH we cannot claim to have enjoyed a tropical summer up here in the North-West we have, nevertheless, taken full advantage of some excellent soaring conditions at our Samlesbury site.

David Field, who will shortly be emigrating to Australia, is now, much to his relief, assured of taking at least a B certificate with him.

Keith Emslie, along with his assistants, organised a very successful Course during the Preston holiday fortnight. The course was for club members only and was well supported. There were several good soaring days, and eighteen-year-old Richard Aldous did a creditable C flight, climbing during his 75 minutes flight to over 3,250 feet.

Len Clarkson and eighteen-year-old Jane Murdoch have recently been promoted by our C.F.I., Jack Aked, to the Olympia 2B and we suspect he will be sending Dennis Cooper and Martin Shaw on their first solos very shortly.

John Gibson and Ivor Stretch took the club Olympia to Lasham for a week in July, but were very unlucky with the weather, so they have gone north to Portmoak, for a change, in search of wave soaring. They have been joined by Ken Cooper and Terry and Eileen Hogben.

Congratulations to Gil Haslam, who was launched from the Lakes G.C. site on 8th August and, making a somewhat round-about journey, landed at Samlesbury nearly four hours later, thereby completing his Silver C.

We wish every happiness to flying members Ian Hamilton and Freda Wellens, who met on the airfield. They were married towards the end of July.

J. S. A.

BRISTOL

THE Tiger Moth having been away three months on a protracted C. of A., we will commence with our thanks to Tony Gaze for lending us his Auster almost continuously during this period.

The weather caught up with the calendar at the end of July and on one day no less than eight Distance attempts resulted in three Silver C's being completed and four more legs gained. Congratulations to the following:— Silver height, Barry Walker and Roy Owen. Completion with distance flights, Mark Westwood, Mike Harper, Brian Pratt. Distance, Laurie Smith. Solos, Messrs. Edwards, Stevens, Wood, Greenwood and Copley. C Certificates, Messrs. Upson, Walker, Price and Curtis. All since the last issue, plus many conversions.

Ray Jefferies deserves special mention, as, after 20 years of taking the ground equipment to pieces, he demonstrated how easy it all is by completing his Silver C with a flight to Bovingdon during a short break whilst putting the Mumford winch together again!

Colin Pennycuick is so high up the Ladder that we're soon expecting to hear he's used his oxygen to get down. Numerous height gains were capped by a 229 km. triangle to put him well in the lead over Roger Barnett, whose 300 km. triangle attempt landed him only 10 km. from home. Cross-country mileage recorded by members since the

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last issue is approximately 1,500, and at the time of going to press the club Oly. is being collected from 50 miles away after a Silver distance attempt by Bentley McLeod. R. G.

CAMBRIDGE UNIVERSITY

ON the whole, soaring conditions at Cambridge have been poor this season, though many pilots met the challenge quite successfully. Among them are Ann Walker and Tony Joss, who completed their Silver C's, Ann by taking the Olympia to Wattisham, and Tony with a neatly executed goal flight to Boxted in the Swallow. By mid-August the longest flights were Simon Redman's 130-mile triangle flown on 31st July and David Wigglesworth's flight of 112 miles to St. Neots via Banbury on 7th August.

Same as last year, the success of Cambridge pilots at competitions has been quite spectacular. Simon Redman won the Western Regionals at Nympsfield, with Colin Pennycuick and Stewart Waller second. John Brenner and Jeremy Pickett-Heaps, flying the club Olympia in the same event, came fifth. During the contest Jeremy completed his Gold C and won his first Diamond by taking the Olympia 300 km. to Great Yarmouth. John Firth took part in the United States Nationals and came 4th. He also won the 5th contest day. G. S. N.

COVENTRY

OUR airspace has been so crowded lately with a veritable procession overhead of World Champs Competitors and triangle manufacturers from Dunstable, that we have had hardly any room to get into the air ourselves. However, the weather naturally having improved rapidly after the close of our Regionals recorded elsewhere in this issue), not a few Club members have been getting down to the serious business of lengthy self-imposed tasks.

Some noteworthy flights include Lou Frank's Gold C climb in the Skylark 3 to 12,000 ft. over the site, Peter Partridge's almost successful Gold C distance attempt to Morpeth when he fell 10 miles short: Mike Smith's out-and-return to Lasham, Doug Cunningham's flight to Swindon and back, and Lou Frank's

attempted out-and-return to Lulsgate landing at Cheltenham on the way back.

The Dunstable trophy has been seen several times whizzing up and down the M.1, and one aspirant who arrived there was astonished, after having asked another stalwart to retrieve him, to see the latter fly in a short while later in another aircraft. No names, no pack-drill — but the Club sympathetically understood, since the pilot in question has been known for some time to suffer from a disease, so far incurable by leading doctors and specialists, which ordains that whenever he sees an empty glider on a soaring day, he feels an obsessive compulsion to get in and go!

Finally, we are pleased to record the steady progress of our Instructor, Bill May, after his recent accident, and we hope it will not be long before he is out and about. B. F.

DERBYSHIRE & LANCASHIRE

A busy time for Camphill. 1,300 more launches by the end of June compared with the same period last year and 300 extra hours of flying. At the end of June, an advanced flying week for would-be Silver C and Gold C pilots, was blessed with some good weather. Over 20 cross-countries were logged, three Silver C's completed, and the C.F.I. came to earth after 435 kilometers of a 500 kilometer attempt.

One or two visitors, in search of five hours' duration, have gone home with a smile of satisfaction. The most noteworthy success being a Skylark 4 pilot who, with a moderate Easterly, soared in wind-shadow thermals, in the lea of our West-facing ridge, for 5¼ hours.

After a rousing party the T.A. left us having made an excellent job of levelling a considerable area of ground close to the hangar. Once the drainage and grass growing is complete there will be much easier access to the West-wind launch point, and a larger glider park. D. M. K.

DEVON AND SOMERSET

DUNKESWELL airfield, which has been used since the early days of the club, has recently been sold. Since we have been unable to negotiate a lease on the runways; a new site has been purchased at North Hill, about 1½ miles west of Dunkeswell. The new field is 108 acres, with excellent thermal and hill-soaring possibilities.

Our Chairman, Sam Tolman, has resigned and Dave Clayton (vice-chairman) has stepped into the breach at this very difficult time. Our thanks to Sam for all the hard work he has put into the club during his term of office.

Our courses this year have been fully booked and, in spite of the weather, most have had their full quota of launches. The morning and evening courses for club members at weekends have been extremely well attended this year, we sometimes wonder if our instructors ever sleep!

The arrival of a new Skylark 4 has slightly eased the queue for the two club Swallows at the weekends. Our Tiger has been at Exeter, having a C. of A., but is now back home, resplendent in red and blue.

There is a lot of hard work to be done at North Hill before we move in next spring, but with security of tenure we have very much to look forward to in the years to come. S. N.

DORSET

FLYING activity recommenced at our new site on Good Friday and although the weather has not been particularly good this year, some interesting flights have been made locally in sea-breeze fronts. The two separate weeks devoted to Silver C hunting drew blank — in England — but in Switzerland Graeham Morris and Gil Turrell caught Silver C duration. Congratulations are due to Graeham Morris and Joe Linee for their respective Silver C's; to Terry Linee and Tom Tomsett for their solo and C Certificate flights; to John and Shirley Purchase, David Taylor to Roger Woolway and David Wilkes and Ted Whyborn for their solo flights; who converted from Tiger Moth to Swallow and last but by no means least congratulations to Margrit Schneider, who converted from gliders to Tiger Moths on her 21st birthday.

In May we had to say goodbye to Colonel Cockle at the A.G.M. but we

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hope that the Life Membership we have given him in appreciation for the work he has done for the Club during his period of Chairmanship will be an incentive to visit us often. Pete Baxendine has been elected to sit in the Chair but one cannot say he actually "sits". There could not be a more active Chairman anywhere.

In June we obtained permission to use a large building as a hangar and another smaller one for a clubhouse, the latter should be a bit more commodious than the faithful but rather small caravan.

KENT

THE party held at St. Julians on 10th July was a great success, and in spite of rather chilly weather several members ventured into the swimming pool and bravely declared that it was warmer in the water. The next festivity arranged by the social committee is to be a barbecue at Challock in September.

In the past eight weeks, Alf Coley has flown solo and Pauline Dunk, Keith Lester, Tony Powsey and David Illenden have had soaring flights for C certificates. Peter Beechey has completed his Silver C with the height leg, and Silver C heights have been claimed by Mike Honey, John Burt, Cyril Whitebread and Ken Smith. Joanna Dannatt, Mike Honey, Peter Kingsford and David Brown have all flown the duration leg.

Recently, a dozen or so members, led by the C.F.I., Roy Hubble, have visited Borkenberge in Germany, where a number of clubs are based. Their stay was much enjoyed by all who went, and the hospitality they received was greatly appreciated. P. B.

LAKES

WHEN the Annual General Meeting was held in the new clubroom at Walney on 18th July the assembly was large enough to tax the seating capacity to its limit.

The Chairman read a letter from the President, Lord Lonsdale, regretting his inability to be present. This prompted several speakers to recall with enthusiasm, and for the benefit of new members, the active interest our President has always shown in the Club from its inception. It was agreed with acclamation that the sentiments of the meeting be communicated to Lord Lonsdale, and we are gratified to report that the Secretary has since received a most cordial reply indicating our President's continued support and assistance.

Ernie Dodd was re-elected Chairman, and Ron Reid has agreed to undertake the duties of C.F.I. for another year. Rosalie Allen and Elma Hoole continue as Secretary and Treasurer respectively.

In our last notes we reported something of a hiatus in flying achievement due largely to preoccupation with the clubroom and other urgent matters. Sid Wearing shook us out of the doldrums with 5 hours 20 minutes over Ireleth to achieve the second leg of his Silver C. Gill Haslam kept him company for five hours on the same day, and Gill Scurrah has notched a C flight in the Tutor. This, incidentally, is the Club's first Tutor C at Walney, although Ces. Batty failed by a narrow margin only a few weeks earlier.

The diesel winch is now running in double harness with the old veteran, thus permitting the use of two cables with a somewhat improved launch rate. With two sound winches, the next task seems to be elimination of unnecessary

cable and 'chute wear. As "Punch" once remarked, "It ain't the 'unting that 'urts 'un. It's the 'ammer, 'ammer, 'ammer along the 'ard 'igh road." It appears that this problem with macadam is still with us and the appropriate committee will have to don its thinking cap!

We have received return visits from John Young and Derek Sandford, both of them looking extremely fit. It is always a pleasure to welcome old friends at The Lakes. F. G. R.

LASHAM

WE have sold our winches and all launches are now carried out by auto-tow or aero-tow. By using the two tow-car method, we have increased our launch rate, thus allowing us to cope with many more pupils and early solo pilots than before. Four Tugmasters are used for the aero-tows and up to the end of July we had completed 4,000 as compared with 7,000 for the whole of last year. Wire launches are slightly down at 10,000 to the end of July as compared with 17,000 for the whole of 1964.

The high-performance soaring side of Lasham is growing apace. The milk runs which produce Silver and Gold legs for distance are now well established and many more Gold legs have been flown than ever before despite a poor summer. Pilots are encouraged to practise triangles of varying sizes to give them experience of speed flying. The School, which operates T-49s, a Blanik and Swallows appears to be slightly under-patronised although courses continue to be fully booked.

Roy Smith has taken over as Chairman from Alan Freeman. Alan is the financial genius who completely reorganised the structure of Lasham and managed to put it on an economically viable basis. Luckily he has agreed to stay on the Committee so that his experience and expertise will not be lost.

Several new private owner groups have appeared this year, including the Burns's 17-metre Austria SHK and two Dart 17's — one with the latest status symbol for would-be pundits — the retractable wheel. The latter, which belongs to the Carrow syndicate, is an absolute honey to fly.

The Air Scouts National Camping site now boasts a four-engined York which is used as a bunkhouse. Their T-21 is being worked very hard as they have managed to persuade Laurie Bittlestone to spend most of his time at Lasham, which has meant many more Scout courses.

Finally, the radio saturation of Southern England looks like becoming a fact judging by the number of VHF sets to be seen around the place. There is talk of a powerful ground station to compete with "India Charlie" so that home pilots and visitors alike can call up our base for weather, turning point and other information. Mutterings in the bar suggest that a putting green or croquet lawn might be provided in front of the clubhouse to keep wives happy and the ladies' bunkhouse is at last going to have a face lift. "Gliding in comfort and joy?" W. K.

LEICESTERSHIRE (Rearsby)

FIRST of all, congratulations and very best wishes to Heather Atkinson and Dimitri Zotov on their marriage on 7th August. Heather is a C pilot and Zot, in addition to being a first-class tug pilot, is also a sailplane pundit. Many happy landings in the future to them both.

Now, apologies, for a mistake in our last report. It was John Whiteley who was last seen heading North-east after his Silver distance; not John Willett. Sorry Johns.

Actually, a few weeks after J. W.'s flight to Grimsby he helped Yours Truly and fellow syndicate member, Jim Hubbard, on our "Silver" retrieve. This took nearly six hours and was from a hayfield below Nether Broughton ridge; the ridge that wouldn't work. It's not a very long walk from Rearsby, in fact.

John's car was stuck in eighteen inches of glorious mud; "Jacob's Ladder" — Olympia 308 — had to be carried over three fields; the nearest house was almost a mile away; the nearest tractor three miles and it took an hour of tractor pulling to remove the car from the mire.

We now have our Capstan open trailer and look forward to having cross-country dual-instruction flights in future. The Capstan is giving excellent service: our own club height record with it being 8,300 ft.

1965

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P Z L FLYING INSTRUMENTS

At last our second syndicate Ka-6 has arrived — by sea and rail after all. Unfortunately, the planned tow back by air from Germany went totally wrong when the tug aircraft crashed on landing there. Don Cameron, our chief tug pilot, Tony Glover and Dorian Bailey were all injured but are now recovering fast.

From mid-year Peter Martin has become our new C.F.I. Vic. Carr is having a well-earned rest after having been our C.F.I. since club formation five years ago. Vic. is now Vice-President.

Drinks all round are due from Spike Glover, Brian Lavery, Eric Knibb (solo-ists); Tom Dawe, Spike Glover, Dave Tilley (C Flights); Dennis Heathcote, John Whiteley, Bernard Fitchett (Silver C's); Peter Martin (Gold C and Diamond Goal); Vic. Carr (Diamond Goal).

We are now having occasional visits from pilots wishing to gain aerotow experience and, as our policy continues to be aerotow only, we are pleased to welcome visitors any Saturday or Sunday. For the first time in a long while we also have a limited number of vacancies for all classes of membership.

D. A.

LINCOLNSHIRE

THE chief topic of conversation at Swinderby is our new pulley launch — a magnificent precision job produced by Arthur Strickson, Allan Peck and Allan Wall. This team of experts quickly latched on, and within a matter of weeks produced the goods. Our first try-out produced 58 launches in 4 hours. At one time three aircraft were aloft simultaneously, and this on a non-soaring day. It would seem that our launch rate will be raised by at least 50%, indeed the C.F.I. was heard to be optimistically quoting 200 launches per day. In which case shall we need organised stand-easy periods, as the pace in ground handling is fast and furious?

Soaring conditions have been poor and we are still looking for the good weather which must come. However, Bob Walker, Roger Goodchild, Arthur Strickson, Allan Peck and Allan Wall have gone solo to bring our total of A and B's for the year to 20. Tony Mawer flew his C in the Grunau Baby and Don Studholme and Mike Moss similarly in the latter's Olympia.

Our chairman, Jack Nicoll, goes on record for achieving the club's first Gold height leg — well done Jack! A trip to Sutton Bank with the Skylark 3F secured this and, incidentally, the duration leg to complete Jack's Silver C. E. B.

NEWCASTLE

THERE has been little in the way of cross-country flying due to the unsuitable weather with which we have been dogged at week-ends. In this respect, 1965 has proved to be a very poor year indeed, and on the few occasions on which there has been good Cu about, we have been grounded by high winds. Altogether very disappointing.

However, we have continued to circuit the T-21, T-31 and Tutor, and there have been a few hill and wave soaring days to make up for the poor thermal season.

Several of our Olympia pilots have been getting in some aero-tow experience at the club's old site — Usworth Airfield, Sunderland, now the home of Sunderland Flying Club. For many of the pilots this was their first taste of aero-tows, and our C.F.I., Norman Revell, flying the Sunderland Club's Tiger Moth, must sometimes have been amazed at the gyrations of the Oly. behind him! These would undoubtedly have been much worse, but for the check flights very kindly carried out by Doug Collinson in his T-49.

Further site development has been taking place to extend our short soaring runway. This will increase its length to about 2,000 ft., but more important, it will give a reasonable area for handling and parking gliders, together with a better approach and landing area.

Finally, our sincere congratulations to June Barker and George Rowden, due to be married in September. We wish them every happiness. B. W. B.

NORTHAMPTONSHIRE

THE acquisition by the Club of a Sky sailplane has enabled cross-country flights to be attempted this year without depleting the number of club aircraft too seriously.

Brian Brown flew to Wittering to add his Silver C distance to the height leg he already has. H. Purser, in his own

Olympia, has obtained his complete Silver C since May. David Luddington has his Silver C height and P. Martin his distance. J. Richardson flew two cross-country runs on the same day but just failed the required distance.

I. J. Deas, F. H. Feneley, J. Tysoe have gone solo and D. A. Joyce, I. J. Deas, I. Ozols, F. H. Feneley and B. Marrison have obtained their C's.

The Club has just completed its annual flying fortnight — the first week under Brian Brown and the second week under C.F.I. P. Bisgood. The weather was reasonably kind.

Evening flying has taken place on most Thursday evenings this summer and passenger flights have also been made available at times.

The purchase of a tug and a T-49 are now seriously being considered to improve cross-country flying and give advanced training. R. N. W. K.



Jim Palmer with Charles Letts of the Northamptonshire Club in the cockpit of the recently acquired Sky.

OUSE (Rufforth)

SILVER C badges and legs are now becoming commonplace in the club and there's a noticeable increase in the "rounds of drinks" being bought in the local. John Taylor completed his badge by obtaining duration at Sutton Bank in the Skylark 2B and Bob Plane gained his height leg to complete his badge, during a week's course at Doncaster.

Richard Boddy recently provided some excitement when he landed the Skylark on the racecourse. However, he made amends by gaining his height later in the day. John Taylor, not to be outdone, joined Richard's thermal in the Swallow and promptly disappeared into cloud. This flight proved to be the nearest to Gold C height yet, easily beating the club record with a climb to 9,800 ft. Richard also did his 5 hours duration at Sutton Bank in the Skylark.

The Skylark is now in and out of the trailer at every opportunity either from cross-country retrieves or visiting other sites. It recently re-visited Carnaby with newly promoted U/T instructor Tim Wray aboard — another Silver distance. Tim reached 9,000 ft. on this flight but already has his height gain.

Our new winch continues to function very well and we had high hopes of testing this with the Capstan when the National Coach, John Everitt, paid us a visit. Owing to inclement weather this was not possible, but instructors Geoff Bailey-Woods and Les Bellamy obtained their categories.

Amidst all the excitement, discussions and the planning of Gold C triangles by the pundits, Peter Thompson has soloed for his A and B Certificates. Well done Peter. G. L. B.

OXFORD

A year which produces only 3% more flying from an increase of 13% more launches for an equivalent period of our previous "worst" year, cannot be expected to produce stories of epic achievement, but we have not been idle.

To off-set the loss of petrol tax rebate, a diesel tractor has been introduced for cable retrieving which, in addition to effecting a long-term saving provides the unforseen side-effect of enabling future Silver Duration aspirants to tackle the task with a pre-conditioned aft-end.

The new winch continues to make progress and luxury is now associated with this project. With cushioned comfort and heating for the colder day, we may be the first club to have a "Driving List" for winch operators.

On the flying side, Dick Gates, Chris Dawkins and Roger Coppock have soloed, the latter gaining his C by a handsome margin, in common with Bill Cook.

Our ex-Chiltern Club trio, Messrs.

Geisha, Swift and Topp have all graduated to the Olympia, with John claiming Silver height.

Peter Brooks, Grahame Smith and Chris Chave have also converted to keep the Olympia very busy and with Bob Collisson have also claimed Silver height. Trevor Moss now flies our Skylarks.

Silver Badge tasks have been completed by Dave Roberts, who "ridge squatted" his Olympia over Edge Hill, by Stan Green with a quick flight to Lasham and by John Pratelli, who completed all three tasks in Skylark 3F within eight days with two Silver heights, 5 hours 8 minutes and 40 miles to Henlow.

If the Hon. Sec's. tendency to go "au vache" is contained, future excitement can be expected only from the imminent arrival of a Dart 17 for the Laurie, Adams, Pratelli Syndicate, the possibility that their Skylark 3F may be purchased for the Club and the acceptance trials for the Keith Plummer de luxe two-drum winch.

L. A. S.

SCOTTISH

AFTER the World Championships, we were pleased to welcome a number of foreign pundits at Portmoak, notably Al Parker, U.S.A., Ted Rudnick, S. Africa, and Dick Georgeson, whose magnificent slides of wave flying in New Zealand made interesting comparison with our local efforts. It is encouraging to know that they have the same problems out there as we do!

The wave has not been very active recently, although Jimmy Rae reached 12,500 ft. one day when everyone else was thermalling, and Frank Reilly took the closed T-21 to 13,000 ft. one evening — without a variometer. The following week Frank completed a thermal flight to Dumfries in the Skylark 3. Other recent cross-countries include a number of 50 km. attempts, some of them successful, but the only people to cover the distance already have their Silver C's. On 1st August, Gordon Glennie overflew us in the course of a 100 km. out-and-return from Arbroath, the first time the return trip has been made from either site.

Our new diesel fluid drive winch has been completed and is now undergoing trials. Results so far have been very promising, and we look forward to seeing it in regular service in the near future.

B. M.

STAFFORDSHIRE

IN spite of the baleful prophecies of the weather men this summer is turning out to be the best we have ever had at Meir. Most of the club Olympia pilots have had excellent local soaring flights and a few more cross-countries have taken place. Barry Ward managed his Silver distance to Syerston at the second attempt and got his height on the way. John Greig has also had a go but came down after 16 miles at Ashbourne. The profusion of airfields in the milk run direction from Meir has led to the situation where none of our recent Silver distances ended in an ordinary field. The club height record was recently hoisted to 9,200 ft. by John Kaye in the club Olympia, an encouraging sign for the aspirants to Gold C.

We have had several visitors to the site who brought their own aircraft to sample our towing facilities and none have failed to soar in our conditions. Why not visit us sometime and see for yourself, a warm welcome is assured?

A. W. H. L. W.

SURREY

ALTHOUGH the weather has been generally poor this season, weekends have often been much better than average, and we are able to report a notable bunch of achievements. One of our youngest members, Chris Lovell, went round a 300 km. triangle Frome-Banbury early in the season; unluckily it turned out that he had taken his turning point photos from the wrong angles, and his claim for Gold distance and Diamond goal was disallowed. Far from disheartened, he went round the triangle again the last weekend in July, and this time got his pictures right. Just before World Champs practise week John Cochrane went round the Frome-Banbury triangle, averaging 35 m.p.h. without really trying. That week Gerry Paddick and Raouf Ismail also collected Gold distances and Diamond goals in the same way. Tony Burton and Julian Temple took tows to Salisbury one day

in July, and both flew the 300 kms. to their declared goal at Great Yarmouth. John Wilks tried the same thing early in August but got sunk at Harlow, Essex, after 140 miles. During the same period Alan Purnell flew a 240 mile course to Shrewsbury and return; later he went round a 300 km. triangle Ross-on-Wye-Bicester.

To date this year, eleven people have flown their Silver C distance, and ten have got their five hours, many of them completing their badge. The "Collector's Plate" has shuttled to and fro between Lasham and Dunstable with monotonous regularity, and has certainly stimulated cross-country flying on those days when the weather has not been good enough for more ambitious tasks. Are any other clubs within reasonable reach of us interested in setting up a similar institution? P. G.

ULSTER & SHORTS

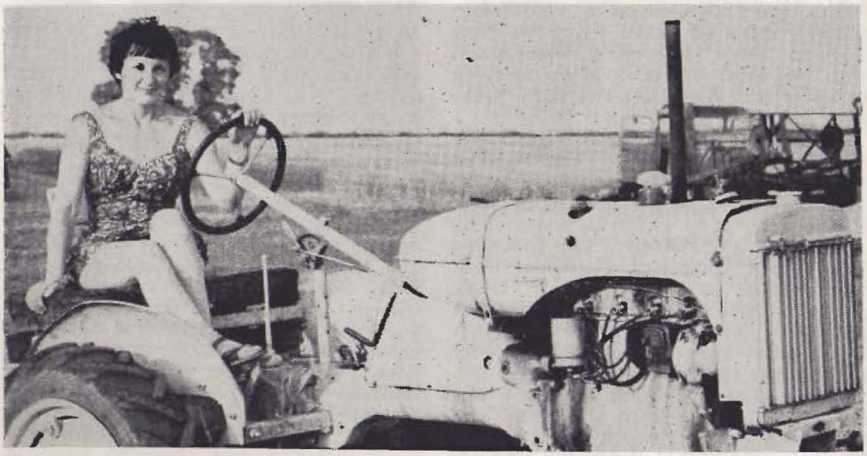
FLYING at Long Kesh has been in full swing every week-end.

Our main news is the introduction of auto-tow pulley launching; this has been in operation since June and has worked like a charm from the first day. We are indebted to our friends in Dublin for the pulley design, tow car "mods', and advice on the specification of piano wire. Advantages over conventional auto-tow on our 4,800 ft. runway, can be summarised as follows: higher launches with an average increase of 35%; faster launch rate, up from 5 to 8 per hour; and lastly economy as petrol consumption is down by an amount corresponding in value to the loss of rebate. Disadvantages are the tendancy of the high tensile wire to kink after a break under load, and a greater rate of cable parachute wear. Radio communication between aircraft and towcar is of great assistance and here Colin Dews, of Pye Telecommunications, has worked wonders.

Among our first solos this year have been George Toome, Jim Wallace, Harvey Bicker and Gerald Lowry. The Eon Baby and Skylark 2 have been putting in a useful amount of soaring in our local area, however, the amount of map reading indicates the likelihood of some Silver C distance legs in the near future.

Negotiations are in progress with our local Ministry of Education for a grant towards the purchase of a modern two-seater, we await the result of our application with bated breath, as the decision is likely to have a considerable effect on the club's future.

A recent visitor to our site was Baron Von Richthofen (nephew of the World



Ladies of the Worcestershire Club do not confine themselves to making tea. Here Betty Lowe "flies" the cable retrieve tractor.

War I ace). He took one look at the T-31 and declared it more appropriate to his uncle's generation that his own!

G. M.

WORCESTERSHIRE

THE acquisition of a T-21 has been the biggest single event to report in the last few weeks. This has made quite a dent in the two-seater list and taken the load off the T-31. By the same token it has, of course, increased the pressure on the instructors who have earned the gratitude of the whole club by their efforts. They have not yet had to resort to the use of any stimuli in order to keep them going but, when the aircraft are put to bed, the dash to the "Three Horse Shoes" shows that they are in need of some restoration at the end of the day.

The courses have been well attended and have produced several first solos and C flights. We are all looking forward to a week's visit from Ray Stafford-Allen with his Capstan and hope that the weather will enable us to take full advantage of this.

Work on the ground has gone on satisfactorily but a considerable amount still remains to be done, mainly on the hangar and clubhouse. Now that the two-seater position has improved, new members can be accepted and we expect our numbers to increase substantially during the next few months.

R. C. S.

SERVICE NEWS

ALDERSHOT (R.A.F. Odiham)

AFTER four issues with no mention of Odiham your scribe has been aroused from his lethargy and reports that after, for various reasons, an enforced cessation of activities for about four months we started flying again in February. With service postings the trained nucleus that had been operating last summer had been broken up and the laborious business of getting another nucleus together takes time. In particular we miss instructor Norman Smith. Operations have not been anywhere near as intensive as could be wished but we have not been unsuccessful. Silver C heights have been gained by Bob Maclagan, Brian North, Brian King and Major Lucas. Bob Maclagan and Brian King have also gained five-hour legs in thermals flying from Odiham. We are now looking forward to good cross-country days at week-ends with the wind blowing *away* from the London and Gatwick control zones.

If anyone wants to sharpen their cutlery or winch guillotines then may we recommend the runway surfaces at Odiham. Their new surfaces are as good as carborundum. They have played havoc with our auto-tow cable and we have temporarily suspended auto-tow operations while we have a rethink on what would be suitable cable.

R. A. E. D.

EAST MIDLANDS (Swinderby)

THE weather this year has cut down our cross-country soaring from Swinderby, perhaps last year's results are remembered too easily. The best effort in the period under review was by Con Greaves, who flew 240 kms. in the Oly. 463. "Kingers" Guest followed up this effort with a 170 km. flight, and Barry Dobson, visiting Bicester, flew 140 kms. from there.

Three members have completed their Silver C's, Barry Cohen, Tony Leroy and John Shorter. This was with the assistance of the ridge at Camphill, where we were made most welcome.

C Certs. go to Ivan Farmer and Bunny Haslett. A and B's to Dave Ireland, Harry Johnstone, Jeff Keast, Colin Aber, Olga Dobson and Pat Styles. The last three named were sent solo on the same day, the first time two lady members have been sent solo in such a short space of time. We now have four husband/wife teams of pilots in the club, the motto seems to be if you can't beat 'em, join 'em!

We have just received our Olympia 2, after a long spell of absence being repaired. Several members who joined the club after its departure are now feverishly cramming Grunau circuits in order to qualify to fly it.

The bar is doing a good trade, and provides an excellent boost to our funds, according to our happy-looking treasurer.

J. G. W.

FENLAND (R.A.F. Feltwell)

OUR flying activities for the months of July and August were unfortunately marred by an accident to our 28-year-old Gull 1. It was spun in and destroyed by a visiting instructor, during early August. Fortunately he escaped with comparatively minor injuries, and is making progress in the Royal Air Force hospital at Ely.

On the brighter side, we have had two complete Silver C's during August. Ted Nagy, one of our U.S.A.F. friends, and Mick Garnett, who earns the distinction of being the first chap to be completely trained from ab-initio to Silver C standard from R.A.F. Feltwell. He has done this in 14 months.

Our chairman, Sqd. Ldr. Smith, completed two legs of his Silver C recently, namely distance and height. The same was flown by "Doc" Stocking, our U.S.A.F. friend who has now returned to the United States, and will be missed for his immense efforts.

C certificates have been flown by the following: Tony Shipley, Laurie Rowe, Johnnie Maxwell, Ron Bulpit, Dave Smeeton, Roy Heslop and "Stu" Powney.

Congratulations on attaining A and B standard to two of our lady members, "Teddy" Gibby and Liz Day. Also to Jim Sheldrake, Ron Allen, Jim Despain (A, B and C in the same day), "Fritz" Frost and Ron Jones.

A gold distance and diamond goal was attempted by Colin Elliott, who unfortunately fell out of the sky after covering 207 kms. and being airborne 6½ hours.

C. R. E.

FOUR COUNTIES (R.A.F. Spitalgate)

BARRY GOULD, who has been C.F.I. since January, 1963, has now handed over this post to Geoff Barrell, and we all have reason to be grateful for the effort he has put in on behalf of the club. He took over when the future of the Club looked ominously uncertain, and under his able guidance formidable operational, administrative and "political" problems have been overcome. We hope that we will continue to see him often at the Club.

We are sorry to have said goodbye to Dick Barrett, who ably represented the Club in the Oly. class at the Bicester Easter comps., and to Ian Smith, both of whom have been posted. Our improved flying statistics so far this year have in great measure been due to their effort. Fred Slater's departure to Aden has also been a great loss to the Club and we now hear that we expect shortly to lose Ian Ascroft, Wint Smart and Wally Pearse, all of whom have done stalwart work on the aircraft and ground equipment. We are also indebted to Martin Hands and Fred Mullen, who, owing to imminent postings, have handed over their jobs of Treasurer and Secretary to Roger Kerridge and Mike Baker.

Although many promising-looking days have clamped, we can show a good tally of effective soaring. The Silver milk run to Skegness or thereabouts has been successfully used by Len Wilkes and Bernie Morris, who both collected height on the way. Geoff Argent varied it slightly by going to Louth, and John Gates went south to Upwood; they have also gained their heights. Ian Smith obtained his 5 hours in thermals over the home site to complete his Silver C and Simon Morrison on leave from Aden achieved height to complete his.

Recently, a small party took the Oly. to Sutton Bank, where Bernie Morris completed his Silver on the hill, Mike Baker completed his with distance and height on a flight to Filey, and Geoff Barrell took a wave to 11,000 ft. C's have been achieved by Fred Mullen, Pete Moores, Barney and Dinger Bell, and first solos by Messrs. Sargent, Barnes, Calvert, Oliver, Little, Kerridge, Plews, Riches and Tomlinson.

Earlier this year, a small piece of Club history was made when the T-21 left the site on its first cross-country, aiming to reach N. Luffenham for a major. The goal, however, was not reached, a landing being made at Cottesmore.

On Whit-Monday, several Club members visited South Cerney to see the world's most exotic sailplanes, only to discover on arrival that Ann Welch had sent them all up to Spitalgate! However, for those who had stayed at the club, it was a memorable day.

S. N. H.

FULMAR

BY the death of Alastair Raffan on 3rd July at the age of 36, Fulmar Gliding Club lost one of its keenest and best loved members. He was a partner in the family knitwear business at Fochabers, where he was well known and respected by the community.



Alastair Raffan.

A devoted family man, he nevertheless found time for many hobbies, including ornithology, art, photography and handicraft. His enthusiasm was boundless and he aimed at nothing short of perfection.

We will long remember his courage and absolute refusal to submit to the insidious advance of leukaemia despite crippling exhaustion right to the last. In his own quiet, humble way he set us all an example of true greatness which we will not find easy to emulate.

His ashes were scattered from the T-21 near the mouth of the River Spey, where he spent many happy hours bird-watching.

Our deepest sympathy goes out to his wife, Mary, and his two young children, Alastair and Fiona. H. D.

(R.N.A.S. Yeovilton)

THE sea-breeze front seems to be the "with it" feature of the 1965 Soaring Season. Yeovilton, situated in the centre of the Somerset peninsula, almost claims to have two tame sea breeze fronts of its own. Certainly they are the dominating feature of our local soaring and depending on how far inland the front penetrates soaring conditions may be very good or completely stable.

The Whit-weekend produced two days with a classic front. Ray Foot climbed to 10,200 ft., Robbie Robinson to 8,000 ft. and Derek Jesty topped them all with a climb to 11,500 ft. for his Gold height.

Derek Jesty also flew Ray Foot's Skylark 3 for his Silver duration at the end of April and completed his Silver C. On the same day Nick Humphreys, flying the Club Olympia, was defeated by the onset of the sea-breeze after 4 hrs. 40 mins. Ray Foot flew his Silver duration again, actually had it registered, and with it completed his Silver C. Nick Humphreys later soared for five hours on 31st July to complete his Silver C.

Peter Moorehead, Tony Atkinson, David Balmforth and Tony Bamford have gone solo for their A and B certificates, while John Hawkins, Ian Milne, Stephen Woodward, David Balmford and Ian Monkhouse have soared for their C's.

On the 13th June the flying took on an Italian look when Keith Hooper flew his new M-100s for the first time, having sold his Olympia 2. This Standard class glider seems to cope well with English thermals and on the following weekend Keith flew to Middle Wallop for his Silver distance.

Portsmouth Naval are generously lending us their R.N.G. & S.A. Skylark 2 for some weekends during the summer, which will enable us to advance suitably qualified pilots. M. H. L.

NIMBUS
(Geilenkirchen, Germany)

SINCE we last wrote some time ago, the club has lost many stalwart members, including Sam St. Pierre, "Tiny" Whitney, "Black" Phipps, John Hart, and not least "Paddy" Connolly. The constitution of the club has changed radically and Sqn. Ldr. Crockatt is now Chairman and Wilf Pickles, complete with wooden throne, is C.F.I.

Several members have seen a conglomeration of oil, grease and mud walking around the hangar. After a few discreet enquiries we discovered it to be our newly appointed M.T. member,

"Yorky" Kitchener!

1964 was a good year for Nimbus, in which the club amassed 5,145 launches, 802 hours and 4,070 kms. cross-country, 20 A and B's, 14 C's, 11 Silver legs, 1 Silver badge, 2 Gold badges and 2 Diamonds for goals. During the winter our fleet of a T-21, 2 Grunaus, Olympia 2B and Olympia 463 took on a standard colour scheme of white fuselage and red wings. At the other end of the airfield we have a recently obtained Pfeifer winch and our faithful Roder winch. Our "Connolly" converted Volkswagen is giving us trouble-free cable retrieving.

The weather this year has been abysmal and if any club has a Sunderland in flying condition for sale let us know, we can then do aero-tows instead of buying a motor boat to retrieve cables. Despite the elements, however, "Andy" Price and "Yorky" Kitchener have managed to achieve their 5 hours' duration, the latter flight through the co-operation of the woodworm in "Len" Tanner's Minimoa. Don Morris did 57 km. cross-country in a sizzling 30 minutes in the Olympia 2B, so completing a well-deserved Silver C.

We were well represented in the R.A.F.G. competitions and we carried away the pot, ably gained by Len Tanner and "Black" Phipps, jointly flying the Olympia 463. M. L.



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.*

CANADA

THE National Championships, held at Pendleton, 29th June-8th July, were won by a former champion, Willi Deleurant, of the Toronto Soaring Club, flying a modified Standard Austria. Second place and the Team Championship went to Mike Stoten and Ted Henderson, of the Montreal Soaring Council, also flying an Austria. Sixteen sailplanes were entered, about half of which were there for the full 10 days. The list was kept down by a number of factors — the U.S. Nationals being held at the same time and in the Eastern States; the Internationals being this year; and lack of motels, etc., near Pendleton.

The weather was superb. We had quite a tent-and-trailer city and meals were served in the old "carpenter shop" building by a group of dedicated members and friends. For perhaps the first time in a Nationals, cold drinks and refreshments were regularly available near the flight line.

The flying operation was hampered a bit by the lack of two of the tow-planes expected to be there. Tiger Moth EMT was pressed into service, though, and one Montreal tug.

There was only one bit of damage to a competing sailplane — Glenn Lockhard put a kink in the tail of the Foka on the 5th contest day and was out for the duration. And he was leading at the time, too.

The Musger 23 suffered minor damage in a local flight, while avoiding ground traffic on landing.

Leo Smith and John Soulsby com-

pleted the second Gananoque out-and-return, gaining their Diamonds for Goal Flight. DAVE KING

Contest Details

JUNE 29TH.—Only one pilot exceeded 10 miles — Glenn Lockhard, 49 miles in Foka. No contest.

JUNE 30TH.—100-km. Triangle via St. Andre and Hawkesbury, 69.7 miles. All finished the course; Mike Stoten, W. Deleurant and L. Smith went round twice, Stoten cutting off 2 minutes, Deleurant 5 and Smith 6. Leading speeds: Stoten (Std. Austria) 47.5 m.p.h.; G. Lockhard, 41.0; L. Smith (Skylark 3B), 34.6.

JULY 1ST.—Out-and-return Gananoque, 187 miles. Strong convection; first departure 11.06 hr.; fastest time 4 hr. 44 min. Leading speeds: T. Henderson (Std. Austria), 39.5 m.p.h.; P. Mortensen (Musger 23G), 38.2; Lockhard, 34.4.

JULY 2ND.—Out - and - return Hudson, then distance through Ogdensburg, N.Y. Leading distances: Lockhard (Foka) 100 miles; Deleurant (Std. Austria), 93; R. Gairns (Ka-6), 85.

JULY 3RD.—1½ hours convection predicted: 37-miles downwind goal race to Lachute. Three completed the course: Deleurant at 74 m.p.h., E. Smith (Skylark 3B) at 61.7, D. MacClement (Ka-6) at 43.5.

JULY 4TH.—200-km. triangle via Demptville and Lancaster, 135 miles, then optional extension. Good convection forecast until late evening. Leading total distances: D. Webb (Skylark 4), 225 miles to St. John airport; M. Stoten (Std. Austria), 159.9 miles; L. Stanley (Ka-6), 135 miles.

JULY 5TH.—Started early with good convection which deteriorated sooner than expected. Free distance. Leading: T. Henderson (Std. Austria), 160 miles to St. Sophie; L. Smith (Skylark 3B), 130 to Three Rivers; S. Bieniada (Skylark 3B), 108 to St. Bartholeum.

JULY 6TH.—Out-and-return Gananoque, 186 miles total; good convection, N.W. wind. First start, 11.56 a.m.; L. Smith landed 7.01 p.m. Leading speeds: Stoten (Std. Austria), 33.7 m.p.h.; Boudreault (Skylark 3B), 33.1; Soulsby (Skylark, *hors concours*) 32.4; Deleurant (Std. Austria) 28.6.

JULY 8TH.—Strong westerly wind which proved too difficult for the proposed upwind race to Rockliffe airport. So an out-and-return race to Maxville, total 37 miles, was selected, but nobody got away.

Final Results

Pilot(s)	*Sailplane*	*Points*
W. Deleurant	Std. Austria	5181.4
Stoten & Henderson	Std. Austria	5177.0
Boudreault & Bienada	Skylark 3B	3893.7
T. L. Smith & E. V. Smith	Skylark 3B	3715.6
G. Lockhard	Foka 246	2740
Stanley & MacClement	Ka-6	2655
Mortensen & Johns	Musger 23G	2405
Bisscheroux & Wohlleben	Skylark 2	1691

Followed by Jonah (Skylark 4), Gairns (Ka-6), Wernburg (Ka-8), King & Thompson (1-26), Kovacs (Skylark), Wimberly (Skylark 4), Maskell (1-26).

Webb competed on one day only and scored 1,000 points.

DENMARK

OUR National Championships were run at our gliding centre at Arnborg for the first time. We were a bit excited to see if we could cope with 38 gliders at this much smaller aerodrome after many years at Vandel, which is a NATO standard field, but all went well.

However, weather was a good deal worse than at South Cerney. We know July is — or may be — a bad month, but had for several reasons (among these the World Championships) fixed ours from July 4th to 18th.

By flying in weather conditions in which we would not have dreamed of making distance flights some years ago, we managed to get 7 valid contest days, but what days! Many had one or more days with zero points. And even if six of the tasks were speed tasks, only 3 competitors on one day and 7 on another got any speed points. It was mostly a matter of staying up.

Nevertheless — even if some better weather might have given other results further down the list, the result at the top was no surprise. Niels Sejstrup became Danish champion for the 4th consecutive time with 6,626 points out of

7,000 possible, more than 2,000 points in front of Ib Braes, who was second with 4,481. Both flew Ka-6CR, as did No. 3, Carsten Thomasen. Niels Lindhardt was 4th in a Ka-8 (which was a very good type to fly in this weather), and Poul Harry Nielsen 5th in a Vasama.

Sejstrup won the free distance task on 5th July with 148 km., while Dyhr Thomsen in an East German Libelle won the next day's speed task over 101 km. to Odense. Thomasen won a 150-km. out-and-return race to Arhus on 7th July. A good deal of the flight was done along a sort of rain front parallel to the course line, but few got connection with it on the way home. However, 7 did.

A 115-km. triangle on 9th July was won by Svend Ravn with 81 km., and another out-and-return to the south on 14th July only just became a valid distance-along-line day, won by Poul H. Nielsen.

High-pressure weather promised better conditions on 16th July, but again brought the usual 2,000-ft. cloudbase, so nobody reached the goal at Toender at the border of south-west Denmark. Sejstrup won with 112 km. and need not have flown the last day, but he did and won again. This was a 160-km. triangle in nearly cloudless weather but too strong a wind. Sejstrup nearly reached the second turning-point after 93 km.

The short distances generally meant that the last few kilometers gave a lot of points, and too many stretched their last glide too far with the result of too many crashes in field landings.

Next time the championships will not take place in July! PER WEISHAUPT

Leading Total Scores

Pilot	*Sailplane*	*Points*
N. Sejstrup	Ka-6	6626
I. Braes	Ka-6	4481
C. Thomasen	Ka-6	4385
H. Lindhardt	Ka-8	4140
P. H. Nielsen	Vasama	4136
J. Friis	Ka-8	3843
B. Skovgard	Vasama	3728
D. Thomsen	Libelle	3693
L. Midtboll	Foka	3394
E. B. Madsen	Ka-6	3238

Types taking part were: 13 Ka-6, 6 Ka-8, 4 Vasama, 3 M-100, 3 Mucha Standard, 2 Ka-7, 2 Lehrmeister, 1 each of Foka, Libelle, Lis, Zugvogel.

EAST AFRICA

WHILST on vacation in Kenya during July, we paid a visit to the East African Gliding Association site at Nakuru, about eighty miles north-west of Nairobi. The club is situated in the African Rift Valley, only a few miles from the beautiful, flamingo-haunted Lake Nakuru, which from the air appears as a sea of rippling pink birds, with the occasional patch of water showing through.

The airstrip, clubhouse, and generally most of the amenities at Nakuru are shared by the gliding club and the local power-flying club, who appear to live together on a very amiable basis — and both flying left-hand circuits. The gliding club membership is small by British standards, with an active membership of about ten, although some of the power pilots are now sampling the delights of "quiet" flight, and a few of them have recently converted on to the Cadet. There are, of course, still the few with the "you wouldn't get me up in that thing" attitude, but everyone is willing to lend a hand when needed.

The club fleet at present consists of a Cadet and a Tutor, although a new two-seater is expected in the relatively near future. The launching is by an exceptionally good winch, built around an American vehicle, and using solid wire. As with most clubs, there are the attendant cable breaks, of which, needless to say, we had our share during the weekend, but were still able to have a couple of very pleasant flights in the Cadet. The lift was there, but all the Cu were building in the hills at the edges of the valley, and quite out of reach of a Cadet, even from a 1,500-foot launch.

The scenery in this area must be amongst some of the most beautiful in the world, with mile upon mile of rolling grassland and hills right up to the escarpment which bounds the Rift Valley, with, on a clear day, from the air at least, the snow-clad summit of Mount Kenya visible to the east.

We would like to thank the C.F.I., Tony Hyde, for allowing us to visit the club and fly there, and Brian and Joyce for their kind hospitality.

BRUCE B. BISHOP
HELEN H. VALENTINE

GERMANY EAST

POOR weather allowed only 5 tasks during the 4th National Championships which ended on 6th June. The winner was again Bernd Nolte (Frankfurt) with 4852.9 points, followed by Werner Runge (Magdeburg), 4806.3; Adolf Daumann (Schwerin), 4694.8; Manfred Blauert (Berlin), 4484.5; Gerd Büttner (Magdeburg, aged 22), 4443.9. Among the visitors, Kmiotek (Poland) scored 4639 and Pieczewski (Poland) 4598. *Aerosport*

GERMANY WEST

WITHOUT any State support the sailplane industry produces about 500 sailplanes a year, with a turnover of more than 7 million DM. Half of them are exported. More than 3,000 sailplanes are now flying in Germany.

CALCULATED V. MEASURED.—At the 40th German aviation conference in Essen, Dipl.-Ing. Hans Zacher stated that between the prospective, calculated and measured performances of sailplanes tested by the Soaring Flight Division of the D.V.L., differences of 10% are often found, because the performances of actual sailplanes are reduced by corners, edges, slits and bad junctions. But pilots must know the actual performances if they are to plan their flights correctly.

NORTHERN REGIONALS. — Regional Associations of Hamburg, Bremen and Schleswig-Holstein took part from 27th May to 7th June at the "Hungry Wolf" airfield near Itzehoe in Schleswig-Holstein (9 miles N.E. of Elbe estuary). Owing to nearness to the coast, the weather was difficult to assess, and was often either much better or much worse than forecast. The Individual Class for pilots who had flown in Nationals, with 12 entries (8 Ka-6, 2 Ka-10, 1 Ka-8, 1 Hütter 301 prototype), flew 6 tasks; 130-km. out-and-return, 96-km. goal race, distance along 189°, 77-km. goal race, 89-km. triangle, 107-km. triangle. Maximum points per day varied from 604 to 775, and Franz, of Lübeck, won with 3.802 points. There was also a Team Class for the Nachwuchs (up and coming) which flew 5 tasks.

IRELAND (Dublin)

SINCE the last news appeared, our new training system has produced a crop of first solos and conversions. Congratulations to Graham Liddy, Peter Jones, Jerry Tierney and Louis Treacy, all of whom went solo on the Bergfalke two-seater.

For a month or so, we enjoyed the luxury of having 2 two-seaters in service at once, and are looking forward to having the Bergfalke in company with the Ka-7 again. Our new Ka-8 has produced two completed Silver C's already. Gerry Connolly completed his Certificate with 5¼ hours' duration (the hard way — in weak thermals!) and Gerry Stanley completed his with a cross-country trip to Portlaoise.

Most people here were well satisfied with our placings in the World Championships. "Not bad for a first attempt," they say, "but we'll do much better in 1967, of course!"

Our tug, Beagle Terrier "Mike Bravo", remains on the verge of admission to Baldonnel. Has any other Club, I wonder, kept a costly tug flying for a year, without ever using it at their home field? Ours has been tugging, and dropping parachutists, and just plain joyriding, around Kells, and Kilkenny, and Bantry, and Greystones, and Wicklow, and Collinstown, but never at Baldonnel (not yet, anyway).

Our radios have bogged down in a mass of technical difficulties with aerials, we have a film company making "The Blue Max" sharing our field, the expense of broken lights on the runway verges has our Treasurer on the verge of tears, and the Baldonnel thermals continue to elude even the "hot" ships! So why should we worry? "C. GARR"

(Clonmel)

CLONMEL Gliding Club is very fortunate to have been granted a loan of £500 from Aer-Lingus Irish International Airlines for the reconstruction and improvement of our runways. During the coming weeks we hope to have the Dublin Gliding Club with their new Ka-6 and Bergfalke, etc., testing new ground and air. We welcome all cross-channel visitors and machines to fly on

this exceptionally good ridge where some Irish records have already been broken.

V. CULLEN

ITALY

SOARING in Italy is supported by the State, writes Vico Rosaspina from Milan; there are premiums for Silver and higher badges, contributions towards the cost of sailplanes; the State provides tugs, hangars, flying fields and military personnel. The Italian Aero Club is responsible for the use and distribution of these. In Italy there are now 150 sailplanes and 800 active glider pilots. The most important centres are Varese, Turin, Milan, Bologna and Bergamo; the national centre, created by the Aero Club, is at Rieti. The officer pupils of the military flying course are taught at Rieti. Aviation sporting activity is predominently in northern Italy; there is very little in the south. *Der Adler*

NATIONAL CHAMPIONSHIPS. — These took place at Rieti from 2nd to 13th August. Final results, just received, show the following competitors leading in League 1:—

Pilot	*Points*
Jean-Claude Penaud	8,113
Walter Vergani	7,877
Ferruccio Piludu	7,339
Adele Orsi	7,079
Antonio G. Ferrari	6,992
Umberto Bertoli	6,752
Giorgio Orsi	6,449
Fiorenzo Lamera	6,351

Penaud, a visitor from France, came 10th in the World Championships, Open Class (in which Vergani was 16th and Lamera 40th). The sailplane types flown in League 1 are not stated. There were 24 competitors.

Of 8 competitors in League 2, 6 flew the M-100s and 2 the Uribel. Stefano Marietti won in an Uribel with 7,263 points.

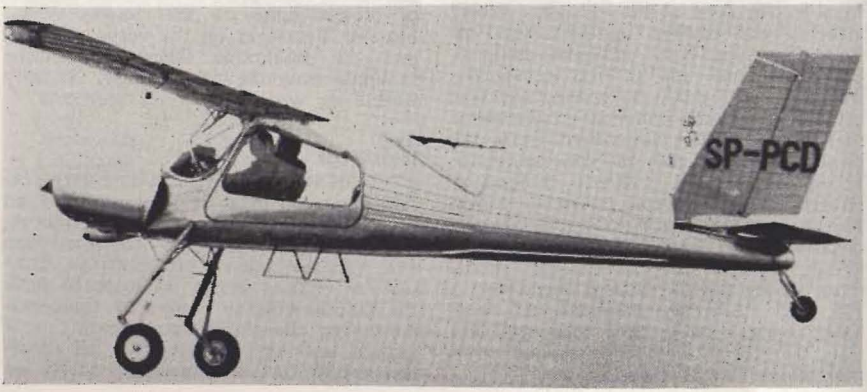
The last task was 115-km. out-and-return Foligno. Vergani averaged 61.745 km./h., Piludu 60.131 and Penaud 57.524. In League 2, same task, Marietti won at 54.907 km./h.

Aero Club d'Italia

POLAND

WORLD RECORD. — On 19th July Vera Kaminska, of the Aero Club of Bialystok, beat the international feminine record for Speed round a 100-km. Triangle in a Multi-seater sailplane. She flew a Bocian, with B. Sawson as passenger, round a course of 109.5 km. from Krywlany via Grodek and Sokolka and back, at an average speed of 87.6 km./h. (54.4 m.p.h.). The previous record, 85.7 km./h., was held in Yugoslavia. *Skrzydlata Polska*

NEW TUG.—The accompanying photo, supplied by Jerzy Popiel, shows a new Polish aeroplane designed specially as a tug, the Wilga. With 240 h.p., it climbs at 5 m./sec. with one sailplane on tow; it is also capable of towing three sailplanes together.



RHODESIA (Salisbury)

FLYING in general since I last wrote has been quite active, especially considering the time of year, and the interest shown by some of our visitors is quite amazing. There has been quite a spate of bods going up for rides and most of them say they are very impressed and wouldn't mind joining. Usually that is the last one sees of them. Bim Molyneux has been trying on many occasions to get his five hours but the conditions just haven't been right.

The Grunau is still in the workshop and work is progressing well. The Oly. is having a few mods done to her; the wheel is being replaced by a straight skid, as in the original design. The Ka-6 has had a complete face lift and inspection and many hours of work have been put into this, especially in the evenings, when it has been pretty cold, even compared to Pommy standards! It had its first flight after its refit on 18th July, and certainly looks a real bird; a queen of thermals, in fact. The Swallow syndicate seems to have changed hands just about completely.

The Blanik nearly came to grief. Whilst just becoming airborne, and climbing behind JT at approximately 150 feet and starting the first turn, Alf Thompson suddenly realised that the tow line had been inadvertently released by a pupil who was sitting in the front cockpit. He had not released in the normal manner, i.e. by pulling the knob, but somehow or other his foot whilst on the rudder pedal must have been well up on it, for his toe brushed up against the release mechanism, which is dead between the two pedals. And of course JT and Blanik parted company. The first thing Alf does is a quick turn to starboard and see if there is a spot to put down. This he did, but by then altitude was running out. What next? Yeah, there are some flaps somewhere. Let's use them. So out they come and up she went — a little, but just enough to enable her to reach the seemingly only open spot which was enough for the Blanik to settle nicely, but with all the confusion and split-second decisions to be made, old Alf forgot that he also had a wheel brake. The result was a slightly dented nose cone and a couple of dents on the leading edge and elevator.

Midlands Gliding Club have very kindly invited the Club down to Moffat field, Gwelo, over the holiday week-end of Pioneer day. Gwelo have offered a prize for the first one to land at Moffat on the Saturday.

It is hoped that pointing and general redecoration of the Clubhouse will be instituted in the next few weeks.

SWITZERLAND

SCORES of the first 10 Swiss pilots in the National Competitions at Grenchen were: Bloch, 3774; Ritzi, 3553; Meyer, 3023; Seiler, 3007; Nietlispach, 2848; Müller, 2680; Lüthi, 2569; Lütscher, 2400; Wanzenried, 2384; Wetti, 2321. Of the German visitors, Fischer finished 7th, though W. Gross and E. Bucher led the field on the first day, and were subsequently overtaken by Urs Bloch. There were 4 contest days. The British visitor, Humphry Dimock, described his part in the competition in our Aug.-Sept. issue, p. 338.

Aberdeen Gliding Club

Litterty, 4 miles N.E. Turriff, Aberdeenshire

Why not a Gliding Holiday?

This club has successfully held gliding holidays for the past 11 years and once again offer courses during July, August and September. Side by side type two seater.

Good thermal and wave site.

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