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June—July 1966



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REPORT ON THE SCHLEICHER AS-12

By COLIN PENNYCUICK

RUMOURS of a fabulous new glider have been leaking out of Poppenhausen for some time past, so when Stuart Waller and I visited the Schleicher factory in March we inquired for news of it. We were introduced to Herr Dipl.-Ing. Gerhard Waibel, who told us about it (in excellent English) and showed us the first prototype, which made its maiden flight in January.

The new machine is called the AS-12, and is a hotted-up (*sic*) version of the D-36. Gerhard Waibel, as a student at Darmstadt, was one of the co-designers of the D-36, along with Wolf Lemke and Heiko Friess. He has now joined Schleicher's design staff, and is in charge of developing the AS-12.

Structure

The structure is basically the same as the D-36, i.e. inner and outer glassfibre skins with a layer of balsa in between. The balsa layer is two-ply in the AS-12, which gives the wing greater torsional stiffness than the D-36 wing, which has a single-ply filling.

At 640 lb. (including radio) the equipped weight is almost the same as that of the D-36, although the span has been increased to 18.3 metres. The wing is also stronger, and Waibel feels he has perhaps been over-cautious in allowing for a maximum *rough air* speed of 200 km/hr. (108 knots). In a static bending test, an AS-12 wing failed at a load equivalent to 12.5 g, although the test was carried out at the rather high temperature of 54° C. at which the strength of the glassfibre is considerably less than at normal temperatures. The AS-12 is by no means the ultimate in lightness and strength, we were assured.

Aerodynamics

The very high performance (some numbers given below) is due to a combination of several features, of which the main ones are:

(1) Specially developed flapped wing sections designed by F. X. Wortmann. The profile drag is about 20% less than that of the NACA 6-series sections used on the Ka-6 and the Skylarks, for instance.

(2) Full-span, camber-changing flaps. An ingenious linkage pushes the ailerons up and down with the flaps, whilst not affecting their differential movement controlled by the stick, thus avoiding any discontinuity of spanwise lift distribution at the flap-aileron junction. Use of the flaps allows the wing to be flown at a relatively constant angle of attack over a wide speed-range, so that sections with a deep, but rather narrow, low-drag "bucket" can be used to good effect at all speeds.

(3) Very high aspect ratio (25.8) combined with rather thin wing sections (14.4% at the root). This can only be achieved with either glassfibre or metal construction, and Waibel thinks that among the designers of metal gliders only Schreder has reached standards of construction comparable with the D-36 and the AS-12.

(4) Low-drag fuselage, over which laminar flow is maintained back to the wing root.

The effect of raindrops spoils the advantage of the low-drag sections, but does not take away the high aspect ratio, the full-span flaps or the low-drag fuselage. Thus the AS-12 is proportionately rather less affected by raindrops than ordinary high-performance gliders.

The wheel is large (it is a Ka-7 wheel), unsprung, and, of course, retractable. In the landing position it projects well below the fuselage.

A major difference from the D-36 is the absence of airbrakes. Designing effective airbrakes into a thin, low-drag wing is an extremely thorny problem, both structurally and aerodynamically, and the D-36 is the only one of the "really" high-performance gliders which has airbrakes. One of its three designers (Friess) designed the airbrakes only, while the other two designed the rest of the aircraft. Besides being awkward to design, airbrakes increase the landing speed, which is on the high side anyway.

Instead of airbrakes the AS-12 has an "all-or-nothing" tail parachute, which can be streamed but not jettisoned, and is stowed in an extremely neat housing under the rudder. This arrangement is

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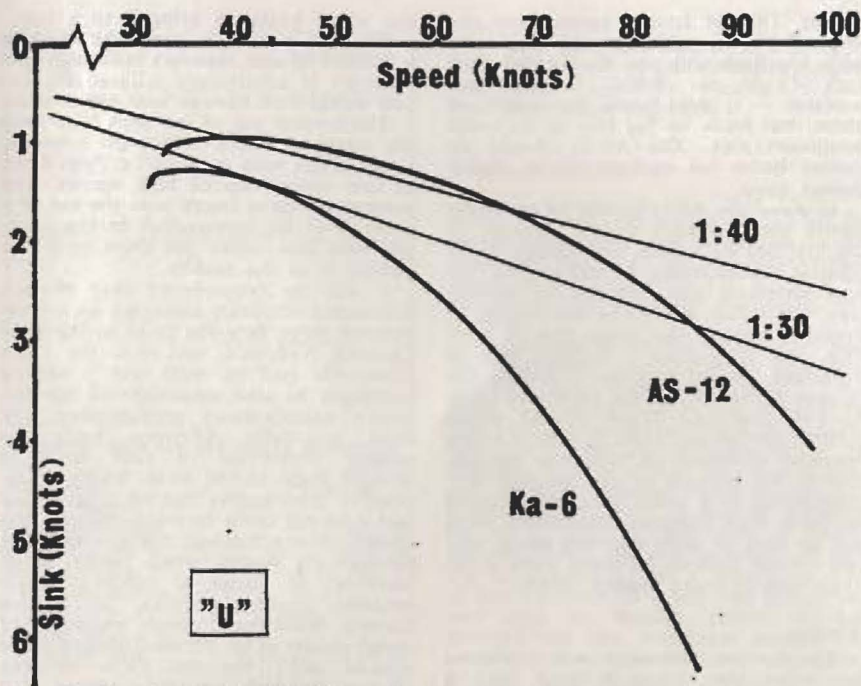
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Calculated polar for the AS-12 at a wing loading of 6.0 lb./sq.ft., compared with the Ka-6 at 4.2 lb./sq.ft. The latter is about the same as a Skylark 3.

not as lethal as it sounds, and depends for safety on good sideslipping characteristics (see below under "Flying").

Performance

As the AS-12 has only been flying two months there has obviously not been time to get a measured polar. Three points have been obtained in comparison flights with the D-36, showing generally similar performance. The minimum sink is about 1.5 ft./sec. (at 39 knots), and the best gliding angle 47:1 at 51 knots. The glide ratio is better than 40:1 in the range 40-70 knots. Putting it another way, although the stalling speed is only 2 knots greater than that of a Ka-6, you have to go at 57 knots before you reach the Ka-6's minimum sink, and at 86 knots before you degenerate to the Ka-6's best gliding angle.

As the British soaring pilot is known to take a somewhat morbid interest in

the circling performance of ultra-hot ships, I questioned Herr Waibel closely on this point. The rather high wing-loading of 30 kg./sq. metre (6.0 lb./sq. ft.) at normal flying weight inevitably results in a somewhat larger radius of turn than would be obtained in, say, a Skylark 4, in spite of the flaps. However, the minimum sink is much less than that of conventional gliders. As has been explained by Nicholas Goodhart (Swiss *Aéro-Revue*, Jan., 1966), and more elaborately by C. D. Cone (Swiss *Aéro-Revue*, July, 1965), thermals are stronger up the middle than round the outside, and consequently an aircraft with a large turning circle needs a lower minimum sink if it is to achieve the same rate of climb as one with a smaller turning circle. How much less the minimum sink must be depends on the "thermal slope", i.e. on the rate at which the lift drops off with increasing

radius. This, of course, varies from one thermal to the next, but the D-36 was able to climb with the Ka-6's and Skylark 4's in our British thermals last summer — it went round the outside of them, but made up for this by its lower minimum sink. The AS-12 should do rather better on account of its higher aspect ratio.

In wave, the AS-12 should be markedly better than ordinary gliders, because of its low sinking speeds, and ability to fly against strong winds. In hill-soaring, the low minimum sink remains an advantage, but a fast aircraft is less nimble at weaving around the crags than a slow one, and also gives a rougher ride in turbulent air, on account of hitting the bumps harder. When the D-36 was taken to the Alps and flown around peaks 4,000-5,000 metres high, a disconcerting increase of radius of turn was noticed, due to the increase in true airspeed corresponding to a given indicated airspeed at these high altitudes. Mountains were apt to rush up with alarming speed, and were more difficult to shear away from than hills of more modest height.

Flying

The landing technique was explained to us by Herr Edgar Kremer, who is simultaneously the firm's chief test pilot, the builder of the prototype AS-12, and Alexander Schleicher's son-in-law. The approach presents no problems, as the gliding angle can be increased to 1:15 by sideslipping, and is very easily controlled. The sideslipping approach gives a good view of the landing field in spite of the reclining position of the pilot. The tail parachute is streamed only on straightening up for the round-out, and increases the gliding angle to about 1:7. The parachute is not jettisonable, as a landing without it would be distinctly fraught — what with ground effect, the aircraft would float for miles.

Kremer has a technique up his sleeve for use in case the parachute should jam, but has not plucked up courage to try it yet. In slow flight, he explained, the aircraft drops about 200 feet if you suddenly move the flaps from fully down to fully up. One normally lands with the flaps fully down, and if the parachute failed to stream, one would round out, select flaps fully up, and hope the aircraft would sit down hard enough for

the wheel brake to bring it to a halt.

The tail parachute could be used as a method of spin recovery (although spin recovery is satisfactory without it), but one would then have to land rather soon.

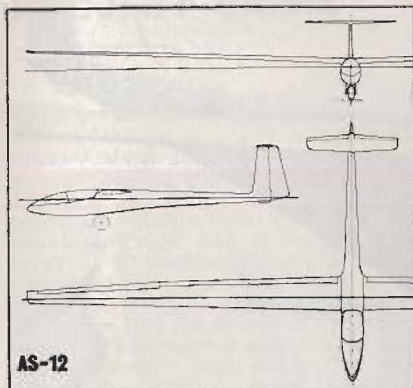
The normal use of the flaps is to keep the angle of attack within the low-drag range of the wing sections, i.e. flaps down at low speeds, up at high speeds. The correct setting is found with the aid of a spirit level set fore-and-aft in the cockpit—you just adjust the flaps until the bubble is in the middle.

It will be remembered that Waibel, previously relatively unknown as a competition pilot, flew the D-36 in the 1964 German Nationals, and won the Open Class. He had to work out a special technique to take advantage of his aircraft's extraordinary performance, the most noticeable difference being the greater proportion of time spent in straight flight in the D-36. Every cross-country pilot knows that on a good day one does not circle in every thermal, but cruises slowly through the ups and fast through the downs, which results in an increase of *achieved* gliding angle between circling thermals. In normal thermal conditions, adroit variation of speed results in an achieved gliding angle around 60:1 for the D-36 between circling thermals, and it is getting near the point where one does not need to circle at all. In fact, Lemke once flew about 120 km. over the Black Forest without circling: the day was almost windless, with no hill lift, no fronts, and no thermal streets in the usual sense — just biggish areas of thermal lift. On a 160-km. out-and-return in the 1964 competitions, Waibel rounded the turning point, took one thermal, and then flew the rest of the 80 km. homeward leg without circling.

The ordinary method of calculating cross-country speed, based on circling in thermals and flying straight through dead air in between, does not really apply to gliders like the D-36 and AS-12, as one does not fly them in this way most of the time.

Rigging

The 18.3 metre wing is in two pieces, each weighing 185 lb. Each wing root locates on two pins sticking out from the fuselage, and the spar ends are locked by two longitudinal pins — an



AS-12

Technical data for the AS-12 prototype

Span	60.0 ft.
Wing area	140 sq. ft.
Aspect ratio	25.8
Equipped weight	640 lb.
Max. A.U.W.	915 lb.
Wing loading	5.4-6.4 lb./sq. ft.
(normal 6.0 lb./sq. ft.)	
Calculated performance at wing loading of 6.0 lb./sq. ft.:	
Minimum sink	0.95 kt. at 39 kt.
Sink	1.94 kt. at 73 kt.
	3.89 kt. at 96 kt.
Best gliding angle	47:1 at 51 kt.

extremely neat and simple arrangement. Flaps and ailerons are worked by push-rods, and connect by simple snap-on ball and socket connectors.

Production Plans

Three prototypes are being built, of which the first has almost completed its works test flying, and is shortly to be submitted for a C. of A. This should come through in time for Kremer to fly it in the German Nationals this summer.

No definite plans for production will be made until the technical problems involved, and the potential demand, have been fully assessed. It is not self-evident that AS-12's would sell like Ka-6's or hot cakes. Besides offering rather a different type of flying, they would cost two or three times as much as conventional gliders. This is mainly because an AS-12 takes a long time to build, and this limits the rate at which gliders can be produced from a certain amount of factory space. It is *not* true that, once you have the moulds, gliders can be stamped out like cornflakes packets — on the contrary, more hand work goes into an AS-12 than into a conventional glider. The wooden glider is not, it seems, quite obsolete yet.

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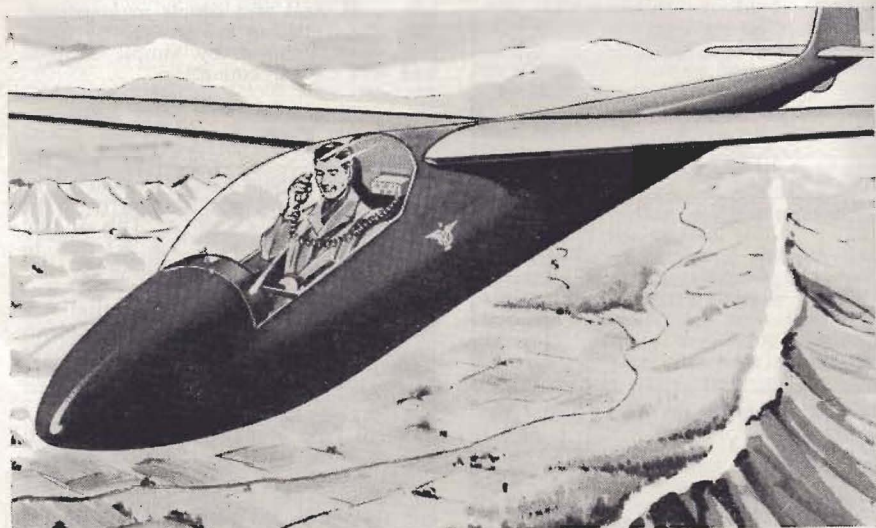



74 BASEMENT
ECCLESTON
SQUARE · SW1

AS this issue is published the Aviation Art Society will be staging its first Art Exhibition in a marquee from 12th-15th May at the Biggin Hill International Air Fair. The accent will be, of course, on powered aircraft but there will be pictures of gliders as well. The Fair is said to be going to have a really super flying and aerobatic display lasting 1½ hours each day. Derek Piggott will be doing the gliding programme.

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

- May 18 F.A.I. Tour of Europe, by John Blake.
- .. 25 Further Thoughts on Aircraft Preservation, by David Ogilvy.
- June 1 Laurel and Hardy feature film.
- .. 8 1966 National Championships, by the Champion.
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PROJECT SIGMA

AT the B.G.A. Annual General Meeting this year the first news was released about an exciting plan to build a world-beating glider in Great Britain. Formerly, the virtues of the commercial production gliders built in this country, coupled with the skill of our pilots, ensured us a place at the top in World Championships. But now, such is the degree of technical sophistication in the opposition that the British commercially-made machine cannot expect to be both a world-beater and within the cash resources of private owners. Since this situation is likely to get progressively worse, it is clear that a completely different approach is required and this is Project Sigma.

Project Sigma is an ambitious plan to set up a design team to produce a special maximum-performance glider specifically for use by a British pilot in the 1969 World Championships. It is expected that the machine will have variable chord plus variable camber wings; if necessary such constraints as a fixed CG position and less-than-perfect handling characteristics will be accepted in order to maximise cross-country performance. Obviously this is likely to result in a glider which is not suited to production even for those willing to pay the inevitably high price; there is no doubt however that there will be an enormous amount of technical fallout which will benefit future production designs.

To be successful, Project Sigma must overcome three major problems:—

MONEY.—It is estimated that the project will cost about £30,000. This sum is obviously beyond the capability of the gliding movement and an appeal to British Industry is therefore being made.

CHIEF DESIGNER.—The technical success of the project will depend on finding the right man for this job. An advertising campaign has been started to try and find him.

TIME.—The three years from now to the 1969 Championships is just about sufficient if a start is made now; but this, of course, depends on finding the Chief

Designer and the money in the near future.

Clearly Project Sigma will require strong and purposive management if it is to be successful. To ensure this the following members have volunteered to serve on the Project Sigma Board:—George Burton, Mike Gee, Nick Goodhart, Frank Irving, Beverley Shenstone, Bill Slater, Cedric Vernon, Lorne Welch, Ken Wilkinson.

The B.G.A. has appointed Nick Goodhart as Project Manager.

H. C. N. G.

SUMMER FLIGHT

*Smaller and smaller,
far below,
nestles the village.
Amongst the trees;
beside the wandering, glistening
stream;
flashing in the sunlight
as the silent bird circles slowly,
dreamily,
with wings outstretched,
way above.*

*Higher and higher
he soars.
Gently circling in the summer sky.
In the moving, restless air;
alive and warm.
Racing upwards to the heavens;
to the snow-white mountains
towering against the blue.*

*Further and further
he goes. Gliding away
beyond the shimmering horizon,
in the gentle, morning breeze.
Straight as the path of an arrow;
leaving the village to nestle,
amongst the trees,
in search of lift again.*

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GATE-CRASHING A WEATHER SATELLITE

IF cloud photographs from weather satellites could reach glider pilots a lot sooner than they do at present, they might prove of practical use. The *New Scientist* (10th March, p. 622) relates how Mr. Wendell Anderson, an engineer with the Radio Corporation of America, New York, made his own apparatus for getting the pictures:

"Starting with an old receiver, he provided himself with the extra apparatus for turning signals into pictures at a cost of only £90 as compared with the £10,000 cost of the average receiving station, and used it to show that he could produce pictures comparable in quality with those produced with professional equipment.

"Most expensive of the extra items was a magnetic tape recorder to store signals from the weather satellite. Arrangements then had to be made to convert these signals into photographic negatives, feeding them line by line as in television on to sensitive film. For this purpose he made himself a projector

with an argon electric light bulb and a microscope which cost him £5.

"To supply the means of presenting the film to the projector, he cut the ends off a kitchen rolling pin, bought two small electric motors for £7 and harnessed them to the roller so that one moved it slowly horizontally and the other turned it up at the end of each line, with a rubber band to ensure smooth movement. Then he set it working in the dark to do the photography, afterwards developing and printing in his own darkroom."



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KIMBERLEY KALEIDOSCOPE

By Les Graham



IT is dawn, the twenty-sixth day of December, one thousand nine hundred and sixty-five, and six bronzed young men, the great round sun of this virgin day glinting in their bloodshot eyes, flex limbs, stretch, pull forth and set course for the far south-west. It is a scene to delight the eye, as each takes a last quick swig from a hip flask, for this is Rhodesia's manhood at its best, the cream of the crop, the ultimate, the finest gathering of men and machines off to clash swords, pit their wits and drink to a standstill the best the world has to offer.

"Close convoy," we said, mutual help on the road and all that . . . five hundred yards passed and we were out of sight and sound ne'er to meet again except



for an accidental glimpse here and there in the next twelve hundred miles . . . oh well! It was just an idea and every man to his own technique. Jimmy and Ken would go with all taps wide open for hours then stop for a full-course lunch, suitably washed down with tankards of foaming ale; Paul and I were plodders, never stopping and forever swigging coffee, smoking and chewing, while Gus and Alf had the most phenomenal bad luck with the Chev overheating when approaching all and every roadside inn!

As a newcomer to Kimberley I had serious doubts about our navigation late on the second day, a howling gale, a landscape like the back-side of hell — with nothing but sand, sand, sand . . . surely Kimberley should read Kuwait, and those shapes looming large through the swirling sands — are they not touring

Taureg looking for throats to slit slickly and silently? All was well, however, and the following morn dawned sparkling and uplifting, the sort of morning, in fact, which would remind me so well of my uncle, a tweedy English gent and a sportsman in the noble tradition: "A beautiful morning, Harold," he would say, "a beautiful morning, let's go out and kill something."

And so to Kimberley, our Mecca. Being Rhodesians with that fine inborn sense of fair play to one and all regardless of colour or creed, we very soon commandeered a complete school block to ourselves which we retained to the very end. Here we remained safely insulated from the world of gesticulating Germans, hairy South Africans and crusading Englishmen, and all was well on the Rhodesian Front.



And now there came to pass a time of great heat and tribulation; we drank and perspired, perspired and drank; at night mosquitos would come to drink our pitifully thinned and ill-spared blood, and scorpions on the tin roof of our humble dwelling-place would dance a fandango of death; in the depths of our misery we would pray, and pray again, for opening time. There also began the "War of the Gliders", and for a thousand years we pulled gliders, pushed gliders, took gliders to pieces, put gliders together again, pushed them,

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pulled them, covered them, uncovered them, washed, polished, pushed, pulled . . . each morning the Air Traffic Controller shouted at the Marshal, the Marshal shouted at the pilots, and the pilots shouted at the crews, the crews kicked passing dogs and dogs in passing snapped at bystanding Bantu, and all the while little aeroplanes with fans in front would sand-blast one and all with a hail of grit and dust.

The very ether would be torn apart with hysterical shouts in German and English . . . Achtung! Achtung! Skylark, Skylark . . . Look out number 42 . . . Phoebus, Austria . . . five metres . . . eben sieben, bitte kommen . . . 110 knots . . . ten sink . . . Jacobsdal . . . going in . . . pushing off.

Morning briefing, all bustle, beautiful Barbara the Blonde Interpreter and the difficulties of keeping one's mind on



the subject while misinterpreting Barbara and "actual" John giving us the actual lapse rates.

Day after day intrepid aviators glid, glode and glided high aloft far and wide; nothing daunted, they went away into the blue, some to stop where they landed and others to land where they stopped. And others yet who went on and on until the ground came up to

meet them . . . at diverse times and at sunset too the "birds" would come home to roost with wings of scarlet and gold at last light.

And then evenings to the coolth and comfort of the hostelry while our horses in the silence champed the grasses of the motel's neon-lit floor; much goodly banter here, ice tinkled merrily in glasses, eyes glittered and old ale quaffed by the quart; 1966 arrived in a blur and a deluge.

On occasions our birds would alight in the sticks . . . there was the night on which our farmer guide stopped ahead to say the road here was loose sand . . . ah yes, he is right, we are in it, stuck — three feet deep! The moon like a burnished salver in a star-studded sky looked down upon us while camel-drawn caravans carrying cargoes of cinnamon, castle and cheap tin trays moved slowly across the horizon; the hour was late, what were we doing here and what was it all for?

Then three desperate men, grovelling in the oasis of Hertogville for cold beer, in vain, a man could die there . . .

Other flashes from the kaleidoscope . . . the night when a well-known "lady-bird" went AWOL and the irate parent searching the billets of the Rhodesians for his loved one; a torch flashes in Alf's



face: "Have you seen my daughter?" says aged parent, "it's half-past two." From the depths of a drink-sodden sleep Alf blinks his poached eyes, "Are you sure it's half-past two?" says he!

Later, myself 'phoning from the offices of the D.F.A., the Prime Minister, the police and a certain villain Mr. P..... for news in vain of dear daughter while aged parent, chain-smoking, plods back and forth, back to the billets at 04.30 hours and, you guessed it, our little girl had been doing embroidery

while waiting for Daddy since midnight.

* * *

The night of the choir when, suitably lubricated, the six Rhodesians reached the heights of celestial singing; even the Germans had to admit that such rendering of "Silent Night" had not been heard since a Christmas truce was observed on the Western Front in 1914.

* * *

Poor old Alf who hadn't "been" for two weeks and whose condition preceded even the weather as a conversational opening gambit.

And then suddenly it was all over, great deeds had been done, the land blossomed and the harvest was rich in gold and diamondry.

* * *

Speeches and prize-giving, merry-making and back-slapping, the captains and the kings steal away into the night and silence reigns over all. The earth still scorches and the dust devils still rage, but nobody now is interested except perhaps that hawk circling high above, and as for him he must now find his own thermals until the great white birds gather again.



Fuller

(Reproduced with acknowledgements from the Salisbury Gliding Club Newsletter.)

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CUT THE CACKLE—OR ELSE

By MIKE GARROD

"YAK Yak calling Natterbox. Do you read me? Over."

"Natterbox calling Yak Yak. Yes — I read you — strength five. How do you read me? Over."

"Yak Yak calling Natterbox. I read you about strength five too. Er — things aren't very good up here, and I may have to land in a few minutes — er — but I'll try to hang on. Did you get that? Over."

"Natterbox calling Yak Yak. Sorry — I didn't get your last message — you were interrupted by someone else. Could you send your message again please? Over."

"Yak Yak calling Natterbox. How do you read me now? Over."

"Natterbox calling Yak Yak. I get you strength five now. Could you send your message again? Over."

"Natterbox and Yak Yak. For Chrissake shut up! Over and out!"

If you, the reader, were unfortunate enough to own a radio set at the 1964 Nationals it is more than likely that you heard a conversation just like this!

Chatter chatter! Yackity Yack! To anybody with only a limited experience of radio telephony it was painful, and for the pilots that had important messages to send it must have been very frustrating indeed.

It's now 1966, and the Nationals are upon us. In 1964 there were 51 gliders with radio, mostly on 130.4. This year the chances are that almost every glider will have radio, and unless something drastic happens very quickly nobody will get a word in edgeways.

What's the cure? As I see it, there are two ways, but first and foremost pilots and crews must cut back drastically on the length of messages. This can be achieved by inventing a code system which means much, but says little. My own system was developed and used during the last Nationals, and I can recommend it as a basis. (You may, of course, think of even better methods — which is just what is wanted!) The following three sections give the form it takes, though the code words are not those I use personally.

A. MESSAGES TO THE CREW DECLARING THE PILOT'S INTENTIONS

Message in Full

I don't intend to cross the line yet.

Am positioning myself to cross the line.

Am crossing the line. Advise me if I have not been observed, over.

Am coming back, and will cross the line again.

Am coming back for another launch.

Am on my way. Start out from Lasham.

Am on final glide into Lasham.

*Transmitted
Code Word
Sitting
Moving*

*Starting
Restart
Relight
Ignition
Finishing*

B. STATEMENT OF FLYING CONDITIONS, AND CONFIDENCE

Message in Full

Conditions are excellent, and the chances of landing in the next half-hour are non-existent.

Conditions are good, and the chances of landing in the next half-hour are remote.

Conditions aren't all that good, and can't be certain of remaining airborne during the next half-hour.

Conditions are poor, and may have to land soon.

I am committed to land in the next five minutes.

*Transmitted
Code Word*

Confidence One

Confidence Two

Confidence Three

Confidence Four

Confidence Five

C. POSITION REPORT

There are many ways of doing this. Here are two examples.

(1) Grid reference or numbered squares.

(2) Distance from a predetermined point.

Now two examples. Suppose Yak Yak is at 1,800 feet near Lasham and is climbing quickly. The pilot decides he'll cross the line after he leaves this thermal.

"Natterbox. Natterbox. Yak Yak. Moving. Moving. Confidence three. Over."

"Yak Yak. Natterbox. Roger. Out." Now suppose Yak Yak is five miles short of his first turning point (which he has called Zulu), but he's struggling at 1,000 feet and conditions have deteriorated.

"Natterbox. Natterbox. Yak Yak. Zulu minus five. Zulu minus five. Confidence four. Over."

"Yak Yak. Natterbox. Roger. Out."

Check for yourself how long these messages might have taken. 15 seconds? Certainly no more! Compare these with the earlier conversation, which said much and achieved absolutely nothing.

Now some further points, which may be evident from the above transmissions, which should be followed to keep the ether as clear as possible.

(a) The pilot should give his crew's call sign twice, his own once, then pass his message immediately *without confirming* that contact has been established.

(b) The crew, having heard a message,

will do no more than acknowledge receipt.

(c) Crews should be on a constant listening watch.

(d) Crews should pass no messages whatever unless absolutely vital.

(e) The pilot has a watch, and can check his own start time! (This business of telling him the time he crossed over is entirely unnecessary.)

(f) Crews must be well briefed before flight, then left to make decisions on their own.

(g) All gliders should have a "press to transmit" button. A transmit switch should entail automatic confiscation of equipment until it is modified (some-one's ears are burning!).

(h) Some relaxation of the above rules should be permitted towards the end of a soaring day, but only if it's obvious that most pilots have landed and have switched off.

And finally — a request to the organisers. It would help considerably if the two frequencies available were allocated evenly to the competitors, thereby reducing the load on either frequency to a minimum. And what about penalties for regular offenders? It shouldn't be difficult to guess what is meant by this!

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SAILPLANE DEVELOPMENT CENTRE

By B. S. SHENSTONE

ENGLAND has long been the home of the amateur who in the past has often accomplished much original thinking and outstanding work. Inevitably as research and development progress, things get a bit beyond the amateur, and that is just exactly where some of us think the R. and D. of British sailplanes has landed. Amateurism is no longer enough; we need some professionalism in addition.

Generalisations are a waste of time unless something is done about them. A number of people think that the time has now arrived for a British Sailplane Development Unit or Group to be created and set to work. What should it do? Where should it do it? There is no use in starting in a big way, so the most necessary work should be the starting point. This most necessary work should be systematic and technically sound sailplane performance measurement. It is well-known that such work has in the past been done extremely well by the F.F.G. (D.F.S.) in Munich under Hans Zacher. The shape of development in Germany has caused Zacher and his colleagues to spend more and more of their time on the development of powered aircraft, so that it is likely that sailplane work will diminish rapidly over the next few years. Work on this line has also been done in Poland, but is not as widely publicized as Zacher's work. Here in England we have therefore now an opportunity to establish a Group which is recognized as technically sound and independent of manufacturers. A good reputation could rapidly be built up and the Group might well be swamped by requests to test sailplanes from all over the world. An initial success in this single line of endeavour would lay the foundation for a wider effort which would then branch out into actual development in the direction of drag reduction, working from the sound performance measuring basis already achieved.

As a natural development of drag reduction, the development of aerodynamically acceptable external surfaces must lead up to structural research and

development, and before long the whole area of sailplane development would be actively encompassed. That is what should be done.

The place to do it would not be under the auspices of a manufacturer or an association like the B.G.A., but could well be undertaken by a University. Such a University should have facilities for flight testing, for strength testing and for wind tunnel testing. This points almost inevitably to the College of Aeronautics, Cranfield, where in fact ideas are taking shape right now and there are plans for such a Sailplane Development Centre.

To start it off, certain essentials are needed. Money to start it moving, the right people to use the money, and well-balanced guidance directed towards producing an absolutely sound technical organization which should achieve an international reputation. All of these requirements are very difficult, but unless they are all fulfilled, we may be thrown back in the lap of amateurism, a delightful and charming but unfortunately quite outdated idea for this sort of work.

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A BETTER DEAL FOR THE SOLO PILOT, PLEASE!

By ALAN PURNELL (Chairman, Surrey Gliding Club)

THE organization of the Clubs at Lasham does not appear to be well known. To the rest of the Gliding Fraternity we are "Lasham" and that's that, and I feel that, once the arrangement between the Lasham Gliding Society and the "Soaring" Clubs has been pointed out, the clear advantage of the scheme for the solo member will be apparent.

The Lasham Gliding Society provides all launching facilities and only accepts pupils who, when trained to a little after solo standard, graduate to one of the "Soaring" Clubs. Soldiers join the Army Soaring Association, Poles join the Polish A.F.A., and the remainder join the Surrey Gliding Club. I am going to point out the raw deal that solo pilots usually get and what a Club can do to alleviate by adopting a policy of trying to make the solo pilot's lot a happier one.

Because we do not run Lasham, the Surrey Club Committee is completely free from worrying about the state of the drains or where the next drum of launch cable is coming from, and can therefore concentrate on providing its members (all solo, of course) with a fleet and equipment worthy of the membership (192). There is no urge to spend the income on a new car park or a bar extension, however important they may be to the site as a whole.

Not all Clubs are large, but the

remedy is to amalgamate, think big, and take special care of the solo membership. A flourishing band of soaring pilots will automatically attract new members into the Club eager to be trained to enjoy the delights of solo flying. A large Club can afford more of everything from tugs and auto-tow cars to staff instructors and spare instruments. If you can attract a professional repair firm, the benefit is considerable. I should also mention that a large Club can organize dual cross-country flying, soaring instruction, dual and solo field-landing practice, blind-flying instruction in both a two-seater and a Link trainer, and a series of lectures on magnetic tape or live ones by really experienced pilots about their specialities.

To take an example, have you considered just how important an aero-tow is to the average solo member? He must make the fullest use of his flight because there are other eager pilots ready to jump into the cockpit the moment he lands. He is only allowed one try, so he must succeed in soaring first time. So he really wants an aero-tow simply because a 2,000 ft. tow will give him *four* times the height to find a thermal than from an 800 ft. wire launch (allowing 400 ft. for circuit planning). Of course an aero-tow costs more, but it is worthwhile from the pilot's point of view. So — the more tugs the merrier. There are four at Lasham — enough at a pinch even if one goes u/s, whereas at a club where there is only one tug, aero-towing must stop. I should hasten to point out that I am not decrying wire launches for anyone who wants one. "Getting away" from a wire launch gives more satisfaction than from an aero-tow, but even if he does not contact he will not grumble because he actively chose his method of launch.

A further advantage is in the realm of week-day flying. Everyone knows that there are five week-days to every two week-end days and that the best flying days are never at the week-ends.

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The Club income benefits enormously even if the fleet is not fully utilised. Members can spend part of their annual holidays at the site and many can rearrange their working days to get days off in the week to enable them to avoid the inevitable week-end crush.

A large Club means that more members are available on any given day to ensure a smooth launching system. This means that members can be launched almost when they like — resulting in less frustration. In thermal conditions it is worthwhile stopping two-seater launching in order to get the fleet of solo sailplanes into the air, where they can stay while the two-seaters resume circuit-bashing. The Club wins out in the long run since the pupils will realise that the same will be done for them later. I know of a Club where members are actually prevented from flying during the week so that public course flights can continue unimpeded. This is a disastrous policy which can only inhibit expansion if not lose members. It is so easy to get into the vicious circle of employing a staff instructor to run courses to pay for the running costs

of the two-seater and the salary of the said instructor, who has week-ends off anyway so he cannot help the members at all.

How do the solo members progress in your Club? Is the system that all pilots must progress from the Tutor to the Prefect to the Olympia to the Skylark? What happens if anyone of those is damaged? There is chaos because the group of pilots on that damaged glider have to fly the previous one in the list. Not only can the pilots of that previous machine not get promotion but there is much more competition for "their" machine. The solution is to keep the number of different types to a minimum. In the Surrey Club we have two basic groups only — the Skylark 2 group (with 4 machines) and the 18-metre group of two Skylark 3F's and three Skylark 4's (which we consider identical from the point of view of promotion). Damage to one Skylark 2 would not seriously reduce the chance of a Skylark 2 pilot from flying. Approximately two-thirds of the club are eligible to fly the 18-metre machines, promotion coming about the 50-hour level. Furthermore, it is bad for members' morale to purchase machines which only a small number of pilots are allowed to fly.

We now come to the point about getting aircraft repaired when damaged. It must be repaired as quickly as possible, almost without regard to cost. Delay means less income and more frustration, and the loss of even one member when the subscriptions are due for renewal usually exceeds the extra cost of getting the repair done quickly. Of course it is costly at the time, but it pays off in the long run.

When are your C. of A.'s done? Are some of them done in the summer merely because the C. of A. runs out then? Get it done in the winter when it is less likely to be needed, even if it means two C. of A.'s for the aircraft for one year — it will be back in phase thereafter.

Express disappointment in the standard of the instrumentation in your Club — turn-and-slips which do not work, outdated and sluggish variors and positively misleading total-energy systems. A machine put u/s because there is no spare A.S.I. could easily lose soaring

fees equivalent to the cost of a new instrument, even discounting the ill-will generated by members on seeing a patently undamaged sailplane sitting on the ground. We, in the Surrey Club, make sure we keep several spares, and furthermore to use modern, reliable types. Again, we standardize on good quality types such as PZL Vario and K. and H. turn-and-slips. All instrument panels, electric wiring and layout are identical for each type of aircraft in case interchange is necessary. Aircraft expected to do a large amount of cross-country flying (our Skylark 3's and 4's) have artificial horizons, and electric variors with audio attachment fitted as standard. Remember, if a thermal is found when the pilot gets low and is looking for a field, that sailplane continues to earn soaring fees and the pilot does not suffer the indignity of sitting in a field during the rest of a highly soarable day. Even if your sailplanes do not leave the vicinity of the site, a good variometer system can allow longer flights, and that means both that the aircraft spends less time on the ground waiting for a launch and that the pilot will be more satisfied and will come back for more. Poor instrumentation in this increasingly scientific sport of ours is the nearest thing to a ha'p'orth of tar I can imagine.

Does your Club insist on keeping all its fleet at the home site all the year round? Persuade them to allow groups to take a machine to another site or enter a competition. Variety is the spice of life. We regularly send sailplanes to Regionals, and half the fleet flies in the Nationals. We take expeditions to hill sites like Portmoak in the autumn to get Gold C heights in wave, and we expect to welcome S.G.U. members to Lasham in the summer to run round the local Gold C triangle to complete their Gold C's. The Surrey Club completed 11 flights exceeding 300 km. in 1965, of which seven were closed-circuit flights—the "milk run" being the Frome-Banbury triangle.

This apparently uneconomic policy of ours, which you think can only lead to financial ruin, in fact made a surplus in 1965. Eight sailplanes flew over 2,000 hours from about 3,000 launches — an average of 40 minutes, summer and winter. In May the average was

70 minutes. Our record of cross-country mileage was a little hazy, but must have exceeded 8,000 miles. Our rates were by no means outrageous at between 6 and 18 shillings an hour with the first half-hour free, and annual subscription of 10 guineas (of which three go to the Society).

As to the future, we shall continue to replace the Skylark 2 fleet with more modern machines such as the Skylark 4 and perhaps Darts if they turn out to be suitable for Club use. We have introduced an experimental week-day booking scheme whereby a member or a group of members can be a private owner for a week. Note that the sailplane is still available at week-ends for the members as a whole, so we can both ease the congestion at the weekend and allow members to have a real gliding holiday for that week.

To sum up, I have tried to make Club Committeemen aware of the needs of the solo pilot, now sadly neglected, and also to make them realise just what benefits to the club and site will accrue if the solo band of pilots is a flourishing one. I have illustrated the results of applying such a policy at Lasham with the Surrey Gliding Club and I can only urge solo members of all Clubs to badger their committee into remodelling their thinking (if necessary) and into devoting more time and a fairer share of the cash available to their needs.

BLACK THERMAL SOURCES

TESTS have been made in Arizona which show that a black asphalt surface in the sunshine may reach a temperature of 19°C. above normal surroundings. It has been suggested that a large area of black asphalt near the coast would induce a sea-breeze circulation, leading to cloud formation and rain.

Calculations suggest that the optimum length would be 35 miles inland from the shore, with a width between 1/10th and 1/5th of the length. One acre of asphalt should produce three acres of arable land.



Suitable large-scale test-sites would be in Libya, Venezuela, or W. Australia, at a cost of about £1,000,000. It is thought that the cost would come out less than a pipeline or de-salting or tank-car transport (these are in descending order of cost).

The expert on the subject is Dr. James S. Black, Senior Research Associate of Esso Research and Engineering Co., in

New Jersey.

References

Black, J. F. & Tayny, B.L., 1963. The use of asphalt coating to increase rainfall. *J. Appl. Met.*, 2, p. 557-564.

Black, J. F., 1965. Weather modification by means of asphalt coatings in heated areas. *Austr. Met. Mag.*, No. 49 (June), p. 59.

J. E. SIMPSON

B.G.A. NEWS

B.G.A. Vice-Presidents

We are pleased to announce that John Furlong and Basil Meads have accepted Council's invitation to become Vice-Presidents of the Association.

Both John and Basil have served on the Council for the last 18 years: John as Chairman of the Flying Committee, and Basil as Treasurer of the B.G.A. Roger Barratt of the London Gliding Club has taken over from John Furlong, and Bill Mackworth-Young from Basil Meads.

World Championships

It has been announced that no World Gliding Championships will be held in 1967. Possible venues for 1968 are Poland and Yugoslavia, but no definite offers have been made so far.

B.G.A. Telephones

We have just installed a two-line telephone exchange in the office. Until the end of 1967 you will still be able to get us by dialling SULLIVAN 7548, if you are in London. But you can now dial us

direct from anywhere in the UK by dialling 01 799 7548.

Silver C Legs

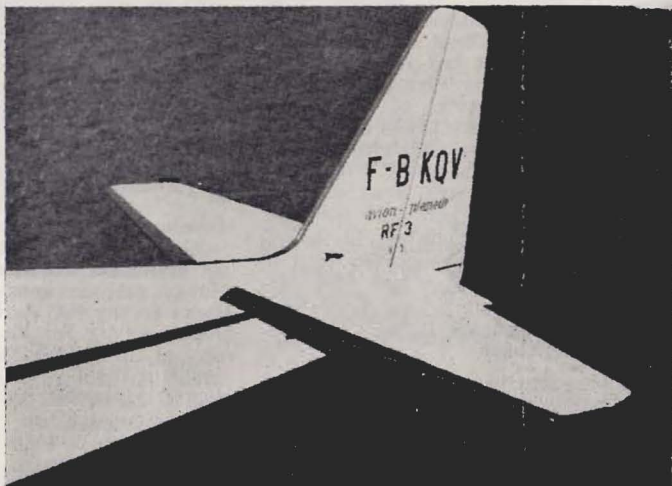
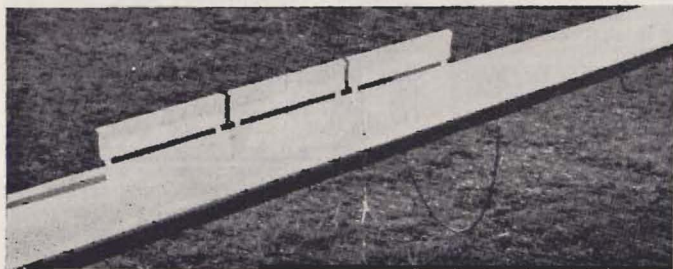
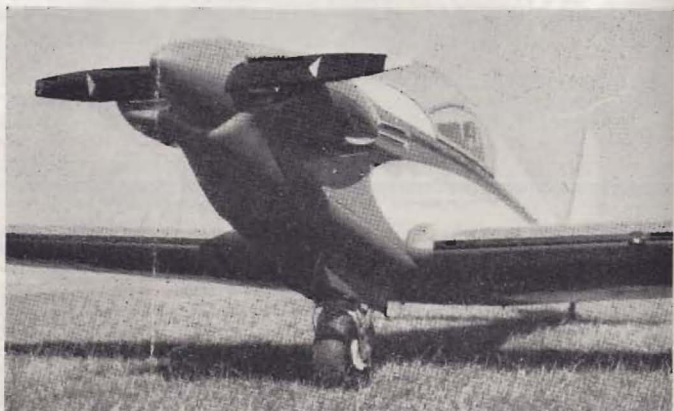
Please note that claims must be forwarded within 6 months of the flight. This rule has been in operation for many years, but some official observers do not warn applicants for Silver and Gold C legs, when signing the form. In case of query this rule enables the Flying Committee to rely fairly reasonably on people's memories, and for missing pieces of paper to be found and/or signed.

Coach and Capstan Instructors' Courses

There are only a dozen places left now for individual instructors on 1966 season courses. Applications should be made direct to the B.G.A. If the applicant is hoping to try for his Instructor's Category at the end of the course, he should apply to the B.G.A., in advance of the course if possible.

Polish Nationals

These will be held from 29th May to 12th June at Leszno.



THE AVION PLANEUR CAME TO LASHAM

By DEREK PIGGOTT

I make no apologies for writing so much about the Fournier RF-3 "Avion-Planeur", since it is the first really satisfactory aeroplane of its kind I have had the opportunity to test.

Whether gliding clubs should actively encourage this kind of flying raises questions of a rather ethical nature. However, the reactions of more than twenty experienced instructors and pilots at Lasham indicate that they want interesting and challenging flying of any kind, and that this aeroplane can provide just that.

* * *

AS the makers say, the RF-3 is not a motorised glider but a high efficiency light aircraft with an exceptional gliding angle. This enables it to be flown as either an aeroplane or a glider. It is not an awkward compromise between the two, nor is it the last word in powered gliders, but it does seem to be an excellent little aeroplane for cheap, recreational flying.

Hitherto, I had always considered that the enjoyment of gliding was inextricably connected with the silence, and the knowledge that nothing mechanical was helping the glider to stay up. However, on several flights in the Fournier I found myself thermalling with just the same interest and excitement as in a glider, even though in reality the thermal was too weak for any glider to use and I had offset most of my rate of sink by using some power.

The potentialities of this kind of training for competition pilots was borne out on one desperate scrape when a very weak thermal was picked up at about four hundred feet. I found no difficulty in the decision to leave the throttle alone and finally, when I left the thermal some way downwind of the field, I found myself rejoining the circuit just as if I had been in a Skylark all the time.

If the correct power setting is found, the Fournier can be flown round the circuit with exactly the same speed and loss of height as any chosen glider. For example, at 50 knots and 1,800 r.p.m. the glide is the same as the Dart.

The control response and general feel is very similar to that of the Swallow except that there is no pre-stall buffet to act as a stall warning. The stall is gentle with one or other wing falling away but with no marked tendency for a spin to develop. A stall warning light is fitted, and it is interesting to see it acting as a thermal indicator when lift is encountered flying at low speed.

The engine is stopped by switching off the single magneto switch, closing off throttle and then stalling the aircraft. It is quite difficult to get the propeller to stop, and it certainly could not happen accidentally. A valve lifter is fitted to help restarting the engine in flight. This proved very disappointing for, although the engine restarted reliably on every attempt, the loss of height was some 600 feet and the dive involved flying within a few knots of the Placard speed. Since this is probably well above the Rough Air limit, it did not seem a safe or satisfactory way of restarting the engine except in smooth air. This difficulty limits the aircraft to local soaring within reach of a landing ground or to soaring above 1,500 feet. It is advisable to trim the aircraft into the dive and to have the throttle completely closed for restarting. When the engine bursts into life there is a noticeable nose-up change of trim, and with the speed still rising it is as well to level out gently.

I made a number of measurements of the rate of sink gliding with the propeller stopped, using a stop-watch and altimeter. These varied from an average of 395 ft./min. at 54 knots (I.A.S.) to 310 ft./min. at 49 knots. These were not very accurate tests, and the high rates of sink compared with the makers' hand-out may be due to the state of the finish, possible differences in the propeller, and even to its exact position during the glides.

The significant fact was that this gliding performance was quite adequate for soaring on a good March day at Lasham, and that I was able to climb to cloud base several times in the half-an-hour of true gliding I enjoyed.

Circuit flying with the propeller stop-

ped is rather like a circuit in the Cadet flying 10 knots too fast! (For those people who can still remember the Cadet.) However, the airbrakes are reasonably effective so that it is quite easy to spot-land.

During the approach and landing, the view ahead is rather similar to that of a "cooking" Olympia and the landing is straightforward provided that it is held off fully so that the touch-down is with the wheel and tail together. The bungee-sprung undercarriage makes an alarming clatter on rough ground and can rebound the aircraft into the air if a tail-high landing is made, or if the touch-down is with little or no air-brake and on bumpy ground.

The take-off and climbing performance are both very good. The ground run in still air is about 150 yards, and this is greatly reduced by any wind. The best climbing speed seemed to be 54 knots, and the measured rate of climb was 500 ft./min. with the wheel down and 600 ft./min. with the wheel retracted. Furthermore, by the time that the Fournier had reached the edge of the airfield, it was always well up, often 800 to 1,000 feet, so that the noise nuisance is much less than a towplane. In cruising flight it is quieter than the average light aircraft, and when the throttle is almost closed to simulate the

performance of a glider, it is difficult, from the ground, to tell if the engine is still running.

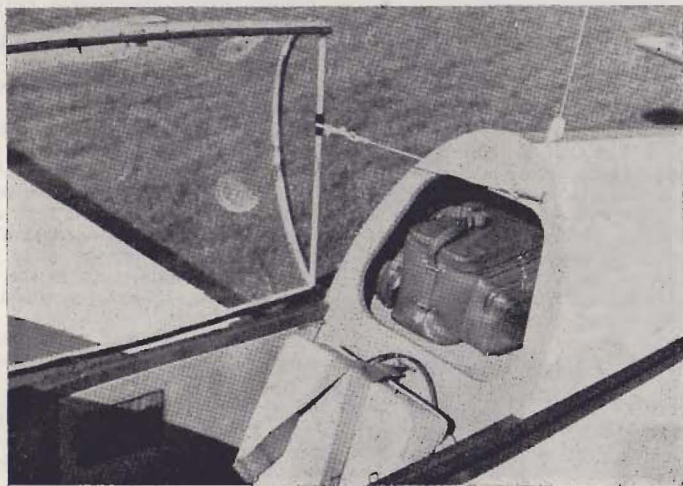
Also outstanding is the very low fuel consumption. The makers claim, and there is no reason to doubt them, that the consumption at about 50 knots is only $\frac{1}{4}$ gallon per hour. Yet at 97 knots the consumption is only 2 gallons per hour.

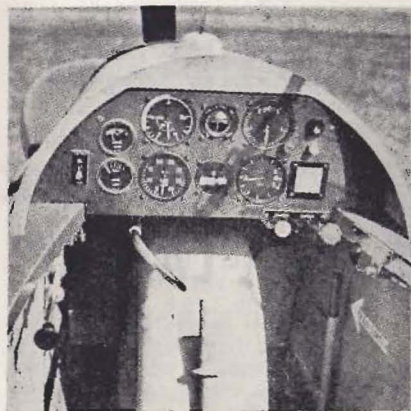
Against this very low operating cost, the price in this country of about £2,500 seems high until you take a closer look and notice the beautifully made cowlings and canopy and the high standard of the construction and finish.

Of course, the overall running cost will depend on the utilisation and other factors, but it does appear to be an entirely satisfactory aeroplane for pottering about, dabbling with thermals and exploring those waves which always seem to form just out of reach from the gliding site.

Details

All-wood construction with fibreglass cowlings, spinner and fairings. One-piece wing removeable for repairs or transport. Single main wheel has a parking brake and retracts forward into a space between the pilot's legs. Steel spring wire hoops mounted at about half span, balance the wings while taxiing. The tail wheel is steered through the





rudder. Air brakes are fitted to the top surface of the wing only. They are reasonably effective but do not restrict the diving speed.

ENGINE: 39 h.p. at 3,600 r.p.m., single ignition VW Rectimo (Volkswagen converted). Starts very easily hot or cold (use choke when cold). Two-piece fibreglass cowling removes to give easy access to engine. Access to magneto difficult or impossible without removing engine (relatively simple operation). Engine r.p.m. restricted to about 3,100 by propeller during the climb.

FUEL TANK: 6½ gallon tank mounted just behind the fireproof engine bulkhead with a rod type of fuel gauge in the filler cap visible from the cockpit. Approximate endurance 2½ to 3 hours safe.

COCKPIT: This is large enough for the tallest glider pilot, is comfortable, well finished and well arranged. The blown or moulded canopy opens sideways and has a clear-vision window and a very sensible and rugged canopy catch.

Working from left to right, the controls include: air-brake lever, throttle knob with friction nut, valve lifter knob, fuel cock knob and choke knob. The elevator trimmer, undercarriage lever and undercarriage safety lock are on the right hand side. In addition, there are two adjustable cold air vents down by the seat.

INSTRUMENT PANEL: The usual A.S.I., altimeter, turn-and-slip, compass and vario, plus oil temperature, oil pressure

and an engine speed indicator (r.p.m.)

On the left hand side are two large warning lights. The red one is operated by the stall warning detector on the leading edge and the other amber-coloured one lights up in conjunction with an electric buzzer if the air-brakes are unlocked with the undercarriage up.

Behind the cockpit is a large space for luggage or equipment.

TAXYING: The steerable tailwheel, wing skids and wheel brake make the aircraft completely independent of all help in winds of at least 15 knots, probably more. The monowheel arrangement seems an unqualified success.

OPERATION OF THE UNDERCARRIAGE: This is simple and positive. After lifting the small safety catch on the locking lever, the lever is pulled back. This releases the undercarriage which swings free. The main operating lever can then be pulled right back and the wheel is locked into the up position. As the wheel locks up, the doors close and the locking lever snaps forward into the locked position.

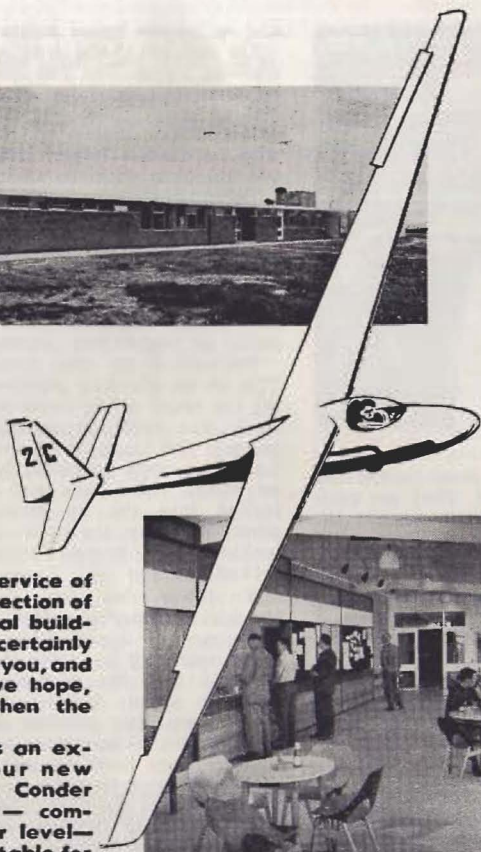
To lower, the safety catch is lifted, the locking lever is pulled back and the undercarriage again swings free. The main operating lever can then be pushed forward and the locking lever snaps forward again, locking the undercarriage down. The position of the locking lever and the reassuring thump as the undercarriage locks up and down give a clear indication that it is locked.

GENERAL HANDLING: The rate of roll from 45° to 45° is about 3 seconds and there is ample rudder to prevent any adverse yaw. The rudder loads during the climb are light and the controls felt similar in feel and effectiveness to an average 15-metre glider with the exception of the elevator which is rather lighter. It is stable, easily trimmed and pleasant to fly. There is a slight nose-down change of trim as the air-brakes are opened and a very slight nose-down change when the wheel is lowered. Full power produces quite a large nose-up change of trim, but this can be held quite easily even if the aircraft is trimmed fully tail-heavy.

Care should be taken manoeuvring at high speeds as the elevator is very light. It is advisable to trim forward a little during dives and particularly when restarting the engine in flight.



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HOW NOT TO OPEN AN A.G.M.



By
Philip
Wills

IT was Chris Riddell who started it. We had decided to have our Annual General Meeting for a change at Harrogate. "Now," said Chris, "I would like the chairman to land in a sailplane, on the Stray, on the Friday afternoon. I could arrange for him to be met by the Mayor, the Press and T.V." Cries of horror from the chairman, at the prospect of adventuring the air in the frozen North early in British March, were rapidly steamrollered.

So Friday, 11th March, saw Kitty and me in the Standard motoring up to Doncaster, where Jack Speight and partners were to put at my disposal my old Skylark 4, and Jack Tarr was to tow me in his Auster most of the 36 miles from there to Harrogate, for release and landing on the Stray, a large open common nearly in the middle of the town.

It started off a nice sunny early spring day, but when we reached M1 and let her out, the tendency of the car to pull right was so pronounced that we stopped to check the tyres. As soon as I got out I realised the tyres were all right: the trouble was due to the gale, blowing from the north-west on the ground, but up above almost from the north—in the teeth of our forthcoming Doncaster-Harrogate track.

As we went on north, we started to run into local rain and even snow storms. At one moment the sky was grey and ragged and overcast to the horizon;

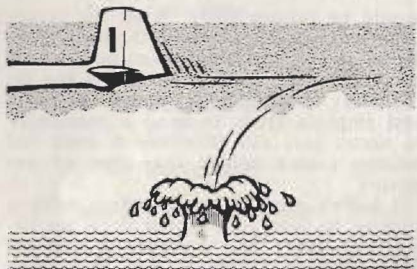
five minutes later the storm would have blown past and overhead was blue again.

Arrived at Doncaster airport, we found the Skylark 4 team huddling in the shelter of their trailer, in the lee of the hangar, and unanimously decided it wasn't on. We repaired to the clubhouse and rang up Chris at the Crown Hotel. He was quite adamant. "I've got the Mayor and nearly 200 people here, and it's quite good outside—surface wind moderate, upper wind 30 m.p.h., sunny".

The red blood of the British Gliding Association aroused, we went back to the trailer, almost crawling against the gale on our hands and knees, lined it carefully up and down wind, and with infinite precaution extracted the bits of the Skylark from it. Twenty minutes later, we had successfully kept all the bits in the same county, and she was rigged minus a safety-conscious wing tip.

We were all chattering-toothed with cold, emphasised by about a hundred small boys in football shorts with goose-pimpled legs who suddenly arrived to watch the fun. I crept into the cockpit, and Jack Tarr cautiously taxied up the Auster; we were hooked together, and off into the teeth of the gale.

The Skylark took to the air almost before the wheels of the Auster started to turn, I dropped my own wheels, and



about ten minutes' hard grinding brought

us over the far edge of the aerodrome. We were off.

We levelled off at 1,500 feet, in order to keep some semblance of forward movement, and set off for Harrogate. At 70 knots on the clock Doncaster crept slowly backwards, but the tug ahead was leaping up and down as if it was a float signalling the onset of a giant fish. And about 10 miles north of the town, the fish took the bait good and proper. With a frenetic surge the tug ahead disappeared far below, out of sight. I banged open the airbrakes, but a rapid look down showed the Auster nearly vertically below, the rope just tightening to pull its tail straight up. Consigning the Mayor, the entire British Press and all other organs of publicity to a determined secondary role, I pulled the release. The rope fell away. At least we weren't going to get into the papers in the wrong way.

I turned round to see if there was any hope of getting back to the airfield — there wasn't. So I selected a ploughed field beside the main road running north from Doncaster, and descended vertically onto it. The Auster had turned with me, and spent a few minutes circling round overhead, then disappeared to the south. Blessing the detachable tips of the Skylark, I waited for the first helpers from the road, took one tip off and laid it up-wind on the ground, then set off for the 'phone.

I didn't have any idea how to sort out the situation. By now the party would have left Doncaster airport — there



would be no-one there. Alas, the reception party would have left the Crown Hotel at Harrogate and even now would be freezing to death waiting for me on the Stray. I could only 'phone the hotel and implore them to send a messenger in arctic furs out to summon back the waiting crowd before they died of exposure.

I hadn't gone 50 yards before, with a toot of its horn, the trailer drew up beside me. They had hooked up and set forth through Doncaster for Harrogate, and to their amazement saw the Skylark

in a field 20 yards from the road. Two minutes later Kitty arrived in the Standard, with Peter's wife. She had been driving north along the by-pass when she suddenly saw the Auster, trailing a forlorn unoccupied rope behind it. Then she watched it fly off to the east and circle round and round. Realising the form, she drove towards the centre of the circle.

The logistics of the situation were now simplified, but quite complicated enough. The glider, its trailer, two cars and five people were together in a field five miles north of Doncaster. The Auster had disappeared southwards; probably Jack Tarr would take it back to safety at Yeardon Airport, Leeds, since Doncaster airport would be empty. Chris, the Mayor and the Press were still presumably on the Stray. But the glider wheels? Where were they? "Oh," said Jack, "Peter set off ahead of all of us with those, in a fast car, so he could get to the Stray in time to help you get the Skylark off the field."

Only the few who have had to get a Skylark 4 which has dropped its wheels



out of a ploughed field in a gale and into a trailer designed to take it with its wheels on, will know what we went through in the next half hour — but we did it.

Then, exhausted, we agreed that Kitty and I should dash on to Harrogate in the Standard, to see if we could arrive in time to defrost the Mayor and the Press, whilst the trailer and team set off for Doncaster. Peter's wife said: "When you find him, tell him to come back to Jack's, where we will stay the night." But we never did.

For Peter-with-the-wheels was rushing north along the by-pass (quite unnecessarily — he could have kept up with us on a bicycle) — when one of those things happened which make all gliding

enthusiasts so dislike the internal combustion engine. For these devilish devices stop as soon as they run out of fuel, which is what happened to this one.

He got out and started running for the nearest garage. Then he trotted. Then he slowed to a walk. By the time he reached the first garage he was just able to gasp out that he wanted two gallons of petrol in a tin. They gave it to him. Then he found he had no money. In spite of his utmost pleadings they took it back.



By the time he reached the second garage his plight was so pitiable that they gave him his two gallons, on condition he left his watch as a pledge. So by the time he reached the Stray he didn't know how late it was, but it was dark and all the houses were locked up, so he deduced it was too late, and disappeared into the night.

Meantime, about an hour and a half late, Kitty and I had reached the Crown Hotel to find, to our enormous relief, Christopher, Mayor and Press all thawing out over cups of tea. Jack had 'phoned the Crown, who had sent a page complete with St. Bernard out to the Stray and passed our message.

Never have we been photographed so much for not doing something. And never have I stood up so nice a Mayor.

But one has to confess that only in gliding can so much confusion be produced in so short a time. Next year we shall walk.

It was nothing



Fuller

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Oh to Keep 'em Flying

FIRST CANADIAN FEMININE DISTANCE

By CHRISTINE PATTINSON

HAVING failed in my first attempt to attain Silver C distance, I was determined, weather permitting, to try again the following week-end. It was still early in the season and those unfortunates like myself, who didn't own private aircraft, were not very keen to fly cross-country yet, although the weather was superb.

From one point of view, though, the weather was a little too superb! The private owners were ready to fly early that morning, and being old hands at the game, with solid reputations for always completing closed circuits, they had already acquired all the available crews. Since club ships didn't come with partners, and as a girl, without a car, who had just let down those for whom she had regularly crewed in the past, I found myself in a predicament. By noon, having ingratiated myself sufficiently with an old flame and after promising not to go too far, I was able to set off.

After being in such a fluster all morning, I was too exhausted to be my usual nervous self, and when I eventually came off tow, found that I was quite relaxed. I had made up my mind earlier to fly south to Cornwall, more or less with the wind and over good landing fields. However, after setting off three times from 3,500 ft. and being blown back across the Ottawa River northeast to Grenville each time, I decided—three-quarters of an hour later than I should have—to change plans and fly E.N.E. towards Joliette, which was obviously more downwind than Cornwall at that time.

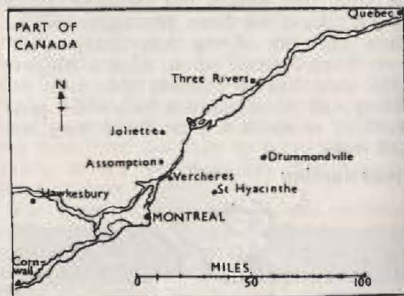
The clouds were streeting and producing good lift, but the wind continually blew me over the wooded foothills of the Laurentians—unhealthy country for an experienced pilot, let alone one as inexperienced as myself. From cloud-base at 5,000 ft. I veered away from the hills towards the North River, encountering heavy sink as I crossed from one street to another, and had several tense moments wondering if I would make it to the next lift. At this time I

must have been averaging at least five miles per hour!

Twenty miles out of Hawkesbury I made for the nearest cloud in front of me, which was still quite large, but obviously dissipating, and to my consternation found only fleeting bubbles of zero sink, which I was too poor a soaring pilot to use. By this time I was once again over the woods, but horribly low. I was forced to pick a small, sloping field, beside what appeared to be an abandoned farm house, on a narrow dirt road, with no telephone wires; the whole complex the only clearing in miles of woods, and situated directly underneath an enormous hydro-electric pylon!

At 700 ft. indicated, about 300 ft. above ground, I turned into the base leg and flew straight into the core of the strongest thermal of the day, and was almost flung to 5,000 ft.—just like being kicked in the pants, which I deserved for being so incautious—but what a fantastic stroke of luck! On reaching cloudbase I realized how tense I had been—I was crouched forward in the seat with my nose almost touching the instrument panel. After this I went more carefully, choosing to go back when necessary rather than pressing on regardless. If this was what was meant by gaining experience then I didn't really think I wanted it.

Four thousand feet below me I saw an L-Spatz landing, which increased my feeling of well-being, and I started to



enjoy myself. Having moved farther to the south over open farm land the conditions improved and I managed to skim along under the clouds at quite a clip for a 1-26.

However, I was too cocky and again gambled on the wrong cloud, but once again I managed to get away, this time from 700 ft. after picking a perfectly beautiful field. After this I had to scrape around at 2,000 ft. for a long time before finding a hot sand pit and cloud-base again, by now at 6,000 ft.

For about ten minutes, over a wide area of closely farmed country with fields and roads radiating from under me to the misty horizon in all directions, I was quite lost and could identify nothing. Then as the cloud shadows moved eastwards I saw factory smoke billowing thickly from what must be Montreal not too far away, and I knew that I just had to cross the St. Lawrence River before landing, even though I had promised my crew to go no farther than I had to.

I had a girl friend living in Vercherres—I would cross the water there and invite myself to tea—Hah! I sped through the base of the cloud, sometimes losing sight of the river ahead, sparkling in the sunshine, when suddenly I realized that the wind was now blowing to the north and in front of me were only insignificant patches of cloud. The water was still a long way off and it looked as if I would have to land at this side after all . . . Oh well, keep scraping and land near Assomption. Beside the river I managed to gain some height and decided at 3,500 ft. that it was safe to cross as there were only narrow channels of water at this point—I must admit that I had a few qualms, wondering what my crew would say, receiving a message worded something like, “. . . landed at 14.00 hrs. on uninhabited island in the middle of St. Lawrence River. No bridge.” But of course this was out of the question—there would not be any telephones to send a message on! Over the middle of the river, with an oil tanker moving slowly beneath me, I found another thermal and eventually saw terra firma underneath from 4,000 ft., with the skies ahead looking very promising. Looking back on the situation for the thousandth time, I know now that, from this point

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on, I repeatedly made the wrong decisions. For a start, with the afternoon ahead of me, and a steady wind behind, I should have continued in the direction of Quebec City, instead I elected to make for St. Hyacinthe airport, which was slightly cross wind, but nearer to Montreal and on a good road.

At 3 p.m. I was circling over the city of my choice, peering down from cloud-base in an effort to find the municipal airport. Later I discovered that it was a mile to the south of the city, while the air map had placed it to the north. I had flown most of the way from the river with one foot or the other held in my hands in an effort to restore circulation; I had started the flight with wet tennis shoes on, and by this time my feet were frozen. Luckily, the 1-26 seemed to fly adequately with only an occasional nudge from one finger! Having once decided to land at St. Hyacinthe it never occurred to me to continue on to Drummondville and make my five hours as well as Silver distance—my brain must have been frozen, too, and while another irrelevant idea, that I had only a

four-hour barograph—I wasn't sure whether a double trace would be accepted—I persisted in flying down through lift, with the spoilers open, to a field just off the main Montreal highway. So ended a four-hour flight on a ten-hour day; it was only later that I realized what a rare day this had been . . . However, maybe next year . . .

The French farmer and his wife were very surprised and upset when I landed in their clover field in the middle of a quiet Sunday afternoon. "Was I hurt? Where was the pilot? Where was the motor? Where did I come from? *England?*!" They regarded me as if I were a Martian and withdrew a few paces. I hastened to explain that although I had originally come from England, I had not come from there on this particular afternoon. By this time, hav-

ing accepted the fact that "a slip of a girl" had "crashed" into their clover field in a plane without motor and was miraculously unhurt, they were prepared to believe anything, and it was difficult to persuade them that I had only flown from Hawkesbury, 82 miles away, and must phone my friends—if I still had some—to come and get me.

From here on, it was a piece of cake, and a chicken pie, and numerous cups of tea and more cake, and to top all this, the farmer's two handsome young sons, to de-rig the aircraft—they wouldn't even hear of me holding the wrench . . . that was man's work! Some men are gentlemen indeed. Sad to say that I know I will have to savour such rare memories until my next cross-country flight—meanwhile, "pass me the wrench!"

GLIDER TRAINING METHODS IN THE U.S.A.

By W. E. MALPAS

ALL flying in the U.S.A., including gliding, is under the control of the Federal Aviation Agency. The F.A.A. issues a series of licences for all categories of flying: power, gliding, lighter-than-air, helicopters, etc. For power flying there is a student pilot's licence, a private pilot's licence, a commercial pilot's licence and an instructor's rating. There is an exactly parallel series of licences for gliding. Each licence is issued as the result of a multiple-choice written examination, followed by a flight check with an F.A.A. inspector.

The public is rather less aware of the gliding movement in America than in many European countries. Only this year, on a small scale, has anything been attempted like our A.T.C. gliding scheme. Power flying is so easy to indulge, that air-minded people turn to it for both recreation and travel. Finally there is a sad lack of publicity. Even the massive "New York Times", which claims to include all the news fit to print, does not include accounts of National or International competitions!

Some clubs in the U.S.A. practise

winch-launching and auto-towing. However, most training is done from aerotows and most pupils come from power flying. A typical pilot with a power pilot's private licence will come to a gliding club or a commercial operation and will convert to gliding with approximately 10-15 aerotows. A 3,000 ft. aero-tow costs anything from 25-35 shillings, according to where you are. Few glider pilots in the U.S.A. start with gliding rather than power flying. But if you find such a pilot, typically his training has consisted of a single aero-tow for demonstration purposes just to check that the pupil really does want to learn to fly gliders, followed by two hours' dual in a power plane to learn the effect of controls and co-ordinated turns; followed by 20-30 aerotows in a two-seater glider. One argument for the two hours of power time is that the instructor can concentrate on teaching without the need to keep a constant watch on height in order to stay airborne. In addition, this flying can be done at times of the day when conditions are not soarable.

What does the United States glider pupil learn during his pre-solo training period? He will cover all the curriculum summarised in the B.G.A. booklet "Flying Training in Gliders", written by Ann and Lorne Welch, except full spins and aerobatics. When learning aero-towing, he will practise both the high-tow and the low-tow position and the special manoeuvres for passing from the high-tow to the low-tow and vice versa. This is a very useful way of using up the time on tow to some advantage, provided that the tow pilot has been warned of what is going to take place. Being able to execute these manoeuvres smoothly and accurately certainly improves the pupil's confidence in the ability to cope with unusual situations on aero-tow.

Although in America there are some gliding clubs which own two-seater training gliders and fly them on a communal basis, there are also a number of commercial operators who hire gliders to any qualified pilot who turns up and wishes to use them. By English standards, hiring rates are fairly high, but I doubt if these commercial operations are wildly profitable. However, the consequence of this system is that it is possible to make reservations in advance for training time. This may be more expensive than queueing up for the two-seater in the typical English club, but it does mean that you can do your two-seater training without the frustration of long waits between flights. There is another factor which tends to reduce the frustration of glider training in the U.S.A. Many parts of the country are blessed with dependable soaring conditions during most of the summer and autumn season. This means that it is often possible in a training flight to stay up. Some clubs limit flying to one hour per person, if there are others waiting to fly.

From all that I have said so far, it can be seen that in the U.S.A. solo training methods are fairly similar to those here. They may be sometimes less irksome, but, on the other hand, they may also be more expensive. Generally, the results in terms of competence of the solo pilots are probably about the same. However, in the area of advanced gliding training we are much better served than the U.S. soaring

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pilots. The B.G.A., the gliding clubs and the Kronfeld club in London all sponsor advanced training for glider pilots. These courses of practical training and lectures in soaring, cross-country flying, meteorology, navigation, field landings, etc., are designed to take a solo pilot with a limited amount of local soaring experience and turn him into a competent cross-country pilot. To my knowledge, there is nothing like this in the U.S.A.

Few American pilots are interested in scraping in marginal conditions, and many are not interested in cross-country flying. There is not the same fanaticism and urge to soar, even under adverse conditions, that you find in the gliding clubs in the U.K. This is probably due mainly to the absence of encouragement and tuition, often allied with dependable soaring conditions. The keen pilot must teach himself from books and journals, by experience, and by rubbing shoulders, when he can, with the small band of top-class competitive pilots who are spread rather thinly across this huge country.

THE B.G.A. AT HARROGATE

12th MARCH, 1966

NOBODY need have worried whether this first attempt to hold the Annual General Meeting and Ball outside London would turn out a success. It did, and to the business side of the proceedings was added the social advantage of having so many people in the same hotel—many turned up the evening before and left the morning after.

Harrogate is a little beyond half-way

Illustrations on Centre Pages

1. Bill Mackworth-Young seconds treasurer's report by Basil Mead (centre).
2. Lady Mensforth presents Jane Warter with the California in England Trophy.
3. L. to R. Godfrey Harwood discussing points at the Associated Club's meeting with Chris Duthy-James and Jack Aked.
4. Frances Leighton talking to Chris Riddell.
5. At the A.G.M.: Frank Irving and Nick Goodhart in foreground.
6. L. to R. Nick Goodhart, Charles Dorman, Pat Moore, Wally Kahn and Basil Meads at the sherry party.
7. Chris and Jane Simpson from Leicester with Barbara (centre) and Lionel Alexander from Cambridge U.G.C.
8. L. to R. David Carrow, Mike and Wendy Hoare, Mr. Hayes, Barbara Carrow.
9. Ann Welch chairing at the Instructors' Conference.
10. Watching the Prizegiving.
11. Roger Barratt of London G.C., who takes over from John Furlong as Chairman, Flying Committee, with Denis Corrick of Bristol G.C.
12. Anthea Riddell.
13. L. to R. John Reussner and Peter Lockwood of Yorks. G.C. with Rika Harwood.
14. Ray Stafford Allen receives the Seager Cup on behalf of London G.C.
15. Stan and Pat Armstrong of Derby & Lanes, G.C. with Matthew Hall (right) of Lakes G.C.

*Photographs by Lawrence Hill,
cartoons by Peter Fuller.*

from Perranporth to Aberdeen, and both clubs were represented—Aberdeen for the first time—as well as a good proportion of all the clubs between.

Right at the start, with the Associate Clubs' and then the Private Owners' meetings, it became obvious that this gathering was going to be more representative than ever before. Last year only two Associate clubs were represented; this time there were 5, 6, 7 . . . (they kept on coming in); while the Private Owners were tightly packed with a record attendance of 37. Godfrey Harwood and Wally Kahn, respectively, each had to reappoint himself chairman in the absence of other nominations.

Then came the ANNUAL GENERAL MEETING, at which it was announced that the British Gliding Association is taking over the whole suite of offices occupied by various aeronautical bodies in Artillery Mansions, and hopes to pay its rent by sub-letting some of the rooms.

A president could not be elected as no-one had yet been found for the job; Air Chief Marshal Sir Theodore McEvoy and Lord Kemsley were re-elected vice-presidents, and Philip Wills, for the 18th time, was re-elected chairman.

A new annual award, the Churchill Gliding Award, was announced. It has been offered by an anonymous donor to assist a project organized and carried out by an individual glider pilot, involving "initiative, flying and hard work, undertaken in that gaiety of spirit which Churchill epitomised". The annual value of the award will be about £50, and the project must be announced beforehand (see B.G.A. form of application).

Finally it was announced that Basil Meads is retiring from the post of treasurer after 18 years. In a tribute to him and Mrs. Meads, Philip Wills said: "Basil and Queenie are the sort of people who have produced the sort of gliding movement we all like to work for".

The INSTRUCTORS' CONFERENCE, chaired by Ann Welch, started with an attempt to define the sort of flying for which a passenger-carrying pilot would

need a Commercial Glider Pilot's License; the answer appears to be: when it is obviously commercial.

John Everitt begged clubs to get their launching organization in full working order *before* he turns up with his Capstan. And he saw the new Bronze C as "for instructors to see whether people are receiving an adequate amount of training".

Paul Minton started his safety talk with a reference to a mythical past when the accident rate equalled the launch rate, since when the curve on a graph has descended through a stage of "ignorance" (doesn't know what to do), then "incompetence" (knows what to do but can't do it), to the present rate, where the curve is so nearly level that we will have to try very hard if we are to get an improvement, and we can't suddenly expect to produce a panacea.

The INFORMAL GENERAL MEETING, which on this occasion was separated from the formal A.G.M. by lunch, was less informal than usual, being clearly separated into three distinct parts. First, David Carrow talked about the Study Group, which under his chairmanship is to work out a future for the B.G.A. — it is still at the stage of gathering information, and its members had so far visited 20 clubs at their own expense and in their own time. The future is likely to be influenced by increasing interest in leisure activities by the Government, whose thinking tends to be on a regional basis.

Wally Kahn said that the Government grants proposed last year were withdrawn in July because of the economic situation, but were now expected to start in 3 or 4 months' time. The "regional" basis of leisure activity promotion means that the ratepayers will be expected to contribute quite a lot (so we must try and get the sons of ratepaying parents into gliding). One way for gliding clubs to get local support would be for them to offer part of their grounds for other sports, and he asked clubs which had not yet replied to his circular on the subject to do so.

Chris Riddell mentioned proposals in Wharfedale made to Keighley U.D.C. for a Sports Centre.

PROJECT SIGMA, an imaginative proposal for developing a world-beating British sailplane in time for the next

World Championships but one, is described by its leading originator, Nicholas Goodhart, in a separate article.

A POWERED TWO-SEATER TRAINER for teaching glider pilots, proposed by Eric Reed and Derek Piggott, was next described.

To learn what such a powered trainer could do, Derek Piggott had been flying the Fournier "Avion-Planeur" during the past week, and he describes his experiences in a separate article. Such a machine, he said, "could push the British gliding movement way ahead of the rest of the world". Though there was more interest in motorized sailplanes on the Continent than here, they were not used there for training.

Eric Reed put the financial aspects. The estimated cost of developing such a machine was £10,000, and a discussion ensued on how to raise the money. As a "professional beggar", Wally Kahn thought people with money would merely ask what commercial benefits the machine would bring; he recommended, instead, begging for a loan, and as Derek Piggott had claimed it would cheapen the cost of training, some of the money thus saved could be used to repay the loan.

Finally, the very successful BALL, attended by 250 people including the Mayor and Mayoress, Councillor and Mrs. S. A. Mitchen; the Mayor gave souvenirs to those who helped Philip Wills to get to Harrogate the day before. Annual Trophies were presented by Lady Mansforth, who was accompanied by Sir Eric Mansforth. There were lots of tables for the non-dancers to continue talking gliding; at one of these, "Paddy" Kearon suggested having the next Annual Meeting in Dublin.

Chris Riddell, who was responsible for the arrangements at Harrogate, writes that he formed a committee for the purpose with Jack Tarr and Jim Park, chairmen of Doncaster and Ouse clubs respectively, and two Yorkshire club members living in Leeds—Jack Speight, who looked after the printing, and Lawrence Hill, who arranged the remarkable photographic display; this included enlargements from the historic collection of the late Eric Addyman of the Harrogate club, lent by his son.

A. E. S.



1



6



2



Drinks



Lunch



Evening Dinner Dance



3



7



4



British Gliding Association

NATIONAL GLIDING CHAMPIONSHIPS 1966

LASHAM, HAMPSHIRE

21st - 30th May

**ORGANISED BY THE LASHAM GLIDING SOCIETY
and the
BRITISH GLIDING ASSOCIATION**

**To be opened by SIR STANLEY ROUS, C.B.E., J.P.
Chairman, Central Council of Physical Recreation
at 10.30 a.m. on Saturday, 21st May**

OFFICIALS

STEWARDS: A. L. L. Alexander, J. Furlong, R. A. Mann, B. A. G. Meads, Mrs. C. Orde, F. N. Slingsby, G. H. Stephenson, J. de F. Thompson

CHAIRMAN ORGANISING COMMITTEE: H. Drew

VICE-CHAIRMAN ORGANISING COMMITTEE: A. MacConaill

DIRECTOR OF OPERATIONS AND CHIEF TASK-SETTER: Mrs. Ann Welch

ASSISTANT TASK-SETTER: D. Corrick

METEOROLOGISTS: F. Wickham and P. Menmuir

CHIEF MARSHAL: L. Creed

DEPUTY CHIEF MARSHAL: A. Barker

DISTANT MARSHAL: L. Bellamy

CHIEF OPERATIONS OFFICER: Miss Joan Cloke

TUG MANAGER: D. Lowe

1/C SCORERS: A. MacConaill

1/C OFFICIAL OBSERVERS: Fl. Lt. K. Snape

GROUND TECHNICAL SERVICES: M. Neale

TREASURER: J. N. Cochrane

PUBLIC RELATIONS: Miss Diana Thomas-Ellam

WELFARE: Mrs. Ann Enevoldson, Mrs. Barbara Wrigley

OFFICIAL HOSTS: Mr. and Mrs. D. Keary

SECRETARY, BRITISH GLIDING ASSOCIATION: Miss Frances Leighton

The Organisers wish to thank the many helpers not listed above who have given up a great deal of time, or are devoting their annual holiday, to making the Championships a success.

SOARING WEATHER

MANY people think that in order to stay up in a glider there must be a wind blowing. This is only true for soaring along a hill. The soaring in these Championships is done by using thermal upcurrents which are bubbles of air which get warmer than the surrounding air and sail upwards like invisible balloons. These bubbles of air go on rising until they have cooled down again to the same temperature as the air round them.

If the thermals are composed of moist air they will form cumulus clouds. These make very useful signposts for the glider pilot, quite apart from the fact that he can climb up into the cumulus and gain extra height. The glider pilot flies across country by finding these thermal upcurrents and circling round and round in them while they carry the glider upwards.

At the top of each thermal he stops circling and flies towards his destination. If he fails to find another thermal he will gradually sink down until he has to land and so end his flight. He can, of course, fly down wind, across wind, or into wind as he wishes, but against a strong wind it will take many hours to go only a few miles.

All the flights in these Championships will use thermals and cumulus clouds. At this time of year in England cloud base is usually between 3,000 and 5,000 feet, and if the conditions are good soaring is possible from about 10 a.m. to 7 p.m.

No National Championships were held during 1965, instead the World Gliding Championships were organised and held in Great Britain.

Eighty-six pilots from twenty-eight nations gathered at South Cerney, Glos., during May-June, and on the six contest days which resulted they flew a total distance of 48,500 miles from 2,507 launches.

The Championships were won by Jan Wroblewski of Poland in the Open Class, and François Henry of France in the Standard Class.

THE PILOTS

THE number of pilots of competition standard, and the demand for competition flying, is now so great that the entries in the Nationals are allocated from a Rating List. This is based on the performance in previous Nationals and Regional Contests. Some of the pilots who are competing this year in League 1 include, in alphabetical order:

ANNE BURNS, the only woman pilot to fly in League 1 and holder of a number of National and International Records (see Records List). Anne has been awarded the Queen's Commendation twice for her work on the Comet and observer duties on low level flying in North Africa. She is a Principal Scientific Officer at R.A.E. Farnborough.

GEORGE BURTON, one of our leading pilots, represented Great Britain in 1965 at the World Gliding Championships held in this country. He was placed fifth in the Standard Class. He is also an expert on glider instrumentation.

Brigadier **TONY DEANE-DRUMMOND** won the National Championships in 1957 and has flown in World Championships three times. His placings: Poland, 1958, seventh in the Open Class; Germany, 1960, thirteenth in the Standard Class; Argentina, 1963, fifteenth in the Standard Class; and Great Britain, 1965, ninth in the Standard Class.

ARTHUR DOUGHTY, a Metropolitan Police Inspector who won League 2 in the 1964 Nationals, and this time will be flying in League 1.

JOHN FIELDEN who as current National Champion will be defending his title. John is well-known in gliding circles for his excellent use of sea breeze fronts; a meteorological condition which occurs mainly near the coasts of Britain, and which can be used in order to stay airborne.

Captain **NICHOLAS GOODHART**, R.N., National Champion, 1962, is one of our best known pilots. He has only flown once in Nationals over the last five years, but has represented Great Britain in the last four World Gliding Championships. His

placings: France, 1956, first in Two-seater Class; Poland, 1958, second in Open Class; Germany, 1960, fourth in Open Class; Argentina, 1963, eleventh in Open Class; and Great Britain, 1965, seventh in the Open Class. (See also Records List.)

DEREK PIGGOTT has been, until last year, C.F.I. at Lasham, was engaged in a lot of flying for the film "Those Magnificent Men in their Flying Machines", and is also an accomplished aerobatic pilot. He will be flying the one-off home-built Osprey.

PETER SCOTT, well-known as an artist, ornithologist, yachtsman, author and broadcaster. He was National Champion in 1963, but was unable to defend his title in 1964 because of other commitments.

FL.-LT. IAN STRACHAN, one of our younger pilots who has done consistently well since 1962 when he won League 2. (See also Records List.)

FL.-LT. JOHN WILLIAMSON, National Champion in 1961. Has represented Great Britain twice in World Championships finished in Argentina, 1963, eighth in the Open Class and Great Britain, 1965, sixth in the Open Class. (See also Records List.)

PHILIP WILLS, last but not least, is one of the best-known personalities in gliding in the world. He became World Champion in 1952 in Spain, the only British pilot to have done so thus far. He has also been National Champion five times. As Chairman of the British Gliding Association he has done much to enhance the prestige of the Gliding movement.

The table below shows a number of pilots who have been in the first fifteen of the five previous Nationals, and it will be interesting to watch their performances this year as a number of these pilots will be flying the new Slingsby Dart 17R for the first time in the British National Championships.

PLACINGS IN FIVE CHAMPIONSHIPS

Figures show League and Placing

Pilot	No. of contest days:	1/4-2/3 days		5 days	8 days	9 days	6 days
		1964	1963	1963	1962	1961	1959
J. S. Fielden		1/1	1/25		1/18	2/2*	—
R. A. E. Dunn		1/2	1/3		1/17	1/39	2/28*
D. D. Carrow		1/4	1/27		1/27	1/27	1/17
D. B. James		1/7	1/22		1/15	1/12	1/21
I. W. Strachan		1/8	1/6		2/1	2/31*	—
A. J. Stone		1/11	1/4		1/10	1/7	—
A. D. Purnell		1/15	2/8*		2/17*	2/1*	—
J. S. Williamson		1/17	1/3		1/4	1/1	1/9
Anne Burns		1/20	1/21		1/8	1/6	1/5*
G. E. Burton		1/22	1/8		1/6	1/2	1/6
P. A. Wills		1/23	1/23		1/3	1/3	ret.
W. A. H. Kahn		1/24	1/14		ret.	1/32	1/15
A. J. Deane-Drummond		1/34	—		1/2	1/4	1/10
P. M. Scott		—	1/1		1/25	1/10	1/27*
H. C. N. Goodhart		—	—		1/1	—	1/2
A. D. Piggott		—	1/7		1/13	1/7	—
A. W. Doughty		2/1	2/16		2/27	1/33	1/34*

— Dash indicates: Did not fly; * Asterisk indicates: In partnership with one or more pilots; ret.: Retired after a few days.

THE AIRCRAFT

RELYING as they do on natural upcurrents, gliders must be made as streamlined as possible. In still air a high-performance glider can cover about 35 miles from a height of 5,000 feet.

The majority of the competing gliders belong to the Slingsby series. Other British gliders are represented by the Olympia series. The only foreign gliders flying are the German Ka-6 series, two Austria's and a Bocian. Most of the gliders are single-seaters, and are constructed mainly of plywood and glass-fibre, though metal gliders are becoming popular. The cost of a fully-equipped high-performance glider is in the region of £1,800, with trailer for ground transport extra. The empty weight of a glider averages about 4½ cwt.

FLYING IN THE CHAMPIONSHIPS

THIS year once again Lasham is organising the National Championships on behalf of the British Gliding Association. This event is undoubtedly the highlight of the gliding enthusiasts' year, and gives Britain's top pilots a chance to pit their skill, not only against the elements, but against each other, in keen though friendly competition.

Each morning the pilots and crews are up early, rigging the gliders, cleaning the mud from yesterday's landing and giving a final polish to the already mirror-like finish of the wings.

After breakfast all crowd into the Briefing Tent to await the announcement of the task for the day. It may be **FREE DISTANCE**, allowing perhaps the chance of a record-breaking flight to Scotland, and the certainty of an all-night retrieve. In this task marks are based purely on distance achieved. A similar though more demanding task is **DISTANCE ALONG A SET LINE**. In this case, marks are lost for landing away from the line. In recent years, more emphasis has been placed on **RACES**, either to another gliding site or more usually round a triangular course of anything up to 200 miles and back to Lasham. These flights test the glider pilots' skill and judgment to the utmost, for to achieve a high speed, the best lift in each thermal has to be constantly searched for and used. A nice balance must be held between too much speed with the risk of landing en route, and greater caution but slower speed. The final glide, starting perhaps 20 miles away, provides excitement for pilot and spectator alike as the glider whistles over the finishing line.

Briefing concludes with a detailed soaring forecast from the Met. man, and a few remarks on the day's launching arrangements from the Chief Marshal. Then, all is bustle as maps are prepared, sandwiches bought, and retrieving arrangements finalised. A long stream of gliders makes its way slowly to the launch point, shepherded into the correct order by the Distant Marshal.

At the launch point a well-organised team of volunteers, under the Chief Marshal, manhandles the gliders into position, the ropes are attached, a wave of the signalling bat, and another competitor is airborne.

Near the airfield each thermal is clearly marked by a swarm of circling gliders. After climbing to 3,000 or 4,000 ft. each pilot sets off on a journey that covers the ground in a peculiar dreamlike way without apparent movement, alternately circling to gain height and gliding for five or ten miles to find the next thermal. At times, when the lift is strong, little time need be spent in circling and a speed of over 40 m.p.h. may be achieved. At other times, when perhaps a layer of cloud cuts off the sun's heat, the sky seems lifeless and every foot is only gained with a struggle. Finally the time comes to choose a landing place, and the journey is over.

Back in Control, as each pilot phones in, his landing position is marked on the wall map with a numbered pin and his retrieving crew is informed when they next report back. As the day goes on, the gradually extending line of pins indicates the progress of the task. Excitement mounts as only a handful of pilots is unaccounted for. At last the line is complete and the winner for the day is known.

AWARDS AND PRIZES

- 1.—The 1966 British National Champions will be the pilots (P 1) of the Open and Standard Class Gliders in League 1 which amass the greatest number of points during the competition; provided that if the top glider in either class scores less than 80 per cent of the winner's points there will be no Champion in that class.
- 2.—The winner of Leagues 1 and 2 will be the entrant of the gliders which amass the greatest number of points during the competition in each League.
- 3.—Trophies will be awarded to the first three competitors in each League.

NATIONAL GLIDING CHAMPIONSHIP AWARDS

THE KEMSLEY CUP	To the Gliding Club whose glider has the highest placing in either League 1 or League 2.
THE LONDONDERRY CUP	To the winner of the individual championships in League 1.
THE L. DU GARDE PEACH TROPHY	To the winner of the team championships in League 1.
THE FURLONG TROPHY	To the winner of the individual championships in League 2.
THE FIRTH VICKERS TROPHY	To the winner of the team championships in League 2.
THE EON CUP	For competition among entrants of whichever type of British-built glider is numerically the strongest in both Leagues, awarded to the entrant of the glider of that type having the highest placing in either League.
THE SLINGSBY TROPHY	For competition among entries of whichever type of two-seater glider is numerically the strongest in both Leagues, awarded to the pilots of the glider of that type having the highest placing in either League.
THE PAN AMERICAN TROPHY	To the British National Champion Standard Class.
THE CENTENARY TROPHY ... (Presented by the Reading Branch Royal Aeronautical Society)	To the competitor in League 2 who is under 28 years of age at the start of the championships, and who scores the most points on any two days.

YEARLY AWARDS

The following Cups and Trophies are also open to Competition by British Nationals for the year ending 31st December for flights starting in the U.K. :—

DE HAVILLAND CUP	For the greatest gain in height.
MANIO CUP	For the longest goal flight, made either : (i) in a straight line, or (ii) dogleg of not more than three legs.
WAKEFIELD TROPHY	For the longest flight, made either : (i) in a straight line, or (ii) in a broken line of not more than three legs, of which all but the last leg must be at least 80 kms.
VOLK CUP	For the longest goal and return flight.
SEAGER CUP	For the best two-seater performance.
DOUGLAS TROPHY	Awarded to the Club putting forward three flights by three different Club members in Club aircraft, aggregating the largest total cross-country mileage.
CALIFORNIA IN ENGLAND TROPHY	Awarded to a woman pilot for the longest flight.
FRANK FOSTER TROPHY	For the fastest speed round a 100 km. triangle.
ROBERT PERFECT TROPHY	Awarded to the Club with over 50 flying members with the highest proportion of B.G.A. categorised instructors to flying members.

ENTRIES IN LEAGUE ONE

(Correct as at 27th April, 1966)

<i>Contest No.</i>	<i>Sailplane</i>	<i>Gliding Site normally used</i>
1 P. A. Wills	Dart 17R	Lasham
4 W. A. H. Kahn	Dart 17R	Lasham
6 H. C. N. Goodhart	Dart 17	Lasham
9 C. A. P. Ellis	Skylark 3	Dunstable Downs
10 P. M. Scott	Olympia 419x	Nympsfield
16 R. A. E. Dunn	Skylark 4	R.A.F. site
19 Anne Burns	Austria SHK	Lasham
20 D. D. Carrow	Dart 17R	Lasham
30 D. H. G. Ince	Skylark 4	Lasham
37 J. B. Jefferson	Skylark 3B	Camphill
42 D. A. Smith	Skylark 3B	Dunstable Downs
44 A. H. Warminger	Dart 17R	Swanton Morley
68 M. Bird	Dart 17R	Dunstable Downs
72 A. J. Deane-Drummond	Olympia 419	Army site & Lasham
86 N. W. Kearon	Olympia 419	R.A.F. site
87 A. W. Gough	Olympia 419	R.A.F. site
91 A. W. Doughty	Skylark 3F	Dunstable Downs
103 D. B. James	Skylark 4	Lasham
147 A. D. Purnell	Skylark 3F	Lasham
173 D. M. R. Riddell	Skylark 3F	Dunstable Downs
176 V. C. Carr, D. G. Cunningham	Skylark 3B	Rearsby & Husbands Bosworth
177 M. C. Fairman	Skylark 3	Dunstable Downs
180 J. D. Jones	Skylark 3F	Nympsfield
200 J. S. Fielden	Dart 15*	Dunkeswell
233 I. W. Strachan	Skylark 4	R.A.F. site
240 M. J. Smith	Skylark 4	Husbands Bosworth
258 G. A. Coatesworth	Skylark 4	R.A.F. site
261 M. P. Garrod	Dart 17	Dunstable Downs
272 J. Cardiff	Dart 17R	Dunstable Downs
345 D. S. Innes	Ka-6*	R.A.F. site
361 C. W. Bentson	Skylark 4	Dunstable Downs
366 H. R. Dimock	Dart 17R	R.N. site & Lasham
367 G. E. Burton	Dart 17R	Lasham
372 J. Delafield	Ka-6E*	R.A.F. site
404 P. G. Burgess	Dart 15*	Lasham
406 J. S. Williamson	Dart 17R	R.A.F. site
411 A. J. Stone	Skylark 4	
420 P. Dawson	Ka-6*	R.A.F. site
450 A. D. Piggott	Osprey	Lasham
966 E. Jerzycki	Dart 17R	Lasham

* Asterisks indicate glider complies with Standard Class requirements.

ENTRIES IN LEAGUE TWO

(Correct as at 27th April, 1966)

<i>Contest No.</i>	<i>Sailplane</i>	<i>Gliding Site normally used</i>
12 C. G. Dorman	Olympia 463	Army site & Lasham
13 G. W. Mackworth-Young	Skylark 30	Lasham
22 T. S. Zealley	Ka-6	Dunstable Downs
41 R. Rutherford	Skylark 4	Long Mynd
46 W. E. Malpas	Sky	Nympsfield
48 J. A. Findon	Dart 15	Husbands Bosworth
52 L. P. Goldney	Skylark 3F	Army site
57 R. C. Barnett, K. R. Aldridge	Std. Austria	Nympsfield
58 E. Stark	Dart 17	Army site
60 D. M. Kaye	Dart 15	Camphill
64 G. Camp	Skylark 3B	R.A.F. site & Dunstable
65 Rika Harwood	Skylark 3B	Lasham
73 K. C. Fitzroy	Skylark 30	R.A.F. site
81 J. G. B. Daniell, P. R. Philpot	Skylark 4	Nympsfield
98 S. M. Morison, R. C. Pick	Skylark 4	Lasham & Sutton Bank
108 P. A. Martin, C. Simpson	Dart 17R	Rearsby
125 C. J. Pennyquick, R. S. Waller	Ka-6CR	Nympsfield
140 C. C. Donald	Dart 17R	Sywell
160 H. S. Mettam	Skylark 3F	Lasham
171 G. T. Collins	Olympia 419	Perranporth
189 D. C. Snodgrass	Skylark 4	Lasham
190 F. W. L. Shepard	Skylark 3F	Army site
196 R. G. Procter	Bocian	Lasham
197 R. A. Neaves, K. C. Wilkinson	Skylark 4	Booker
239 P. Minton	Skylark 4	Lasham
249 E. J. Meddings	Olympia 463	R.A.F. site
260 P. Pozerskis	Skylark 4	Dunstable Downs
266 W. N. Tonkyn	Skylark 4	Lasham
267 S. J. Redman	Skylark 4	Cambridge
278 P. H. Lane	Ka-6 (mod.)	R.A.F. site
317 G. S. Neumann	Skylark 3F	Cambridge
327 D. C. Kerridge, P. W. James	Skylark 4	Lasham
328 D. P. L. Scallon	Skylark 4	Lasham
350 P. Hanneman	Ka-6	R.A.F. site
354 G. McA. Bacon, J. G. Croshaw	Ka-6	R.A.F. site
368 R. T. Willbie	Skylark 4	Lasham
401 R. A. Sandford	Olympia 463	Nympsfield
402 L. S. Hood	Ka-6	Army site
405 J. H. Wheeler	Ka-6	Army site
466 F. G. Irving	Dart 17R	Lasham
<i>Hors Concours</i>		
J. Everitt and others	Capstan	(Coach & Capstan)
228 E. G. Hart, K. R. Pearson	Skylark 4	(A.T.C.)

INTERNATIONAL GLIDING RECORDS

Single-Seaters

DISTANCE	A. H. Parker (U.S.A.), 647.17 miles (31.7.64).
HEIGHT GAIN	P. F. Bikle (U.S.A.), 42,303 ft. (25.2.61).
ABSOLUTE ALTITUDE	P. F. Bikle (U.S.A.), 46,266 ft. (25.2.61).
GOAL FLIGHT	W. A. Scott (U.S.A.), 497.562 miles (23.7.64).
GOAL AND RETURN	S. H. Georgeson (New Zealand), 466 miles (6.1.65).
100-KM. TRIANGLE	G. B. Moffat (U.S.A.), 79.77 m.p.h. (16.8.62).
300-KM. TRIANGLE	G. B. Moffat (U.S.A.), 74.48 m.p.h. (6.8.64).
500-KM. TRIANGLE	E. Dommissé (South Africa), 66.56 m.p.h. (25.12.63).

Multi-Seaters

DISTANCE	V. Ilchenko & G. Petchnikov (U.S.S.R.), 515.6 miles (26.5.53).
HEIGHT GAIN	L. E. Edgar & H. E. Klieforth (U.S.A.), 34,425 ft. (19.3.52).
ABSOLUTE ALTITUDE	L. E. Edgar & H. E. Klieforth (U.S.A.), 44,255 ft. (19.3.52).
GOAL FLIGHT	P. Antonov & V. A. Oplatchko (U.S.S.R.), 436.66 mls. (24.4.64).
GOAL AND RETURN	S. Ratusinski & S. Maciejewski (Poland), 337.71 mls. (29.7.62).
100-KM. TRIANGLE	V. Ilchenko & G. Stepanov (U.S.S.R.), 64.76 m.p.h. (28.7.64).
300-KM. TRIANGLE	V. Tchouvikov & J. Logvin (U.S.S.R.), 56.27 m.p.h. (1.8.64).
500-KM. TRIANGLE	H. Sorg & H. Sorg (W. Germany), 52.03 m.p.h. (7.1.64).

BRITISH NATIONAL RECORDS

British National records can be set up by citizens of the United Kingdom in any country.

Single-Seaters

DISTANCE	P. Lane (in Germany), 460.5 miles in Skylark 3F (1.6.62).
HEIGHT GAIN	G. J. Rondel (in U.K.), 29,100 ft. in Olympia 2B (18.6.60).
ABSOLUTE ALTITUDE	H. C. N. Goodhart (in U.S.A.), 37,050 ft. in Schweizer 1-23 (12.5.55).
GOAL FLIGHT	H. C. N. Goodhart (in U.K.), 360 miles in Skylark 3 (10.5.59).
GOAL AND RETURN	A. H. Warminger (in S.A.), 374 miles in Std. Austria (13.1.66).
100-KM. TRIANGLE	A. H. Warminger (in S.A.), 72.0 m.p.h. in Std. Aust. (21.12.65).
300-KM. TRIANGLE	A. H. Warminger (in S.A.), 62.0 m.p.h. in Std. Austria (6.1.66).
500-KM. TRIANGLE	Anne Burns (in S.A.), 64.20 m.p.h. in Std Austria (25.12.63).

Multi-Seaters

DISTANCE	L. Welch & F. Irving (from U.K.), 254 miles in Eagle (14.5.55).
HEIGHT GAIN	R. P. Saundby & B. Roberts (in U.K.) 17,750 ft. in Blanik (7.6.64).
ABSOLUTE ALTITUDE	C. Morgan & L. Stanbridge (in Austria), 19,685 ft. in Ka-7 (5.11.62).
GOAL FLIGHT	W. Kahn & J. Williamson (in U.K.), 194 mls. in Eagle (12.4.58).
GOAL AND RETURN	F. Gaze & Rosemary Storey (in U.K.), 170 miles in Eagle (7.8.59).
100-KM. TRIANGLE	G. Camp & Delphine Gray-Fisk (in U.K.) 39.3 m.p.h. in Eagle (21.8.64).
300-KM. TRIANGLE	W. Kahn & B. Davey (in U.K.), 30.08 m.p.h. in Eagle (27.7.63).

UNITED KINGDOM RECORDS

United Kingdom records can be set up by pilots of any nationality with flights starting from the U.K. All the following holders are U.K. citizens:

Single-Seaters

DISTANCE	H. C. N. Goodhart, 360 miles in Skylark 3 (10.5.59).
HEIGHT GAIN	G. J. Rondel, 29,100 ft. in Olympia 2B (18.6.60).
ABSOLUTE ALTITUDE	G. J. Rondel, 30,580 ft. in Olympia 2B (18.6.60).
GOAL FLIGHT	H. C. N. Goodhart, 360 miles in Skylark 3 (10.5.59).
GOAL AND RETURN	J. S. Williamson, 274 miles in Olympia 419 (30.8.64).

Single-seaters (continued)

100-KM. TRIANGLE	I. W. Strachan, 48 m.p.h. in Skylark 3B (20.5.65).
300-KM. TRIANGLE	H. C. N. Goodhart, 41.2 m.p.h. in Skylark 3 (25.6.57).
100-KM. GOAL	M. Bird, 71.09 m.p.h. in Skylark 3F (4.8.62).
200-KM. GOAL	I. W. Strachan, 71.1 m.p.h. in Skylark 4 (2.6.63).
300-KM. GOAL	E. A. Moore, 57.4 m.p.h. in Skylark 2 (27.5.57).
500-KM. GOAL	H. C. N. Goodhart, 56.4 m.p.h. in Skylark 3 (10.5.59).

Multi-Seaters

DISTANCE	L. Welch & F. Irving, 254 miles in Eagle (14.5.55).
HEIGHT GAIN	R. Saundby & B. Roberts, 17,750 ft. in Blanik (7.6.64).
ABSOLUTE ALTITUDE	R. Saundby & B. Roberts, 19,050 ft. in Blanik (7.6.64).
GOAL FLIGHT	W. Kahn & J. Williamson, 194 miles in Eagle (12.4.58).
GOAL AND RETURN	F. Gaze & Rosemary Storey, 170 miles in Eagle (7.8.59).
100-KM. TRIANGLE	G. Camp & Delphine Gray-Fisk, 39.3 m.p.h. in Eagle (21.8.64).
300-KM. TRIANGLE	W. Kahn & B. Davey, 30.08 m.p.h. in Eagle (27.7.63).
100-KM. GOAL	B. James & K. O'Riley, 60 m.p.h. in Gull 2 (27.5.57).
200-KM. GOAL	J. Williamson & D. Kerridge, 34.9 m.p.h. in Eagle (9.4.55).
300-KM. GOAL	W. Kahn & J. Williamson, 43 m.p.h. in Eagle (12.4.58).

WOMEN'S INTERNATIONAL RECORDS

Single-Seaters

DISTANCE	Olga Klepikova (U.S.S.R.), 465.53 miles (6.7.39).
HEIGHT GAIN	Anne Burns (G.B.), 29,918 ft. (13.1.61).
ABSOLUTE ALTITUDE	Betsy Woodward (U.S.A.), 39,994 ft. (14.5.55).
GOAL FLIGHT	Adela Dankowska (Poland), 391.463 miles (7.7.64).
GOAL AND RETURN	Anne Burns (G.B.), 337 miles in Std. Austria (6.1.66).
100-KM. TRIANGLE	Anna Samossadova (U.S.S.R.), 57.85 m.p.h. (27.6.60).
300-KM. TRIANGLE	Yvonne Leeman (S.A.), 64.6 m.p.h. in BJ-2 (6.1.66).
500-KM. TRIANGLE	Anne Burns (G.B.), 64.20 m.p.h. in Std. Austria (25.12.63).

Multi-Seaters

DISTANCE	Z. Solovey & S. Ivanova (U.S.S.R.), 385.246 miles (27.6.64).
HEIGHT GAIN	D. Trouillard & S. Suchet (France), 23,806 ft. (11.12.61).
ABSOLUTE ALTITUDE	D. Trouillard & S. Suchet (France), 28,221 ft. (11.12.61).
GOAL FLIGHT	P. Majewska & I. Raze (Poland), 335.78 miles (8.8.63).
GOAL AND RETURN	D. Zachara & M. Olszewska (Poland), 260.54 miles (29.7.63).
100-KM. TRIANGLE	W. Kamunska & E. Sawon (Poland), 55 m.p.h. (19.7.65).
300-KM. TRIANGLE	O. Manofova & V. Lamova (U.S.S.R.), 46.2 m.p.h. (12.6.64).

British National

DISTANCE	Anne Burns, 326.56 miles.
HEIGHT GAIN	Anne Burns, 29,918 ft.
ABSOLUTE ALTITUDE	Anne Burns, 34,590 ft.
GOAL FLIGHT	Ann Welch, 328 miles.
GOAL AND RETURN	Anne Burns, 268 miles.
100-KM. TRIANGLE	Anne Burns, 52.2 m.p.h.
300-KM. TRIANGLE	Anne Burns, 53.84 m.p.h.
500-KM. TRIANGLE	Anne Burns, 64.2 m.p.h.

United Kingdom

DISTANCE	Anne Burns, 282 miles
HEIGHT GAIN	Anne Burns, 16,750 ft.
ABSOLUTE ALTITUDE	Anne Burns, 18,400 ft.
GOAL FLIGHT	Anne Burns, 192 miles.
GOAL AND RETURN	Anne Burns, 134 miles.
100-KM. TRIANGLE	Anne Burns, 37.3 m.p.h.
300-KM. TRIANGLE	Anne Burns, 27.6 m.p.h.
500-KM. TRIANGLE	
100-KM. GOAL	Rika Harwood, 51.6 m.p.h.
200-KM. GOAL	Anne Burns, 53.2 m.p.h.
300-KM. GOAL	Anne Burns, 39.7 m.p.h.

DURATION RECORDS

These are no longer recognised. The last one to be homologated was set up in France in 1952.

LEARNING TO GLIDE

THERE are many different reasons why people start flying gliders. For some it is merely a cheap way to eventually flying aeroplanes; for others it is a means of getting into the air which is less noisy, or nearer their homes than a flying club, or by which they can solo at 16 instead of 17. But for most people the reason that they continue to go on flying gliders is invariably not the often mundane one which prompted them to start. For gliding is a sport, which gets more fascinating the more skilled the pilot becomes.

All cross-country flights, and soaring inside thunderstorms, can only be achieved by the pilot's own efforts. There is no question of just opening a throttle and pointing the aircraft in the right direction. All the lift the pilot needs must be found and used with skill and cunning, and at the end of his cross-country flight the pilot must choose a strange landing place, perhaps 10 miles away, perhaps 200, from home. The unexpectedness of gliding is one of its greatest charms.

A map of gliding clubs is given on another page, and for more detailed information about a particular Club you should if possible visit it one Saturday or Sunday, introduce yourself, watch what goes on, and perhaps have a trial lesson in the two-seater.

It is impossible to estimate costs in advance, as this depends very much on how often you visit your Club, and how much flying you do. You will find out that many people enjoy this sport who have quite modest incomes, and as most of the work is done by members themselves, costs are kept down. For members coming from a distance most Clubs have bunkhouse accommodation. Many Clubs hold holiday courses during the summer where you can spend a week or a fortnight packing in the elementary lessons in as short a time as possible. The prices range from 12 gns. to 26 gns., depending on the length of the course, but this includes full board and lodging for the period, gliding instruction and flying charges.

When you first start you will be introduced to your instructor who will take you up for a short flight in a two-seater to see how you like it. The glider will be launched either by winch or car tow, and before the instructor releases the wire, you will probably have reached about 800 ft. in a steady, steep climb. After the launching wire has fallen away the instructor will adjust the speed to about 37 m.p.h., and will fly you on a wide circuit of the airfield. It will be easy for him to explain what is happening and what interesting landmarks to look out for, because the only sound will be the gentle whistle of the air past the glider.

After this flight your training begins in earnest. First you are taught the use of the controls, and how to fly straight, and make gentle turns, then how to take off and climb up, and how to make an approach and landing.

You will also have to learn stalls and spins, not because it is necessary for you to be able to do them, but because it is important that you learn to recognise how inadvertent bad flying can lead to stalling the glide, and what you must do to recover from a stall or spin should you still be so careless as to do one by mistake.

After a while you will be flying the glider from take-off to landing without much help from the instructor, and when he is finally satisfied that you can fly circuits properly, and are able to deal with such possible occurrences as the cable breaking on the launch, you will go on your first solo. From this point on, although you will have further dual flights to see that you do not get into bad habits, it will be up to you to put in as much practice as possible until you can fly the glider really well, and have learnt to find and use the lift that will carry you high above the gliding site, so that you can visit the clouds and fly for miles over the country.

You will find it very helpful to do some reading on the subject before attending a Gliding Course or joining a Club. The many books which may be obtained are listed elsewhere in this programme.

You should also read the sport's only magazine, *SAILPLANE & GLIDING*, which costs 3s. 6d. per copy plus 6d. postage and is published every other month. In this you will find all the latest gliding news.

Copies of these books and all the others published are available from the bookstall on this site or direct from the British Gliding Association.

BOOKS ON GLIDING

FOR THE BEGINNER

- About Gliding.** A 20-page booklet of questions and answers on gliding. 1s. 0d.
Elementary Gliding by P. Blanchard, 5s. 0d. The perfect textbook for the beginner.
On Being a Bird by P. A. Wills, 8s. 6d. A thrilling book both for the general public and the expert. It relates the life-time experiences of a glider pilot and former World Champion.

GENERAL BOOKS

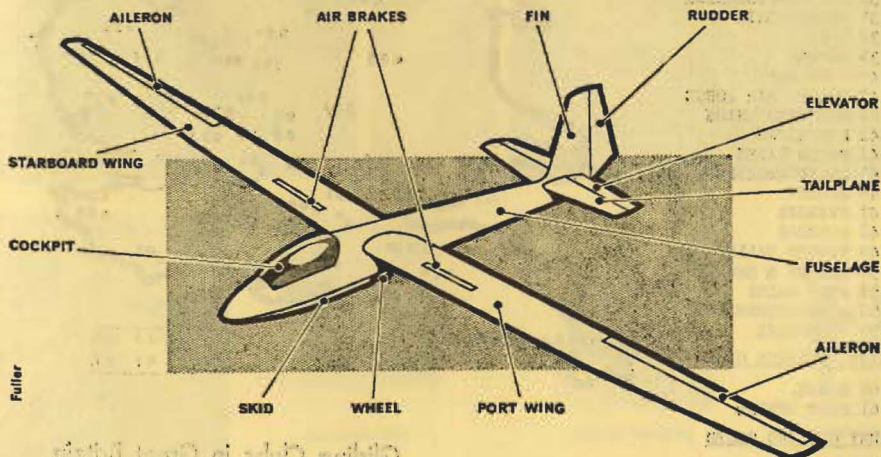
- The Story of Gliding** by A. and L. Welch, 28s. 0d. The history of soaring flight.
Go Gliding by A. Welch and G. Denes, 30s. 0d. An excellent book for the enthusiast who wants to know all about gliding.
Where No Birds Fly by P. A. Wills, 21s. 0d. The author tells of the growth of the gliding movement and his own exciting experiences.
Glider Flying by A. Welch, 21s. 0d. An introduction to gliding in non-technical language.
The Gliding Book, 30s. 0d. Seven experts have contributed to this book which covers all aspects of gliding.

TECHNICAL BOOKS

- Theory of Flight** by R. Stafford Allen, 12s. 6d. A useful textbook for the pupil pilot.
Soaring Pilot by A. and L. Welch and F. Irving, 21s. 0d. Soaring the modern glider.
Gliding by A. D. Piggott, 25s. 0d. The complete textbook with diagrams and photographs.
Glider Maintenance Manual by R. Stafford Allen, 5s. 0d.
Flying Training in Gliders by A. and L. Welch, 6s. 0d.
Cloud Reading for Pilots by A. C. Douglas, 18s. 0d. Ideal textbook for cloud study, with 200 photographs.

Many other interesting books. We also sell gliding ties, scarves, car badges, blazer badges, table mats and postcards.

SAILPLANE & GLIDING Magazine. Bi-monthly. This magazine is sent to gliding enthusiasts all over the world. Annual Subscription only 24s. 0d. including postage. Single copies 4s. 0d. including postage. Binders to take 12 issues (2 years) 15s. 6d.



THE GLIDER AND ITS COMPONENTS

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- 21 GLASGOW
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- 26 LASHAM GLIDING SOC.
- 27 LAKES
- 28 LANDS END
- 29 LEICESTERSHIRE
- 30 LINCOLNSHIRE
- 31 LONDON
- 32 MIDLAND
- 33 NEWCASTLE
- 34 NORFOLK
- 35 NORFOLK & NORWICH
- 36 NORTHAMPTONSHIRE
- 37 NORTHUMBRIA
- 38 OUSE
- 39 OXFORD
- 40 PERKINS*
- 41 POLISH AIR FORCE
- 42 SCOTTISH UNION
- 43 SOUTHDOWN
- 44 SOUTH WALES
- 45 STAFFORDSHIRE
- 46 SURREY
- 47 SWANSEA
- 48 SWINDON
- 49 THAMES VALLEY
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- 51 WEST WALES
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CIVIL SERVICE CLUBS

- 60 R.A.E.
- 61 POST OFFICE

ARMY GLIDING CLUBS

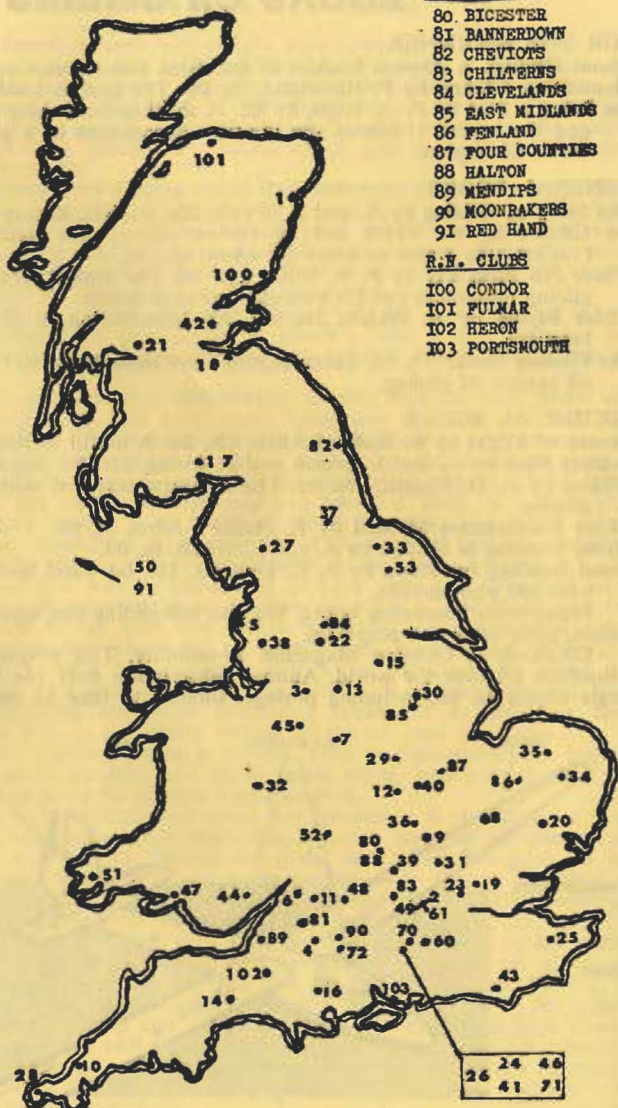
- 70 ALDERSHOT & DIST.
- 71 ARMY
- 72 SOUTHERN COMMAND

R.A.F. CLUBS

- 80 BICESTER
- 81 BANNERDOWN
- 82 CHEVIOTS
- 83 CHILTERN
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- 87 FOUR COUNTIES
- 88 HALTON
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- 90 MOONRAKERS
- 91 RED HAND

R.N. CLUBS

- 100 CONDOR
- 101 FULMAR
- 102 HERON
- 103 PORTSMOUTH



Gliding Clubs in Great Britain

*ASTERISKS INDICATE RESTRICTED MEMBERSHIP



9



14



10



15



11



12



13



Annual General Meeting



Associated Clubs Meeting

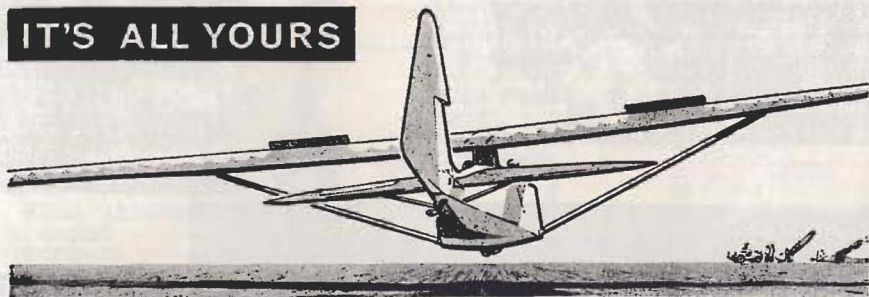


Private Owners Meeting

AT HARROGATE

(for details see page 210)

IT'S ALL YOURS



ALTHOUGH some interesting powered gliders are being produced in various parts of the world, the main interest in Britain is in using such aircraft for training.

The two big inefficiencies in gliding training are (a) the length of time that a pupil must wait and work on the field before his turn comes, and (b) the low utilisation of the instructor's skill; a hard day's work of 30 circuits may provide a mere 2 hours air instruction. If the instructor is a professional, the club is getting a low return on its money.

There are probably more people who will say that the introduction of powered trainers (little aircraft) will alter the sport of gliding, taking away the fun of pushing, and turning it into a second rate form of aeroplane flying. They are quite right, if they want to look at it that way.

If, however, we want to cope with an expanding movement, and get pilots *safely* on to real soaring without undue delay and frustration, it is necessary to examine our present system.

We know that we can teach pupils the things that they should know to become safe pilots, but we also know that it takes too long to do it in terms of time; even taking into account the overall time spent, the actual air time is too short.

There can be no big improvement in this situation (discounting a few hill sites), using the present method of launching. It is essential to look for some other way to teach effectively with less loss of time, particularly between flights.

The advantages of using a powered trainer are:

(1) A single person (the instructor) only is needed to carry out training with one aircraft, instead of at least three as at present.

(2) Lessons can be booked with some chance of success, at all times or on certain occasions.

(3) Unless the powered trainer is also the tug, training can continue without cluttering up the launch lines when pilots want to go soaring.

(4) Certain aspects of advanced training,

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which are not practicable now, can be taught.

Having said this, it is necessary to study the introduction of a powered trainer into the real life situation of a gliding club, because if it does not succeed here it is better to remain both slow and overworked. For a start let us assume that we have a suitable aircraft. Its handling characteristics and controls must not be remote from those of a glider. Its performance must be such that it can climb out of the field without leaving the instructor a nervous wreck. Above all, it must not make a filthy noise either in the cockpit or from the ground.

Having got the aircraft we must carry out trials to discover what are the best lessons to teach, and how to integrate its use with the glider. We must never forget that the pupil is to become a soaring pilot, and the air experience flights must be done in the glider so that he can see what it is all about. Then, there is a great chunk of early flying which can be initiated on the powered trainer—effect of controls, principles of turning, circuit planning, spin recovery, etc. It will be possible to give the pupil the appropriate amount of time to understand the lesson without the constant interruption of arriving back on the ground.

From here on there should probably be increasing use of the glider until the pupil is past solo and becoming concerned with the more advanced aspects of gliding. The powered trainer can then be used for the teaching of accurate circling, navigation, field landings, if suitable, aerobatics, and for general flying checks.

I have recently been flying the French single-seater "Avion Planeur" RF-3 with the Volkswagen engine, and going through the whole range of elementary exercises (talking to myself!). By using a throttle setting to give "no sink" or the equivalent performance of a Capstan or Blanik, it is possible to simulate usefully quite a lot of the training syllabus. The controls of this aircraft are not unlike those of a glider, and it has proper airbrakes. At "Capstan" throttle setting, and at 1,500 ft. it is barely audible from the ground.

There is no suitable powered trainer two-seater at present in this country,

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although work is being done on this by Derek Piggott and Eric Reed. But even when one becomes available, it will not be really practical just to "buy it for the club". There is still an enormous amount to learn about using it if the purpose is to *provide really good training more quickly*. There will be clubs whose sites preclude such an aircraft at all for lease, size or surface reasons. There will be clubs without an instructor of sufficient experience or qualifications.

Nevertheless, the powered trainer holds out the most practical hope of speeding up the time a pupil takes to learn to fly. With common sense and the pooling of everyone's experience a suitable aircraft could be integrated with gliding safely, effectively, and reasonably quickly.

ANN WELCH

(A scheme for "A Powered Trainer for Glider Pilots" was outlined by Derek Piggott in the August, 1964, issue of *SAILPLANE & GLIDING*.—Ed.)

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IMPRESSIONS AB-INITIO

By GEOFF HULME

I shall never forget that first ever flight in a glider. I got out of my car at the gliding site and wandered over to a group by an aircraft. "Who's next in the Ka-2?" someone shouted, then looked at me: "Do you want a go?". A moment later I was told to bend down a bit and a parachute was laid on my back. Several hands pushed, pulled and sorted the straps out and with a click or two they had me harnessed. Someone else ran up with a membership form to sign. I hadn't time to read it, but realized it probably let them out if anything went wrong.

"What do I do if we have to jump?" I enquired. "Count up to ten and pull the handle?". Don't worry, they said, you won't have to bale out. Anyway, you won't have time to count to ten; just get well clear of the aircraft, give a long pull on the handle and hope for the best. Someone else remarked, "We'd have the M. of A. down here if that happened."

A moment later I was being strapped in the front cockpit and another chap was getting in behind. I remember feeling a trifle nervous and hoped he was a good pilot.

We were off the ground before I had much time to think about it and I was tipped back like being at the dentist's. Very soon, however, the pilot drew attention to the horizon coming into view, and a moment later with a clunk the tow-line was released and we settled down on our own. The view was magnificent and the floating on air sensation was most agreeable. I was allowed to feel the response to the controls for a few minutes and was fascinated at being able to make the aircraft obey my will. All too soon my pilot said he would take over and we did a gentle turn and headed down towards the field. There was a blur of green, a slight bump and we were down. Someone said: "You'll never do that again — get out of a car and straight into an aircraft."

I stayed on and had a repeat flight

later, including another little go at the top. The pilot said I had done quite well during the few minutes he let me handle the controls, and I should take up gliding. The bug had certainly bitten, I felt I must see what could be done about it.

On several weekends after that, I visited the airfield and had an occasional "air experience" flight in a T-21 as a monthly member. It did not come up to the class of those first two launches in the Ka-2, and the chaps I went up with were not instructors and not inclined to let me have a go with the controls, but I tried to learn what I could.

I had a job at first to spot the field and launch site and spent many hours there for just a few minutes flying. However, I helped with the aircraft retrieving and learned to use the lamp or bats to signal the winch. I got used to fitting the winch cable, and running with the wingtip on take-off. I eavesdropped on any conversations which did not appear private, and eventually applied to join the club.

After three months on the waiting list I was accepted as a full flying member. Then came my first training flights. I was nervous and too tense to begin with. I used too much rudder on turns, then not enough. I was over-correcting if one wing went low and ending up with the other one as low as the first one had been. I was very glad to have someone with me. I'd work like mad to get the aircraft straight and level after a turn. The instructor would say, "Let me have it a moment". A couple of tiniest touches on stick and rudder and it was as if he had fed it on to a rail. I thought I should never learn to do that, but it is becoming better. After five flights I had an instructor who threw me in at the deep end. He let me take off and land with only verbal instructions. Fortunately I got away with it and it gave me some confidence. I was more relaxed after that. Anyway, I felt happier about the actual



LIGHT- YEARS AHEAD

S.G. Brown

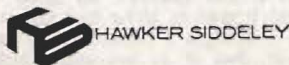
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flying after that, although I have had no time recently to admire the view. If I stared at a dial for a moment trying to puzzle out the altitude, by the time I realised I was looking at the G meter a voice would say, "Keep your speed up," or, "Your right wing is low," or, "Turn left now," before I had time to look at what was on the altimeter. I would eventually find it whilst trying to listen to words of wisdom regarding stalling, skidding, slipping and approach for landing.

I had an aero-tow in the beloved Ka-2 last time I went up and got on reasonably well with keeping in position behind the tug. I forgot to keep a look-out after release and would probably have been half way across the county if it had not been for the instructor. We did a practice stall and recovery. It was quite an experience hanging by the straps, looking straight down at the ground for a moment.

The Ka-2 is fairly docile and responsive and doesn't argue with me when I want it to do something, so I get on all right with it. I have found out where

to glance to check the air speed and altitude, but I have never yet bothered with the variometer. Each time I go up now I intend to, but never remember it. They switched the electric one on for me, but it was a waste of time, as I never thought of it until we got down again. As it happened I had the same instructor that I first flew with, and we were again doing a hangar flight. We did a less hectic turn about 600 ft. and put the speed up to about 70 knots for a lowish run over the launch site and down the field back to the hangar, only this time it was I who held it off as we skimmed over the grass before touching down. I forgot all about using the air brakes, but apparently they were not required for that landing. I was pleased to note that my reactions to keep the glider straight were about automatic and the instructor said I was flying quite well after only twelve lessons. It was the first time I had not felt a bit apprehensive before take-off.

If I can keep my reactions progressing towards automation, I might soon find time to have a look at the variometer.

I am certainly having lots of fun.

Product Review—THE S & G BROWN PACIFIC

THE Pacific is the lightest combined headset and microphone yet marketed, weighing under 1 ounce. Designed for use in quiet surroundings in aircraft or space vehicles, it would be very suitable for the glider pilot or his retrieve car driver.

The single headset version feeds one ear through a detachable ear plug, of which sizes are made to fit all shapes of ears. The other ear is left open to hear wind noise or conversation. This feature should appeal to users of deaf aids.

Speech is picked up by a small plastic pipe which replaces the boom of the conventional boom microphone. This tube has the characteristic of cutting down noises and portions of the speech spectrum which do not convey intelligence (but unfortunately it will not stop unnecessary chatter). The level of electrical output is comparable to that of a noise-cancelling electromagnetic micro-

phone. (Impedance is 300 ohms, which is the value for which most radio equipment is now designed.)

The unit is unmounted and can be clipped to spectacles, if the user normally wears them, or a headband can be supplied. Helmets are not the fashion now, but the Pacific can be clipped to a helmet if required. It is compatible with all oxygen masks. The advertisement shows how small it really is and one way of mounting it.

* * *

PYE BANTAM

When this set was reviewed (Dec.-Jan., 1964-5, p. 449), it was mentioned that an adaptor could be made to enable the set to be operated from a glider's 12 (or any greater) volt supply. Details of a suitable adaptor are available from the B.G.A. (Radio Co-ordinator).

R. BRETT-KNOWLES,
B.G.A. Radio Co-ordinator.

MAKING A GLIDE CALCULATOR IN ONE HOUR

By IAN STRACHAN

A RECENT article told us how to construct a glide calculator, etching the figures on perspex and taking twelve man-hours. I invite you to leave the etchings (and the twelve hours) for your girl friend, and make the following device in only *one hour*.

The original "G.J." calculator, designed by George Burton and John Williamson, had a single speed scale to one side of its centre. Both John Williamson and myself then had the idea of splitting the speed scale into two halves, and indeed the *easiest* way of acquiring such a calculator is to buy the "JSW" variety which has been advertised in this magazine. My own type, which is very similar, was designed in 1961, primarily for the Skylark 3. It has been used extensively since by a number of pilots, and for various gliders having Max. L/D's 1:30—1:35. The polar used turned out very similar to those produced for the Skylarks 3 and

4, and Ka-6, by Doetsch and Lampard. (SAILPLANE & GLIDING, Feb. '65, p. 44.)

Even so, 100% accuracy in figures is not only difficult to achieve, but is not even essential. What really matters on a final glide is not so much whether one starts at, say, 4,000 or 4,100 ft. (or even 4,200), but the *trend* of the glide, once started (i.e. whether you are going above or below the original glide path). It is far better to start trusting the calculator but monitoring the glide very carefully, than to take far too much "safety allowance" and cross the finish line in a screaming dive. Figures on a calculator are, after all, only a guide, for how many pilots know *exactly* the wind component, and expected downdraught strength (or even their A.S.I. position error), when starting a final glide? Here is the tremendous advantage of logarithmic calculators, for at each distance/height checkpoint it is easy to see the *trend* and adjust speed accordingly. For

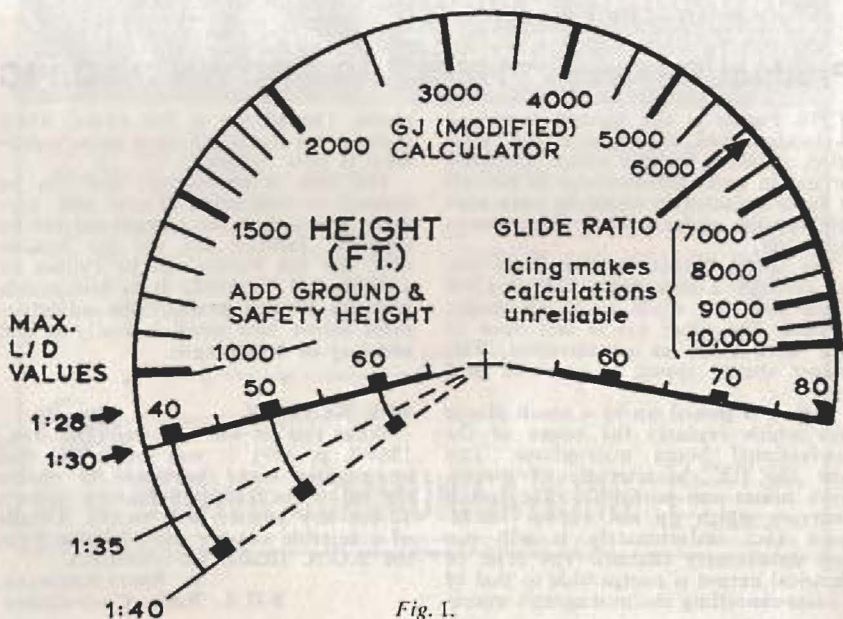


Fig. 1.

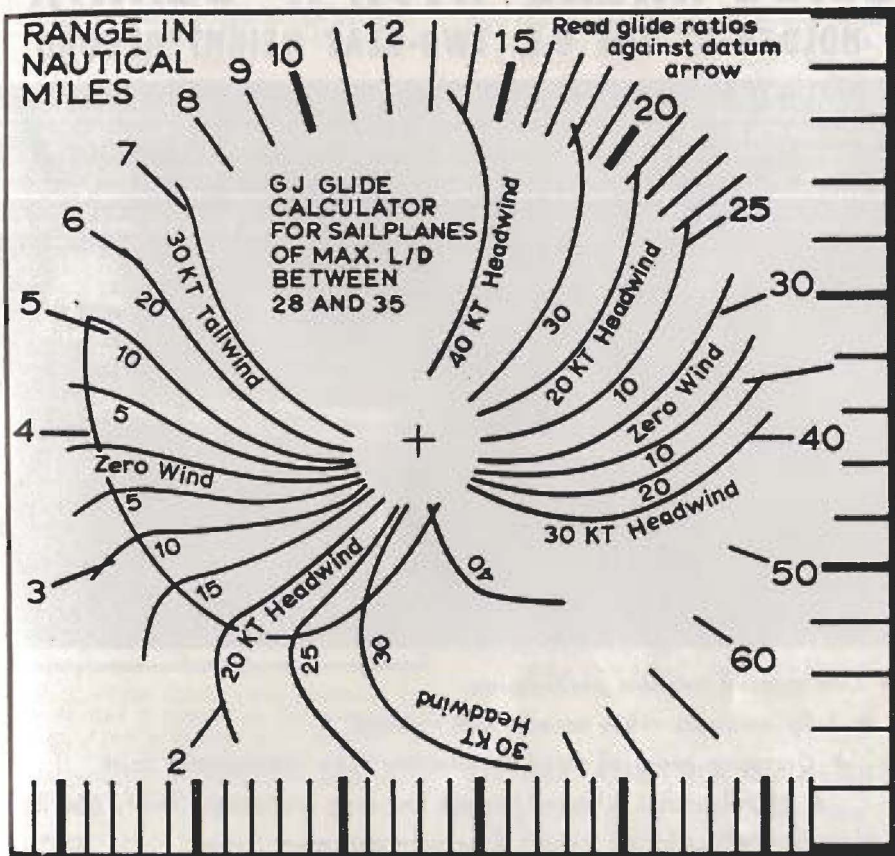


Fig. 2. The scales at the edges are nautical miles for 1:500,000 and 1:250,000 maps. (10 n.m. = 10 minutes of latitude on the $\frac{1}{2}$ million map.)

these reasons *any* calculator will work well for different types of glider as long as the differences are not too great. This particular device will work well for the following types (and any others that are vaguely similar): Skylarks 3 and 4, Darts 15 and 17, Ka-6, Olympias 419, 463 and 465. Of course, the performance of these gliders *may* differ (who really knows for certain?), but, if you wish, you can make the calculator to the Max. L/D that you think is right for your own machine (see later). However, be very cautious before using

optimistic figures — it is far better to be a little pessimistic and *reach* the finish line, than to be too hopeful and land a couple of fields short. Of course this should not happen if you check the glide often and accurately enough.

Materials required

1. Thin typing paper or tracing paper 10 in. \times 5 in.)
2. Thin but rigid celluloid, "acetate paper" or perspex. (10 in. square.)
3. Thick cardboard. (5 in. square.)
4. One very small nut and bolt, split

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pin or two-pronged paper fastener. Also Sellotape, scissors, coloured pencils and a small skewer.

AV STILL AIR SPEED	CLIMB OR DOWN DRAUGHT	V	SINK AT SPEED V	DOWN DRAUGHT + SINK
0	0	40	1-30	1-30
12	0-60	45	1-55	2-15
21	1-40	50	1-80	3-20
28	2-30	55	2-10	4-40
34	3-80	60	2-60	6-40
37	4-50	65	3-20	7-70
42	6-00	70	3-80	9-80
47	8-00	75	4-70	12-70
53	12-00	80	5-50	17-50

Fig. 3. These figures were originally for the Skylark 3, but will do for many other types. After a genuine 6-kt. thermal, fly at 70 kts. The final column is for the calibration of a speed-to-fly scale on a PZL type vario.

Method

1. Trace figures 1 and 2 on to your paper, then copy Fig. 3 (or your own performance estimates) on a 5 in. square piece of paper. Clarity is improved by colouring thus: red shading for the speed scale, green shading for the height scale. Headwind lines should be drawn in red and tailwind lines in green. Climb figures (from Fig. 3) in green, sink in red.

2. Cut out Figs. 1 and 2. Cut Fig. 1 along the Max. L/D appropriate to your glider (use 1:30 if in doubt). The high-speed end can be adjusted in a similar way if required (Dart 17r owners note!).

3. Cut out two 2 in. radius circles of the transparent acetate paper. Stick the reverse of Fig. 1 to one circle, then

stick the uncovered segment of this circle to the other one, thus sandwiching Fig. 1 between them. The best sticking medium is a small flattened loop of sellotape, sticky side outwards. This completes the moveable part of the calculator.

4. Cut the cardboard to size, stick Fig. 2 on one side and Fig. 3 on the other. Cut two pieces of acetate paper to the same size, place the cardboard between them and stick the edges firmly together with several layers of sellotape.

5. Pierce holes with the skewer accurately in the middle of Figs. 1 and 2 (on the crosses) and fix together with the small nut and bolt so that Fig. 1 pivots on Fig. 2. The calculator is now complete.

The actual techniques of using the calculator are beyond the scope of this article, but they can be found either from a club pundit or from previous SAILPLANE & GLIDING articles. As well as the reference already mentioned, the following will be found useful.

"Flying for Speed", by the author, April '65, pp. 116-8.

"The G.J. Calculator", by George Burton, Feb. '60, pp. 14-16.

"Gliding to a Goal", by Tony Deane-Drummond, April '57, pp. 92-93.

TO ALL AUSTRIA OWNERS

WE have had a letter from "Dick" Johnson, U.S.A., relating how he was unable to recover from an inadvertent spin, while thermalling in gusty conditions, in an Austria S.

His friends will be relieved to know that he baled out and is recovering from a broken leg.

Pending further investigation the following advice is given to owners of Austrias:

Always make sure that the C.G. is within the limit (14.2 to 17.5 ins. aft of Datum. Datum point is wing root leading edge at rib 1).

Deliberate spins must *not* be carried out until further notice.

Care must be taken to maintain adequate speed when circling in thermals.

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Chairman, Technical Committee



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A CADET TO 13,000 FEET IN EIGHT MINUTES

By MIKE JOHNSON

SURELY a fishy tale? No; in fact, quite true. And let me state at the outset, *not* a remarkable feat. If you are curious, read on, while I explain the joys of gliding in Kenya.

Before joining the R.A.F.'s "Mushroom Airways" to the heart of Africa, I was lucky enough to get an invitation from Tony Hyde, the C.F.I. of the Kenya Gliding Club, to visit them and see the site, along with what they had achieved so far. He made the stipulation that one cannot assess the pleasures of gliding at Lanet by the glider types available; I later fully appreciated his meaning.

My chance came when we were asked to move our oil barrels to Zambia, from Nairobi instead of Dar-es-Salaam. There were a lot of reasons given by the Press for the move but the crews remain convinced that the *real* cause was the bad feeling created by their drinking all the local beer—added to the fact that we could not really remain in a new six-star hotel after the pool had been used once. The standard of living of R.A.F. crews must be that to which they are accustomed.

The Kenya Gliding Club is still in its infancy and has little to offer in the way of gliders, but the airstrip, clubhouse facilities and local charm are out of this world. Situated at Lanet, one-and-a-half hours' drive north-west of Nairobi, it nestles amid scenery not to be rivalled. From above the field one can see Lake Nakuru, with its permanent red flush produced by the flamingoes which live there in their thousands. The vastness of the Menengai Crater rests just beneath your wing tip, and the whole area fits precisely the movie makers' image of "Panorama" with even the wild life clearly visible. But, apart from these sidelines, the thermals there are regular and incredibly strong.

Tony picked me up on the morning after arrival at Nairobi and we drove off up country. On the way I recalled my first experience in a Cadet Mk. 1; I think my briefing finished with the words "Watch it, Mike—she comes down like a garden shed", or something similar. I

remember coming off the launch, putting the wing down and starting the round-out for landing at the same time. Perhaps the present sortie was not such a good idea after all! However, on arrival we got things moving, slowly at first as tow cars are prone to boiling at 6,000 feet in those temperatures. By the way, I forgot to mention one starts with a little height in hand. After an air test they hooked me up—damned if I could remember the new mnemonic for checks. As I was leaving the ground I heard the shouted caution: "Don't worry about the airspeed, it normally over-reads on the launch". Suitably briefed, I was off.

At the top of the launch I went quickly into that turn, and was just working out my speed for the approach when I noticed the altimeter moving steadily up. It was a long time since I had seen an altimeter in a glider showing such a blatant disregard for terra firma. Looking for the green ball, I found it was stuck to the top of the tube, so I timed the rate of climb for a few turns to discover it was 2,000 ft./min. Enjoying the view, and while taking avoiding action on a vulture of some kind (one of those with the predatory look) which thought I was early lunch or late breakfast, I centered on gusts, some of which felt like riding a piston shaft and made my parachute seem conspicuous by its absence. Then a few minutes later came the problem of preventing myself from entering cloud at 13,000 feet, as there were no instruments. Travelling horizontally was not much fun, due to the effect of the strong air currents on that type of glider, so I came down in a strong but smooth downdraught. A mistake, a veritable black, as I learned that it was not done to interrupt the routine beer-drinking by making your flight less than thirty minutes, dragging the chaps from the comforts of the clubhouse when their arms were only half raised.

I am grateful to the Kenya Gliding Club for an experience I will remember, and hope to repeat. Never again shall I make rude comments about Mk. 1's.

SOARING AND SEEDING WITH A MOTOR-SPATZ

By ROBERT SWINN

Deputed by a chemical firm to measure the air pollution caused by its effluent, Mr. Swinn confirmed his suspicion that this effluent could have a "seeding" effect on wave clouds.

IN an interesting offshoot of a research programme, recently completed, into local meteorological conditions related to air pollution, which had been bent a little to include standing waves, suspicion arose that the amount of ammonia and certain other chemicals contained in the air had a distinct bearing on the condensation properties of a stable air mass meeting the barrier of the Cleveland hills. This was confirmed by measurements taken at and around condensation level. Routine analysis gave the pollution factor. A small feed-in by spray of a mixture in which ammonia predominated had a most encouraging, even startling effect. Flying through this area with my auxiliary-engined sailplane (engine off), a reading of 5 to 7 ft. per sec. rise was recorded where previously the vertical component, whilst evident from the cloud movement, was hardly measurable. As a furtherance of the experiment, I was keen to see what effect large-scale seeding would have on the low-level lee waves occasionally thrown up by the Pennine range of hills; however, as the idea could not at the time be fitted in to the rather more serious industrial programme, a future opportunity had to be awaited.

Forty gallons of a mixture thought suitable was made available free by local industry. The opportunity eventually came when low-level waves of three lines were in being. Spraying was carried out at a low level close to the downwind edge of the hills, in the down beat, and again at a point on the up beat of the first wave, just below condensation level. I was able to observe the seeding from my soaring point at 3,000 ft. and track through the seeded area. The effect of the seeding was to increase the vertical speed of the air mass above condensation level right off the variometer, whilst the build-up of cloud in the immediate area grew considerably, and for a short period the area could be

tracked by the nose alone. The effect was pronounced at the second and third wave, but to a diminishing extent. My operating height increased rapidly to over 5,000 feet, at which point I was way above the wave clouds.

The effect of the seeding was most encouraging from a soaring point of view. The general effect was short-lived, however, and subsequent subsidence brought me down to a little over the original 3,000 ft. The seeding aircraft run was approximately 3 miles cross wind.

More recent experiments from ground level at the top of a moorland plateau under katabatic wind conditions towards

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evening have given rise to only one temporary wave out of five attempts; in the successful case almost simultaneously with the cloud birth a marked increase of wind speed over the edge of the plateau was registered. Sulphurous compounds were also used on the ground work.

In reply to questions, Mr. Swinn has given the following further information:

I have now made many wave flights (for which the machine is so very suited); flights of 5 hours and heights of 7,400 feet have been reached. Heights in the order of 15-20,000 feet were possibilities on some days, but I am not a man for heights and pull out when I have done my basic research, which I confine to the minimum height at which waves under their varying conditions can be used. My reasoning is that any brave man can sit in a wave once he is in it and be carried up to the maximum allowed by physical conditions and other factors, *but*, the best purpose is served if more light can be thrown on the best way to get into them at lower levels . . .

Locally I now can move into a given area with certainty and pick up waves at very low levels — levels which before in this area would have been thought impossible. A good example occurred the other day when an A.T.C. club were doing repeated launches to 1,200 ft. in wave conditions and not making contact all day. With my knowledge accumulated through local research I was able to enter the same wave pattern at 800 feet and do over three hours' soaring, from time to time glimpsing through the wave cloud clearance their continued vain attempts to make contact. Place of entry, not height, is the all-important factor . . .

The seeded wave clouds did in fact develop cumulus tops, and only at the point of their dwindling in intensity did this take on an accepted wave outline.

At and around 3-7,000 ft. in the presence of moisture, i.e. in front of a warm frontal system, the area of lift is well out in front of the wave cloud itself.

ABOUT THE MOTOR-SPATZ

The transferring of a fraction of the winch power from the ground to where the bird has it, brought about this re-



The Motor-Spatz.

markable machine. The machine in turn has opened up new soaring horizons. Gone for me are the frustrations of launching, and in their place is the scene of a smiling man arriving at the site with a gallon tin of petrol and an air of complete independence and the assurance of a good day's flying. A quick glance at the map and prevailing wind direction decides whose hill I will use that day or in which area I will seek wave flying, or a shorter period of engine-on thermalling to be done. Ready stop and start of the engine in the air and a take-off distance of 100 yards, coupled with a top speed approaching 100 m.p.h. or a modest soaring speed of 40 m.p.h. with an Olympia performance, give a comfortable feeling under the belt.

In practice the miniature power unit is little used, as the fine performance of the aircraft does not often call for it. As many as 200 air miles have been done on as little as 1 pint of petrol. The machine in the U.K. enjoys the privilege of operating under the kindly cloak of power flying. Some 750 enquiries have been received by me. On the Continent around 50 machines are in current use with gliding clubs, and it is reasonable

to suppose that in the next 5 to 10 years U.K. clubs will be seeing the advantage of this type of machine.

The following extracts are from further letters from Mr. Swinn:

For some time I have run a small society, the object of which has been to follow and take part in powered sail-plane development. The net result is that I am in touch with activities in this direction all over the world, and I have possibly the most comprehensive records in the form of photographs and letters on the subject that there is.

I went on the Continent and made a tour of all the machines then known, and there were a number of one-offs which were really advanced. However, the chance of purchase was out, as the persons were dedicated to their machines. On the factory-produced types no clear lead had been established, i.e., one could not purchase one machine knowing that it was well backed and the manufacturer was intent on continued production, giving assurance of spares and other services.

I finally settled on the most advanced type, and had a long talk with the manufacturer; his enthusiasm soon left me in no doubt that, as well as having the most advanced machine, he also had the most advanced and dedicated outlook himself. I laid down the modifications and other requirements for the machine I wanted; these were met willingly, and eventually I took delivery of my machine (by air freight) . . .

Regarding my machine's soarability — well, I get more pure soaring than any other private owner I know of . . . Flying averages out at 10 mins. engine-on to 2 hrs. 15 mins. pure soaring . . . Remember, the engine is only used for launching, and location in a given area.

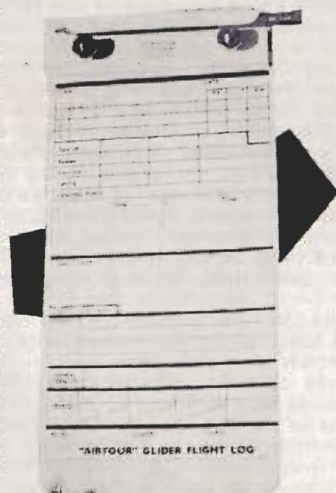
The only thing which will hold back this form of soaring will be the attitude of the have-nots. But when, as will eventually happen, one of them will possess such a machine, they will about face and cry that any machine without its own built-in method of launching is old-fashioned — such has ever been the way of these persons.

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OBITUARY

FRED BALL

EARLY in February Fred Ball died, in his 76th year. Fred will be remembered mainly by A.T.C. Cadets who learned to glide at Portsmouth and R.N.A.S. Gosport in the 40's and 50's as the C.F.I. who was the mainstay of the school. He was a pilot of the R.F.C. in the first World War but never bragged of his successes. We chiefly remember his fund of stories and taste for the good things of life in the mess at lunch time. Personally, I owe my C to his unselfishness in letting me have his turn to

fly, when conditions were good.

His wife died last year and there were no children.

R. B.-K.

SIR SYDNEY CAMM

SIR SYDNEY CAMM, the famous aircraft designer, who died on 12th March at the age of 72, played a part in the first British soaring contest at Itford in 1922, for he designed the "Handasyde" glider in which F. P. Raynham put up the second best performance of the meeting. Sir Sydney was invited to the 40th anniversary reunion at the Kronfeld Club in 1962, and would have come if he had not been abroad at the time.

A. E. S.

BOOK REVIEW

The Horse's Mouth: JOURNAL OF THE YORKSHIRE GLIDING CLUB, October and December 1965, March 1966.

THIS new club magazine, excellently produced, is evidently named after the white horse cut into the club's south slope and visible from all over the Vale of York.

Besides articles on club affairs, the first number has an account by Tim Birch of how he flew Silver C distance along a sea-breeze front; it was along almost exactly the same route and distance as John Neilan's flight of 1935 to Withersea in the first Kirby Kite during that year's Nationals—a club distance record at the time.

In the December issue Cliff Banks writes about a Pennine wave which took him to 8,500 ft.; flying close to the leading edge of a wave cloud, he had to make a sudden turn to avoid colliding with what turned out to be his own shadow, and was then rewarded by the sight of a full-circle rainbow on the cloud surface.

In the March issue Mike Wilson, in "The Fenman", describes how, every time he tries to fly from the North to Dunstable or *vice versa*, he always ends up in the Fens.

The magazine could do with someone to vet the punctuation, which is particularly unorthodox in the "Ornithology" series, a regular and lively gossip feature about the birdmen and birdwomen who make up the club membership.

Pilot Reports of Vertical Wind Shear Experienced on Take-off or Landing. Ministry of Aviation: Civil Aviation Information Circular, U.K., No. 84/1965.

THIS is another of those circulars warning power pilots of something that has been known to glider pilots for years. "The I.C.A.O. Meteorology and Operations Divisional Meeting 1964," it says, "held jointly with the World Meteorological Organisation Commission for Aeronautical Meteorology, recommended that studies in relation to aircraft operations be undertaken on the occurrence at aerodromes of vertical wind shear in the layer of the atmosphere up to 300 feet above ground." Pilots are asked to report to the Met. authorities any "difficulties due to vertical

wind shear experienced by pilots at any particular aerodrome during landing or take-off operations”.

Going into details, the circular starts with the least frequent type of shear — reduction of wind with height, which, of course, is most troublesome at take-off by reducing the angle of climb. Then “A lateral wind component changing with height,” proceeds the circular, without mentioning that the change will almost always be an increase rather than a decrease, “could cause an aircraft to move out of the area in which obstacles have been surveyed” — in other words, move sideways. Anyway, a pilot who has wind-shear trouble on take-off, and regards it as hazardous, should warn others by sending back a radio message, which “should be as brief as possible and the content limited to a statement that wind shear has been suspected together with the height of the occurrence and its severity”, though not, apparently, what it did to his aeroplane.

As to landing through a strong wind gradient, which every glider pilot knows (or should know) how to allow for, the circular gives an interesting estimate that “The effect on a large jet of an unexpected change of one knot in the longitudinal wind component during the period from threshold to touch-down is to vary the landing distance by approximately 100 feet”.

If, on the approach, a pilot notices his airspeed falling, “it is not possible normally to produce extra thrust quickly enough to compensate for a falling air speed”. Then what should the pilot do in this troublesome situation, which, after all, is the most common of all those caused by wind shear? The circular says: “Corrective measures usually entail a combination of attitude and flight path change with a risk of some or all of the following hazards occurring—(a) an air speed dangerously close to the stall, (b) a dangerous attitude, (c) a threshold speed or threshold height which may invalidate the landing performance, that is, give rise to an undershoot or an excessive landing distance, (d) a high rate of descent at touch-down.”

The U.K., the circular concludes, “is giving consideration to ways and means of measuring wind shear instrumentally. However, pilot reports will be the main source of information on the occurrence of wind shear at airports and its effect on aircraft operations for some time to come.” Yet a vast number of measurements of wind shear under all sorts of conditions can be found in the meteorological literature. The circular doesn't even mention the rough working rule of meteorologists that the wind speed at 10 metres over land is approximately one-third of the gradient wind, which is already known from the weather chart; that the gradient effect tends to be more concentrated near the ground at night; and that, north of the Equator, the surface wind is normally to the left of the gradient wind.

A. E. SLATER

CORRESPONDENCE

MORE PROFESSIONALISM

Dear Sir,

Ann Welch (SAILPLANE & GLIDING, April, 1966) points out, quite rightly, that gliding is no longer a “pioneering” type of activity but is now something you can do in exchange for money. With indestructible logic, she then gives convincing reasons why every member of a gliding club should be fully involved in all of its activities.

Does it always have to be this way? Glider pilots are normal, healthy, responsible, ambitious people, and most of them during the course of their gliding career will acquire a husband or wife, children, house, and also change their job, moving to a new area. Not all husbands are prepared to abandon their families every weekend and conversely not all wives and children are prepared to shiver on a bleak airfield. A difficult choice has to be made. The experienced but married club

member, knowing what is expected of him or her should they continue gliding with their own or a new club, eventually gives up the struggle and settles for domestic bliss, to join the 95% or so who start gliding and fall by the wayside.

This represents an appalling wastage of effort and resources, the cause of which is obvious. No one is going to spend a week-end painting the clubhouse, etc., when there are similar jobs waiting at home. Nor are they going to get up at the crack of dawn and engage in a production car race to get at the top of a flying list, only to miss their turn because they are half a mile from the launching area doing some useful but non-gliding activity. The golfer does not expect to mow the fairway before "teeing off" even though there may be a lot of capital tied up in it.

As one gets older and presumably more affluent, one is prepared to pay a reasonable price for someone else to do the jobs one was willing to do in former years. Why should gliding clubs be any different?

The majority of gliding clubs consist of an establishment of hard core, experienced enthusiasts and a large group of relatively inexperienced novices. What happens to all those who become reasonably proficient and then acquire domestic responsibilities, but have neither the time nor inclination to become national or world champions — and simply want to fly?

They get out — for no other reason than they cannot fly when they want to, and become highly frustrated in doing so. The smaller clubs in particular can ill afford to lose the proficient member who wants to settle down with his family, yet maintain an interest in gliding but not be required to devote himself, body and soul, to his club every week-end.

The sort of people I have in mind, married, in their thirties with, say, 100 hours experience, are noticeably thin on the ground in the majority of smaller clubs, most of which either can't or will not make any attempt to meet married members half way, but who would contribute much to the stability of both finances and membership.

The answer is more professionalism, not less, and a genuine understanding of the needs of married members with domestic responsibilities. Anyone who subscribes to the "do-it-yourself" school of thought holds a nostalgic yearning for the past.

Rugby.

D. J. CAREY.

WORLD CHAMPIONSHIPS AS CONTESTS BETWEEN NATIONS

Dear Sir,

In a somewhat jingoistic frame of mind, I have just worked out a table of final results for the last World Championships, marking each nation as a team.

They were arrived at from the final individual placings by a straightforward "Wallymark" system. The number after each country is the sum of team members' final positions. Where a country had less than four pilots, the average of their placings was multiplied by four to give a comparable figure.

While not claiming to be absolutely fair, it does give an interesting comparison of national prowess at cross-country flying.

Chesham, Bucks.

D. E. FOSTER

(The columns show: Final Placing, Country, and Sum of Daily Placings.)

1	Poland	12	11	Belgium	88	21	New Zealand	129
2	France	26	12	Czechoslovakia	93	22	Finland	130
3=	Britain	27	13	Italy	95	23=	Australia	132
3=	Germany	27	14	Sweden	96	23=	Norway	132
5	Switzerland	54	15	Israel	100	25	Rhodesia	138
6	U.S.A.	58	16	Yugoslavia	101	26	U.S.S.R.	143
7	Hungary	60	17	Canada	103	27	India	156
8	Austria	69	18	South Africa	110	28	Iceland	158
9	Netherlands	77	19=	Denmark	117			
10	Argentina	80	19=	Ireland	117			

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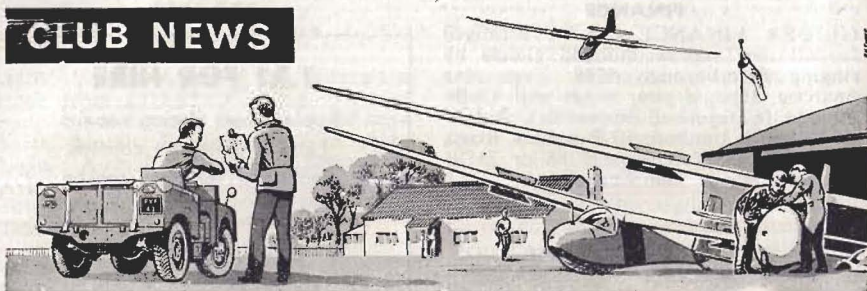
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CLUB NEWS



CONTINUING our improvements to the Club News section, starting with the next issue we will be making heading blocks for each club which will give the name and address of the site and the person to contact for information. Will Club News secretaries please let me know who this person should be in their club together with their telephone number. News for the August-September issue should reach me at 14, Little Brownings, S.E.23, not later than 15th June, and for the October-November issue by 17th August.

30th March, 1966.

YVONNE BONHAM (MRS.)
Club News Editor.

BRISTOL

MARCH saw the beginning of soaring and several Silver C legs have been flown. We can claim a bit of one-upmanship on Lasham, the inhabitants of which, according to Barry Walker, on the day he flew his Silver distance there, were not flying because they claimed conditions were too rough!

Ab-initio courses start on 18th April with C.F.J. Peter Etheridge instructing and Bentley McLeod winching.

We have half-a-dozen entrants for the Nationals and whilst there is much talk about Dart syndicates it does not look as if any of our members will be flying one at Lasham. Our Regional competitions are nearly fully subscribed for 18th-26th June.

Finally, our congratulations to Jane Warter, who is this year's recipient of the "California in England" Trophy.

R. G.

COVENTRY

NEW committee members elected at our A.G.M. on 26th March were: Ray Stevens, Ken Haynes and Frank Neal who take the place of retiring members, one of whom is Lou Glover, who has given many years of service to the club.

The following day the club Olympia trailer released pent-up feelings of jealousy at its inmate doing all the flying, leaving the ground in a 90 m.p.h. gale, almost gaining its C and returning to earth via a heavy landing. Unfortunately completely destroying itself in the process.

Recent lectures on Saturday evenings have covered meteorology and cross-country flying, and now more members than ever are to be seen studying fronts and control zones in the clubhouse!

An additional Tiger Moth privately owned, with a towing hook, is now hangared at the site; so with three Tiger Moths for the season aero-towing will be the order of the day. A. N. O. W.

DEVON AND SOMERSET

LAST year we said that we were negotiating for our own airfield at North Hill and we are now pleased to announce that we have acquired the site and hope to tow the winch over there as soon as the ground has dried out. The new field will be ideal for hill soaring and commands a fabulous view over East Devon. Of course, it will take time to establish ourselves, but, as our own landlords, we hope to provide better

amenities for our members and guests.

Courses this year will be run at Dunkeswell and commence on 18th April. Our very popular task weeks will be held at Dunkeswell on 23rd July and 27th August. Our T-49 and two Swallows will be available for courses this season and will be kept at Dunkeswell.

Congratulations to two of our club members, Tim Gardner and Rowland Trott who both flew to Feltwell on the same day to achieve their Diamond goals. Tim was flying the club's Skylark and Rowland flew John Fielden's Skylark.

H. C. W.

finished.

One of the first flying days presented good ridge conditions. March has given several soaring days which have been good practice for the competition triangles which are planned for the summer. Several expeditions are planned for Regional Competitions and also to Portmoak and Iceland for wave flying.

By the way, if any gliding type should find himself (or herself) in our vicinity, we should be pleased to extend our hospitality during any week-end.

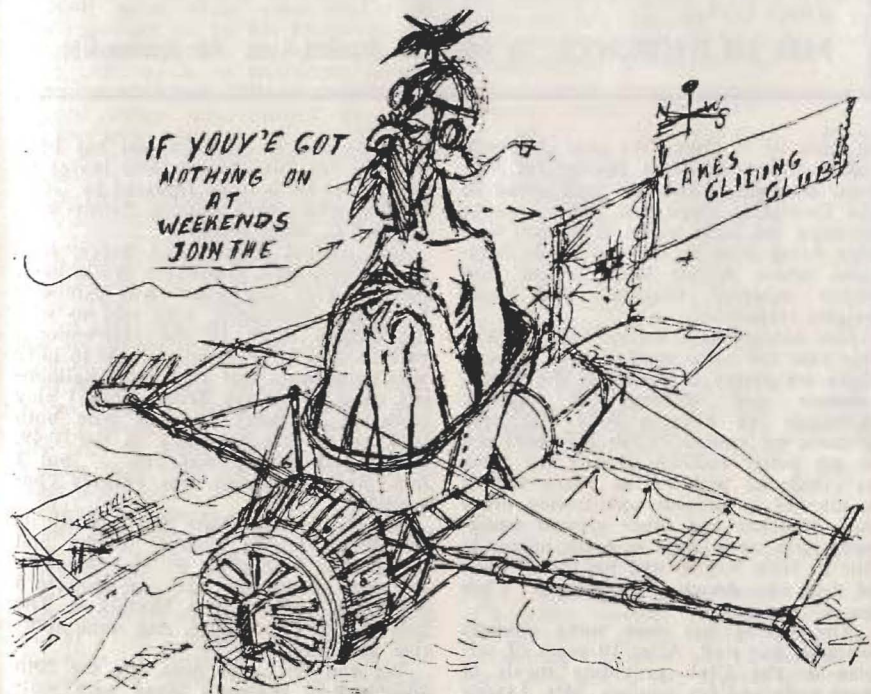
R. W.

KENT

SINCE the New Year, the weather conditions have not permitted a great deal of flying. The new winch is taking shape and the clubhouse is virtually

LONDON

THE weather this year has been fairly favourable, few week-ends having occurred without any flying. A number of five-hour attempts have been successful, though one visitor from the Northamptonshire Club was unfortunate



Drawing by Rowland Wearing.



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to clock up 4½ hours. We have also been visited by gliders from Booker for five-hour attempts, which are aero-towed to the Dunstable slope and left to weave amongst the local traffic. The most notable flying done so far was up in Scotland, where Arthur Doughty and Bob White achieved Diamond and Gold heights respectively.

Our courses have started fully booked this year for some weeks ahead, though there are plenty of vacancies during the summer and autumn at present. Although we have a very full programme of courses, Club members are to get better facilities during the week as compared with recent years, and it is planned to provide aero-towing every day. Winches and other ground equipment have never been so good, primarily due to John Argent and his merry band of men who design and construct "Club proof" equipment.

The Spring has seen some changes amongst our staff. After 19 years of service to the Club providing meals at week-ends and for courses, Mrs. Linney has decided to retire. We shall all miss

her very much. Jan Mikulski has been with us for two seasons and leaves us very soon. He is to be replaced by Geoff Naylor, who's been flogging circuits with the A.T.C. until recently.

Our annual dinner and dance, held at the Civic Hall, Dunstable, was a great success. Our top guest was Anthony Smith, the balloonist, who told us why the British entry in the international balloon race held recently ought to have won (it appears that all foreign balloonists cheat, while the British always play cricket!). Anthony and his wife both took to the air next day in the T-49, and found gliding was fun — but I don't think Anthony was entirely converted!

The Collectors Plate has started its travels again, the honour of the first trip of the year going to Mac Mackenzie, who completed the out-and-return trip from Lasham in a Skylark 4. The first of many successful, and some abortive attempts!

We end on a sad note. On the 20th March Ron Watson's ashes were scattered from a glider over the Downs and

a short memorial service was held for Ron, who had been a staunch member of the London Gliding Club for very many years. (See Obituary April-May issue, p. 126.) A Memorial Fund has been started. Those who wish to contribute to this may send their contributions addressed to Ron Watson Memorial Fund, London Gliding Club, Dunstable Downs, Beds.

M. P. G.

MIDLAND

LONG MYND EASTER RALLY

FOR one day and a bit, during the five days of Easter, the clouds lifted off the Midland Gliding Club's 1500 ft. plateau. The bit came late on Saturday and the whole day was Easter Sunday, 10th April.

On this one good day, with a forecast of cumulus, with cumims later, and a N.W. wind which soon backed to S.W., the task set by Ric Prestwich was an 89-mile Triangle, N. by E. to Tilstock, S.E. by S. to Halfpenny Green, and W. back home. Tilstock airfield had a new owner who refused to allow turning-point markers on his land, so they were laid outside the nearest pub instead.

Launches started about 11.25 under a dark mass of cumulus which kept feeding itself from the south end of the Mynd until, an hour and a quarter later, it disgorged hail. It was difficult getting away from the cloud-soaked Mynd but easier over low ground, though pilots had to deviate quite a lot to avoid bad patches.

Mick Kaye made much the best time, 3 hrs. 6 mins., having to deviate well east of Shrewsbury and then west of the line, and he made Halfpenny Green in a glide from, and back to, an isolated good patch inside the triangle. Others to complete the course were Tim Corbett in 3 hrs. 42 mins., Martin Seth-Smith in 3 hrs. 50 mins., and John Brenner in just 4 hours.

Ivor Shattock from South Wales, who came down on the third leg, had climbed 11,000 ft. in a cumim and awaits confirmation of Gold C height; he had started his climb with the altimeter showing minus 400 feet (actually 1,100

ft. above sea level). Some others tackled the cumims and Kaye went to 8,000 ft.; but the short triangle made high climbs unnecessary. Bobby Neill reached Halfpenny Green and four others were brought down on the second leg by over-development.

Thirteen machines were entered, including two from Derbyshire and Lancashire and one each from South Wales, Norfolk and the Royal Navy. Competitors included four sons of prominent glider pilots: Mick Kaye, Bobby Neill, Alan Goodfellow and Louis Rotter.

Meteorology was looked after by Bruce Bishop until the better weather brought, or was brought by, Frank Seaman, a new recruit to the select band now following in "Wally" Wallington's footsteps. Seaman has been on the staff of the Met. Office Training School at Stanmore, together with "Jock" Findlater and Peter Wickham.

By Monday morning the clouds had descended again onto the Mynd, and as the met. man could promise nothing better till late Tuesday, the rest of the Rally was scrubbed and Mick Kaye was presented with the Mynd Cup.

Results: Sunday, 10th April

Pilot	Sailplane	Points
1 D. M. Kaye	Dart	1,000
2 M. Seth Smith	Oly 460	972
3 J. Brenner	Oly 460	922
4 T. Corbett	Skylark 4	901
5 I. Shattock	Skylark 2	629
6 R. Neill	Skylark 4	419
7 E. R. Boyle	Dart	283
8 A. Goodfellow	Skylark 4	277
9 A. Adams	Oly 460	175
10 D. Darbshire	Oly 460	150
11 D. Johnson	Sky	110
12 S. J. Curtis	Skylark 4	100
13 Rotter/Jones	Capstan	0

Olympia 460, Skylark 2, Sky and Capstan had 10% handicap bonus.

A. E. S.

NEWCASTLE AND TEESSIDE

A MARKED improvement in the gliding weather has been observed at Carlton in recent weeks. At the time of writing the snow has all melted, we have only one or two degrees of frost at night, and on several days it has been

possible to stand up against the wind! On these latter occasions, some good soaring has been achieved on the ridge and in wave, though to date no exceptional heights have been obtained. The wave systems seem to have been rather out of phase with our site, since our neighbours have had some very good height gains.

Our A.G.M. has been held recently, and this proved to be a much more lively affair than in previous years. Perhaps the major outcome was the change of secretary — Tom Shepherd taking over from Dick Stoddart. Tom's address by the way is 22 Danes Croft, Bridlington, East Yorks. A word of thanks to Dick Stoddart for the splendid work which he carried out during his term of office.

At a Special Meeting immediately following the A.G.M. it was decided to change the name of the club to that which appears above. It was felt that since our site is very close to the new Teesside County Borough, from which a large part of our membership is drawn, the name of the new area should be included in our own name in order to avoid the mistaken impression that the club is concerned solely with Tyne-side.

Plans for the further development of the site are in hand and indeed some of the work should have started when this appears in print. Amongst other things, the possibility of acquiring a more permanent clubhouse is under active consideration. B. W. B.

NORTHUMBERLAND

SHOULD the remaining nine months of the year prove as good as the first three, 1966 will linger for ever in the hearts of all of us here at Hedley. Practically every week-end this year has been soarable to some extent and only one day lost to bad weather. The first thermals appeared on 25th January and regularly thereafter though the very best soaring days are, inevitably, mid-week.

The Hedley wave has been very much in evidence to set members longing for aero-tows to get to it. After scratching his way up to 3,000 ft. Dave Wilson found out all about downs when going for the next step upwind and lost the

lot in about a minute, to land — once again — out. Unabashed, he tried the following week-end and after a magnificent climb to 12,000 ft. — and a safe return — won the standing prize of 6 bottles of home-brewed beer.

Membership of the club has been well increased by a group of mustard keen students from Sunderland Technical College. Several recent solos have also swelled the ranks of Tutor bashers.

The club features quite regularly in the local press but hit the nationals after blacking out most of the Tyne valley when a length of broken cable and parachute landed over nearby power lines.

With site negotiations in the final stages, plans are now being laid to level the site to provide a landing strip for the tug we haven't got but need so much.

P. W. L.

OXFORD

CONGRATULATIONS go to Fred Rawlings, one of our instructors of long standing, who has extended his duties by becoming a B.G.A. qualified aircraft inspector. Several club members are pleased to work under his control to carry out C's. of A. on club aircraft in our own workshop.

Congratulations also to John Adams of the Dart 17r, No. 330, syndicate having just passed the B.G.A. tests to join our panel of categorised instructors.

Flying activities remain slow to recover at the start of a new season, due, of course, to the weather, but John Ellis spent an hour-and-a-half aloft early in March in his venerable Gull 3.

Our Skylark 2, No. 63, has at last left us for new horizons at Doncaster. In its place the fleet is now graced by Skylark 3F, No. 168.

The A.G.M. was quite well attended and chaired by Malcolm Laurie, who stated that though hours were down, launches totalled some 3,000 — about average compared with previous years. The diesel tractor made quite a marked improvement to the launches per gallon rate as against the Bedford truck.

John Ellis sounded the market for a possible fortnight of task flying during the summer for all solo pilots. There were many takers but he pointed out that considerable organisation would be necessary and hoped the club pupils would assist with retrieves and enjoy

that aspect of the sport. To compensate these pilots, it was decided to commence Wednesday evening flying much earlier this year.

The meeting closed with the presentation of the Simpson Cup, for the most outstanding flying achievement from the site, to John Pratelli for flying his Silver C in two consecutive week-ends.

C. J. T.

STAFFORDSHIRE

SEVERAL expeditions to other sites in search of new scenery and sources of lift will have taken place by the time these notes appear. Both the syndicate Olympias are going to Portmoak with a group of private owners and club members. We also expect to visit our friends at Church Broughton, where the Burton and Derby clubs are located.

Visitors to Meir lately have included the Olympia 463 of Adams and partners from the Mynd and our friends from the Avro Club at Woodford with their Skylark. Both were present during the week-end of the great "high", 19th-20th March, and had some soaring. Ray Stafford-Allen visited us on the following week-end with the Capstan.

With the efforts of two winches and a Tiger we hope to be able to do 100 launches per day when the season really gets under way.

A. W. H. L. W.

SURREY

AT the A.G.M., Alan Purnell, Chairman; Tony Barker, Secretary; Peter Hoskin, Treasurer; and Pat Garnett were elected for a further year. In addition Chris Lovell, Tony Burton and Ralph Ismail were elected to serve on the Committee.

Another Skylark 4 has been added to our fleet of two Skylark 4's, two Skylark 3's and four Skylark 2's. A new week-day priority booking scheme has been introduced for this season.

Because flying statistics for the Surrey Club were not given separately in the April issue they are included here: 2,240 hours were flown from 3,280 launches, 7,000 cross-country miles, including eleven 300 km. legs, of which seven were closed circuits. Gerry Pad-dick won the Thackray Trophy for the longest closed circuit flight by a non-Gold C pilot.

A. R. I.

TRENT VALLEY

AFTER our first meeting in November we are at last airborne, having had the good fortune to rent the runways of Sturgate Airfield near Gainsborough. We have commenced flying with a T-31, fitted with spoilers, which cuts down the time spent on retrieving.

Our C.F.I. is "Siggie" Romrig, and under his leadership the club is rapidly increasing its membership. Peter Hatton has generously allowed us to use his Land Rover for launching, and with Fred Brackenbury has headed the team of enthusiasts who have built an excellent trailer for our T-31.

To combat excessive wear on the nose and tail skids, the C.F.I. has made ingenious use of two small wheels, surely this is the only three-wheeled T-31.

We are now eagerly looking forward to a single-seater for our first soaring season.

P. A. H.

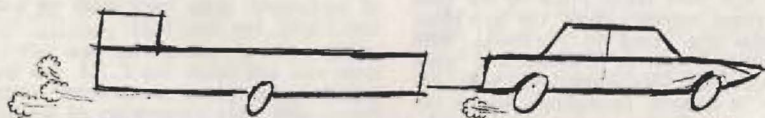
WEST WALES

FOLLOWING a visit at Withy-bush Airfield by Air Commodore Christopher Paul, Secretary-General of the AIR LEAGUE, the West Wales Gliding Association has been approved to hold Gliding Holiday Camps for Henbury Secondary School, Bristol. These visits will be sponsored by the AIR LEAGUE and have been promoted by Frank Allen, master at the school, who is an enthusiastic and qualified pilot himself.

In our own small way the West Wales Gliding Association is now, for the third year, presenting six schools with gliding scholarships in the Pembrokeshire area. They are worth over £150 per annum, and fully paid for by our club members.

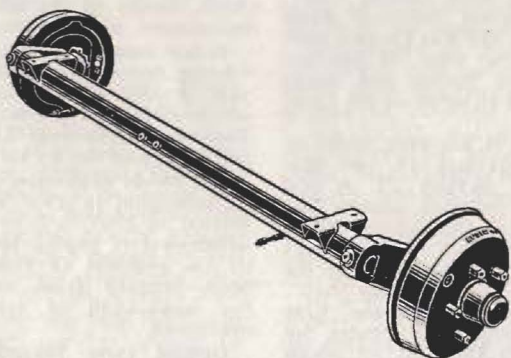
The steady expansion of the club since its formation in 1960 was severely restricted in 1965, first by the precipitate withdrawal of capital loans necessitated by the removal of recognition of the Shaw Slingsby Trust, and then by the full application of taxation on club operations.

Despite these burdens, the Gliding Holidays run for the first time in 1965, increased the club fleet utilisation to well over 4,000 flights and 500 hours on three sailplanes alone.



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Taking the five full years of club flying from January, 1961, the records show 20,000 flights by gliders from Withybusch, and the Auster has provided over 1,000 aero-tows and 750 flying hours.

A private syndicate purchased the Dart 15 which was flown by George Burton in the last World Championships, and the club fleet has been extended with the purchase of an Olympia 463.

Congratulations to Richard Baldwin on winning the top pilot award, the President's Trophy, for the second year running.

Membership is still open to all who wish to come and learn to fly before the soaring season is too far advanced. Including entrance fee and annual subscription, it can still cost less than £25 to learn to fly solo. Social membership of our excellent clubhouse is available for only £1 per annum.

THERMAL

SERVICE NEWS

FENLAND (Feltwell)

FLYING has continued steadily during the last two months despite somewhat unkind weather.

Lemmy Tanner has taken over as C.F.I. from Colin Elliot. During January two parties made the pilgrimage to Portmoak and found the hospitality good but the weather poor.

R. G. J.

FULMAR (Lossiemouth)

MARCH provided a very mixed bag of weather but off-shore south-westerlies allowed a reasonable amount of soaring. Ian Macdonald had his first real taste of thermal soaring in the Swallow and John Stanley used an evening thermal to waft him into wave and thence to 8,600 ft. with a grand view of the sunset on the Moray Firth.

The T-21 continues to be in great demand and we hope to have some first solos soon.

Our best wishes go with Derek Marpole and John Stanley who have been chosen for the Navy team in the Inter-Services Competition.

H. D.

R.A.F.G.S.A. (Bicester)

THE Easter Competition at Bicester included only one contest day, Easter Sunday, 10th April, so no Inter-Services or Inter-Command Champions could be announced. There were 38 entries divided into two leagues.

Fl.Lt. Ian Strachan, Director and Task Setter, set a race to Spitalgate (72 miles) and back for League 1 and distance along the same course for League 2, as the forecast was that a front moving north-eastwards would have cleared Spitalgate by the time anybody got there. Unfortunately the front came to a stop and moved back over Spitalgate, covering it and its approaches with a low stratus layer with its top surface at 1,000 ft. and its base only a few hundred feet above ground. Above it was good cloud lift to 7,000 ft.

Tony Deane-Drummond (Army) had the luck to spot the turning-point through a hole in the clouds and was able to glide 9 miles back to Saltby, making the longest distance (1,000 points). John Delafield (987 points) and "Max" Bacon (980) also rounded the turning-point, while John Williamson, Ed. Meddings and "Paddy" Kearon landed at Spitalgate (870 pts. each). In League 2, Master Signaller N. L. Bailey went furthest.

A. E. S.

CROSSWINDS

(Butzweilerhof, Germany)

OWING to a tragic accident on Sunday, 6th March our club once again faces a major crisis. Our one and only fully qualified instructor and C.F.I., John Jarred, was giving soaring instruction to a C pilot, John McIlwaine, when their T-31 collided in mid-air with an L-Spatz flown by a German pilot. All three pilots were killed.

"Spike" Jarred had left his own club, Nimbus at Geilenkirchen, and come to our aid when the club faced a similar instructor crisis in September last year. Although he had been our C.F.I. for only a short time, "Spike" soon established himself and brought the operating efficiency of the club to an unprecedented peak. However, the enthusiasm

that he instilled is still with us and all our members are keen to continue flying at Butzweilerhof and build up the Crosswinds Gliding Club in memory of him. So if any B.G.A. instructor is considering taking up employment in the Rhineland, we would be very pleased to hear from him. In the meantime, our other T-31 has been transported to Geilenkirchen and most of our members go there to fly at week-ends.

We have just said good-bye to our secretary, Flt.-Lt. "Pete" Peterson. Before she left, Mrs. Peterson designed a club badge which is depicted here. This is the view that we have from launch height over the airfield. Negotiations are in progress for the manufacture of a cloth badge and ex-members wish-



ing to buy one should write to Andy Price at Wildenrath. The colours are light blue, dark blue and white.

Our tame Kiwi, Dave Hopecross, completed his A and B certificates, Tony Phillips claimed his C and Andy Price reached 18,300 ft. in the Issoire wave, thus gaining a Gold height and just missing his diamond and finally Don Farquhar managed to get lost on his first solo aero-tow and carried out a successful first field landing.

As usual, we shall be the host club for the R.A.F. Germany Gliding Championships which are to be held during the period 25th June-10th July, so we are busy planning the operations room, briefing room and other necessary facilities.

A. C. P.

NIMBUS (Geilenkirchen, Germany)

ONCE again it is necessary to announce that we are under new management. This time, Al Whiffen has inherited the wooden throne. After many years, Al has finally made the break with his "Father", Pete Dawson (C.F.I. Phoenix G.C.) and taken the post as C.F.I. Nimbus.

The club has recently moved into new hangarage and obtained a first-rate clubhouse which boasts; a spacious bar and lounge, coffee bar, lecture room, C.F.I.'s office, toilet facilities and central heating throughout. The club's gratitude is extended to Dave and Mary Crockatt, who — in addition to managing the financial and administrative tasks — found the time to bring our accommodation up to such a high standard of luxury.

"Yorky" Kitchener has returned from Bicester with the dazzling title of Assistant Instructor and Don Wilson has been elevated to Passenger Carrier. Whilst drunk with power, they formed a partnership and bought Lemmy Tanner's Minimoa when he was posted back to the U.K. A Kranich 2 has been added to our bulging fleet with views of advanced soaring training and is at present undergoing major overhaul.

Eddy Pratt was the sole representative to attend the R.A.F.G.S.A. Wave-soaring Project at Issoire in France, where he gained valuable experience in ridge and wave flying, but alas no certificates. We now have large contingents of members from: Wildenrath; Wegberg; Birgelen, who have undertaken to respray our aircraft as they become necessary; and finally, Butzweilerhof have brought along their T-31 to fly with us temporarily.

The Bronze C has been welcomed to fill the gap between C and Silver C, but is causing some consternation amongst the solo pilots who may be seen night after night poring through books on gliding. A good thing!

Expeditions are now in vogue. During the last week of July, we shall be the guests of a Dutch club just across the border in Beek, and in May the Olympia 463 is going away to the Alpine Gliding Centre at Unterwössen near the Austrian frontier.

A. C. P.

OVERSEAS NEWS



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

BELGIUM

A Belgian expedition took a Mucha to Fayence for the Christmas-New Year period; the best height gain was 5,150 m. by Georges Defosse, and Gil Vaden Broeck with Mme. Defosse put up a Belgian feminine two-seater record of 3,250 m. height gain in a Bijave.

Statistics for 1965, described by the Verviers Club as "une année exécrable pour le vol à voile en général", confirm this opinion. Total flying hours were 10,687 against 12,974. The average duration per flight was also down for the same "raisons atmosphériques", though aero-towed launches at the St. Hubert centre, for example, increased from 6,705 to 7,597.

New national records during 1965 were: Guy Sander, 8,480 m. absolute and 7,620 m. height gain at St. Auban on 16th April in Breguet 901s; Fernand Lacroix, 200 km. Triangle at 73.5 km/h. from Angers in an Austria; and two-seater duration, 8 h. 43 min. at St. Hubert by Michel Nizet and N. Smet in Ka-7.

Aviasport

CANADA

THIS is written at the start of the season, and there is no flying news to report, winter being the time for Club meetings, re-equipping, wing filling and smoothing and waiting for spring.

The annual general meeting of the Soaring Association of Canada has come

and gone. A notable piece of news was that one club, the Van Isle Gliding Club, has logged no less than 13% of the total number of flights in Canada — and that with just one aircraft! The plans for Air Cadet instruction flights were discussed, with at least one club taking on an extensive programme. There are signs of substantial upswing in soaring popularity in the Western provinces.

As soon as the ground is firm enough, flying will start at many places across the country. The Gatineau Club, operating from Pendleton, are reputed to have already started, being blessed with concrete runways. With most clubs the Easter week-end is the traditional starting time. Some strange equipment will have to be broken in, some sites that have never been flown from will have to be tried, and by the end of April the season will be well and truly under way.

The Nationals will be the next event of some interest, and this year the Regina, Saskatchewan, Club plays the host. Unfortunately the dates once again conflict with the U.S. Nationals, being 5th to 14th July. Should we ask them to move their date? There's an old English proverb about the tail wagging the dog.

ONTAERO.

DENMARK

ANALYSES of airport and airfield traffic statistics for 1965 show that gliding accounted for 19,733 out of 58,357 total aircraft "movements", a 48% advance over the 1964 figure of

13,350 glider movements.

Comparison of accidents during the period 1960-65 with those of 1950-59 shows that the percentage due to "traffic and field landings" has fallen from 17 to 3%, while approach and landing accidents have risen from 60 to 71%. The figures for launches are reduced from 20 to 18% and for "in the air (structure)" are up from 3 to 6%.

Flyv

FINLAND

TWO NEW SAILPLANES.—The IKV-3, of 18 metres span, is intended to compete in the Open Class in the next World Championships. Made of wood, with a Wortmann wing section, it is expected to have a gliding ratio of at least 38, and a minimum sink of 0.55 m/s, at 70 km/h. (20.65 in, at 38 kt.). It will have flaps and a wheel.

The Pik 17 "Triniti" is a training single-seater of 12 m. span (39½ ft.). Best gliding ratio expected to be over 25. Aspect ratio 13.5. Airbrakes and all-moving elevator. *Air et Cosmos*

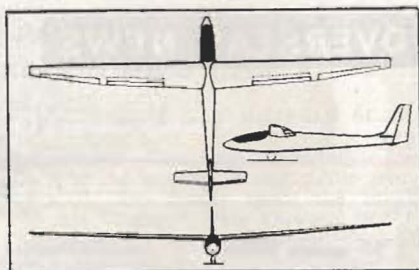
Now that the Northern European countries hold regular Nordic Championships, Nordic records are also recognized. Finland holds two: Out-and-Return, 530 km. by Matias Wiitanen on 16th May, 1965, and 300 km. Triangle Speed, 85.8 km/h. by Jorma Jalkanen on 5th June, 1961. Both flights were made over Finnish territory, in a Vasama.

Flyv

FRANCE

ALL-PLASTIC PROJECT.—As a result of their experience with the prototype WA-50 four-seater all-plastic aeroplane, with its saving of man-power in construction, the Wassmer firm are embodying what they have learned in an all-plastic sailplane, the Wa-26. It is already under construction — the front half at Issoire and the rear half at Merville.

The two-part wing, of 15 metres span, has a Wortmann section. In the interests of laminar flow, the airbrakes are set far back as in the Elfe and Prue Standard; not being very efficient in this position, they are given the largest possible area, but far enough out from the fuselage not to upset airflow over the tail. Their hinge is at 60% of their chord, and they can turn through 90°.



The all-plastic Wassmer 26.

The rear section of the fuselage is of plywood. The front is a stratified shell, reinforced by an interior honeycomb skin which forms the floor and walls of the cockpit. The controls run between these two layers. The pilot leans back but less than in the Edelweiss. The interior height of the cockpit at the seat position is 80 cm. (2 ft. 7½ in.). This fuselage was, in fact, intended for an abandoned 18-metre project. The wheel is retractable, but the production model will have a fixed wheel to conform to Standard Class.

Anticipated performance has not been given by the designer.

Air et Cosmos

CONVERTED TO TUG.—The Société Aéronautique Normande has modified its 4-seater "Mousquetaire" (Musketeer) aeroplane to serve as a tug, which it will call "Abeille" (Bee). The flaps have been enlarged, increasing the wing surface and reducing take-off speed, and a bib (*bavette*) is fitted on the 180 h.p. Lycoming to help to keep it cool. The cockpit canopy is also modified: it is now "panoramic" instead of "classic"; thus the pilot can follow the "evolutions" of the glider or towed banner. Removal of the bib makes it a good touring aeroplane.

The span is 10.27 m. (33 ft. 9 in.); petrol tankage 215 litres; take-off speed with flaps, 80 km/h. (50 m.p.h.); climb at sea-level 4 m/s.; ceiling 5,100 m. (16,700 ft.); max. radius of action, 1,250 km. (780 miles).

Aviasport

IRELAND (Dublin)

OUR well-wishers will be pleased to hear that our new clubhouse has reached the interior decorating stage.

The work-minimum required has been raised to 25 hours, but the stalwarts working on the clubhouse have exceeded this limit long ago.

On the flying side, two of our members, Peter Kilkelly and Gerry Stanley, both achieved a fairly lengthy cross-country flight, to complete the final leg of their Silver C's. Another of our members, Dave Hooper, discovered a "reversed air-flow" effect of a rotor in clear air, just the day before we received Mr. Bishop's recent article in *SAILPLANE & GLIDING* explaining this phenomenon. Incidentally, Dave achieved 7,000 feet in the wave!

More news of John Byrne's now-famous "shuttle-launch" system. Martin Mulhall recently received a launch of 4,500 feet off a 5,000 feet runway, flying a Ka-8, in a 20-knot wind. (90% efficiency!) This was achieved by a combination of kiting and judicious juggling of throttle, selector and brake on the fluid-drive tow-car. This is not as easy as it sounds, since a rapid rearwards movement of the tow-car, while "Drive" is selected, tends to stall an idling engine. The procedure is not recommended, however, because so much cable hits the ground immediately after release, that severe kinking is almost inevitable. Accounts of other clubs' similar experience would be welcomed.

C. G.

ITALY

FLIGHT MEASUREMENTS OF M-100s.—A polar for this popular machine, compiled from measurements in flight, gives minimum sink 0.63 m/s. at 63 km/h., best gliding angle 1 in 30 at 75 km/h., 1 m/sec. sink at 100 km/h., and 2 m/sec. sink at 137 km/h.

Aerokurier

HIGH PERFORMANCE SAILPLANE.—The A-2, designed by the Polytechnic Gliding Centre of Milan, is expected to make its maiden flight soon. Of 15 metres span and 180 kg. empty weight, it is a mid-wing design with the outer wings tapered, the aspect ratio being 19. It has a T-type tail, with the fin and rudder swept back.

Owing to the difficulty of field landings in Italy, the fuselage, which is the most likely portion to get damaged, is made of wood, so as to be easily repair-

able; it is semi-monocoque. But the wings and tailplane are of light alloy.

Elisabeth Zanca broke the national feminine gain-of-height record at Fayette with 4,350 m. in a Breguet 900 on 31st December. She reached 5,000 m. absolute.

Aviasport

NEW ZEALAND

THE Auckland Provincial Championship ships were held at Waharoa Airfield from 14th-19th February and only three competition days were possible. The wettest week for months cut thermal activity to a minimum and conditions generally were hot, humid and horrible.

FEBRUARY 14TH.—Eight pilots managed to get out to Wiltsdown Mill and return, a distance of 60 miles. A light stable N.E. airflow covered the northern half of the North Island giving weak thermals and some intermittent easterly wave from the Kaimai Range. It was in one of these patches of weak wave that John Cooper went down to the turning point some 30 miles to the south in half an hour. It took over an hour in very weak thermals for him to return to win the day. Leading results: J. Cooper (Ka-6), 1,255 pts.; A. Fowke (Ka-6), 954 pts.; R. Reid (Ka-6), 778 pts.; R. Court (Skylark 4), 653 pts., A. Cameron (Ka-6), 556 pts.; P. Heginbotham (Ka-6) and D. Wright (Oly. 463) were equal 6th with 443 pts.

FEBRUARY 15TH.—Light N.E. winds continued with weak thermals and again some weak wave later in the day. Extensive cloud sheets affected thermals which (when available at all) were very weak indeed. Task: 107-mile Triangle; from the airfield to Te Kauwhata to the north-west, down to the Hotel at Tirau and back to Waharoa. The winner was Ross Reid, who went 5 miles past the first turning-point; Cameron, Heginbotham and Fowke landed within a mile of each other some 3 miles past it.

Among those who had not reached scoring distance by 4 p.m. were Ross Carmichael (Ka-7, two up) and the two Olympia 463's flown by Ron Wood and Dave Wright. By this time the wave had started so these three set off from their 2,000 ft. launches in the opposite direction to the course, towards the Kaimai Ranges. By working the wave to nearly

5,000 ft. these three were able to score. Leading results: R. Reid, 1,176 pts.; Heginbotham, Fowke and Cameron equal second with 716 pts.

The weather for the next three days can be described in one word—wet. On Friday a few competitors withdrew and went home, deciding that there were more important things to do than getting drenched.

FEBRUARY 19TH.—The Met. man, Garth England, was able to give some hope at briefing that things would improve. The tephigram forecast thermals when ground temperature reached 75 degrees; it was already 74 degrees but a layer of medium cloud took a long time to burn off. This, together with the evaporation of the surface water, delayed the onset of thermals until mid-day. When they did go off the cloud tended to over-develop quickly.

The task set was a 56-mile Triangle, Waharoa, Waitoa Dairy Factory, Tirau Hotel, Waharoa. Only eight contestants managed to reach X. Brian Kosoof of the home club won the day; possibly his local knowledge helped, but he nearly got back to Waharoa. The northerly wind was strong compared to the thermal strength, and this meant that landings along the second leg (N.-S.) were very spread out, one thermal making 5 to 10 miles difference in landing position. John Cooper was second, landing at Tirau. John's points this day were almost enough to make up for his 9th equal on the second day. But Ross Reid scored 176 points and with this 6th place he made a total of 2,130 points, just 44 points ahead of Cooper.

At the prizegiving Ross Reid was presented with the cups as reigning champion of the Auckland Province. Brian Kosoof received the cup for the best flight—his effort on the last day earned this. Ross Carmichael took the two-seater trophy given in memory of Bob Connor who was killed last year in an aircraft accident. This award was appropriate, for Ross represented the Piako Club of which Bob had been president, and the competition was held at the Club's gliding site.

Leading Final Results

1. Reid	Ka-6	1,159
2. Cooper	Ka-6	2,130
3. Fowke	Ka-6	2,086

4. Cameron	Ka-6	1,670
5. Kosoof	Ka-6	1,527
6. Court/Hookings	Ka-6	1,385
7. Heginbotham	Sk1. 4	1,245

Of the 22 aircraft entered, nine were Ka-6's, three Skylark 4's, four Ka-7's (three entered in a special two-seater competition flying two up), two each of Skylark 2 and Olympia 463, a Socian and a Std. Austria.

(Condensed)

ROSS MACINTYRE

THE results of the sponsored inter-club contest run concurrently with these Nationals for a prize of £1,000 have been announced.

1. Wellington G.C.
2. Wigram G.C.
3. Marlborough G. & S.C.
4. North Otago G.C.
5. Otago G.C.

R. M.

PORTUGAL

A GROUP of students in a Polytechnic School is considering the plans of a Fauvel Flying Wing, for which the wood is already at Lisbon.

There is a commercially owned RF-3 ("Avion Planeur") in the country.

J. N. MATOS in *Aviasport*

SWITZERLAND

THE Swiss Aero Club is organizing introductory courses for young people who are going into commercial or military aviation. They have an examination at the Institute of Aviation Medicine at Dubendorf for physical and psychological aptitude. This year 250 will take 44 power-flying courses at 18 aerodromes, and 80 will take 18 gliding courses at 7 different centres.

The usual exchange visits of young pilots between Switzerland and the United States cannot take place because U.S. transport aircraft are needed for the Vietnam war. So, instead, Canada and Britain will partake in the exchange, so that four Swiss pilots, aged between 18 and 20, will go to Canada and five or six to Britain. In return, similar numbers from Canada and Britain will be guests of the Abwalden Gliding Group in the Lucerne section of the Aero Club.

Aero Club of Switzerland

WEST GERMANY

WINCH DRIVER'S LICENCE. — The period of validity of these licences has been extended to five years. For a further extension of five years, 200 winch launches must have been done, including 50 in the last year. The minimum age is 17. Training in winch-driving can begin at the age of 16, but the trainee must take out a winch driver's licence within a year or undergo another training course.

Der Adler

SEFF KUNZ IS 60.—Vice-president for some years of both the F.A.I. Gliding Commission and the German Aero Club, Seff Kunz has reached the age of 60 after 40 years' activity in aviation. "Gliding," he says, "gives me so much pleasure because it shows me the world from another point of view — and because I am always associating with young people, from whom one learns to understand better the times in which we live. The young see the world in other shapes and colours, in another light, with other associations and new goals."

in *Aerokurier*

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