Sailplane and Glider

The First Journal devoted to Soaring and Gliding

FEBRUARY 1952

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Sailplane and Glider

Founded in 1930

and ULTRA LIGHT AIRCRAFT

THE FIRST JOURNAL DEVOTED TO SOARING AND GLIDING

FEBRUARY 1952 ★ Vol XX No 2

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COVER PHOTO :

The ' S.G.38 ' taken at Huesca, Spain, last summer. Photo from Ara, first and only Spanish Gold ' C.'

Editorial

As we go to Press we hear the result so far of the Appeal by Lord Kemsley for funds with which to send a team of five Pilots and attendants to Spain. The sum of over £1,350 has so far reached the B.G.A. It would be invidious at this stage to list the donors, because the gift of one pound from a poor pilot who can only afford one hour's soaring a week is worth more to him than the £1,000 of the S.B.A.C. is to its members.

Whilst wishing the best of luck to the Fund we must ask our readers to examine what it appears must be the situation if the hopes of the Fund raisers are not realised, as we regret to state is our belief. It may be, of course, that Lord Kemsley is reserving his heavy guns for the last week of the campaign, but we must state that it is our belief that unless he does so the amount aimed at will not be obtained.

If not, then clearly the B.G.A. will have to think again about the size and constitution of the Team, which, anyway, we have always thought to be too large. In our view ' Steve ' and Jock Forbes with Lorne Welch would be the best team to represent Great Britain, and almost within our financial ability. After all, Paul MacCready alone did more for U.S.A. and World Gliding as the sole representative of U.S. than our five pilots did for us last year at Orebro.

We are afraid that there is a certain psychological resistance against giving to the Fund from among the ranks of the gliding fraternity, because they also do not see the need for such a large caravanserai. They would rather send a smaller team all of whose expenses were borne by the Gliding Movement than have to ask outsiders to assist the sport.

We are afraid, therefore, that the provision of the bulk of the Fund will fall on Lord Kemsley and perhaps his chain of Newspapers, and may even fall on the Kemsley Fund.

We regret that we are not among those who can sit back and take all this for granted. We prefer to help ourselves, and so does most of the Gliding Movement, hence the Clubs.

Gliding people are a queer lot. In some things they are apathetic, in others they display a burning zeal and energy that we could wish sometime were applied in other ways.

We have wondered what would happen to the Movement in Great Britain if someone were to offer a really large annual prize for competition, say £1,000. We are sure it would stimulate not only competition in better flying, but also the designing of better machines. The prospect of larger orders stimulated the design of the ' Meise ' for the Olympic Contests which were never held in 1940, and this became the ' Olympia ' and eventually the ' Sky.' Except the Horten Tailless family, and now Richard Johnson's ' RJ5 ' (which appears to us to belong to the same family) there have been no new developments. True the ' Prue ' and the ' 1-23 ' of Paul Schweizer have come along since the war, but the ' Prue ' came to grief and the design may have yet to be proved. We are waiting to see what the Germans and now the Japs have to show us. There was also the ' Orao ' from Jugo Slavia which did so well at Orebro, and there is the Polish ' Bat.'

Of the traditional designs perhaps the ' RJ5 ' is the most proficient, because Richard Johnson has devoted so much effort to removing the causes of drag, induced or parasitic, the latter of which increases with the speed.

Shortly, the Kemsley Fund will come to the end of its seven year term. (It was provided by a Covenant which under our Income Tax Laws frees for the object of the Charity of Clause, the Income from which the gift was derived as well as the Gift itself). Presumably the Capital of the sum so given to the Trust, and loaned out to the Clubs, will be returned to the Trust.

Now we do not wish to appear either ungracious or ungrateful, but we do feel that unless the whole idea of the Kemsley Trust is changed, it will not do any good to the Movement. Whilst the Kemsley Fund exists, no other National Newspaper will give the large prize of £1,000 which the Daily Express gave for the power race last year, nor which the Daily Mail used to give to encourage aviation before the war.

Of course there are those who do not wish to see large numbers of people gliding in Great Britain, but we are not among them. But of one thing we are sure which is that only thus will we get into the Movement the new blood on which the future depends.

SOARING IN FRANCE

A Cheerful Old Timer
THE 'AVIA 40 P'

By GUY BORGÉ

And some considerations of slow high performance Sailplanes

A PRE-WAR VINTAGE

CARRYING on the study of the French designed sailplanes, this month I am writing about a pre-war vintage—the 'Avia 40-P.'

It may seem extraordinary when the modern trend of soaring machines tends to speed by any method—heavy wing loads, flaps—that I come back to an old low speed design.

But these machines of the previous era retain their charm, in my opinion, because I enjoy in them the taste of soaring in lazily cruising conditions keeping me away from Earth for the longest time. They remain as rare, far as they are precious, and the time appears close when they will no longer exist. Therefore, before they disappear entirely, I devote this article about a specimen of a 'disappearing generation.'

1933—'AVIA 41-P' BREAKS RECORDS

In 1933, Mr. Raymond Jarlaud designed a High Performance sailplane which was named the 'Avia 41-P.' Directly inspired from the 'Wien,' with a large strutted wing of nineteen metres, it proved, in Nessler's hands, its virtues by breaking nearly all the French records of distance and duration. But in spite of its astonishing slow properties, the 'Avia 41-P' was too difficult to handle; too expensive to build to be made available in the French Aero-clubs which were awaiting an efficient High Performance sailplane which was more practical.

M. Jarlaud in 1935 produced a modified version of the '41-P'—the 'Avia 40-P' which very soon proved itself a great success. Its nice appearance, its elegant cantilever wing of tapered shape, its pointed rudder and aerodynamical qualities enthralled the pre-war pilots.

The 'Avia 40-P' became the only High Performance machine to be mass produced before 1940—twenty being completed. In 1941 a number of 'Avia 401-P's' were built at Castelnaudary and Algeria.

In relation to the '40-P,' the '401-P' wing bore some spoilers.

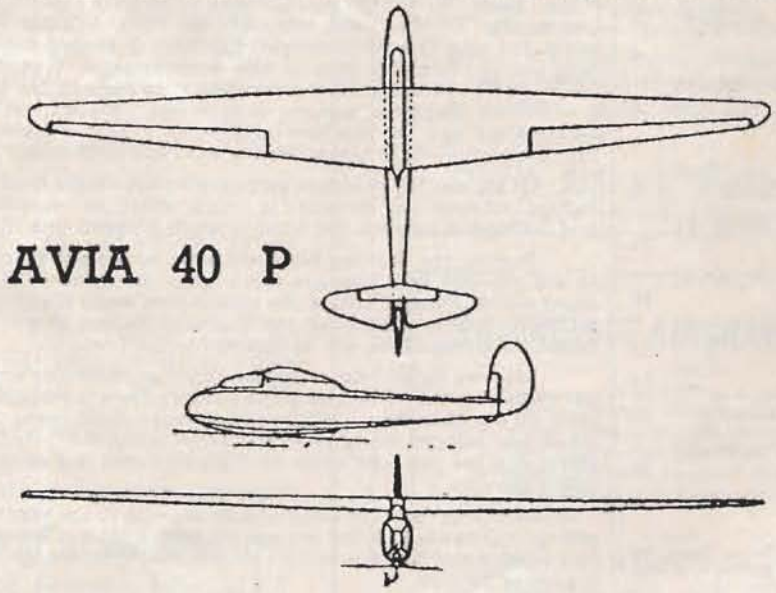
CHARACTERISTICS OF THE '40-P' OR '401-P'

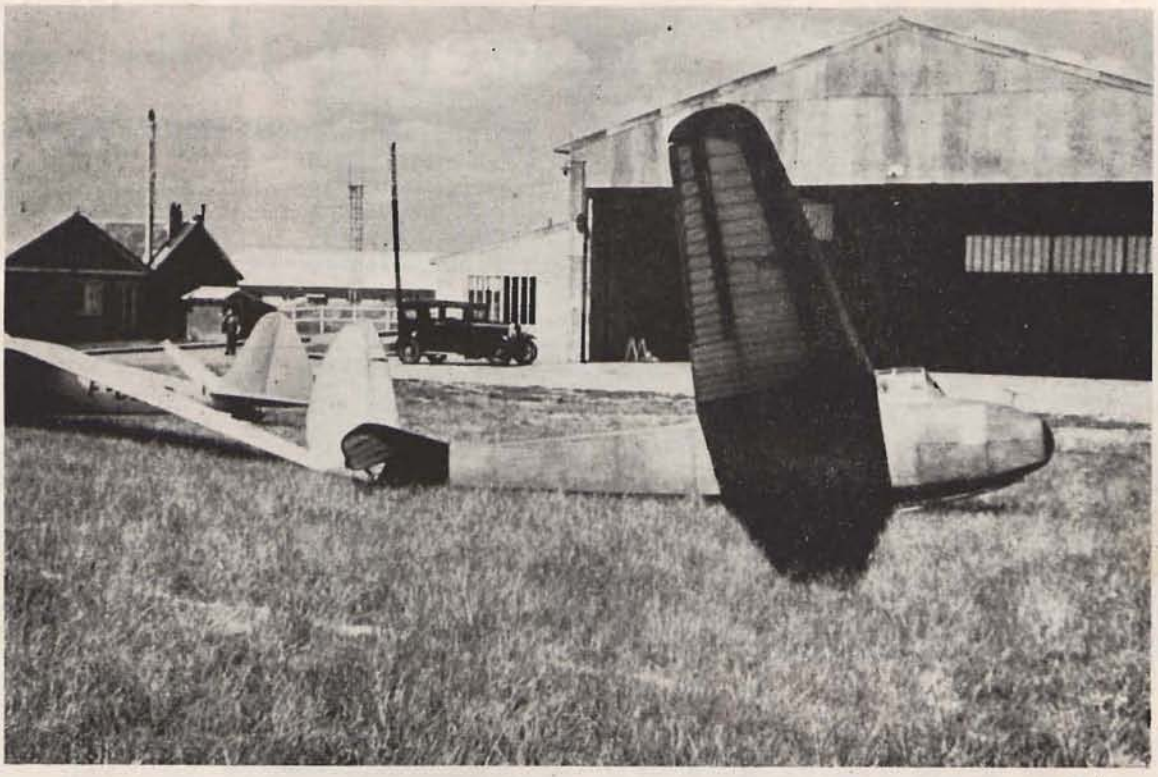
Wingspan, 14.90 metres (48.9 feet); Wing area, 15.30 m² (167.8 sq. feet); Aspect ratio, 14.50; Empty weight, 140 kgs. (308 lbs.); Full weight, 220 kgs. (484 lbs.); Minimum sinking speed, 0.64 metre/second at 50 km./hour (2.1 feet/second at 31 miles/hour); Maximum gliding ratio, 23 at 51 km./hour (32 miles/hour).

SUPERIOR STANDARDS

The '40-P' and the '401-P' were machines of remarkable performances in hands of first-class pilots, with figures sometimes superior to Gold 'C' standards. In France two 300 km. distances were executed in this type (in 1939 by M. Tournon, Paris —Besançon; and in 1945 by Miss Choisnet).

In Algeria where the base of cumulus clouds reaches higher altitudes than in Europe, several pilots climbed above 4,000 metres. Principal advantages of these machines appears during weak thermals, without wind, when it is necessary to fly very slowly, and the '40-P' is then at its best.





The 'Avia 40 P' *Photo : Borgé*

I used a type of pre-war construction, without spoilers, at my last course at the Beynes Centre for several hours and this one flight gave me unforgettable impressions. I could equal the 'long wing sailplanes,' such as 'Air 100's,' 'Weihe's,' or other Kings of the Air, and easily climb above 'Olympias.' But when the air became rough, I endured the lack of solidity of the machine. The wing is too short and stiff and in turbulence the numerous articulations of the ailerons do not stay in the same axis ; the stick becomes impossible for lateral control.

Another disadvantage, which affects big pilots, is the discomfort of the narrow cabin and of the cramped seat.

Majority of 'Avia 40-P's' were built with open cockpits, but some had enclosed hoods.

The remaining specimens of this type are to be found at the La Montagne Noire Centre which, four years ago, possessed five unities—today only the Beynes Centre carefully keeps one in excellent condition—it is very nice to operate. Some fly at Chavenay, Cazaux and in Algeria, and I believe that one 'Avia 40-P' of unknown origin flew in England several years ago and was offered for sale in *Sailplane* columns, but I don't know its present fate.

In my opinion, the formula of the slow sailplanes with a wingspan limited to 15/16 metres, such as the 'Avia 40-P,' seems extremely valuable to the Aero-club users who require machines for piling up hours and badges. The machine able to pick up very small thermals or slope lift to use them to the last minute by its slow virtues constitutes a desirable item ; a rare bird certainly difficult to study, but not impossible today. It should own these qualities :

A wingspan inferior to 16 metres (52.4 feet), to keep convenient size. The 18 metres wingspans are not some practical solutions, too heavy to move, too blocking up into hangars or trailers. Some performances of a minimum sinking speed of 0.60 metre/second (1.9 feet/second) at about 40/50 km./hour (25/31 miles/hour) by a low wing loading, and of a maximum gliding ratio of about 25.

Never mind the bad speed performances, I think that picking the narrowest and weakest lift which is most numerous, the easy use of the central and better part of the thermals exceeds the disadvantage of losing altitude between these thermals.

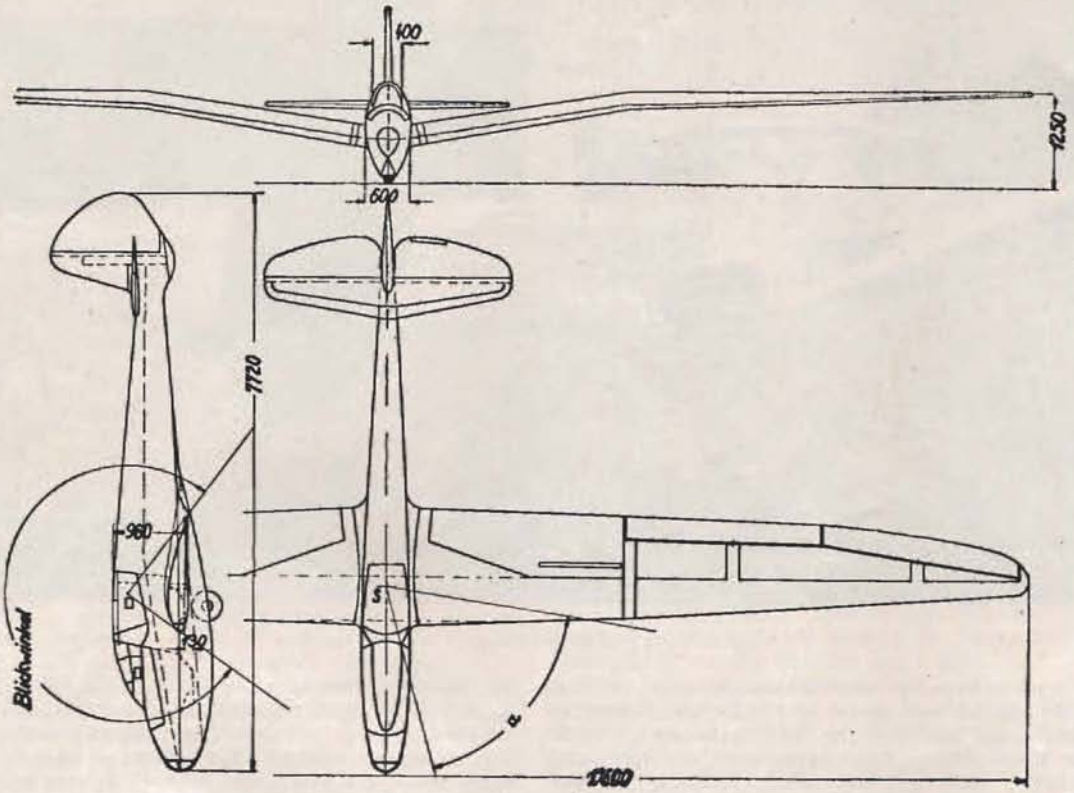
Best example was the 'Mü-13,' certainly the slowest German performance sailplane, which on many occasions beat 'Weihes,' 'Reihers,' 'Condors,' etc. at the Rhön Contests. In fact I have flown twenty different types of sailplanes, in nearly 500 hours of soaring at many French sites with hundreds of miles of cross-country flying, and I found, in relation to the number of occasions, relatively few cases when fast flying appeared absolutely necessary.

Because European climate does not present similar currents to the Texan ones, the complicated fast machines such as 'Arsenal 4111,' 'Bréguet 900,' 'WLM,' 'Castel-Mauboussin CM8-15' have only a few days a year to display their paces.

Accent will then be put on slowness allied to a

The 'Musger-19'

From Hubert Zuerl, Editor 'Aero'



From preceding page :

low sinking speed. The laminar airfoils offer great interest and M. Jarlaud was telling me that by their use the days of large wingspans were being left behind and that in future High Performance sailplanes would employ a similar wingspan to the 'Avia 40-P' or the 'Olympia,' and performance figures would be better than the 'Air 100' or the 'Weihe.' But it appears uncertain to obtain these figures at low speeds, preferably a security factor of 10 authorizing cloud flying with classical handling properties. In general to now, the slow sailplanes—'Avia 40-P,' 'Mü-13'—did not offer classical handling.

I should be happy to know the opinion of the readers about this unorthodox point : value of interest in the clubs of the SLOW High Performance sailplanes. If this opinion was founded, what designer would give us the dreamed slow machine replacing the old 'Avia 40-P' ?

THIS new high-performance sailplane, produced by the Austrian Sailplane Works of J. Oberlerchner in Spittal/Drau, is a development of the pre-war 'Musger-9' by the designer of the same name. The cantilever mid-wing sailplane has a pronounced gull wing, thus resulting in enough ground clearing of the outer wings. Seating arrangement has been essentially improved with regard to the 'Kranich.' The rear seat, in addition, has been placed something higher than the front one, so that the instructor has a good view over the pupil's head.

TECHNICAL DATA

Span, 17.60 m. ; Length, 7,172 m. ; Maximum wing chord, 1.60 m. ; Wingtip clearing, 1.25 m. ; Maximum fuselage width, 0.60 m. ; Empty weight, 238 kg. ; Gross weight, 438 kg. ; Wing area, 20.7 m^2 ; Aspect ratio, 14.2.

Mrs. Platt calls in at Luneberg and Allenberg (Sweden)

Luneberg. Heavens ! What's this ? No prize for the answer

LUNEBERG

I HAVE a very guilty conscience about this article, for it has been so long hatching that by now it must be hopelessly out of date. And for that I do apologise, for Luneberg was very welcoming.

We arrived in Hamburg by ' Dove ' on a fine June day, but as usual I was only able to contact the gliding people at the end of my stay, and then on a non-flying morning. F/L Bailey met our car at the gate, introduced us to half-a-dozen of the members, and showed us all the contents of the hangar—and how lucky they are—for with a membership of about 40 they have a ' Weihe,' a ' Rhonbuzzard,' the original (and very slab-sided) ' Mu,' a selection of ' Grunau Babies ' and primaries, and even a two-seater side-by-side ' G.O.4.'

BUILT FIFTEEN MACHINES

The Club began with only two machines. They now have about 15, all built up of bits and pieces in their own workshop—and here again they are lucky—being able to call on the services of some of the pre-war sailplane pilots with experience of local conditions. Some of their canopies, especially, are exceedingly complicated variations of original designs, and must be interesting to handle.

Launching so far is entirely by winch. Aero-tows are out of the question for the time being and they have neither tugs nor any pilots available. But they are toying with the idea of motor-car towing for isolated tests, although again transport is a problem.

RUSSIAN BORDER DIFFICULTIES

There are four ' B ' Instructors, of whom two, McKercher and Lindsell, hold the Silver ' C.' There is a certain difficulty about advanced training in that the Russian border is very close and distance becomes a complication with the prevailing wind blowing in that direction. But the Club sent representatives to the Wasserkuppe Meeting in July, and I hope to hear that since then many of them have trained to such a high state of excellence that they could cross the whole of Europe in one hop, if only the borders were not there.

ALLEBERG—SWEDEN

AFTER Hamburg we flew on to Scandinavia—I saw groups of sailplanes most tantalisingly set out both in Copenhagen and in Oslo, but had no chance to investigate. But in Sweden I was more fortunate, for Claes Ahgren of Shell took me under his wing and introduced me to Col. Enell, Chief of the Royal Swedish Aero Club.

A ' Seabee ' was conjured up and together with Ahgren and Chief-Instructor Beyman we waddled out of the hangar, into the water, and up over a bewildering scene of pine forests, farms, and a myriad of little lakes till we came to rest well the other side of Sweden in what seemed, as we came down, to be the smallest pond of all.

Here we were decanted on to a little wooden pier, helped by a swarm of flaxen-headed children, and sent off in a taxi through the most enchantingly fairy-tale countryside of log cabins and flowery meadows. On the top of a gentle ridge lies the Gliding School of Alleberg, a delightful place with a long wooden dining hall overhanging the slope, where jugs of milk and huge plates of food were waiting for us—to say nothing of two flights in their ' Kranich ' . . .

The school is open for three months each summer. In three seasons they have done 2,000 take-offs in one ' Slingsby ' two-seater, and on the other one—new last year—they have already managed to clock up 1,500. There is room for 54 pupils sleeping in huts and many more in tents. When I was there the season was about to open with 35—and those 35

Jet Assisted Take-Off

JUNIOR

By Warren J. Merboth (*Holder of Golden 'C' Certificate No. 5. Research Engineer, Aerojet Engineering Corp.*)

AEROJET Engineering Corporation of Azusa, California, the largest manufacturer of rocket power plants in the country, has developed a small, compact, utility rocket motor which can be used very effectively on light aircraft, and also on gliders, as a spare 'engine.' On light aircraft its potentialities as an emergency power unit, and as auxiliary power for high altitude take-offs and overload conditions is very apparent.

6,300 FEET/MINUTE

On gliders, they meet all the requirements for a greyhound getaway and a prodigiously high rate of climb. Soaring altitude can be reached in 15 to 20 seconds with rates of climb as high as 6,300 feet/minute.

The JATO Junior has been awarded C.A.A. rocket type certificate No. 250, No. 249 having been conferred upon its predecessor the original JATO, a unit of four times the thrust, which played such a prominent role during World War II for the assisted take-off of all types of military aircraft. It is a self-contained unit, and its operation is independent of its surroundings since the fuel used contains its own oxygen for combustion and does not depend on atmospheric oxygen.

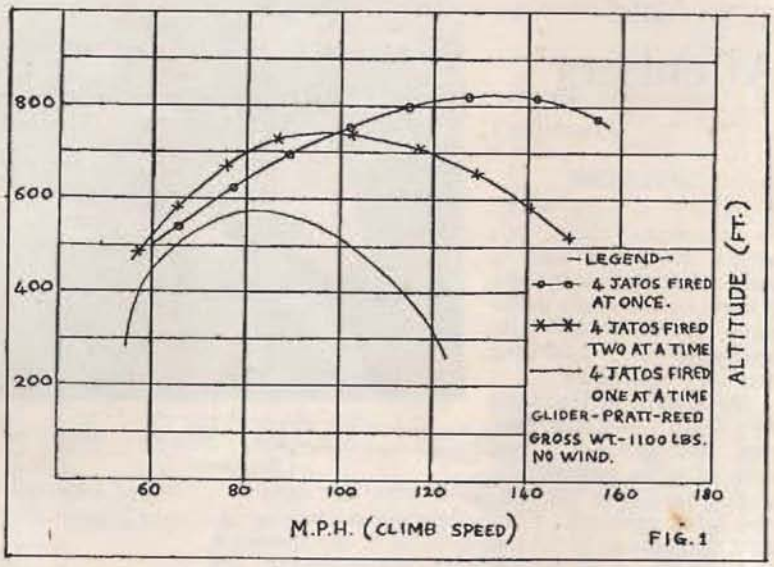


FIG. 1

The JATO will operate best when the pressure ratio of the combustion chamber and the atmosphere is at a maximum, consequently, this makes it ideal for high altitude work. At the present stage of development, these advantages cannot be found in any other means of propulsion.

Briefly, the thrust of a rocket motor is derived from the rapid generation of large quantities of high temperature gases from the chemical reaction of suitable propellants within the rocket motor chamber. These propellants are ignited by an electrical ignitor requiring only 6 volts. The operating chamber pressure ranges are from 850-1,650 p.s.i.a.

Assuming a constant chamber pressure, a steady flow of exhaust gases and complete expansion through the nozzle, the thrust developed by the rocket motor is given by the equation :

$$F = Q\ VK_L$$

where Q is the rate of flow of the exhaust gases in ft³/sec, is its density in slugs/ft³, V is the exhaust gas exit velocity in ft/sec, K_L loss coefficient for the nozzle. However, since the nozzle cannot be designed so that full expansion is accomplished under all

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From preceding page :

would have found 25 machines at their disposal. They have two 'Tiger Moths' for towing, the aforesaid two 'Slingsby' side-by-sides, a 'Kranich,' a 'Schweizer 2-22,' a 'Schweizer 1-19,' an 'Fi' (boom single-seater, aerobatic, performance 1/25), three 'Weihes,' three 'Olympias,' five 'Grunau Babies,' and five primaries.

This year they were going to practise the triangular course as they find distance comes too expensive (but I see by their leaflet that any flight of over 300 km. is retrieved free). The short course is 17 km. each leg and the longer one 33 kms. This year also they were using radio instruction. It would be well worth booking for a course in such an excellent school—especially as Sweden is one of the countries where the downtrodden Briton may still use his pounds without limit! Besides Alleberg, there are 30 clubs state-subsidised and another 12 not. Of these the three best get subsidised next year and the three worst drop out, so there is a constant stimulus.

Wave flying is practised at Över in the mountains, there one can get 4,000 metres without oxygen—and there is plenty of height still available. Go and fly with the Swedes. They are a marvellously hospitable people, bless them. VERONICA PLATT.

conditions, a pressure term must be applied to the above equation to account for this variation :

$$F = Q\ VK_L + (P_e - P_a)\ A_e$$

where P_e is the pressure in lbs/ft² at the nozzle exit, P_a is atmospheric pressure and A_e is the nozzle exit area in ft².

By this equation it can be easily seen that a rocket motor develops its maximum thrust when operated in a vacuum, or, the lower the atmospheric pressure, the greater is the thrust.

TESTS WITH 'PRATT-REED'

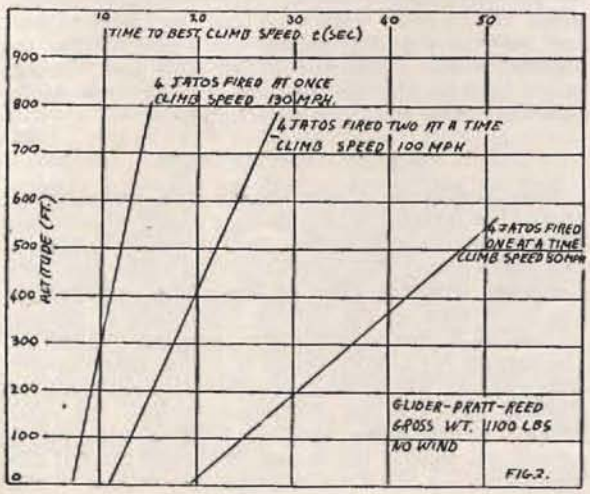
A number of glider launchings were made with JATO to determine its practicability. These tests were conducted with a 'Pratt-Reed' glider having a 1,100 pound gross weight.

The glider was equipped with four JATO Juniors mounted in pairs on brackets located on either side of the fuselage just below the wing. Although the installation could have been submerged for better streamlining, and provisions made for the dropping of the used bottles, no attempt was made to do so on these tests.

Brackets were arranged so that the jet was directed away from the fuselage and tail group in the normal flight position. Since the effective thrust of the rocket varies as the cosine of the angle, a variation of as much as 10° from the line of flight would have little effect.

The initial tests proved that with the method of mounting described above, the unbalanced torque caused by firing the units singly at below flying speeds was an uncomfortable handicap in attempting to maintain directional control, although these conditions vanished as soon as flying speed was attained. However, with a little practice, these shortcomings might be overcome just as in correcting for engine torque on a power plane take-off.

In the take-off the acceleration was very rapid and the climb angle was assumed as soon as the most efficient climb speed was attained. Figure 1 is a curve showing the effect of climb speed with each



combination of firing in a no-wind condition. From this can be seen the best climb speed for each arrangement.

The maximum altitude can be obtained by firing all four JATO'S at once and climbing at an indicated air speed of 130 m.p.h. At this air speed, the climb angle is roughly 40°. It should be pointed out here that the stronger the wind velocity on take-off, the higher will be the final altitude as the higher wind does not require as long a run to reach climb speed.

Figure 2 is an interesting comparison of the maximum altitudes *vs* time that can be gained by using the various combinations of JATO'S at the best climb speeds.

Exhaust gases from the chamber emerge from the nozzle at supersonic velocities and care should be taken in arranging the jet so that its deflection off the runway surface is not directed against the tail empennage as any loose gravel or sand carried by the jet would puncture the fabric.

BEST OF STREAMLINING

One way to eliminate the possibility of such damage would be to use a bi-propellant liquid rocket with the single nozzle located in the tail extremity. The entire assembly would be submerged affording the best of streamlining. A liquid rocket motor is lighter in weight for a unit of comparable thrust and duration, and its components can be better adapted to conform to available space in the fuselage.

An additional advantage of the liquid rocket is that its thrust can be varied and it may be turned on and off at will. However, the necessary valving which is required for this type of setup would eventually prove more costly.

The Navy has not removed the security classifications on the solid propellants used in the JATO Junior rockets, therefore they are not available to the public.

But, in the meantime, I suggest to those of you who have intentions of using rockets for take-offs or emergency power, that you ponder over the comments made by C.A.A. on the application of JATO to gliders. 'Should the pilot of such a flying machine hold a glider, power, or multi-engine rating?'

To be on the safe side you had better prepare for a multi-engine rating as I am sure a few hundred hours in a 'B-36' would improve your soaring technique tremendously.

SPECIFICATIONS

Thrust	250 lbs. static=sea level 68° F.
Equiv. H.P. ..	Approximately 50 at 75 m.p.h.
Duration	12 sec.
Approximate weight	55 lbs.
Over-all Dimensions	6" Diameter × 18" long.

By courtesy of 'The Thermal.'

WAS THIS FAILURE ?

132 Miles in a 'Grunau Baby' in 5 hours

By Fred Hoinville (*First Australian Gold 'C'*) *President and C.F.I. Hinkler Soaring Club*

I'VE just discovered the 'Grunau Baby.' After several years flying medium and fairly high-performance sailplanes, from the 'Gull I' to the 'Olympia' and 'Gull IV' and 'Schweizer TG-3,' and feeling genuine sympathy for those pilots who were restricted to the lowly 'Grunau,' I recently had the enlightening experience of flying the Hinkler Soaring Club's 'Blue Grunau' 132 miles in the last five hours of an eight hour soaring day, with the result that I developed a strong affection for the little 'Model T' of the gliding skies, and now hanker to give it a thorough try-out under good conditions.

GOLD 'C' IN 'GRUNAU'

I have no doubt that the 'Grunau' can do much better than 200 miles in a day, since I missed the best three hours yet got so far. So, all you boys and girls who fly the 'Grunau,' don't be disheartened by the 'RJ-5,' just hop in and get a Gold 'C' with the 'Grunau.' It can be done.

Here's how it happened. I had attended the Narromine Gliding Meeting with the Hinkler Soaring Club, hoping to compete in the National Jubilee Championships, but owing to the breakdown of our tow-truck right at the start, I was restricted to the role of tow-pilot throughout the contests, and glumly watched the other pilots having all the fun, while we sought in vain for a cylinder head gasket to repair the truck. It arrived after the contests finished. Too bad.

Thursday, 10th January. The contests over, it was Bob Krick's day to fly the 'Olympia,' and we decided that he should use the north-west breeze and promising cloud formations to attempt a goal flight to Bankstown, about 200 miles, and quite close to our home airfield at Camden, N.S.W. So at about 10.30 a.m., I towed Bob to 400 feet, where he released and got away to near cloud base. Narromine is about 800 feet above sea level, and this made Bob's starting height about 1,200 feet above sea level.

Fifteen minutes earlier, Len Schultz had started south in the Sydney Soaring Club's 'Olympia,' preferring the flatter country in that direction.

It occurred to me that the Bankstown goal offered a solution to my own major difficulty, which was that there was nobody to retrieve me if I went on a cross-country flight. If I took the 'Grunau,' and went towards Bankstown (Sydney airport) there would be no retrieve needed since the 'Grunau' could be picked up on the trip home, no matter where I landed. But the 'Grunau' was then sitting in a paddock at Trundle, 60 miles south, where Ray Ash had landed it the previous day. This meant that I had to retrieve it with the tow-plane first, before I could start.

TO CLOUD BASE—6,000 FEET

I decided the trip was worth trying, even with a late start, so did the retrieve and at about 1.30 p.m., was launched by courtesy of Sel Owen of the S.S.C., who towed me up with 'Brolga,' my 'Tiger Moth.' At 900 feet (1,700 a.s.l.) I released and climbed at an average of 8 to 10 f.p.s. to cloud base at 6,000 feet. Then down went the nose and I shot off to Dubbo, 22 miles east, stopping only once to circle, and getting there in 33 minutes.

I veered south, still cruising at 55 m.p.h. indicated speed between thermals and climbing steeply at low speed in every bit of lift, but circling only in the strongest thermals, which however rarely equalled 10 f.p.s., mostly being about 8 f.p.s., and diminishing as the day wore on.

Clouds were about 4/8, cloud base slowly rising, and lift weakening, as I reached Molong, 80 miles in just 2 hours, and the country was getting rougher. I now had to circle more frequently, and gained height slower, and the groundspeed suffered accordingly. The wind was dropping also, from about 10 knots from 330 feet at the start to less than 5 at 4 p.m. near Orange, about 95 miles out.

I now turned east towards Bathurst, 20 miles further, and at this time the clouds commenced to thin out and lift was rarely better than 3 f.p.s., and I had a hard fight to stay up, getting down to about 3,000 feet near Bathurst, where I finally found a very weak thermal which took me very slowly back to 7,000 feet. The ground altitude around Bathurst is over 2,500 feet, so that was a rather close shave.

With 6,000 feet remaining over Bathurst Airfield, I had the option of giving up there, or gambling on the chance of working my way through the valley to Lithgow, with the possible help of the only two remaining clouds ahead. I knew I could land safely, but perhaps not conveniently, anywhere in the valley, where all the fields were very hilly, so I pressed on, and very slowly drifted the last twenty miles to Tarana, which I reached about 6.30 p.m., losing height slowly all the way except for two weak thermals where the last clouds had been.

GLARE OF THE SUN

Here I selected a safe smooth hill, and cruised around for fifteen minutes in very nearly no-sink air while trying to peer further up the valley to seek a safe perch ahead, but found that the valley shadows combined with the glare of the canopy perspex in the level rays of the setting sun made it almost impossible to see at all, there being no window in the canopy, so I sadly called it a day, flew straight into the sun for half-a-mile then straight back to Tarana with the sun harmlessly behind me, and slipped slowly down one hill, over a wire fence, turned left behind the horses, half-right around the trees, then up the next hill, the tiny wheels of the

A 'CAMEL LAUNCH' IN EGYPT

The 'Christmas' card reproduced above was sent to us by 'Bob' Swinn, C.F.I. Egyptian Gliding Club

Krick undercarriage rolling smoothly up and over the top to a gentle stop on the crest, at the back door of the Police Station.

The altitude at Tarana was 2,700 feet a.s.l., about 1,000 higher than my point of release. The time was 6.45 p.m., the distance 132 miles in a straight line, or about 150 miles along the track followed. After more than 5 hours in the 'Grunau,' I felt no discomfort and was quite fresh, although I had been very hot until I pulled the rubber-tube ventilator out by the roots early in the day.

After that, it had been rather cool, as this let a blast of air directly onto my feet from the one-inch hole in the nose, but I found the cold preferable, and not excessive.

The late start, three hours behind the others, was not the only handicap on this flight. Right from the start, the red ball of the variometer stuck very badly, having become electrically charged, with the result that I was not able to assess the best cruising speeds accurately, and sometimes found myself sinking very rapidly when the variometer was telling me that I was in no-sink air, and flying slowly when the speed should have been high. I eventually had to use the altimeter instead of the variometer in sink conditions, although the green ball worked most of the time. When I turned the electric turn indicator on, it failed to function, so cloud flying had to be abandoned also, when it would have been quite a help.

Len Schultz landed at Wagga, having flown 210 miles in the S.S.C. 'Olympia.' Bob Krick landed at Bathurst, 115 miles, in the Hinkler 'Olympia' after picking the wrong cloud at 2.30 p.m.

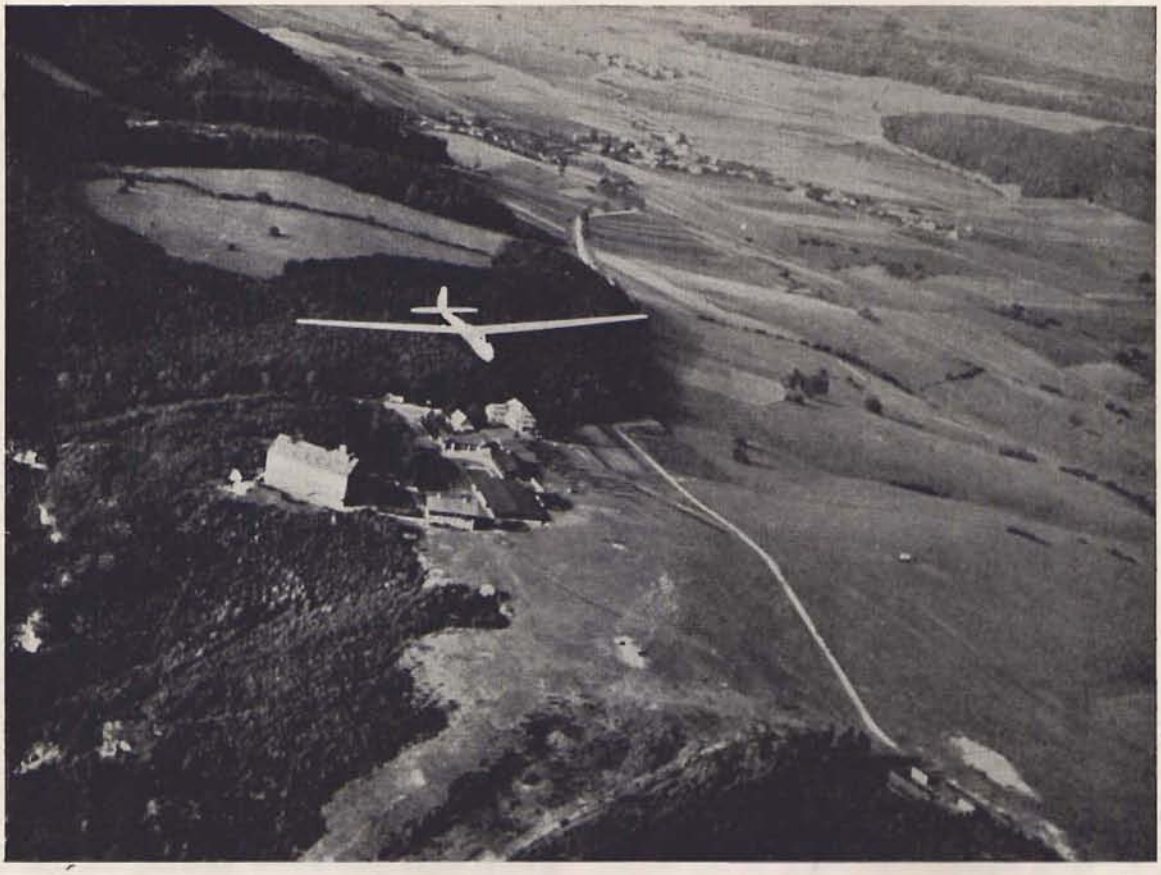
The Narromine camp is a long story in itself, and will be written up separately. During the contests, the Hinkler Soaring Club gained five Silver 'C's,' and did many good flights, including distances of 155, 152, 115, 88, 86, 60, 60, 60, miles.

My own personal score in the National Championships was :—

1 live bat captured (it hopped into bed with me one night) ; 2 stray dogs adopted me ; 1 mahogany suntan ; 1 dislike for the smell of dead rabbits ; 1 resolve not to sleep in a hangar again (oh, those banging doors) ; 1 almost broken heart, from watching the clouds go by, while others flew ; and, 1 new respect for the 'Grunau Baby' sailplane.

After landing at Tarana, I was soon surrounded by about 20 New Australians from all parts of Europe, some of whom knew a little about gliders and helped me to de-rig the machine and put it into a garage, the use of which was offered by storekeeper Bill Payne, and accepted with gratitude. Bill also provided a very welcome meal. Then I made a few telephone calls, and at half-past midnight caught a train back to Narromine. The trip had taken me 5 hours by glider. It took me 10 hours to return by train.

Next day, the 'Grunau' was collected by Bob Krick with a truck from Bathurst, and taken back to Bathurst Airfield and re-assembled, while I flew the tow-plane down from Narromine to Bathurst, and after putting on a full afternoon of soaring demonstrations for the Bathurst Aero Club and residents on the Saturday, we got away to an early start on Sunday morning, when I double-towed the two sailplanes 80 miles back to Camden—Bob Krick in the 'Olympia,' and Ray Ash in the 'Grunau.'



2nd T.A.F. Rest Centre, Scharfoldendorf, home of 2nd T.A.F. Headquarters Gliding Club. 'Weihe' pilot, Corporal 'Andy' Gough has got in over 700 hours

Corporal 'Andy' Gough (left) and F/L D. E. Osland, C.F.I., of the 2nd T.A.F. H.Q. G.C., and Officer Commanding 2nd T.A.F. Rest Centre

OVER 31,500 LAUNCHES BY 2nd T.A.F. CLUBS LAST YEAR

FACTS and figures given in Germany by the Chairman of the 2nd Tactical Air Force Gliding Association (Air Commodore L. R. S. Freestone) show that the 2nd T.A.F. clubs got in nearly 4,000 hours and over 31,500 launches in 1951. The Headquarters Club alone, at 2nd T.A.F. Rest Centre, Scharfoldendorf, completed 2,000 hours.

17 SILVER 'C's'

During the year the clubs issued 88 'A', 94 'B' and 59 'C' Certificates and 17 Silver 'C's.' Altogether, pilots flew over 100 Silver 'C' legs—duration, height and distance tests. Over 1,000 non-member passengers were carried. Total R.A.F. membership of the 2nd T.A.F. gliding clubs is something over 300.

Highlight of 1951 came on May 19, when F/L D. E. Osland, the Chief Flying Instructor of the Headquarters Club, set up a new 2nd T.A.F. distance record of 364.5 kilometres in a 'Weihe.'

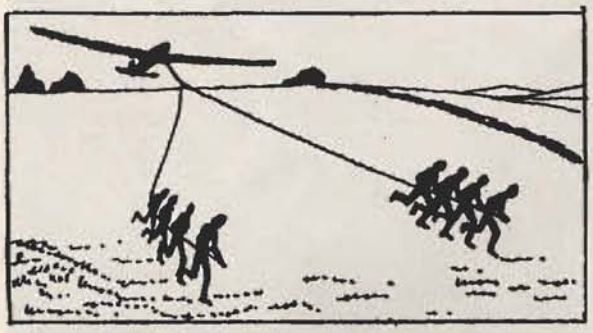
During the 1951 2nd T.A.F. Gliding Competitions, which lasted a week, Corporal 'Andy' Gough, of the Headquarters Club, who put up the best overall performance, averaged over 150 kilometres a day. And on the same day that F/L Osland broke the Command distance record, Corporal Gough, also flying a 'Weihe' from Scharfoldendorf, landed in Holland, too—at a point 213 kilometres from the start.

Sepp Niederstadt, who for years commanded Scharfoldendorf and directed the training of more than 6,000 German glider pilots during the war, is still there—as foreman-labourer and winch driver

The Plain Man's Guide to Gliding

By Godfrey Lee **Part 2** *Illustrations—Derek A. Mossman*

I HAVE been aware for the last few minutes that something like a thunder-storm has been brewing in the breast of the Intelligent Reader and I am sure that he is just about to address me somewhat as follows : ' This is all very well ; I've waded through your long-winded explanations and I've put up with



your childish jibes at my expense, but what you haven't explained, dammit, is how the wretched glider gets into the air to begin with and, anyway, how does a man learn to fly the things in the first place ! Well now, I'm very pleased to hear that sort of remark because it means that the Intelligent Reader, at any rate, has got interested in gliding, otherwise why would he want to know how gliders get into the air or how you learn to fly them ? You see, the main idea of this book is to interest people in gliding, so I feel I'm making progress. However, let's deal next with the I.R.'s two questions. There are four common ways of launching gliders into the air and these are described below.

1. *Catapult Launching.* In this form of launching the glider is attached by a short length of ordinary rope to the middle of an elastic rope, or ' bungy ' about 25 feet long and half-an-inch in diameter. This bungy is laid out in front of the glider in the form of a ' V ' with glider attached at the vertex, or bottom of the ' V.' Three or four men then take hold of each of the two distant ends of the bungy (i.e. at the tops of the arms of the ' V '), and run forward stretching the elastic as they go. Meanwhile, one or two people are lying on the ground behind the glider holding on to the rear part of its body or ' fuselage.' These ' holders-on ' wait until those who are running have stretched the elastic out to about twice its natural length when they release the glider which is then shot forward just like the stone in a boy's catapult. The glider is very soon moving fast enough to fly, when it rises into the air, shoots forward and overtakes the bungy, which then goes slack and drops off automatically.

This method of launching is very suitable for use on the edge of a hill, or for giving short training flights on flat or gently sloping ground.

2. *Winch Launching.* In this case the power required to launch the glider is supplied by a stationary engine (usually an old car engine), driving a drum which winds in a length of flexible steel cable. The glider is attached to the end of the cable farthest from the winch.

To launch the glider the winch winds in the cable, thus towing the glider along on the end of the cable like a kite on the end of a piece of string. When the glider has reached its maximum height the pilot operates a release mechanism in the cockpit which permits the cable to fall away and leaves the glider flying freely.

The length of cable used in a winch launch is usually between 1,000 and 4,000 feet and the heights above the ground obtained by the glider are about one-third of the length of the cable.

Winch launching is probably the most frequently employed of all methods.

3. *Auto-Towing.* This is basically the same as winch-launching except that instead of the cable being wound on to a drum on a stationary engine the end of the cable is attached to a car which is driven forward in the normal way and simply tows the glider behind it.

The drawback to this method is that a good stretch of smooth ground, such as an aerodrome runway, is required for the car.

4. *Aero-Towing.* This is one of the most satisfactory of all methods of launching (though also the most expensive), as in this case the glider can be taken right up to the clouds.

The glider is attached to an aeroplane by means of about 50 yards of ordinary rope. The aeroplane takes off in the normal way and tows the glider up behind it. When the pair have reached a suitable height, usually about 2,000 feet, the glider pilot releases his end of the rope and continues to fly in a normal manner.

HOW YOU LEARN TO GLIDE

In most gliding clubs in this country the major part of a pilot's training is carried out in single-seater gliders, that is to say, the pilot is flying entirely on his own, or ' solo,' right from the beginning.

He starts off in a very simple, robust safe type of machine known as a ' Primary Trainer.' The first flights on this type are not really flights at all, but rather slides along the ground at just less than flying speed. On these slides he can learn to keep the wings level and gets a general idea of what everything feels like.

After having a few slides, the learner next has some small flights or ' hops ' during the course of which he

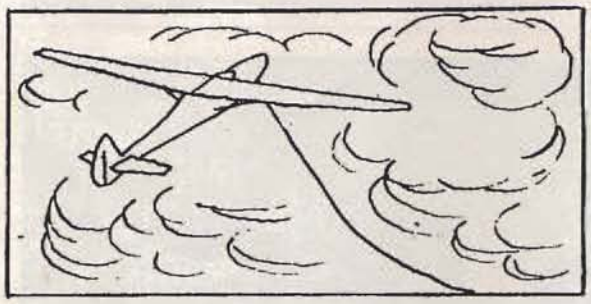
attains a height of a few feet above the ground. So the process goes on, with the height of the hops being gradually increased until the pupil is doing straight flights up to a height of about 50 or 100 feet.

During this period the height reached on the flight is governed by the strength of the launch, and this is under the strict control of the Instructor. Before each flight the pilot is carefully instructed or ' briefed ' as to what sort of flight he is going to be given and it is explained to him just what he is to do.

After he has mastered straight flights the pilot is taught the art of making turns; gentle turns at first and later on complete, full turns.

When the pupil is capable of doing satisfactory turns on the primary trainer he is promoted to the next type, a ' secondary ' machine. This is similar to the machine that he has been flying, but is rather more refined, not quite so sturdy and, most important, has a better performance. He is familiarised with the new type by means of a few straight hops and then goes on to turns as before.

After the pupil has done a fair number of good flights on the secondary and has shewn that he can turn it safely at will in calm weather, he will be



given an opportunity to soar the machine, usually by doing some slope soaring along a hill.

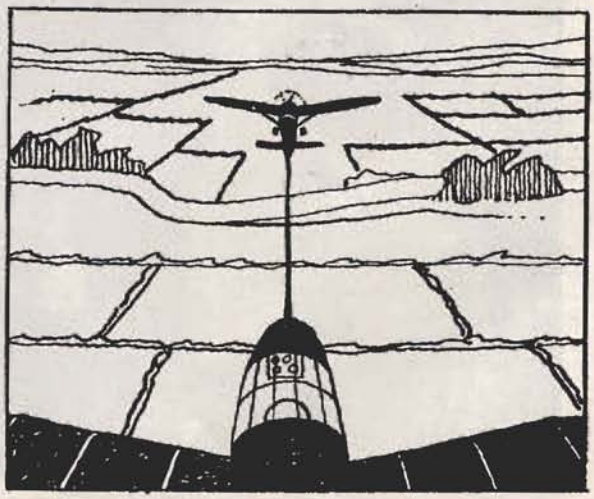
Assuming that all goes well the pupil will have one or two more soaring flights in the secondary and will then progress on to a still better type, and so on and so on.

During the course of this training the pupil may be given a few instructional flights in a two-seater glider. This is mainly to eradicate any special faults that he may have developed and also to let him get used to the appearance of the landing ground and local countryside from the air. A two-seater trip is especially valuable just before the pupil makes his first attempt at soaring, as the Instructor can then take him over the course that he is to fly and can shew him just where he should go, where he should make his turns, and all the rest of it.

The rate of progress depends, of course, mainly on the pupil's natural aptitude, but, inevitably, the weather conditions met during the course of the training have an appreciable effect on the time taken. An average pupil can usually be considered competent to fly any normal type of glider or sailplane after his total time in the air (as pilot of a single-seater machine), adds up to about 25 hours. This condition can be attained in a year from starting to learn, but I think that about two years is nearer the average.

Although the pupil should be able to fly any reasonable sort of machine safely after 25 hours' flying experience this does not mean that there is nothing more for him to learn. On the contrary, it is only after the pilot has learnt to fly his machine really well and is able to carry out all the normal manoevres more or less automatically (in the same way that the Intelligent Reader, no doubt, can drive his car or ride his bicycle), that he can free his mind sufficiently to concentrate on the real art of soaring as opposed to the simpler business of keeping the glider moving safely through the air. When the flying part of it has become second nature, then the pilot is able to devote his attention to looking out for thermals, to getting the best out of those that he does find, and at the same time can spare some of his attention for looking out for suitable clouds, navigating, map reading and all the time keeping his eye on a suitable landing field, for remember, this may be wanted at almost any time on the flight for one can never be quite sure of finding the next upcurrent. It is not possible to say how much experience is required to master all the aspects of soaring, for no-one as yet has ever done it; certainly, after many hundreds of hours flying, there is still more to learn.

When the pilot has become proficient at flying under normal conditions, he can then start to practice flying in clouds, known as ' blind flying ' because the pilot is unable to see the earth at all. There is not sufficient space here to describe blind flying in any detail but, in essence, the glider carries certain instruments from the readings of which the pilot can tell what sort of manoeuvres the machine is performing. It is, I think, clear that this requires much more concentration than flying in sight of the ground (when it is obvious at a glance what is going on), so that, on this subject alone, there is plenty of scope for the pilot to go on learning and improving his technique. *(To be continued)*



CORRESPONDENCE

SIXTEEN- AND SEVENTEEN-YEAR-OLDS TO HITCH-HIKE TO SPAIN

DEAR MRS. PLATT,

I was greatly interested in your very excellent article in *Sailplane* on the Spanish gliding sites. I have discussed it with a friend and we have decided to explore the possibilities of hitch-hiking to Spain in the summer to do some gliding.

We are both 'C' pilots, and members of the Southdown Gliding Club. My friend is 17 years old and I am 16. We are both flying 'Tutors,' I have about 10 hours, and my friend 6, although these totals will no doubt be increased before the summer.

Bearing in mind the fact that Foriston, although very good for cliff-soaring, is *not* a thermal site, and therefore a site with good thermic conditions would be more attractive to us, it seems that Madrid would be the best bet.

I have written to the Commandant of the Madrid centre about details, but whilst awaiting his reply, decided to take advantage of *Sailplane*'s offer of advice on all problems by writing to you for your opinion.

Hoping I have not put you to any great trouble.

BARRY SMITH, Brittany Rd., Hove 3, Sussex.

SCHOOLMASTERS' PROGRESS

CLASSICS master at Durham School and former fighter pilot is Mr. Wilfred Rhodes, 28, who is one of the twenty-six schoolmasters who have had a week's training course at the Royal Air Force station at Detling, Kent, as glider instructors.

He told a reporter that he considered the training course most beneficial and thought that a glider would prove a most useful form of practical training for the boys.

It is planned to introduce gliding at about sixty schools. Each will eventually be supplied by the Air Ministry with a single-seater primary glider. From elementary training they will advance to more difficult work in two-seaters at A.T.C. Gliding Centres.—More reports in March.

COMPETITION

IN the second of our new series of Winter Competitions readers are invited to send in accounts of local soaring flights, cross-countries, etc., that they have made, with an illustration of the machine, in which the flight was made and/or of themselves, if possible.

Stories must not exceed 1,200 words where possible *and* must be written on one side of the paper only please.

Two Guineas will be paid for every article published.

Round the bar at Scharfoldendorf—a jargon of ridge winds, thermals and standing waves . . . Centre : F/L D. E. Osland, C.F.I. (*See pages* 10 *and* 11)

Two American Pilots make plans for world contests

WE hear that Mr. Bill Beuby of California, and Col. Scott Royce of the U.S.A.F., now stationed in Germany, are making plans to compete in Spain if proper designation by the Soaring Society of America can be arranged.

Both gentlemen have long been prominently identified with American soaring and are soaring pilots of great skill.

We imagine that S.S.A. will be happy to grant the necessary sanction for these two. In view of Paul MacCready's brilliant performance in Sweden, American participants in this year's Contests will need to be strictly on the ball if American International reputation is to be preserved.

B.G.A. Cup Awards

THE British Gliding Association have awarded the following cups for the best performances during 1951.

A. W. Bedford : de Havilland Cup for his climb to 18,100 ft. on April 12, and the Manio and Wakefield Cups for his National Distance Record of 257 miles, on May 2.

P. A. Wills has been awarded the Seager Cup for his National out-and-return record of 163 miles on June 3, and F/L Charman-Thomas for his out-and-return flight of 54 miles in a ' Sedbergh ' two-seater on July 29.

Austria's only Glider

Sequestration by the Russians

ON January 12 the Soviet authorities were responsible for the sequestration of Austria's only glider. In 1950 the machine was named ' City of Vienna ' by President Körner, who at that time was burgomaster.

It is the property of a flying club, and was originally re-built from a wreck by members in their own spare time and with their own funds.

The machine was carried away to the local Russian headquarters, and the flyers fear that it will not be returned, because during their examination by a Russian major they were asked if they were not aware that flying is forbidden in Austria.

The examining officer is wrong on that point, for permission was given by the Allied Council as long ago as December, 1949, for glider flying to be resumed in Austria ; the Russian High Commissioner was in the Chair and signed the appropriate authorization.

The Annual Dinner and Dance of Southdown Gliding Club was held on Saturday, February 2. London Gliding Club held a similar event at Dunstable on the same day.

Central African News

Salisbury Gliding Club.

The new ' Kadet ' wings should be fitted by the time this article goes to press, and all we need now is a new winch and retrieving car—and, of course, airfield! Thanks to the efforts of our new Chairman, G/Capt. Charles Ryly, A.F.C., we have managed to evict the Printing and Stationary Department from our hangar—so no more de-rigging for us!

We were all pleased to see Jimmy Harrold take his Silver ' C ' in ' H-17 ' after 10 years of hard trying. Now we have several Silver ' C ' aspirants.

Umtali Gliding Club. Recent flying has been restricted to the ' Dagling ' now being fitted with nacelle. The Club has borrowed the Central African Gliding Association's ' T.31 ' fuselage jig and is eagerly awaiting delivery of its two-seater. However, thanks to rail delays, Salisbury will hold its record till the next thermal season.

Umvukwes Gliding Club. This club is due to be formed of tobacco farmers on the 4th November. All the club possesses is a keen nucleus of farmers and a landing ground. Harrison, the Secretary, hoped to acquire a ' T.31 ' to start the club—a wise choice indeed—so we are keeping our fingers crossed.

Luneburg Gliding Club

KITEING

LUNEBURG Gliding Club is situated 185 feet above sea level on Luneburg Heath, which is a 5,000 square mile area of comparatively flat country. With high winds and no ridge, normal flying becomes impossible. We have therefore, resorted to a type of flying which we have termed ' Kiteing.'

It has been found that providing the wind speed is over 25 m.p.h. and not gusting, a kite launch can be carried out. The aircraft which has been used by this club is a ' Govier,' side-by-side two-seater.

Using a Peiffer winch in low gear, and 5,000 feet of 3.6 mm. cable of 1,200 kilogramme breaking strain, the aircraft is launched up to approximately 1,000 feet. The winch engine is then switched off, but left in gear which acts as a brake.

TO 3,800 FEET

The pilot, without releasing the cable then eases the stick back to increase the angle of attack as much as possible without stalling. By easing the winch clutch the cable is allowed to be slowly paid out, but checked frequently to keep the cable correctly tensioned. This is carried on until all available cable is paid out. The aircraft can then remain airborne as long as suitable wind conditions prevail. The maximum height reached with this length of cable has been 3,800 feet.

This type of flying has so far been carried out on three days during December, a total of 33 launches being carried out, giving an aggregate flying time of 7 hours 43 minutes. The actual flying time could have been much more, but to give as many members as possible an opportunity to sample ' Kiteing ' almost all of the flights were limited to 15 minutes duration.

New National Records in Rumanian Contests

By R. A. G. Stuart (M.A. Cantab.)

TRAINING BEFORE CONTESTS

AT the Rumanian National Gliding Championships in 1951 there were 11 competitors, of which two were women. The championships included seven days of official training and 10 competition days.

Altogether 156 take-offs were made during this period—83 for training. However, 19 of these competition flights were not classified owing to bad weather conditions.

Competitors covered a total of 5,553 km. in free distance flights, equivalent to three times the distance between Moscow and Bucarest, the average distance per competitor being 505 km. Of these distance flights, nine were over 50 km., 25 over 100 km., two over 150 km., and eight over 200 km.

In the category of altitude flights there were 11 gains of over 1,000 m., three over 1,500 m., 21 over 2,000 m., nine over 2,500, three over 3,000 and four over 4,000 m. The total time flown by competitors was 349 hours, averaging 30 hours each at an average duration of five hours per flight.

NEW RUMANIAN NATIONAL RECORD

There were four classes of events in the championships. In the class for goal flights, in which speed was awarded points as well as distance, the victor was Mircea Finescu from Cluj, equal with Valeriu Popovici from Bistrita and Gh. Galca from Iasi. All three flew from Bucarest to Adjud, a distance of 215 km., which is a new Rumanian national record.

They were followed by Ovidiu Popa from the town of Stalin, who flew 205 km. and Mihai Iliescu from Timisoara, who covered 170 km. Iliescu was the winner of the 1950 championships with 1,748 points, but he was unable to retain the title in spite of the fact that there were only two other competitors who had competed in the championship before.

In the out-and-return goal flight class the winner was again Mircea Finescu (Cluj), with Gh. Galca second and Ovidiu Popa (Stalin) third. These three and two others flew 2 × 110 km., again a National Record, but the placing was determined by speed.

100 KM. TRIANGULAR RACE

In the class for a race round a 100 km. triangle, Finescu (Cluj) again finished first and set up a national record of 55.5 km./h., Popa (Stalin) being second and Gh. Georgescu (Bucarest) third.

Finally, in the gain of height category Finescu was again victorious and set up a new record of 4,350 m., followed by Gh. Galca (Iasi) with 4,150 m. and Gh. Maistorovici (Pitesti) with 4,100 m. Finescu was thus an easy and well-deserved champion, having won all the events and beaten the existing records in each case. He obtained a total of 2,480 points. Popa came second with 1,820 and Galca third with 1,740.

TABLE OF RUMANIAN NATIONAL RECORDS

Altitude : Mircea Finescu (Cluj) 4,350 m.

Speed over 100 *km. triangle* : Mircea Finescu, 55.5 km./h.

Duration (*two-seater*) : Mircea Finescu and passenger Macsek (Cluj), 17 hours 9 minutes.

Out and return goal flight : Mircea Finescu (Cluj), Ovidiu Popa (Stalin), Mihai Iliescu (Timisoara), Gh. Galca (Isai) and Gh. Maistorovici (Pitesti), 2 × 110 = 220 km.

Distance in straight line : Ovidiu Popa (Stalin), 292 km.

WOMEN'S RECORDS

Speed over 100 *km. triangle* : Valentina Ghinea (Bucarest), 38.7 km./h.

Altitude : Valentina Ghinea (Bucarest), 2,730 m.

Goal flight : Olga Gionea (Cluj), 110 km.

Distance in straight line : Valentina Ghinea and Olga Gionea, each with a distance of 110 km. ; Gionea's being a goal flight.

Duration : Valentina Ghinea (Bucarest).

Over 50 Rumanians now have their Silver 'C's,' including three women. Six have obtained one of the legs for their Gold 'C's,' *viz.* Mircea Finescu (Cluj), Gh. Cucu (Bucarest), Valeriu Popovici (Bistrita), Gh. Maistorovici (Pitesti), Gh. Galca (Iasi), and Mihai Iliescu (Timisoara).

Gliding at 125 G.S. During 1951

By PETER FLETCHER

125 G.S., Langley—Summer 1950

A YEAR OF PROGRESS

LAST year saw good progress at Langley, and before giving some details, the figures for cadet pupils trained may be of interest.

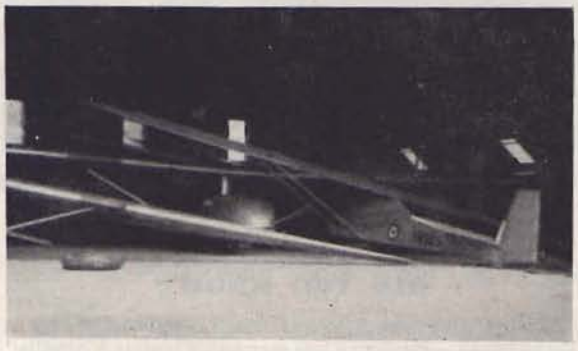
We have produced 48 B.G.A. certificates for the boys consisting of 4 ' C's,' 18 ' B's,' and 26 ' A's,' these latter are mostly on their way to the ' B ' stage in due course. Our ' C ' certificates are all taken in the ' Prefect ' from thermals and the ' B ' certificates are obtained in the ' Cadet Mk. I ' from circuits.

Our system is complete dual instruction, we have given up the solo system completely and this has been our first full year with the entirely dual method —the results have exceeded our most optimistic anticipations.

The pupils get all their instruction in our ' T.21.B Sedbergh,' converting when ready to the ' Cadet Mk. I ' for the solo ' A ' and ' B ' tests. After a reasonable amount of further dual and solo practice those selected as showing good all-round aptitude are converted to the ' Prefect ' and given soaring instruction in the ' Sedbergh.' This summer Cadets White, Fishe, Samuels and Roberts all took their ' C ' certificates in the ' Prefect,' White going to 3,100 feet and Fishe staying up 48 minutes.

NOTABLE ACHIEVEMENT BY CADET

One other flight by a cadet pupil, White, deserves a mention, he thermal soared a ' Cadet Mk. I ' from about 700 feet to 2,000 feet, the machine had a variometer fitted but was in all other respects an ordinary ' Cadet Mk. I ' with square wings and built-in head-winds, a very good effort considering the pilot's limited experience.



The Hangar and a tight fit

Langley is more or less ideal for a flat site consisting of a very large level grass airfield from which winch launches average between 1,200 feet to 1,400 feet, the best launch so far being 2,100 feet in the ' Prefect ' in a strong wind. The pilot was civilian instructor Baily and the winch driver, your scribe.

Thermal activity is good and during the summer some quite reasonable local soaring is done, the longest ' Sedbergh ' flight this season was one hour thirty minutes by the School's C.O., F/L Poulter, with civilian instructor Macdonald. While they were doing this flight the writer was able to come up and join them for rather over an hour in the ' Prefect,' and on landing the next pilot launched managed 50 minutes, this being civilian instructor Jenkins, an ex-A.T.C. cadet who was trained by us in the early days before he joined the R.A.F.

The best height ever reached was 5,600 feet by the School's C.F.I., P/O Wyatt, with Cadet Ellis who is now on pilot training with the R.A.F. in Rhodesia, and flying ' Harvards ' as a change from sailplanes. This season's best was 4,900 feet by F/O Watson with Cadet Fishe in our ' Sedbergh.' 3,000 feet plus is fairly common during the summer and nearly all instructors and some cadets have reached this height solo and dual on several occasions. Two of our cadets, Fishe and Samuels, flew in this year's National Competitions with F/L Piggot and our own F/O Watson, coming eleventh in the team entry with a ' Sedbergh ' which pleased our School a great deal.

HIGH STANDARD OF FLYING

The general standard of flying is now fairly high, mainly due to the excellent equipment available and the courses that have been run by the Home Command Central Gliding School at Detling, where any bad habits acquired in the old solo training days have been firmly eradicated ! All our instructors have spent between two and four weeks at Detling in the past eighteen months.

It is important when comparing results with Club

The ' Goevier ' Two-Seater

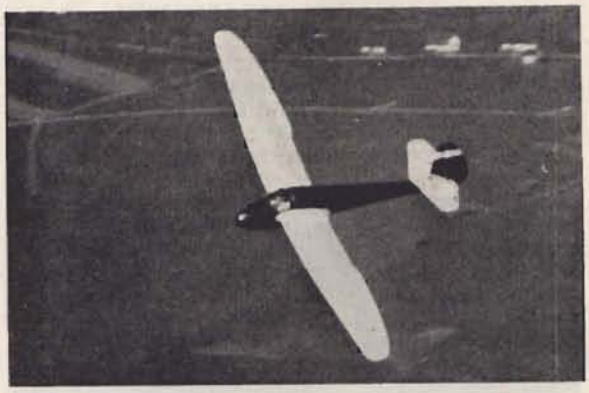
By Wolf Hirth

THE ' Goevier ' (designed in Göppingen as 4th type of the ' Sportflugzeugbau Schempp-Hirth from W. Hirth and Wolfgang Hütter in 1937). .. 4 = vier .. (say feer) was made in series of 10 since 1938 in Kirchheim-Teck (see map). 102 had been delivered, when we had to stop production and to start war material manufacturing in 1942.

The ' Goevier ' was not made for performance (competition), but for training. She should have the same sinking speed as the ' Grunau Baby,' and she has, but with two persons of course and a better gliding ratio.

The seats are side by side. Flights of more than 20 hours have been made. There are still ' Goeviers ' more than 10 years old in service, and in good condition. (As well as some 12 year old ' Goedreis ' —' Minimoas '—are still soaring from South Africa to Iceland and also in the United States).

The Wolf Hirth Company therefore, gives a guarantee of perfect workmanship (quality ?—I forget the right word), for 12 years. One of the most interesting tacts is the twice reaching 1,000 metres (3 000 feet), by winch tow of a ' Goevier ' with two persons in the British Gliding School in Reinschlen in 1947 or '48 ? The company in Nabern has orders in ' Goeviers ' for three months.



' Goevier ' side-by-side two-seater

DID YOU KNOW ?

THAT the first pilot to use a variometer was a Frenchman—Hemmerdinger, in a ' Thomas-Vauville ' glider, about 1923.

GLIDING AT 125 G.S.—*from page* 17

flying to remember that we only operate on Saturdays, Sundays and Public Holidays, and our soaring flights are normally kept short as a matter of policy to enable us to carry out our primary object of instructing cadet pupils.

However, it may be of interest to include a few figures for those who love them.

The instructors have roughly 945 hours of gliding time between them ; our School does rather over 4,000 launches per year. Almost all our pupils on leaving us join the Royal Air Force—the only exception being one to Sandhurst and one to the Royal Engineers.

We are always very pleased to see any of our old cadets, and exceptionally pleased if they come back as R.A.F. pilots, as this of course, is the objective of a high percentage of our pupils.

HOPES FOR 1952

Our hopes for 1952 remain about the same as for 1951, to train as many cadets as possible to a useful standard, we want to better our output if we can, but the weather is always the unknown quantity—1951 saw us grounded with a waterlogged airfield for two months.

We want to get a few more Silver ' C ' legs if these can be fitted in. and we hope for a ' T.31 ' tandem two-seater to ease the load on our faithful ' Sedbergh.' We are very keen to try instruction on this new type as it enables a pupil to go solo in the front seat without any change of trim, and with a performance about equal to a ' Tutor ' without having to change over to a ' Cadet Mk. I ' from a ' Sedbergh ' as at present, which is a desirable object though by no means essential.

From the foregoing it can be seen that we in the Air Training Corps Gliding Schools have come a long way from our early days, and that in addition to purely gliding down we can now soar up as well, which is a ' Good Thing.'

CORRESPONDENCE

COMPETITION

PERHAPS the most evident fact which we have discovered as the result of our ' Suggestion ' Competition is the surprisingly large numbers of otherwise before unknown readers who have filled our post box daily with their welcome letters and suggestions, valuable and otherwise—we have had one or two rather rude ones !

LACK OF INTEREST

As the Production Manager of ' Sailplane ' for the past fifteen months I have been very much aware of the seemingly lack of interest which the average reader takes in the contents of what, after all, is the oldest and largest circulating gliding journal in the world. Apart from the usual enquiry letters all criticisms and contributions have always come from the old hands whose names in the ' Sailplane ' offices and gliding circles have been household words since gliding began.

But now it would seem that the comparative newcomers are realising the important part which our paper plays in gliding affairs by stimulating interest and helping in general to further the interest of our grand sport.

In answer to the question **' Are you a regular reader of ' Sailplane ' ?** *all writers said that they were. One, however, stated that he was going to discontinue taking the magazine because—*' the general gliding news of late has become so inaccurate as to have no value whatsoever.'—**Mr. Henry Midwood, Highbury Grove, Clapham, Bedford,** *does not point out any of these ' inaccuracies.' However, we are sending him his copies* **Free For This Year** *and hope that he will let us know if he spots any more ' mistakes.'*

MOST POPULAR FEATURES

The six most popular features in order of preference seem to be :—

(1) Editorial (*nine readers in every ten put this ' top '.*)
(2) Stories of Notable flights, particularly those by amateurs.
(3) Technical Developments of Sailplanes, Design and Construction of machines.
(4) Guy Borgé's monthly articles on Gliding in France.
(5) News From The Clubs and items of interest from the Empire and clubs overseas.
(6) Royal Aero Club Certificates.

Bill Ivan's story **' 8 Miles High '** (May issue) *and ' Dick ' Johnson's story* **' 545 Miles in a Sailplane '** (October issue) *are voted* **BEST OF THE YEAR,** *and we are sending them each a special volume for* 1951 *as a souvenir.*

Here is a selection of letters with details of prizes etc.:

SIR,

I prefer (1) Articles by amateurs for amateurs, unless the subject calls for obviously very expert treatment.

(2) Items such as ' My First Cross-Country ' ; Technical articles on design and construction ; Reports on British and International outstanding flight's ; Small, but interesting bits of news about whats going on in gliding ; British Club News.

(3) The best story of 1951 is very difficult to assess ; I would vote for the report on the British Competitions, alongside the story of the new World Distance record.

(4) If I were Editor ? Well you asked for it, so here goes.

I would have many more articles by genuine week-end amateur pilots on local soaring, short cross-countries, aerobatics, general airmanship and met. Far fewer by the so called ' pundits ' who do the sort of flying we all admire but cannot hope to do ourselves because we lack the money, facilities and ability to live for weeks on a site waiting for the perfect day. I am interested up to a point of course, in high speed long-distance cross-countries, out and returns, etc., but as a week-end amateur who has not quite reached the 100 hours gliding mark, I want to hear far more about the sort of soaring I can do. Tips on thermal flying, how to get into lift without undue fumbling, how to get the best out of hill soaring on a given day, tips on reading the signs, both from the air and the ground as to where good lift is likely to be found.

I would try to get a series of articles going on instrument flying which is really essential in this country with our miserable cloud base height which often makes a Silver ' C ' climb from a 1,000 feet winch launch impossible without going into the cloud. In conjunction with this I would publish a full page map showing all the air lanes and prohibited zones, and keep it up to date month by month as amendments come in from the Ministry of Civil Aviation.

I would run a series of articles entitled ' Handling Notes on Every Glider and Sailplane in Use in the U.K.', written by a pilot for pilots containing all factual information on getting the best out of the type. I would do a series on gliding pioneers such as the late Robert Kronfeld, also a series on the clubs and sites in this country, their history, peculiarities, if any, of the site and a map on how to get there.

Finally, a series of articles on ' Know How,' Winch driving, retrieving, cable repairs, splicing, glider inspections and repair work, ground handling, etc.

That is enough to fill the *Sailplane* for many

moons, so what about it?—**P. Fletcher, Queens Avenue, Muswell Hill, London, N.10.**

We too would like to see more articles by the genuine week-end amateur pilots, but they seem unprepared to make any effort to put on record their doings. Consequently, only the achievements of the 'pundits' go down because record breaking flights, etc. call for special treatment on our part. The week-end pilots must make an effort to record their own doings and send them along—we'll do our part if they do their's.

Mr. Fletcher's suggestions were voted most valuable by our panel of judges and he receives **A Year's Free Subscription.**

A SIXTEEN-YEAR-OLD, SAYS—

DEAR SIR,

I am only sixteen years of age and a fairly new reader of *Sailplane*. I was introduced to it whilst on a gliding course with the A.T.C. in July. Since then I have been a regular and probably one of your youngest readers.

As a newcomer, the six features which I think best are: The Report on the British National Gliding Contests; '545 Miles in a Sailplane,' by Richard Johnson; 'Germany Glides Again'; South Australian Jubilee Soaring Contests; and Dynamic Soaring.

If I were Editor I would omit a lot of technical articles and include more stories like 'The World's First Home-built Schweizer.' I think this would stimulate the interest in home-built machines which I think is a good thing for the movement. Lastly, I would like to see more articles on Ultra Light Aircraft as I am very interested in this side of flying.—**M. Adams, 'Gelnshellach,' Green Lane, Shanklin, I.O.W.**

Our youngest reader (?) receives a special prize for his commendable effort of **A Complete set of 'Sailplanes' for last year in the Easibinder,** *advertised elsewhere in this issue.*

DEAR SIR,

The six best features in *Sailplane* are Editorial, articles describing notable flights, articles about technical developments of sailplanes, club news, articles on meteorology and R.Ae.C. Certificates. Best story of the year is the report of the National Competitions.

I should try to print more articles written for the benefit of *newcomers* to the sport—remember that few handbooks of gliding are now in print. Run a series describing the principal British Gliding Centres and Clubs, their size, available gliders and facilities, fees, charges, and so on. Omit papers about light aeroplanes as these have little or no relevance to gliding.—**Commander P. Bethell, R.N., High Tress, Dorking, Surrey.**

'Plain Man's Guide to Gliding' in this issue is for newcomers and other similar features are being arranged.

'DAKOTA' TRIP TO SPAIN?

DEAR SIR,

Several of my friends have ceased taking *Sailplane* because there is little to interest the comparative novice. Could we not have more on actual flying—the technique of steeper turns, flying blind in cloud: less technical data and comments on personages with whom we are unfortunately unacquainted—notably 'Steve'? I like your Editorials. Why not organise a Charter 'Dakota' to Huesca for the Gliding Contests. Many would like to attend and enjoy a Spanish holiday at the same time at half the cost of scheduled airlines. Please start from Birmingham!—**F/O L. Bond, 41, G.S. Ellesboro Road, Harborne, Birmingham.**

A 'Dakota' to Huesca sounds a grand idea. All those interested please write to 'Sailplane' before Feb. 29, and depending on support for such a project, we will see what can be done. Write now if you are interested.

DEAR SIR,

Your best feature is the Editorial. Include articles on building, repair, choice of materials, maintenance and inspection of gliders. News of individual or group building and modification of gliders. Review of glider designs suitable for home or club building. —**Peter Shaw, Vernon Road, Copnor, Portsmouth.**

Right Mr. Shaw, but who is engaged today in this country in group or home building?

MOST PEOPLE ARE TOO LAZY

SIR,

I don't particularly enjoy odd and scrappy accounts of ultra light groups, obscure intentions, nor editorial thunderings at the iniquities of the B.G.A.

I don't expect Gliding with a capital G to sweep the country, most people are too lazy and uninterested to make the effort.

You have put your finger right on the spot when you point out that there is scarcely one P.V. sailplane being built at home now. A shocking state of affairs.

Gliding will always be a sport with a small following, I believe, mainly because its 'spectator appeal' is so slight. Jolly good thing I think myself, so far there's been no need to differentiate between professional and amateur or any other nonsense of that sort.—**Lt. H. M. A. Hayes, R.N., H.M.S. Wilton.**

ANY COMMENTS FROM 'THE LAZY'?

DEAR SIR,

The best story of the year is 'Antipodean Diary,' by Veronica Platt, because it is a well told story of the small groups of industrious enthusiasts, who are the essence of unsubsidised gliding. I would omit over-technical articles, the 'Ultra Light Aircraft' from your title—petrol fumes and vibration are the antithesis of soaring. I would include any more overseas gliding news it is possible to obtain as this is the life-blood of your magazine. A review of past British sailplanes, with details (perhaps polar curves) of ones still in existence, i.e. 'Tern,' 'Gull,' 'Petrel,' etc. This review would almost result in details of types (and numbers built), first cost and date of manufacture of all the Slingsby sailplanes that have been built, besides telling the story of the world's foremost sailplane manufacturers it would be interesting to see how we in this country have advanced from building foreign types under licence. Finally, gliding manufacturers in the December issue could have been

printed in English. We are not all linguists—perhaps you aren't either.—**Flight/Cadet G. Bacon, Ravenscourt Gardens, London, W.6.**

Some very good suggestions, **A Year's Free Subscription,** *and, by the way, the list came late and there wasn't time for a translation—the writer isn't a linguist either.*

DEAR SIR,

The best story of the year is 'Soaring on the Famous Bishop Wave,' by F/L R. C. Forbes. Let's have more Club and A.T.C. news with photographs and less space on powered aircraft.—**F/O J. Dolman, Stroud Lane, Christchurch, Hants.**

Less space on U.L.A.A. would be no space as a very small percentage of 'Sailplane' is given to the achievements of what is an important organisation, small though it may be.

DEAR SIR,

Include more articles on meteorology, as applied to gliding; short articles and photographs of leading gliding personalities. Omit very technical articles and the monthly list of 'B' Certificate holders.—**C. D. Beehl, Twentywell Lane, Bradway, Sheffield, Yorks.**

Omit the 'B' Certificate holders is a strange request. Does anyone else want this done?

SIR,

Omit some of the Continental reports which record little detail of flying technique etc., and are therefore of little real value to the British enthusiast. Include articles on construction and repair of sailplanes. **A. D. Piggott, Willington Street, Maidstone, Kent.**

We regret being unable to publish all the letters received, and the 'suggestions' not published are nevertheless being carefully noted. During the coming months proof that you will get the type of features that you want will be evident. Although the Competition is closed do please continue to write and suggest.—Production Manager.

A. Fox-Green, Labour Control Service, B.A.O.R. 3, *has the last word. He says*: I vote the six best features in *Sailplane* as follows: Personal stories—especially record attempts; Editorial—I am partial both to pepper and vinegar; Chit-chat from clubs—the more widely scattered the better. (This line seems to have fallen off a bit lately) descriptions of interesting kites, technical articles and Guy Borge's articles. French gliding has a certain elan which is lacking in the less temperamental countries! If I were Editor, I would include rather more of the easy-to-read type of article; for the man who just likes to fly and doesn't care a hoot about NACA sections or Reynolds number. Omit—nothing. Everything interests someone, and everyone can always learn.

Modify—technical articles. Some of them although of interest to the 'pundit' take up too much space.

THE SAILPLANE AND GLIDER

TWENTY YEARS AGO

Throughout the coming year we are publishing in each issue under the above heading items from the pages of 'Sailplane and Glider' twenty years ago. This month all items are taken from the four weekly issues which appeared in February, 1931.

FLIGHTS OF 7 AND 8¼ MINUTES

ON February 21, 1931, a Saturday, Messrs. D. C. Smith and T. Graham Humby, who are members of the London Gliding Club, made flights of 7 minutes and 8¼ minutes duration respectively, thus qualifying for their 'C' certificates, as they landed above their start point.

Later, when in our reminiscent dotage, some, or one, of us writes a history of the British Gliding Movement, this Saturday will assume special significance. After nearly a year of hard work, bitter disappointments, and mistakes due to ignorance, two persons have been trained by a collection of amateurs to perform the most difficult of all kinds of aerial navigation—motorless flight—and this is the point of fundamental importance, these two sailflyers have received no tuition on power aircraft.

All their tuition has been obtained on motorless aircraft and their instruction from other members of the Club who, may or may not be power pilots, but all of whom are self-trained nor have they obtained their 'C' certificates in Germany.

The ambitions of a year ago have been justified, and we can forge even more strongly ahead now that one Club has proved our contentions that by Gliding, and Gliding alone, with no subsidy, it is economically possible to train our young men as pilots of no mean order. Well done London !

25,000 AT GLIDING EXPOSITION

According to an American contemporary, *The National Power Glider*, 25,000 people attended during the early days of last December the first National Gliding Exposition which was held in the ballroom of the Park Central Hotel, New York.

Now this is an idea that ought to have occurred to us before and we bring it very strongly to the notice of the British Gliding Association. First as a means of arousing public interest, secondly as a means of selling gliders, and thirdly as a means of increasing their own funds, which need is accepted as imperative.

Arousing public interest is a necessary task. There are 5,000 people interested in gliding out of a population of 48 million, something ought to be done about the odd 47,995,000.

The press has drawn, and will continue to draw attention to the sport, but photographs and news must be thrilling or exciting before they receive publicity. Thus our chief object is destroyed.

4,000 MILES—570 HOURS DURATION

The cabin monoplane glider *Texaco Eaglet*, in which Captain Frank Hawkes crossed the American Continent from San Diego, Calif., to New York between March 30 and April 6, 1930, has flown more than 4,000 miles, with a total duration of 570 hours.

This glider is not a sailplane in the usual sense of the word ; it was towed behind a power machine and cut loose over the various stopping places *en route*. It was then flown down with suitable manoeuvres. It is to be exhibited in The Smithsonian.

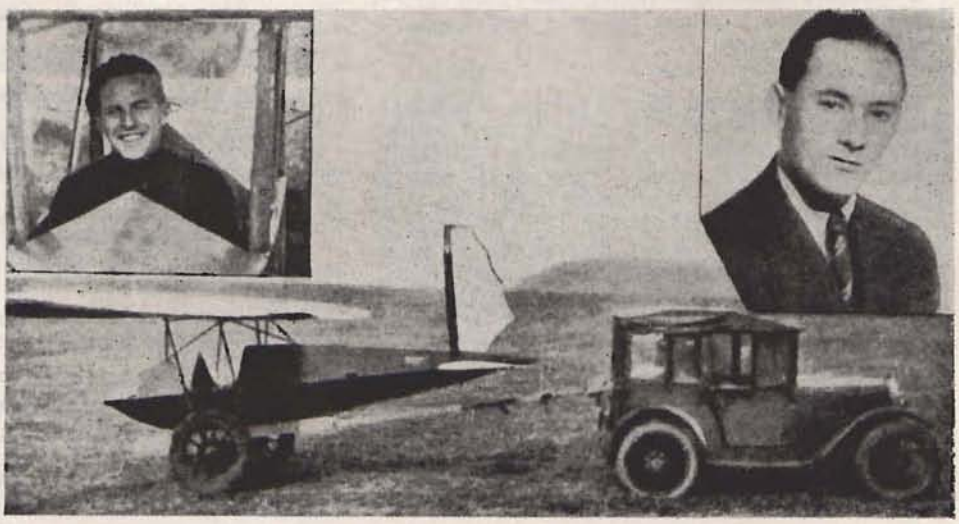
R.Ae.S., MANCHESTER BRANCH : GLIDER SECTION

The 'Zogling' built by members of the Glider Section of the Manchester Branch of the R.Ae.S., has now made about 300 flights. This Club is very active on Sundays at Woodford aerodrome from 11 a.m. to

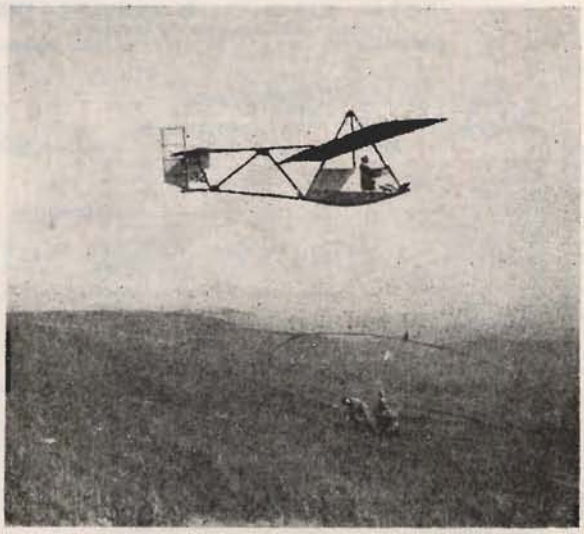
THREE ACHIEVEMENTS OF THE LONDON CLUB

Top left and right : Messrs. Humby and Smith, the first two 'ab initio' 'C' pilots, both trained by the London Club

Bottom: The 'Scud' designed by Mr. Baynes and flown by Mr. Male for over an hour recently. Both the latter are also members of the Club



The ' Darmstadt II '



An early trainer—the ' Pegasus '

dusk. Visitors will be welcomed.

Another machine is to be built shortly. There are about 150 members, but vacancies for a few still exist. Inquiries should be addressed to G. Moore, 10, Crafton Street, Rusholme, Manchester.

THE FIRST BRITISH SAILPLANE?

We hear that the new ' Dagnall ' high-efficiency machine has already passed its first trials and actually soared for some time, although the site was chosen more for convenience than as being in good soaring country. The tests were made to assure the designer of the airworthiness of his designs.

We gather that feelings are most sanguine about this machine and that the week-end, March 7-8, is going to see some developments in this direction.

A KENTISH ANNIVERSARY

Kent Gliding Club, which claims to be the oldest in the country by a few days, held its annual dinner on February 23 at the Royal Star Hotel, Maidstone. This was the anniversary of the first flight made in this country on a ' Zogling-type ' glider.

The machine was built in about five weeks by members of the club to the designs and under the supervision of Mr. C. H. Lowe-Wylde. Mr. Lowe-Wylde was also the pilot. This machine is still in service with the Kent Club and has done them yeoman service.

THE SOUTHAMPTON GLIDING CLUB

The Club had its first maishp on Feb. 22. The machine was landed heavily and the rear spar broke close to the landing wire attachment. The repairs were done by the members during the week.

4,500 ON WINCH LAUNCH

IS THIS A RECORD?

DEAR SIR,

On Sunday, Dec. 9, 1951, one of our instructors, with a pupil, reached a height of 4,500 feet above ground level while still on a winch launch?

Many flights were made during the day to a height of above 4,000 ft.

The Sailplane was a Sedburgh ' T21B '. The winch had approximately 6,000 ft. of cable.

The weather conditions, fine, surface wind, west at 25 knots, 2,000 ft. wind 280° 45 knots, 5,000 ft. wind 290° 55 knots.

On a previous occasion we managed 3,700 ft. in a ' Grunau ' whilst still attached to the cable.

We have a barograph trace of most of the flights, and wonder if the height of 4,500 ft. made by F/O L. Griffiths is a record for a winch launch.

W. VERLING,
166 G.C.,
R.A.F., Hawkinge,
Kent.

Dates for World Competitions

Dates have been fixed for the International Championships in Spain from Monday, June 30 to Tuesday, July 15 inclusive. The venue is not yet known.

ROYAL AERO CLUB CERTIFICATES

(Issued under delegation by the B.G.A.) DECEMBER, 1951

CERTIFICATES 'A' .. 74 (14177 to 14250 inclusive)
'B' .. 47
'C' .. 8
Silver 'C' —
Gold 'C' —

'B' CERTIFICATES

No.	Name.	A.T.C. School or Gliding Club.	Date taken
11674	Derek Palmer	No. 26 G.S.	16.12.51
12773	Norman S. Holmes	No. 49 G.S.	22.12.51
13280	Colin Hill	No. 24 G.S.	2. 9.51
13418	Rhys S. D. George	College of Aeronautics	14.10.51
13976	John T. Bowcott	No. 49 G.S.	2.12.51
13993	Peter G. Flower	Bristol G.C.	2.12.51
14002	Dennis Milburn	No. 27 G.S.	19. 8.51
14014	Peter J. McCarthy	No. 186 G.S.	16.12.51
14177	David L. Bordett	No. 168 G.S.	15. 7.51
14178	John Dunlop	A.T.C. Dyce	9. 7.51
14179	Alexander J. Reid	No. 5 G.S.	13.10.51
14180	Archibald Steele	Aberdeen G.C.	12. 8.51
14182	Hugh Hilditch	Surrey G.C.	14.10.51
14183	Reginald J. Salisbury	No. 49 G.S.	7.10.51
14186	Douglas Walter	R.A.F. College, Cranwell	30. 6.51
14187	Dennis J. Carey	Scottish G.U.	2.12.51
14188	William A. Llewellyn	No. 168 G.S.	2.12.51
14192	Douglas G. Mould	Bristol G.C.	3.11.51
14194	Leonard S. Pegg	R.A.F. Fassberg	13.10.51
14195	Ernest A. C. Yell	Wahnerheide G.C.	19. 8.51
14196	Cyril C. A. Atkins	Scharfoldendorf	16. 6.51
14197	Peter Shaw	Portsmouth G.C.	14.10.51
14198	Michael P. Knutton	No. 24 G.S.	11.11.51
14199	Barry Claughton	No. 64 G.S.	16. 8.51
14202	Lewis E. Clack	Bristol G.C.	10.11.51
14203	Richard Horsfield	No. 23 G.S.	25.11.51
14204	Barrington C. D. McCarthy	No. 87 G.S.	2. 9.51
14207	Keith E. Bonney	No. 123 G.S.	11.11.51
14208	Raymond Eggleton	No. 123 G.S.	2.12.51
14213	Geoffrey D. Crane	No. 168 G.S.	21. 8.51
14214	Barrie M. Richardson	No. 106 G.S.	2.12.51
14215	Peter E. Collier	Bristol G.C.	3.11.51
14217	Donald E. Watts	No. 123 G.S.	16.12.51
14218	Patrick M Collidge	Luneburg G C.	18. 4.51
14219	John Tully	No. 45 G.S.	16. 9.51
14220	Eric Warsdale	No. 45 G.S.	10. 6.51
14225	Adrian S. H. Fisher	No. 123 G.S.	2.12.51
14226	Aubrey M. Speeiy	No. 123 G.S.	2.12.51
14227	Thomas C. B. Spencer	No. 45 G.S.	18.11.51
14228	David Vaughan-Games	No. 130 G.S.	2.12.51
14229	Rex A. Minter	R.A.F. Hamelin	6. 5.51
14230	John F. A. Graham	R.A.F. Wahnerheide	30. 7.48
14236	John Downes	Royal Engineers F.C.	13.12.51
14242	Michael H. Marsh	No. 84 G.S.	23.12.51
14245	Margaret I. Freestone	R.A.F. Scharfoldendorf	3. 2.51
14246	Trevor J. Chapple	Dartmouth Cadets	20. 8.51
14247	Brian W. Lavender	No. 84 G.S.	23.12.51

'C' CERTIFICATES

1638	Thomas Anderson	No. 26 G.S.	16.12.51
11954	Leonard F. Keena	London G.C.	20.11.51
14160	Derrick Abbott	London G.C.	27.11.51
14194	Lennard S. Pegg	R.A.F. Fassberg	2.12.51
14196	Cyril C. A. Atkins	R.A.F. Scharfoldendorf	8. 7.51
14229	Rex A. Minter	R.A.F. Hemeln	2.12.51
14230	J. F. A. Graham	R.A.F. Wahn	18. 4.49
14245	Margaret I. Freestone	R.A.F. Scharfoldendorf	7. 6.51

Sailplane and Glider

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