SAILPLANE & GLIDING

April — May 1967 3s 6d

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SAILPLANE & GLIDING

OFFICIAL ORGAN OF THE BRITISH GLIDING ASSOCIATION

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Associate Editor and Production Manager: Rika Harwood
Magazine Assistant: Nicky Stothard — Club News Editor: Yvonne Bonham
Advertisement Manager: Peggy Mieville
Committee: Philip Wills Chairman, G. Harwood, W. Kahn, M. Bird, M. Simons

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Cover photograph: The Slingsby T-53 and the factory of Slingsby Sailplanes, at Kirbymoorside. Another photograph of the machine is shown on the next page.

Published by the British Gliding Association, 75 Victoria Street, London, S.W.1. Sullivan 7548/9
Printed by The Amberley Press, Farnham, Surrey.

Vol. XVIII No. 2

CHAIRMAN'S REPORT ON 1966

THIS year I want to write rather a different report from those of the past few years: for I want to show where I think we have arrived, how we have got here, and how critical a point we have reached for the entire future of British Gliding.

It is now 34 years since I first took on a job (as Hon. Treasurer) for the BGA, 33 years since I became a member of your Council, and 32 years since the structure of the Association was altered to the one which, with minor alterations, has endured until now. I am writing from memory, but in 1933 the Council contained 8 members representing clubs with an actual active flying membership of possibly no more than 100 pilots of whom none had progressed beyond the C licence stage and only a handful had actually ever done a cross-country flight. What is achieved today by hundreds of pilots, in flying round closed-circuit courses of 100, 200, 300 kms., or more, in reaching heights in excess of 20,000 ft., in achieving distances undreamt of in those days, all as a matter of course, was beyond our wildest dreams.

The growth of our movement since then is largely due to the soundness of the structure we then devised, which has attracted to our service a continuous flow of competent and responsible enthusiasts who, working in their spare time, have achieved for us a degree of freedom and delegated Ministerial authority which is not approached in any other country in the world. Broadly speaking, we are left to run ourselves, and by common consent do it better, quicker and cheaper, than it could be done by officialdom.

But as the movement has grown, so has the work-load on its central body. Whereas in 1933 we had a part-time Hon. Secretary in a tiny office in Berkeley Street, now we own a lease at Artillery Mansions, occupy 7 rooms with a staff of 12 people, and 13 Committee Chairmen spend increasingly large amounts of spare time working for us. Your Chairman now presides over a Council of no less than 38 members, representing 91 clubs and 167 Private Owner Groups.

On a fine summer Sunday, about half the aircraft in the skies over our Island are gliders. They make no noise, they don't bother anyone, they are piloted by ordinary men and women of all ages simply enjoying themselves, and taking their day's sport out of the peaceful sky. And in so doing, they are learning the self-discipline of the air, to work together in a common cause, and to express and develop their talents in many fields of human endeavour and knowledge. In addition they are providing contributions in various technical fields, ranging from aerodynamics to meteorology, and have enabled a small industry to be established with an export record around 40 per cent of production. This is the stuff of the cement of a 20th-century society.

After the tremendous success of the 1965 World Gliding Championships, I foresaw a potential expansion of our movement which would strain to breaking point the administrative capacity of your Association, and the operational capacity of our clubs. Accordingly we set up a Study Group to review our structure, and recommend changes which would permit a large further expansion without overstraining the capacity of the enthusiasts who run it. It had been hoped that, by the time of this AGM, this report would have been completed for submission to you, but, mainly for the very reason the Group was set up—overwork of its members—this timetable has not been achieved. That its conclusions are urgently needed is shown by the increasing number of our Committee Chairmen who, for one very good reason or another, age, business or family necessity, or health, have had to ask us to find successors to take over their work.

I will emphasise in one paragraph the quite crucial dilemma we have, in my opinion, reached.

If we open the floodgates of expansion, which I am sure we could do, we are not equipped to handle the number of people who would want to join our clubs. If we do not, and remain a relatively minor sport, we cannot expect to achieve sufficient political influence to resist the tide of restrictionism in the use

of the air which is now threatening to suffocate us.

To survive we must expand, and expand enormously. If we do not, British gliding will gradually be frozen out of the air. To such a challenge, to people of our sort, there can only be one answer.

Expansion. My evidence of the pent-up demand for gliding is simple. A single feature article in a national newspaper brings up to 1,000 enquiries to the BGA. If we were to run a serious campaign, enlisting the Press and Television, the result would be a flood of enquiries saturating the available courses and club memberships.

The memberships of the new clubs established at Wycombe Air Park (Booker) only two years ago already approaches 500 people. A very large number of potential entrants for each year's National Championships has to be restricted, by rating lists, to hold the entry back to the maximum manageable number of 80, which still make these the largest Championships in the world. Incidentally, the high standard of safety achieved, mainly by self-discipline, is underlined by the fact that the five days flying at our 1966 Championships, which took place in very difficult conditions, often in high winds, were free of accident.

To increase our capacity to grow, we obviously need more clubs, more equipment, and, above all, a development of our training methods, which with existing equipment involve so much delay and frustration that only the most determined can survive. There are literally thousands of eminently worthwhile people who simply have not the time to spend day after day at a gliding club waiting for a chance for a few training circuits.

Last year you authorised your Council to investigate and if possible back the design and production of a Powered Trainer. Later on in this report you will find a summary of the progress of this project, which in my view is of critical importance. For a successful Powered Trainer might be expected to increase by a substantial proportion the number of trainees which could be handled. In this lies the only way in which I can foresee the rapid increase in the size of our movement, which is in my view essential for its survival.

Growth also requires a very large increase in the number of clubs having security of tenure of their sites and the reshaping of your central body, the BGA as an essential infrastructure (an important report from the Chairman of our Sites Committee is printed hereafter).

Suffocation. I commend to your close attention the appended report of the Chairman of the Airspace Committee. Every member can help by propagating the facts contained therein. To put the case succinctly, we are being squeezed out of the air and British aviation generally is being relegated to an internationally inferior level, by the pressures of interests who want the air to themselves, and who are deaf to any arguments based on facts and logic that such restrictive practices are unnecessary.

The science of accident prevention in all fields of flying is well proven—it is based on the patient accumulation of facts, then the tabulation and interpretation of those facts, this leading to corrective action where it is shown to be necessary. A reference to the report of our Safety Panel, printed hereafter, is a good example of this process in action.

In Air Traffic Control alone is this scientific approach rejected. So serious is the position reached that a breakdown of confidence in the Board of Trade National Air Traffic Control Services section has occurred. We have appealed to the Minister BoT to institute a review into comparable practices in the United States, where immensely more traffic is handled with safety, and without any such crippling restrictions being imposed on its growths. This is, of course, a matter that affects not only British gliding, but the whole future growths of British aviation.

The extraordinary fact is that, up to now, NATCS has not accepted responsibility for collision risks in the Flight Information Regions, and has failed to realise that in restricting more and more airspace, they are thereby creating artificial bottlenecks and crowding in what is left, and thus increasing collision risk.

We believe that proper investigation would indicate that the present policy of ATC in one country must lead to an

unnecessarily high level of danger in some fields of light aviation, without enhancing the existing excellent record of safety achieved by public transport.

Conclusion. Since I have been working for the BGA we have progressed from a tiny band of enthusiasts, regarded as little more than lunatics, with less than £10 in the BGA Bank, to the present stage, where clubs and private owner groups, disposing in the round of sums in the hundreds of thousands of pounds, are backed by a central body with financial resources adequate for its present tasks, though quite insufficient to deal with the essential expansion I have outlined in this report.

Finally, we have achieved for ourselves a position of international pre-eminence in this field of aviation.

Now we are faced with a new and even more exciting challenge, different in scale and kind from what has gone before.

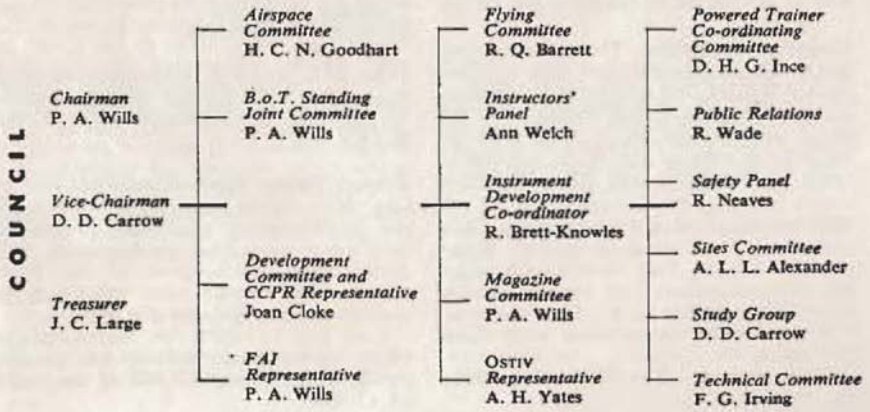
I am clear therefore that it would advantage our Association if at the outset a new and younger Chairman could take over to pilot the ship on this new journey. But it seems unlikely now that one can be found in time for this forthcoming AGM and if this proves to be the case I am prepared to offer myself for re-election, if it is your wish, for one more year. During that time we will set-up an elective machinery to enable Council to recommend to you a successor at the next AGM. I hope that recommendations for alterations of the structure of the Association will be presented at the same time. I would like to say that I still hope to continue to serve the cause of British gliding, and am full of ideas as to how I might be of use. But the first step is to find my successor.

Committees, Panels and Officials. After more years' service than I can remember, this year we suffered the retirement of John Furlong (Flying Committee), and Basil Meads (Treasurer). Both honoured us by accepting Vice-Presidencies.

During the year we also lost the service of Bill Mackworth-Young who was forced to give up as Treasurer for health reasons. Wally Kahn, although remaining a Council member, has handed over to Joan Cloke the tremendous work on the Development Committee. At the end of the year we are additionally losing Lionel Alexander (Sites) and Paul Minton (Safety). Their successors will have a tough job living up to the standards these men have set.

An important new post has been established, Chairman of the Powered Trainer Co-ordinating Committee (David Ince). The Public Relations Officer vacancy has been filled by Richard Wade.

The structure of the BGA is now as follows (Committees are shown in alphabetical order giving name of each Chairman):



This formidable table underlines the vast field and the amount of work which is covered by volunteers in the service of British gliding's central body. It will also give some idea of the size of the job undertaken by our Secretariat, which has to service all these Committees and Panels on top of the day-to-day job of issuing certificates, dealing with sales, and so forth. We owe our grateful thanks to Frances Leighton for her five years' work as Secretary, also to her successor Inge Deen, and to all the members of the BGA Secretariat, which is inevitably growing in numbers, but not as fast as the work to be done.

Finance. Once again our AGM is taking place too early for us to be able to present our accounts at this moment. We are proposing as from this year to bring forward our accounting date to 30th September, so that in future we will have more time to prepare and present our full financial picture beforehand. At the beginning of 1966 we took over a 7½-year lease of the suite of offices at Artillery Mansions, and since it took us a few months to let off one or two spare offices, and since the amount of administrative work has grown so enormously, I fear our accounts are not likely to show a very rosy picture. We are hoping, however, to obtain increased financial support from the Department of Education for 1967 which should enable us to balance our budget for this year.

Our 1966 Accounts and 1967 Budget will, of course, be presented at the AGM.

Magazine Committee. The circulation of SAILPLANE & GLIDING has now reached the 6,000 mark and continues to increase. It is still the best gliding magazine in the world and contributes a profit towards the general work of the BGA. All thanks again to Doc Slater and Rika Harwood.

Membership. During 1966 the Ouse Club transferred from Associate to Full Membership. The 28 Full Member Clubs or Associations include four members which have affiliated Member Clubs as follows:

Army Gliding Association with three clubs.
Civil Service (CISAVIA) with three clubs.
RAF Gliding and Soaring Association with eleven clubs.
RAF (Germany) Gliding and Soaring Association with four clubs.
Royal Naval Gliding and Soaring Association with four clubs.

New clubs formed during the year include: Albatross, Northwest of Ireland, Porthcawl, RPE (Westcott) (CISAVIA), Trent Valley, Upward Bound and Universities of Glasgow.

Membership is now (1965 figures in brackets):

28 (26) Full Clubs or Associations.
35 (32) Associate Clubs.
1 (2) Overseas Associate Club.
167 (165) Private Owner Groups.
27 (31) Individual Members.

Operations. (1965 figures in brackets):

Civilian Clubs flew a total of 38,494 hours (37,617) from club sites from 201,881 launches (183,527).
Club owned gliders total 213 (209).
Privately-owned gliders total 222 (226).
The combined Services flew 11,559 hours (10,567) from 70,622 launches (60,305).

Certificates were issued as follows:

A and B endorsements including A.T.C.	2,576	(2,876)
C endorsements	438	(455)
Bronze C endorsements	528	(—)
Silver C complete	184	(178)
Gold C complete	10	(24)
Gold C distance	5	(37)
Gold C height	22	(36)
Diamond for goal	9	(37)
Diamond for height	7	(4)
Diamond for distance (in S.A.)	1	(—)

(The ATC issued 2,342 proficiency certificates and 1,670 holders of these applied for A and B certificates through the BGA.)

Project Sigma. You will recollect that at last year's AGM approval was given for the establishment of Project Sigma to develop a very high performance sailplane under the auspices of the BGA provided the finance came entirely from outside sources and not the BGA.

I am glad to report that Sigma has got off to a very good start and has already succeeded in raising £21,000 of the target of £30,000.

In addition, much material assistance has been offered, and in particular advice from Professor Wortmann on aerofoil sections has been invaluable.

An arrangement has been concluded with Slingsby Sailplanes whereby John Sellars, who is currently Slingsby's Chief Designer, becomes full-time Chief Designer of Sigma for the duration of the project. An aerodynamicist has also been recruited and the project is now fully staffed.

Technically, work is concentrated on determination of the most suitable aerofoil section and this will then be tunnel tested at RAE, Farnborough.

The programme is substantially up to the original time-scale.

SBAC. The Private Flying Loan Fund continues to make valuable and greatly appreciated contribution by loans to gliding clubs and private owner groups.

The number of loans approved in 1966 was 11, and funds so dispensed came to £8,737.

There are 44 loans now current to the value of £41,000. The value of all loans to the gliding movement for the purchase of aircraft, flying equipment and site development made since the creation of the Fund is £46,959.

P. A. WILLS, *Chairman.*

C.V.S.M. MEETING

World Gliding Championships

The main item of interest at the meeting of the Motorless Flying Commission of the F.A.I. held in Paris on the 4th February was the venue for the next World Gliding Championships.

They are to be held from the 9th-23rd June, 1968, at Leszno, Poland. Practice week from the 2nd-8th June.

Entries will be accepted up to about 80 gliders divided into two classes — Open and Standard. Two pilots per class may be entered and teams will consist of 1 pilot and 3 crew per aircraft.

Radio

Radio for the Standard Class is now accepted.

Only one radio transmitter per team (car and glider) will be allowed. Team managers may only have separate receivers; there are no restrictions on the number of receivers used.

Pilots may not use their radio to obtain Air Traffic Control clearances unless otherwise stated by the organisers.

Modifications to Rules

It was agreed that the only navigational aids to be permitted would be magnetic and gyro compasses. Help from non-competing aircraft to be prohibited. The rules for the championships will be finalised at the next C.V.S.M. Meeting on the 3rd November, 1967.

Gliders for Hire

There would be a number of gliders available for hire — mainly Foka's. The meeting was told, however, that there would be a shortage of cars.

Costs

This was worked out at $7.00 (U.S.) per day per head, regardless of the position in the team.

Standard Class

There are no changes in the present Standard Class rules, except that the minimum wheelsize is to be increased to 300 x 100 mm.

This requirement will not be applicable to gliders built before 1st January, 1970, and therefore will not affect the 1968 Championships.

The word "Club" is to be included in the Standard Class definition.

OSTIV

Applications are invited from six or eight experienced pilots to take part in the course for forecasters which is being held at Calcinate del Pesce (Varese), Italy, from the 16th April to 7th May. The pilots selected would fly the tasks set by the conference during the second week of the course, starting on the 24th April. It may be possible to borrow or hire gliders for that period. Accommodation will be free but meals and aero-tows will be chargeable. Write for details to: OSTIV Secretariat, NLM Atoomgebouw, Schiphol Airport, Amsterdam, Holland.

THE SCHEMPP-HIRTH "CIRRUS"

By MARTIN SCHEMPP

THE prototype of the all-fibreglass Cirrus has been test-flown, just in time to include its true performance figures in this article.

The wing profile is one of the latest Dr. Wortmann aerofoils. The wing shell is a sandwich structure of foam with fibreglass, no balsawood, with an all-fibreglass box-type spar. The prototype has an all-movable V-tail, but we are going to use a conventional tail for the series productions, following the desire of our American customers. The maximum payload at 309 lb. is high, which will be appreciated. With a payload of 199 lb., the wing loading is only 5.67 lb./sq. ft. It will be possible to carry jettisonable water ballast in the wings. The ground clearance with the retractable landing gear is unusually high at 11 inches.

Besides the spoilers, a jettisonable brake parachute in the tail cone is provided for. Rudder pedals are adjustable in flight. The back-rest is adjustable in inclination and in camber.

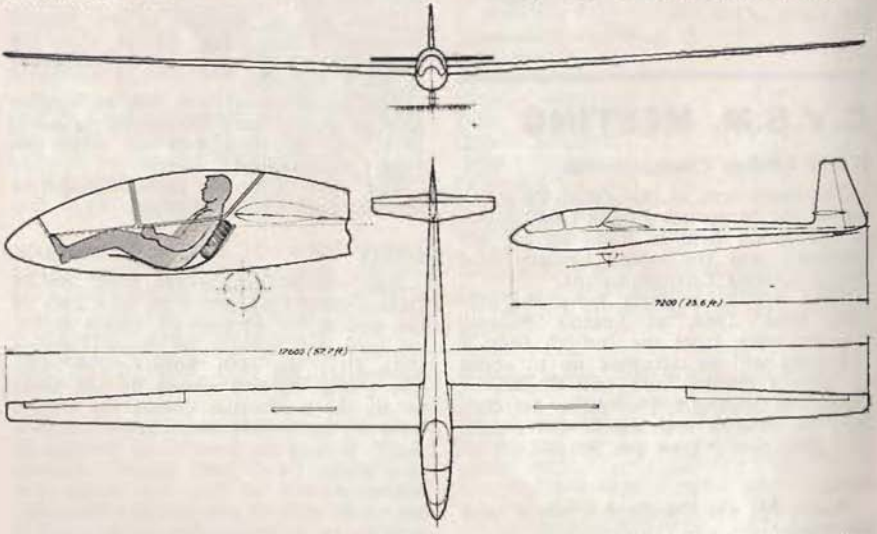
The designer of the Cirrus is the aeronautical engineer Klaus Holighaus, one of the co-designers of the D-36 Darmstadt, since 1965 a member of our company. Klaus Holighaus is also a very competent glider pilot, doing all test flying himself. He is going to fly the Cirrus in the German Championships at Freiburg (14th-28th May).

The principal ideas in the design of the Cirrus are:—

(1) By the choice of a flapless, rather thick aerofoil, the wings have a distinctive, wide laminar dent (0.2-1.35). Thick aerofoils are known to behave harmlessly in stalling, giving the maximum advantage in circling flight.

(2) Such aerofoils result in less weight of the wings compared with wings of similar span and aspect ratio with flaps. Thick wings are naturally much stiffer and stronger.

(3) These three facts (wide laminar dent, harmless behaviour in stalling, relatively low wing-loading) result in extremely high climbing performance.



The wing span has been increased to 17,740 *mm.* (58.2 *ft.*) *since this drawing was made.*

The prototype Cirrus about to be test flown. The production type will have a conventional tail.

(4) Good climbing performance enables the pilot to achieve a better all-round cross-country speed compared with flapped wings, although sailplanes of similar span, but with flaps, will be somewhat superior in fast flight.

(5) The design and aerodynamics of the fuselage follow the latest wind tunnel tests of Dr. Wortmann. Thus the cockpit could be made very comfortable without any noticeable sacrifice in drag.

(6) The choice of a flapless aerofoil and of a normal seat position will result in much simpler handling in flight compared with a sailplane with flaps and a rather flat pilot's position.

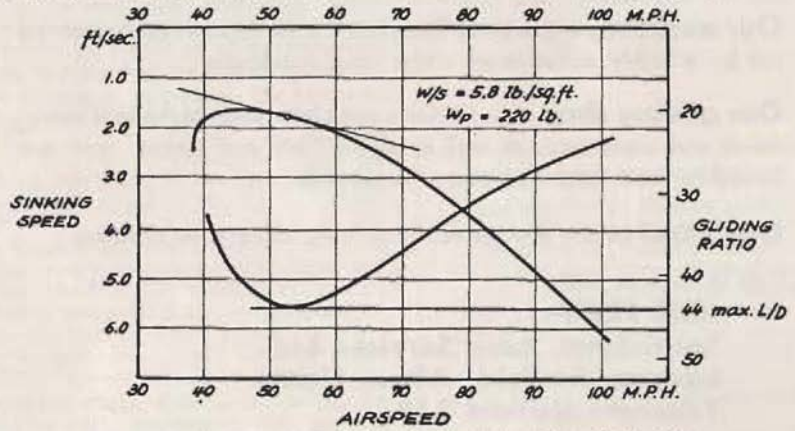
(7) The large and curved plexiglass hood allows a good view in all directions. This is especially important in circling flight in thermals for observing the position of other sailplanes.

(8) The shape of the fuselage gives enough space for a large instrument panel.

(9) The relatively low weight of the wings with their fork-like main fittings allows a simple and quick assembly by three people.

The wing and the tail surfaces consist of a glass-fibre spar (Roving webs) and a GFK foam-sandwich shell running over the spar. As foam material, Hart-PVC-foam "Conticell 60", tested to 60°C. temperature, with a specific weight of 60 kg./sq.m., is used. Stiffness trials on such a wing show very high values for torsional and bending stiffness. On test, the wing did not break with a loading of nearly 15G.

The fuselage is built up from a 1.5 mm. thick GFK shell, stiffened with foam rings secured with resin. This construction, already used in boat-building



Cirrus performance curves obtained from actual flight tests.

owing to its unusual insensitivity to blows, results in a robust yet light construction.

The wing and landing gear junctions, as well as the whole control system, are carried out with a steel tube structure secured to the fuselage shell. The wing attachment is achieved with a tongue-and-fork spar-fitting, using only a 40 mm. diameter bolt, which centres itself and thus allows effortless rigging with three persons.

The cockpit is very roomy and comfortable, with adjustable pedals and a doubly adjustable seat in the manner of a reclining chair, so that pilot heights of 1.55-2.05 m. (5 ft. ¼ in.-6 ft. 8¼ in.) and weights of 60-150 kg. (132 lb.-331 lb.) can be accommodated within permitted limits of c.g. and loading.

Technical Data

Wing Span	ft.	58.2
Wing Area	sq. ft.	135.6
Aspect Ratio		25.0
Fuselage: Length	ft.	23.6
Width	in.	24.6
Height	in.	32.9
Weights: Empty weight	lb.	551
Min. payload	lb.	132
Max. payload	lb.	331
Gross weight	lb.	882
Wing	lb.	317.5
Fuselage	lb.	220.5
Horiz. tailplane	lb.	13.0
Max. speed, glide or dive	m.p.h.	155
Max. speed in rough air (gusts ±33 ft./sec.)	m.p.h.	127
Performance at wing-loading of 5.8 lb./sq. ft.:		
Stall speed	m.p.h.	38
Min. sink at 45 m.p.h.	ft./sec.	1.64
Max. L/D at 53 m.p.h.		44

AIRSPACE COMMITTEE REPORT

COMMITTEE MEMBERS: H. C. N. Goodhart (Chairman), Miss P. L. M. Buckley, C. A. P. Ellis, D. H. G. Ince, O. W. Neumark, E. E. Reeves, D. A. Wilson.

DUE to the Prime Minister's decision to eliminate the Ministry of Aviation, the Controller, National Air Traffic Control Services and his staff have been transferred to the Board of Trade.

We know (and the facts on which we base our knowledge are also available to NATCS) that, with the low levels of traffic in the U.K. at present—and in the foreseeable future—there is ample space for the co-existence of gliding and all other types of airspace use. But we have the utmost difficulty in persuading NATCS of this, in spite of this evidence.

The most important fact which simply must be got over to the maximum number of people is the *uncrowdedness* of the airspace over Britain. On average in the summer by day there are about 36 commercial aircraft under the control of ATC (Air Traffic Control) over the whole 94,000-odd square miles of the U.K. By night or in the winter the average is very much lower. This is the real measure of the problem our £10m. per annum ATC organisation has been set up to deal with, and is the background to the increasing restriction being unnecessarily loaded on all airspace users other than those in the control system.

It is relevant to consider the following statistics of airport movements for 1965:

	Air Transport	*General Aviation*
Chicago O'Hare	443,026	76,404
London Heathrow	192,368	13,968

i.e., London has well under half as many air transport movements as Chicago and under one-fifth the number of general aviation movements and yet airspace restrictions around London are far more severe than around any airport in the U.S.A., Chicago O'Hare included.

London ranks 49th in the world for total aircraft movements and yet has more airspace restrictions than any of the 48 ranking above it. Even Bournemouth (Hurn) has more severe restrictions than any in the U.S.A., yet where it comes, or indeed whether it comes, in the aircraft movements list is a good question.

Whilst in 1966 there has been virtually no increase in adverse ATC measures, this is only the calm before the storm. Special Rules Zones are already planned for Lyneham, Newcastle, Teesside, Leeds/Bradford and more to come; worse even than these is the possibility of the application of Military Air Traffic Zones to gliders. If all these measures come into existence, cross-country gliding, although entirely possible without prejudice to essential safety, will not be feasible without breaking the regulations.

In the not-so-distant future there will be an enormous further sterilisation of airspace to cater for the third London airport. Then there will be the Research and Development establishments demanding their segregated airspace. Unless we can reverse this process, we shall reach a system which would be, in some respects, more severely restrictive than is to be found anywhere else in the world, and as a consequence gliding as we know it today in our country would cease. With the facts so completely on our side, it is inconceivable that this will happen.

H. C. N. GOODHART, *Chairman.*

INSTRUCTORS' PANEL REPORT

MEMBERS: Mrs. Ann Welch (Chairman), J. C. Everitt (National Coach), P. Minton (Safety Officer), V. C. Carr, G. T. Collins, Wing-Cdr. J. G. Croshaw, T. Davidson (Scotland), Ft.-Lt. J. Delafield, Flt.-Sgt. A. W. Gough, J. M. Hands, Air Commodore N. W. Kearon, R. A. L. Neaves, A. D. Piggott (Powered Trainers), Flt.-Lt. J. S. Williamson.

THE shortage of instructors is, at last, being overcome. There are now 79 with CFI endorsements, 286 holding Categories and a further 435 registered with the BGA as general, assistant or trainee instructors. This covers 83 civilian and service clubs. Instructors are not, naturally, distributed evenly between clubs, and small or new clubs often still have difficulty in finding a CFI with either the qualifications or the time to take on the job. There are, however, still not enough Professional Instructors, partly because many of them leave to become aeroplane instructors or commercial pilots. The problem here is not that of a shortage of suitable people but a straightforward one of salary.

Instructors are now less scarce for several different reasons:

1. The result of four years of training courses by the Coach and Capstan. Without the grant from the Department of Education and Science for the Coach, and the gift of the Capstan, plus the scholarships to help instructors pay for their flying from W. D. & H. O. Wills, organised training courses would not have been possible.

2. Because they have not had to cope with trying to run instructor courses on a voluntary basis, the Panel has been able to spend this time in improving communication in instructional matters by running a National Instructor week, CFI Conference, and by producing *Instructor* (see below).

3. Improved performance 2-seaters, aerotowing and more advanced training is making instructing more interesting.

There is no ground for complacency, because there will always be much to be done, but the opportunity now exists for widening the scope of instructor courses, to cover more advanced aspects of flying training, to concentrate on improving the position of the professional instructor, to investigate powered training more fully, and to help clubs develop ground school facilities which are at present almost non-existent.

There will always be room for improvement in the accident rate.

Instructor's Conference — November, 1966. This followed a week in which refresher, new type and category test flying was available to any instructor who came. The weekend Conference itself was attended by 98 instructors from over 40 clubs. (See full report, February issue, SAILPLANE & GLIDING).

Instructor. This duplicated journal was intended to be brought out four to six times in the year, but so much good copy arrived that 11 issues were produced by the end of 1966. It is intended to be useful to instructors by providing topical information on techniques, accidents, improved instructional methods, in a form which is easy to find and keep for reference. It is issued by the BGA free to all categorised instructors.

Conclusion. Training pilots to fly complex and fast new gliders safely, requires a continued watch on in-flight instructional methods, and the provision of a good back-up ground teaching. Various aspects of programmed learning, including self-contained courses, and self-teaching exercises, are being studied and introduced.

The biggest problem facing clubs is, however, not one about which the Panel can do much. It is the obtaining of secure sites on which they can build in a permanent sense. Without proper security the bigger clubs cannot reasonably take on a professional instructor, and so operate full time. The smaller clubs, probably without even adequate club buildings, cannot offer training which is other than severely limited.

ANN WELCH, *Chairman.*

NEW ZEALAND NATIONALS

8th — 18th February

FIVE days before the Championships started cyclone "Diana" moved over the Tasman area. Five inches of rain fell all in one day and the Contest Mess tent 25 ft. x 50 ft. was blown down. However, flying on four practice days was possible in reasonable conditions.

Of the 27 sailplanes taking part 17 were Ka-6's. The rest was made up of Skylarks, Olympia 463's, one Dart 17, one Std. Austria and others.

8th February. TASK:— 121-km. triangle.

Wind 8-10 knots with some scattered cu's but mainly dry thermals. No one completed the task but all but one pilot scored. Another 10 landed within 7 miles from the finish. I. Evans (Ka-6E) was the day's winner; equal second were P. Heginbotham, T. Fowke (Ka-6E's) and A. Timmermans (Skylark 4). Equal fifth R. Reid (Ka-6E) and J. Cooper (Ka-6).

Tony Fowke, the new Champion, who was first on five days, and second on two.

9th February. TASK:—Free Distance via turning point. X=30 km.

Cloud cover was rather persistent and cut off convection and most pilots needed their three launches. Only Heginbotham and Reid managed to get past 2X and the day was declared No Contest. Two Ka-6's were damaged, one badly enough to have to withdraw.

10th February. TASK:—Twice round a 70-km. triangle.

Another No Contest as only Fowke and Cameron managed to get round once.

11th February. TASK:—Dog-leg race, 105-km., second leg into wind. Though last to be launched, Fowke was first to arrive at 2.15 p.m. and won the day. Heginbotham took a minute longer, Reid was third, and ten completed.

12th February. TASK:—305-km. triangle.

For the first time ever a 300-km. triangle was set in New Zealand Nationals, but of the 24 aircraft which took part only Tony Fowke managed to get round in 6 hr. 1½ min. His time will provide the basis for a new National record as currently no 300-km. triangle record exists. He picked up a useful 1,000 points this day with Reid second, 587, and Cooper and Cameron equal third with 509 points. This gives Fowke a good overall lead.

13th February. TASK:— 200-km. triangle.

This was easily the best thermal day so far although times round the course were rather disappointing. Of the 9 sailplanes to complete the task Reid was the winner with 3 hr. 50 min., and Fowke second. Heginbotham, the defending Champion, did not complete the task.

14th February. TASK: — Out-and-Return. Distance not known.

Several abortive launches were taken before 11 a.m. and in the end it was Fowke who got away first. Times round the course varied from 3 hr. 29 min. to

5 hr. for the six pilots who managed to get home. Court (Skylark 4) moved up from 5 th to 4th place overall, Hookings from 12th to 7th and Cooper from 8th to 5th place overall. Fowke was 1st for the day with Reid, Cameron and Cooper to follow.

17th February. After a rest on the 15th, the 16th was a wash-out because of drizzle.

TASK:—135-km. triangle. It was once again Fowke who led the field and finished 54 min. before anybody else; this gave him an unbeatable lead. His time was 2 hr. 28½ min., followed by Cameron, 3 hr. 22 min., and Heginbotham third with 3 hr. 51½ min.

18th February. TASK:—103-km. triangle.

Only 11 pilots scored and the day was devalued to 717 points for Fowke the winner. Second, Cooper and Cameron third.

This has been the most successful Championships ever held in New Zealand. The New Champion, Tony Fowke, who flew brilliantly throughout the contest, will, as the winner of the event, be offered a place in the New Zealand team to go to Poland next year.

Line-up for the Opening Ceremony.

Final leading results:		**pts.**
1. Fowke	Ka-6E	6,668
2. Cameron	Ka-6CR	5,575
3. Reid	Ka-6PE	5,470
4. Cooper	Ka-P	5,021
5. Heginbotham	Ka-6E	4,598

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THE KRONFELD CLUB

THE series of Instructional Lectures for power pilots has been going well. The best attendance so far was for the talk by Derek Piggott entitled "The Finer Points of Flying". A list of the remaining lectures is given below.

On Wednesday, 22nd March, Kenneth Owen, of *Flight*, takes the Chair for a panel discussion on "Aviation and Parliament". The members of the panel will be Robert Howarth, M.P., Vice-Chairman Labour Aviation Group; Rt. Hon. Robert Carr, M.P., Opposition Aviation Spokesman; and Eric Lubbock, M.P., Liberal Aviation Spokesman. Members of the audience will be able to put questions to the panel, these should if possible be given in writing in advance to the chairman.

Aviation Art Society

The travelling exhibition opened in Dundee City Art Gallery in January and will also be on show at Perth City Art Gallery and Kirkaldy Corporation Art Gallery from the 11th to 25th March. This is the first time that aviation art has been seen in Scotland, and the exhibitions have been very well attended.

Norman Hoad, Margaret Kahn and Ann Welch have been invited to exhibit at an exhibition of gliding paintings being held at the Royal Academy in The Hague, Holland, in March. The exhibition will be opened on the 4th March by the Dutch Minister of Culture. The Minister, the Burgermaster of The Hague and the Governor of the Royal Academy will arrive by Ka-7's (weather permitting) landing in a field immediately opposite the Academy. The exhibition will also be on show in Rotterdam and Arnhem Art Galleries.

Lectures on Mondays at 8 p.m.

Apr. 3. Light Aircraft Maintenance, by Harold Best-Devereaux.

Apr. 24. Business Use of Aircraft.

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

Mar. 22. "Aviation and Parliament" (see above).

„ 29. Films: Model Rocketry and War Nuclear Weapons Delivery.

Apr. 5. Films: "Love at First Flight", Sennet skit, and "The Cure", Charlie Chaplin.

„ 12. Back to Square One. Historical talk with films by Dudley Hiscox.

„ 19. Flying Adventures, by Ft. Lt. L. Kurylowicz, D.F.C.

„ 26. Films: The B-52 in S.E. Asia, and Tactical Air Reconnaissance (USAF).

May 3. Space flight.

„ 10. Feature Film: "Foreign Correspondent". Vintage Hitchcock thriller.

„ 17. "Girl with Wings". Story of Amy Johnson, Elizabeth Grey (authoress).

„ 24. Japanese Aviation Films. Presented by Japanese Airlines.

POWERED TRAINER CO-ORDINATING COMMITTEE REPORT

COMMITTEE MEMBERS: D. H. G. Ince (Chairman), J. E. G. Harwood, F. G. Irving, R. A. Neaves, T. A. McMullin, A. D. Piggott, Mrs. Ann Welch.

ACTIVITIES during the current year have fallen into three distinct phases.

The first, handled entirely by Eric Reed's original committee, was concerned with the preparation of a report for Council which stated the case for powered training and recommended the development of a special aircraft. (See Appendix 1). It ended with submission of this report in the early summer of 1966. Thereafter, a new committee (the present one) was appointed to co-ordinate and progress all future aspects of powered training.

Phase 2 involved further exploratory discussions with the ARB (Air Registration Board), BoT (Board of Trade) (Aviation Department) and aircraft manufacturers.

As a result, a further interim report was submitted to Council in September, of which the following is a summary:

1. Present Position

(a) AIRCRAFT. No aircraft manufacturer is able to undertake development of a powered trainer similar to that described in the Eric Reed report—at least for the present. One company would, however, be willing to do so if the BGA were to finance development to the extent of £10,000.

(b) AIRWORTHINESS OF POWERED GLIDERS. These will be treated by the ARB and BoT exactly as powered aircraft, will have to be registered and will be subject to Part III of ANO1966. A new restricted Category C. of A. is being introduced and powered gliders will probably be certificated in this Category (maximum all up weight 6,000 lb.). C. of A. renewal on an annual basis would involve ARB inspection.

(c) OPERATION OF POWERED GLIDERS. These will be treated by the BoT exactly as if powered gliders were conventional light aircraft. Dual training of glider pilots is likely to be permitted from unlicensed airfields with BGA rated instructors holding PPL's. No solo flying by pupils will be permitted—pupils will not require Student Pilot Licences.

(d) COSTS. The cost advantage of powered training compared with instructional flying on gliders as stated by Eric Reed's committee, is fully supported.

(e) ESTIMATED U.K. MARKET. Given a suitable powered trainer and financing arrangements, comparative operating costs alone form such a compelling argument that there would seem to be an immediate market for six to seven aircraft in clubs which are capable of using them—and a longer term market for a further seven or eight aircraft. If the design is also capable of being operated as a tug, an eventual U.K. market for 25 aircraft could be visualised. These figures are based on the gliding movement at its present size. It is considered unlikely that the ATC (Air Training Corps) or the RAFGSA will be customers for the powered trainer.

2. Should Powered Training go Ahead?

Unequivocally *Yes*. The airworthiness and operational requirements which will have to be met seem to be both reasonable and acceptable. The arguments previously stated in favour of powered training are fully justified and savings in operating cost are likely to be even greater than have so far been suggested.

3. Should the BGA Finance Development of a Special Aircraft?

It is clear that where powered training can be substituted for dual instruction in gliders there are immediate advantages. It is also clear that any type of aircraft which is likely to be used for powered training—whether it exhibits glider type characteristics or not—will be treated by the ARB and BoT in exactly the same way as a light aeroplane. What still remains a matter of opinion, however, is the amount of additional dual conversion

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training on gliders required at the ab-initio stage:

(a) with a powered trainer which approximates as closely as possible to a glider, and

(b) with existing designs of light aircraft already developed and available on the British market.

Phase 3 continued the investigation of this aspect of the problem, and started with a step by step analysis of ab-initio powered training and subsequent glider conversion flying before first solo.

The method (which together with the results obtained is described in Appendix 2 to this report) provides a yardstick by which to judge the relative merits of different powered trainer designs. The first and perhaps surprising result—in view of all that has been said and written about powered training—is that, whilst as such it may be seen to offer an immediate advantage, even on relatively unsuitable aircraft, the overall trend becomes progressively less favourable the closer the aircraft's characteristics approximate to those of a glider. When this comparison is related to cost, it becomes clear that the additional expenditure which would result from funding the development of a special aircraft would not be justified and that the logical step is to make use of the aircraft which is likely to provide the best characteristics without additional financial penalty.

If a British manufacturer could be persuaded to develop an aircraft to the Eric Reed Committee specification (Appendix 1) and to recover development costs over an estimated 50 aircraft, this would undoubtedly be "best buy", otherwise—and assuming that the climb performance is adequate—the RF5 appears to offer by far the best alternative. It would not, of course, be possible to use the RF5 as a tug as had been visualised with the Eric Reed project. However, a powered trainer with desirable glider type handling characteristics—in particular, roll inertia and aileron power—may require modification in this respect to be acceptable as a tug.

As a further step, therefore, the Committee is obtaining all possible information on the RF5 and the aircraft itself will be evaluated as soon as a prototype can be made available for this purpose.

In addition, powered training experiments, limited to those for which BoT approval has already been granted, will continue throughout the coming year under the guidance of the Instructors' Panel.

APPENDIX 1

Summary of Eric Reed Committee Power Trainer Specification.

General Description

All metal, side-by-side two-seater, tractor engine installation, tricycle undercarriage, T-53 wings (including airbrakes) and tail unit.

Technical Data

Span:	ft. 50
Gross wing area:	ft.² 175
Aspect ratio:	14.3
Length:	ft. 21.7
Power unit:	Rolls-Royce Continental C.90
Horsepower:	90
Tare weight:	lb. 800
Maximum payload:	lb. 450
Maximum all up weight:	lb. 1,250

Estimated performance as Powered Trainer

Payload:	lb. 450
All up weight:	lb. 1,250
Wing loading:	lb./ft² 7.15
Power loading:	lb./h.p. 14
Stalling speed:	knots 40
Maximum rate of climb:	ft./min. 1,050
Take-off run to clear 50 ft. from rest:	less than ft. 1,000

Estimated performance as Glider Tug

Payload:	lb. 225
All up weight:	lb. 1,025
Wing loading:	lb./ft.² 5.85
Power loading:	lb./h.p. 11.4
Maximum rate of climb:	ft./min. 1,400
Stalling: speed:	knots 36

Design considerations included particularly

(*a*) Operating speeds within 5-10 knots of typical glider speeds.

(*b*) Roll-Yaw and pitch-trim characteristics as nearly identical to a glider as possible.

(*c*) Available power must ensure climb rate not less than 500 ft./min.

(*d*) Taxiing unaided to be possible in cross-winds up to 15 knots.

(*e*) Capable of being flown solo.

(*f*) Easy derigging, similar to a glider.

APPENDIX 2

Comparison of Powered Trainers

The method used is well known in Value Analysis. It was particularly chosen because of its recognised success in obtaining clearly definable, objective and unbiased results on which to base decisions.

All members of the Committee were involved, working as a team (except one who was unavoidably absent) together with P. Minton and J. Everitt who had been co-opted for the occasion.

The first step was to assess the number of glider conversion flights likely to be required before first solo for an average pupil flying from a large flat site after ab-initio training on an "ideal" powered trainer (as defined in Appendix 1—but with 30 kt. stalling speed). Taking into account the need for training in launch method and cable breaks, it was considered that 8-12 winch launches or 3-6 aero-tows would be necessary.

The second step was to carry out a detailed analysis of the pre-solo instructional exercises, to consider in each case whether glider characteristics were essential and then assuming that these characteristics were not present in the powered trainer—to establish the subsequent amount of additional dual conversion glider flying which would be necessary before first solo. For this purpose, the table shown in Figure 1 was displayed to the team, incomplete, apart from the list of exercises and column headings. Each exercise was then considered in detail, the findings agreed and entered up in turn.

The third step was to consider the total amount of glider conversion flying required after training on powered aircraft of varying characteristics, varying downwards from the "ideal", as defined above, to those which provide virtually no glider-like characteristics whatever.

Clearly the most attractive case, involving minimum conversion (8-12 winches or 3-6 aero-tows, as stated previously) must result from use of the "ideal" aircraft. However, the additional conversion flights which would be required with less effective powered trainers would not necessarily be the sum of the individual penalties shown in the table (Figure 1) added on to the minimum figure.

The team was invited to consider this aspect, together with the results already derived in drawing up the sub-table at the bottom of Figure 2. It was now possible to complete columns 5 and 6 of Figure 2 and hence to derive "best buy" information.

FIGURE 1

Exercise	*Can only be taught on glider*	*Glider Characteristics essential*	*In What Respect*	*Penalty if essential characteristics not available. No. of flights*
Air Experience	No	Yes	Nose-Twitch	1
Effect of Controls (Primary)	No	No	—	—
Trimmer	No	No	—	—
Airbrakes	No	Yes	Airbrakes must be fitted	1-2
Straight & Level Co-ordination	No	Yes	Roll-Yaw Pitch	6-10 (or 40 min.-1 hr.) 1-2
Stalling Spinning	No	Yes	Cannot define. Penalty applicable to all powered trainers.	1-4
Circuit Approach	No	Yes	Speed Airbrakes	2-20 6-20
Landing	No	Yes	Forward view. Others not defined. Tricycle or tailwheel, U/c not significant.	2

FIGURE 2

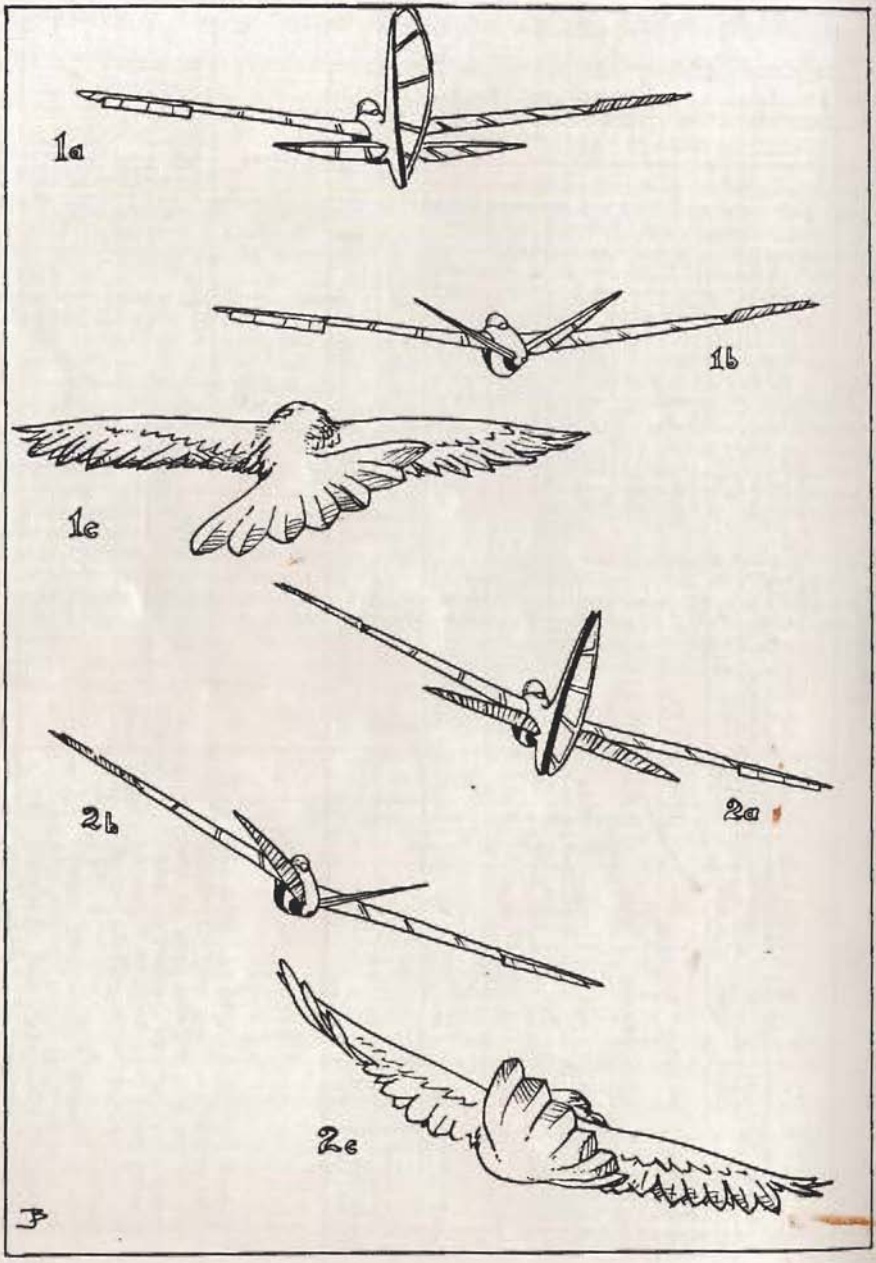
Aircraft	*Stall Speed Knots*	*Airbrakes Fitted*	*Glider Roll-Yaw Characteristics*	**Glider Conversion Flying Required* Winch	Aero-tow	***Power Flying Time Required Hours*	*Estimated Development Cost to BGA*	*Estimated Selling Price*	*Total Cost For 6 Aircraft*	*Remarks*
Ideal Project	30	Yes	Yes	8-12	3-6	4-5	?	?	?	No such project exists
Eric Reed Specification	40	Yes	Yes	12-16	3-9	3-5	£10,000	£3,375	£30,250	Price revised upwards from original estimate
Beagle Pup	42	Could be	No	16-20+	6-9+	3-4 or less	Nil	£3,500+	£21,000+	Cost of airbrakes conversion?
RF5	40	Yes	Yes	12-16	3-9	3-5	Nil	£3,000 inc. duty	£18,000	May not have acceptable climb performance
Motorfalke	30	Yes	Yes	Unacceptable climb performance for ab-initio training						
Condor	40	No	No	16-20+	6-10+	2½-4 or less	Nil	£2,950	£17,700	
Jodel D-117	40	Ineffective	No	14-18	6-9	3-4	Nil	† £1,350	£8,100	†No longer in production. Approx. price for good 2nd hand machine
Bolkow Junior	42	No	No	16-20+	6-10+	2½-4 or less	Nil	£3,450	£20,700	
Various high wing light a/c	—	No	No	High Wing and view unacceptable for integration with glider operations						

*Note 1. + sign in colums 5 and 6—more conversion flying may be needed due to the high induced drag on low aspect ratio aircraft requiring faster cruising speed than might be suggested by comparison with stalling speed figures.

**Note 2. Column 7 derived by assuming 6 hours total flying, power and gliding, in each case, and deducting gliding as aero-tows at 20 mins. each.

SUB-TABLE

Aircraft Category	*Airbrakes Fitted*	*Glider Roll-Yaw Characteristics*	*Stalling Speed Knots*	*Glider Conversion Flying Required* Winch	Aero-tow
No. 1 (Ideal)	Yes	Yes	30	8-12	3-6
No. 2	Yes	Yes	40-42	12-16	3-9
No. 3	Yes	No	40-42	16-20	6-9
No. 4	No	No	40-42	16-20	6-10


1a
1b
1c
2a
2b
2c

V-TAILS AND BIRDS' TAILS

By A. E. SLATER

FERDINAND SCHULZ, the East Prussian schoolmaster who put up several World's gliding duration records in the mid-1920's, believed in copying the birds; and at least one of these records was done in a machine which had no vertical surface whatever on its tail, either fixed or movable. At the Rossitten Gliding School in 1930, a replica of one of these machines was stowed in the roof: it had been pranged by somebody who had tried to slope-soar it over the sand dunes but could not match Schulz's skill at making rudderless turns. (Schulz had died in 1929.)

W. von Langsdorff's "Das Segelflugzeug" (1931) shows three such machines: the famous "flying broomstick" (an open primary type) of 1922, and two with fuselages—one with a strutted wing (1923) and the Königin Luise with cantilever wing (1924). All these machines had rotating wing-tips instead of conventional ailerons. The story goes that Schulz brought one of them to the Wasserkuppe for the German Nationals, but the airworthiness authorities told him he must have a vertical surface on the tail or it would be disallowed. Schulz insisted that the birds could manage quite well without one, but he was overruled, so rigged up a fixed vertical fin under protest. (But by 1928, when I first saw him, he was flying a perfectly conventional sailplane called the Westpreussen.)

How, then, do birds turn without rudders? Horton-Smith, in his book on the Flight of Birds (1939), said that, for instance, if a bird wants to turn right, it starts the turn with its tail twisted to the left, but after that, when actually turning, its tail is twisted to the right.

I was able to confirm this by the "negative blinking" technique (patent not applied for). In a normal blink, you keep your eyes open most of the time but shut them momentarily every now and then. With a negative blink, you keep your eyes shut, then open them for as short a fraction of a second as you possibly can. By this means you can get a "still" of any moving object, and the image stays on your retina for a short fraction of time after your eyes are closed again. It does not take long to train your eyes to transfer from one blinking method to the other.

The negative blink is particularly useful for studying the various positions of the wing in flapping flight; for this it is best to watch a whole flock of birds, and blink at a rate of about once or twice a second. You will soon have seen every possible attitude of the flapping wing in one bird or another. And if, for instance, you can find someone on the brink of the Round Pond in Kensington Gardens throwing up sardines for the gulls, you can observe at close quarters the whole range of manoeuvres from flapping, gliding, diving, braking, turns sharp or gentle, to collision avoidance. But to observe a normal turn you should watch a bird from behind, and blink continuously at a fast enough rate to make sure it really is turning.

Now for the probable reason why the bird twists its tail the way it does. Consider a conventional glider, seen from behind, making a right turn when flying at minimum sink. On entering the turn, it needs to go a little faster because of increased stalling speed in a turn, so the elevator goes down and the rudder moves to the right, as in Fig. 1 (a). (Control movements are exaggerated in these diagrams to make them more obvious.)

What are the corresponding movements in a V-tail? Right rudder alone would cause the control surface on the left side to move up, and on the right side to move down. But down-elevator would push the surface down on both sides. These two motions, therefore, would tend to cancel each other out on the left side but to reinforce each other on the right, as in Fig. 1 (b). So what does the bird do? It can ignore the left side of the V-tail, which contributes nothing to the necessary control movements, and needs only to imitate the right side of the V, which it does by twisting its tail in the manner shown in Fig. 1 (c), lowering the trailing edge to give the effect of

Three of Ferdinand Schulz's rudderless designs. Centre: The "Flying Broomstick" of 1922; above, the strutted wing of 1923; and below, the cantilever Königin Luise of 1924.

Illustrations by John Blake

both down-elevator and right rudder.

Now to study the control movements of each form of aircraft when well into the turn with correct bank (Fig. 2). The rudder is still over to the right, but the elevator acts partly as a rudder and also has to counteract the down-elevator effect of the real rudder in a bank, so it is pulled up (a). The corresponding actions in a V-tail (b) are that the left surface goes up but the right stays neutral; the bird in this case only needs to copy the left side of the V-tail, so twists its tail to the right and raises the trailing edge to give up-elevator and right rudder.

The accompanying lateral control movements have also been added, likewise in exaggerated form, in the diagrams —ailerons in the case of the gliders and wing-warping in the bird, so as to put on bank when entering the turn and hold it off while turning.

Of course these ideas might be shot down. The bird's alleged motions of raising or lowering its tail are likely to be so slight as to be imperceptible, even by the "negative blink" method. Also the control movements on one side of a V-tail probably do not, as suggested, exactly cancel each other out; but this doesn't matter, as the bird need twist its tail only to the extent required to produce the desired effect—it is not obliged to put on a 45° twist. The greater the twist, the more the rudder effect compared with elevator effect.

So this may be the solution to the mystery of the bird's missing rudder. But, so far as I am aware, the V-tail was unknown in Ferdinand Schulz's time, or he might have been able to get away with it after all.

WAVE FLYING IN COLORADO

By DENIS BURNS

I HAD firmly resolved to eschew performance flying in gliders in foreign climes during the English winter, but found myself this January, due to the machinations of a certain "Doc" Wiley and Anne, lodged in Colorado Springs in the supreme comfort of a U.S. Air Force Base, contemplating a formidable range of mountains on the immediate westerly quarter called the Rockies which rise up out of the central American plains in a most impressive manner. The central feature of this vista is a chunky massif some 14,500 ft. high called Pikes Peak, and the avowed object of "Doc" (Lt. Col. USAF) and Anne was to soar the celebrated wave which often forms there in westerly winds. For this purpose "Doc" had placed his extremely well equipped Schweizer 1-23 at our disposal together with suits of high altitude flying kit of a very high standard of comfort.

The Pikes Peak wave is explored by sorties from a "gliderport", entitled Black Forest, run by two highly efficient operators — Mark Wild and Dave Johnson — the latter being the brother of the celebrated "Dick" Johnson.

Dave gave us introductory briefing flights in his new Schweizer 2-32, an all-metal two-seater of considerable comfort and very high performance. To get to the wave one has to fly through downwind rotors, not necessarily marked by cloud, and Dave has this well taped. I am now convinced of the sense in using the brakes to control position relative to the tug in extremely rough air.

I think the first day of note was our first Friday. Al Parker (of world distance fame) was there with his son, Steve, aged 16. Steve radioed back that he had achieved 34,600 ft., thus becoming possibly the youngest "Diamond height" in the world. These Texans do things in a big way with impressive modesty! Anne shortly radioed back that she was at 36,200 and —50°C in Doc's ship. This was a Colorado feminine record, previously held by the redoubtable Caroline Rowe, of Rhodesia, but not enough to beat Betsy Woodward's world record.

Doc and I hurriedly kitted up in our arctic clothing and oxygen masks and waited impatiently for the 2-32. Ultimately becoming airborne, we struggled up to 26,500 ft. in a dying wave, which

Anne Burns (front) and Janie Oesch after their record flight.

nevertheless was sufficient to beat the British two-seater record.

I can't say that I enjoyed the flight all *that* much. I spent a lot of time scraping the front of my spectacles and removing the oxygen mask from time to time to cough, as the oxygen, deep-frozen at —45°C from the previous flight, was attacking my lungs. I was very glad to have Doc as a nominal number two!

Anne arrived back after 4½ hours mostly spent above 30,000 ft. and —50°C. Her radio packed up due to the cold, so we were quite glad to see her!

Things calmed down a bit thereafter and I opted to take a day off in Oklahoma City to visit Marshall Claybourn, of U.S. Nationals contest directing fame, and to get a barograph calibrated, amongst other things.

Of course this was *the* day. I arrived back to learn that Doc had been going up strongly to reach about 40,000 ft., but unfortunately lost both his barograph and altimeter, so cannot claim the Colorado record. Anne and Janie Oesch, of Colorado Springs, had gone up to 31,600 ft. and broken the feminine two-seater world record held by the French. Their first try resulted in an abortive out-landing but they insisted on being dragged up again. Baulked on their first climb by cloud, it took them some 3½ hours to reach their final height. Frankly these girls are tough.

Well, that was about all for the flying. Impressions retained were primarily of the terrific hospitality, technical efficiency and genuine politeness of Americans.

Everything at the Black Forest Glider Port is in apple-pie order. The oxygen works, is totted up pronto, the tugs tug and above all the living facilities are of a first-rate standard.

Oh, and if you want to go ski-ing, that can be laid on too! Col. Al Faranworth, USAF, took me for a day's ski-ing at a place called Vail up in the deep Rockies. Lo and behold, it turned out to be a complete Alpine village, built from scratch in excellent Tyrolian style during the last year or so! It was only 300 miles there and back (which is about the entire length of Switzerland when you come to think of it)!

A great people, the Americans; they are obviously going places fast. Personally I am glad that they still speak English. It makes things a lot easier.

GLIDING AT SOUTH KENSINGTON

By MARTIN SIMONS

GLIDING people don't visit museums very often, being too busy building trailers, fettling instruments, waiting for the weather to improve, or even soaring. Most of us like to see old aircraft flying, as at the all-too-rare Shuttleworth displays, rather than in static display or model showcase. Interest in the history of aviation is fairly strong, however, and it seems likely that most of us, at one time or another, have spent an afternoon or more in the aeronautical section of the Science Museum in Kensington. This is the nearest thing Britain has to a National Museum of Aviation, and the collection is quite fascinating.

There is one glaring omission. Any member of the public visiting the museum in ignorance of our sport would go away with the impression that since Lilienthal and Pilcher died and the Wrights fitted their little engine into a glider, motorless flying has entirely ceased. There are showcases of model power planes and instruments, mocked-up cockpits of airliners and jet fighters, a number of complete aeroplanes, and a vast array of aero engines, some genuinely important, some interesting curiosities, some merely engines. Many of the exhibits obviously deserve their place because they represent important links in the technical chain of development or because they are historical relics that no one in his right mind would wish to exclude. Other items seem to be on show merely because the museum has them lying around. The German U-boat gyro-glider, which takes up a lot of useful space, yet which had very little technical or historical importance, is a case in point.

The display contains no solitary reference to modern gliding. There is no glider of any kind more recent than Pilcher's, there is no model of a sailplane, no gliding instruments (our various kinds of variometers are surely quite unique to the sport), not one photograph, no description of launching equipment, not a diagram, not a line of text, not a word. As far as the Science Museum is

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(very important)

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Type	span	L/D	min. sink	factory price
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DIAMANT 16.5	16.5 m	42	1.8 ft/sec	sFr. 26 500.– ($ 6155, £2160)
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concerned, we don't exist.

Some three or four years ago, the aeronautical section of the museum was moved from its old totally inadequate quarters, next door to the Imperial Institute, into its present new gallery on the top floor of the main building. Here there was more space and better lighting. A few months after the move, the present writer drew the attention of the museum authorities to the total lack of representation of gliding, and asked for action to be taken. A courteous reply was received, but nothing whatever was done. More recently two old gliders, the Rhönsperber and the Cross-Channel Gull, both in sadly deteriorated condition, were offered independently by different people, at different times, to the museum. Neither was accepted, even for safe storage. The Gull, we are delighted to hear, will not, after this apparently shortsighted rejection, be destroyed, but will be taken north of the border to be displayed next to Pilcher's original "Hawk". The Scots, whatever their ill-deserved reputation, are willing to find the several hundred pounds needed to restore the wreckage to condition suitable for exhibition.

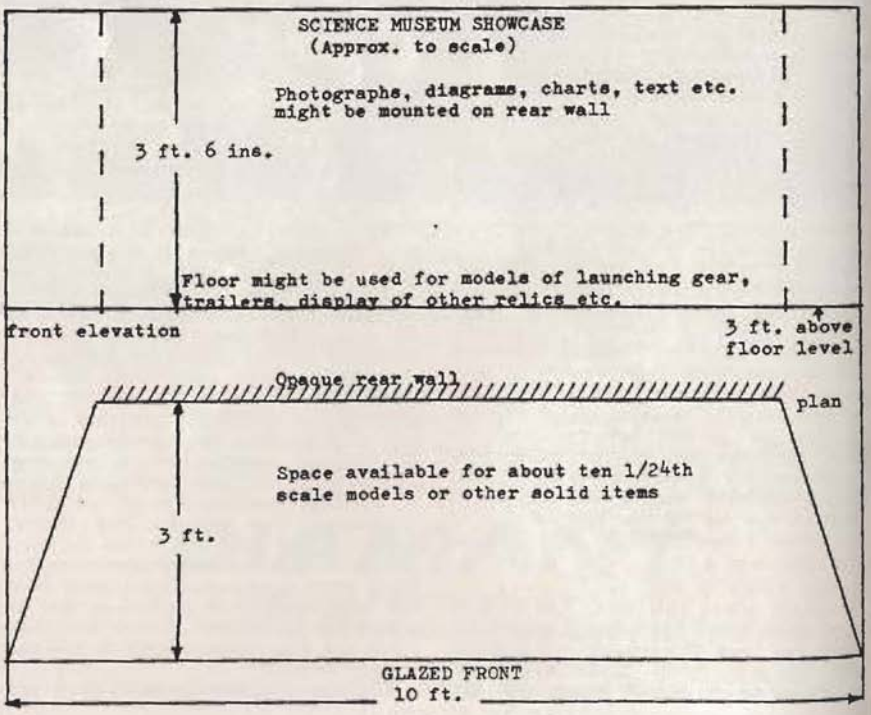
Further correspondence and conversation with the official responsible for this part of the museum at Kensington, Mr. Brian Lacey, indicated that neither lack of money, nor any deliberate policy of exclusion, is blamed for the inadequacies of the display. The new gallery is said to be too small for full-sized gliders to be shown. It is true that the Southampton manpowered aeroplane, which, like the gliders, has been rejected, has a wingspan as great as the width of the gallery. Its inclusion in fully rigged condition would mean some overcrowding. It does seem, however, after careful study and a few rough measurements, that a modern, or an old, sailplane could in fact be suspended in the place now filled by the above-mentioned U-boat gyro-glider. The wing at one end might overlap the tip of the Spitfire and at the other, Lilienthal might have to bank the other way a little.

Mr. Lacey is not, so far, very enthusiastic about this idea, and in any case there aren't any suitable gliders on offer just now. Presumably while pilots can go on flying such magnificent machines as the Scuds, Petrels, Weihes, Bussards and Kites, they will do so rather than give them away to any museum. The opportunity for him to have the historic Gull has passed; the 'Sperber, too, has been withdrawn. Where have all the Wrens gone?

All is not lost, however. There is a part of one showcase at present filled with nothing very much, and this could be devoted to gliding. It could hold, if our persuasion continues in strength and in a constructive manner, models, examples of our vital (and special) instruments, small pieces of ancillary equipment, and explanatory text, diagrams, relics like record barograph charts and photographs. Mr. Lacey seemed to brighten up considerably at the suggestion that we might somehow devise a working demonstration of an audio variometer. The whistles and deathly groans issuing from this would probably ensure a steady stream of spectators and might even draw small boys away from the static display of rockets at the entrance to the gallery. There isn't anything else that makes a noise in this part of the museum.

The author of this article is quite pre-

pared to continue the campaign until successful. The tentative offer of a single showcase must be followed up with some really sound suggestions as to how it might be used to good effect. It is important not to try to cram everything in; a successful display should concentrate on a few really important technical matters and at the same time show something of the historical development. The question of finance does not, at present, arise. What is of immediate concern, however, is that no one in the gliding movement should throw away any ancient instruments, nor destroy any relics. No exhibition would be complete, for example, without one or more of the early Cobb Slater variometers as well as more modern instruments and some less successful experimental ones. If owners of such things feel they ought to be included in the proposed display, they should write at once to me at the London Gliding Club, Dunstable, so that arrangements can be made to have the items looked after. There is even a possibility that any old glider, condemned from the flying point of view, could be stored safely at Kensington until such time as the museum can expand. At the same time, those interested should write offering suggestions about how the space ten feet wide by three by three, could be employed to best advantage. Whether or not it is eventually, or immediately, used in the way it should be seems to depend at least partly on whether our collective ideas about it are practicable, lively and attractive to the museum authorities. We have to persuade them that gliding is not a lunatic fringe activity, but is of technical and historical interest and can form the basis of an interesting visual display. If we can do this we should be able to secure the promise of more space at some later time when the gallery is extended. Ideas, please, *now*.



FREE DISTANCE

By PHILIP WILLS

This third and final article on the Italian Nationals concludes Philip's account of this event (See December—January and February—March issues)

THE task I shall not forget was, of course, Free Distance. This is always the highlight of any Championships, but never more so than in Italy because, what with the roads, the distances, and the telephone system, the retrieve is likely to be as big an adventure as the flight itself, certainly taking an extra day.

For various reasons, the only route for big distances from Rieti is the one to the south, and since the "toe" of Italy is mountainous and said to be unlandable, up to now all distance flights have been made towards Taranto and the "heel". So it was on this day. The maximum distance available is just over 500 kms., but as flying down the narrow sea-girt strip of land comprising the heel of Italy, late in the day, is obviously likely to run one into evening calm, so far the longest distance achieved had been Taranto airfield, just over 400 kms.

The straight-line course therefore runs south from Rieti, over mountains which, as one goes on, get gradually lower, then out over the flatter south-eastern plain to the sea at Taranto, then on into the "heel". I, however, decided to start on a S.E. course, to reach the giant soaring slope of the Gran Sasso near L'Aquila, and hoped to use this and a subsequent chain to the south to speed up my flight. This proved a wrong decision, since some pilots who took the straight line went further than I did, but it certainly took one over some enchanting country.

Unfortunately, there was a Designated Start, and first take-off was 13.30 hours. I happened to be towards the end of the list, so only took off at 14.15 hrs., by which time lift was over 3 knots, the earlier starters were on their way, and we had all missed at least an hour's distance.

Immediately after release I turned on course, skirted Mt. Terminillo on the south, and flew to a small cloud over 6,000 ft. Mt. Calvio, behind a deep valley containing the pinnacled village of Antrodoco; and one of the high points of the day immediately arrived. Because as I circled immediately over its crest I was joined by an eagle, who determinedly attached himself to one of my wing-tips and followed me round for at least a quarter of an hour. Fortunately I had my camera with me, and took a series of shots, of which two are the best I have in my collection (see cover of last issue).

From there to l'Aquila, and fast down along its Western wall, which then was followed by another gigantic rampart of the Montagne di Mailla, towering up to the 9,500 ft. peak of Monte Amaro. The sea-breeze fronts were conflicting over this and producing a truly impressive cloudscape, and there again I got a photo of a scene I shan't forget (see Dec.-Jan. issue, p. 428).

I avoided the cloud clamped on this peak, but took one a little further on to 12,000 ft., and from then on for a long way was in and out of cloud until, with the peak of Vesuvius just visible above the haze, nearly 75 miles to the west, I came out over the flatter eastern plain of Italy, west of Foggia.

The sky ahead was now nearly cloudless, but the sea-breeze front had moved east, and a big line of cumulo-nimbus, about 20 miles east of me, ran N.W.-S.E. along my track for many miles. So I flew towards it, and near Cerignola got under it, and in heavy rain found 5-knot lift. I turned on my oxygen, and climbed up into it. Here I made another mistake: I took it too high. At 13,000 ft. ice started to form, and I went on to the top at 17,000 ft. I then turned on course, and flew blind for perhaps half an hour. Later, Vergani told me that, in this same cloud, he broke off his climb at 13,000 ft. to avoid icing, and doubtless this made him many extra miles.

Fifty miles later I was on my final glide, and a slight complication intervened. Before take-off we had been briefed of a Military Zone into which we were not supposed to intrude. I was about to fly over a corner of it, and

might not have enough height to overfly it, since no further thermals seemed in prospect. So I diverged to the east, following a long, straight road and railway line beneath. I passed over a tiny railway station at 1,500 ft., flew on a few miles, and it was clear I must land. Should I take the last mile or two, landing in the middle of nowhere, or go back to the little railway station, with at least a telephone? Remembering my last Free Distance effort in the 1961 Italian Nationals, where I landed in the wilds and subsequently when Kitty arrived couldn't even find my glider until 5 a.m. the following morning (which led to a little justified criticism from my team as we rattled about through the night on fourth-class roads and walked around looking in vast ploughed fields with our torches), I took the easy way, turned back, and landed gently in a ploughed field by the station of the wee village of Cisal Sabina at 19.30 hrs.

* * *

The field erupted Italians of all shapes and sizes, and in no time I was whisked away in a battered car to a local café, where my forms and primitive Italian resulted in a lot of telephoning. Kitty's programme involved motoring down the Autostrada to Caserta, just short of Naples, calling in at one or two 'phoning points on the way, and then stopping at one of the Rovesi restaurants, spanning the motor-road, where she was to wait for my message. For here was the critical fork in her route, either across the tortuous and vertiginous roads over the spine of the peninsula to the eastern plain, or to keep to the western side if I had failed to cross the Apennines. When the call eventually came through, however hard I tried I could not get to speak to her myself (as a matter of fact she had been tempted away for a critical half-hour with the promise of better service in the local Post Office), but by the time my Italian friend hung up I was given to understand that my message would be given her. I had to hope for the best.

Through the Mont Blanc Tunnel on the way to the Italian Nationals.

In the meantime the carabinieri from Altamura, 10 miles away, had arrived in force. I felt bashful at giving them so much trouble, but they were kindness itself, I eventually got the impression that this was a change from their ordinary routine duties. But it's just as well that up to a dozen of our police force do not have to involve themselves every time a glider lands in a British field.

Four guards were left on the machine, and I was whisked in a jeep back to the carabinieri-station in Altamura. Much activity followed. A sextuplicate report was typed to Rome, with copies all over the place, giving my name, age (a sore point: the local Rieti paper called me the "piu ancienzo piloto"), aircraft details (What? no registration in your country?), and, in due course, reason for landing.

Now, in a foreign language you can hardly speak, it really isn't possible to describe what Free Distance is all about. If you try and say you set out in the morning without the faintest idea of where you were to land, and here you are, you feel you may get yourself locked up as a lunatic.

So I compromised. I pointed to the military zone, pencilled on my map, and said I had landed where I had to avoid infringing it — which was exactly true, as far as it went.

Two days later, back at Rieti, the local paper had black headlines: "007 British pilot Philip Wills landed at a secret NATO airfield in Southern Italy and was immediately surrounded by

armed carabinieri and Air Force Guards". My horrified expostulations were met with bland assurances not to worry.

Then I was taken to a local restaurant, where I ate under the watchful eye of a junior carabiniere, back to their office, where I was given back my landing certificate covered with rubber stamps, to a local hotel, which the carabinere opened up for me and where they obediently booked two bedrooms, although I said we would probably not arrive until around 4 a.m., then out and away through the sleeping countryside back to the Dart.

After trying to explain to all and sundry what gliding was all about, I got my sleeping bag out of the locker, spread it out under one wing, and lay down to doze until my team fetched me. The silence of the warm night was broken by the occasional cheerful chatter of the guards around my glider, and by the barking of innumerable dogs. The night sky was ablaze with a million stars.

I wished, sleepily, that some of the workers at Kirbymoorside could see some of the odd places where their craftsmanship took us, and how it was admired by the people who came to see it.

At 3 a.m. the headlights of the Fiat cast a yellow sword through the night from the horizon, and a few minutes later my team arrived. They had been misdirected, and had been nearly to Bari, when Justin managed to solve the somewhat garbled address they had been given. In ten minutes the Dart was in her trailer, and we were being led in triumphant convoy back to our hotel.

The only sad thing about the journey back next day was that we had no time to stop and look at the wonders on the way. Pompeii, Naples, Rome, and a hundred other marvels rushed by under the imperative necessity of our return. But I consoled myself: these would still be there another day, whereas with a glider you have a key to the way ordinary people live in out-of-the-way places which is denied to the tourist.

I had not done too well on this day — eleven pilots had got beyond the Foggia barrier, and I was eleventh, with 366 kms., against Vergani's 440 kms., the longest flight yet made from Rieti. Good for him.

SAFETY PANEL REPORT

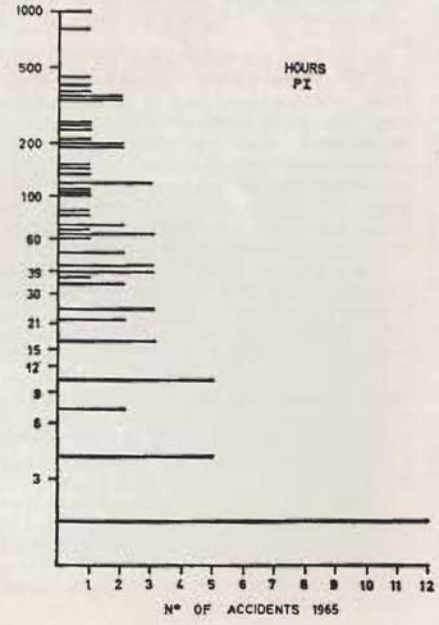
MEMBERS: P. Minton (Chairman), J. C. Everitt, R. A. Neaves.

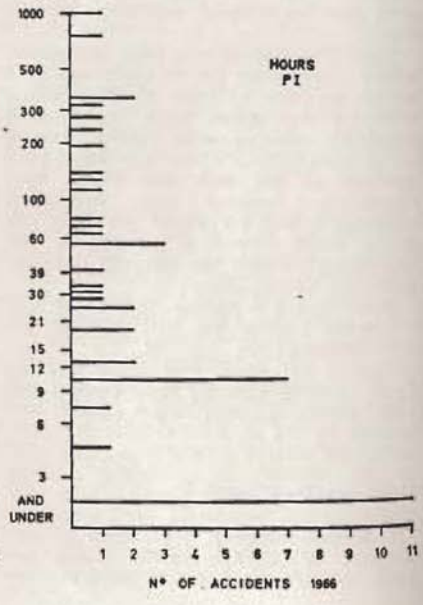
AS last year the work of the Panel has only been made possible by the efforts of Club Safety Officers and Instructors who have provided prompt and accurate information on accidents and incidents. Because of this self-discipline we have been able to strengthen further our connections with the Flight Safety and Accident Investigation Branches of the BoT (Civil Aviation Department) and they in turn are continuing their policy of co-operation and aid. It is only to be regretted that the excellent example of positive bureaucracy shown by these Branches of the Board is not followed by all those who are responsible for deciding the freedom or restriction of the gliding movement.

We have made various attempts to correlate reports received and so far have only been able to produce one useful way of presenting the information. Appended are two diagrams (presented on logarithmic ordinates) showing the number of accidents sustained by pilots of varying experience in the last two years.

The major difference between the two diagrams is a marked reduction this year in the number of accidents to pilots with over 60 hours' experience. However, this may only show that 1966 was a worse year for advanced flying than 1965. Although about half these accidents were to training two-seaters (often involving misuse of the airbrakes by the pupil) a disproportionate number of the remainder involved experienced pilots spinning on the approach or off a cable break.

There are surprisingly similar patterns of accidents to inexperienced pilots in both years. The large number of accidents to very inexperienced pilots is particularly disturbing as it includes a large proportion of stalling and spinning accidents which nearly always have serious consequences. The second peak





between nine and 12 hours is mainly due to undershoot and approach accidents.

It would appear that there is still inadequate supervision and follow up training just after a pupil has gone solo, and that supervision at a later stage is not sufficient to prevent the results of overconfidence. In spite of many warnings, pilots of every level of experience still get into situations, which are so much out of hand that the glider enters a spin near the ground.

Unfortunately this year has proved that it is extremely unwise to venture into electrical storms and pilots should be aware that the bonding being incorporated in gliders is not a protection against direct strikes by lightning. Following an incident reported in a competition, a further warning must also be issued on the dangers of collision whilst thermal soaring in groups.

I must end by thanking the BGA office for all the telephone calls, paper, etc., they have dealt with on our behalf and hope that perhaps next year they will have to spend less time on dealing with accidents.

P. MINTON, *Chairman.*

SITES COMMITTEE REPORT

THE Sites Committee was formed in March, 1961, and I was its first Chairman. Now that I am leaving, I may perhaps be pardoned for a little crystal gazing. The occasion for this is a most significant event—the entry of the Glasgow and West of Scotland Gliding Club into Cumbernauld airstrip.

When the Committee was formed, the main sites problem was how to hang on to, buy or lease surplus airfields. Lasham apart, we lost that battle. We had been led to suppose that we would get favoured treatment in this field, and we also imagined that, if we could not buy cheaply the grass parts of an airfield, the runways were of little value to anyone else. We were wrong in these assumptions. For one thing, we were not favoured. It may be that the Crichel Down affair prevented it, but I doubt if those who were in a position to help really ever intended to.

As to runways, the demand for hardcore and their value as foundations for broiler houses made them so commercially desirable that we could not compete. Exceptionally, as in the case of Husband's Bosworth, we did buy in the open market, and in this case, we had very pleasant relations with the Ministry officials concerned in the auction. But I do not myself look to surplus airfields as an important future source of sites.

I think that there is a future in joint user on RAF and civilian airfields. As to the former, slow progress is being made. The Essex Gliding Club, for instance, has run into a lot of detailed problems, not least the difficulty of getting permission to aero-tow, but, with much help from the ATC (Air Training Corps) its problems are gradually being solved, and I do not doubt that there are good possibilities in the future.

New clubs, and the many established clubs which have insufficient security of tenure, should, I am sure, consider buying land for airstrips in the open market or trying to share existing strips. The acreage required is only a fraction of that needed for a traditional airfield, and with present land prices this is of crucial importance.

This brings me back to Cumbernauld. Last winter (1965-66) the club concerned was without a site, and was advised, during the course of a BGA visit, that it would do well to consider the airstrip being laid down as part of the development of Cumbernauld New Town (other Local Authorities please copy). As a result of its own enthusiasm, the support of the Development Corporation and encouragement from the Board of Trade (who, throughout my tenure of office have, first through Mr. L. C. Nash and now through Mr S. N. Chilton, given the Committee all the help, advice and support it could possibly want) the club may well be the operator of the strip, and may well attract the other gliding clubs

as well as a flying club. This is the sort of thing which is badly needed. Ann Welch has said—and I wholeheartedly agree—that the chief obstacle to the growth of the movement is the chronic shortage of sites. Here is an example of how to go about overcoming that shortage.

The other, and somewhat improbable, function of the Committee has been as watchdog extraordinary of legislation. My profession may have something to do with this. My successor is also a lawyer, so no doubt this function will continue. On at least two occasions, possible legislation adverse to our interests has been withdrawn or favourable legislation enacted subsequently. I have found those responsible to have open minds and to be as capable as they are friendly, but I do wish that bodies likely to be affected could be consulted as a matter of course *before* legislation gets to the draft stage. The maxim "act first—think later" makes one, often unfairly, suspicious of the men from the Ministry. I would welcome a "mini-PACFAG" set up, for instance, by the Ministry of Transport, whose functions affect gliding in quite a lot of ways.

In the end, the Sites Committee is only as good as its clubs, and, not only because they have saved the BGA a lot of work, I would like to congratulate those clubs which have solved their own site problems over the years. If I named any, I might omit some. Suffice it to say that in this field, as in others, the old saying about helping oneself holds good.

A. L. L. ALEXANDER, *Chairman.*

TECHNICAL COMMITTEE REPORT

COMMITTEE MEMBERS: F. G. Irving (Chairman), R. C. Stafford Allen (Chief Technical Officer), P. Bisgood, J. B. B. Johnston, J. D. Jones, J. Leach, K. R. Obee, C. O. Vernon, B. E. Warner, L. Welch, R. B. Stratton.

Adviser to the Committee: Lt.-Cdr. R. Brett-Knowles (Instrument Development Co-ordinator).

Terms of Reference:

To advise the Council on technical matters, in particular to supervise the Airworthiness Scheme.

1. Supervision of the issue of Certificates of Airworthiness.
2. Supervision of the approval of Inspectors.
3. Consideration of all technical problems.

Work of the Committee:	1965	1966
Number of Meetings	7	7
New Certificates of Airworthiness issued	72	68
Certificate of Airworthiness renewals	372	407
Major Overhauls (included in renewals)	36	51
New Glider Types certificated	3	2
Renewals of Inspection Approval	80	80
Renewals of Senior Inspection Approval	17	21
Renewals of Firms' Approval	4	3
New Inspectors Approved	17	13
New Senior Inspectors Approved	2	3

AS the above statistics indicate, the British Gliding Association is now responsible for the airworthiness of a significant proportion of the flying machines in the U.K. That we have succeeded in doing so on a largely amateur basis (except for Ray Stafford Allen), whilst retaining the confidence of the appropriate departments of the Board of Trade and the Air Registration Board, is mainly due to the conscientious and devoted efforts of the inspectors in their

hangars and workshops. On visits to clubs and on occasions such as the Inspectors' Conference, one cannot fail to be impressed by the enthusiasm and attention to detail of those whose main reward is that of seeing a job well done.

So far as the Committee is concerned, 1966 contained a large amount of routine, such as modifications to existing gliders and approval of new types such as the K-6E and Schweizer 2-22. Other topics of interest are mentioned separately below.

Electrical Bonding. Taking into account a fatal accident due to a lightning strike and previous less serious incidents, it was decided that an elementary form of bonding should be incorporated in all cloud-flying gliders. Full bonding, as specified in Section D of BCAR, would have been too difficult and expensive to incorporate, so it was decided to concentrate on a simple system which would protect the pilot against electrical shocks due to build-up of different potentials on all control levers and other metal parts with which he would be likely to come into contact. It should be noted that this form of bonding will not necessarily protect the structure or the pilot against the effect of major strikes on or very close to the glider, but it is thought to be an adequate protection against the more usual source of discomfort and danger.

Repair Manual. Ray Stafford Allen has completed his compilation of this Manual, which will form a replacement for AP 2662A together with much additional material. Copies are available from the BGA office.

Inspectors' Conference. The Conference enjoyed the hospitality of the London Gliding Club on 29-30 October, 1966. The attendance was rather small (about 25), but the discussions were of great value. In particular, it became clear that those present were not in general favour of a two-year C. of A. system.

Accidents. 1966 was fortunately free from accidents of technical origin, although consideration was given to the Report (CAP 263) on the accident to a Tutor in 1965. The action taken as a consequence of the accident involving a lightning strike in May, 1966, is described above, and the official report is awaited with interest.

German Towing Hooks. After various difficulties due to different ring sizes, the firm of Tost were finally persuaded to produce a hook for winch-launching which replaces the "Safety Coupling". It is known as the "EKombi" and it, or the Ottfur, must now be used on all aircraft to which the "Safety Coupling" was original equipment.

Discipline. As the introductory paragraph indicates, the large majority of inspectors maintain very high standards. But we would be less than human if there were not occasional lapses and I regret to have to report that the Committee found it necessary to reduce the status of two Senior Inspectors to that of Inspector, due to a fundamental failure on the part of those concerned to appreciate and accept the responsibilities of the senior approval.

Chief Technical Officer. In the course of his duties Ray Stafford Allen visited 23 clubs, some on several occasions. Also a technical course was held at the London Gliding Club during the month of February.

News-Sheet. Ray Stafford Allen has continued to publish his monthly news-sheet, which has become a most important means of communicating information on modifications, defects and inspection methods.

Acknowledgments. This report customarily concludes with a grateful tribute to those who have helped the Committee during the year. This year much of the Committee's appreciation is expressed in the introduction, but it remains to thank the firms and the office staff for their largely unseen but quite vital work. In particular, Slingsby Sailplanes have been most generous in their help, and we must also record a very satisfactory liaison with Schleichers and Tost in Germany, SZD in Poland and Schweizers in the U.S.A.

F. G. IRVING, *Chairman.*

FLY INTO THE NIGHT

By JANUSZ RUGE

As briefly reported in our last issue page 76 a claim for a new world two-seater height gain is awaiting homologation. Mary and Jan Mikulski have translated the following article which appeared in the Polish magazine "Skrzydlata Polska"

THE 5th November, 1966, started well, as since early morning a very strong "Halny" wind (Föhn or Mistral) had blown over the Tatra Mountains. Some pilots had already been up to Gold or Diamond height, and they looked at the sky and listened to the met. forecast. A member of the Tatra Aeroclub at Nowy Targ, Stanislas Jozefczak, towed Muchas one after another into the Zakopane area. On his way back he keenly observed the terrain and investigated the rotors. "Yes," he decided, "this is it!" The long awaited day had come. Today the world's altitude record in the two-seater class must be attacked!

The flight plan was as follows: take-off during daylight, then a trial climb and, just before sunset, a descent right down to the base of the rotor. The actual climb to be at night, and then land by the flarepath of the airfield at Nowy Targ.

Such a flight plan was chosen as a result of many years of observation of the behaviour of the waves, which seemed to intensify markedly after sunset and during the night. Last year's attempts, made during daylight only, did not bring the expected results, and only a Polish National record was broken.

The Bocian was being prepared. There were 14 litres of oxygen to be stowed on board. In the front cockpit a KP-18 oxygen set, and in the rear cockpit a SAT-5 set was fitted in place of the not-yet-available KP-18, which had been in the workshops since last Spring awaiting official approval! The SAT-5 is not really suitable for night flights, particularly in the rear cockpit of a Bocian, as it is necessary to regulate manually the flow of oxygen in relation to the altitude. In the dark the instrument panel in the front cockpit cannot be seen, and the fur coat of the pilot was in the way as well.

Stanislas Jozefczak's passenger (J. Tarczon) had an additional hand-held altimeter throughout the flight, and he controlled the flow of oxygen according to its reading. The hand-held altimeter really became very useful in the later stages of the flight. After 6,000 m. had been exceeded, one of the two 5 m./sec. variometers and the altimeter in the pilot's cockpit stopped working, and the only instrument to show the pilot his altitude was the one in the passenger's hand. It travelled from passenger to pilot and back again several times, though its indications were only approximate, as it was not connected to the static vent.

Communications with the crew were also inadequate, as the pilot was busy most of the time, and talking was difficult due to the oxygen masks.

The radio was checked and the barograph prepared, though unfortunately the only barograph calibrated up to 16,000 m. had been damaged on the previous day in the strong turbulence of a rotor. Jozefczak decided to take one calibrated to 12,000 m., as he thought that, according to the current record list, it would be sufficient for the gain-of-height record.

Usual pre-fight actions followed: the pilots put on fur clothing, the barograph was properly installed, and a final check was made for torches, navigation lights, Verey pistol and oxygen. At 15.24 hrs. they took off behind a Junak. Everything on board the Bocian was under control, and the first radio reports were routine.

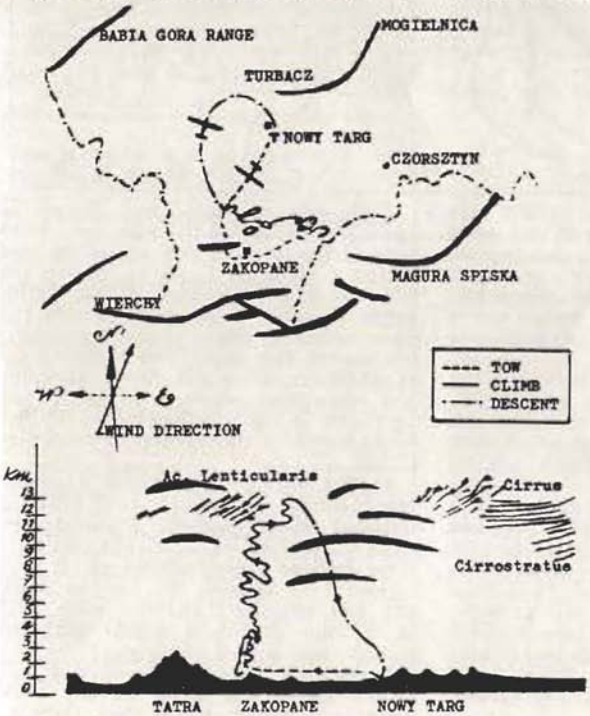
The pilot's "wave flight report" submitted after the flight on a special form — descriptive and graphic — used by the Aeroclub of Tatra for all flights of special interest, is quoted below. These forms have to be filled in by pilots immediately after landing.

"On the 5th November, 1966, I took

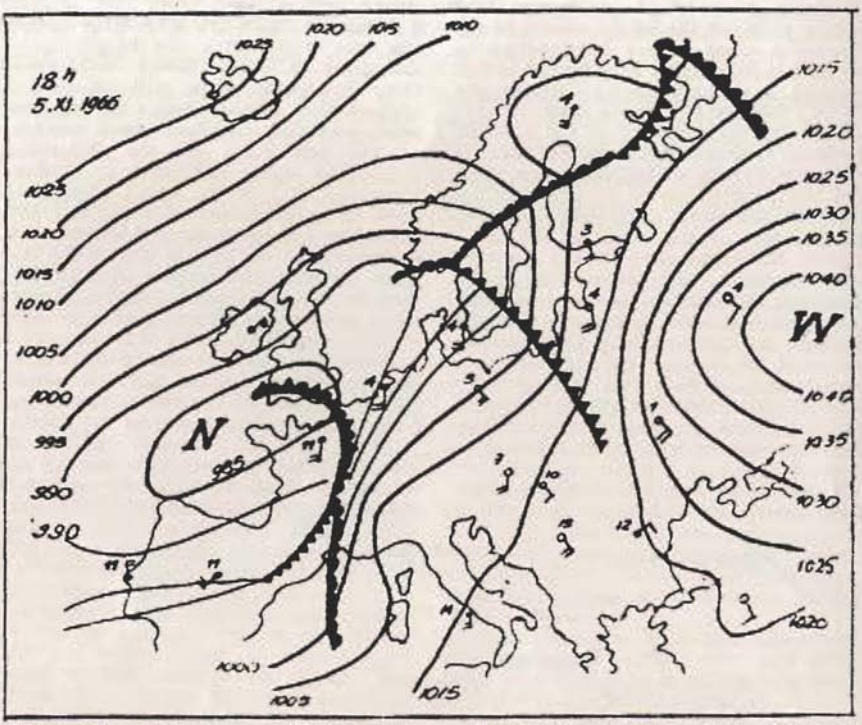
off from the airfield at Nowy Targ hoping to break the height record in the two-seater class. I had been preparing for such a flight for a long time, and had planned to take off during daylight and fly into the night. This required a rather special approach because of the different 'look' of lenticulars in the darkness. I had been towing gliders in the morning and this enabled me to become familiar with the prevailing conditions and with the location of the areas of lift. During the day cloud cover was $\frac{7}{8}$ strato-cu but lenticulars were not visible. In the afternoon the strato-cu started to disintegrate and lenticulars appeared—although not very well defined, they gave an indication of lift, as they were situated at a considerable altitude. At the time of take-off only one rotor was left east of Zakopane; it was giving lift from 200 m. above aerodrome level up to a height of about 2,300 m.

"Take-off in the Bocian from Nowy Targ aerodrome was made in a fairly strong surface wind from 200° behind a Junak, at 15.24 hrs. The flight during tow was mostly at a low height up to Zakopane in fairly strong turbulence. Over Zakopane, while still on tow, I realized that I must decide on my low point preceding the final climb quickly, as the last rotor in the Bukowina Tatrzanska region had begun to weaken. I released at 1,700 m. above aerodrome level in an upcurrent of 8 m./sec., and I continued to climb up to 3,500 m., then cautiously, on the side of almost the last rotor (about 5 km. long) I tried to descend as low as possible. In fact I was ready for an away landing on the slope of Bukowina Tatrzanska if necessary.

"However, I did manage to descend as low as 450 m. above take-off height (about 150 m. above the terrain), and from that moment I started my climb. At 4,500 m. I left the rotor and moved into the wave proper. Lift was 3.5 to 4.5 m/sec. When it started to weaken I moved in the direction of Zakopane.



Map showing flight route in relation to mountain ranges, and diagram of vertical structure of cloud including the "Halny" wall.



Whilst doing this, I was climbing at a steady rate of 4 m/sec. with the wind from 190° and 110 m/sec. wind-speed. At this stage I managed to reach 11,500 m. in an area of lift about 8 km. long. When lift started to decrease again, I moved further on in the direction north of Zakopane.

"At this point in the 3 m/sec. strong lift I reached 12,200 m. It was already night-time. The 'Halny' wall and all lower cloud had disappeared completely, and only lenticulars remained, looking like black strips in the starlit sky. The wind was still 210°, velocity 85 km/h. I started my descent at 18.00 hrs. and landed at 18.40 hrs."

The pilot's met. observations during the flight were as follows:

"Lower wind 220° — 8 m/sec., upper wind 180°, varying later on between 170°-190°, average speed about 120 km/h., gusts up to 180 km/h. Wind at the highest level reached 210°, about 85 km/h. Cloud cover — nil."

From the synoptic chart shown at 18.00 hrs. GMT, i.e. 19.00 hrs. local time, it can be seen that the set-up was almost perfect. At 12,560 m. he left the lift, which was indicated on the variometer as about 3 m/sec. Following the observations in flight of the lenticulars, lift during that night was reaching up to 15,000 m. Over the Nowy Targ lift has often been observed at heights of 16-17,000 m. This is confirmed by jet aircraft and by observation of lenticular clouds.

During the flight there were relatively few messages over the radio, as untalkative and modest Stanislas reported very little. Conditions made this difficult anyway, because above 10,000 m. it was awkward to remove the oxygen mask and talk into the hand-held mike, and in addition speech is unintelligible in rarefied air.

From time to time, the crew transmitted the actual wind velocity over Kasprowy Wierch which they received

by telephone from the met. station. They listened, tense and anxious; at last there was a message, "I am beginning to descend", and later, "I am over Nowy Targ at 4,000 m. and I can see the aerodrome lights." They fired a Verey light in acknowledgement, and got the same answer from the air.

During the flight and at landing time, there was practically no wind on the aerodrome, except for a very light S.W. breeze of 1-2 m/sec. The Bocian touched down at 18.40 hrs. (dusk fell at 16.40 hrs.), and the cold but happy occupants were immediately greeted by their crew. They removed the barograph and looked at it — all in order — all recorded! The graph reached the upper edge of the drum. At first glance it looked like a new world record! Everyone began to congratulate Stanislas and he was tossed into the air. "Higher, higher," shouted someone, "he's not afraid of height."

His impressions made everyone a little envious of the "cosmonauts". Flight at night seemed so peaceful — a feeling of motionless suspension with the instruments being the only indication of the fact that one is airborne. Lenticular clouds recognisable only as dark spots in the starlit sky and the lights of Prague, Katowice, Krakow and other towns shining out far below.

After the usual entries of data on the barograph had been completed and the barograph fixed, a provisional height was calculated, but without success. The barograph was only calibrated to 12,000 m. and the pen had gone far beyond the last point of calibration. For the compulsory re-calibration, the barograph had to be taken to Warsaw, but the 5th November was a Saturday and their patience in waiting for the result was put to the test. The provisional reading after calibration showed the lowest point as 1,050 m. a.m.s.l., i.e. approximately 150 m. above ground level at Bukowina Tatrzanska. The highest point was 12,560 m. a.m.s.l. with a gain of height of 11,680 m. The official figures from the F.A.I. are not yet known, but the modest, pleasant and friendly pilot of the Tatrzanski Aeroclub, instructor and aerodrome manager of Nowy Targ, broke a world record and the sixth national record with this flight.

The famous Sierra Nevada in the U.S.A. had been beaten!

* * *

Questions which now present themselves are: Where is the stratospheric glider? What happened to pressurised suits? Why was the work on the conversion of a glider or of one Bocian to do stratospheric flights interrupted? Where is the enthusiasm of the Zarzad Glowny APRL (the Managing Committee of the Aeroclub of Polish People's Republic) after Jozefczak's record in 1961 for the design of these gliders?

We are able to fill up all the places on the list of altitude records by adopting standard equipment. To fly at Bishop, Americans had to build extra strong, all-metal gliders. In my opinion, at this moment everything has been squeezed out of the standard equipment. No one here will be able to fly higher without risking health or life. At the most, women may reach men's achievements, but that will be all.

In contrast to all other record tasks, we have reached the technical limit for altitude flying, as it will no longer be possible with our present equipment to exceed the 3% rule to break a previous record.

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AUSTRALIAN NATIONALS

By GARY SUNDERLAND

TO most Australians the Christmas holiday season means lazy days at the seaside. Soaring pilots prefer the searing heat of inland airfields, the experience of cool climbs in the upper air, with wheeling multi-coloured sailplanes and the excitement of competing in the Nationals.

This year the venue was at Narromine, in New South Wales, the centre of an area of soaring country so vast that it could swallow up most of Europe.

From the south came pale-faced Victorians, straight from the drizzle of their "English" climate, to fly against sunburnt South Australians used to desert flying in "Texas-style" thermals, while from the north came Queenslanders, escaping from the tropical rain of the "wet" — a thousand miles away.

Pilots competed in two leagues, League 1 being restricted to high-performance sailplanes with a glide ratio of 25 or better. Most pilots flew locally manufactured Ka-6's or ES-60's (Boomerangs), although there were a number of home-built and imported gliders, notably the Sydney-based Foka, Sagitta and BG-12. Sixty-two pilots competed in League 1, mostly in two and three man teams, flying on alternate days to a "scramble" system designed to match all the pilots against one another. As pilots flew a different number of days, the average score over the days flown decided the placing. There were twelve contest and two rest days.

Peter Heginbotham, representing New Zealand, contested the Tasman Trophy against National Champion Malcolm Jinks.

The weather co-operated reasonably well. During the practice period and the first contest week the air was moist, and plentiful cumulus were available at midday with frequently overdeveloped cunimbs in the late afternoon. These storms sometimes interferred with the tasks as high stratus pushing out from the storms cut off convection.

The second week saw generally drier air with blue thermals or just wisps of cloud.

The most notable day during the practice week was Christmas Day last, when four pilots nominated an out-and-return Narromine, Temora, Narromine, of 513½ kms. and three pilots completed the task for Diamond distance. They were Jan Coolhaas, Foka, and "Nobby" Clark and Chas. Suter, each in a Ka-6.

Peter Heginbotham landed just 9½ miles outside the field on the final glide. It was getting dark and he did not want to risk damaging the Boomerang he was to share with an Australian pilot. This was less than 2 km. short of Diamond Distance.

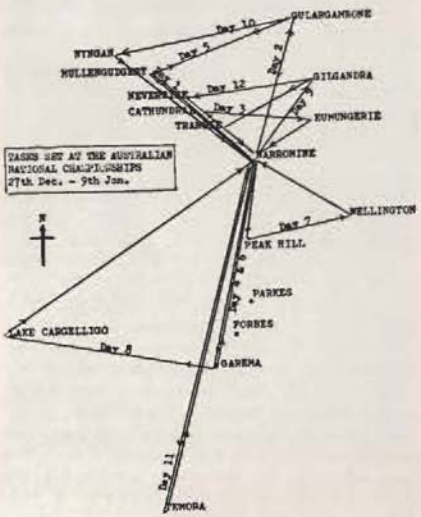
Summary of League 1 tasks:

Day 1 — 27th December

Strong thermals forecast with overdeveloped cu spreading in late afternoon. Wind generally north, 12 knots.

TASK: Out-and-return Mullengudgery, total 190 km.

There were 27 starters in League 1 and conditions turned out as forecast. Maurice Bradney won the day with 2 hrs. 15 min. (52 m.p.h.) in his ES-60, followed by Malcolm Jinks (ES-60),



2 hrs. 17 min. and John Blackwell (Foka) third with 2 hrs. 21 min.

Day 2 — 28th December

Moderate thermals, light north winds.

TASK: Triangle, Gular, Mullengudgery, Narromine, total 290 km.

A storm developed near the second turning-point and spreading stratus brought most pilots down on the last leg. Bill Simpson (Ka-6) was the only one to make the drag back to Narromine, so marks were for distance only. Equal second: Johnnie Rowe (ES-60) and R. Martin (ES-60). Third: C. Churches (Ka-6).

Day 3 — 29th December

Dry and strong thermals forecast with light north-easterly winds.

TASK: Triangle, Cathundral, Eumungerie, Narromine, total 167 km.

Actually high stratus resulted in very poor soaring conditions. Peter Heginbotham reported the lift was very weak and extremely narrow and broken. Only Tommy Thomson (ES-60) made it home to win the day, and once again marks were for distance only. Second: V. Kasak (BG-12) and Peter Heginbotham (ES-60) third.

Day 4 — 30th December

Same forecast as the previous day.

TASK: Out-and-return to Garema, total 300 km.

The day turned out to be extremely unstable, with cumulus forming early, giving 1,000 ft./min. lift. Several storms developed along the track and one near Parkes spread out to cut off convection as several pilots tried to race around it. Once more Bill Simpson stayed on track and worked weak lift to the turning point to retain his perfect average. Only 7 pilots reached Garema and marks were again for distance only.

Day 5 — 31st December

Strong thermals were forecast to 8,000 ft., with light winds low down.

TASK: 300 km. Triangle, Mullengudgery, Gulargambone, Narromine.

It was not a record-breaking day, but conditions were good enough for some fast times to be recorded. Times for the first six places varied between 4 hrs. 3 min. to 4 hrs. 32 min.

John Blackwell in the cockpit of his Foka.

Peter Heginbotham, 6th place, was able to claim a new New Zealand record with a speed of 41.2 m.p.h. First: Malcolm Jinks; Second, B. Wrenford (BG-12); third, A. Patching (ES-60).

Day 6 — 1st January

Not a few sore heads greeted the usual clear blue sky of morning with a promise of strong thermals (rough!) with a 15-knot east wind.

TASK: Out-and-return to Garema, total 300 km.

A good day and only 6 pilots landed out, so speed marks were at a premium. John Blackwell (Foka) 3 hrs. 43½ min. Johnnie Rowe (ES-60) 3 hrs. 45½ min. and Sue Suter (ES-60) 3 hrs. 52½ min.

Day 7 — 2nd January

Moderate thermals with a marked windshear at 6,000 ft. and thunderstorm activity expected from the south-west.

TASK: 200 km. Triangle, Peak Hill, Wellington, Narromine.

Rough weather was expected by mid-

afternoon, but this did not eventuate, and once again it was very much a speed task with times varying from 2 hrs. 32½ min. to 2 hrs. 49 min. for the first six places. First, P. Rohrlach (ES-60); second, Peter Heginbotham, 2 hrs. 36½ min.; equal third, M. Bradney (ES-60) and M. Page (Ka-6), 2 hrs. 38½ min.

Heginbotham was able to claim another N.Z. record with a speed of 50 m.p.h.

Day 8 — 3rd January

Very good soaring was forecast with dry thermals to 10,000 ft. and a light south-westerly wind.

TASK: 500 km. Triangle, the first ever set at an Australian Nationals, Garema, Lake Cargelligo, Narromine.

Conditions were good on the first leg but task-setter "Wally" Wallington had no means of forecasting the large bank of cirrus which sat over the second leg and cut the lift to 200 ft./min. Only 7 pilots got round the second turning point and none got home. Malcolm Jinks made it half-way back on the last leg to win the day. Second, D. Deane (Ka-6). Third, E. Sherwin (Ka-6).

Day 9 — 5th January

The 4th was declared a rest day when it became obvious that long retrieves on bad roads would keep everyone up all night.

Moderate thermals combined with a 20-knot N.W. to S.W. wind made the task-setters opt for a short triangle.

TASK: Gilgandra, Trangie, Narromine, total 172 km.

The task was not easy and all landed out with two on the aerodrome just short of the finish line, and Tjaco Boersma a short Ka-6 nose across the line. A day when the extra penetration of the "hot ships" paid off.

J. Coolhaas (Foka) won with 2 hrs. 23 min., followed by Johnnie Rowe, 2 hrs. 27½ min. and Sue Suter with 2 hrs. 32½ min.

The next day was declared a rest day due to a strong forecast wind which did not eventuate.

Day 10 — 7th January

Moderating winds and better lift were forecast.

TASK: 346 km. Triangle, Gulargenbone, Nyngan, Narromine.

The second leg was something of a problem as the lift was not good and navigation confusing across the sparsely populated river flats. Also a strong headwind sprang up on the last leg which had many pilots worried on their final glides. After a very good speed around the course, Tommy Thomson had his hopes dashed when he was unable to keep rolling long enough to cross the finish line.

First, John Blackwell, followed by M. Waghorn and C. Churches.

Day 11 — 8th January

This was to be the day of days. The Wallington board gave strong lift to 10,000 ft. or more in clear air and virtually no wind.

TASK: Out-and-return to Temora, total 513½ km.

17 pilots completed this task and 7 landed short, with Hugh Eddie just near enough to get his Diamond distance. Visitor Max Howland also flew a Ka-6 around the course. It was the third Diamond for Merv Waghorn and the second Diamond for 14 others.

Peter Heginbotham came from New Zealand.

Some pilots went to 12,000 ft. and Gold height. Malcolm Jinks flew home along a cloud street and had to use his brakes to let down. Times varied from 6 hrs. 1 min. to 6 hrs. 36 min. in the first six places. First, John Blackwell. Equal second, M. Jinks and V. Kasak. Third, M. Bradney.

Day 12 — 9th January

A very hot and strong north wind made conditions low down, with broken thermals, very unpleasant for the pilots. The task was shortened when it became evident that the wind was stronger than the forecast 20 knots.

TASK: 200 km. Triangle, Eumungerie, Nevertire, Narromine.

The lift proved to be mainly of the order of 400 ft./min. to 6,000 ft. with few good climbs recorded. 15 pilots completed the task, which was won by J. Rowe and M. Waghorn with 2 hrs. 50½ min. Second, E. Sherwin, 2 hrs. 54 min. and third H. Clark, 2 hr. 58 min.

Final averages showed Malcolm Jinks winner of the Tasman Trophy and National Champion for the third successive year. Malcolm's team also won the Team Trophy.

The Schneider Award went to George Detto for the most tenacious effort during the competitions.

League 2, flying lower performance aircraft on generally shorter tasks, was won by Tony Solomons, flying solo in an ES-52B Kookaburra.

At the final presentation and closing ceremony, the Director-General of Civil Aviation, Mr. Don Anderson, said that the contest was an outstanding success. Over 40,000 miles had been flown in 2,000 flying hours without a single accident.

Final leading average scores		*Points*
M. Jinks	ES-60	984.25
J. Rowe	ES-60	970.75
J. Blackwell	Foka	939.25
D. Deane	Ka-6	931.25
Sue Suter	ES-60	910.5
V. Kasak	BG-12	891
B. Martin	ES-60	879
M. Waghorn	ES-60	872
M. Bradney	ES-60	860
P. Heginbotham (N.Z.)	ES-60	853

GLIDER TRAINING AND CLUB ORGANISATION

By R. P. SAUNDBY, Cyprus

STARTING with Ann Welch (SAILPLANE AND GLIDING, April, 1966), there has been increasing correspondence on the subject of professionalism. Associated with this there has been a strong undertone of discontent with the present gliding organisation. In my opinion the correspondents have confused three separate issues:—

(a) The need for full-time management in clubs.

(b) The employment of servants to do the chores.

(c) The excessive ratio of work to flying in many clubs.

As I am in the apparently underprivileged group, married, in my thirties, non-private-owner with an addiction to gliding, I set down my personal experiences and opinions.

I started gliding in 1960, having had certain power-flying experience. Since 1960, I have flown about 350 hours from 1,400 launches at eight clubs, service and civilian. Of this flying, about two-thirds of the launches and half the hours have been instructional flying. I am, at present, the C.F.I. of an overseas Service gliding club and my name is not to be found on any rating list.

It is true that gliding is divided into two worlds. On the one hand there is the private owner, or member of a well established club, who goes for an hour's soaring, from an aerotow launch. Doubtless, he does his share of the work but he has had a reasonable flight. On the other hand, there is the member of a struggling club, who spends all his weekend wrestling with antiquated ground equipment and on Sunday evening is lucky if he gets a couple of four-minute circuits in the T-31.

It is not just a question of money. If travelling and incidental expenses are taken into account, flying may cost the member of a struggling club ten times as much per minute spent in the air.

This was well illustrated in SAILPLANE AND GLIDING of December, 1966. The Surrey Club news complimented Bill Dean who has gone from ab-initio to Gold C with two Diamonds in three years. The same issue contained a rather plaintive letter from Peter Warren, telling us of his 35 hours' flying in perhaps 15 years.

The problem, then, is how to raise the standards of these struggling clubs. When I took over as C.F.I. my club had just had a series of four accidents. Three of these were associated with inexperienced operation of aircraft. Judging from the sad tales published in the *"Instructor"*, others suffer the same problem. The cost of these accidents, both in loss of aircraft utilisation and rising insurance premium, is more than the gliding movement should afford to pay. More difficult to cost, but of no small amount, is the continuous loss of time at any small gliding club from inexperienced fumbles.

Faced with this low level of experience when I took over the club, I deliberately discouraged recruitment. My club flies about 400 hours a year and the membership has fallen from 75 to 40. This means that the hypothetical average member will fly 10 hours a year. In my opinion this is a minimum figure for the gaining of experience and the maintenance of safety. In my own gliding career I have never flown less than 25 hours in any year. I analysed the statistics published (SAILPLANE AND GLIDING April, 1966) for 1965. If the flying by club aircraft is divided by club membership, less an allowance for private owners, the annual flying per member

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will result. Of 52 clubs in the United Kingdom, only five achieved more than 10 hours per member, and two of these five, Lasham and Bicester, are Centres, not clubs. Of the rest, 24 clubs produced less than 5 hours per member. So Messrs. Carey and Warren (SAILPLANE AND GLIDING, October and December, 1966) have a case. It is my opinion that any club that cannot generate more than five annual hours per flying member should look at itself very critically.

More constructive than restricting membership is to increase the amount of flying available. One way is to buy more aircraft and establish new sites. A more efficient way is to improve utilisation of existing aircraft. I was concerned with the establishment of the R.A.F. G.S.A. Centre at Bicester. There we aimed for a high aircraft utilisation and during the summer months we achieved over 40 hours per aircraft per month, which is respectable even by powered aircraft standards. I analysed the published club statistics for 1965, dividing hours flown by club aircraft. Three, Bicester, Lasham and the Midland Club, achieve over 300 hours per aircraft a year. Unfortunately, if one looks further down the list, 32 clubs had a utilisation of less than 100 hours an aircraft a year, nine clubs had an average annual utilisation of less than 50 hours. There was a close correlation between average hours flying per member and aircraft utilisation.

I feel that those clubs with a low utilisation should review their fleet closely. If their site has inherent limitations it may pay them to prune both aircraft and members. If they can improve their aircraft utilisation they will find they have contented members, fewer accidents and no financial problems.

My experience of improving aircraft utilisation has been with service clubs, but I am sure that the lessons are of general application. There must be a properly organised system for the repair and maintenance of club equipment and aircraft. Loss of utilisation from unserviceability is only too frequent. I can remember losing an Olympia that had landed away, for a fortnight in summer because of a broken trailer. In too many gliding clubs the launching equipment is appalling. A half-hour fumble with a winch can cost a small club pounds in loss of flying and more in morale. It is just not worth penny pinching on winches and cable.

Secondly, fly during the week as much as possible. The increased utilisation is a pure bonus. For service clubs it is important to have a site from which flying can take place during the week, and to encourage those on leave, and shift workers, to fly. I cannot see how joy-riding passengers can be justified while club members are struggling to gain gliding experience. In my club only V.I.P's. and prospective club members have passenger flights; incidentally this policy means that there is little room for "passenger-carrying" club pilots. Both V.I.P.'s. and prospective members should be flown by experienced instructors. If a club employs a professional instructor, this will allow utilisation of club equipment during the week. It is, however, essential that an adequate number of weeks in the best soaring season are set aside for club members. At one civilian club where I was a member, I once suggested going on a course. I was immediately discouraged. In contrast, during 1964 I spent a week's holiday in Aosta and flew 19½ hours in five magnificent flying days.

If a club has no available instructor and its members are of too low a standard to fly on their own, they should take their aircraft to a larger club with spare supervisory and launching capacity. For this, an appropriate fee would be payable. In turn, large clubs should welcome visitors from small clubs during the week. It will improve both their site utilisation and their bar profits. At Bicester the bar pays the overheads of the Auster.

This leads to the influence of aero-towing on aircraft utilisation. It is more difficult to soar under 1,000 ft. than at 2,000 ft. Many an inexperienced pilot can soar if the tug pilot deposits him in a good thermal three miles upwind of the airfield. He will return elated after an hour's local soaring. From a winch launch the same pilot would probably fail to contact a thermal from his ration of three launches. As he never contacts a thermal he never gains any thermal soaring experience. In weak or difficult conditions even experienced pilots will increase their soaring from well flown aero-tows. This is why it is essential that tug pilots have soaring experience. If a club has a non-gliding tug pilot it will pay them to give him some free dual soaring. When assessing the cost of a tug aircraft the improved glider utilisation must be considered. It also follows logically that while private owners should pay the full economic cost of an aero-tow, the charge for club aircraft can be less, the difference being covered by increased aircraft utilisation.

A further development which will influence flying training is the introduction of powered glider trainers. It will be difficult to design an aircraft which can lift two pilots, and engine and fuel, has a sailplane wing loading and is not an unmanoeuvrable great brute. When this is successful it will revolutionise glider training. Pilots may well fly more hours, and do more landings before going solo, but this flying will be achieved over a much shorter time. But only clubs which are already large and efficient will be able to afford these powered trainers, and this will accentuate existing differences in the gliding world.

The next problem of gliding clubs is the provision of manpower. Skilled manpower in this modern world is an incredibly expensive commodity and will become more expensive. If we employ full-time servants to perform the chores of the club, we will inevitably price gliding out of the reach of middle-income members. In the past, club manpower has not been costed, it has been free, and it has been expended in a profligate manner. The cost has been enormous in terms of demoralised members. Too often the employment of professional labour has been the stimulus to more efficient management. There is no reason why we should make less efficient use of our voluntary club labour. In general, as machines age, their capital value falls and their maintenance costs rise. Clubs should buy their machinery new, or factory reconditioned, and not bodge up scrapyard purchases. If club members are expected to work on aircraft and equipment, a proper job sheet must be made out, if only verbally, and the right tools provided.

The most valuable members of a club, either on the ground or as instructors, are usually married. Good clubhouse accommodation will keep their wives happy, and the husbands will cheerfully invest pounds' worth of manhours in the club. A decent ladies' toilet may repay its capital cost in a year. Fit out a decent kitchen and there is an odds-on chance you will have the wives working as well, but no woman will willingly cook in a slum. It is my opinion that if a club is properly managed, and adequate capital is wisely spent, the investment of labour expected of each club member should not be unreasonable. I am less certain about the field of aircraft repair and major maintenance. Amateur repair is inevitably slow, and is too costly in loss of utilisation. Repair and maintenance is moving outside the amateur field, and in future this work will increasingly be carried out by specialist firms. Despite all the inherent advantages of service clubs, repairs have been a major problem in my club. Last, but by no means least, I use my position as C.F.I. to distort flying lists in favour of the harder working members of the club, and to make use of the better soaring opportunities.

The great need in the gliding movement is for efficient management. Already

it is becoming difficult to recruit C.F.I.'s in clubs. I understand this only too well and have been heard to refer publicly to the millstone round my neck. Were I a civilian, I could not undertake my present task on a permanent basis. I have eased my situation by conducting a programme of instructor training, but there remains a heavy load of responsibility. My experiences with Bicester showed most clearly that the need in gliding is for the appointment of a professional C.F.I./Manager to run the club. His responsibility is to provide continuity, and organise the club members to do the work, whether on the ground or in the air. He must be an officer, and not a servant, of the club. Good management is the key to success in gliding, as with any other enterprise.

THE FATAL ACCIDENT TO FRED DUNN

WHEN Fred Dunn was killed, on 4th May, 1966, near Christchurch, New Zealand, on the test flight of a Dart which he had just built, the shock of his loss extended outside the boundaries of New Zealand.

To summarise the official report, now out, Fred took off on aero-tow, and released at 5,300 ft. When the tug pilot turned to photograph the glider, he couldn't see it. It was later found completely destroyed, in the Eyrewell Forest.

The following are the critical paragraphs from the Accident Report:—

20. The terylene tow rope was 120 ft. long and 5/16 in. in diameter, with two steel rings spliced to each end for tug and sailplane inter-connection. The rope passed through a 7 in. diameter funnel made of a non-rigid plastic, and secured by insulation tape bound round the end of the spout at a point 10 ft. 8 in. ahead of the end of the rope. Purpose of this funnel was to stabilise the rope when trailing free behind the tug.

24. (a) The sailplane began to overtake the tug until the funnel on the rope became partially or wholly reversed in the airstream; thus becoming, in effect, a "parachute" offering resistance to the airflow.

(c) Following cast-off, the rope was carried rearward rapidly by "parachute" action of the funnel, which then assumed its normal streamline attitude in which it generates some degree of lift.

(d) The funnel struck the lower surface of the anti-balance tab of the starboard tailplane, causing the tab to move upward and thereby producing an initial pitch-up of the sailplane's nose.

(e) Build-up of energy in the rope was transmitted to the free portion aft of the funnel and the rope became wrapped round the tailplane, the rings at its extremity swinging upward and penetrating the lower fabric cover.

(f) As towing tightened the rope, the funnel became folded round and indented the trailing edge of the tab, the pilot simultaneously resisting upward pitch of the nose by forward pressure on the control column which forced the tab downward and cracked it chordwise in extension of the point of indentation.

(h) The tug was now pulling the sailplane by the rope looped round the latter's tailplane.

(i) Imbalance and asymmetric tow caused the nose of the sailplane to pitch downward and the aircraft to yaw to port in a left-hand diving turn, thus permitting the rope, initially below the starboard mainplane, to escape round the starboard wing tip.

Conclusions

32. (a) The pilot was experienced, though not in full flying practice, and was qualified to make the flight undertaken.

(b) The aircraft was soundly constructed to approved specifications and with approved materials; and no failure, defect, or malfunction was present.

(c) In a manner which has not yet been precisely determined, the tow rope fouled the sailplane's tail after cast-off.

(d) Fouling resulted in the rope becoming looped round the starboard tailplane, which was torn away.

(e) Structural failure of the outer sections of both wings was a consequence of dive brake extension beyond limitation speed.

(g) The pilot prepared to abandon the aircraft by parachute, but had neither sufficient time nor height to escape.

CLUB STATISTICS

Gliding Club	Aircraft Club owned or op. 2S	Sec	HP	PO	TUG	Launches On Club site	By Club gliders	Hours Total	Club gliders
AIRWAYS (INCLUDING) POST OFFICE (CISAVIA)	5	2	5	—	2	12,172	11,268	2,432	1,714
THAMES VALLEY	1	—	2	1	—	89	89	217	217
ALBATROSS	1	—	—	—	—	820	820	55	55
AVRO	3	—	1	1	—	3,494	3,555	360	378
BATH & WILTS	2	1	—	11	—	4,090	2,736	837	307
BLACKPOOL & FYLDE	1	1	1	—	—	1,638	1,676	198	198
BRISTOL	2	2	2	15	1	6,903	5,693	1,985	853
BURTON & DERBYSHIRE	1	—	—	2	—	2,082	1,847	241	189
CAMBRIDGE	2	1	3	6	1	3,359	3,296	1,508	920
COLLEGE OF AERONAUTICS	2	1	2	2	—	2,600	2,539	466	366
CORNISH	3	3	1	2	2	5,760	5,573	750	686
COTSWOLD	2	—	1	—	—	2,320	1,970	216	176
COVENTRY	2	1	3	7	2	4,988	4,163	1,129	767
DERBYSHIRE & LANCASHIRE	3	2	2	15	—	5,130	4,220	1,577	757
DEVON & SOMERSET	1	3	—	6	1	8,075	6,500	1,340	640
DONCASTER & DISTRICT	2	3	1	7	—	4,324	4,119	793	579
DORSET	2	2	—	8	1	2,805	2,230	624	236
DUMFRIES & DISTRICT	3	—	—	1	—	932	900	90	74
ESSEX	2	1	—	3	—	3,388	3,153	419	321
ESSEX & SUFFOLK	1	—	2	—	1	577	577	243	243
HALIFAX	1	1	—	—	—	391	389	22	22
HANDLEY PAGE	1	1	1	—	—	2,334	2,376	402	402
KENT	3	1	1	—	—	8,992	8,303	1,430	900
LAKES	2	2	1	—	—	2,830	2,838	352	307
LAND'S END	2	1	1	—	1	3,385	3,301	463	409
LASHAM GLIDING SOCIETY (INCLUDING CLUBS SHOWN AND THOSE NOT ANNOTATED) (NATIONALS EXCLUDED)	4	1	—	53	3	24,782	13,721	6,953	1,798
ARMY (SEE A.G.A.)									
IMPERIAL COLLEGE	1	—	1	1	1	N/K	1,468	433	433
POLISH AIR FORCE ASSOC.	—	—	4	—	—	359	359	372	372
SURREY & HANTS.	—	—	8	—	—	2,498	2,498	2,096	2,096
LEICESTERSHIRE	1	—	1	—	—	1,645	1,075	1,051	376
LINCOLNSHIRE	2	2	—	3	—	3,990	2,744	355	175
LONDON	3	4	3	22	3	19,500	17,500	4,500	2,700
MIDLAND	2	2	2	8	—	7,852	6,918	2,659	1,712
NEWCASTLE & TEES-SIDE	2	1	1	6	—	2,296	2,044	543	333
NORFOLK	2	2	3	—	—	3,370	3,370	408	258
NORTHAMPTONSHIRE	1	2	—	2	—	675	595	240	158
NORTHUMBRIA	1	1	—	4	—	1,100	900	125	75
NORTH-WEST OF IRELAND	2	1	—	—	—	875	900	60	60
OUSE	2	2	1	1	—	4,176	4,146	465	461
OXFORD	1	—	3	4	1	3,051	2,810	643	450
PERKINS SPORTS ASSOCIATION	1	1	2	1	—	2,398	2,342	320	305
R.A.E. (CISAVIA)	1	—	2	—	—	2,710	2,860	470	470
SCOTTISH GLIDING UNION	5	3	2	4	—	5,367	4,514	2,299	1,318
SOUTHDOWN	1	2	2	2	—	3,678	3,722	798	572
SOUTH WALES	2	1	—	3	—	1,850	1,800	220	206
STAFFORDSHIRE	2	2	1	2	1	3,884	3,680	395	337
TRENT VALLEY	1	—	1	—	—	2,800	2,800	178	178
ULSTER & SHORTS	1	1	2	—	1	1,461	1,461	222	222
UPWARD BOUND	3	1	—	—	—	2,061	2,082	146	146
WEST WALES	2	1	1	1	—	3,664	3,614	411	384
WORCESTERSHIRE	2	2	—	2	2	1,570	1,252	160	112
YORKSHIRE	3	—	1	13	1	4,912	4,014	1,745	856
TOTAL CIVILIAN	96	61	56	217	24	204,881	174,906	38,494	25,161

FOR 1966

Flying days		Cross-country		Courses		Certificates					Membership		
Total	soaring	Total miles	By club gliders	No.	Pupils	AB	C	BC	S c—l	G c—l	Flying	Non-flying	Potential
264	91	4,000	1,000	14	84	54	26	16	6—28	1—5	450	40	800
N/K	N/K	240	150	—	—	N/K	N/K	N/K	N/K	N/K	128	6	200
41	8	—	—	—	—	2	—	—	—	—	20	20	150
122	36	130	—	—	—	2	1	4	2—8	—	105	12	N/K
90	24	1,941	51	—	—	14	—	6	5—14	—	70	12	140
71	37	—	—	—	—	7	6	3	0—1	—	82	100+	N/K
201	111	6,487	542	21	168	15	8	10	3—17	—	247	54	350
85	27	—	—	—	—	6	3	3	—	—	N/K	N/K	70
175	103	4,484	436	11	60	21	8	5	5—11	0—1	188	8	210
100	25	250	50	—	—	13	—	2	1—1	—	120	—	140
225	82	876	20	22	131	16	9	3	1—6	—	95	25	100
115	38	54	—	—	—	15	8	3	—	—	69	6	90
133	72	2,048	1,386	3	25	12	8	10	4—8	1—2	146	30	200
162	111	N/K	N/K	6	90	N/K	N/K	N/K	N/K	N/K	240	100	350
207	75	N/K	N/K	20	160	N/K	N/K	N/K	N/K	N/K	147	38	200
132	67	1,703	308	1	8	13	2	4	6—7	—	119	60	150
98	45	1,081	110	—	—	10	1	1	3—9	—	92	48	200
60	11	—	—	—	—	2	1	8	1—3	—	N/K	N/K	N/K
102	31	137	72	—	—	14	9	8	1—1	—	134	67	150
63	42	—	—	—	—	3	2	1	1—3	0—2	38	—	N/K
29	12	—	—	1	N/K	1	—	—	—	—	31	4	N/K
86	37	360	60	—	—	6	7	8	1—9	—	36	—	50
213	103	2,520	80	25	198	32	11	6	4—14	—	172	60	200
116	30	77	27	11	86	7	5	6	1—0	—	56	12	100
167	81	550	340	24	187	3	2	2	1—3	—	112	23	200
303	90	15,000	—	45	225	N/K	N/K	N/K	N/K	N/K	655	119	1,000
120	N/K	1,000	1,000	—	36	N/K	—	5	3—7	—	68	4	N/K
60	30	3,480	3,480	—	—	2	1	—	2—0	—	30	30	60
N/K	N/K	8,000	8,000	N/K	N/K	N/K	N/K	N/K	N/K-20	2—5	285		N/K
94	60	5,252	48	—	—	11	2	37	3—8	0—2	95	7	150
115	17	—	—	—	—	16	7	4	1—4	—	60	15	100
285	165	5,000+	1,000+	18	150	30	20	12	6—20	0—1	430	110	600
202	167	2,281	752	22	355	24	18	3	—	0—1	—	—	250
99	80	1,013	25	N/K	40	6	6	7	0—1	—	75	7	200
130	70	880	80	1	10	13	5	9	0—2	0—1	77	14	120
62	14	150	85	—	—	3	3	6	1—5	—	53	3	100
112	33	230	—	1	10	6	4	5	2—4	—	65	10	100
58	N/K	—	—	continuous		10	5	4	0—1	—	40	10	100
108	37	264	264	—	—	13	5	1	2—5	—	115	2	180
90	30	386	132	—	—	8	—	2	2—3	—	85	—	100
90	N/K	60	60	2	14	5	4	N/K	1—3	—	40	—	40
110	50	980	980	continuous		10	6	4	2—8	—	86	4	150
243	168	1,880	670	16	130	8	5	12	6—42	0—8	165	40	250
90	—	850	240	—	—	13	5	4	1—4	—	90	20	N/K
70	33	250	50	2	16	4	10	4	1—4	1—1	60	5	120
106	32	84	—	1	—	16	4	6	0—3	—	84	2	200
76	18	—	—	1	10	6	2	—	—	—	44	3	60
75	17	—	—	—	—	4	2	4	—	—	40	—	60
58	11	—	—	5	60	54	6	2	—	—	N/K	N/K	N/K
140	40	400	200	18	140	12	6	3	2—6	—	50	50	100
83	12	—	—	3	30	8	2	2	—	—	70	10	190
184	121	1,500	500	14	80	15	11	5	6—25	—	180	100	300
—	—	63,153	9,828	308	2,467	563	255	215	85—314	5—29	5,585	1,315	

CLUB STATISTICS

Gliding Club	Aircraft Club owned or op. 2-S	Sec	HP	PO	TUG	Launches On Club site	By Club gliders	Hours Total	Club gliders
A.G.A.									
Aldershot & District	1	1	2	—	—	1,200	1,923	285	285
Army Soaring Club	—	—	2	—	—	110	110	175	175
Southern Command	2	2	3	—	—	5,055	5,102	777	777
R.A.F.G.S.A.									
Bannerdown	2	2	3	—	—	3,307	3,414	580	530
Bicester (including Halton)	7	1	6	—	1	19,136	19,136	4,113	4,113
Cheviots	1	1	2	—	—	1,600	1,600	187	187
Chilterns	2	1	2	—	—	3,776	3,776	455	455
Clevelands	2	2	2	1	—	3,838	3,838	595	595
East Midlands	2	1	4	—	—	5,022	5,022	615	615
Fenland	2	1	3	—	—	7,800	7,800	1,180	1,180
Mendips	2	2	2	—	—	3,787	3,787	454	454
Moonrakers	2	1	3	3	—	3,687	3,687	688	688
R.N.G.S.A.									
Condor	2	—	1	1	—	2,643	N/K	N/K	N/K
Fulmar	2	2	1	—	—	4,271	4,271	665	665
Heron	2	—	2	—	1	2,945	2,989	359	359
Portsmouth	2	1	1	—	1	2,345	2,340	431	316
Service Total	33	18	39	5	3	70,622	68,795	11,559	11,444
Service and Civilian Total	129	79	95	222	27	275,503	243,701	50,053	36,605
Air Training Corps	150						181,576		
R.A.F. Germany	8	7	6	—	—	16,973	16,973	2,472	2,472
Eagle	2	2	2	—	1	—	3,314	—	462
Nimbus							5,591		679
Phoenix	2	3	1	—	—	5,000	5,100	933	933
Two Rivers							2,968		398
Aden Services	3	1	1	—	—	3,900	4,000	550	550
Crusaders	2	1	—	—	—	5,468	5,468	509	509
Overseas Total	13	9	7			26,341	26,441	3,531	3,531

Notes: The following clubs have been omitted because no recent or complete figures are available: Aberdeen, Edinburgh Univ., Glasgow & West of Scotland, Porthcawl & District, Rocket Propulsion Estab. (Westcott), Univs. of Glasgow, Swansea, Swindon.

FOR 1966 (continued)

Flying days Total	Flying days Soaring	Cross-Country Total miles	Cross-Country By club gliders	Courses No.	Courses Pupils	Certificates AB	Certificates C	Certificates BC	Certificates S c—l	Certificates G c—l	Membership Flying	Membership Non-flying	Membership Pot
89	45	1,089	1,089	—	—	3	1	—	1–2	—	N/K	N/K	N/
N/K	N/K	N/K	N/K	N/K	N/K	N/K	N/K	N/K	N/K	N/K	50	N/K	N/
136	N/K	2,500	2,500	6	50	26	10	4	6–11	0–1	189	—	2:
N/K	N/K	847	847	—	—	18	13	4	2–5	—	113	—	N/
230	N/K	14,470	10,522	16	240	63	10	6	6–16	1–2	200	—	2:
N/K	N/K	700	700	cont	inuous	4	1	1	0–2	—	35	10	
82	30	1,000	1,000	cont	inuous	8	6	2	0–3	—	62	2	1:
N/K	N/K	300	300	—	—	5	8	3	3–11	—	N/K	N/K	N/
122	39	1,110	1,110	—	—	16	5	2	2–4	—	60	—	1(
180	100	2,400	2,400	2	20	34	15	6	3–11	0–2	100	—	2(
132	53	166	166	—	—	23	12	4	3–12	—	95	—	1:
N/K	N/K	1,404	1,404	cont	inuous	12	10	7	1–12	1–3	107	2	1:
91	25	N/K	N/K	1	10	8	3	4	2–6	0–1	25	N/K	
111	46	535	535	1	11	13	10	1	3–10	1–1	57	—	
99	50	1,950	1,950	3	20	11	4	—	0–2	1–1	50	—	1:
106	13	2,825	281	—	—	5	—	—	2–4	0–1	103	—	1(
		31,296	25,161	29	351	249	108	44	34–111	4–12	1,246	14	
		94,454	34,989	337	2,818	812	363	259	119–425	9–41	6,831	1,329	
				cont	inuous	2,342	60						
N/K	N/K	—	10,838	—	—	73	56	23	8–36	0–2			
—	—	—	2,500	—	—	25	9	2	2–6	0–1	55	—	
			1,823			26	26	12	0–11	—			
114	54	3,230	3,230	—	—	12	15	7	4–16	0–1	70	—	1(
			1,280			10	6	2	2–3	—			
200	200	—	—	cont	inuous	15	15	4	1–3	—	40	—	1(
						11	3	1	0–3	—			
			10,838			99	74	28	9–42	0–2			

Key to aircraft categories: 2S=two-seater; Sec.=Secondary; HP=high-performance; PO=privately owned; S=1st column completed Silver C's, 2nd column Silver C legs. G=1st column completed Gold C's, 2nd column Gold C legs. BC=Bronze C.

THE 16th ARGENTINE NATIONALS

20th January to 11th February

THESE Nationals were referred to as being typically "British" weather-wise by Jorge Minuzzi, who visited the B.G.A. offices immediately after the Nationals for a chat, and he supplied us with information on this contest, of which the following is a summary.

In general the weather was anti-cyclonic and conditions were reasonable, resulting in eight contest days which included some long and some short tasks.

As the Argentinians apply handicapping, everyone flew in one class consisting of 42 pilots. The gliders flown were: 4 Std. Austria SH's, 2 Std. Austria S's, 1 Std. Austria (handicap 0.76); 18 Ka-6's, 4 Vasamas, 2 Zefirs, 2 Skylark 3's, 1 Skylark 4, 1 Foka, 1 M-100 (handicap 0.88); 4 Slingsby Skys, 1 Skylark 2, 1 Mucha (handicap 1.0).

29TH JANUARY. *Task*: Twice round a 96-km. triangle.

Hossinger was an easy winner, handicapped or not, with 71.40 km./h. in the Std. Austria SH. Second, Bocksch (Vasama) 59.05, and third, Honda (Ka-6) with 58.80 km./h. 27 pilots completed the task, and only 3 did not score.

1ST FEBRUARY. *Task*: Out-and-Return race, total distance 128 km.

Only 10 pilots finished this task, which turned out to be quite difficult. In order to show handicapping in actual use, we publish the placings of the pilots. Maximum speed points for this day were 244 and distance points 756.

		speed km./h.	*pts.*
Araoz	Sky	43.96	244
Mendiburu	Ka-6	47.64	221
Fentanes	Foka	47.42	219
Sadoux	Skl. 4	46.98	215
Santos	Ka-6	46.14	213
Burzaco	Skl. 3	45.18	197
Stanley	St. Aus.	51.38	189
Hossinger	St. Aus. SH	49.19	171
Fleiderman	St. Aus. SH	47.52	148
Macarron	St. Aus. S	42.10	111

2ND FEBRUARY. *Task*: Goal race via a turning point, total distance 126 km.

All but 6 pilots completed the task with speeds varying from 79.26 to 41.28 km./h. Minuzzi (Ka-6) won the day with 69.41 km./h., followed by Hossinger 79.26 and Sadoux (Skl. 4) with 64.73 km./h.

3RD FEBRUARY. *Task*: 500-km. triangle. This was the first 500-km. triangle ever set in Nationals and it was unfortunate that no one completed it, although Hossinger nearly got home with 475 km. (Hossinger set up a new National record over this distance when on the 27th December last he flew a 525-km. triangle at a speed of about 75 km./h.) Only two other pilots, Berreta (Ka-6) and Stanley, went past the 400-km. mark, but another 11 reached or nearly reached the 2nd turning point 330 kms. away.

5TH FEBRUARY. *Task*: Out-and-Return race, total distance 160 km.

All but 3 pilots completed the course, which was won by Berreta (Ka-6) followed by Hossinger and Stanley in 2nd and 3rd place. (No details available on speeds.)

6TH FEBRUARY. *Task*: 113-km. triangle. Again most pilots got round at speeds varying from 64.08 to 34.06 km./h. Urbancic (Ka-6) was the winner with

61.57 km./h. Second, Fentanes (Foka) 57.07, and Hossinger third with 64.08 km./h.

8TH FEBRUARY. *Task*: 209-km. triangle. Speeds were much higher than on the previous task and 35 pilots completed it. Winner, Bocksch (Vasama), 72.83 km./h. Second, Ballester (Ka-6), 67.72 km./h. Third, Stanley (St. Aus.), 77.91, and fourth Hossinger with 77.81 km./h.

9TH FEBRUARY. *Task*: 306.5-km. triangle.

Reasonable speeds were again possible and 30 pilots got round: fastest was Hossinger, but the winner of the day was Araoz (Sky), 61.90 km./h. Second, Urbancic (Ka-6), 64.94 km./h. Third, Bueno (Skl. 2), 56.68 km./h. Fourth, Hossinger, 74.34 km./h.

This turned out to be the last contest day and Hossinger became once again National Champion; he will be one of the pilots who will represent Argentina in next year's World Championships, and we are told that he will probably fly an HP-14.

Apart from Hossinger's 500-km. record, two other national records were broken. On the 24th December last Hossinger broke the Out-and-Return record with a flight of 405 km. in a Std. Austria SH. Fentanes set up a new goal flight record of 605 km. in early January, also flying a Std. Austria SH.

B.G.A. NEWS

1966 Annual Awards

The British Gliding Association has pleasure in announcing the following awards for 1966.

DE HAVILLAND CUP for the greatest gain in height: to John Barrows (Surrey and Hampshire Club) for a gain of height of 20,500 ft. at Lasham on 10th June. Skylark 3F.

MANIO CUP for the longest goal flight: to Christopher Simpson (Leicestershire Club) for a goal flight from Rearsby to Kirton-in-Lindsay via Fossebridge, a distance of 201 miles, on 15th May. Dart 17R.

WAKEFIELD TROPHY for the longest flight: to Derek Marpole (Fulmar Club) for a flight from Milltown to Penrith, a distance of 210 miles, on 17th July. Skylark 3.

VOLK CUP for the longgest pre-declared goal-and-return flight: to Ronald Powell (RAFGSA Centre) for a flight from Bicester to Yeovil and return, a distance of 192 miles, on 3rd July. Skylark 4.

SEAGER CUP for the best two-seater performance: to John Willson and Harry Daniels (Bannerdown Club) for a 300 km. triangle Colerne, Gaydon, Lasham, Colerne at a speed of 55.55 km/h. on 15th May. Blanik.

This flight broke the British National and U.K. multi-seater records.

DOUGLAS TROPHY to the club putting forward three flights by three different club members in club aircraft aggregating the largest total cross-country mileage: to the Surrey and Hampshire Club for the following flights.

Alan Purnell, Lasham, Lincoln, Husbands Bosworth on 15th May. Skylark 3F. 206 miles.

Ralph Ismail, Nympsfield, Shillingford, Netherthorpe on 18th June. Skylark 4. 168 miles.

Pat. Garnett, Lasham, Frome, Banbury, Weston on the Green on 3rd July. Skylark 4. 142 miles.

Total distance 516 miles.

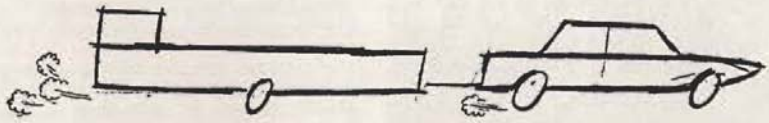
CALIFORNIA IN ENGLAND TROPHY to a woman pilot of British nationality, for the longest flight commencing in the U.K.: to Mrs. Anne Burns (Surrey and Hampshire Club) for a 300 km. triangle Lasham, Frome, Banbury, Lasham on 28th April. SHK. Distance 187 miles.

FRANK FOSTER TROPHY for the fastest speed round a 100 km. triangle: to George Burton (Imperial College Club) for a speed of 82 km/h. on 3rd July. Lasham. Thruxton, Welford, Lasham. Dart 17R.

This flight broke the U.K. single-seater 100 km. triangle.

ROBERT PERFECT TROPHY to the Club with over 50 flying members which has the highest number of B.G.A. categorised instructors in proportion to flying membership:

1st Trophy and £40 Award — Coventry Club. 2nd £20 Award—Kent Club. 3rd £10 Award—Norfolk Club.



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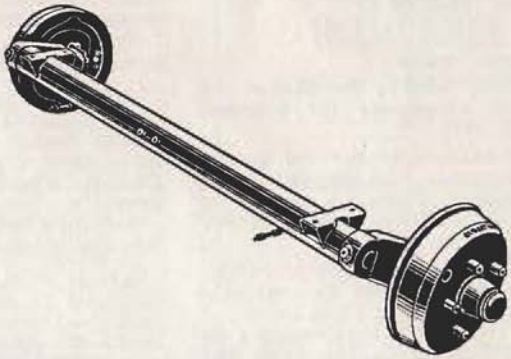
Towing is so smooth on a Rubery Owen independent suspension. The torsion bars give 4 inches of independent movement to each wheel and the whole unit allows a lower centre of gravity for exceptional roadholding and easier towing. Independent suspension makes a world of difference to towing. Fit a Rubery Owen axle to your trailer.



RUBERY OWEN & CO. LTD., Trailer Equipment Division,
P·O· Box 10, Darlaston, Wednesbury Staffs. Tel: James Bridge 3131.

Annual Awards 1967

The terms of reference for three of the Annual Award Trophies have been altered by Council. These trophies will in future be awarded as follows:

MANIO CUP: The fastest time around a previously declared 200-km. triangle.

WAKEFIELD TROPHY: The longest flight. Any turning points to be previously declared. Not more than four legs.

SEAGER CUP: The best two-seater closed circuit performance; turning points to be previously declared.

National Ladder

It is proposed to make two "Top Rung" awards each year. These will be:

(1) To the pilot with the highest placing on the National Ladder, all of whose qualifying flights were made in glider(s) owned by member club(s) of the B.G.A.

(2) To the pilot with the highest placing on the National Ladder, all or any of whose qualifying flights were made in glider(s) owned by Private Owner Group member(s) of the B.G.A.

Anyone who would like to donate one or both of these trophies to the B.G.A. is asked to contact the Secretary at the B.G.A. offices.

* * *

As a result of the article on ladder competitions in last December's issue a great amount of enthusiasm has been shown. Therefore, it has been decided to run a National Ladder. Any queries or correspondence should be addressed to me at 65 Gurney Court Road, St. Albans.

So far nine clubs have agreed to take part. It is intended to circulate results every month so that throughout the year this should give *you* the added boost to go off and do an even more adventurous flight.

Don't be put off because you aren't very good yet and cannot hope to reach the top. The idea is to have pilots of all skills on the ladder — so please support it. Is *your* club taking part? If not, why not?

Note: Claims for points in the National Ladder will *only* be accepted when they are sent by the ladder organisers in your club.

ROGER BARNETT,
Member, Flying Committee

New Awards

Council has agreed that any prospective donors of trophies should also be asked to consider the following terms of reference:

(a) Fastest time around a 300-km. triangle.

(b) Fastest time around a 400-km. triangle.

(c) For the longest flight made between 1st October and 1st March inclusive. Any turning points to be previously declared. Not more than four legs.

Be warned!

If you are taking your car abroad and you have a VHF transmitter with you, you may find yourself in trouble at foreign frontiers.

The G.P.O. permits glider talk on 129.9 and 130.4 m/cs. but these frequencies are, of course, purely for domestic use in the U.K. and in no sense are they international frequencies. Before a set can be used abroad you have to obtain special authority from the appropriate Ministry in the country concerned. The frequency allocated would almost certainly *not* be one of the two U.K. gliding ones and it is by no means certain that permission would be granted at all.

If your radio is permanently installed in your car and you do not have permission to use it abroad, disconnect the set and place it under seal before departing. The B.G.A. knows of at least one case where trouble was experienced at Brissago (Switzerland/Italy) and at Forbach, near Saarbrücken (Germany/France).

Group Personal Accident Scheme

For many years now the Association of British Aero Clubs and Centres (now merged in with the British Light Aviation Centre) have offered their members a Group Personal Accident Scheme at a premium rate considerably cheaper than can be secured on an individual basis. The original rate was £1 premium per £1,000 benefit, but from May, 1965, owing to adverse claims experience, this was increased to £2 premium per £1,000 benefit.

In 1958 the B.G.A. negotiated with the Insurance Brokers to this scheme,

Messrs. Willis, Faber and Dumas, 54 Leadenhall Street, London, E.C.3, for a parallel B.G.A. Scheme at the same premium rate. Here again there has been adverse claims experience recently and the premium rate was increased during 1966 to £2 per £1,000 benefit. The limit in the sum insured at the special scheme rate is £3,000 any one person.

The B.G.A. Council has just carried out a thorough review of the terms of this scheme and has negotiated a number of amendments in the cover, as follows:—

1. The Policy will cover persons only whilst flying as a pilot or passenger in any glider (excluding powered aircraft and prototype gliders) operated by member clubs of the British Gliding Association or syndicates or privately owned gliders registered with the British Gliding Association as a private owner group anywhere in the United Kingdom or Europe. Cover extends to include whilst on the ground within the confines of aerodromes, airfields, gliding sites and landing grounds in the course of gliding activities insured hereon.

2. The basic cover will exclude death or disablement incurred in any kind of air race or competition for which an official entry form is required. However, annual cover for such competitions can be included on application for an additional premium of 10s. per £1,000 benefit.

3. Further, the basic cover excludes power flying and in this connection it should be made clear that the B.L.A.C. scheme and the B.G.A. scheme are run in parallel and that cover under one does *not* imply cover under the other. However, the B.G.A. scheme may be extended to include power flying for glider towing risks only at an additional premium to be individually negotiated, based mainly on the experience of the pilot in power aircraft and the anticipated hours likely to be involved. As an indication, an additional premium of 25s. per £1,000 benefit has been quoted by the Underwriters in a typical case.

4. It is also pointed out that flying in prototype gliders or in gliders not operated by member clubs of the B.G.A. or not registered as private owner groups, is not covered.

5. Finally, professional instruction for which instructors receive remuneration is excluded but nevertheless the Underwriters are prepared to consider covering without additional premium reserve officers and unpaid civilian instructors in connection with A.T.C. gliding schools.

6. The limit in the sum insured under this scheme is £3,000.

The B.G.A. Council are glad to continue to recommend this scheme, whose terms, notwithstanding the increased premium, are still well below what can be individually negotiated. However, any such scheme has inevitably to be a compromise between securing the widest cover and achieving the cheapest group premium rate, and whilst the scheme is entirely suitable for, and is indeed designed for, "normal" gliding activities, its limitations should be appreciated.

Should they have any queries, members are advised to consult Messrs. Willis, Faber and Dumas or their own insurance adviser.

* * *

Powered Trainers

This note concerns a developing situation about which clubs may well require advice at the start of the 1967 season.

The Committee has made the following recommendations concerning the operation of motor gliders from B.G.A. sites; B.G.A. and Club responsibilities in this respect, and relationship with owners.

1. Motor or powered gliders are defined by the Board of Trade and Air Registration Board as light aeroplanes. They will be certified and registered as such. Their operation from gliding sites by private owners or groups is therefore exactly the same as that of any current type of light aircraft (within the

traffic pattern of the site, they must observe all local flying regulations and it is the C.F.I.'s responsibility to see that they do so).

2. Private owners, groups or syndicates solely operating motor gliders cannot be admitted to B.G.A. or Club Private Owner membership (this is not possible —light and ultra-light aeroplanes are the responsibility of the British Light Aviation Centre and Popular Flying Association respectively).

3. B.G.A. and Clubs must accept responsibility for the operation and serviceability of motor gliders — whether privately owned or not — when these are being operated by, or on behalf of, a club for specific gliding purposes, such as glider pilot training and aero-towing (a responsibility which is an extension of one we already accept for aero-towing).

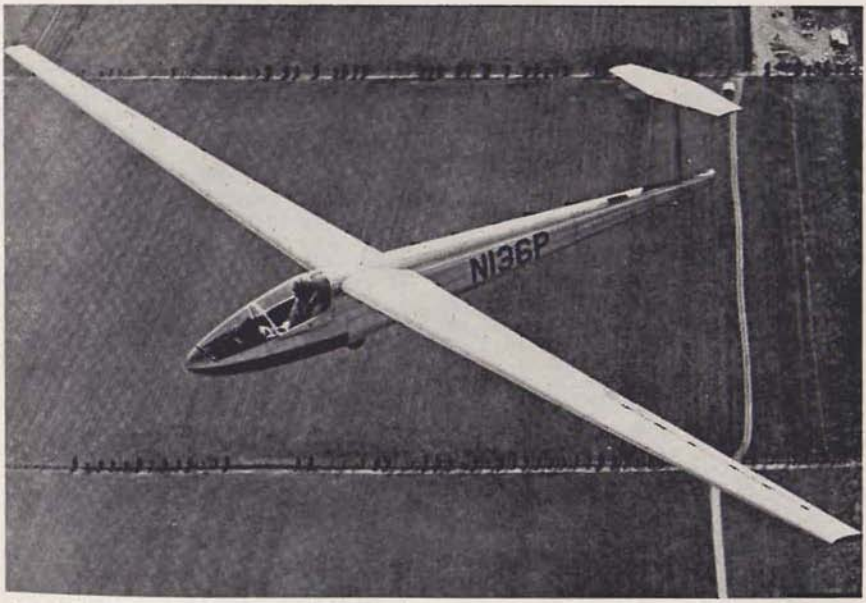
Finally, in case the above should appear to be an unduly rigid and restrictive outlook, it is important to recognise that it is in the best interests of the movement to (a) encourage owners of motor gliders to come and operate from our club sites and (b) to maintain a flexible outlook and a willingness to modify our own attitude as circumstances change.

DAVID INCE, *Chairman,*
Powered Trainer
Co-ordinating Committee

Coach and Capstan Courses

Details for instructors' courses are available from the B.G.A. office, and applicants are advised to book as soon as possible.

THE LATEST PRUE



Irvine Prue, making the first flight in his new ultra-high performance sailplane, the UHP-1, which he expects to fly in this year's United States Nationals. Designed and built by himself, it is all metal except for a strip of fabric across the entire wingspan, top and bottom. Span 57 feet; empty weight 375 lb.; aspect ratio 28.
Photograph by George Ureges

FIG.1

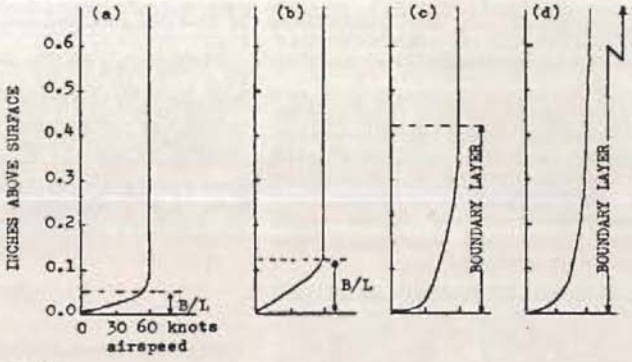


FIG.2

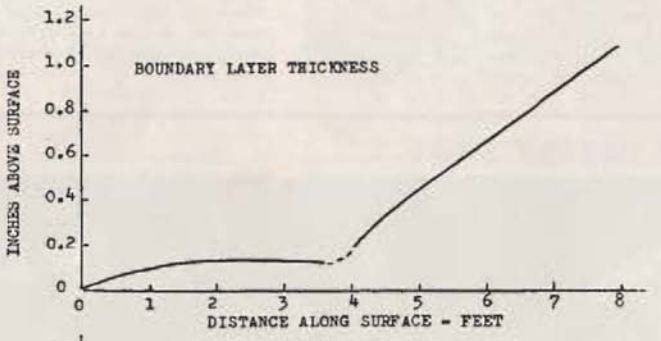


FIG.3

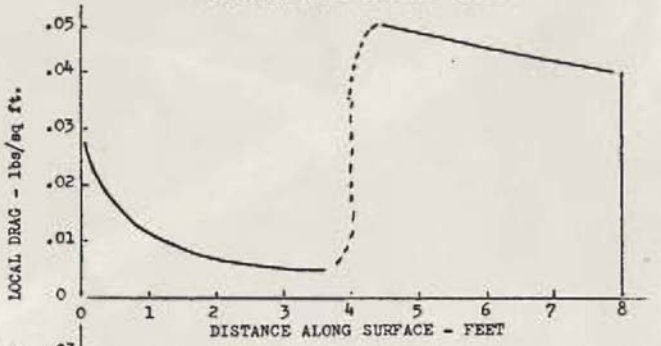
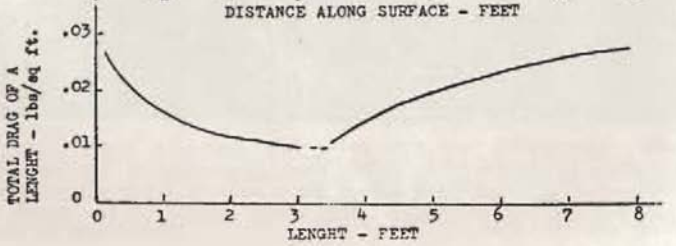


FIG.4



DRAG FOR THE LAYMAN

By NICHOLAS GOODHART

NEARLY all glider pilots are aware that the reason their glider continually descends through the air is that energy is being consumed by the drag forces on the glider and that this energy can only be replaced by descending relative to the air. The greater the drag forces the quicker must be the descent.

These drag forces come from three sources:

1. Friction between the glider and the airflow.
2. Induced drag or drag due to lift.
3. Pressure drag or drag due to separated airflow.

Part 1 of this article, published below, deals with the friction drag. Part 2, dealing with the induced and pressure drags, will be published in a later issue of S & G. It is hoped to use these articles as the basis for further articles on glider performance.

Laminar Flow. When smooth airflow first touches a surface it flows smoothly with the particles next to the surface moving only slowly, the next particles sliding over these a little faster and so on outwards from the surface. This is called laminar flow. Fig. 1(a) shows a graph of speed of airflow against height above the surface.

The important point about this curve is how quickly the speed increases as you go upwards from the surface; if the speed increases very rapidly near the surface, the drag is high; and if it only increases slowly, the drag is low. In this case the speed increases fairly rapidly (reaches half the free stream value in about 0.02 inches) and thus the drag is fairly high.

Now, as Newton pointed out, to every action there is a reaction, which in this case means that if the air is applying a force to the surface, the surface is applying a force to the air. The effect of this force is to slow the air down, and as the boundary layer is by definition the layer of slowed-down air next to the surface, it is clear that the boundary layer must get thicker.

Thus further along the same surface the picture will look like Fig. 1(b).

Again the important point is the rate of increase of airspeed immediately above the surface; because the boundary layer is now thicker, this rate of increase is much lower (reaches half the free stream value in about 0.05 inches) and consequently the drag is very much lower.

Summarizing from the beginning again we have:

Initially, a very thin boundary layer with a rapid increase of velocity above the skin and consequently *relatively* high drag.

Very quickly, this drag causes the boundary layer to thicken, and as the boundary layer thickens, so the drag decreases and the rate of thickening of the boundary layer also decreases.

Finally, a boundary layer of appreciable thickness (and consequently very low drag) which thickens only slowly as the airflow travels along the surface.

Turbulent Flow. Unfortunately this excellent state of low-drag laminar flow does not go on forever. However smooth the surface may be, there comes a time when the airflow breaks (somewhat in the style of a wave) and the boundary layer gives up its smooth layer-upon-layer sliding action and becomes a turbulent mass of eddies with air moving up and down and sideways in the boundary layer as well as lengthwise. The point at which this happens is known as the laminar transition point.

The effect of this turbulence is to transport energy down to the lower layers of the boundary layer which now looks like Fig. 1(c).

It can be seen at once that there is a very rapid increase of velocity near the surface and thus drag is very high.

As in the case of the laminar layer, the high drag slows air down in the boundary layer which consequently gets thicker, but regrettably it stays turbulent, and the drag, though decreasing slowly, remains very much higher than when the flow is laminar. Fig 1(d) shows the situation further downstream.

In order to give numbers to all this,

Fig. 2 has been drawn to show the boundary layer thickness of a 60-knot airflow flowing over a smooth flat plate eight feet long. This shows that the laminar boundary layer builds up to 0.05 ins. thick in less than 6 inches and only reaches 0.13 in. after 4 feet. Transition then occurs and the boundary layer thickens rapidly, reaching 1.1 in. thickness by the trailing edge.

Fig. 3, showing drag in lb./sq. ft. at any point along the surface, is the really significant item. This shows that the drag rapidly decreases from its initial value and after 1 foot is down to 0.01 lb./sq. ft. It reaches about half this value at 4 feet just before transition. The turbulent drag is enormously higher, with a value of 0.05 lb./sq. ft. initially (ten times higher than the laminar drag immediately prior to transition) and falling only slowly along the remaining 4 feet of the plate to about 0.04 lb./sq. ft.

So far we have considered only the local drag at any point along the surface; it is now interesting to compare the average value over various lengths. From Fig. 2 the average value for a plate 6 inches long will be about 0.02 lb./sq. ft., but for a plate 4 ft. long this will have dropped to 0.01 lb./sq. ft. On the other hand, the average value for the 8 ft. long plate will be 0.028 lb./sq. ft. Fig. 4 shows how this average value changes with length.

Thus it will be seen that size has an enormous effect on drag per sq. ft. A six-inch length one foot wide has a total drag of 0.01 lb.; a 4 ft. length one foot wide, i.e. eight times the area, only has a drag of 0.04 lb., while an eight-foot strip one foot wide, i.e. twice the area of the 4 ft. strip, has a drag of 0.224 lb. or 5.6 times as much.

Remember that all this has been done at the one speed of 60 knots. Basically, drag varies with the square of speed, so if we double the speed all these figures are increased by a factor of 4. But it is not as easy as that, as a chap called Reynolds pointed out.

He discovered that the effect of changing the speed is to move the transition point in inverse proportion; i.e. if you double the speed to 120 knots on our strip of flat plate, transition will move forward to 2 ft. from the leading edge, and consequently very much more of the plate will be in turbulent flow with high drag.

The Transition Point. Since the skin friction drag is so very much higher after transition than before it, it is clear that the total skin friction of a glider at any particular speed will depend almost entirely on where transition occurs. If the whole glider could be bathed in laminar flow from stem to stern, it would have fantastic performance. However, such a result could only be achieved by boundary-layer control on all wetted surfaces, and it is generally believed that the pumping power and weights involved in this process would outweigh the gain.

On a practical glider, transition is going to occur at some point on each particular surface, and the question is where.

The three main factcrs controlling transition are:

(a) length and speed
(b) pressure gradient
(c) surface roughness.

(A minor factor is noise. It seems quite possible that you could enormously

reduce the performance of a glider which had extensive laminar flow if you made a loud noise at the correct frequency.)

The length and speed factor is the one discovered by Reynolds, and, in the speed range we are concerned with, say, 30-100 knots, means that over a length of a few inches we are almost certain to get laminar flow, but that over a few feet we are unlikely to get it without special arrangements. In the smooth flat plate example, transition would be at 8 ft. at 30 knots and 2 ft. at 120 knots.

It just so happens, therefore, that the size bracket of gliders comes slap in the middle of this tricky region where the flow may be laminar or turbulent, depending on the special arrangements made.

It has been found that a very powerful influence on transition is exerted by the pressure gradient. If pressure continues to fall in the direction of flow, there is a strong tendency for the boundary layer to stay laminar, and this is the principal method which has been used in recent years to produce more extensive laminar flow. Roughly, the pressure continues to fall along a wing section or body until its maximum thickness is reached, and rises again thereafter. Thus a wing section with maximum thickness farther back is better from this point of view.

This is, however, something for designers to consider, and the glider pilot cannot do anything about it except to note the principle and consider the effect of waviness in front of the minimum pressure point. Skin waves will produce fluctuations in the pressure gradient. Provided these fluctuations are not such that the pressure stops decreasing (i.e. pressure stops becoming more negative in the direction of flow), it does not matter; but if there is a local positive gradient, transition will occur, and turbulent flow, once started, cannot revert to a laminar state.

It is not possible to give figures to indicate what waviness is acceptable. When the boundary layer is only just staying laminar (which must be the situation just before transition), any waviness will clearly move transition forward; on the other hand, at some angles of attack in some parts of the wing, where there is a strong favourable pressure gradient, quite considerable waviness (say 0.05 in. over 3 in. length)

would be tolerable.

The surface roughness also has a powerful effect on transition. Thus it is important that all surface roughness be eliminated ahead of transition. As a rough guide, surface roughness of 0.010 in. height would almost certainly create immediate transition, i.e., a dead fly or, worse still, a raindrop or an ice crystal can be expected to produce a turbulent wake with consequent high drag. Paint lines, too, can be effective transition producers unless carefully rubbed down. Remember that transition on the bottom surface of a wing is just as important as on the top surface, and that therefore every effort should be made to eliminate roughness on both top and bottom surfaces.

As a convenient measure of roughness, you can easily feel projections of 0.001 inches, and thus if the surface feels smooth you can be reasonably sure that no transition-producing roughness is present.

Once transition has taken place and the boundary layer is now very much thicker, the importance of both roughness and skin waviness decreases greatly.

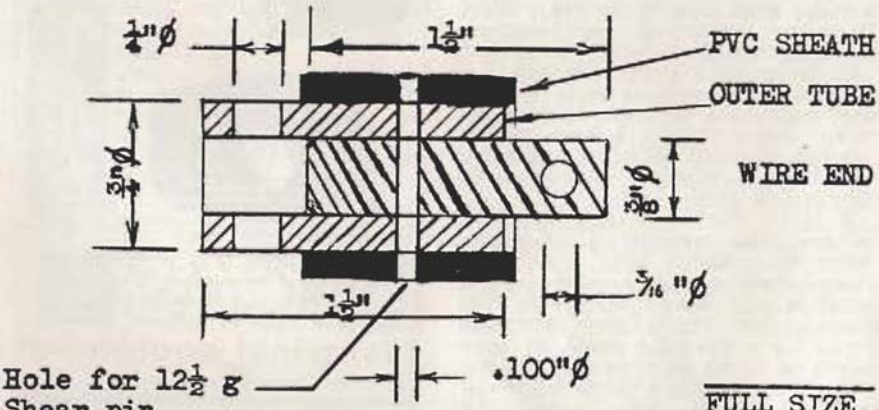
Finally, it is worth noting that it is smoothness and freedom from waviness that you should aim for, and this is not necessarily the same thing as a high gloss.

SHEAR-PIN WEAK LINKS

THE present rope weak links have proved unsatisfactory on several counts. The most important of these is the variability of the breaking load which can be influenced by factors such as humidity, wear and the quality of the rope used. Since these factors all affect the breaking load adversely, one or two clubs have used a thicker section than the one recommended; this means that in good condition the weak link is too strong and therefore dangerous.

The shear-pin type of weak link overcomes many of these difficulties. The assembly consists of a mild steel outer tube which is attached by a shackle to the parachute rope. An inner plug, also of mild steel, slides inside the outer tube and is attached directly to the cable. The two parts are held together by a shear-pin made from 12½ g (.098 in.) bright mild steel wire bent at each end to prevent it falling out. The P.V.C. sheath is to protect the assembly on landing.

The weak link has been tested at Imperial College, simulating as closely as possible the loads likely to be applied. A general acceptability test was also carried out at Lasham. Both tests gave



good results; the following is a short summary:

1. The breaking load is 1,050 lb. ± 50 lb. Repeated rapid loading to 90% ultimate did not appear to affect the breaking load, and only produced minor permanent deformation to the pin.

2. Repair after a break is very cheap indeed (1/15 to 1/20d.) and very quick. The broken pieces of wire usually fall out and it takes less than a minute to reassemble and insert a new pin.

3. The only tools required are a pair of wire cutting pliers and a half-round file, used for trimming off burrs should the inner plug get dragged along the runway after a break.

The Technical Committee have examined this weak link and have given it their approval. M. BAILEY

GLIDING CERTIFICATES

DIAMOND GAIN OF HEIGHT

No.	*Name*	*Club*	1966
3/51	J. J. Wilks	Surrey & Hants	15.9
3/52	W. H. Dean	Surrey & Hants	13.9

GOLD C COMPLETE

No.	*Name*	*Club*	1966
167	L. E. Frank	Coventry	22.8

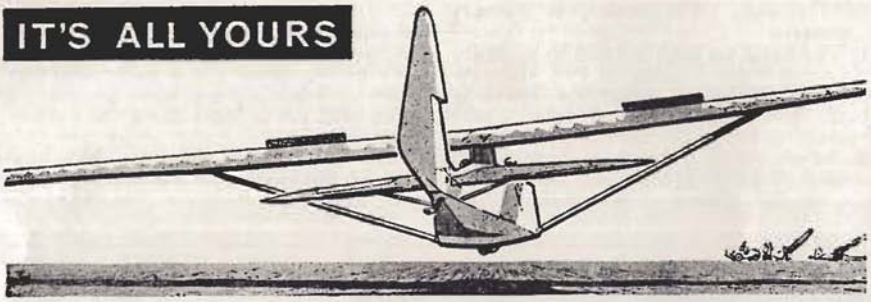
GOLD C GAIN OF HEIGHT

Name	*Club*	1966
N. A. Ensor	Fenland	4.8
J. J. Wilks	Surrey & Hants	15.9
A. J. R. Deacon	Airways	11.3
T. Davidson	Scottish	13.9
J. E. U. Wallace	S. Command	18.6

SILVER C COMPLETE

No.	*Name*	*Club*	1966
1858	Rosemary Stephens	Moonrakers	30.6
1859	R. J. Rushby	Lincolnshire	1.8
1860	D. G. Shepherd	Fulmar	24.7
1861	J. McG. Scott	Cambridge	2.6
1862	R. P. Brisbourne	Surrey	3.7
1863	Irmgard Burton	East Midlands	5.8
1864	J. J. Limb	Portsmouth Naval	3.7
1865	R. C. Godlee	Derby & Lancs.	5.8
1866	P. J. Kelly	Eagle	24.7
1867	P. G. Jeffers	Airways	4.8
1868	J. Pickering	Essex & Suffolk	10.8
1869	R. J. Wilson	Kent	20.5
1870	M. Honey	Kent	30.7
1871	A. C. Taylor	Oxford	14.8
1872	C. M. G. Watson	Fulmar	14.8
1873	E. J. Winning	Swindon	14.8
1874	D. Morgan	Condor	16.8
1875	G. H.Crawshaw	Yorkshire	27.7
1876	M. P. Annison	Ouse	15.8
1877	M. I. Orrey	Bicester	16.8
1878	Anne Rudgyard	Bicester	16.8
1879	R. A. Boddy	Ouse	4.8
1880	J. R. Butler	Chilterns	18.8
1881	J. H. Minchin	West Wales	7.8
1882	J. A. Vivian	Surrey	28.8
1883	T. M. Colvert	Southern Command	16.8
1884	P. Davis	Surrey	23.8
1885	F. J. Sheppard	Surrey	24.8
1886	R. M. Wade	Airways	24.8
1887	R. K. Warren	Surrey	23.8
1888	G. H. Dagnall	Surrey	28.8
1889	M. C. Woolridge	Imperial College	28.8
1890	A. H. Mann	Surrey	28.8
1891	K. L. C. Phipps	Phoenix	27.8
1892	F. J. Purchase	Swindon	24.8
1893	H. D. V. Leech	Southern Command	4.9
1894	L. A. Crawford	Coventry	14.8
1895	Dorothy Thompson	U.S.A.	19.6
1896	R. H. Trinder	643 G.S.	3.9
1897	B. Murgatroyd	Four Counties	15.8
1898	R. Cunningham	Bath	28.8
1899	A. J. Benfell	Airways	2.5
1900	I. H. Hobday	Surrey	14.8
1901	R. O. Willett	Leicestershire	3.9
1902	C. Plaskitt	643 G.S.	7.9
1903	C. Garton	Surrey	18.8
1904	D. J. White	Doncaster	26.8
1905	J. K. Manley	Coventry	6.9
1906	J. L. G. McLane	Yorkshire	7.9
1907	A. J. Dowsett	Handley Page	15.9
1908	B. C. Pratt	Bristol	24.7
1909	D. Davenport	Avro	15.5
1910	T. J. Hartwell	N.A.E. Aero Club	3.9
1911	P. J. Evans	Southern Command	5.9
1912	J. V. Ilett	Avro	7.9
1913	E. S. Robertson	Bicester	10.5
1914	D. E. Barker	Bath	31.7
1915	G. A. Pentelow	643 G.S.	21.7
1916	T. A. Adams	Bristol	29.6
1917	H. W. Fletcher	Thames Valley	15.9
1918	A. A. Vincent	Essex	11.7
1919	H. Peterson	Aden Services	15.9
1920	T. McGrath	R.A.E.	13.9
1921	R. T. Constable	Surrey	15.8
1922	S. A. Garner	Swansea	16.7
1923	R. Jayne	643 G.S.	17.7
1924	W. Radwanski	Polish A.F.A.	9.8
1925	A. Brown	Midland	17.7
1926	V. J. Hurd	London	17.8
1927	J. D. Benoist	Mendips	20.12
1928	F. O'Brien	Imperial College	15.11
1929	(Pending)		
1930	Mrs. A. M. Neumann	Cambridge	21.8
1931	A. P. Dalton	Wrekin	31.12
1932	J. E. Rouse	Thames Valley	1.1.67

IT'S ALL YOURS



MORE and more people want to go gliding, but giving them what they want is another matter. This month, "It's All Yours" consists of extracts from a paper, expressing personal views, produced by the chief of a big club to his committee. Not all of the points raised, however, are big club problems, and there is useful stuff for clubs of all sizes to consider if we are to provide flying training for at least most of those who want it. Too often, people find that gliding clubs do not offer them enough in return for their money.

ANN WELCH

* * *

PEOPLE will not come to the Club if the charges are prohibitive. In 1966 we have seen a reduction of 5% in the launch rate and 20% in full flying members compared with 1965. There would appear to be two reasons for this: The credit squeeze, and the higher subscriptions and launch charges introduced in 1966. It is impossible to accurately apportion the effect each of these factors has on a member or potential member.

It would be fair to say that the average member has less to spend on his pleasures, and that it would be difficult to induce him to come more often to fly than previously, unless there is greater attraction. Such attractions would include lower launch charges. The average impecunious member may well put up with hardships such as bunkhouse or tent accommodation, a sandwich meal, no beer, etc., to ensure him/her flying. However, he *has* to pay to fly, and it is this aspect of costs which should be kept under constant review; they should not be allowed to creep up beyond the reach of the young keen member, and others, who are prepared to put up with some hardship in order to fly. There is every indication that should charges rise any higher, revenue from members will be substantially reduced. This is not to say that overall revenue would necessarily drop, as this decrease may be offset by continued public interest and support on weekly courses. However, as our main consideration is to protect the interests of our members, it may be desirable to have a greater price differential as between members and the public for launches. In this respect prices for weekly public courses in 1967 will be much higher than those held in 1966. The effects of the increase in prices in terms of whether or not courses will be filled is not known. With adequate advertising it is hoped that members of the public will support the ab-initio courses, and that members of other clubs will also support the advanced courses.

Every effort should be made to tie revenue to other sources, e.g. caravan rallies, motor clubs, and a charge for spectators' car park, etc.

The 1966 drop in launch rate was primarily due to club members and private owners not taking advantage of the facilities. The club two-seaters maintained the same number of launches as in 1965. It may be that members are now becoming more selective, probably due to the increase in charges in 1966. There appears to be a number of ways to improve attendance and encourage more flying by members, including:—

1. Lower costs generally.
2. Lower launch charges in non-peak periods December to February.
3. Leadership and encouragement to come from the Committee and C.F.I.

4. More efficiency in terms of equipment and staff.
5. Ground training programmes in good as well as bad weather, and in the evening.
6. Friendly atmosphere, social, entertainment and educational programmes.
7. Availability of aircraft.
8. Reduction in the waiting time, "pushing and shoving" of aircraft, and attendant frustration.
9. Communications — club news sheets, etc.

Most of these factors are obvious and do not require amplification. However, reduced launch prices, say by 1s. in the three winter months, may help to increase attendance and launches, without necessarily reducing total revenue and profit to the club.

Every effort must be made to increase the efficiency of equipment and to take the "effort" out of gliding.

Members of the public should be encouraged to come to the club, both on weekly courses and on a daily basis. They should be given all the available informative literature and induced to become full members. This requires that they should be met in a friendly and helpful atmosphere and must be seen at the earliest stage by the C.F.I. or Committee members. It would be helpful, too, if Associate members could be available on a roster basis at the week-ends to meet and introduce members of the public and new members to other members. Ways and means of attracting the public include advertising in the right medium and by being efficient and friendly when they do come. In this connection it may be considered morally wrong to accept all new members, knowing that we do not have the facilities for training them. The argument that the facilities will be provided with the money from the new members may be considered fallacious. Present policy, however, encourages the acceptance of all potential applicants.

The Launch Rate

The following summarizes the main factors which affect the launch rate:

Finance: i.e. cost to members, revenue to the club.

Availability of members and members of the public to fly.

Availability of serviceable equipment of the right type: gliders, tugs, winches, ropes and cables.

Proficient permanent staff and member instructors.

Efficient operation of flying programme.

Maximum use of daylight hours.

Leadership from the Committee, Chairman and C.F.I.

Maximum routine and minimum interference from external services, e.g. competitions, visiting aircraft, near-by air displays.

Communication facilities, such as club news-sheets.

Availability and introduction of more efficient launching equipment.

Better advertising and public relations.

Environmental conditions, bar, canteen, social and educational events, etc.

Weather and safety.

Use of Daylight Hours

At present, the average first flights of the day are often after 9.30 a.m. The exceptions include: week-end courses run by professionals, and flying by the few keen members who personally organise

early starts. Other than this, nothing is officially laid on and no positive encouragement given to early starts either during the week or at week-ends.

With proper leadership, co-operation and organisation, it should not be impossible to start earlier at week-ends, but it may be more difficult during the week, without the employment of extra staff. There would appear to be no reason why the first flight time should not be at 9 a.m. as a general rule.

The popular belief in some quarters that much earlier starts are possible during the week in summer without employing extra staff, either paid or voluntary, cannot be sustained in fact. No instructor, flying most of the day on a five-day week basis, can be expected to work for more than his agreed weekly of 42½ hours.

With the employment of voluntary instructors each week-end, supported by the C.F.I., and if possible one other paid instructor for the purpose of supervision, it would be possible to start earlier at week-ends.

More co-operation with organisations such as the C.C.P.R., other sports bodies, large commercial and industrial concerns in the area, other gliding clubs, farmers, Round Table and county and local authorities, are likely to produce worthwhile results.

Advertising and Public Relations

To encourage members of the public to come to the club as potential members, for weekly courses or for other purposes, it is essential to advertise, and advertise in the proper media. This becomes even more important when subscriptions and launch fees are raised at times of a credit squeeze or periods of high unemployment.

Particularly important in terms of public relations are farmers. Efforts should be directed to ensure that friendly relations are maintained with local and other farmers who sometimes are unwilling hosts to club members. Open days and free flights in gliders together with a friendly approach would be of much value in preserving the present cordial relationship. It would be unfortunate, to say the least, if farmers as a body become anti-glider pilots.

Social and Educational

The effect of a properly run social and educational programme is not always appreciated. It is necessary, however, to avoid "overdoing" the social aspect. With the availability of capable instructors it should be possible at all times to lay on a lecture programme in the event of bad weather, as well as organised evening instruction, without the need for outside lecturers. However, there is no doubt that from time to time it would be beneficial to invite visiting lecturers. With the availability of a 16-mm. projector and appropriate films, it is possible to provide entertainment and educational films at short notice.

Operational Communications

Consideration must be given to the possibility of providing some form of radio contact between the office, C.F.I. or deputy on the field, and launch points. Every effort should be made to "man" the office during daylight hours in the period from March to November, if necessary on a shift work basis. Associate members could well help in this connection. Unwittingly, members, particularly at week-ends, interfere with normal routine in the office. Discussions on flying matters as well as conversations of a domestic nature are held in the office. This is human nature, but members must be encouraged to discuss these matters elsewhere.

Weather

The weather is often blamed for a bad year by flying clubs. Sometimes this may be true, and it is true in certain circumstances, e.g. a run of bad weather at week-ends which may affect soaring pilots. The weather over the period of one year, however, is unlikely to adversely affect to any degree the training school programme.

FLYING COMMITTEE REPORT

COMMITTEE MEMBERS: R. Q. Barrett (Chairman), R. C. Barnett, J. B. Brenner, G. E. Burton, V. C. Carr (since Oct., 1966), Air-Commodore N. W. Kearon, A. MacConaill (resigned Sept., 1966). Advisors to the Committee: A. F. W. Edwards, J. E. Furlong, J. M. Hands, T. A. McMullin, Mrs. Ann Welch, K. G. Wilkinson, T. S. Zeally.

DURING 1966 the Committee met nine times. In order to cope with the volume of work a number of sub-committees were established, each of which has as its chairman a member of, or an advisor to, the main Committee. These sub-committees are concerned with such subjects as: Organisation of Contests, Operational Regulations, Contest Regulations, Awards, Records, Operational use of radio, Handicapping, Photography in Contests, Badge Examinations, Badge claims, Service aspects of gliding, International gliding and Task-setting.

Badge Claims. Claims vetted by the Committee resulted in 438 completed C's, 528 Bronze C's, 184 Silver C's and 10 Gold C's.

Records. A total of eleven U.K. and British National Record claims were approved and confirmed by Council. The 200-km. U.K. triangle record was re-introduced and a 400-km. U.K. triangle record was instituted; British National triangle records for these distances will also be introduced if permission is granted by CVSM. During the year the definition of "British National" was altered so that (with some exceptions) British Nationals living abroad could claim these records.

Competitions. The National Championships were organised by the BGA in conjunction with the Lasham Gliding Society in May. Each League had five contest days and Mrs. Anne Burns was declared National Champion. The Committee would like to congratulate and thank Harold Drew (Chairman) and Mrs. Ann Welch (Director of Operations) and the other Nationals Officials for the excellent organisation of the event.

During 1966 eight Regional Competitions (four Service and four civilian) were organised by clubs which were accepted by the Committee for rating purposes. So far as the civilian competitions were concerned the demand for places exceeded the supply. Clubs were, therefore, encouraged to hold more "Regional" contests in 1967 and the Committee is pleased to be able to report that the response to this request has been excellent.

Rating Schemes. The alteration to the Rating Scheme Rules which enabled pilots to count their "best" instead of the "highest-rated" contests meant that the production of the 1967 Rating List was a more difficult task than usual. However, a provisional list of rating points for 254 pilots was circulated to clubs during September and an amended list was published in November.

The Committee was asked to produce a

Rating Scheme for 1968 and the revised rules of this scheme were agreed by Council during the autumn.

Handicapping. A new Handicap List was produced which will apply in 1967 but we were unable to accept that the principle of handicapping gliders was a long-term solution to the problem of how best to assess pilots' skill.

Photographic Evidence. The RAFGSA August competition was the first time that a BGA-approved event had accepted photographic evidence of rounding turning points. From the results obtained, and from other tests made by the Committee, it was decided that in future photographic evidence is acceptable by the BGA in all National and Regional contests.

British Team Selection. During the year Council agreed that the procedure for selecting the British Team for the next World Championships should, in principle, be the same as that used in 1964. The Committee was asked to examine the details of the voting procedure and recommendations were made to Council.

"Ladder" Competitions. Details of how a "Club Ladder" contest can be organised were published with a view to introducing a BGA "National Ladder" if there is sufficient interest.

Future Organisation of Contests. We have spent a great deal of time considering whether the existing structure of competitions in Britain is the best method of (a) assessing the relative skills of pilots, and (b) giving pilots the maximum possible satisfaction from contest flying. Our conclusions and recommendations are being reported to Council. Any changes will not be introduced until 1968 at the earliest.

Acknowledgments. 1966 was an exceptionally busy year for the Flying Committee and we should like to record our thanks here to the many individuals who gave us a great deal of help with some of the specialised problems which we encountered—in particular to: Charles Ellis, Wally Kahn, Roger Neaves, Colin Pennycuick, Peter Scott, Geoffrey Stephenson, Ian Strachan and Lorne Welch.

ROGER Q. BARRETT, *Chairman.*

DEVELOPMENT COMMITTEE REPORT

THIS Committee was set up in June, 1963, under the Chairmanship of W. A. H. Kahn to find out what grants might be available to gliding clubs from the then Ministry of Education and to advise clubs on such grants. During the past three and a half years it has helped many clubs to make successful applications to the Ministry (now the Department of Education and Science). As the national interest in sport has developed so the Committee has extended its activities and now provides the focus for co-operation with government bodies and the various national and regional organisations.

The Committee itself is, to a large extent, what Kipling described as "one man's work". The Clubs will know to what extent their successful applications were, due to the wise advice of Wally Kahn, but not many will have realised how much work went into sorting out problems, piloting schemes through the Ministry and preventing difficulties before they could occur. Wally Kahn has now decided to pass on this work and to end his term of chairmanship. The thanks of the gliding movement are due to him not only for his help in individual clubs but also for his efforts in securing the grants for the National Coach and Chief Technical Officer. These two specialist officers have done a great deal to raise and maintain the high standard of gliding, and in doing so have helped the sport to expand and become available to many more people.

The moratorium on grants which was imposed by the Government in July,

1965, was lifted during 1966 and grants are again available. Grants were made to ten gliding clubs during 1966. The Officers of the Department of Education and Science have, as always, given us unfailing co-operation and have dealt helpfully and efficiently with our problems. I should like to tell them of our gratitude for their quick grasp of our needs and for their patience with our complexities.

The planned development of sport generally is gradually taking concrete form. Regional Sport Councils have been set up in 11 regions with the duty to advise, co-ordinate activities and foster co-operation among the statutory authorities and voluntary organisations. Standing Conferences have been formed in each Region to support the representatives of sport on the Councils. Representatives of Gliding are serving on the Conferences and on the Councils.

The question of multi-sport centres and shared facilities is very much in the mind of planning authorities today. This, too, is a question which gliding clubs might well consider. Land, clubhouses and workshops could often be shared with other sports with very little difficulty.

For some years gliding clubs have been aware of the role they could play in capturing the interest and enthusiasm of young people. They have organised activities ranging from one-day courses to scholarships, full-week courses and project work with schools. Nothing but the limitations of week-end flying, insufficient equipment and small clubhouses prevent many clubs from doing a great deal more. As always, the difficulties of development stem from lack of security of tenure of sites, a constant obstacle to the expansion of gliding. It may be that with the interest of the Government in the development of all sports this basic problem might eventually be overcome.

As a first step, many Regions are planning surveys of facilities and the Midland Conference has issued a statement on "The major needs of sports organisations in the West Midlands". Other Regions no doubt will follow and in preparation for such surveys gliding clubs would do well to consider their future and to make plans on a joint basis. Overall planning is clearly a sensible way of making use of resources and co-operation has advantages to everyone.

It is no more than commonsense that the equipment, buildings, and land for which grants are requested should be part of a long-term plan of development and that clubs, before making their applications should have a clear and practical policy which can be carried out without straining their resources.

I would like to emphasise here the importance of a well thought out and carefully made application. So much time and trouble can be saved if applications are passed smoothly through the process without the need for constant checking back on details.

JOAN CLOKE, *Chairman.*

WIN A SWALLOW COMPETITION

THIS competition; the first of its kind in Great Britain, initiated by W. D. & H. O. Wills in conjunction with the B.G.A., is now well on the way and should give a terrific boost to all club Swallow pilots and a tremendous incentive to club training programmes.

The contest itself, divided into three stages, will, weather permitting, come to a climax on the 28th to 30th July, when the finalists will be put through their paces at Lasham in front of a panel of judges.

The winners, one from the North and one from the South of the British Isles, will be presented with a fully instrumented Slingsby Swallow for their club: the winning pilots will be credited with £40 each towards flying fees. The second and third pilots in each region will be presented with a barograph for their club and £25 and £10 respectively towards flying fees.

All candidates will receive a book just published, "The Solo Glider Pilot".

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N.Z. 100-KM. RECORD ATTEMPT

By S. H. GEORGESON

THE 100-kilometre triangle is a comfortable sort of record to break inasmuch as it can be attempted at short notice and often late in the day, and in the event of coming unstuck, will probably not present a mammoth retrieve.

The philosophy for speed task records has to be entirely different from that of competition flying. In competition flying it is imperative to keep airborne. In record flying it is imperative to keep up a speed which you know will secure the record, and it means that one has to push this line of thought until the very last minute, when one will probably have either to land or abandon the attempt.

At Omarama this year, I made a number of attempts, often accompanied by Bruce Gillies. Start after start would be made across the point of origin, but only to have to come and try again because the speed was too slow.

On analysing the current record attempt, I felt fairly dissatisfied with the performance that I had put up and had many attempts to beat it, with the idea of getting the time as close to one hour as possible to complete the 66 miles. Gerald Westenra and I tried the 100-km. triangle record from Dunsandel just prior to Christmas. A cloud street ran approximately from one side of the apex of the triangle to the base. While this was a good set-up for the attempt, due to mismanagement, both by Gerald and myself, we didn't do particularly well. Gerald came unstuck, but his speed was good. I made the triangle, but took one hour 30 minutes. We both felt that the performance could be considerably increased with lifts in the region of 4 knots.

On this particular day at Omarama there were a few well-defined cumulus clouds which were used as the indication for lift source.

The analysis of the Omarama attempt is most interesting:

Total height climbed — 9,500 ft.
Total height lost — 11,500 ft.
Distance claimed — 64 miles
Total distance flown — 74 miles
Total time climbing — 20 minutes
Average rate of climb — 455 ft/min.
Average gliding angle — 1 in 33
Average speed when not climbing — 74 m.p.h.

On landing, after completing the 100-km. triangle, I felt that my slow performance was entirely due to having flown such a large deviation from the prescribed course. Lift lay in areas badly off course and I thought that I must have flown something in the vicinity of 90 miles. However, on putting pins in the map and running cotton round them, I discovered that, in fact, I had flown something like 74 or 75 miles, which is approximately 16% increase in distance. This cost me something like 8 minutes, which, after all, would have made a big difference, but on analysing the barograph chart, I discovered to my horror that I should have started the final glide quite a bit earlier and ignored the last thermal I used. The incorrect decision here cost me 3 to 4 minutes.

The area between the last turning point and the finishing line often produces heavy downdraughts, and this made me over-cautious. On this day it produced strong thermals and very turbulent air. I was therefore unable to burn up the excess height with high-speed flying. The Dart has a maximum rough air speed of 84 knots, or 96 miles per hour. The speed on the final leg was therefore kept down and caused me to cross the finishing line at 1,200 feet.

It seems to me that the achieved performance is a good deal higher than the considered performance of the aircraft, and because of this I should have been flying faster than the 66 knots during the greater part of the triangle.

I would think, given proper pilotmanship and average rates of climb of 450 feet/min., it should be possible to reduce the triangle time to, say, 1 hour 10 minutes. As there are obviously days within the country where lift is greater than this, it should not be too long before speeds of 60 m.p.h., or greater, should be achieved.

OSTIV PUBLICATIONS

THE Organisation Scientifique et Technique Internationale du Vol à Voile has issued two new books:

OSTIV PUBLICATION VII, containing the first part of the papers presented at the 1965 Congress in South Cerney, is obtainable: by individual members, from the London Gliding Club, Dunstable Downs, Dunstable, Beds., England; price, U.S. $2.25. By all other members and non-members, from the OSTIV Secretariat, NLM Atoomgebouw, Airport, Schiphol, Netherlands. Price U.S. $2.25 for members, U.S. $3.00 for non-members.

AIRWORTHINESS REQUIREMENTS FOR SAILPLANES, new edition: obtainable from the OSTIV Secretariat (address as above); price, U.S. $1.50 for members, U.S. $2.50 for non-members.

Orders can still be accepted for OSTIV Publications V, VI and VII, as well as for the World's Sailplanes II. Money for all these books must be sent in advance.

A. STIRNEMANN

REGIONALS

Coventry Regionals. Husbands Bosworth Airfield from July 15th-23rd. Closing date for entries 22nd May. Enquiries and entry forms: Comp. Sec., 26 Portia Ave., Shirley, Solihull.

Midland Regionals. The competition to be held at the Long Mynd from June 3rd-11th for the Olympia 460 series is now open to all types of gliders. There will be a special prize for the best performance by an Olympia 460.

BOOK REVIEW

The Wooden Sword, by LAWRENCE WRIGHT. Published by Elek Books Ltd., London. Price 42s.

LAWRENCE WRIGHT tells, in the main, the same story as Brigadier Chatterton in "The Wings of Pegasus", and to those of us who lost so many of our friends, sent incompetently to their deaths in the Sicilian invasion, it is a sickening and terrible one.

But Lawrence can write, he is a highly intelligent man, with the sensibilities of an artist (or more precisely, of an architect), and everything in the book reflects his own unusual, wry, and individualistic self. Who but Lawrence could write: "Glider pilots are even more dedicated and obsessed than golfers; their girl-friends complain that they have only two ideas in their minds, and their wives that they have only one."

His intelligence and abilities ensured that he was on the inside of the whole long and largely tragic saga, and his inability, without spectacles, to read even the top line of the oculist's chart ensured that he survived to tell us about it. Though only just—but for a last-minute change of plan he would have died with Nigel Norman in his Hudson, on the way to North Africa.

I remain of the opinion that the results of their achievements, in terms of battle, were almost insupportably inadequate when set against the enormous cost in men and materials. Lawrence again records the appalling blunder of the Sicilian invasion, but then goes on to show that, in the greatest moment of all, on D Day, the gliderborne spearhead played a most valuable part. After that, however, came the brave failure of Arnhem, and thereafter the whole effort tapered away. So much gallantry, so much heroism, so much waste.

In this book, Lawrence holds up a mirror in which we can see reflected the picture of a generation of brave men whom we knew—and I have a certainty that, in the face of a similar challenge, we would see their like again.

I strongly recommend this book—our country is going through a dreary and dispiriting time, but a people capable of such unselfish heroism and humour cannot be kept down for ever. And when we do come through, it will be not our heroism alone (which other nations have in equally high degree) but also our humour (which is, I think, unique), which will between them do the trick. If only the challenge facing us today was as explicit as was that of Hitler!

P. A. WILLS.

CORRESPONDENCE

HANDICAPPING

Dear Sir,

May I refer to the excellent article by John Delafield and Ian Strachan on the Structure of future British Competitions in your February/March issue. Whatever handicapping system is used, the same advantages he quotes for higher performance gliders will continue to apply, i.e., for record breaking, reaching out to thermals spaced far apart, the speed squared rule in competitions, "just" squeaking home, theoretical speed may be pessimistic, etc.

Handicaps which mean anything must be based on performance. These two authors have substituted emotion when downgrading the performance of the better gliders to make it more acceptable to those who own them. I certainly dislike their idea of changing handicaps based on ballot or personal opinion. If subsequent and independent investigation of the performance curve shows the glider to be wrongly assessed, then by all means change it.

I should dearly love to fly a BS-1 in this country in competitions and when properly handicapped. I should get all the advantages in the first paragraph, but those who are not so fortunate in their mount would at least have a good chance—if I made a mistake. Otherwise they have not a hope.

Salisbury, Wilts. TONY DEANE-DRUMMOND.

PROFESSIONALISM

Dear Sir,

I would like to reply to some comments resulting from my letter in the October/November issue of SAILPLANE & GLIDING.

Philip Wills (December/January) has hit the nail right on the head! It is precisely because the B.G.A. can only do what its *members* want, that I made certain remarks in my letter. I did not suggest that the B.G.A. should actually provide the hardware necessary for gliding.

It is true that anyone can become elected to the B.G.A. Council and air his views there, and it is just possible that if the solo pilot had a louder voice in their deliberations, he would not have a problem to complain about! However, life is short, and I chose to ventilate this subject in these columns as a more effective medium.

The point I'm trying to get across is that the B.G.A. must adopt a *wider responsibility above the sectional interests of its members,* none of whom, as far as I am aware, actually represents the average solo pilot who simply wants to fly when it suits *him* and not someone else, and either can't afford to or doesn't wish to become a private owner. The B.G.A. must represent, and advance the interests equally, of all sections of the gliding community. It must accept the challenge and take the lead in creating the climate of opinion which believes a better deal for the solo pilot is possible, and if necessary it must adopt policies designed to make it happen.

There are two schools of thought, the preservers of the status quo, and those who believe in a more professional approach to gliding. The efforts of the former have not been crowned with notable success, measured in terms of average flying time per solo pilot—about 4½ hours per year. The latter group believe they can do better.

With Mr. Elsden and partners (February/March) I must agree. Not all private owners (hereinafter referred to as P.O's) are rich, and some of them do great things for their club.

Nevertheless, taking an overall view P.O's *as a group* by definition spend more time in the air or attending to their own aircraft than an equal number of non-P.O's. If a club consisted entirely of P.O's, professional help would have to be engaged to perform essential work on launching equipment, etc.; alternatively the P.O's would have to do it themselves and spend less time in the air. It follows that the P.O's are indirectly subsidised by the voluntary effort of the non-P.O's, and they should, in all fairness, pay higher subscription and launching fees, increased in proportion to the extra flying time that they achieve.

Birdingsbury, Nr. Rugby. D. CAREY (ex-P.O.).

COMPETITIONS AND HANDICAPPING

Dear Sir,

May I, as a League I competitor, put my view on handicapping as discussed in our last few magazines? First, remember how many *good* competition days there have been in recent years, the sort of day when one can go in for a race expecting to get back, and the only consideration is how to exercise one's skill to win.

Being more fortunate than most others, I am usually able to fly in two competitions each year, and in addition am able to take time off to fly on almost every good soaring day. My definition of a good soaring day is one on which one can anticipate being airborne for at least four hours. Consulting my log book, for the last three seasons and six competitions there have been 55 good soaring days and

of these 16 have been in competitions, averaging less than three good days per eight-day competition. 1961, 1962 and 1963 produced wonderfully good weather at the National Championships, 21 good competition days.

In a competition, when the weather is near perfect, those with the heaviest wing loading and best high speed performances will win handsomely. If, on the other hand, the weather produces weak soaring with a low inversion, the machine with a light wing loading will climb the highest and go the farthest. Skylark 3's and their like will be in the van, and many of the Darts and similar will not even get started. Now how can handicapping cope with the latter type of weather? To my mind, it is ridiculous: just think of all the leaders sitting on stools in the control room wondering which Skylark 3 was winning the whole competition. This could happen.

An even stronger argument against handicapping is that it would stifle or mislead development. Gliders would be designed to beat the slide-rule instead of to produce good all-round performance.

There is no comparable sport to ours which has a National Champion. The nearest is sailing where there are sufficient numbers to provide one-design competitions, and even then not a Champion for one-design. I know how galling and frustrating it is for a good sailor in a small club with a mixed collection of dinghys to have the best boat and win all the competitions and yet on handicapping never a win during the whole season!

My opinion is very strong that there should be no handicapping in Open Competitions. Let the best pilot in the best glider (no matter how expensive) win. All pilots will eventually benefit from the overspill of the efforts of the sponsors of new types of gliders. Good luck to the SIGMA project. Let us hope that this all-British glider will not be smothered by handicapping before it is born.

Alverstoke, Hants. HUMPHRY DIMOCK.

MORE ATTENTION TO CONTROLLED AIR SPACE

Dear Sir,

With reference to the Flying Committee reports and correspondence on Rating and Handicapping, may I say that this, unfortunately, is the burning topic of the day and (although a non-flying reader) one I find intensely interesting. My own suggestion to improve glider design, is for an additional handicap to penalize high wing-loading. This would also offset any bias in task-setting noted by A. J. Stone in his letter on last year's Nationals. The handicapping topic was referred to as unfortunate because it tends to "cloud" the more important subject of expansion of controlled airspace. Possibly more attention would be given to the airspace problem if we were not so inured to control in every aspect—private, domestic and industrial—of our daily lives.

Newbury, Berks. J. E. CRAMP.

STRUCTURE OF FUTURE COMPETITIONS

Dear Sir,

John Delafield and Ian Strachan have devised a scheme for class competitions which they believe could be introduced in 1968. It might be workable but it is complicated and it seems to be only a slight improvement on the B.G.A. proposals. Also, as they admit, it would need constant revision as new types of glider came along.

The formula class system I proposed in the December, 1966, issue of SAILPLANE & GLIDING, or the even simpler one I offered ten years ago (SAILPLANE & GLIDING, 1956, p. 95), could be put into effect next year without any calculation or fuss. The only equipment needed is a tape measure, and this could be used again and again. Of course, it would not be essential to hold a contest every year for every one of the five main classes. The move to list the Standard Class (equivalent to my Class 5) results separately in future is in the right direction, but there is no need for the Open and the Standard Class Nationals to be held concurrently, nor even at the same airfield. Perhaps we should have no grand-sounding title of National Champion any

more, but only separate Championships in each formula. The method of selecting our international team is a separate issue, and I still believe it should be done in some kind of *one-design* team trials.

One of the main purposes of the formula scheme is to encourage manufacturers to produce good gliders within a rigid specification, instead of going all out for performance at any price. The retention of some open contests and the over-riding importance of the Internationals will still lead to the appearance of outstanding super-ships, but these will remain out of the reach of most of us. John Jefferson, Mike Fairman and myself, who are not at heart very worried about our standing in the lists, are nonetheless greatly influenced by competitions when we go shopping. It is the contest winners, rather than we, who influence the manufacturers when it comes to putting a new type into production; it is their names, not ours, that usually appear first on the order lists. We therefore need to interest the competition and record-breaking elements in the less complex and inherently less expensive gliders. At present, British manufacturers have no very strong incentive to produce a really good Class 5 glider. It is easier for them to add lengths of wing, retractable wheels and other expensive features, because our only important competitions are Open. They are forced to compete in an Open market, so they produce Open Class gliders. I hope the point is sufficiently made?

If, as John D. and Ian S. say, handicapping will still leave the better gliders with a big advantage almost all the time, why bother with it at all? On the other hand, if in fact it does act in the intended way, it could easily be applied, as a compromise or for an interim period, *within* each formula. For example, the Dart 17R might be taken as scratch for Class 3, other types being marked up or down a few per cent as necessary, but excluding Classes 1 and 2 altogether. The encouragement to manufacturers would remain, to improve existing designs without adding greatly to their size or complexity. Nevertheless, in the long run I believe it would be better to introduce the formula system as soon as possible and let its influence work unhindered by any props or crutches.

Enfield, Middx. MARTIN SIMONS.

THE RAT RACE

Sir,

Each year some 80 glider pilots and about 200 crew members gather for the Nationals somewhere in England. In the same year an even greater number attend Regionals. All these people have one experience in common—they will sit around for at least half that time in pouring rain and drizzle waiting for the weather to clear.

On the Continent the gliding weather is generally much better and is well worth the little extra journey from this country. Unfortunately, most of us are limited as to the amount of time and money we can spare for gliding and find that the best we can do is to spare 10 days or so to fly in the Nationals or a Regional.

If one is interested in maintaining a position on this mysterious Rating List of ours it is essential that one flies in the best U.K. contest that we can. In short we cannot fly both in the U.K *and* in Continental Competitions. In addition we often find that the dates of Continental Nationals conflict with ours.

This is an unfortunate state of affairs because each year the B.G.A. receives invitations from European countries for pilots to visit and fly in their Nationals. All too few people from the U.K. have been able to accept these offers which is a sorry state indeed.

I, for one, would be eager to fly in, say, the German Nationals were it not for the necessity to hold one's own on the Rating List. I am sure there are others in this position.

May I, Sir, through your columns ask the Flying Committee to make provision in future for pilots to miss a Nationals or Regional one year and not suffer too severely on the Rating List as a consequence.

JOHN DELAFIELD.

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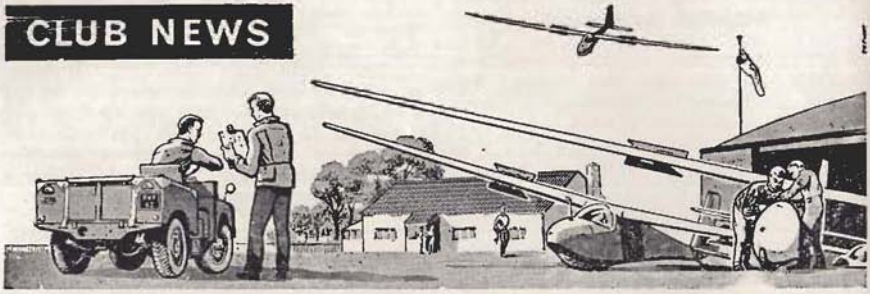
CLUB NEWS



A NUMBER of clubs have reported using thermals in early January, let us hope this is a forerunner of a good soaring season.

Please watch your copy date for the June-July issue, which is published early for the Nationals, and news for inclusion should reach me by the 29th March, and that for the August-September issue by 14th June, at 14 Little Brownings, London, S.E.23.

Please remember, your copy should be typed double spaced on foolscap, and if you have any suitable photos do send them along too.

13th February, 1967.

YVONNE BONHAM (Mrs.),
Club News Editor.

ALBATROSS

IN common with most clubs, our flying activities have been severely curtailed by poor weather conditions at the weekends. However, we have utilised the time to complete the removal of our domestic equipment from our former site, and now our new headquarters—once again old farm buildings—are beginning to resemble home. Although we have modern sanitation at our new base, our Chairman's architectural masterpiece has moved with us. "Fred's Priv."—absolutely essential at our old site, has just been granted a C. of A. in its new role as a petrol store.

Following several visits by Her Majesty's Inspectors, we have had the welcome news that we are to receive a grant, and, at the time of writing, we impatiently wait to know the amount. At least we can now look forward to expansion, and with the prospect of more advanced aircraft to supplement our sole T-31, we have been able to welcome more experienced pilots into the club.

At the end of October, we faced a crisis with the resignation of our C.F.I. Frank Mares. Frank had been with us for almost a year, and, although not a founder member of the club, will always be remembered by them as the pioneer of our actual flying operations. The club committee is grateful for the assistance rendered by George Collins of Perranporth and John Fielden of Dunkeswell at this time, in recommending suitably qualified instructors to take over as Club C.F.I. and, following up their suggestions, we have secured the services of Tony Edwards as our new C.F.I. Tony is a former R.A.F. pilot, whose gliding experience includes eight years with the A.T.C. as an instructor, and four years as resident instructor at Perranporth, he is thus familiar with most of the problems appertaining to club flying.

Since the formation of the club by a group of enthusiasts in February, 1964, of the original 20 who formed the club, 10 are still active members, and although two of these have moved from Plymouth to become rather remote country members (John Leacher in the Middle East and Ray Buzza in London), both Ray and John managed to get home in time to fly with the club during the Christmas holiday.

We have now been flying for just over 15 months, and club membership has increased to over 40 at the present time. Total club launches approach the 1,000

mark—no mean achievement in view of the fact that we have to rig and de-rig the aircraft every time we fly. A Bedford van has been added to our vehicle fleet, and this has proved invaluable as a maid of all work, particularly for retrieves during ab-initio training.

F. C. S.

BATH AND WILTS

IT was with sincere regret that we heard of the death of our President, Viscount Long of Wraxall.

Lord Long was a great asset to our club. On more than one occasion he proved to be a most effective buffer between ourselves and Authority.

It was very evident that his word was respected by the powers that be and we shall be hard pressed to find a more effective successor.

Every weekend he would come along to the airfield to exercise his dog. Frequently he would stop for a chat, watch progress, and ask if we wanted his help in any proposed project where officialdom might be concerned.

I believe he genuinely enjoyed his association with us and it was very obvious that he thoroughly enjoyed his first experience of silent flight on the occasion of his 73rd birthday.

During his funeral service, at which our club was well represented, he was described as a "character" and it is as a "character" that we, in our club, will remember him with respect and affection.

The club also suffered a loss when Owen Harris asked the committee to accept his resignation as C.F.I. Owen is leaving the district on promotion with his firm. The committee, in accepting his resignation, wished him every success and thanked him for the hard work he had put in over the last two and a half years. Owen was presented with an inscribed silver cigarette case as a token of our gratitude.

His successor is to be Gordon Mealing who was C.F.I. when the club was formed and who has recently been Owen's deputy. Now that business commitments are less pressing Gordon feels that he is able to take up the reins again.

"One of the most instructive evenings we have ever had" was the general opinion after a talk by Fl.-Lt. Willson, C.F.I. of the Bannerdown club, on "Meteorology for Glider Pilots". Fl.-Lt. Willson approached his subject purely from the practical glider pilot's point of view and an idea of the intense interest shown can be gained when it is stated that the amount of beer consumed that evening was negligible and members had to be dissuaded from asking him further questions to give him a chance to grab a pint before the bar closed.

K. N. S.

COTSWOLD

IT'S circuits and bumps time at Newnton, that five-minute flight (or was it three?) still exhilarates the blood stream as a whisky to an alcoholic.

The short winter days greatly reduced flying, and even the incentive scheme (3s. per launch before 10 a.m.) did not get members to the club any earlier, and as far as we know no one has benefited by this scheme so far.

Emile (the "Biggles" of our club) thought he could copy the bird style of landing on a fence, but found that the Cadet was no sparrow!—consequence, clipped wings.

The annual dinner-dance was well attended and everyone enjoyed themselves. Ray Stafford Allen and his wife were our guests of honour and Ray gave the after dinner speech.

By the time this is printed the B.G.A. will have had their A.G.M. at Cheltenham, and we expect to have met many interesting people.

P. F. J. M.

CORNISH

JANUARY 1st in Cornwall was warm and sunny and we started the year as we intend to continue . . . all our aircraft, including the Tiger and Chipmunk were airborne during the day—10 in all—and soaring was enjoyed in moderate thermals. The C.F.I., George Collins, and Instructor Geoff Hayman both took the 463 into cloud, the best altitude being 4,300 feet. Since then the weather has been about average but much to the astonishment of us all we have a record amount of flying logged. This sort of utterly spontaneous but steady improvement is surely the healthiest of signs in

a voluntary organisation, another one is the number of members to be seen at the club these days. Even on non-flying days the place is a hive of activity with all sorts of jobs and projects in hand, like the new monthly newsletter, or the new F100 tow truck.

Chief among our projects is an additional hangar. The possibilities wax and wane as ideas are received and explored, they are now crystallising and we confidently expect it to be housing our tug aircraft and the odd glider by early spring. This, of course, will be a really practical boost to our already increasing efficiency.

Our T-21 is back at Slingsby's to have a complete overhaul and re-cover. Doug Reynolds knows how it got there—welding a wheel to the brake drum tends to stop it falling off I gather.

More aero-tow pilots are being trained and the tug pilot roster is getting fatter. We welcome back Mike Armstrong to tugging duties, also Tony Turner, a categorised instructor from Bicester who will help with the courses this year along with Bill Owens. Two resident instructors will ensure that our courses are both efficient and profitable to the pupils and pundits alike who visit us in 1967. Never before in the club's history have we been able to offer better flying facilities of all kinds.

J. M. H.

COVENTRY

IF January is to be taken as the trend-setter, then we are in for a very good year, for the weather has been glorious and on the first day of the new year the T-21 went to 3,000 feet. Several other small duration soaring flights have been made during January and February.

Much fettling of machines and trailers has been going on in preparation for the season to come, and the ex-Rearsby Skylark 4 has had a magnificent face-lift by Ron Gardner, its ultra modern fluted line finish having led many strangers at the site to believe at first glance it was a Dart!

At long last we see before us the implementation of the first step on the road to full-time flying with the appointment of Gordon Glennie of Arbroath to be our full-time Seasonal Manager from April to September, so we shall be pleased to see anybody who can snatch half a day off business this summer, come to Bosworth for a launch.

F. W. F.

CUMBERNAULD

AFTER their absence from these columns for quite a few issues we are glad to report that the Glasgow and West of Scotland Gliding Club and the Edinburgh University Gliding Club are back in business and have obtained the use of the new airstrip at Cumbernauld, 14 miles east of Glasgow. The two clubs have decided to join forces and will use the above name for joint operations, though they will retain their own names and identities.

The group welcomes Dr. Arthur Cruickshank as C.F.I. Arthur has been acting as C.F.I. of the Edinburgh University Gliding Club for several years and we look forward to many happy hours of flying under his leadership. With four aircraft—T-21B, Eagle, Tutor and Olympia 2B—and a group of keen enthusiasts, we hope that by the time this appears in print quite a few flights will have taken place.

T. J. G.

DEVON AND SOMERSET

YOUR scribe having just returned from five weeks in Barbados (wonderful soaring weather but no gliders!), the following notes have kindly been supplied by our new Chairman.

The annual dinner and dance on 17th December was again held at the Victoria Hotel, Sidmouth, 60 members and friends being present.

A smaller but equally enjoyable gathering met at the Carlton Hotel at Honiton on the previous Saturday when we were regaled with roast game and cheered by lashings of very good wine kindly provided by our genial President, Mr. T. R. N. Whyte. The evening was so much enjoyed that it was resolved to repeat it from time to time as a club activity.

We have been flying from our new site at North Hill, Broadhembury, since the beginning of November and we are very well pleased with the move. There are snags, of course. The entrance gateway has become a quagmire in the recent

rains, and cars and trailers tend to get stuck and have to be rescued by tractor. Also, at the present we have no club-house or hangar but plans have been submitted and we hope to start building very shortly. The steel for the framework is already in our possession and being assembled. It came from four obsolete electricity pylons which one of our members bought for the club and which we dismantled ourselves. We nearly had a classic accident in the course of this. One of our members had his safety harness attached to the cross-member he was in the process of unbolting!

Incidentally, when the plans for the hangar were submitted, the Planning Officer pointed out that the roof was an aerofoil and that in a strong wind it was liable to become airborne. We therefore agreed to fit spoilers. We did not want a soarable hangar.

To hardy gliding types the initial drawbacks of the new site are nothing compared with the magnificent soaring possibilities. Even in light winds soaring is possible with the wind direction anything from south to north-west and this covers most days of the year. Several members had over an hour's soaring in quite light winds on New Year's Day. In fact, our launch rate has decreased alarmingly as we tend to run out of gliders to launch.

The financial stringency resulting from the move has left us with a somewhat depleted fleet consisting of a T-49, two Swallows and a Tutor, but we have a number of P.O.G's and more syndicates are contemplated. Our Tiger Moth has a new engine. We hope this one will be less prone to shed inessentials, like magnetos, than the old one.

We are planning to hold our usual training course this year as well as two task weeks; will those interested please apply to Mrs. J. Hancock, 2 St. Peter's Close, Broadway, Ilminster.

We look forward to lots of fun and plenty of hard work in the coming season.

A. E. R. H.

GRAUNCHESTER

Dear Editor,

Your scribe's pen having gone in for its annual C. of A., we thought your readers, deprived of our news, might like to share a poem that our C.F.I., Alf Turnbuckle, rendered at our Christmas party. With apologies to Rupert Brooke, late of the Dagling syndicate.

W. A. R. N.

GRAUNCHESTER

GOD, I will pack, and take a train,
And get to the Midlands once again.
And of that district I prefer
The lovely hamlet, Graunchester.
For Booker people rarely smile,
Being urban, squat, and packed with guile,
And Lasham men in the far South
Are black and fierce and strange of mouth.
At Dorset they fling oaths at you
And worse than oaths at S.G.U.
And folks in Oxford and those parts
Have twisted cables and twisted hearts;
And things are done you'd not believe
At Dunstable on Christmas Eve.
Strong men have blanched and shot their kind
Rather than send them to the Mynd.
But Graunchester, ah Graunchester!
There's peace and holy quiet there;
Great clouds along pacific skies
And men and women with straight eyes,
Sleek Tutors, lovelier than a dream
A refuse pit, a murky stream,
And kindly little winds that creep
Around the top of our slag-heap.
The women there make wads and tea,
The men all swot for their Bronze C.
They love the air, they spurn the ground
And drive their winches round and round.
And when they get to feeling old,
They overshoot the field, I'm told.
Oh, is the static-water sweet
That laps around the launcher's feet?
Opens the bar from ten to three,
And are their crates of brown for tea?

KENT

THIS must have been our most active winter for many years, with only two or three non-flying weekends, the majority allowing flying on at least one day, or even both.

The first solo of 1967 came on 29th January (Peter Luckett) and the first workable thermals on 5th February.

Every Thursday since October, C.F.I. Roy Hubble has laid on a social/instruc-

tional evening with various slides, films and lectures on all aspects of gliding, with special emphasis on Bronze C subjects.

We are starting a club ladder this year using the rules suggested in the December/January SAILPLANE & GLIDING and this, plus the bottle of whisky offered by Eric Gook to the first pilot to fly to Firle, is already promoting the "get up and go" spirit we sadly need to increase our cross-country statistics; so watch out Southdown for the first good day of the season—you may be invaded by some half-dozen thirsty pilots from Kent, all claiming their bottle of noggin!

Congratulations to instructors Vic Ovenden and Cyril Whitbread who successfully obtained their categories following a visit from Roger Neaves in January.

M. H.

LAND'S END

THE winter period has seen a lot of bad weather, but when it has been flyable some very interesting conditions have been met. The end of October produced thermal conditions enabling one member to do his C flight on his second solo in the Blanik. November was an almost complete write-off, but December produced several ridge days. Perhaps the punch-line for 1966 came on December 28th which started as a ridge day but built into a thermal day giving 5 kt. lift to cloudbase at 2,500 ft.

1967 started well with a 20 minute flight off a 600 ft. winch launch on the 1st, and of the remaining five flying days in January another two gave thermal conditions, with one ridge day. Perhaps the most interesting was a dull grey overcast Saturday, with 8/8ths cover at 1,300 ft. which was giving large areas of no sink in zero wind. Flights of 20 minutes off 500 ft. launches were making us scratch our heads!

January also saw the completion of our ridge explorations when a 20 kt. N.N.E. wind enticed C.F.I. Brian Pritchard to take an aero-tow to Penzance, from which he soared the Skylark between Penzance and Lamorna at up to 1,800 ft., finally thermalling back to the airfield some six miles downwind. We have now cliff-soared in every wind direction without landing out.

February, too, has started off with a bang, good thermal conditions being enjoyed on the 4th and 5th, producing the first Bronze leg for the year. We don't allow ridge flights to count for Bronze C, preferring the badge to really mean something in terms of cross-country competence.

In every way the club has now settled down to a stable pattern and is developing very happily. Most problems are in process of solution if not solved, and the only big question mark is what is going to happen in October, when our agreement with what was the Ministry of Aviation runs out.

The T-21 is just emerging from a major at the time of writing, with the Skylark due to go in for hers, so everything will be on top line in good time for the spring. With two categorised instructors, two club instructors, and a second full-time instructor for the courses we look forward to flying every possible day (last year, with only one instructor, we perforce could not fly on Saturdays) and to breaking our 1966 totals by a very substantial margin.

One thing we very much look forward to is nipping up the road to collect the "Peninsular Pot" from Perranporth—a "collectors" trophy generously donated by Geoff Hayman of the Cornish Club after he landed two fields short of Land's End a few months ago. He crept down the cliffs in the Avia, the last 15 miles or so at no very great height!

Come all ye—you're all welcome.

W. D. T.

LINCOLNSHIRE

THE tedious task of rigging and de-rigging will soon be over as the erecting of our 60 by 90 ft. hangar is almost complete, members have put in a great deal of time and labour. One member was heard to say, jokingly, "I joined the gliding club for relaxation". Even the influx of new members have realised the importance of this construction and have continued to come, although very little flying has taken place during the winter months. They will, however, be rewarded as a training week has been arranged to take place during March.

The clubhouse is now fully serviced

with water and drains: certain members were seen (complete with nose-pegs!) shovelling in the "mire" which gave off an odious smell.

The first of our two petrol winches has now been converted to diesel, and we hope this will help to keep running expenses down. It is hoped that the people concerned with this conversion do not have too long a rest before tackling the second winch.

Good relations are still maintained with the G.S.A. at Swinderby with frequent visits to parties held in their clubhouse.

R. J. R.

LONDON

WE have had quite a bit of wave soaring this winter, all of it with westerly winds; 2,000 ft. might not sound much by other people's standards, but one cannot expect much better from the hill we have! Several five hour flights have been done, but apart from this we have no spectacular flying to report. The weather has permitted training to continue almost every weekend.

After our record season in 1966, plans are laid for further expansion this year. Additional staff, another winch, a fourth Tiger Moth, two new Ka-13's, and extra courses could add up to doubling our operations as compared with two years ago, given favourable weather.

It has been decided to acquire an anemometer for the club with the proceeds of the Ron Watson Memorial Fund. It was felt that this instrument would prove itself of great value, being a constant reminder to the occupants of the bar that there is more than one sort of wind! If one glider is prevented from serious damage by a watchful eye, it will have paid its way several times over.

Vic Ginn left us for South Africa at the end of the year, where he will be doing drawing office work. We suspect, however, he'll be doing gliding in his spare time! We wish him luck. The workshop is now in the charge of a more diminutive, but nevertheless active chap, by the name of Les Seymour. We have just taken on someone else to help turn over two-seater fuselages!

Chuck Bentson has sold his Skylark 4 to a syndicate in Australia, including Wally Wallington. Chuck is joining a syndicate with a new Ka-6E, the second of this type at the club.

Owing to complaints from our neighbours during recent years, we have experimented with a silencer on a Tiger Moth. If this proves practical, the others will be muffled as well. It is hoped our efforts to keep the district quieter at weekends will be appreciated, and there are no more mutterings about injunctions!

Our annual dinner was a great success, our chief guest of honour being Chris Riddell. Trophies were awarded to Martin Simons for his construction work, Roger Barrett for organising the air display, Mr. and Mrs. Hunt for being the most promising ab-initios, Mac MacDonald for a 300-km. triangle in an M-100s, and Terry MacMullin for the farthest boomerang flight.

M. P. G.

MIDLAND

THIS year's dinner-dance was held at the Long Mynd Hotel. The move from Birmingham to Church Stretton met with the approval of those who attended. During the evening, the trophies were presented to the winners for 1966. Rick Prestwich won the Siam Trophy for the longest flight from the Mynd and the Sheffield Trophy for the greatest height gain. Bob Swift won the Hardwick Trophy for an out-and-return flight and John Jefferson the Neill Trophy for the best ab-initio.

The Maxim Trophy for Club effort went to Shelley Curtis who, until recently, was Secretary and Deputy C.F.I. The Coventry Club's gain is our loss. Shelley is succeeded as Secretary by Ron Hayes and as Deputy C.F.I. by John Brenner.

During the coming season, we are to operate a ladder contest with a trophy for the overall winner and another for the best performance in club aircraft.

Inside the clubhouse, the east end of the dining room has received a real facelift from Alan Jones and John Rickett who have panelled the wall in cedar.

A new arrangement with a group of about 30 enthusiasts at Birmingham University has resulted in their appearing on the Mynd on those Wednesdays when

the weather has been suitable for flying. A special course is to be run for them at the beginning of the season.

K. R. M.

NEWCASTLE AND TEESSIDE

UP to the time of writing these notes, the winter at Carlton has been the mildest that we have experienced since moving to the site. Compared with past winters it has proved a very milk and water affair—not that we are in any way complaining! We have managed to get in a high number of launches and a very fair amount of soaring in hill and wave conditions, even if no spectacular heights have been achieved.

Club statistics for 1966, which stands out in memory as being a singularly poor year, were not as disappointing as had been feared, except in the sphere of cross-country flying. Soaring, generally, was down in duration, but even so of our 99 flying days, 80 were soarable. The club year 1966-67 has got away to a much better start, and our overall average flight time to date is approximately 30 minutes. If the year continues in this way, it could easily be the best year yet at Carlton. Still, there's many a slip . . .

The recent spring-like weather has not gone unnoticed by our private owners. They can regularly be seen drawing circles of quite prodigious radius on new maps, discussing the acquisition of more and better instruments, radio, etc., or generally fettling gliders and trailers for the coming season. Both the Dart and Skylark syndicates have entered a quota of competitions, and all that is needed now is the warm sun, lots of big fat thermals, and plenty of luck!

In the meantime there's work to be done repairing the road and preparing the ground equipment for the wonderful season ahead—we hope!

B. W. B.

PERKINS

WE lost two of our founder members in November last, Jack Kilby had, for personal reasons, to vacate the position of Hon. Secretary, which he had held for the last eight years. He will be sorely missed at the helm, or more correctly, the controls. Stan Hickson, our ground engineer for many years, has taken a post in Dorset and apart from wishing him luck in his new work, we hope that another gliding club may benefit by his valuable experience both on the ground and in the air as an instructor.

Ray Stafford Allen and his wife were our guests of honour at our annual dinner-dance on 3rd February, which was attended by some 50 members.

Tony Fidler (who got his A, B and C during last year) made the last soaring flight of 1966 on 13th November from a winch launch and kept the Grunau Baby up for 20 minutes. The latest soaring flight recorded in the club's history!

Daisy May (bless her little yellow spoilers), our club T-21, passed her 10-year test recently and is flying again resplendid in her new outfit.

We are pleased to welcome a syndicate-owned Auster Tugmaster, which will be available at weekends for aero-tows. This is the first time we have had this facility at Spanhoe, and it should enable us to investigate if not make use of the "Corby Mushroom" (a visible sign of an industrial thermal) produced by the Corby steelworks near us. Now that we have aero-tow facilities, we hope that we will have many callers from other gliding clubs.

Finally, congratulations to Chris Falkenbridge on obtaining his instructor's category.

J. V. L.

PORTHCAWL AND DISTRICT

A 10-KNOT southwesterly blew steadily when the first launch of the Porthcawl and District Gliding Club was carried out on 1st January from the old airfield site of Stormy Down near Porthcawl. Many an old airman smiled and turned in his grave as the T-31 sailed up, carrying with it the club's first C.F.I., Jim Martin.

The club was formed after 18 months of money-making schemes and careful discussions with local farmers who now re-own the site. The club owns a winch, caravan and a T-31. A Tutor and T-21 will be arriving shortly, together with the possibility of two Grunaus. Launches are available at weekends and public holidays, and the site offers launches in most wind directions. Numerous ridges

are within 10 miles reach, and investigations are under way to find satisfactory southwesterly and northerly facing ridges.

The club welcomes visitors, but requests that entry to the site is only made through the main site entrance on the road passing the hangars.

W. K. J.

STAFFORDSHIRE

THE A.G.M. this year was very well attended. The reports of the retiring committee showed that the club had only a small increase in flying activity in spite of operating two extra aircraft. The weather and difficulties with the Tiger Moth were blamed for a less satisfactory financial result than last year.

The new committee consists of: Chairman, B. Clare; Secretary, N. Bartlett; Treasurer, P. Felthouse and C.F.I., P. Bradwell, with R. Larkinson, F. Townsend and A. Wright as ordinary members.

The retiring Secretary, Gordon Hudson, is emigrating to Tasmania shortly. We will miss him as he was an enthusiastic instructor and private owner as well as a most efficient secretary.

Soaring commenced on 4th February with a 30 minute flight by Ron Cook to complete his Bronze C. This augers well for the newly established Club Ladder which will be operated as part of the National scheme.

The winch building group are busy on yet another production, this time designed to launch Capstans and similar heavyweights to great altitudes.

A. W. H. L. W.

SURREY AND HANTS

AT the A.G.M. in December, it was decided that the name of the club should be changed to the Surrey and Hampshire Gliding Club. Other matters at this meeting were the election of new committee officers, and the imminent arrival of the club's Dart 17R.

The only major change was the resignation of Peter Hoskin. His place as Treasurer was taken by Bill Dean.

Winter has seen the usual desultory flying, typical of this time of year, and not much else. However, within the last two months several soaring flights have been recorded.

The club is joining the National Ladder and arrangements will be announced shortly.

A. R. I.

SERVICE NEWS

CHILTERNS

NOTABLE events during the winter months have been mostly on the social side. On 10th December we held a successful Christmas party which was well attended by both club members and V.I.G.P's (very important gliding personalities) alike. Later in the month, Penny and Joe Hegarty committed the unpardonable sin of arranging their wedding on a Saturday and then inviting most of the club members. Needless to say, the poor uninvited were too few in number to run a gliding field. Shame!

However, we do fly as well as socialise and to justify this claim we have tentatively organised a ridge-soaring expedition to Sutton Bank from 23rd April to 5th May. The Chiltern fleet has now been supplemented by the recent arrival of a Grunau 2B from Bicester. The extra launch height attainable in this delightful little machine makes it the most sought-after on the line.

Our training programme was intensified in the new year and we were well rewarded with a whole batch of new solo pilots who are preparing to meet their first soaring season. At the other end of the progress chart, our two aspiring passenger carriers, Terry Perry and Cliff Brookfield, are both booked on instructor courses in the immediate future and we wish them luck with the rigorous ordeals which lie in store.

A. C. P.

FENLAND

THE club is now settled in at Marham, thanks to excellent co-operation from the rest of the station and to the appointment of Wg.Cdr. Dunn and Sqn.Ldr. Wilson as Chairman and Vice-Chairman respectively.

Weekend launches are back around the

250 mark and with the vast expanse now available flying takes place on two separate lines, training and solo.

An increase to our fleet in the shape of an Olympia 460 has been received, and along with the other winter majors has been resprayed in club colours.

An expedition to the Long Mynd is planned for the near future, with Austria in mind for later in the year.

The 1966 R.A.F.G.S.A. statistics show that the Fenland Club led in all departments except membership, and if the numbers arriving so far this year are any guide we shall rectify that in 1967.

R. G. J.

FULMAR

ON the whole, 1966 was not a good soaring year for us, but it did produce the odd cracking day. New club records were set for number of launches, cross-country miles and badges gained. Our efforts won the Naval Air Command Trophy. The league results: 1st Fulmar, 2nd Condor, 3rd Heron, followed by Portsmouth and Culdrose.

The most notable flight was the first ever Gold distance from Fulmar by Derek Marpole, our C.F.I. No doubt others will follow the trail he has blazed.

Our congratulations for winning the absolute altitude trophy go to John Stanley, who is, in the meantime, doing an out-and-return to the Far East.

H. D.

HERON

SINCE we last appeared in print our membership has been even more than usually fluid. We have lost Mike Livesay (Secretary), Eddie Basham (C.F.I.), Jake Arbuthnot (Treasurer), Robbie Robinson (Air Engineer), Nick Humphries and many more worthies. Our thanks to them for their efforts to the good of the club.

Trevor Thomas now has a lot on his plate as C.F.I. and Secretary. David Brown is pushing on as air engineer with all the C. of A's, and Nick Taylor holds the purse strings.

Our 3F has had a very good season —not enough gold, however! Mike Livesay had 8 hrs. but was still five miles short on a 300-km. triangle. No doubt he finds it different driving a minesweeper.

The Bristol Club have kindly allowed us to have the Skylark 3F at Nympsfield for a period to chase 5 hour legs. Mike Gale had early success with this after two attempts. We now realise the worth of an airfield site for easy operations in most winds—but we appreciate the ridge.

The coming season holds great promise with the return of the Tiger Moth for aero-tows. We hope for more chances to use those marvellous soaring conditions which always occur midweek as the Tiger is sometimes allowed to slot in with the powered flying.

Our social side is being run very ably by Jim Howard. We hope for many splendid evenings in the new clubhouse which he is getting refurnished.

W. F.

RAFGSA (Bicester)

JOHN BENNETT and John Hogan have the distinction of being the first to solo at the Centre this year and it is noteworthy that both went all through on aero-tows. Thermal soaring was possible on 4th February and two or three pilots logged between 40 and 50 minutes each. Preparations are in hand for the trip to Nympsfield and I hope to report a number of achievements in a subsequent issue.

Ab-initio and instructor courses are under way and thanks to our C.F.I. and his permanent staff the equipment is in good condition after the annual servicing programme. Radio is being given more prominence this year and it is hoped that high performance machines will carry lightweight sets using R.A.F.G.S.A. discrete frequencies.

Sqn.Ldr. E. S. Robertson, our Chairman for a number of years, is posted to the Far East in April. He has done much to further the activities of the Centre and R.A.F. gliding generally and we shall be sorry to see him go. Another Centre personality we shall miss is Wg. Cdr. J. G. Croshaw who has left to take up an appointment in the U.S.A.

Our tug fleet is being increased this year and this should materially help to increase flying hours and facilitate aero-tow retrieving.

A. E. B.

WREKIN

WE must begin with an apology to the Moonrakers for the caption to the photo in the last SAILPLANE & GLIDING. Our Mynd expedition was jointly with Mendips and Moonrakers, and it was *their* Ka-7! Honest, we didn't write it.

Twelve members gave up their Christmas and New Year holiday to glide at Leeming with the Clevelands Club, and at Sutton Bank, home of the Yorkshire Club.

During the expedition one Silver C was completed and several 5 hour legs were flown. Also Bronze C's and C's were claimed by various members of the party. Altogether, over 100 hours were logged.

We are planning to organise a task week at Cosford next August, and hope that this will be well supported.

Ian Strachan was a welcome visitor to our Wednesday evening series, when he gave a talk on the use of calculators and speed to fly rings, recently.

H. F. O.

* * *

ADEN

ADEN is now in the middle of its soaring season—and how magnificent the conditions are! Without exception, every day is soarable from about 9.30 a.m. till 5 p.m. Up till about 1 p.m., lift is strong under ragged cumulus at about 3,000 to 4,000 ft. Then the sea air gradually encroaches from the east, and by about 3 p.m., there are weak, but very smooth, blue thermals to 2,500 ft. The transition period can be tricky, with very rough, distorted thermals. No doubt, soaring would be possible right up until sunset, but a 5 p.m. curfew is an unfortunate restriction. Conditions are so predictable that potential members are promised, often several days in advance, a half-hour introduction flight.

Silver C heights are difficult to achieve because of the low cloudbase. Five hour flights involve flying through the difficult period as the sea air arrives, and then holding the much poorer blue thermals. This, coupled with the excessive fatigue from flying in Aden's heat, makes successful flights unusual. However, our hard-working aircraft member, Stu Hoy, recently achieved his with the help of some of the club pundits working half-hour shifts in the T-21 as "pathfinders". He completed the first three hours unaided with no difficulty, but on occasions during the last couple of hours was content to "follow the leader".

Visitors to Aden are often surprised not only by the amount of soaring that is done but by the high launches that are achieved. All launching is done by car, and 1,800 ft. is not uncommon in the Barge, and people have been heard to ask for their money back after 1,400 ft. on the launch! It makes some of the efforts in the U.K. with winches seem a bit pathetic.

There was some delay in getting gliders back from Kenya after the expedition in September. When the Olympia finally did return—minus trailer—a most entertaining and unusual delivery flight was made from Aden's main airfield, Khormaksar, to the club field at Sheik Othman. Air Traffic were most co-operative as Bill Maltby scraped away from a 900 ft. launch off Khormaksar's short runway. About 3,000 ft. is required to reach Sheik Othman in comfort, and when the Olympia had finally made enough height, his troubles weren't over even then. Bill was obliged to remain airborne for nearly two hours waiting for the ground party to arrive. Our second T-21 is being delivered in the same way after its major overhaul.

Finally, we say farewell to our C.F.I. of the past two years, Jack Harrison, who has returned to the U.K. to learn at Central Flying School how to be a real instructor. Bill Maltby has taken over, and is keeping up the Harrison traditions. He ought to—he's his former pupil!

K. A. H.

NIMBUS
(Geilenkirchen, Germany)

THE majority of the winter has been spent in repairing and preparing the ground equipment ready for the spring. The six aircraft are also being refurbished, the Swallow already looks better than new and various major and

minor inspections are on the way. The Barge is now yellow—Ugh!

Planned expeditions for this year include a month at the Wasserkuppe in May and a fortnight at Lachen Speyerdorf. Currently various people are attending at Issoire hoping for wave, we await their return with interest.

Don Wilson is still working hard on the Minimoa which will be 30 years old next year, he expects to have it flying this summer.

Our present aircraft state: Olympia 463, Olympia 2B, Swallow, Grunau 3, T-21, and Rhönlerche.

M. J. W.

TWO RIVERS
(Laarbruch, Germany)

SINCE last reporting some months ago on the fatal car accident of Chris Lister we now have the Chris Lister Memorial Trophy to be awarded each year for the best soaring achievement. This time it was won by Colin McLea and was presented to him on 28th January, when we had a games evening against the local Germans of the Luftsports Club, Goch, who fly from Asperden.

We have acquired an 8½-litre winch and this, with two other winches and a reverse pulley auto-tow, in the making, should, we hope, give us good launching through the coming season.

The fleet consists of a Ka-6, Skylark 2, Swallow, B-Spatz, Ka-2 and T-21. Our Grunau Baby 2 has ended its life and now lies in the club hangar despite several suggestions of ways of disposing of it.

Winter so far has been enjoyable to the brave few and laughs occurred when, while flying in strong winds, the cable broke just below the 'chute, which then disappeared towards Holland. Would any Dutch readers finding our wayward 'chute please return it to us.

At present we are getting all the fleet and equipment into good order in readiness for the gliding expedition to Asperden for the fortnight following Easter, the idea being to instruct the solo pilots on soaring techniques, providing the weather is with us. The faithful Barge will be circuit bashing with the ab-initio pupils.

D. J. S.

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.*

AUSTRALIA

FOR the first time the Gliding Federation of Australia is to have a full-time secretary. He is Richard T. Getling, at present an instructor at Sunraysia G.C. and previously secretary to the South Australia Gliding Association. He is the first Grade 1 instructor to graduate from the National Gliding School. Before coming to Australia he was an Air Commodore in the R.A.F. and is still on the reserve list. Mr. Getling's

address is: P.O. Kangaroo Ground, Victoria.

FEMININE GOLD C.—Sue Suter completed her Gold C on 20th November last by climbing to 11,000 ft. during a flight of 325 miles from Waikerie to Euston (N.S.W.) and back in an ES-60. She already has her Goal Diamond but not yet the Height Diamond.

On the same day Tony Hanna of Clare Club flew Australia's third 500-km. triangle, from and to Whitwarta via Karoonda and Renmark, taking about 7 hrs. in an ES-60.

Australian Gliding.

AUSTRIA

DECENTRALISED CONTEST, 1966.—Leading pilots in the final results were: 1. Johann Fritz, 57,144 pts., 14 flights totalling 5,074 km. 2. Erich Gehrer 46,288 pts., 11 flights totalling 3,363 km. 3. Harro Wödl, 41,880 pts., 16 flights totalling 4,792 km. 4. Alf Schubert 41,480 pts., 5 flights totalling 2,288 km. 5. Arnst Schraffl, 40,792 pts., 10 flights totalling 3,014 km.

Ing. Bruno Gruber, of Linz, is the 19th Austrian to earn all three Diamonds.

GRAZ ACADEMIC GLIDING GROUP celebrated the 45th anniversary of its foundation on 17th October, 1921, in the Hotel Wiesler, where it was founded, in the presence of its first leader, Dipl.-Ing. Hans Zoffmann.

WAVE FLIGHTS to 4,400 m. and 5,600 m. (18,400 ft.) were made at Mariazell on 16th October, and broken off only for lack of oxygen. Lift was 2-3 m./sec. They were possible because there is now a 150 h.p. tug; the previous 90 h.p. Piper could not cope with the turbulence.

Austroflug.

BELGIUM

LEADING results of the Coupe Pierre Charron were: 1. Harold Drory, 2,970 pts. 2. Guy Sander, 2,782. 3. Marcel Cartigny, 2,770. 4. Michel Bluekens, 2,430. 5. Jozef Boone, 2,430. 6. Paul Bourgard, 2,430. 7. Louis de Dorlodot, 2,430. 8. Georges Defosse, 2,430. 9. Michel Doutreloux, 2,430. 10. Fernand Lacroix, 2,430.

Michel Bluekens won the Challenge Kilometrique of the Royal Antwerp Aviation Club with 2,000 km.

Conquête de l'Air.

CANADA

INVITATION TO GLIDING HOLIDAY.—This message carries an invitation to our English and European fellow enthusiasts to visit Canada and to bring their sailplanes with them.

This year sees Canada celebrating its hundredth anniversary of confederation, the birthday of the country. To mark the occasion, the national contest is opened to overseas entrants, and it is hoped to turn it into a "minor internationals".

The contest will take place at Hawkesbury, the home field of Montreal Soaring Council, which is situated in the extreme eastern tip of Ontario, in the fork of two rivers and just south of the spectacular Laurentian mountains. There is an abundance of excellent cross-country landing fields, even if one does not make the goal, which would in most cases be an airfield. A day's out-and-return task might take one to the beautiful Thousand Islands region — a flight there is an unforgettable experience.

On a non-flying day one can visit the nation's capital, Ottawa, about an hour's drive away — just round the corner by Canadian standards — or Montreal, the great cosmopolitan city where most European arrivals land. After the contest is over, if one still has some time left, there is a welcome for the visitor at any of the locality's numerous gliding clubs. For those with more time and

money, the opportunity to visit the U.S. national contest may be more appealing — it starts several days after ours ends.

The contest dates are from 20th to 30th June, and 1st July is Dominion Day, the exact birthday of the country. This opportunity to be present at this historic occasion will provide more excuse to visit the contest for those who may not do so otherwise. After all, a centennial comes only once in a lifetime.

Further information is available by writing to the Contest Manager, Mr. R. O. Pearson, 570 Chester Road, Beaurepaire, Quebec, Canada. Do not delay now — time is getting short.

On other news, there really is little to report, winter being the non-flying season. If anything, the new two-seater built by Henry Preiss, of Windsor, Ont., is an interesting departure. It is somewhat like a side-by-side version of the HP-11; in fact he used some design details of the latter. So look out, Capstan, here's a challenge!

The last season saw four new clubs established, which is a respectable rate of growth, being some 12%. Canada is a fast growing country, a country of the future if there ever was one.

ONTAERO

DENMARK

WAVE EXPEDITION TO POLAND.—During Nov.-Dec., 1966, seven glider pilots from Sjaelland went to Jelenia Gora in Poland to fly in waves, and came home later with Gold and Diamond heights.

On 29th November they were woken up at 4 a.m. and spent some time hauling the Muchas to the launch point through half-metre high snowdrifts. The Bocian was fitted with an extra wide skid under its wheel.

Helmuth Sorensen was first off among the Danes, but the turbulence under the rotor was too strong, and he landed 10 minutes later with a broken tow-rope.

Bjorne Rasmussen released at 700 m. in 2-3 m. lift in the rotor and contacted the wave at about 3,500 m. He got up to 6,800 m. For a short while he had climbed at 10 m./sec.

Harry Thorsted stayed up for 3½ hours and he spent so much of this time at around 6,700 m. that he got his feet frostbitten and later had to be taken to hospital. He was consoled for his fortnight in bed by his Diamond and by the mini TV which he had brought with him in spite of everyone's derision.

The same day Jörgen Olsen climbed to 4,100 m. in a Mucha-100, Paul Nielsen to 5,300 m. in a Mucha Standard, and Ejvind Nielsen to 4,600 m. solo in the Bocian.

December 2nd started overcast, and Paul Nielsen was sour as hell when they got up at 4 a.m., "but something in me told me that today was the day and I sang all the way to the airfield".

Ejvind Nielsen got up to 7,780 m. in the Mucha Standard, but there he had to break off in 4½ m. lift because his oxygen supply was getting low and his nails blue.

Paul Nielsen broke off at 7,640 m. and followed Ejvind down. Jörgen Olsen got up to 5,080 m. Another three Diamonds!

When their toes were warm enough again Ejvind and Paul set off again in the Bocian in an attempt to beat the 16-year-old two-seater height record. The tow this time was most like a kind of aerobatics, but they got up to a new height record of about 6,740 m. absolute height with a 5,650 m. gain of height. "But that can be beaten, so just go to Poland and do it. We have broken the way for you, and you are more than welcome down there."

On this glorious day, which was also a record day for the school, 20 Diamond heights were gained and a Foka from Leszno flew 432 km. distance from 8,500 m. height.

Translated and condensed by Ann Mari Neumann *from an article in Flyv by* EJVIND NIELSEN.

CLUB NEWS.—Sibeborg G.C. flew on 80 days in 1966, made 2,056 launches and logged 450 hours. Erik Stilling got the distance pot for 225 km., Jorgen Klausen the duration pot for 8 hr. 2 min., and Ib Rasmussen flew most hours—102.

Vestjysk G.C. made 1,829 launches and logged 347 hours on 88 flying days in spite of a very bad thermal season. The Lehrmeister made 1,156 launches and the Vasama had an average time of 1½ hours per flight.

Flyv.

FRANCE

MOUNTAIN SOARING COMPETITION. — This international event, to be held at Vinon-Verdon from 17th to 25th June, was announced in our last issue, page 72, and in the second paragraph it was stated to be open to pilots with the equivalent of the Brevet de Pilote de Planeur. In reply to our question to the organiser, M. Marcy, he writes to say that this Brevet is the equivalent of the Silver C for British pilots.

GLIDING SUPPRESSED.—The coming into service of the Paris-Nord airport will cause the closing of both Mitroy-Mory and Moisselles, and the suppression of gliding at Plessis-Belleville and Meaux-Esbly. Gliding is likely also to have to leave La Ferté Alais. In the Paris district only three airfields will still be available for gliding: Cherence to the N.W., Moret, and Coulommiers. But there is a possibility of using some of the new airfields being built to replace the six which the opening of Paris-Nord has caused to disappear.

A one-sided decision by the military, without consulting civil aviation, to take over a zone in Eastern France 100 km. N/S by 45 km. E/W, looks like putting a stop to gliding in the three centres Pont-St.-Vincent, Nancy-Malzeville and Thionville.

DROP IN CERTIFICATES.—In spite of total flying time in 1966 having reached 100,000 hours for the first time (excluding national centres), C certificates have dropped to 620 from 1,200 in 1965 and Silver C's to 124 from 215 in 1965. This is attributed to new regulations relevant to certificates and licences.

Actual totals for 1966 were: 102,834 hours, from 194,525 aero-tows and 3,924 winch launches; 302,969 km. across country; 24,791 hours by the tugs. There are 96 gliding organisations (clubs, etc.).

J. C. Penaud has won a Coupe Breguet for 1966 with 21,602 points against 16,101 by Mercier, followed by Ragot, Gavillet, Klein, J. J. Girard, Giovanni, Henry (10,435 pts.). Penaud has also won the Coupe de L'Aéro Club de France for the best three flights of 1966.

Air et Cosmos.

HOLLAND

WAVE flying at Issoire has not been very successful this winter. None of the groups who went were able to claim any Gold or Diamond heights, although some waves were explored. On the only good looking day no flying took place as it was New Year's Day and the Centre was closed.

Leo Simons fared better at Fayence; at the beginning of December he reached Diamond height in a Ka-6, and on 24th January he and Jan Stots set up new Dutch two-seater records for gain of height (about 4,700 m.) and absolute altitude (about 5,300 m.) in a Bijave, again at Fayence.

Last year's experiment of two contests will be repeated. The first, from 20th May to 3rd June, will consist of a small group (about 20 pilots) who will fly for the Dutch title and for selection to the World Championships. The second one, from 1st to 14th July, will be open to all comers and the best ones have the possibility to fly in the first group in 1968.

Due to the 60th anniversary of the Royal Netherlands Aero Club, all activities related to flying will have special highlights. So will the Gliding Art Exhibition which is to be opened by the Minister of Culture, Miss Klompé.

The Victor Boin contest will be held on 29th April at Hilversum airfield.

J. TH. VAN ECK.

IRELAND (Dublin)

THE club has been presented with a handsome trophy by Mike Slazenger; this is in the form of a silver glider mounted on an inscribed base. It is to be known as the "Slazenger Trophy" and won each year by the pilot with the most points scored on our new ladder system. The trophy was presented at the annual dinner-dance held at Dublin Airport to Dave Hooper who was top of the ladder for 1966. Dave also won the Green Cup for the best flight and the Mike Harty Memorial Cup for best progress made in the year.

1967 has started well with wave reached on several days from the pulley launch (Tug in for C. of A.). Best wave flight for January was Colm Curley with

The Slazenger Trophy.

9,800 ft. in the club Ka-8, earning him his first Silver C leg and 50 points on the ladder. Much ground work has been done during the winter months, including the building of two new trailers: one for the Blanik which will give us two-seater cross-countries, and one for the new Ka-6 delivered in February. Each member is expected to contribute 25 hours' work per year on glider maintenance or site improvement. This scheme works very well, and recently sufficient ground has been reclaimed from the brier patch by spade and sickle, to provide parking space for four trailers in a sheltered spot. This work was spurred on by the damage sustained to three trailers during the winter gales.

Gerry Connolly plans to set a task each good flying day during the next few months to enable all concerned to gain experience for the Irish National Championships. It is proposed to sell our Kite 2's to make way for the Ka-6. With the higher performance machines now coming into the country and the competitive spirit increasing, this coming season should be most interesting.

"C. GARR."

ITALY

OSTIV COURSE AT VARESE.—The object of this technical course was to introduce the participants to the examination and appraisal of flying qualities, to examine and evaluate some sailplanes, and to discuss the results obtained.

The course was run by Dipl. Ing. H. Zacher, assisted by Dipl. Ing. H. Laurson, both of D.V.L. München.

The following sailplanes were available: Ka-6CR, SF-27 and SB-5 from Germany: Skylarks 3 and 4 from Great Britain; M-100s, Eolo, Uribel C and Bonaventura from Italy; Sagitta from Holland; Mucha-100, Mucha Standard and Bocian from Poland.

The aero-tows were carried out by two Stinson L5 tugs.

The 12 participants included representatives from Germany, France, Great Britain, Italy, Holland and the United States of America.

The syllabus comprised the theoretical and practical aspects of the examination and appraisal of the flying qualities of individual aircraft types. As groundwork for this, use was made of F.F.M. Reports No. 40 ("Investigation of Flying Qualities of 14 Sailplanes", by H. Zacher) and No. 62 ("Examination of Flying Qualities of 7 Two-seater Sailplanes in OSTIV Course at Varese, 1963", by M. Rade, P. Weishaupt and H. Zacher). The participant had to obtain a brief overall impression during his first flight in a new type, and then to investigate an individual manoeuvre (e.g., stalling be-

haviour, yawing, rolling about the longitudinal axis, lateral oscillation and spiral motion, effects of sideslip and of airbrakes, turns with one control).

These tests were done by means of systematic ground measurements (e.g., control movements, friction) and flight measurement (e.g., control forces). Unfortunately bad weather, either poor visibility or turbulence, did not allow completion of the comparison of the Ka-6CR characteristics with the DVL-FFM measurements.

In the discussions, the results were exhaustively talked over, and particular subjects were dealt with in four sessions —examination of flying qualities; flight performance measurements; normal-, V-, T-, all-moving and swept tail units; stick-fixed and stick-free stability.

The results of the course were set out in 73 pages with tables and diagrams. A report of the digested results will be published this spring.

Swiss Aero Revue

KENYA

GLIDING continues in Kenya and we are now in the middle of our best soaring weather. The arrival of Bim Molineux's new Ka-6CR from the factory in Germany has caused some excitement and envy. The T-21 was damaged in a rigging accident and is out of the air again, and the T-31 has been sold to a club that is about to be formed at Serengeti in Tanzania. In the absence of a two-seater, we have taken to sending power pilots solo in the Cadet and have successfully converted five to gliding, one of whom managed a 15-minute soaring flight on his first launch in a glider!

Brian Hopkins has obtained his Silver C duration and height legs with a flight of 5½ hrs. to 14,500 ft. a.s.l. in the Ka-6. Pete Williamson, Thady Ryan and Derek Pollard have all obtained their C's. The Tutor has done over 20 hours' soaring during the past two months, and, on one flight, got up to 16,200 ft., only just below Gold C height.

Our C.F.I., Tony Hyde, has left us to work in South Africa and has handed over to Brian Hopkins. Tony has done much during his stay to make the club a going concern.

Soaring in Kenya can only be described as superb, and during December, January and February, every day is a "five-hour day".

We continue to get a fair number of overseas visitors and recently had visits from Jack Harrison, late C.F.I. of the Aden Services G.C., Colin Pennycuick from the U.K., and Peter Seton from Holland. Any gliding types who find themselves out here are always guaranteed a warm welcome and the "gen" on gliding they impart to us is found to be most useful.

BRIAN HOPKINS.

NEW ZEALAND

DICK GEORGESON writes: "I had a fantastic attempt at the World Distance Record last weekend (21st-22nd January). Bruce Gillies and myself tried, and I was lucky to get away from Omarama relatively quickly and in 1 hr. 50 min. after leaving (I had passed over the western side of the Main Divide over 8/8th cloud) was about 20 miles west of Hanmer, doing 200 miles in this time. All was going well until the wave formation completely broke up. Apparently there was the remnant of a weak trough separating me from the North Island, where conditions again were probably satisfactory. It was an exciting attempt, but unfortunately didn't come off. The weather over the Christmas period was not suitable, as we had no westerlies at all."

SCHOLARSHIP CONTEST.—This was organised by the Nelson G.C. and announced on local radio and small advertisements in the local paper. It brought in 113 applicants who each paid 30s. for an aero-tow to 2,200 ft. and opportunity to try their skill on the glide down, having been briefed beforehand on the effects of the controls. Prizes offered were a year's club membership plus: (1) free instruction to solo stage, (2) two hours' dual, (3) an hour's dual, (4) two instructional flights, and, because of the large entry, six more prizes of one instructional flight plus membership. The gain to the club was 17 new members with more to come, and an increase in spectators, after a prizegiving ceremony attended by the local M.P.

FARTHEST NORTH.—The most northerly club in New Zealand is the Far North G.C. operating with a Ka-7 from an elevated aerodrome at Kaitaia, which has the Pacific on one side and the Tasman Sea on the other. Good soaring is to be had even in the winter months.

Gliding Kiwi.

NORDIC COUNTRIES

THE Association of Nordic Aeroclubs (ANA) has issued the following list of Nordic gliding records as at 1st January:

Free Distance: Harald Wermuth Jensen, Denmark, in Lo-150, 692 km. from Naperville (Illinois) to Hohenwald (Tennessee), U.S.A., 4.4.62.

Goal Flight: Kaeld Wiebe, Denmark, in Ka-6CR, 525 km. from Arnborg to Kassel/Waldau (Germany), 28.5.66.

Goal-and-Return: Matias Wiitanen, Finland, in PIK-16 b/c Vasama, 530 km. from Räyskälä to Ilmolahti and back. 16.5.65.

Absolute Altitude: Klaus Wiese Nielsen, Denmark, in Schweizer 2-32. 9,195 m. at Stead AFB, Reno, U.S.A., 29.6.66.

Height Gain: Per-Axel Persson, Sweden, in Weihe, 8,050 m. in flight from Orebro to Skarpnäck, 12.6.47.

Speed round 100-km. Triangle: Lars Fredriksson, Sweden, in Foka SZD 24c, 86.04 km./h., Ekeby—Malmköpings kyrka—Julita kyrka—Ekeby, 30.6.64.

Speed round 300-km. Triangle: Jorma Jalkanen, Finland, in PIK-16 b/c Vasama, 85.8 km./h. Parola—Jämi—Oripä—Parola, 5.6.61.

Speed round 500-km. Triangle: Istvàn Wlassics, Sweden, in Ka-6CR, 55.27 km./h., Ekeby—Alvsbacka kyrka—sjön Dadrans sydspets—Ekeby, 19.6.66.

P. WEISHAUPT.

RHODESIA (Salisbury)

PRIOR to the advent of our rainy season in early December of last year many pilots attempted cross-countries just about every weekend as well as during the weeks when the conditions seemed favourable.

Alf Thompson started the ball rolling by completing the third Rhodesian 500-km. out-and-return since Paul Hodge made the first one over a year ago (reported in SAILPLANE & GLIDING). Alf was flying a Vasama, and he managed this in the very good time of six-and-a-half hours. Since then Bob Moore has made the fourth 500-km. out-and-return in the same Vasama.

Les Graham, our Club Secretary, managed a 300-km. out-and-return to Orten's Drift, near Enkeldoorn, in the Bergfalke 2, also at a fast pace in four-and-a-half hours, which isn't bad for an old Bergfalke. Basil Wordsworth managed a 300-km. out-and-return, this time to the cooling towers of the Umniati power station; the weather was so good that at no time was he below 7,000 feet above the deck, and he had plenty of time to spare. Basil was flying a syndicate Ka-6.

Les Snowball had various attempts in the Ka-6 but couldn't quite make his 300 on three occasions. John McGeorge, Club Chairman, also in the Ka-6, thought he had made Orten's Drift, but his photographs showed he was about 10 miles short, so must jack up his navigation. Others fell down all over the countryside, but happily all intact. All were attempting either 300's or 500's.

One pilot had to land not far from where an escaped prisoner was last seen, and as this prisoner had a PPL it was thought that someone had arrived to rescue him from the skies. There was quite a commotion and it wasn't long before police arrived, phone calls were being made and suspicious farmers eyeing all and sundry. The pilot in question was wearing a white shirt amongst other things, and of course the prisoner was last seen wearing similar apparel!

MIKE MCGEORGE.

SWEDEN

WAVE CAMP AT KEBINEKAISE.—The Royal Danish Aeroclub have again this year had an invitation to the camp at Kebinekaise, which takes place from 12th to 27th March and which usually has a large Swedish and Finnish participation. The camp is arranged by Kiruna Aero Club and launches and landings take place on an ice-covered lake. Pilots have to bring their own gliders, but to a restricted degree the club's own five aircraft can be used—also for instruction in local wave flying. In certain weather conditions radio is required.

Translated from Flyv by
ANN MARI NEUMANN.

SWITZERLAND

STANDARD ELFE TEST REPORT.—Dieter Schmitt, who saw the first of this type flown to 2nd place in the Standard Class by M. Ritzi at South Cerney, reports on the flying qualities of a later version, the Elfe S-3, which has retractable landing gear. He found the rudder hypersensitive on aero-tow, which was no disadvantage. Then, in free flight, in spite of the very short control stick and no trimmer, the elevator control was light and the machine could be flown practically with the thumb and forefinger. One immediately felt at home (*zu Hause*) in it, and the good vision and comfortable seat should prevent tiredness on long flights. He flew at 200 km./h. through turbulence with little bending of the wing, and sank at 4 m./sec. at that speed; at 160 km./h. sink was 2 m./sec. He gently stalled the machine and then pulled the stick right back, and at 60 km./h. it sank on an even keel without any tendency to slip or spin. If made to spin, it would come out immediately on letting go of the stick or rudder.

In circling, the machine settled to a constant 70 km./h. with 30° bank and 90 km./h. with 45° bank. Change from 45° to 45° opposite bank took 4-4½ secs.

Flug Revue.

DECENTRALISED CONTEST, 1966.—Leading final results: Rudolf Seiler, 72,200 pts.; Kurt Baumgartner, 45,840; Augen Aeberli, 45,080; Emil Ehrat, 43,125.

Swiss Aero Revue.

UNITED STATES

NEW SCHWEIZER TWO-SEATER.—Schweizer Aircraft Corporation announces a new two-seater training glider, the 2-33, which was to have been introduced at the company's annual dealers' meeting in November. The new glider is designed to fill the gap between the 2-22 and 2-32. Details are to be made available soon.

Soaring.

DICK JOHNSON writes: Have just completed my kit-built HP-13.5, and hope to fly it as soon as my leg heals a bit more. It looks just great, and should perform well.

WEST GERMANY

BRITISH PILOTS are invited to take part in a Regional Contest to be held from 29th April to 7th May at Hahnweide, in the neighbourhood of the Schempp-Hirth sailplane factory at Teck, near Stuttgart. The invitation has been sent to the Royal Aero Club by the sponsors, the Wolf-Hirth Flying Group. Details include the following:

Programme.—Arrival on 29th April in time for official opening at 18hrs. in the clubhouse. Last contest day 6th May, and prizegiving at 20 hrs. same day.

Entries are accepted for Standard Class, Open Class, "Nachwuchs"—Novices (who have not competed in Regionals or Nationals before), and, if more than three enter for it, a Two-Seater Class. Launching is by winch or aero-tow. Radio is allowed: the organisation can be contacted on frequencies 122.5 and 123.5. Pilots must bring barographs and cameras. Up to three persons can be entered for each aircraft. Papers must be in order for both aircraft and ground transport. Marking will be on the Wallington system.

Costs.—The entry fee is 40 DM (about £3 11s.). To encourage foreign participants, their travelling expenses from the frontier to the flying site will be refunded to the extent of 0.08 DM per km. (about 2¼d. per mile). Their launching fees will be reduced from 1.50 to 1 DM. (1s. 9d.) per winch launch and from 1.50 to 1.20 DM (2s. 2d.) per minute for aero-tow. Accommodation on the flying field, with food 14 DM (25s.), without food 6 DM per person per day; accommodation only in a 16-bed dormitory, 3 DM per day.

Since the above information was sent to Press, the German Aero Club has written to say that, since they cannot accommodate foreign pilots at their own Nationals, British pilots will be welcome at this Hahnweide meeting, where it is hoped they will be able to compete with the German national team. Details are as above except that arrival is on the 28th, launches are free, and the meeting is extended to 10th May to enable comparison flights to be made.

Applications for participation should be sent to: Segelflugkommission im Deutschen Aero Club, 6000 Frankfurt/M, Brockenheimer Landstr. 19, West Germany. Closing date 5th April.

YOUTH EXCHANGE. — German-French and German-British exchange visits at the Hirzenhain gliding centre are planned for 1967, *Aerokurier* states, and they will include a training course for girls.

VANDALS broke into a hangar which the Ingelfingen Gliding Group rented from a firm there and, finding a fox's tail and a hatchet, did severe damage to a Bergfalke, Ka-6, L-Spatz, and the winch motor, windshield and radiator. The damage was estimated at 20,000 DM at least (£1,760), and the equipment was not insured.

Aerokurier.

ZAMBIA (Copperbelt)

THUMBING through my back numbers of SAILPLANE & GLIDING, I see that, since February, 1962, when I first started getting the magazine, we have never sent you any news from our club, although various mentions of it have been made in articles from Salisbury G.C., Rhodesia.

Since Northern Rhodesia gained its Independence in 1964 and became Zambia, the control of the Central African Soaring Association fell away, and gliding in this country now falls under the aegis of the National Aero Club of Zambia, which is affiliated to the F.A.I.

The club is situated at Nkana airfield on the outskirts of the copper-mining town of Kitwe, and shares the Government-owned laterite runway with the Copperbelt Flying Club and various air charter firms. It is the only gliding club operating in Zambia at present. The countryside is flat, 4,000 ft. a.s.l., and covered with inhospitable bush, so cross-countries have to be planned with care. Thermic conditions are excellent by English standards, only dropping to these standards between November and March during the rainy season.

In the hangar on weekdays are stacked a Piper Cub with tow hook, an Air-100, a Bergfalke 2, and a Doppelraab, which are all owned by the club, and a Grunau, a Ka-6 and a Standard Austria SH, which are privately owned. Membership hovers around the 40 mark. Where else in the world will you find a ratio of seven members to one glider?

All launches are by aero-tow. We take off directly behind the tow aircraft and maintain low-tow position as soon as the tug climbs away from the ground. We do, of course, teach high tow as a possible position not to be in, and how to get out of it, but we find ab-initio pupils take to our method like fish to water, and visiting pilots convert with no trouble. I haven't encountered this method anywhere else; has anybody any comments?

During 1966 eight new members went solo, five Silver C's were completed, two Gold C's were completed and two Goal Diamonds were won, the latter by Vic Brierly, the C.F.I., and Geoff Hammond during the Central African Championships in Salisbury; they shared the Air-100, flying alternate days in the Championships. That leaves Vic one Diamond to get, having got his Height Diamond in the Grunau during a flight to 35,560 feet a.s.l. (SAILPLANE & GLIDING, August, 1962.)

Vic tried a 500-km. out-and-return in the Air-100 to a turning point north of Lusaka on 30th October, but the first storm of the rainy season forced him down at 3.40 p.m. on his way home at a place called Kapiri Mposhi (believe it or not) after completing 350 km., thus setting up a Zambian record. A few days later in the Bergfalke, with Gabriel Jonisho, our African club watchman, prop swinger, glue mixer, dope sprayer and general factotem, in the front seat, he thermalled, mostly in cloud, to 20,000 feet a.s.l. to set up a new Zambian two-seater height record.

Zambian records at the moment are not very high or very long, but then, don't forget, Zambia hasn't been Zambia very long. As the little buttonhole badge says—"We keep trying".

* * *

MOTORIZED SAILPLANES

A TABLE of comparative data for the German sailplane SF-27 and the motorised version, known as SF-27M or Illerschwalbe, is given in *Der Flieger*. This machine was described by Peter Ross in SAILPLANE & GLIDING for Dec.-Jan., p. 474, as the "highlight" of last year's Motor Glider Rally.

The empty weight goes up from 210 to 250 kg. (463-551 lb.); minimum sink from 0.65 to 0.7 m./sec.; minimum flying speed from 57 to 60 km./h. Best gliding angle remains at about 1 in 32. The motor will run for about 2 hours at a flying speed between 120 and 140 km./h.

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