Sailplane and Gliding

2/6

February 1959

SAILPLANE AND GLIDING

OFFICIAL ORGAN OF THE BRITISH GLIDING ASSOCIATION

Edited by Alan E. Slater, M.A., F.R.Met.S.

Published by The British Gliding Association, 19 Park Lane, London, W.1.

Magazine Committee: Godfrey Harwood, Rika Harwood, Walter Kahn, Peggy Mieville, Colin Moore, Veronica Platt, Ann Welch, Philip Wills.

Volume X, No. 1. Bi-monthly

February 1959.

CONTENTS

COVER PHOTOGRAPH.—Scottish Gliding Union's T-21b coming in to land at Portmoak during National Gliding Week. Photo by John Watt; copyright by Scottish Field Picture Agency.

Printed by Young Myers & Co. Ltd. and F. A. Clements (Chatham) Ltd. of Harrow and Chatham, for the British Gliding Association

Save Your Height

by Alan Purnell

WHY perform involuntary aerobatics while photographing turning-points? Why do tight vertical turns with the stick between your knees? Using two hands to take the necessary photograph loses even the pundit a good deal of valuable height, but whereas the Diamond C merchant can and will recover his position, the Silver C aspirant may not—as recently evidenced by a victim in Accra who just had to land in the bush, poor chap.

I felt that I too, one day, might need to photograph a turning-point, and realising that if I ever did, I shall need every inch of height to get home again, I decided to "activate the grey matter". This article is the result.

It is possible (but only just) to take a photograph with the camera in the left hand only if the shutter is mounted on the lens barrel, but it is almost impossible if the shutter is mounted on top. One needs to be a contortionist to look through the viewfinder, whether it is frame or optical type, and the position is so very unsteady anyway that the negatives are liable to be rather blurred unless a very high shutter speed is used. It is, however, much easier to use the right hand, but since only a few pilots can fly left-handed, this is not much help.

What is required, therefore, is a means of holding the camera firmly in the left hand, with provision for a smooth release of the shutter, while leaving the right hand free to hold the stick normally. It would be a great advantage to use a direct-vision frame viewfinder somehow clipped to the camera. This would enable one to fly out of the corner of one's eye (so to speak) and also to recognise features on the ground which would be lost in an optical finder.

The problem can be solved completely for a camera which has a tripod bush, cable release socket and an accessory shoe. The latter is used for fitting the viewfinder and so is not vital but, as will be seen later, extremely useful. The cable release socket really is necessary unless some cumbersome system of strings or levers is devised to work the shutter release remotely. The tripod bush serves to mount the camera on a pistol grip structure which the left hand can grasp firmly to hold the camera steady.

The grip may, of course, be of any shape and material to suit the designer. My own is of discarded Meccano parts. The carpenter or model aeroplane enthusiast may even shape a lump of wood with a groove for each finger—positive luxury!

Provision must be made on top of the grip for holding what is usually called a "camera case retaining screw" which screws into the base of the camera. Most miniature cameras in this country (even foreign makes) have a standard ¼-inch Whitworth thread so that even a discarded bolt will do —as long as the camera can be aligned to point in the right direction! In this case the grip as a whole would have to be rotated to screw the camera to the grip. The "pukka" screw will solve the problem automatically if room is left to revolve the "screw" in its seating by the knurled knob.

All that is required now is a cable release (of at least 10 in. length) to be screwed into the correct socket in the camera (not the flash contacts!) and to curve back over the top of the camera into a suitable housing on the grip, so that the plunger may be moved

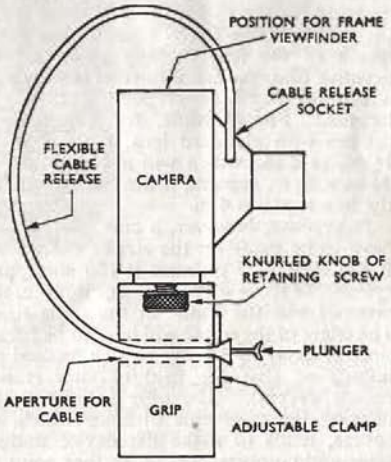


DIAGRAM OF BASIC COMPONENT ARRANGEMENT.

by easy pressure with the first finger. The diagram may help to make this clear.

There are several important points to note. First, the flexible cable release wire must be of sufficient length (more than 10 in.) to prevent undue bending of the wire which, if twisted too much, may indeed trip the shutter. Secondly, the plunger end of the cable (i.e. the grip end) must not be a permanent fixture, for otherwise it will be next to impossible to screw the other end into the camera—except by using three hands. The procedure, therefore, is to screw the cable into the camera socket first and then to bend the cable back over the camera and thread it through a suitable aperture in the grip to be fixed in position there by an adjustable clamp.

Although the above vastly simplifies taking photographs, it is still difficult to sight the ground through the viewfinder (owing to the proximity of the left hand), and so it is an advantage to fit a frame viewfinder, rigidly mounted on the top of the camera. A great deal more care is necessary to build this accessory than the rest. Firstly, the field of view must be that as projected by the lens on to the film and this means that it must be aligned properly as well as being of the correct proportion. This is of greater importance still if a telephoto lens is fitted even if the focal length is only doubled.

Theoretically the viewfinder may be a frame size equal to the negative size and an aperture for the eye set at a distance from the centre of the frame equal to the focal length of the lens (usually equal to the negative diagonal for a normal lens), or of a size in constant proportion to those lengths. For example, for a miniature camera with standard lens, use a 1 in.× 1½ in. at 2 in., which will also serve for a 3¼ in.×2¼ in. camera, if the focal length of the lens is about 4 in.

In practice, however, a compromise will have to be made on the size of the frame. If the eye-frame distance is too short, the eye cannot focus on both the object (i.e. the ground) and the frame at the same time. The edges of the frame will have to be fuzzy, since of necessity the eye will be focused on infinity so that the field of view is not clearly defined. The only solution is to increase the eye-frame distance which, of course, tends to make the device unduly large and cumbersome. A further point to note is that the eye should not deliberately look at the edges of the frame, for then the

eye will have shifted its position and a false field of view is obtained owing to the finite size of the aperture. Allowance should also be made of the fact that the eye cannot touch the aperture; this is especially true for anyone wearing spectacles, so that the aperture will have to be nearer the frame than calculated (approximately 1 in.). It is vital to check the field of view, and this is best done indoors by standing 12 feet from a wall and checking that the area seen is about 10 ft. by 6 ft. 6 in. (for a normal lens) and corresponds to that seen through the normal viewfinder. For a non-standard lens of focal length, f inches, the area seen at a distance, d feet for a negative size of length l inches, and breadth b inches, is $\frac{d \times l}{f}$ *by* $\frac{b \times d}{f}$ feet assuming that d corresponds to infinity.

Fitting the viewfinder to the accessory shoe is simple if Meccano parts are used (e.g. fishplates to slot into the shoe).

My own design is a little more complicated as (*a*) I wear spectacles; (*b*) it is designed to be used for both a normal lens and a 2× telephoto, the eye-frame distance being variable to accommodate the different focal lengths; (*c*) so as not to scratch my spectacle lens, I judge the eye-frame distance by a spacer touching my forehead. This latter modification will no doubt appeal to those who do not like their eye being poked out by the aperture.

If the above scheme is carried out it will be found that it is vastly easier to take photo-

graphs outside the right-hand side of the cockpit than the left (the wrist is twisted through a right angle in the latter case). Also, most closed-canopy sailplanes have only one clear vision panel and this usually *is* on the left. The problem, however, is easily solved if the camera is turned through a right angle on the grip so that the camera may be pointed out of the window while the left hand is still "pointing" forward. This will not affect the cable release.

If the pilot finds that photographs taken through the curved and scratched perspex are up to his standards, then the modification is unnecessary. I personally find that in general the negative is of poor quality for a miniature camera.

A further great advantage of this system is that it facilitates air-to-air photography. Firstly, with the frame viewfinder there is no danger of misjudging the distance of a near-by sailplane as there would be if an optical finder of image two-thirds true size is used. Secondly, since the aircraft is still being flown normally with the pilot in a relaxed attitude (so we hope) there is little danger of losing control (or the thermal). However, it is interesting to note that the glider will have to be about fifty feet away to "fill" the negative, which is rather close. Hence the advantage of a telephoto lens—it rests the nerves

I have purposely not given any drawings of my own device (except an outline), since anyone building such an apparatus will very likely use totally different materials. However, I do greatly recommend Meccano as being easy to work with Another reason (besides the fact that I cannot draw) is that the above is designed solely for a camera with a built-in accessory shoe, cable release socket and tripod bush, and unfortunately not all cameras have these luxuries. However, ingenuity and elastic bands always pay dividends, and you can be assured that the result is worth it.

May your landmarks be recognised and your turning-points be distant ones!

An example of a turning-point photograph taken with the author's device; it shows Asterton at the bottom of the Long Mynd.

OPERATIONS AT LESZNO

In the article by Ann Welch published in our December issue, pp. 334-6, a large section was unfortunately transposed from its proper place under the heading "TASK SETTING" and put later in the article.

The transposed section, which should come immediately after the words "... was too big for the weather" (p. 334), begins with the words "No one reached the goal ..." in the 4th paragraph on page 335, and continues to the words "... at the declared start time!" on page 336.

After this come the sections "STARTING ARRANGEMENTS", "RETRIEVING ARRANGEMENTS", etc.

Memories of "Mephisto"

by Frank Irving

It recently occurred to me that by now there must be a large number of gliding people to whom "Mephisto" is just a name; indeed, there may be some who have never even heard it. So, since it occupies a venerated place in the annals of the Surrey and Imperial College Club, it seemed that now was a good time to record some of its history before memories faded.

Once upon a time (i.e., when we were very young at Redhill) the sole retrieving vehicle was an Alvis "Silver Eagle", much modified, which itself merits a record. Let it suffice to say here that it was stark and somewhat unreliable, the sort of vehicle advertised rather flippantly in the back pages of "Motor Sport": " . . . would suit enthusiast," and all that sort of thing. Even now, a retrieve along the North Downs with an ex-Redhill member will frequently produce a dreamy look in his eyes as he murmurs, "I remember when the Alvis broke its clutch here in 1948." Indeed, there are few parts of A25 where it did not break its clutch between 1947 and *circa* 1950. Eventually, even the tougher members realised that this type of retrieving was incompatible with Efficiency and Intensive Operation, so a collection was made amongst the members and Ron Macfie was delegated to buy a retrieving vehicle for £120. The reader will appreciate that financial affairs were run on a pretty homely basis.

A DEVILISH DEVICE

The result produced gasps of horror or enthusiasm according to the individual's ideas on motoring. It was a Canadian-built Ford V-8 15 cwt. truck with 4-wheel drive, delivered in desert camouflage. By normal standards, it was vast, brutal, and thirsty, but also very strong. Its size rendered the driver rather one-up, *viz-a-viz* policemen, since the edge of the door was roughly at eye-level for a constable standing without. It was cleaned up, painted a turgid colour called "Mephisto Red" and decorated with a devilish device on the doors (artist, Frank Kinder). On its first visit to the Mynd, an Irish visitor took a startled glance at it and said: "Sure, 'tis just what I'd expect from the Surrey Gliding Club." Take that how you like.

Having been built to withstand the attentions of ignorant Army drivers, it survived reasonably well in gliding surroundings, although the general massiveness of the scantlings was sometimes a disadvantage. For example, no one person could lift the spare wheel and the stiffness of the rear springs was rather hard on trailer tow-bars. I recall one incident when the pounding proved too much for the Rice trailer's front end, which gently went on its knees on A5 quite a long way from civilization, fortunately without coming off completely. It certainly developed one's initiative.

ON WELSH SHEEP-TRACKS

It was undoubtedly reliable and went on all sorts of expeditions, particularly in North Wales. On one of the early Scorer meteorological larks, it was sent off to survey some awful mountain dear to Bill Crease's heart. After some hours of grinding over sheep-tracks in 4-wheel drive, round perilous precipices with overhangs which barely cleared the tilt, it came to a little village built mostly of slate, with a very narrow main street defined by dry-stone walls. At this moment, a scraggy hen shot across its bows, so Ron Macfie clamped on the anchors. There was a scrunch of nobbly tyres sliding on loose stones and it neatly rotated through 90°. The walls were about 1.20 Mephisto-lengths apart, and since this manoeuvre was strictly irreversible, its extraction was a lengthy process.

Fuel was something of a major problem. In good fettle it would average about 12 m.p.g., and filling the tanks involved a major capital investment. One Nationals cost Lorne Welch about £35 in petrol alone. Coming back from these Champs, Mike Neale arrived at Hyde Park Corner near midnight, tired and rather dirty (200 miles in Mephisto was a great feat of endurance, and one rarely kept clean for more than 50). He stopped at the traffic lights before turning left into Knightsbridge

leaving, as he thought, enough trailer clearance on his left, but insufficient room for another car. The lights changed: he selected first cog, tramped on the loud pedal and wound on a lot of left-hand down. There was a noise like a pip being squeezed and, behold, a gent in a rather extruded-looking Austin 7 found himself half on the pavement. Fortunately, this character had no wish to meet the police, being in a pretty alcoholic state, and eventually departed. Mephisto had a slight paint-mark on one front tyre.

IN YORKSHIRE

Mike was also concerned in one of the more confusing retrieves perpetrated from Redhill. The Weihe and an Olympia were both in Yorkshire. A scheme was evolved whereby the Weihe was taken by trailer from its landing place to Brough aerodrome, which was rather farther from Redhill. The trailer then collected the Olympia and brought it back. Meantime, an Auster would go and collect the Weihe. Clearly, such a plan was almost foredoomed to failure—or so we would think with the advantage of hind-sight. Two days later, the Weihe, Olympia, Mephisto, trailer and Auster were all in Yorkshire, the Weihe having, indeed, been moved farther from Redhill. The subsequent moves in the game again constitute a separate story. However, Mike found himself conducting Mephisto and trailer in Yorkshire with about two days of beard and grime. Indeed, the whole outfit conveyed that subtle air of unorthodoxy which causes policemen to stop things even if they are being legal. In this case, they were cruising around the 40 mark, so the policeman could hardly be blamed. He was really nice about it, and they escaped with a warning which still rings in their ears: "There are a lot of rich people in this county with a down on lorry-drivers like you, so watch out!"

Another celebrated encounter with the Law arose when it was being used to ferry members to and from London (in the early Lasham era). Ron Tudor-Owen was driving and had worked it up to its never-exceeded speed of 43 m.p.h. late one Sunday night near London Airport. A police car popped out, made the usual noises and stopped Mephisto. Out got two policemen, going through the usual motions of unbuttoning top pockets. A cap and a pair of eyes appeared over the edge of the driver's door:

Mephisto himself (photo by W. Kahn).

"We have stopped you for exceeding the speed limit."

Ron T.-O.: "What speed limit?"

The eyes looked rather shocked and announced: "This 'ere is a commercial vehicle and must not exceed 30 m.p.h."

Ron T.-O.: "It's a private car: there's the licence."

The eyes disappeared, and two flat hats moved round to the licence. A torch was shone and, much to the gratification of the passengers, a voice distinctly said: "Blimey, so it is." However, the eyes re-appeared, with a hard glint in them. "What have you got in the back?"

Ron T.-O.: "People."

Policeman: "How many?"

Ron T.-O.: "Not sure. Better have a look."

Off they trotted to the back, lifted up the flap of the tilt and peered inside. This time a lot of eyes peered back, so they divided by two and returned to Ron T.-O. with a sort of Cheshire Cat look on their faces. The spokesman drew himself up to his full height, bringing his face to driver's elbow level, and made his little speech:

"This 'ere vehicle is designed for the

FAUVEL SAILPLANES

"More performance for less money"

AV 36 "Monobloc"
AV 22 Two-seaters

Simpler
Smaller
Cheaper
Safer

AV22 No. 02. St. Auban Centre, August, 1957. In production.

AV 36

Certified by 4 Countries
Flying in 14 Countries
Being built in more than 21 Countries

Now in production! **AV 36 Mk. II**

Glide ratio 1/26. Large canopy.
Powerful airbrakes and easy landing characteristics.
Wingtips quickly dismantled.

Sets of drawings in English, French, German

"SURVOL"—Charles Fauvel, Boite Postale 104, Cannes A.M., France
Agent for Canada, U.S.A. and English speaking countries:
G. JACQUEMIN, P.O. Box 504, STREETSVILLE, ONTARIO, CANADA

carriage of seven persons or more apart from the driver and is therefore a NEAVY motor car and must not exceed 30 m.p.h."

Ron T.-O.: "Oh . . . Apart from the driver?"

The Law: "Yes . . . Better think of a better story next week, hadn't you? Good night."

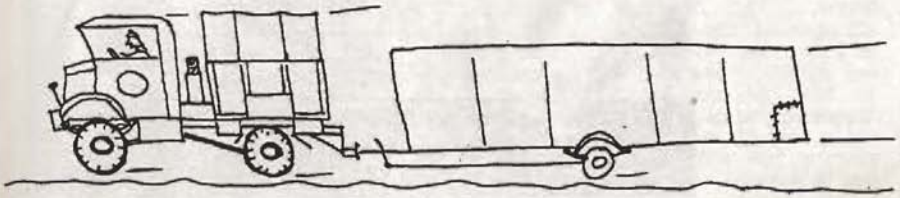
Mephisto's finest hour came with the Canvey Island floods. At the time, it was sitting at Imperial College, so I borrowed it to rescue a colleague's semi-submerged chattels. A day later, I.C. Union responded to a call for volunteers, so it was used to convey loads of students, equipped with shovels provided by the Royal Borough of Kensington. Having got there it seemed the ideal vehicle for ferrying sandbags to the dykes, having 4-wheel drive and high ground clearance. It soon became a familiar sight at "The Red Cow", the sand-bag-filling H.Q., and set a pace with which the R.A.F. 3-tonners were unable to compete. It was deemed to be laden when the rear springs locked fairly flat, which meant, in fact, about twice as many sandbags as the 3-tonners were taking. And it drove right up to the dykes whilst lesser vehicles got frightened of the mud.

NOBLE WORK AT CANVEY

This went on for about a week and led to various incidental entertainments. One night, as I was driving it back full of students full of "The Red Cow's" beer, we passed a policeman cycling along Victoria Street. The characters in the back rapidly improvised a coarse ditty, casting doubts on the parentage of policemen, at which umbrage was took and much furious pedalling started. And then, alas, I stalled the engine at the next traffic lights and the usual pantomime started, with the helmet and pair of eyes (surrounded by perspiration) glaring over the edge of the door. The eyes thought we'd better go round the corner for a little chat. This became rather less acrimonious when a couple of rugger-playing types about 7 ft. tall disentangled themselves from the R.B.K. shovels and stood over the constable. It was put to him that much noble work had been done at Canvey, and perhaps exhaustion had led to a little slip of the tongue. Moreover, his suggestion that the words and music might have distracted the driver from his proper conduct of the vehicle was clearly unfounded, since anything other than the engine was quite inaudible in Mephisto's cab. Eventually, he doubtfully agreed that, in the circumstances, perhaps personal prejudice had modified his sense of judgment, and in view of the obviously noble work done, nothing more would be said. But perhaps it might be better to keep away from Victoria for a while.

This was virtually Mephisto's swan-song. Its fuel consumption was incompatible with Efficiency and Intensive Operation, so a Vanguard pick-up was obtained. Then an unexpected frost damaged the engine and, rather sadly, it was handed over in part-payment for repairs to the hangar roof. Thus passed one of the major features of the heroic days of post-war gliding. Nowadays, retrieving crews tend to look slightly askance if the vehicle hasn't got central heating and radio. In Mephisto, one was virtually open to the weather and the transmission was so non-automatic as to defeat those brought up on synchro-mesh.

On reading through this, I see that the Law is invariably shown to be kind and understanding after a little initial confusion. This was not always so. I well recall the time when I was bringing back an empty trailer from Elliott's and saw a little Ford Prefect in the mirror. "Aha!" I thought, "a granny-wagon. Can't catch me". But it did, and the first policeman started a considerable lecture on the evils of trailer-towing at 43 m.p.h. as number two licked his pencil and started writing: "Ford HYO 301 . . ." That cost £2, a small enough price to pay for all the Skill and Initiative one had gained by then.



VII Scybowcowe Mistrostwa Swiata

SOME IMPRESSIONS OF THE WORLD CHAMPIONSHIPS

by Tony Goodhart

The adventures of a competitor at World Championships are not confined to flying, and we have asked Lieut.-Commander Tony Goodhart to deal with some of the other aspects. He did, of course, put in some excellent flying, notably on the last contest day when he came second among 24 in the Standard Class.

I NEED hardly say that it was a great honour to be selected as one of the four pilots to represent Great Britain at the 1958 Championships in Poland. The aircraft which I flew, the Olympia 415, loaned by Elliotts of Newbury and built specially by them to come within the Standard Class limits, is a first-class aircraft with excellent handling qualities; it is very comfortable and has really good visibility. In the rather weak thermal conditions which obtained during the Championships it was, however, a bit heavy; but who could have forecast that the conditions were to turn out so unusually—for Poland—poor?

My crew chief, Frank Irving, and his able assistant, Peter Swift, deserve "honourable mention", to say the least. They put in a quite remarkable number of hours in detailed and extremely well-thought-out preparation during the weeks before we left England, and while in Poland made sure that my only worry was the flying.

Our team manageress, Ann Welch, was expert at ironing out minor difficulties with the organisers and could be relied upon always to look on the bright side of things—if there weren't a bright side, she would quickly invent one!

The whole meeting, my first attendance at World Championships, was characterised by friendliness and understanding amongst the organisers and the very large number of competitors and crews. It was interesting to witness the unanimous vote at an early pilots' briefing in favour of including English as a third (to Polish and French) language—the proposal had been made by the Swedish team (the British team having previously agreed to try to understand French). One had instinctively felt that the excellent proposal might be put out of court by the champions of the Veto.

The met. briefings, though not always accurate, were most efficiently delivered by the Polish met. man in Polish and English, followed in French by the French team's "previsioniste". The latter's translation of occasional forecasts which he personally

The author at Leszno.

doubted, were masterly exercises in paraphrase.

The launchings with 10-metre heavy nylon ropes were initially surprising, to put it mildly, but soon became matters of course - there being no option. It was a pity, I felt, that the Standard Class were always launched after the Open Class. Although in some of the race tasks it would have made little difference, in the free distance starting first would almost certainly have enabled several of the Standards to exceed the coveted 500 kilometres.

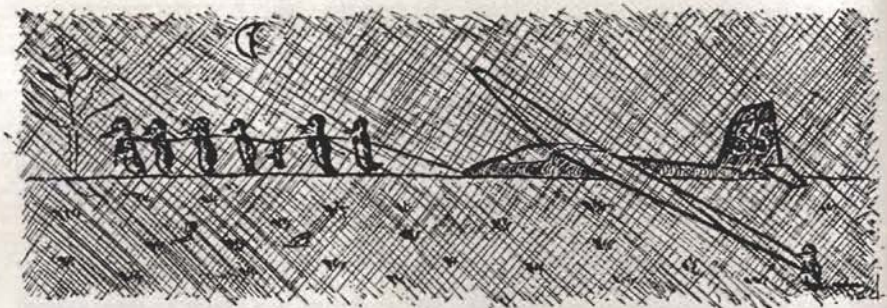
Some of the thermals over Leszno airfield were apt to be over-populated—the most I ever counted was 34 sailplanes in one thermal (I counted these on my way to the thermal—and went elsewhere).

The "natives" wherever one landed were extremely friendly and helpful—on one occasion, only five miles from Russia, due to telephone unsystem, I spent 2½ hours in a village post office, which rapidly filled with the village elders with hordes of youngsters peering through the windows. Much beer was consumed, drinking toasts to each other and to various *ententes cordiales*. On returning to my glider, on the back of a motor-bike driven by a now slightly weaving elder, we collected some 17 locals and dragged the glider 400 yards to the roads through the piece of Pripet Marsh I had elected to land in, hacking down half-a-dozen small trees in a spinney which baulked the route.

The Volga Boat Song rendered in various languages (including for some undisclosed Italian) was the source of much-needed encouragement as we splashed through the marsh. I doubt if anybody has previously carried out tests to evaluate the drag of a partly submerged Olympia.

On only one occasion did I meet with a somewhat cool reception on landing (in a potato field). I discovered that I had landed only a few miles from a military encampment and the local peasantry had assumed that I was an intruder from "another place". However, a Union Jack and (in my best Polish), "I am a glider pilot of Great Britain taking part in the World Championships," soon put their minds at rest.

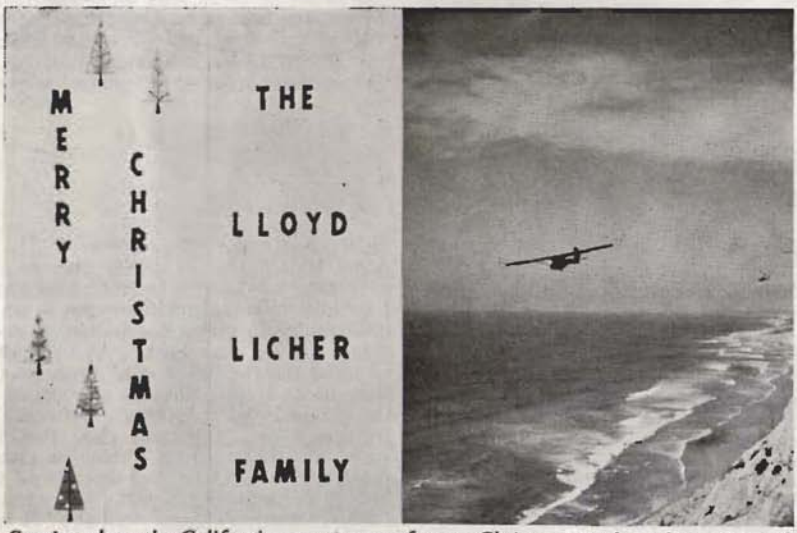
On this occasion, while waiting for my crew, having previously disrupted Polish Army training for 1½ hours because the postmaster was also the Territorial Sergeant, I decided to run the horizon for a while preparatory to giving the battery a good charge on the way back. As soon as I switched on, the "know-alls" amongst the sixty or so local onlookers announced to the "know-littles"—"Radio". After a few fruitless efforts it became clear that my Polish was not up to a lecture on cloud-flying and, due to the peculiarities of the human semi-circular canals, the necessity for gyro instruments—so "Radio" it had to be.



The drag of a partly-submerged Olympia 415

As the system was now humming in a purposeful sort of way, action was obviously indicated. Having no radio (in Standard Class), "action" needed "improvisation", so I took the oxygen mask and plugged in its lead; this brought forth a volume of explanation from the "know-alls" to the "know-littles". Having called "Frank, this is Tony—do you read?" several times, I was suddenly faced with the problem of receiving the reply. Had the "know-alls' known "anything", even they might have smiled at the sight of my putting the oxygen mask to my ear. But there was no reply from Frank and the stock of British radio went a long way down.

An hour or so later, when it was nearly dark, I heard in the distance the characteristic thundering of the Vanguard-trailer combination. Quickly switching on again, I called Frank and, having listened for a reply, was able to announce to the populace that my crew would arrive within a few minutes—which they duly did. The honour of British radio had been redeemed.



Soaring along the Californian coast: one of many Christmas cards we have received.

BLACK THERMALS

A METHOD of seeding clouds with carbon black to produce rain, tried out by Dr. Florence W. van Straten of the United States Naval Weather Service, has also been found capable of starting up thermals in cloudless air.

When cloud particles are all the same size, they all sink through the air at the same rate and therefore do not coalesce into raindrops. For this to happen, some particles must sink faster than others, so as to hit, and amalgamate with, the smaller particles which do not fall so fast.

The earlier cloud-seeding experiments were directed to promoting the growth of ice crystals in clouds which, though above freezing level, still consisted mainly of supercooled water particles. Later, Frank Ludlam tried seeding clouds with salt, with the idea that water condensing on the salt particles would grow into extra-large cloud-droplets; one of these experiments was done at Cranfield with the co-operation of glider pilots (see "Operation Cumulus", by F. H. Ludlam: GLIDING, Autumn 1952, p. 122).

The American experiments with carbon black were done over the coast of Georgia in July 1958. According to *Time* (6th Oct. 1958): "The usual tactic was to attach a package of 1½ lbs. of carbon black to a static line and toss it out of an airplane flying through the top of a cloud. When the slack snapped out of the line, the package broke open, releasing the carbon black. Seven clouds out of seven tested dissipated entirely in 2½ to 20 minutes."

According to theory, the carbon particles, which are two millionths of an inch in diameter, absorb the sun's radiation, so that any cloud droplet which captures one of them is warmed up and evaporates; the evaporated water then condenses on to the neighbouring droplets, which grow bigger than the average droplet size, fall faster, and collect more droplets by collision. Hence the rain.

After this, the experimenters tried dropping carbon black into dry air; the particles absorbed sunlight and heated the air around them. When the relative humidity of the air was high enough, the warmed air would rise so fast that, "almost every time", a cumulus cloud would form in its top. The object of the experimenters was only to create clouds big enough to produce rain, so they did not bother to find out if the thermal was there when no cloud formed, though undoubtedly it must have been.

Mr. J. G. M. Wood, of the Surrey Gliding Club, who kindly sent the extract from *Time*, suggests: "If a quantity of carbon black was dropped from a glider, after a short time (to be discovered by experiment) the glider could about-turn and fly back into a thermal of its own making."

And in a *Members' Newsletter* of the Soaring Society of America, it is suggested that "it might be possible to make your own thermals by using some sort of a dispensing device on the ground which would shoot up a column of carbon black, thus starting a thermal right where you wanted it. Should this prove to be feasible, one can look ever further into the future and visualize the competing pilot's crew hurrying madly across the countryside thirty or forty miles ahead of him, stopping at intervals to toss out a thermal generating pot at appropriate places along his course. We can also foresee the mad scramble of the Rules Committee to make such practices illegal in the next year."

Scientifically, the most interesting prospect is that of being able to start thermals rising from a position well above ground level. In the early morning, when the surface air is still too cold to go up in thermals, it often happens that the air above this "night inversion" is in a state of incipient instability. "Black thermals", as they are likely to be called when their effect on skin and clothing is realised, should be readily producible in such air, if they are producible at all.

A.E.S.

Lifetime of Showers

At a Meteorological Office Discussion on "The use of radar in forecasting precipitation," reported in the *Meteorological Magazine* for August 1958, Mr. Houghton "remarked that the lifetime of small shower echoes was about one hour. However, when conditions favoured heavy showers or thunderstorms, new cells tended to develop to replace those decaying and the life of the shower complex was considerably greater."

British Gliding Association News

Annual Ball

This will be held on Friday, 13th March, 1959, from 8.30 p.m. to 2.0 a.m., in Londonderry House. Single Tickets, at £1 each, will include a buffet supper. The cabaret will be compered by Michael Pertwee.

Annual General Meeting

This will start at 2.30 p.m. on Saturday, 14th March, and will be preceded by an Instructors' Conference and a Conference of Club Managers, Secretaries and Treasurers. The A.G.M. is at Londonderry House; the other two meetings at the Kronfeld Club.

World Championship Seeding

A preliminary list of seeded pilots for the 1960 World Championships has been agreed by the Council. In alphabetical order, they are:—P. L. Bisgood, G. F. Burton, A. J. Deane-Drummond, K. C. Fitzroy, G. A. J. Goodhart, H. C. N. Goodhart, A. Gough, D. H. G. Ince, D. Brennig James, D. M. Kaye, D. A. Smith, G. H. Stephenson, L. Welch, J. S. Williamson, and P. A. Wills.

C Certificate Examination

From 1st February, the test on legislation affecting sporting gliders in the United Kingdom, which is part of the C Certificate Endorsement, will be in written form. The examinations can only be given by the C.F.I. or by B.G.A. or A.T.C. Categorised Instructors.

Gliding in Spain

The British Embassy in Spain has informed the B.G.A. that the following Spanish gliding schools can now accept foreign visitors on their courses. Applications must be made through the British Air Attaché in Madrid and be accompanied by a letter of recommendation from the B.G.A. Owing to heavy subsidy, the charge is only 15 pesetas a day, including board and lodging. The schools are:—

MONFLORITE, 12 km. from Huesca, near the Pyrenees; courses for C and Silver C Certificates.

LLANES, in Asturias, near the coast; courses for B and C.

SOMOSIERRA, 90 km. from Madrid, among mountains; courses for B, with primary gliders.

BRITISH GLIDING ASSOCIATION EXAMINERS OF INSPECTORS

The British Gliding Association invites applications for two appointments as Examiners of Inspectors to the Technical Committee. One Examiner will be required to deal with applicants for inspection approval based south of the 53° parallel, the other Examiner dealing with those to the North of this Line.

The duties of an Examiner will consist of visiting applicants for inspection approval, generally at weekends, assessing their suitability and submitting reports to the Technical Committee. Travelling expenses and a small fee will be payable by the British Gliding Association.

Applicants should have been approved Inspectors of the British Gliding Association for at least five years, or have equivalent experience of Glider maintenance and repair.

Applications, giving references and full details of experience should be made not later than the 28th February to:—

The Chairman,
The Technical Committee,
The British Gliding Association,
Londonderry House,
19 Park Lane,
London, W.1.

THE SHAW SLINGSBY TRUST LTD.

As reported in our Issue of Summer 1955, the original founder of Slingsby Sailplanes, Major J. E. D. Shaw, died in April of that year, and his Trustees recently felt it necessary to dispose of his interest. It was clearly of vital importance to ensure the continuance of control in sympathetic hands of what is the major source of supply of British sailplanes.

The final outcome is the creation of the Shaw Slingsby Trust Ltd., which has now come into being, the first Council Members being Philip Wills, John Furlong and Basil Meads (*Secretary, Kemsley Flying Trust*).

This Trust, identifying permanently with the gliding movement the names of two families who have done so much for British Gliding, now owns the entire share capital of Slingsby Sailplanes. Slingsby's will continue trading as before, but distributed profits will go to the Trust, which will support the British Gliding Movement in much the same way as does the Kemsley Flying Trust. Its Registered Office and Secretary are at 25 City Road, London, E.C.1.

ANNUAL BEST FLIGHTS

As was only to be expected, the months of November and December have not produced any additions to this year's best flights, so it remains only to record the achievements of this sad and soggy year, though when you remember that the British distance record was broken by Sgt. Gough's magnificent flight to Holland and that this and two other flights exceeded 500 km. in (or from) Great Britain for the first time ever, maybe it was not as bad as all that.

The following list shows the final Annual Best Flights results for 1958:—

Single-seater

Distance	Sgt. A. Gough	348 miles
Distance to goal	C. Green	194.5 miles
Out and return	Mrs. A. Burns	94 miles
Absolute altitude	A. T. Morgan	16,300 ft.
Gain of altitude	A. T. Morgan	15,340 ft.
100-km. triangle	P. A. Wills D. H. G. Ince	29.8 m.p.h.
200-km. triangle	D. H. G. Ince	35.8 m.p.h.
300-km. triangle	No claims.	

Two-seater

Distance	W. A. H. Kahn J. Williamson	194 miles
Distance to goal	W. A. H. Kahn J. Williamson	194 miles
Out and return	Mrs. A. Welch J. Williamson	102 miles
Absolute altitude	P. Scott, P. Collier	16,400 ft.
Gain of altitude	P. Scott, P. Collier	14,300 ft.
100-km. triangle	No claims	
200-km. triangle	No claims	
300-km. triangle	No claims	

THE Club's painting exhibition and competition, and its Dinner and Dance, both of which were held for the first time, were such a success that they will probably be held about the same time each year. The painting competition, a write-up of which appears elsewhere, was well supported, and it is hoped next year to send out notices of this earlier to Clubs, as it should be possible to obtain entries from all the Clubs in the United Kingdom. This year a number of people mentioned that they wished they had heard about it sooner. The Club is very grateful to the six professionals who lent two paintings each, as an example of how to do it, and also to Captain Cuthbert Orde and Lee Kenyon for acting as the Judges. The exhibition, which was open from Monday, 3rd November, until Friday, 7th, was very well attended and, apart from the viewing fee of 1s., the Club gained a number of new members, including the Secretary-General of the Royal Aero Club and the Director of S.B.A.C.

The Club's first Dinner and Dance was held on Friday, 7th November, and 99 people attended. The Guests of Honour were the Chairman of the Royal Aero Club, Colonel C. F. H. Gough, M.C., T.D., M.P.; and the Right Hon. Lord Sempill, A.F.C. After an excellent meal the health of the Guests was proposed by David Carrow, D.F.C., deputising at the last moment for Maurice Imray, who was struck down by 'flu. This was replied to by Colonel Gough in a most excellent speech. Lord Sempill then proposed the health of the Club, which was replied to by the Secretary, who has no recollection of what he said. This completed the formal part of the evening, and dancing followed until 1 o'clock. It had been hoped that Mrs. Kronfeld and Billy, her son, might be able to attend, but unfortunately they could not.

Thoughts for 1959 include the repetition of the above. Also an exhibition of photographs by our only Honorary Member, Charles Brown, from 10th to 17th April, and towards the end of the summer we will be holding a competition of photographs for members. Details of this will be sent out with the Club's Newsletter nearer the time.

It is also hoped to run a series of lectures in the early spring on Glider Maintenance and Repair.

The Club has recently added to its equipment a comprehensive slide projector, together with screen.

On 9th December the Popular Flying Association held a get-together evening, and it is hoped that this will be the first of monthly or possibly fortnightly meetings of the power-flying members of the Club.

Finally, subscriptions were due on 1st January, so if you have not paid or you wish to join, please forward your 15s. to—

The Hon. Secretary,
Basement, 74 Eccleston Square,
London, S.W.1.

A reminiscence: Lord Sempill at the Sutton Bank meeting of October 1933 (facing camera). Also in foreground, L. to R.: Philip Wills, G. Mungo Buxton's back, and C. H. Latimer-Needham (chief marshal).

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

Jan. 28th Man-powered flight by D. R. Wilkie.
Feb. 4th Air League by G. J. C. Paul.
11th The Tipsy by C. Riddell.
18th Talk.
25th Some medical aspects of high-speed and altitude flight by Dr. Warnbeek.

Courses of Instructional Lectures
10s. a Course: 3s. a Lecture:
Applications to the Hon. Secretary.

ON GLIDER MAITNENANCE
Thursdays 8 p.m. by R. C. Stafford-Allen.
Feb. 19th Anatomy of the Glider.
26th Glue, Ply, Timber, Dope, etc.
Mar. 5th UBENDEM—WEMENDEM.
Mar. 12th Renewing the C. of A.

FOR TRAINEE PILOTS
Mondays at 7.30 p.m. by D. Piggott.
Mar. 9th First Training Flights.
16th Stalling.
23rd Launches and Landings.
31st Soaring.

★ ★ ★

CROSSWORD SOLUTION

Across

1, Motorless; 6, B.G.A.; 8, Tweed, 9, Boy; 11, Down; 12, Gaol; 13, M.B.E.; 15, O.K.; 16, Airballs; 18, Owls; 19, Olaf; 21, Hard Gale; 23, To; 24, Lot; 25, Grip; 26, Gull; 28, Yes; 29, Omega; 30, Tor; 31, Peritrack.

Down

1, Meteorologist; 2, Thermal; 3, Rudder; 4, Ebbw; 5, Sky; 6, Break; 7, Angle of Attack; 10, One leg; 12, Go solo; 14, Bishop; 17, Borage; 20, Letter A; 22, All out; 23, Tiger: 27, U.S.S.R.; 28, Yap.

The correct solution to the Crossword Puzzle published in our December 1958 *issue, p.* 328, *is given above. The winners are:—* 1*st Prize: Mr. G. J. R. Spillman, Magdalene College, Cambridge.* 2*nd Prize: Lieut. C. A. Hely-Hutchinson, R.N., Royal Naval College, Greenwich.*

THIS GLIDING

"MIKE made one solo. It turned out to be an exciting flight for Mike and a lot of work for the ground crew. During the tow, the wire broke at one of the splices. Mike had 600 ft. of altitude and had no problem. However, the wire snapped ahead of the tow car and wrapped around the rear left wheel. Since the car was moving at about 50 m.p.h. at the time, the wire made many wraps and drew up on the emergency brake cable at the wheel. This slammed the brake on that wheel and brought the car to a screeching halt. The crew at the glider end of the field heard the brakes go on and immediately took the other car down to investigate the trouble. On the way down, the car travelled over the dropped wire and it caught on the drive shaft wrapping around there. What a mess! The remainder of the wire was immediately removed from the runway in the event of a plane landing. The wire was cut away from the towcar and we were able to move that to the hangar even though the brake was still tight. The second car was moved off the runway and that wire was also cut off. The wheel was removed from the towcar and the emergency brake cable removed from the left wheel. This will prevent the brake from locking if we ever have a repeat performance. . . . Since the towcars were out of commission, the Pratt Read was put away and the flying ended for the day."—*South Jersey Soaring Society Bulletin.*

* * *

A Chinese student has stayed in the air in his Class C glider for 1,013 seconds—113 seconds better than the world record.
—*South China Morning Post.*

Gliding With Dalton

by J. C. Neilan

THE scale normally used in a Dalton Mk. III Navigational Computor is useless for gliders, as it starts at too high an airspeed. It is, however, by no means an arduous task to dismember the computor, turn the roller blind inside out, and redraw the computor diagram to include airspeed arcs right down to zero. The squares grid is not required, so the diagram need only include the airspeed arcs at every 10 units (I use knots at twenty to the inch on mine) and the drift lines radiating at every 5°, but the odd fives suppressed below 40 knots to avoid undue crowding. If you get the centre line accurately in the middle, all is well, but if it comes off centre when you reassemble, you may have to do a bit of filing of the holes in the metal pieces which locate the rotating disc.

The redrawn diagram (see Fig. 1) should fit on one fold of the reverse side of the blind. Fast-flying pundits could extend it to suit their own requirements.

The reason the scale must be taken right down to zero is because the airspeeds which will be used in computing courses for thermal flights will be the average still-air cross-country airspeeds (which I prefer to abbreviate to Mean Airspeed, or Vm), and the groundspeeds resulting may well be negligible in some winds.

For the benefit of those who have not used a computor of this type, an explanation might be helpful. The basic problem in flying is:—

GIVEN: Wind direction and strength,
Required Track,
Airspeed,

FIND: Course to steer,
Groundspeed.

This is solved by means of a triangle of velocities, in which the lengths of the sides represent speeds, and the angles are directions. Thus, in Fig. 2,

AO is wind direction and strength,
TO is track and groundspeed,
TA is course and airspeed.

It is usual practice these days to work all problems in knots, but it works just the same in any other unit of speed. You start off by drawing a line (AO) in the direction in which the wind is blowing and of length representative of the wind speed. From O

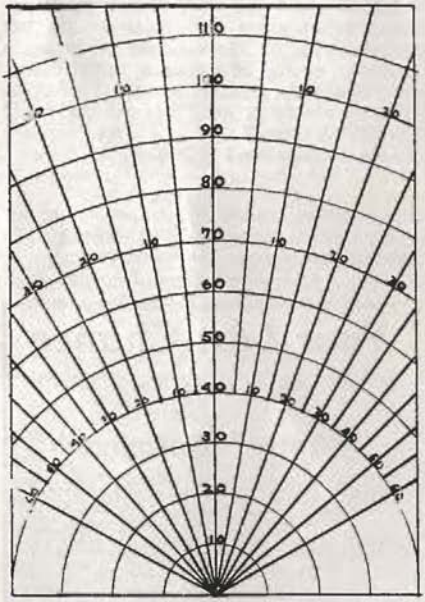


Fig 1.

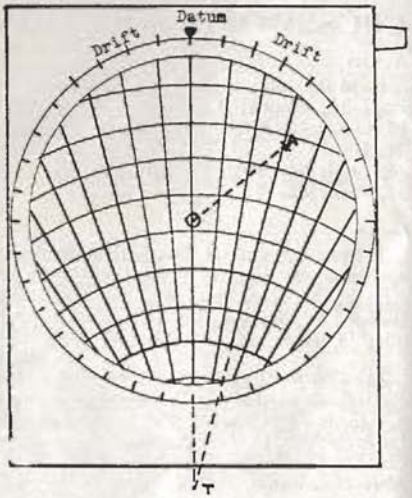


Fig. 2.

you lay off the reciprocal of the track, but you don't know the groundspeed yet so you can't mark T on it. The other thing you know is your airspeed, and with A as centre and a compass set to a radius representing the airspeed you draw an arc of a circle cutting the Track line. This gives the point T. The length TO now represents the groundspeed, and the direction TA represents the course, the angle OTA being the drift angle. The aircraft flies direction and distance TA in an hour, but in the same hour the wind blows it in direction and distance AO, so that the net result is that over the ground it flies direction and distance TO.

Now it is highly inconvenient to have to have paper, pencils, protractors, dividers, rulers and all that in the cockpit, but it is quite handy to have a computor and a pencil. The computor merely works out the triangle of velocities for you without you having to actually draw all the lines yourself. The airspeed arcs are already drawn, as also are the drift angles, on a movable blind which is placed behind a transparent circular window which is rotatable to any direction.

All that you need to draw is a point or cross on the window, which represents the point A in the triangle of velocities. Proceed by rotating the window till the direction from which the wind is blowing is against the datum point at the top of the instrument. Using the airspeed arcs as a scale by moving the blind until an arc (or zero if you prefer) is under the little dot in the middle of the window, make your mark by counting upwards from the dot a distance equal to the wind speed.

Then rotate the window until your desired Track is against the Datum point, and move the blind until the wind mark is over the top of the appropriate airspeed arc, and the computor is set up. Fig. 3 shows what it would look like if the actual lines were drawn instead of only the wind mark A. The groundspeed is shown by the distance TO, and the drift angle by the line TA. The problem solved in Fig. 3 is appropriate to an aeroplane. The picture begins to look a little more complex when you use your Mean Airspeed for finding out your mean groundspeed and mean drift. Let us suppose you have a wind of 050/15 knots, and you will have a mean Rate of Climb of 175 ft./min., giving you mean airspeed of 20 knots at a cruising airspeed of 55 knots. Let us also suppose that an Out-

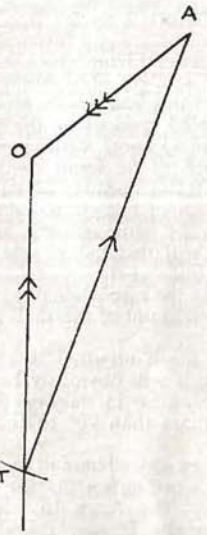


Fig. 3.

and-return task has been set on a track of 330°/150° distance 25 nautical miles to the turning-point.

Set the computor to direction 050 and count 15 knots upwards from the centre and make the wind mark. Now rotate the window until 330° is against the datum, and move the blind until the wind mark is on the 20 knots airspeed arc. Read off the groundspeed (12 knots) and the drift angle (45°), noting that it is on the right of the track. Course is therefore 330° plus 45° =015° between thermals. You may want to know the head or tail component of the wind, and this is obviously the difference between your mean airspeed and your mean groundspeed, i.e. a head component of 20 minus 12=8 knots.

For the return journey you simply rotate the window until the return track 150° is against the datum point, and move the blind until once more the wind point is over the 20 knots mean airspeed arc. You will notice now that although the wind is from slightly abaft the beam of the track, the groundspeed is still somewhat less than the airspeed, owing of course to the large amount of drift (45°) one has to allow for. The answers this time are: Course 150° minus 45°=105° and groundspeed 17 knots, giving an effective *head* wind component of

3 knots This is only for that part of the flight while you are still thermalling. When you get to a point from which you can reach home in a straight glide, things are much better. For this you simply move the blind until the wind mark is on the cruising airspeed arc of 55 knots, which gives us then a groundspeed of 56 knots, with drift 15°. Note the previous head component has now become a small tail component. A good knowledge of your gliding angle in all conditions will obviously enable you to start your final glide at the earliest moment and perhaps win the race while others are taking needless height out of thermals and wasting time thereby.

If your mean airspeed is less than the windspeed, it will obviously be impossible to make progress in thermal flight in any direction more than 90° to the downwind direction.

It might be as well here to make a remark about the wording on the top half of the computor. The mark to which I have referred as the Datum Point is actually marked "True Course", and the drift scales either side are marked "Drift Port" and "Drift Stbd." on the left and right hand sides of the Datum. This is due to the peculiarly inept method of use of the computor generally taught in the R.A.F., which went something like this:

"Put the wind on the computor blowing away from the centre, and align the track to the Course datum and note the drift. Then rotate the window until the course is against the drift on the drift scale and see what the new drift is. Then shuffle it a bit more until eventually the drift on the diagram agrees with the drift on the scale. The centre dot (all this time) was on the airspeed arc. Read off the course against the True Course datum, and the ground speed against the airspeed arcs."

The reason for adopting this method escapes me, and I recommend all users of the instrument to adopt the simpler and more accurate method I have described, and to ignore the inscriptions altogether. Better still, get an engraver to block out "True Course" and replace it with "Track", and to delete the words "Port" and "Stbd." on the drift scales and replace them with "subtract" and "add" respectively put before the word "drift". The East and West Variation also marked on the same scales is correct in that Easterly variation is subtracted from, and Westerly variation added to True directions in order to get Magnetic directions.

The reverse side of the Dalton Computor usually carries a metal circular slide rule for calculating times, speeds and distances. It is usual to regard the central scale as the time scale, and the outer one as the distance scale. Speeds are usually set by putting the 60 minutes indication against the distance gone in the hour. For example, in the problem we worked earlier we found a mean groundspeed outward of 12 knots, the distance to go being 25 nautical miles, so we set 60 on the inner scale against 12 on the outer scale, then on the outer scale we see 25 miles is against 125 minutes on the inner scale, so it will take two hours five minutes to get there. Coming home at 17 knots, it would take 88 minutes if the entire distance had to be soared, but if we estimate that we can glide the last ten miles (at 55 knots), we can subtract ten from the distance, making it 15 miles to soar at 17 knots (=53 minutes), and 10 to glide at 56 knots (=10¾ minutes), total nearly 64 minutes, a saving of 24 minutes.

On the inner scale there are special marks for converting distances from nautical miles into statute miles and kilometres, which is done simply by putting the units you have got against the distance you have got, and reading off what that distance is in the other units against the appropriate marks. E.g.: What is 300 kilometres in nautical miles? Put the Kms. mark against 300 (the 30 mark actually) and read opposite the Naut mark approximately 162.5. One has to say approximately, because the chief snag with concentric discs is that they are very rarely exactly concentric, and should you be able to choose your own computor, that is a thing you ought to check.

The computor disc also has two windows

bearing scales for correction of height and airspeed. The height correction is made by putting the indicated altitude against the air temperature, and by reading the corrected height on the outer scale against the indicated height on the inner scale. For example: Indicated height 4,000 ft., air temperature plus 15°C. gives a corrected height (on my computor) of 4,110 ft. The airspeed correction works in just the same way. You put the air temperature against the indicated height in the airspeed window, and read the true airspeed on the outer scale against the indicated airspeed on the inner scale. E.g.: Indicated height 6,000 ft., air temperature plus 10°C., indicated airspeed 60 knots, true airspeed 66½ knots.

Should you have attained such a state of punditry that you want to look up what the air temperature should be at some particular height in the International Standard Atmosphere, put the 0 of Indicated Height against plus 15°C. in the Height Correction window, and read off the answer for any other height.

And of course you can use the computor for finding your rate of climb, putting height gained (outer scale) against minutes (inner) and reading the feet per minute on the outer scale against the 10 (read as 1.0) on the inner.

Gliding Certificates

DIAMOND FOR GOAL FLIGHT

No.	*Name*	*Club*	*Date*
231	L. R. Robertson	Derbyshire & Lancashire Gliding Club	26.5.58

GOLD C CERTIFICATES

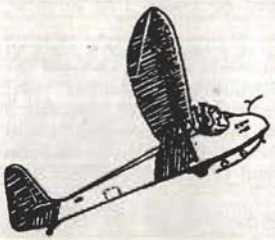
No.	*Name*	*Club*	*Date of Completion*
39	D. S. Bridson *	London Gliding Club	11.8.58
40	A. Coulson	Newcastle Gliding Club	31.7.58
41	L. R. Robertson	Derbyshire & Lancashire Gliding Club	19.10.58

SILVER C CERTIFICATES

No.	*Name*	*Club*	*Date of Completion*
763	J. Bradley	East Anglian R.A.F. Gliding Club	20.7.58
764	W. V. Menkevich	Cambridge University Gliding Club	30.8.58
765	J. C. Deas	Cambridge University Gliding Club	24.9.58
766	E. W. Clarke	Cambridge University Gliding Club	24.9.58
767	G. R. Heasey	Bristol Gliding Club	17.10.58
768	M. W. Thompsett	Coventry Gliding Club	20.9.58
769	W. Storey	Lasham Gliding Centre	21.5.57
770	R. Marshall	Southdown Gliding Club	23.7.58
771	C. P. A. Jeffery	London Gliding Club	20.7.58

C CERTIFICATES

Name	*Gliding Club or A.T.C. School*	*Name*	*Gliding Club or A.T.C. School*	*Name*	*Gliding Club or A.T.C. School*
J. D. Haytread	624 G.S.	R. A. Hughes	East Midlands	M. Kelly	612 G.S.
F. I. Nicholls	Yorkshire	T. W. Sheppard	London	G. M. Sheppard	613 G.S.
R. J. Howard	Cranwell	M. Gani	S et M, France	C. A. C. Ashman	631 G.S.
J. P. Whitehead	Scottish G.U.	J. G. Riddall	Derbyshire & Lancashire	C. R. Browse	613 G.S.
K. W. Buckley	Marham	M. W. Thompsett	Coventry	D. R. Matta	Cornish
W. E. Sandham	Moonrakers	C. Sharpe	512 G.S.	M. Farrand	Four Counties
I. D. Grant	621 G.S.	G. A. Kerr	London	J. Fletcher	Surrey
A. M. Blankley	Four Counties	K. R. Mansell	Midland	T. A. Nicoll	Connell PG 94
G. P. Whitehead	Scottish G.U.	D. J. Hopkins	622 G.S.	J. D. S. Thorne	Wessex
E. J. Pollard	Cornish	A. L. Brown	Wahn	V. Bridges	621 G.S.
P. D. Kevan	East Midlands	C. W. Burman	Fenland	B. E. Russell	Brüggen
G. R. Chapman	Surrey	J. Townsend	Fulmar	H. A. Brunt	London
F. A. Harris	Surrey			R. D. C. Hart	Bristol
M. J. Lowing	Cranwell				



ITS - ALL - YOURS

For and About Instructors

THOUGH the Safety Conference, held at the Kronfeld Club on Saturday, 13th December 1958, was the first of its kind in this country, it must not be imagined that this is the first time the subject has been debated; far from it, for the annual Instructors' Conferences, held for many years past, have largely covered the same ground. But they have had other matters to discuss as well, whereas on this occasion Safety had a conference all to itself.

The principal speakers were Christopher Paul in the morning and Ann Welch in the afternoon, each talk being followed by a lively discussion among the audience, which consisted largely of instructors and numbered 74.

Philip Wills, in opening the conference, emphasized that we have to work hard even to keep the accident figures level; otherwise our standards would inevitably go down.

ACCIDENTS AND HOW TO PREVENT THEM

Air Commodore G. J. C. Paul showed half-a-dozen large coloured diagrams (here reproduced in black-and-white). They covered ten years of gliding accident analysis, on which he had put in a tremendous amount of work during the period. His terms of reference, he explained, were "to assist clubs to eliminate accidents by analysing and reporting upon all relevant information available." (Note: "eliminate", not "reduce").

As to availability, there was one year, 1954, in which next to no reports were sent in. However, reports on about 550 accidents and incidents have been accumulated.

There are many ways of dividing accidents into categories, as the various diagrams show. In time, they could be further subdivided, though overlapping could result: for instance, when canopies come off, this could be due to a fault at several different stages of flight. There are enough cases of launching with spoilers out to make a particular category; and another category could be cable-breaks, since there are still people who cannot cope with them.

Accident rates can be conventionally worked out by numbers in relation to flying hours, or launches, or miles flown; but these methods discourage clubs from reporting minor accidents and the resulting statistics may only be a measure of conscientiousness in reporting. In the diagrams, cost has been taken as the standard, but the change in value of the pound since 1949 should be remembered.

Diagram 1 shows total number of accidents reported and their total cost for each year; in 1934, already referred to, only 15 were reported. It is seen that 1955 was a peak year, and 1957 will also be a "peak" if the curve goes down again in 1958;

otherwise it may represent a "trend". Just think, said Air Cdre. Paul, what that £7,000 in 1957 could have been spent on in the way of gliding equipment.

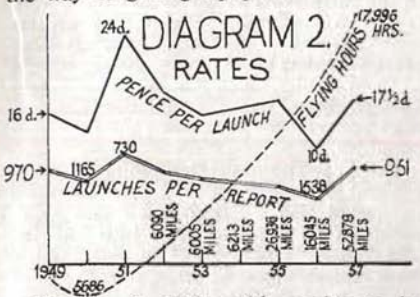


Diagram 2 deals with accidents in relation to number of launches. The upper line shows the cost of accidents per launch (given in pence), and the peak year is seen to be 1951, when they cost 24d. (2s.) per launch, while in 1956 the cost was only 10d. The lower line shows launches per accident report, but in reverse: i.e. it goes highest for the fewest launches per accident, and lowest for the most—thus, high for a bad year and low for a good one. Both these lines have been "smoothed" while crossing the "bogus" year 1954, in which many accidents were not reported.

Also in Diagram 2 is a continuous curve showing total flying hours each year, and in looking at this one should remember that there has been a great increase in the amount of flying per launch.

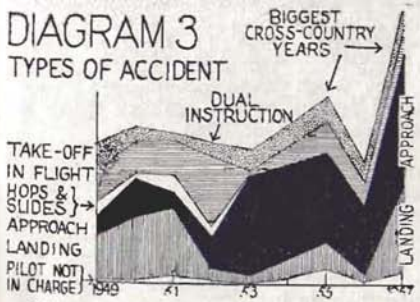


Diagram 3 divides the accidents into types according to the stage of flight, and shows the total cost (not number) of each type in each year, with 1954 smoothed out as before. It shows that "hops and slides" disappeared after 1953 with the abolition of primary solo training, and that, before this, landing accidents formed a bigger proportion of the whole than they have done since.

Take-off accidents are tending to diminish, but those "on the approach" have much increased from 1953 onwards and are still rising.

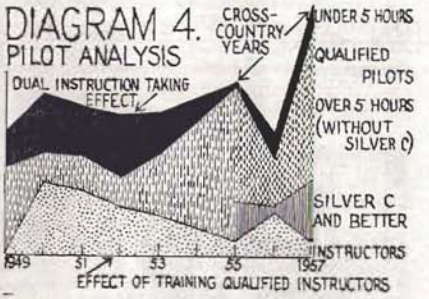
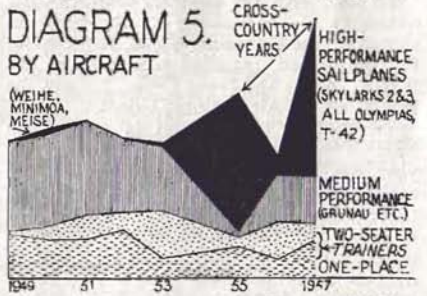


Diagram 4 classifies accidents according to the kind of pilot. From 1955 onwards those with over 5 hours' flying but without Silver C have been separated from those with Silver C or better; before that the two classes were in the same category. The "Instructors" class means that the pilot in charge was instructing at the time, irrespective of whether he or his pupil had the controls. Again, total cost is shown.

The "Under 5 hours" class has much diminished and "Instructors" show a downward trend, but since 1952 there has been a big increase in "Over 5 hrs. without Silver C."

Diagram 5 classifies the accidents according to type of aircraft involved. "High-performance" sailplanes begin as



Weihe, Minimoa and Meise, and finish as Skylark II and III, Olympias of all types, and T-42. "Medium performance" are the Grunau Baby and its variants; "Two-seater

trainers" are the T-21 and T-31; and "One-place trainers" are the Cadet and Tutor.

The most striking feature is the enormous increase shown by high-performance sail-planes since 1953, especially in the years of maximum cross-country flying, due in part only to national contests.

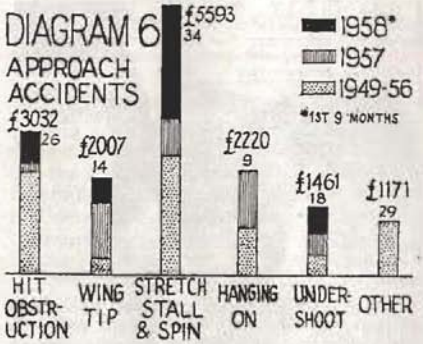


Diagram 6, the last, subdivides the "Approach" accidents into six different types, each column being further divided into "1958 so far", 1957, and all previous years. The striking preponderance of "stretch, stall and spin" accidents on the approach to land is at once apparent, and aroused much attention in the subsequent discussion.

Finally, Air Cmdre. Paul said that figures can mean anything, and the way to find out what they do mean is to look at them in the right way.

Discussion

To start with, the audience directed their questions to the validity of the statistics shown on the diagrams, which, Air Cmdre. Paul explained, included reports from the B.G.A., Army and Navy Clubs, but not the R.A.F. or the Air Training Corps.

The nature of statistics is such, Ken Machin said, that small variations year by year are not really significant, and he thought that too much had been got out of those shown. Wally Kahn (Lasham) drew attention to the rising cost of labour, pointing out that the similarity in cost of damage per launch from 1949 to 1957 really indicated an improvement.

Godfrey Lee (London) found it rather surprising that there were almost no accidents to high-performance machines until after 1953; could it be that they were safer in the hands of those with solo training? If so, the moral was "Back to Daglings!" Air Cmdre. Paul answered that in the early years of the period there were few such machines, so that only experts were allowed to fly them; whereas now there are many more, and pilots are put on to them sooner. Ken Machin (Cambridge) thought there was a correlation between high-performance accidents and cross-countries.

Bernard Thomas (Derbyshire & Lancashire) wanted to see how cross-countries correlated with "stretch, stall and spin" accidents by dividing these into "home" and "away" landings. This, Air Cmdre. Paul replied, could be done, though not at the moment; however, he thought the two kinds would be roughly equal. As to the comparative risks on flat sites and hill sites, this information could also be extracted, but it has not been done so far.

"Stretch, stall and spin" came in for a lot of discussion, especially as, since Diagram 6 was drawn, the number had increased to 34 and the total cost to £5,884; there had already been 9 in 1958, costing £2,566.

Derek Piggott (Lasham) did not altogether approve of taking total cost as the most important criterion, as it does not tell us whether major or minor accidents happen most often; such knowledge should help us to get down to eliminating them. Air Cmdre. Paul, however, thought that total cost was the best representative way of displaying the information; and it is the total cost which affects insurance rates for the clubs. To give the cost of particular accidents, as requested by Lionel Alexander (Cambridge), would go against agreed policy, which was to encourage the sending in of reports by not enabling individual accidents to be identified.

Chris Riddell (Yorkshire) wondered if many "stretch, stall and spin" accidents were not due to the pilot being tired at the end of a long flight, and whether private owners were more liable to them just after buying the aircraft—like the owner who tried to land a Skylark III downwind on his first flight in it.

David Carrow wondered how much comparative use the different types of glider have, and was given the number of gliders in use in the United Kingdom each year. From 1949 to 1957 they were: 113, 120, 154, 151, 133, 130, 173, 194, 211. He then pointed out that, whereas the number of

gliders had nearly doubled, the number of launches had nearly trebled in the same period.

A new theme, which aroused quite a lot of discussion, was introduced by Ken Machin (Cambridge) when he declared that what we really wanted to know was "relative cost per degree of satisfaction got." He suggested that the total flying revenue of all the British Clubs would be a measure of this satisfaction; i.e. the total cost of accidents should be divided into the total flying revenue. However, Charles Ellis (London) pointed out that flying fees at many clubs come nowhere near meeting the cost of flying, and the total turnover of a club should be taken, since flying is, after all, its only purpose. Wally Kahn added that club figures alone would give fallacious results because the costs of private ownership would be ignored, and there are two clubs which have 50 private owners between them. Philip Wills agreed, however, that the figures sought should be asked for in the questionnaire sent out to clubs, though Godfrey Harwood (Crown Agents) raised the difficulty of deciding how much of the fees for summer courses can be regarded as flying money.

Humphrey Dimock (Portsmouth Naval) said that the statistics given ignored the "newspaper morbidity", meaning those accidents which get into the newspapers because the pilot is taken to hospital, or because of fatal result; and Ken Machin added that adverse publicity affects our income. Air Cmdre. Paul, however, did not think this affected the lessons to be drawn from his statistics. For instance, all collisions, as well as near misses, are potential causes of death, whether the actual result is a fatality or not.

Vic Carr (Coventry) thought that training methods are now adequate and it is the flying discipline which really needs attention.

The last item of discussion was a suggestion that actual case histories of accidents should be published in SAILPLANE & GLIDING. However, at Annual General Meetings of the B.G.A. the voting has always gone in favour of keeping these reports confidential.

Philip Wills wound up the morning's session by hoping that, as a result of it, we would see a smart increase in the number of accidents *reported*.

A E.S.

GLIDER PILOT TRAINING

IN order to find out how the training of glider pilots can be improved, there must be some measure of agreement on the object to be achieved, as this will affect both the methods used and the extent to which training is continued. The object should, I feel, be to teach people to fly gliders for the purpose of becoming able and responsible soaring pilots. To be effective this object should never be lost sight of, even if the club has only one elementary glider, or is dealing with one-week course members. The whole future mentality of the pilot is established in his early dual training, and if this is rushed merely to get him solo, or given without any thought of soaring and cross-country flying, the teaching will have failed in its primary object.

The practical effect of this is twofold: (a) the pilot will take longer to reach the stage of being able to get value from his glider; and (b) because in practice the amount of advanced instruction given in clubs is small, the partly trained pilot will tend to devise means of achieving the results for which he has not been prepared, and is likely to pick up bad habits. This will lead to the increased risk of accidents.

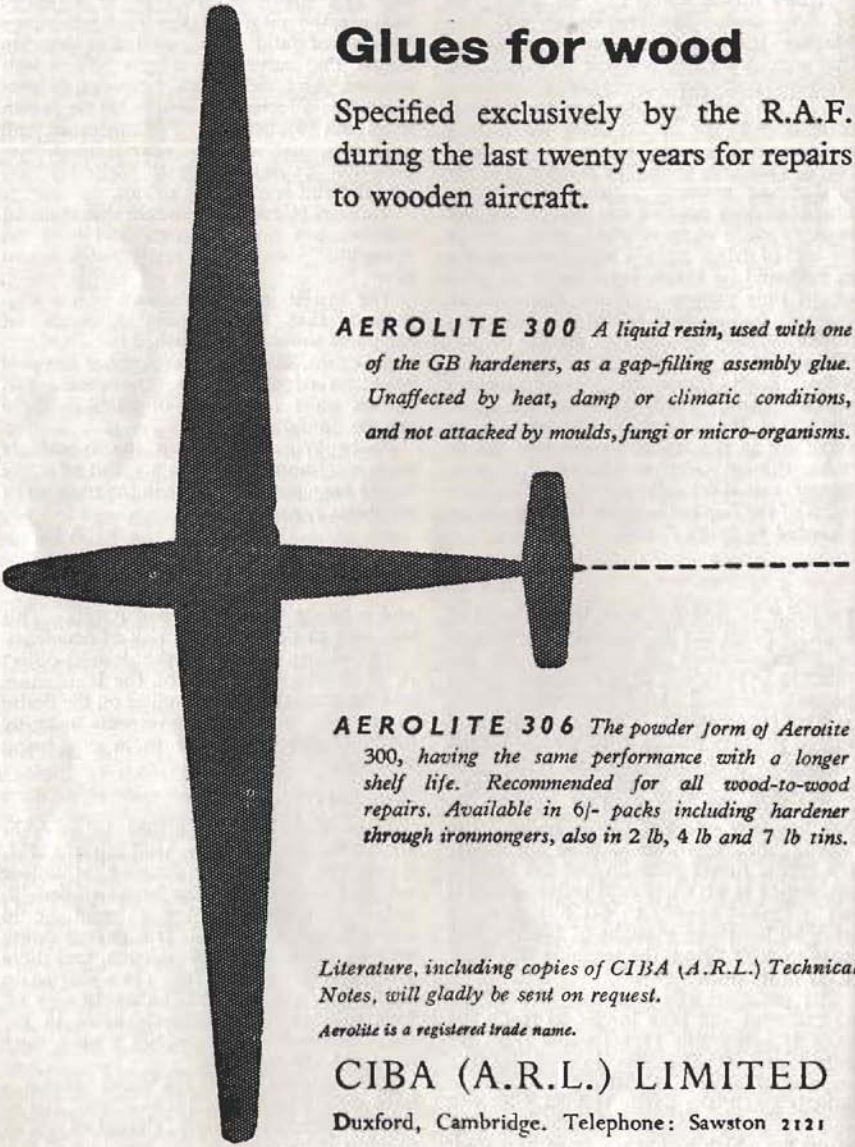
The ability to achieve the desired object is, of course, dependent on the Instructors and the club aircraft, as well as on the desire to attain it. In these two respects lie many practical difficulties, the main one being financial.

Instructors

Most clubs cannot afford to pay instructional staff, and the vital job of C.F.I. is carried out by a devoted volunteer working excessively long hours under—in winter particularly—tough and cold working conditions. He is a person doing his own full-time job in addition, and there are simply not enough hours in a year to do everything, and as well as he would wish to. This problem is particularly acute in the clubs doing 4-8,000 launches a year, who have 100-150 members.

In some cases both C.F.I.'s and Assistants have great experience, but in others, due to the exigencies of marriage, change of job, or nervous exhaustion of the previous C.F.I.

AEROLITE



Glues for wood

Specified exclusively by the R.A.F. during the last twenty years for repairs to wooden aircraft.

AEROLITE 300 *A liquid resin, used with one of the GB hardeners, as a gap-filling assembly glue. Unaffected by heat, damp or climatic conditions, and not attacked by moulds, fungi or micro-organisms.*

AEROLITE 306 *The powder form of Aerolite* 300, *having the same performance with a longer shelf life. Recommended for all wood-to-wood repairs. Available in* 6/- *packs including hardener through ironmongers, also in* 2 *lb,* 4 *lb and* 7 *lb tins.*

Literature, including copies of CIBA (A.R.L.) Technical Notes, will gladly be sent on request.

Aerolite is a registered trade name.

CIBA (A.R.L.) LIMITED

Duxford, Cambridge. Telephone: Sawston 2121

(an increasing occupational hazard), the mantle of responsibility has been draped forcibly on to a club member of relatively little instructional experience, simply because if he does not take the job on, the club will collapse. Enough praise cannot be given to those individuals who, suddenly and unwillingly elevated above their fellows, do a most conscientious and creditable job for their clubs. It must be realised that as long as clubs cannot afford to pay for instructional staff to take some of the load off overworked volunteers, it is going to be difficult, with the best will in the world, to make any big or general improvement in glider training.

Aircraft

These should be both suitable for the stage of instruction or flying for which they are used, and should have matched characteristics.

All training gliders now should have proper airbrakes.

The mixed bag which clubs are using, because of financial limitations, create difficulties in training methods which would otherwise not exist at all. For example, if the use of airbrakes cannot be taught from the start, because the following solo aircraft has not got them, this will lead to wasted time, or confusions like the too early introduction of side-slipping.

Financial limitations also discourage the obvious use of the two-seater for first solos, because it is the only dual aircraft, and this in turn restricts the already small choice of suitable intermediate aircraft. Many of these follow-on aircraft in use in clubs have outdated handling characteristics and performance, which bear little relationship to modern soaring gliders.

It is not in accordance with the gliding club spirit for these financial difficulties to create discouragement, and there is little doubt that clubs in this country are achieving remarkably fine results with limited equipment which is far from the ideal. This has been apparent on the visits that I have made to clubs for category tests. There are, however, some ways in which instruction can be improved. Some of these are, of course, realised, and action is being taken; but there are others which are invariably due to inexperienced instructors, which have become apparent on test.

The most common fault, by far, lies in making briefings and explanations of theory far too complicated. This occurs either because the instructor is not quite clear on the stuff himself and is thinking it out as he goes along, or because he does not appreciate the impact of his words on the pupil, or realise how little, in fact, the average pupil can or does take in. The implications of this are obvious. The pupil becomes confused, thinks certain exercises are difficult, gets the wrong emphasis, and because he does not understand may unconsciously reject or forget important lessons.

The use of stick positions, instead of aircraft attitude, is still too widespread, encouraging the pupil to concentrate on what he is doing with his hands, and on some useless formulae like "centralise controls" and "take off bank", instead of concentrating on what the aircraft is actually doing in the air.

Exercises in effect of controls and faults in turns are invariably taught in a negative sense. Instead of the usual "fly straight and level" or "are you slipping or skidding?" it is far better to make the pupil use the controls positively. "Put the wing down—now bring it up again"; or later, in turns, "change this turn to a skidding turn and then correct." In this way the pupil develops a positive mentality to his flying and the instructor knows better what the pupil does or does not understand.

Too much emphasis is sometimes given to the value of the instruments. When a pilot goes into a strange field he will find that his altimeter is valueless as an approach aid, and so he should never be allowed in his early training to become dependent on it. "Woodpecker" instructors who tap away the paint round the altimeter will breed a race of pupils whose concentration on accurate altimeter readings may later give rise to expensive embarrassment.

Perhaps the biggest shortcoming has been the lack of good field-landing training due to inexperience in the art by some instructors and insufficient facilities in the club. It is obviously necessary to develop the technique for going into strange fields, and I hope to be able to give some ideas on this in the next issue.

ANN WELCH.

Discussion

At the end of her talk, Ann Welch asked the meeting for opinions on whether we should put up the qualifications for Chief Flying Instructors—say, for those who take

on the position after 1st May, 1959. The Handley Page Club objected that they would cease to exist if this were done, unless there was an "escape clause". Wally Kahn (Lasham) thought that no paper qualification would remove those "horrible colours" on Air Cdre. Paul's diagrams. And Lionel Alexander (Cambridge) was sure that there was nothing wrong with instructing; we did not have accidents where we had the proper equipment, so the problem was not to raise the instructors' qualifications but to get the kind of two-seaters we want.

The subject which received most attention in the discussion was the need for continued instruction for pilots while they progressed to an advanced stage. As Air Cdre. Paul said, although the basic training is good, when a pilot goes solo he is on his own and regards himself as a qualified pilot; whereas the first solo should be no more than a small incident in the pupil's continued training. To quote Wally Kahn, "none of us are giving enough time to those flying solo."

One difficulty of getting volunteer instructors to do advanced training, Ann Welch said, is that they would have to watch other people flying solo instead of doing instructional flights themselves, and they would probably walk off. However, if they got their Silver C's first, they would not then suffer the frustration of seeing Silver C opportunities pass by while they were on the ground. Another difficulty, Godfrey Lee (London) said, was that, to give advanced instruction, an instructor would have to know more than was in the B.G.A. handbook. The need for much advanced instruction to solo pilots could be cut down, Ann suggested, if the right points could be emphasized during early training.

Derek Piggott (Lasham) was convinced that putting pupils on to high-performance machines early was correct policy, and the only thing to be said for Grunau Babies and similar types was that they are cheap; but they will become more expensive, as no more are being made. David Carrow, however, thought that pupils should progress from type to type, so as to have something to look forward to; if put straight on to Skylarks, they don't bother to fly unless it is soarable.

When the risks of landing away came to be discussed, the need for teaching pilots to plan ahead was emphasized, especially by Derek Piggott, who said that the absence of such teaching was the weakest point in present instructional technique; the worst planners, he had found, were pilots who had been flying without airbrakes. Nearly all "stretch and stall" accidents were due to making sudden decisions instead of planning ahead. Other speakers recommended more practice in landing in fields away from the site, or, as is done at Cambridge, a series of spot landings on the site.

David Ince (Lasham) suggested that the Instructors' Panel might look at the question of "continuation training", and Wally Kahn suggested a week's course during 1959 at which instructors should come along for training. Finally, detailed accounts of particular accidents in SAILPLANE & GLIDING were again proposed, and offers to supply such an account came from the London, Kent and Cambridge Clubs.

Out of the past: WHAT IS IT? *Answer on page 44.*

Gliding Records

INTERNATIONAL

Single-Seaters

DISTANCE	R. H. Johnson (U.S.) 535 miles.
HEIGHT GAIN	W. S. Ivans (U.S.) 30,100 ft.
ABS. ALTITUDE	W. S. Ivans (U.S.) 42,000 ft.
GOAL FLIGHT	R. Fonteilles (France) 421 miles.
GOAL & RETURN	V. Zejda (Poland) 322 miles.
100-KM. TRIANG.	J. Mrak (Yugoslavia) 60.22 m.p.h.
200-KM. TRIANG.	P. F. Bikle (U.S.) 55 m.p.h.
300-KM. TRIANG.	K. Bozidar (Yugoslavia) 49.4 m.p.h.

Multi-Seaters

DISTANCE.	V. Ilchenko & G. Petchnikov (U.S.S.R.) 515.6 miles.
HEIGHT GAIN.	L. E. Edgar & H. E. Klieforth (U.S.A.) 34,425 ft.
ABSOLUTE ALTITUDE.	L. E. Edgar & H. E. Klieforth (U.S.A.) 44,255 ft.
GOAL FLIGHT.	J. Popiel & A. Siemaszkiewicz (Poland) 336.3 miles.
GOAL & RETURN.	E. Dommisse & S. J. Barker (S. Africa) 270.9 miles.
100-KM. TRIANGLE.	H. C. Ross & H. E. Jensen (U.S.A.) 54.04 m.p.h.
200-KM. TRIANGLE.	H. C. Ross & H. E. Jensen (U.S.A.) 50.33 m.p.h.
300-KM. TRIANGLE.	H. C. Ross & P. E. Wilson (U.S.A.) 50.96 m.p.h.

BRITISH NATIONAL

	Single-Seaters	Multi-Seaters
DISTANCE	A. Gough 348 mi.	Welch & Irving 254 mi.
HEIGHT GAIN	P. A. Wills 28,200 ft.	Piggott & Whately 15,240 ft.
ABS. ALTITUDE	H. C. N. Goodhart 37,050 ft.	
GOAL FLIGHT	H. C. N. Goodhart 318 mi.	Kahn & Williamson 194 mi.
GOAL & RETURN	R. C. Forbes 217 mi.	N. Goodhart & Foster 141 mi.
100-KM. TRIANG.	A. J. Deane-Drummond 47.5 m.p.h.	James & Marshall 35 m.p.h.
200-KM. TRIANG.	A. J. Deane-Drummond 45.36 m.p.h.	Piggott & Burgess 22.32 m.p.h.
300-KM. TRIANG.	G. A. J. Goodhart 48 m.p.h.	

UNITED KINGDOM LOCAL

DISTANCE	A. Gough 348 mi.	L. Welch & Irving 254 mi.
HEIGHT GAIN	J. S. Williamson 26,300 ft.	Piggott & Whately 15,240 ft.
ABS. ALTITUDE	J. S. Williamson 28,500 ft.	
GOAL FLIGHT	A. W. Bedford 257 mi.	Kahn & Williamson 194 mi.
GOAL & RETURN	A. J. Deane-Drummond 197.5 mi.	Williamson & A. Welch 102 mi.
100-KM. TRIANG.	F. Foster 46.3 m.p.h.	James & Marshall 35 m.p.h.
200-KM. TRIANG.	A. J. Deane-Drummond 38.8 m.p.h.	Piggott & Burgess 22.32 m.p.h.
300-KM. TRIANG.	H. C. N. Goodhart 41.2 m.p.h.	
100-KM. GOAL	D. Goddard 67.2 m.p.h.	James & O'Riley 60 m.p.h.
200-KM. GOAL	H. C. N. Goodhart 58.8 m.p.h.	Williamson & Kerridge 34.9 m.p.h.
300-KM. GOAL	E. A. Moore 57.4 m.p.h.	Kahn & Williamson 43 m.p.h.

WOMEN'S RECORDS: BRITISH NATIONAL & UNITED KINGDOM

DISTANCE	Mrs. Anne Burns 192 miles.
HEIGHT GAIN	Mrs. Anne Burns 10,500 ft.
GOAL FLIGHT	Mrs. Anne Burns 192 miles.
GOAL & RETURN	Mrs. Anne Burns 94 miles.
SPEED, 100-KM. TRIANGLE	Mrs. Ann Welch 22.6 m.p.h.
SPEED TO 100-KM. GOAL	Mrs. Rika Harwood 51.6 m.p.h.
SPEED TO 300-KM. GOAL	Mrs. Anne Burns 39.3 m.p.h.

The Mud of Mazanoovka

by Philip and Kitty Wills

Reproduced with acknowledgements from "Flight"

Every long cross-country flight really consists of two adventure stories, not one. In the morning the sailplane emerges from its chrysalis, and shortly afterwards the pilot sets off to test his skill and fortune. At the same time his crew leaves on a retrieve which may call for equal qualities of initiative and much more devotion, and produce hazards and surprises as great as anything experienced by the pilot. In the evening, if all goes well, the twin threads recombine for the journey home.

Now, although many flights have been written up, the retrieving teams have so far been surprisingly silent, yet their skill and ardour form a vital part of the whole. In what follows, therefore, I am trying to present to the reader the whole story of one single long flight, and to indicate the debt owed by all pilots to the faithful crews who get them, somehow, back to base, to fly again on the morrow.

P.A.W.

JUNE 25th 1958 was the big day of the 1958 World Championships at Leszno, in Poland. Also it must have established a record for total mileage flown in one day without engines: no one has yet worked it out, but the 62 competitors must between them have flown over 15,000 miles, and their retrieving cars accordingly must have covered well over double that formidable distance.

In spite of this, it was not a really first-class day from the standpoint of Polish weather—during the practice period the week before we had had three consecutive days far, far better, but unluckily these never repeated themselves during the actual Championships.

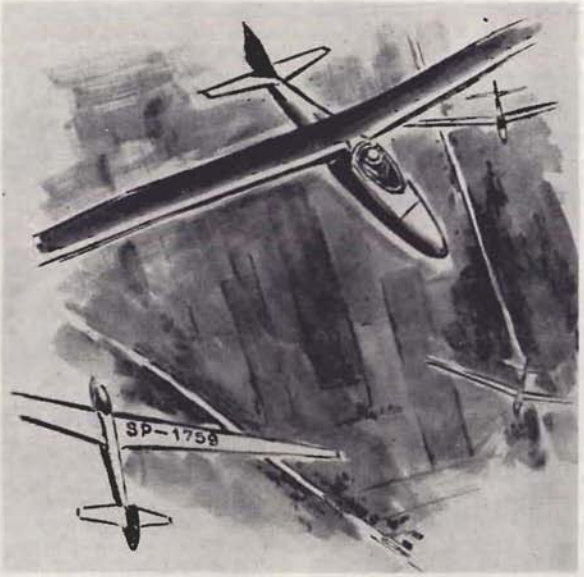
The day dawned bright and fairly hazeless, and the weather forecaster gave us winds from W.S.W., 15 km./hr., veering to west as we flew eastward, with cumulus based 5-6,000 ft. giving lift of 1½-2 metres/sec. Towards the afternoon large cumulo-nimbus, tending to spread out and "clamp", were expected in the N.E. sector of Poland, and towards the S.E. smaller cu-nim were forecast with less risk of such over-development. There was a murmur of excitement from the 62 competing pilots when Free Distance was announced as the task for the day.

A glance at the map of Poland will show the alternatives facing us. Centred on Leszno, the 500-km. radius indicates that to the N.E. a considerable sector gave us the opportunity of covering about 510 km. before reaching the Russian border; south of this a considerable sector of Russia cuts in and gives a maximum range of under 500 km.; whilst south of this again a maximum of about 535 km. is available at one point, with a long sector nicely above the magic 500.

In the forecast winds, therefore, we could either set off straight downwind as far as Warsaw, and then attempt a final leg north of east, across the wind direction, or start slightly across wind, making for a point south of Warsaw, then veer slightly S.E. to go for the maximum possible distance. Course 1 gave rather more risk of a premature landing behind an over-developed cu-nim, so most of us (including me) decided to try course 2. In the event, the cu-nim only developed to the satisfactory stage on course 1, and failed to show up entirely on course 2, so the four pilots who flew this course did better, on the average, than the rest of us.

Now came a most maddening error. We had been told to have our machines on the starting line by 10.00 hrs. for take-off to start 10.30 hrs., but at the last moment a question elicited a forecast from the met. that cumulus would not start to develop before noon, and the take-off was deferred until 11.00. No sooner had we got to our machines, however, than the first puff appeared overhead, and the unfortunate rigidity of the organisation prevented them from reverting to the original starting-time. So we all sat champing on the ground for an hour (more for us unfortunates in the Standard Class, launched last), listening to the tinkle of our 500-km. Diamonds falling out of the window. I was actually launched at 11.35.

The Polish aeroplanes used a very short



towing line 20 metres long. This looked very alarming at first. The little green aeroplane struggled gallantly up, and with its tail well down you looked at its plan-form and seemed to be peering over the tow-pilot's shoulder at his instrument panel. In fact, if you could see his Air Speed Indicator you were about right for height; if you could in addition see his oil pressure gauge you knew you were too high. At 11.45 I was waved off at 800 metres and at last was off on my *fifth* attempt for my Diamond.

Releasing into the first thermal in a large Championship one flies straight into fairy-land. Every rising column near the airfield is marked by a swarm of circling and climbing sailplanes of all shapes, sizes and colours, and one flies over to the best-looking flock and joins in at the bottom.

We smaller machines could circle more tightly than the larger ones, and so often could climb more quickly; it was like being a goldfish in a large bowl of goldfish, swimming silently round together towards the top. Around the swarm of small fish swam the larger fish in wider circles. Often one would be so near another that every detail of the pilot's face and clothes, and even his instruments, could be seen. But so high is the standard of pilotage that the entire silent and mysterious dance of the swarm felt as safe as it proved to be.

Each aircraft as it climbed near the top of the upcurrent would dart off on its course towards the distant East, and as I myself reached the top I looked down on a 2,000-ft. deep column of beautiful aircraft circling in a kind of stately gavotte over the green Polish countryside.

By now the sky was full of cumulus, though it took me 20 minutes' cautious circling to work up to safety at cloud-base of 4,000 ft. During this time, however, I safely passed the first 25 miles to Gostyn, which had on previous days proved my downfall. On this occasion I knew that my retrieving car was nervously following along on the road below ready to catch me if I fell, for a rush back for a second start at Leszno.

The Polish countryside, except for the mountainous region on the southern border, is not monotonous, in summer anyway, but it is all very much of a muchness and rather like the flatter parts of Cambridge-shire. For 300 miles to the Russian border it consists of endless flat fields of waving corn, grass, and roots, with areas of woods and forests, and a fair number of slow-

moving rivers. There are no hedges, so that we were at last flying in a country where landing was no problem at all, and this, no doubt, is one of the reasons why in 1958 the exotic, regardless-of-cost sailplanes with higher air and landing speeds at last showed their paces.

By 12 o'clock I was safely at cloudbase, with all Poland before me bathed in sunlight and dappled with the shadows of cumulus, and with a fair wind nearly astern. Ahead and behind and on either side were the near and distant graceful shapes of my competitors, their many-coloured wings flashing as the sun caught them in their circles. Life has its brilliant moments.

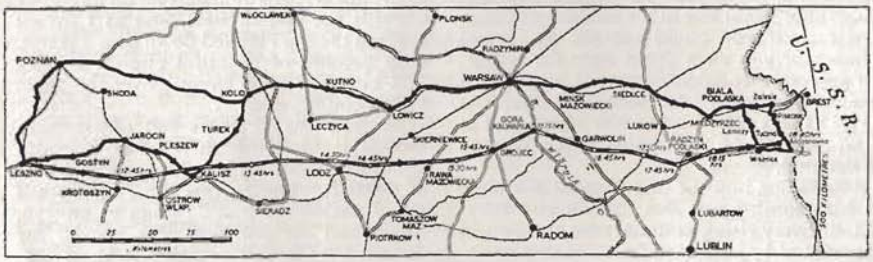
But this is really more a story of a retrieve than of a flight, for this was the longest and hardest retrieve that "Justin" had ever done, involving nearly 800 miles with the 30-ft. trailer in just 32 hours' motoring. Since the Standard Class aircraft were not allowed to have radio, a combination of sheer intuition, allied to the rudimentary telephone system of Poland, was all that ensured that I was one of the first pilots to get back to Leszno the next evening. "Justin" is the name of my retrieving car and team—on this occasion a Vanguard Estate car piloted as always by Kitty, and by Harry Midwood. So over to Justin.

shepherd him over the first part in case he comes down early and wants to be got back in time for a second launch. Last launching time to-day is 4 p.m. If there is no news of him by the time we reach Warsaw we are to do whatever we think best according to what we have seen of the weather.

Harry and I leave him to be launched by Ray and make for the trailer, hitch up, then rush over to the mess to collect our crew lunches, but find they are still not ready, so have to leave without them. Never mind, we have lots of bottles of fizzy yellow and red drinks left from other days, Polish petit beurre biscuits, one or two bars of Frank's peculiar Imperial College concoctions and a wonderful Dundee cake that had been presented to us and which we had been keeping for a rainy day, also the remains of Philip's lunch which we hope he won't be down to want.

We turn on our car radio and tell Control we are leaving the airfield, but they are too busy to be interested, so we drive quickly, off through Leszno, and stop on the edge of a large wood which the gliders have to go over.

It's a nice sunny day with rather weak-looking clouds. Harry sits on the roadside looking through his binoculars for Philip, amongst all the groups of gliders twinkling in the sunshine coming towards us. Nick is overhead at 11.15, *then we see Tony—they*



We assemble our Skylark 2, polish it, cellotape any unnecessary gaps and tow it gently over the grass aerodrome to its starting place in the lines of drawn-up sailplanes—the back row in the Standard Class, almost the last of the 62 *gliders to take off.*

We collect our pilot's lunch from the jeep which comes round, sort it, putting what we consider eatable in the air into the pocket in the cockpit and the rest into our car. Philip arrives from briefing and gives us our instructions. He tells us to head east towards Warsaw and to go off over our wood. A shout from Harry: he has found Philip on aero-tow—he can see his red wing with one white tip. We can hear Nick's voice getting more cheerful as he gets a bit more height and Tony's voice is getting fainter.

Our pilot is dumb as he is not allowed radio in the Standard Class aircraft, but we see him overhead—it is now 11.45. *We dash to the other side of the wood and pick him up again. He is gaining height quickly; he goes to the north of the road and we dash*

on as fast as we can, but he is out of sight at 12.10, *flying fast.*

We rush through Gostyn and work out how long we dare leave telephoning and yet have time to find him where he has landed, de-rig, get him back to Leszno and launch him again. We decide we must telephone not later than 1.30 *as it will certainly take us some time to get through.*

Just at the right moment a village turns up, and in the first few houses is one with a plaque over it—an "administration house" of sorts. We stop, rush up the wide, dark, dingy stairs, find a door on a landing with some official-looking writing over it, knock and go in. There is a telephone on a table and three men and a boy, a bed and a chair or two. We put our "understanding form" in front of them and they all read it at great length. They offer us chairs and then put the number through. The bell rings—we hope it is for us, but no such luck. It is a previous call that one of the men had been waiting for. Then starts what seems to be an endless conversation. At last it is over, and then another tinkle. It is *ours this time.*

A very short conversation: "Nieme komunikaizi," *he says to us. We beam all over to his surprise (he not knowing that this is welcome news to us). We thank him very much and say goodbye, some of the very few Polish words we have off pat. We offer to pay, but he says* "Nie," *so we rush down and out and into the car.*

Well, that's seen our pilot over the first bit, beyond where he could have been got back for a second try if he had come unstuck. What a relief! This first bit is always an agonizing responsibility, and when out of the way one feels one can breathe again.

We now settle down to driving; entering a village we see an accident ahead on the road—is it a trailer? One of ours passed us a bit back. No, thank goodness—and then we see it's a child and a lorry; they have left the accident as it happened in the middle of the road, and knots of shocked and sorrowing villagers are waiting at the side for the police. We wish we didn't have to intrude and go quietly by feeling so sorry for them, and sick at heart.

* * *

Meanwhile, what had been happening to the Skylark II—the egg this ardent spoon was chasing so devotedly? I had settled down happily to the routine of speed flying on a good day. In every second or third thermal I timed myself from moment of entry to leaving, and calculated my average rate of climb—which worked up as the day wore on to never more than 350 ft./minute —good but not epoch-making. Setting my speed-cruise chart at this figure, I was flying on course between thermals at 55-65 knots. In these conditions there is practically no difference in technique and in speeds to fly between a Skylark III, to which I was so well accustomed, and the smaller Skylark II, although the achieved average ground-speed is, of course, rather less. Every half-hour or so I spotted and ringed my position and time on my map, and worked out the average speed achieved, which remained throughout the day remarkably constant at 72 km./hr. The clouds were mostly quite shallow, and experiment showed me it was hardly worth climbing into them, although later on I found one or two which gave me an extra 1,000 ft. of good lift inside.

During the first hour I was flying over country we had come to know during the past week or so, over Gostyn of ill-repute, over the hamlet just beyond at which I had landed and spent a long time trying to pronounce over the telephone to base. It spells itself Mszczyczyn; next time you are in your bath, dear reader, try it out for yourself.

As I flitted on from cloud to cloud, the countryside below hardly changed—the faster you ran, the more you seemed to stay in the same place. At 2.30 the large town of Lodz came into sight to the south of my course. Here at last, I thought, is somewhere I can pronounce. However, the Poles had it again—they pronounce it Wooj. For the last hour I had seemed alone in the dazzling sky, but now another white sailplane swam quietly into my thermal below me, and we circled and flew on together for another 20 minutes before I lost him. It was a reminder that, in fact, I was not on a lone joy-ride; in a radius of 25 miles or so were 61 other pilots all mad keen to get on a little faster and further than I.

I was all the time crabbing slightly across the wind to make my easterly course, and at 4 p.m. a large river ahead was clearly the Vistula, and as I got nearer and located myself by the town of Gora Kalwaria on its banks, I was about 35 km. south of Warsaw, and now was the time to alter course a little

more towards the S.E. to get the maximum distance. Smoke from a factory chimney below tried to tell me that the wind direction had changed very much in my favour, but I was too old a hand to be caught by that. The surface wind always tends to blow slightly towards a centre of low pressure, but above 1,000 ft. or so the air blows *round* the centre, and the speed and direction of the air I was flying in was only shown by watching the movements of the cloud-shadows. These, however, did show that the upper wind had veered slightly in my favour. But time was getting on—the magic 500-km. circle was still 170 km. ahead; would I reach it, or had the dead hand of officialdom snatched my Diamond from my grasp once more?

A momentary panic. Crossing the river from Gora Kalwaria below were, without a shadow of doubt, two bridges, carrying a road and a railway. Neither were marked on my map. Could I be lost? A hasty check-up with other landmarks convinced me—dangerous conclusion, but, on this occasion, correct—that the map was wrong.

As I flew on over the flat, green country below, the sky ahead and to the right of my course started, unmistakably, to die. Slightly to the left looked better, and in this direction, into the blind sector, I was forced. A quarter of an hour later the guts started going from the air even in this direction, and again I was forced more to the left. Instead of puffy cumulus everywhere, there were soon left only a few isolated clouds, each at what appeared to be maximum range. It was no longer a question of hurrying, of leaving each lift as my rate of climb began to fall off, but of hanging on to the very top and then setting off at slow maximum-range speed to try and reach the next cloud before it collapsed.

Certainly all chance of exceeding 500 km. within the Polish border had gone. Should I risk all and try and overfly it into Russian territory? The hazard here was, not that I should not get back at all, but that formalities would be so protracted that I should miss one or more days' flying and so fall out of the Championships. I turned this problem over and over as I spiralled myself up in a tired thermal under a decaying cloud over a large wood near Radzyn Podlaski, 85 km. from the border. When I left it at 4,000 ft. I knew that, if I could find but one more such area of lift before the day finally died, the choice would have to be made. Dammit, only the week before during the practice period, I had had my *fourth* attempt at this flight, and had landed at Jordanow in the Carpathians, only 15 km. short, after 8¾ hours in the air. I *could not* throw away this chance, which literally might never recur. If it was offered, I would take it. Krushchev, here I come.

* * *

At last we reach the Poznan-Warsaw main road and we decide to ring back: still no news, but another two hours of precious daylight wasted; it is now 6.40. We decide to ring again the other side of Warsaw where there is a fork, one road going straight on east to the border and the other branching towards the south-east.

An elaborate funeral goes by—wonderful horses and everyone walking. In the next town an old man lay looking dead on the pavement with people standing round him—Harry says he's probably only drunk, to cheer me up

Warsaw—we stop for petrol just after the Palace of Culture and have a long conversation with a man who was stationed at Blackpool during the war. He tells us the way out is left, 2nd left, left; we thank him, think we do this, find ourselves inevitably back at the pumps in record time. The man very good-naturedly leads us out on his motor-bike, puts us on the right road, and waves us on.

Then, suddenly, another trailer—it's one of ours—it's Frank, chasing Tony Goodhart, our other pilot in the Standard Class. We exchange news on our wireless, and stop in the next village, Milosna, before the fork. I go into a shop to ask for a telephone; a wonderful smell of cooking reminds me I'm awfully hungry, but there's no phone, so on we go. Harry has bought some cherries, and has been given a flower for his buttonhole which sets him up. I've been given a St. Christopher.

We get to the fork, and have to decide. The weather has been looking better to the east for a long time, so we decide to go straight on. If necessary, there is a road running south along the border when we reach it.

We find the police station at the next town of Minsk Mazowiecki and settle down for another two hours' wait. We entertain the inevitable pink blancmange of children's faces pressed against the car's windows. We

play our radio at them, then we talk to Frank on the wireless; finally I go to bed in the back, to their great interest.

* * *

I reached the last wisp of dying cloud in the sky, at 2,000 ft. north of Wisznice. Would it lift? Sink fell off, I started to circle, I held my height. I searched the whole air under the cloud, but couldn't find lift. By now the wind had dropped, and even by staying where I was, I was not making distance along my track. *Niet*, said Krushchev.

I set off on my final glide, flying at a precise 39 kts. I flew along parallel to a wood, over a straight but rutted cart-track with little groups of hovels forming tiny villages along it. As I got lower, I saw it ended in a small village and at the head of it quite a large new building in course of construction. By stretching my glide to the last, I grimly carried on until a potato struck my skid in a field just beyond this house, and at 6.45 p.m. the flight was over. My first act was to lay my ruler on the map from where I was to that maddening 500-km. line still just ahead of me: 27 km. short, and about 10 km. from the border. Oh well! . . .

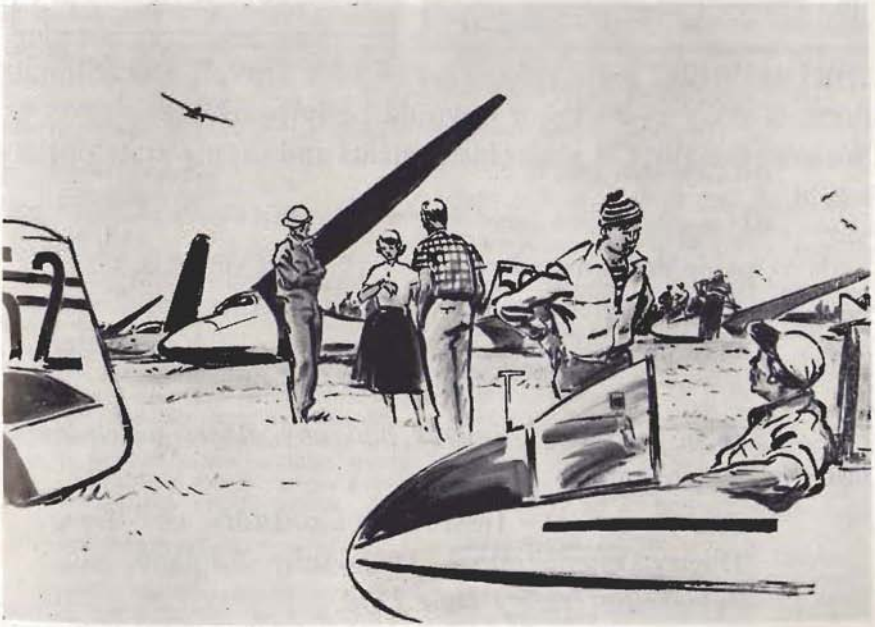
* * *

After 7¼ hours' flying, I had landed in the usual potato field: at the edge of this was the partly-built large house I had seen from the air, and behind it a line of small tattered cottages, forming the village of Mazanowka (I have spelt it phonetically in my title). As the scattered line of spectators started to run towards me, I produced my "Understanding form", which told them in Polish what I was and what I wanted: a guard for the aircraft, completion and signature of my landing certificate, and transport to the nearest telephone.

Soon a young man produced a battered two-stroke motor-bike and waved me onto the pillion, and we set off. But instead of going to a post-office or police station in the village, we bumped straight through it and out onto an appallingly muddy track of beaten earth on the other side which wound away through the fields towards some distant woods.

(To be continued)

Illustrations from "Flight".



Kronfeld Club Painting Exhibition

THE gloom of November was brightened considerably at the Kronfeld Club by the painting exhibition, which was also a competition, held from the 3rd to the 7th. Fifty-two paintings were shown, of which 12 were by professional artists, who had kindly lent examples of their work. Despite the presence of these paintings, the Gliding Movement had nothing to be ashamed of and the standard of the paintings and drawings was very high.

Ann Welch, whose painting of the Skylark III won first prize, had eight entries and all of these bore out the Judges' remarks on her winner that "The picture is a result of most accurate observation".

Second prize went to a painting of Dunstable Downs by 14-year-old Nicholas Price, and Cuthbert Orde, one of the Judges, mentioned the day after the judging that at the time the Judges were not aware of the age of the painter.

The painting of a Tutor at Camphill won third prize for S. W. Hickson of the Perkins Gliding Club, two of whose exhibits were sold during the week.

Space does not permit individual comments on the rest of the paintings or drawings, but everyone who visited the Club during the week was highly impressed by the standard and also the variations in both the subject matter, ranging from a Victor to an Avro 504K, and the mediums used, which included not only pencil and oil, but also gouache and crayon.

It is understood that the Club intends to hold a similar exhibition about the same time next year, which should give everyone interested plenty of time to prepare their entries.

CORRESPONDENCE

HANDICAPPING AND THE STANDARD CLASS

Dear Sir,

Now that the Standard Class has convincingly won itself a place in international and, one hopes, national gliding, it deserves continued support so that its importance may prosper.

Unless it is given some artificial stimulus, the Standard Class may tend to be regarded as slightly second-rate; particularly in Championships which, not unnaturally, each pilot is trying to win, and as a first step tries to equip himself (or induce his sponsor to equip him!) with the best possible mount. Since one (though by no means the only) object of Championships is to declare the Champion pilot, it would seem reasonable that all competitors should have some measure of equal chance. This, to my mind, entails some form of handicap according to glider performance. In this way, even the pundits may be induced to fly Standard Class and so play their part in the development of relatively inexpensive high-performance gliders—one of the declared objects of the introduction of the Class.

In yacht racing, the waterborne sport most nearly akin to ours, it is an accepted principle that competitors usually race in one of three categories:

(a) One-design craft
(b) Craft built within a formula (restricted class)
(c) Craft of differing types each with an individual time-correction factor.

As far as gliders are concerned, it may be said that

(a) might tend to stifle design (though one should remember Hans Jacobs' Meise—or Olympia—designed in 1937 and only recently surpassed).
(b) neatly covers the Standard Class.
(c) to produce a fair handicap system applicable to gliders presents many, though not insurmountable, difficulties. The "Goodhart number" (see SAILPLANE & GLIDING) is a possible example.

I therefore recommend that an amendment to the Rules for the 1959 British Championships be issued without delay announcing a handicapping system taking the form of either

(a) a simple percentage addition to points scored by Standard Class gliders; or
(b) a more sophisticated system of a handicap factor (such as Goodhart number) for each type of glider.

TONY GOODHART.

P.S.—This letter is written before the rules for the 1959 Championships have been published, but I assume that they will not initially include any form of handicap system.

CHRISTMAS QUIZ

Dear Sir,

With regard to the interesting "Quiz" in the December 1958 issue, the "third-party" Insurance required for gliders exempted from the order, ref. C.A.I.C. No. 47/1955, is £2,000.

Incidentally there does not seem to be an Insurance requirement for fully registered and certified gliders.

The telephone number given in the answers is M.T.C.A., not A.R.B.

J. E. CRAMP.

Newbury, Berks.

THE HELICOPTER TOW

Mr. R. R. Pinniger, of Fareham, Hants, writes regarding a statement in the article "There Always Has to Be a First Time", published in our issue of October 1958, p. 284. Referring to the T-21 Sedbergh which was on its first test flight after rebuilding, the author wrote: "One of the men who had had a major part in the rebuilding volunteered out in a very definite manner!"

Since Mr. Pinniger has in the past done many glider repairs for the club at Lee-on-Solent, he wishes it to be known that this repair was not done by him, nor was he the man referred to as having "volunteered out".

The author, Lieut.-Cmdr. H. R. Dimock, assures us that "neither was it our chief instructor and maintenance engineer who 'volunteered out'".

WYNCHRYTE

A Technical Monograph

by Edward Littlejohn

By courtesy of the Wessex R.A.F. Club a secret weapon, aimed at some of those fumbles which wreck the launching rate, has recently been given a trial; a few fellow-members think it may be of interest to the wider gliding world. Credit for the basic idea is due to the Midland club in the person, as far as the writer can recall, of Dave Dennett; certain additional refinements have been incorporated in the present design.

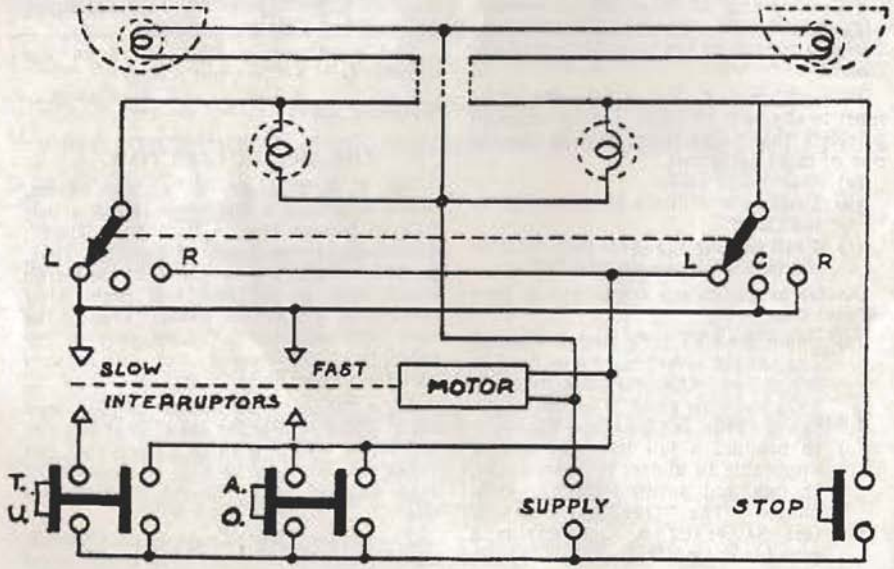
The requirement was the control of one, two or three winches on a long launching run.

At the launching end there is a horizontal boom mounted at a height of more than 6 ft. and provided at each end with an Aldis or a car headlamp. The lamps must have their axes parallel within a degree or so and be directed at the winches. The boom should be at least 6 ft. long; 24-watt lamps in good reflectors should be satisfactory. A three-core cable connects this array to a small box which carries a selector switch, three push-buttons and two small repeater lamps; the box is fed, through a two-core cable, from a car accumulator.

When a launch is imminent, the operator selects Left, Centre or Right winch and presses buttons, as appropriate, for "Take up", "All out", or "Stop"; the repeater lamps give him a check that both he and the device are functioning correctly.

Now to the winches; there the drivers survey with benign equanimity the distracted figures circulating among the aircraft, the two pairs of wings which become level and then change their minds—in short, the chaos at the launching point so well known to winch drivers. All is peace at the V-8 end; the motto is: "no light—no launch".

A single light starts flashing slowly and the driver of the centre winch goes smartly



Wynchryte Mk. I.*

into action—his girl friend is not with him to-day; as the slack comes in, the flashing changes to a quicker tempo and the launch is on. Hardly has the drogue touched the ground before the driver of an outside winch sees two lights—one fixed and the other, on his side, flashing slowly; he dwells a pause while the unexpended portion of the previous cable clears his (the morons at the other end never remember about the cross wind) and then reaches for the throttle.

What about the "Stop" signal?—ah, yes, of course; a single fixed light.

Herewith is the circuit which arranges all this.

For the interruptors various devices were considered, and the best answer appeared to be automobile contact-breakers operated by a camshaft driven direct from the final gearwheel of a windscreen-wiper motor. "Take up" comes from a single-lobe, 180-degree cam, and "All out" from a four-lobe one. One driver has criticised the fast flashing as being a little too much so, and a three-lobe cam might be better, but would, of course, reduce the contrast between T.U. and A.O.; alteration of motor speed is not practicable.

Construction is merely a matter of fitting the bits and pieces neatly into a small box—Wynchryte, Mk. I, star, is about 7 by 5 by 6 ins.—but the connections at the box had better be plugs and sockets and at the accumulator crocodile clips.

The writer holds no patents but, should anyone take up the idea, the B.G.A. could probably handle a donation towards the expenses of the next Internationals.

Fauvel News

AN AV-36 IN MADAGASCAR

THE AV-36 of the Aero Club of Fort-Dauphin, the first glider in service in the island of Madagascar, has, with the help of the French Navy, been transported from Toulon to Madagascar and arrived at Diego-Suarez during September. From there, piloted by Mons. B. Astraud, it reached Fort-Dauphin by traversing the whole length of the island for a distance not far short of 2,000 kilometres, towed by a Cessna 170, and giving a demonstration at Tamatave in passing.

A SUPER AV-36

The first AV-36 Mk. II (AV-361) will appear shortly. It is being produced by the C.A.D.A.F. at the Aix-Chambéry aerodrome. The improvements added to the machine will assure it a best gliding angle of 1 in 26 and a minimum sink of 0.74 m/s (2 ft. 5 in. per sec.), retaining the particularly spread-out velocity polar which is characteristic of Fauvel "flying wings".

Compared with the AV-36, the AV-361 includes the following improvements:

Small increase of surface area with more marked increase of aspect ratio (span 12.80m. = 42 ft.).

Extremely powerful air brakes of the same type as on the AV-22 (25 m/s at 150 km./h. = 82 ft./sec. at 93 m.p.h.).

Power of directional control increased by 25 per cent.

Ovoid fuselage widened by 7 cm. at the elbows.

Blown canopy giving a panoramic view and plenty of room.

The machine, "monobloc" as before, continues to be as easily transportable by road.

AV-22 TWO-SEATER

The bringing into use of the AV-22 No. 02 at St. Auban having confirmed the qualities of this machine, an order for a series of four has been received. These are in course of production at the "Survol" establishment of Charles Fauvel at Cannes, and a proportion of the components are being made at Aix-Chambéry. The first machine should be flying by the spring.

The AV-22 No. 01 was returned to the constructor at the beginning of 1958 for incorporation of the improvements introduced into No. 02, and was delivered in early August. It is now equipped with the moulded "balcony" canopy and with very powerful air brakes. Its dual controls have been modified, the forward ones being fixed and only the rear ones mobile; the same will apply to the series production.

The differential action of the ailerons has likewise been reduced. The best gliding angle should approach 1 in 27. From 45° bank to 45° opposite bank takes 3½ seconds.

CH. FAUVEL.

A New Polish Training Sailplane

THE SZD-16 "GIL"

by A. Blasik

EARLY in November the test-pilot of *Szybowcowy Zaklad Doswiadczalny* (Polish Soaring Institute), Mr. Adam Zientek, made the first flight on a new Polish sailplane, the SZD-16 "Gil". This machine was designed by Engineer Z. Badura and his constructors' group. It is designed for perfecting and training of young pilots in thermal flights, aerobatics and soaring.

It is a cantilever high-wing machine with guasitrapesicall* monospar wing and plywood box. The ailerons are aerodynamically and dynamically balanced. There are air brakes, in the form of extending plates, on top and bottom of the wing.

The fuselage is of welded steel tubes, covered with fabric. The tail is hinged on a dural sheet tube of circular cross-section, 3 metres long (9 ft. 10 in.). The convenient seat, the set-up pedals and wide cabin give full comfort. A plexi-canopy, originally shaped with a flat front pane, gives a good view in all directions.

The landing wheel, sprung with greatly extensible rubber bands, allows of "heavy-duty" landings which may occur with pilots of little experience.

With economical production costs and reasonable performance, this sailplane gives pilots the opportunity of good and cheap sport.

Technical Data

Span, 13.5 m. (44 ft. 3½ in.).
Overall length, 6.85 m. (22 ft. 6 in.).
Area, 14 sq. m. (150.7 sq. ft.).

* We are unable to interpret this.—ED.

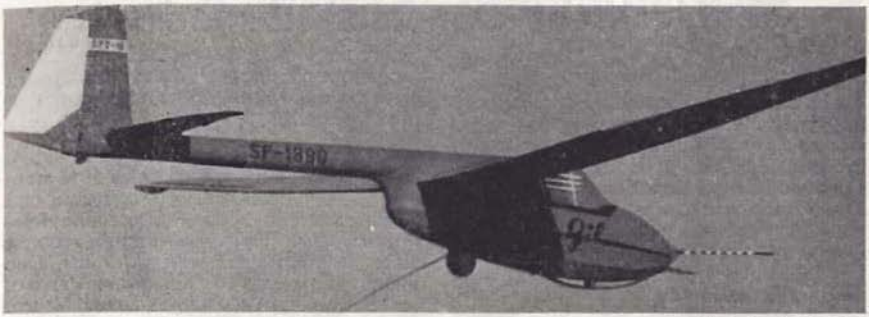


Photo by L. Suchy.

Aspect ratio, 13.
Wing loading, 17.9 kg./sq. m. (3.67 lb./sq. ft.)
Empty weight, 165 kg. (364 lb.).
Max. permissible flying weight, 250 kg. (551 lbs.).
Wing section: NACA 43012A.
Elevator section: NACA 0009.
Rudder section: NACA 0012.

Performance

Best gliding angle, 1 in 20 2 at 67 km./h. (41.6 m.p.h.).
Minimum sink, 0.86 m/s at 55.8 km./h. (2 ft. 10 in. per sec. at 34.7 m.p h.).
Minimum flying speed, 50 km./h. (31 m.p.h.).
Maximum flying speed, 200 km./h. (124 m.p.h.).

UP and DOWN

Cross-country at 200 m.p.h.

On 13th October, 1958, M. Landi, flying a Bréguet 901 and using wave lift, set off from St. Auban sur Durance, and reached his goal at Cannes, 60.4 miles away, in 18 minutes. The speed works out at 323 km./h., or 200.7 m.p.h. Next day, Landi made a distance flight of 315 km. from St. Auban via Malaucène and Colmar (Basse-Alpes) to Aix-les-Milles, and MM. Rousselet and Sabro covered the same course in a Bréguet 904 two-seater. In three consecutive days, at this centre, 6 Gold C legs and 8 Diamonds were earned.

Soaring Discouraged

Midway Island in the Pacific, with an area of only 1,282 acres, has to accommodate not only the U.S. Navy and Military Air Transport Service, but one-third of the world population of Laysan and black-footed albatrosses, writes Jack L. Wagner in *Shell Aviation News* for December 1958. Consequently there is a collision problem, due mainly to the birds' habit of soaring over the runways, so it has been necessary to get down to a study of how the birds soar. Mr. Wagner continues:—

"If conditions favourable for soaring were eliminated, the probability is that soaring in the runway vicinity would be substantially reduced, if not eliminated. Terrain features were found to be extremely important in this respect. Updraughts produce favourable soaring conditions and these can be created by piles of earth, high bushes, trees, etc. If such areas are adjacent to runways the birds wheel out over these strips. During many hours of runway watches, certain birds marked with dye, for individual recognition, soared past repeatedly. Not content to ride only the updrafts, they enjoy skimming out a number of yards over nearby level areas, where they sometimes came in contact with aircraft.

"The recommended solution was to 'flatten the earth for a distance of 750 ft. from the centre line on both sides of the duty runways. If practicable (for water catchment) these areas could be blacktopped. This would give the best assurance of eliminating not only soaring areas, but also breeding and nesting areas close to the runways. If blacktopping is not feasible a planting programme employing low or flat growing grasses or herbaceous species might be tried to prevent sand blowing over the runways and piling up into dunes again.'"

National Contests Abroad

Switzerland

There being no centralized competitions in Switzerland, the annual contest is decided on points earned during the summer half of the year. Hans Nietlispach is Swiss Champion for 1958 with a total score of 33,274, far ahead of Fritz Dubs with 23,761 and Alex Gründisch with 23,192. René Comte made the greatest altitude of 18,291 ft. on 6th August, Rolf Brunner the greatest distance of 231 miles on 26th April, Nietlispach the longest goal flight of 278 miles on 12th June, Gründisch the best out-and-return of 146 miles on 18th April, and Nietlispach the fastest 200 km. triangle on 4th June.—*Aero Revue.*

Netherlands

The 1958 Dutch national contest was held, as is now customary, in the spring, from 23rd to 31st May. Among 30 competitors, Dick Reparon won with 5,995 points out of a possible 7,000; J. Klijnstra came second with 5,275 and J. van Eck third with 4,788.

Italy

The Italian Championships of 1958 were held at Rieti, 50 miles north of Rome, and consisted of four speed-races, one free-distance day, and one distance contest along a given line. Types of sailplane taking part were: 10 Canguro, 5 Passero, and one each of Eolo, C.A.T.28 and Veltro. The winner was G. A. Ferrari, flying a Canguro.—*Aviasport.*

Germany

Winners of the decentralized national contest for 1958 were:—Individual Class: (a) experienced pilots, Hans-Werner Grosse, 1,788 points; (b) young pilots, Ulrich Plarre, 1,790 points. Team Class: Luftsportclub Forchheim, 1,649.8 points.—M. DESKAU.

WORLD GLIDING STAMPS

Many countries now issue stamps with pictures of gliders on them. Three of these are illustrated above. If you have any others, we would be very pleased to print them. Please send them to Wally Kahn, care of SAILPLANE & GLIDING.

Two Winter Thermal Phenomena

by Adam Zientek

The author is chief test pilot at Bielsko, near the mountainous southern border of Poland, where many of the best known sailplane types have been produced, including the "Mucha-Standart", winner in the Standard Class at the 1958 World Championships. Note that average sea-level temperatures in March are about 5°F. colder in Poland than in Great Britain.

In winter one is not generally inclined—except in Foehn weather—to consider attempting high-performance flights above the snow-covered ground. As, however, launching at this season is troublesome as well as unrewarding, it is usually discontinued. Snow signifies, in practice, the cessation of soaring flight. Only manufacture and test-flying continues throughout the calendar, for new sailplanes must be tried out in preparation for the coming spring. This holds also for our own work at the Szybowcowy Zaklad Doswiadczalny —the Polish sailplane institute at Bielsko, birthplace of many Polish sailplane designs.

It is this circumstance that I have to thank for the success of two quite remarkable flights which convinced me that, even in weather when it would be absurd to expect thermals, there are surprises to be reckoned with.

So on 11th March I came to be testing seven newly-finished Jaskolkas. Owing to heavy melting snow, four inches deep, aero-tows had to be put off till another day, and only winch-launching tests could be carried out. Throughout the day not a single ray of sunshine had penetrated the eight-eighths of homogeneous, heavy leaden *altostratus opacus*, below which grey shreds of strato-cumulus floated past at about 3,000 ft. This layer of low cloud covered about 7/8 of the sky. Visibility through the milky-grey haze was restricted to a few kilometres, and the mountain tops were almost continuously veiled by heavy snow-fall. To sum up: "London weather", in which anyone engaged in gliding does so because he must, not because he wants to.

Understandably, the sailplanes, the winches and the retrieving cars were not very mobile in the snow, and because of this the launching team had some unusual experiences. Later, when the wind had spitefully changed direction, there was nothing for it but to launch downwind. In spite of this, launches proceeded in orderly fashion and the three-minute hops followed each other swiftly. Only one flight, at about 2 p.m., was at all different—in fact, so different as to be unbelievable.

Only 110 metres (360 ft.) showed on the altimeter upon release, when shortly afterwards the Jaskolka went into a turn and circled diligently up to . . . cloud base at 1,000 metres! The upcurrent showed every sign of being a thermal, and indeed of the kind that one expects to find in the best soaring weather during May or June. The lift averaged two metres a second, with a maximum, in the region from 500 to 700 m., of over three metres a second! One need only say that the whole flight, with the climb to 1,000 m. and a quick spin down (unfortunately this was necessary), lasted 10 minutes!

Unfortunately this wonder thermal was not repeated on the next flight. On the contrary, the weather became slowly worse, with typical signs of an approaching warm front. Late in the evening came a snow-storm, and the snow cover thickened overnight to 20 inches.

The next adventure of this kind befell me on 25th March, immediately after a fairly long period of snow and fog, which left behind a one-foot-thick layer of hard snow. In contrast to the previous day the weather was glorious: the sky absolutely clear, the temperature one degree below freezing, and a light south wind. For all that, the strong insolation gave expectations of a thaw, and consequently I could reckon with only one launch. I was flying the new prototype SZD-22, Mucha-Standart.

At about 2,700 m. (8,860 ft.) I cast off. Shortly afterwards I started the usual spinning test and very rapidly lost 2,000 metres. The programme had been fulfilled and the rest of the flight could be devoted to enjoyment. At the level of the summit I flew along above the track of Szyndzielnis cable railway, the main artery of our mountain complex, and could watch the

Photo by L. Suchy.

tremendous ski-ing activity, though with half-closed eyes because of the blinding light. Outside, the frost still held; yet, thanks to the powerful sunshine, my cabin was like a frying-pan, so that the window panel had to be pushed fully open.

Suddenly I experienced what in such conditions was hardly to be expected—a light jerk, premonitary of an upcurrent. I started circling at once, and—look!—the variometer confirmed the unbelievable! The new prototype had met its first thermal.

The next happenings followed the usual course: at first just narrow and capricious, but continually stronger (up to 2 m./sec.) and higher—up to 1,100m. (3,600 ft.), only above the mountain all the time. The localisation of the upcurrent appeared to be independent of the wind direction—it was found to be as good to windward as in the lee, till finally there was no difference because calm supervened, as shown by a vertical column of smoke from one of the mountain huts.

After an hour I caught sight of the first shreds of cloud. I flew to them at once and . . . was set upon by a four m./sec. downcurrent which lost me a good 400 metres (1,300 ft.). But the next cumuli, though still quite flattened, were more friendly disposed and allowed an easy climb to cloud base at 1,300 m. (4,300 ft.).

All this would have been nothing wonderful if it had not been for the unending whiteness which covered not only the ground but even the branches of the pine trees—a layer thick enough to neutralize all differential heating. Dozens of small mobile dots on the snow fields and slopes showed that the ski runners knew how to exploit their element. Mucha-Standart was doing the same: not until after five hours did it take leave voluntarily of the "snow thermals". A cascade of loops from 1,000 metres brought this unique adventure to an end.

WHAT IS IT?

THE photograph on page 28 is reproduced from THE SAILPLANE & GLIDER of 28th April 1933, and shows F. G. Enser in the cockpit of his "Enser Research Sailplane." But disrespectful people, taking one look at the shape and colour of its fuselage, called it the "Flying Carrot."

The machine was "designed and built to carry out full-scale tests with aerofoil sections at slow speeds", and had a span of 25 ft., weighed approximately 100 lb. empty, and stalled at about 25 m.p.h.

During the last quarter of a century, in his spare-time workshop at West Drayton, Mr. Enser has repaired and rebuilt a great number of gliders, as well as occasionally producing unconventional aircraft of his own design. He is, as far as we know, still going strong.

Preliminary Flying in the Harbinger

FLYING the Harbinger, at the moment, is still in the very preliminary stages, approximately 10 hrs. appearing in the log.

The specific tests required for the C. of A. have not yet really started, flying up to now coming under the category of "Familiarisation and General Handling", with the c.g. well forward. Nevertheless, first impressions are always interesting, and these may be said to be wholly favourable. The first flights, solo, were undertaken at Hucknall aerodrome (1¼-mile runway), and consisted of three auto-tows:—

(1) Almost the full length of the runway, at about 20 ft., to make sure everything was working.

(2) Very gentle climb to 200 ft., landing straight ahead on the runway.

(3) Normal climb to 600 ft., with a genteel circuit, trying the brakes on the early part of the final approach.

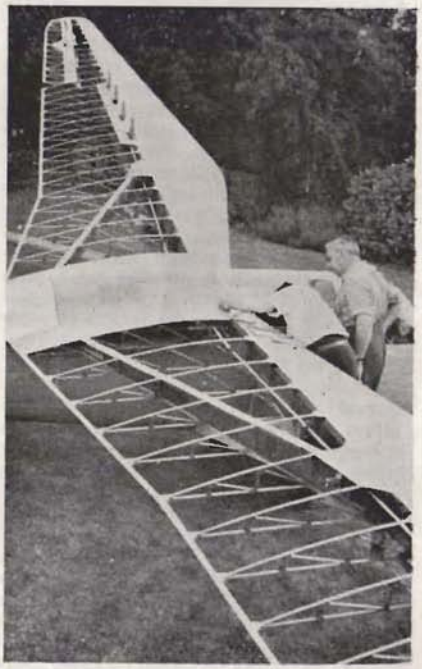
These flights, which took place in about a 20-knot wind, were entirely satisfactory, and it was decided at once to proceed to Camphill for further flying. After two more solo flights, over the edge, the machine has been flown two-up, in varying weather conditions, up to a total of 10 hrs., as already stated. Handling seems encouragingly normal in all respects, the only mods. decided upon at the moment being a mass-balance in the elevator circuit to replace the fairly heavy spring bias at present fitted. This, we hope, will reduce the rather disconcerting pull required at present while circling. Rate of roll, bearing in mind that we have added 15 ins. to the designer's length of nose, is not outstandingly good; though it is probably well inside the B.C.A.R. requirements. No figures are available yet, and much more experience and thought will have to go into this before deciding whether or not it is satisfactory. Stalls as yet have only been carried out straight and level, but seem to be in line with modern expectations, i.e. there seems to be plenty of lateral control when one is well stalled and sinking like a brick.

The brakes (Dragon's teeth, four-a-side top and under-side of wing) seem reasonably effective and certainly make no appreciable difference to the trim; but again, much more experience is required before giving a considered opinion. Having tried them in the air, I thought they were not very good, but on my first landing with brakes on, I dropped it in the rough 30 yds. short of my intended touchdown, so perhaps they are better than I thought.

Visibility from the back seat is really excellent. This is, of course, inherent in the design, but it is comforting to know that it really is as good as one had hoped. Obviously we have no performance figures yet, but first impressions confirm our expectations, that it is about the same as an Olympia. 75 knots is the highest speed we have tried, up to now, at which the machine feels very solid, and the performance, back to the edge after a thermal, seems about "Olympiaish".

To sum up, I would say that to date the machine has given us no surprises. It is what we had expected: probably no world competition winner, but certainly a machine to have a lot of fun in.

GERRY SMITH



Some of Harbinger's internal structure.

OBITUARY

E. MILNER-HAIGH

We regret to read of a report, just as we go to Press, of the death of Mr. Ernest Milner-Haigh, of St. Ives, Cornwall, due apparently to his having been struck by a train while crossing the line to reach his home. It was to save Perranporth airfield for the Cornish Gliding and Flying Club that Mr. Milner-Haigh recently offered to buy the airfield, which the Government was preparing to sell. His offer was accepted in preference to all other offers, and we are assured that this sad event will not prevent the scheme from going through. Mr. Milner-Haigh's son, Charles, is a joint secretary of the club, and to him and other members of the family we tender our sympathies.

SIR GILBERT T. WALKER

The aerodynamics of boomerangs and the art of designing and throwing them, the motion of elongated projectiles and dynamical tops, the theory of electromagnetism, the soaring flight of vultures and other Indian birds, the energy output of athletes' muscles, the path of a billiard ball in a rolling ship, the prediction of monsoon rains, the structure of cumulus clouds and the "cellular" distribution of upcurrent patterns, the periodicities of weather cycles—these are only some of the subjects on which Sir Gilbert Walker performed notable scientific research; and at the time of his death on 4th November 1958, at the age of 90 years and 4 months, he was collaborating in the writing of a textbook on the flute.

After spending 21 years as Director-General of Observatories in India, Sir Gilbert returned to England in 1924 to become Professor of Meteorology at Imperial College, and while holding this position he joined the Council of the British Gliding Association in the first few years of its existence.

Stimulated by the company of gliding people, he collaborated with his research students in the study of model thermals in the laboratory, and an account of this research, given to the Royal Aeronautical Society on 16th February 1933, was reported in THE SAILPLANE & GLIDER for 17th March and 28th April that year. Smoke was blown into a shallow wind channel six inches wide and three-tenths of an inch deep, with a steel bottom electrically heated to produce instability. The resulting upcurrents in the smoke were seen through the glass top to arrange themselves in a pattern of polygonal "cells", like the cloudlets of strato-cumulus and alto-cumulus; then, when the top was moved to produce shear, the artificial cloudlets joined up into parallel rolls, first lying transversely to the "wind" and then, with increasing shear, parallel to the wind direction. Here, Sir Gilbert was first to point out, was a plausible explanation of "cloud streets".

A further lecture on thermals and cumulus clouds was reported in THE SAILPLANE for February 1934, and about this time Sir Gilbert Walker had much discussion and correspondence with Britain's first two Silver C pilots, Eric Collins and Philip Wills. But with his retirement from the professorship later that year, he moved to Cambridge and his versatile mind went chasing after other problems, though he was always keen to hear the latest news from the gliding world when one ran across him.

A.E.S.

AVNI YAYKIN

Those who were at the 1956 World Championships at St. Yan, in France, will remember the remarkable performance put up by the Turkish two-seater pilots, Avni Yaykin and Ziya Argun, on the first day of the contest, when they made the longest distance in the two-seater class by flying a Ka-2 Rhönschwalbe 240 miles to Luxembourg; then, owing to frontier trouble, it was three days before they got back into France. This feat helped them to finish in 7th place out of 13 entrants in the class.

We now regret to read a report from Ankara that, due to a two-seater glider striking the minaret of a mosque with one wing, both the passenger, who was Mr. Yaykin, and the pilot were killed. Mr. Yaykin was director of the Ankara Gliding School, and started gliding in 1937.

Advertisements with remittance should be sent to Cheiron Press Ltd., 3, Cork St., London, W.1. (REGent 0677) Rate 6d. per word. Minimum 7/6. Box numbers 2/- extra. Replies to Box numbers should be sent to the same address.

PUBLICATIONS

"AUSTRALIAN GLIDING" — monthly journal of the Gliding Federation of Australia. Editor, Allan Ash. Subscription 30 shillings Australian, 24 shillings Sterling or 3.50 dollars U.S. and Canada. Write for free sample copy. "Australian Gliding", Mineside Post Office, Mount Isa, Queensand, Australia.

"MODEL AIRCRAFT"—Official Journal of the Society of Model Aeronautical Engineers. Features contest winning model designs, constructional articles, photographs and reports of international and national contests. 1/6 monthly from any newsagent. Send for specimen copy free from "Model Aircraft", 19-20 Noel Street, London, W.1.

READ POPULAR FLYING the bi-monthly magazine of the Popular Flying Association. Subscription £1 a year. Specimen copy with scale plans of the Hirtenberg HS9A and history of this unique aircraft 1/6d. from The Popular Flying Association, Londonderry House, 19 Park Lane, London, W.1.

SLOPE SOARING with a radio control model sailplane is a fascinating pastime and a typical phase of aeromodelling. Read about this and other aeromodelling subjects in AEROMODELLER, the world's leading model magazine, published monthly, price 1/6d. MODEL AERONAUTICAL PRESS LTD., 38 Clarendon Road, Watford, Herts.

"SOARING"—Official organ of the Soaring Society of America. Edited by Lloyd M. Licher. Obtainable from Soaring Society of America, Inc. Box 66071, Los Angeles 66, California. Subscription $4.00 in North America and $5.00 elsewhere, apply to your Post Office for a form.

MISCELLANEOUS

SOUTHDOWN Gliding Club. C. of A's. and all types of repairs carried out by fully qualified engineers—full-time staff. C's. of A.:—Tutors, £15. Olympias, £20. Skylarks, £25. T-21B's and Eagles, £30. All enquiries to the Hon. Secretary, 4 Elmer Court, Elmer Sands, Nr. Bognor Regis, Sussex. Telephone: Middleton-on-Sea 2391.

FOR SALE

"MINIMOA" Sailplane, German built Gliding Angle 1:26. First class condition, normal flying instr. fitted. Dutch C. of A. Price £400. Apply: Royal Netherlands Aero Club, 8 Jozef Israelsplein, The Hague, Holland.

CABLE Parachutes (B.G.A. Approved) obtainable from Ratsey & Lapthorn Ltd., Medina Road, Cowes, Isle of Wight.

BENDIX Non-Spillable Attitude Gyros. These exceptional U.S. instruments are now available for export. Complete installation includes 12 volt Inverter, all necessary cables, connectors and instructions. Artificial Horizon Mounts in Standard 3⅛ in. diameter opening. Inverter draws approximately 1.9 amps. Weight 8 lbs. Sterling payment can be arranged. £150. Thomson, 716 Calle Palo Colorado, Santa Barbara, California, U.S.A.

JASKOLKA ZO high performance sailplane (available after testing for B.G.A. C. of A.). The machine is offered delivered to site complete with full blind flying instrumentation at an inclusive price of £1,250. This sailplane may be inspected at Dunstable by prior appointment. Hire purchase facilities can be arranged. Box 44.

WANTED

CADET on Tutor fuselage wanted. Please write to Bristol Gliding Club, Nympsfield, Nr. Stonehouse, Glos.

TO complete set. Gliding Vol. 3, No. 2. Two copies required. Look it out now. Box No. 43.

INSTRUMENTS wanted:— A.S.I., Altimeter and Vario in reliable condition. Offers to N. M. Jackson, 40 Eamont Gardens, W. Hartlepool.

SITUATIONS VACANT

GLIDING Instructors required 1959 June to August inclusive, at Lakes Gliding Club. Apply to: Mr. J. M. Young, 40 South Road, Kirkby Stephen, Westmorland.

CLUB AND ASSOCIATION NEWS

IN the past it has been customary during the winter months to find little to report in club news, but this year it appears to be very much the reverse.

Gliding activities continue all the year round and so should club news, even if the topics change from outdoors to indoor socials and annual maintenance.

This month club news includes the first in what I hope will become a series. Namely the showing of club ties, blazer badges, car badges, etc. The Kent Club which has been formed nearly three years has two very good badges which their members are keen to possess. These are in very short supply, both being at present out of stock, but this is shortly to be rectified. I hope other clubs will send in photographs of their badges, including a brief description of colours, etc.

I think it is a good idea that the Club News section of SAILPLANE & GLIDING should give news of clubs being formed so that any enthusiasts who feel they would like to, or could help, can contact and offer their services to the person who is doing all the spade work. This is often a lengthy and irksome task of letter writing, 'phone calling, etc. Therefore, any of you interested in a club in South Wales at Fairwood Airport, Swansea might like to contact Hon. Secretary, R. J. Comley, 76 Fredericke Place, Llansamlet, Swansea, who no doubt will be pleased to have some offer of help and advice.

With the new soaring season advancing, thoughts also turn towards the Nationals and this is a subject very much in the mind of the News Editor. It is necessary to mention the Press date for the June issue now, because the date for Club News copy is due before the April issue is published. Will Press Secretaries note that copy for the April issue is the usual period of time, i.e., first post, Monday 16th February, and the June issue, first post, Monday 30th March. I shall send a reminder to Press Secretaries, but "to be forewarned is to be fore-armed" so please have your copy ready, typed as usual, double spaced on foolscap, and sent to S.E. Ambulance Station, New Cross Road, S.E.14.

COLIN MOORE,
Club and Association News Editor.

ACCRA

THE Club held its second Annual Open Day on 16th November and was honoured by a visit from the Ghana Prime Minister, Dr. Nkrumah, and several Cabinet Ministers. Demonstration flights by the Tandem Tutor and Syndicate Spatz went off smoothly and, as both machines found lift, they were able to demonstrate some soaring flight as well. Speculation regarding the outcome of the Prime Minister's visit has covered a wide field, but the only certain thing so far is that Dr. Nkrumah and the large number of guests enjoyed themselves.

After much discussion, heated argument and several meetings, it has now been decided that the next machine for the club shall be a Prefect and this has been ordered with the hope of delivery in Ghana in February.

Ron Smee, a member of the Spatz syndicate, earned his Silver C height leg on 23rd November when he recorded a gain of height of 1,200 metres and on the same day Karl Lorenz had a 16-minute soaring flight in the Tandem Tutor for his C Certificate. On 1st November, Gerry Burgess came close to completing his Silver C with a 4 hr. 38 min. flight in the Spatz. The most interesting "thermal" of the latter flight came when 70 tons of explosives were detonated at the quarry which is producing rock for the new Tema harbour. The smoke column from this blast was giving a very turbulent 3 metres per second when the Spatz joined it at 2,500 ft.

P.G.B.

Dr. Kwame Nkrumah, Prime Minister of Ghana, discussing the Slingsby Tandem Tutor with Dick Skelton, Chairman of the Club.

ANDOVER

SOME 50 members of the club with their ladies were present at the annual party and dance held at the Star and Garter Hotel, Andover, on Saturday, 6th December.

The newly formed entertainments committee deserved much credit for arranging such an excellent social evening designed to bring members together in the long evenings of the winter months. Lady members spent a busy day in attractively decorating the hall. Dance music was provided by the Black Jacks Band from Southampton, led by a member of the club.

Other club members provided a humorous floor show, which soon had the audience in the right frame of mind for a jolly evening, which proved to be a great success.

It is the intention that other social evenings will be arranged throughout the winter, the object being to keep the club in its present happy state during the shorter flying days.

Flying will go on as usual in the winter and our craft will be seen creeping through the mist each Wednesday, Saturday and Sunday, as usual.

The C.F.I. has ambitious plans for next year; it is his intention to provide more advanced soaring tuition for the members now that adequate craft are available.

As the year draws to a close, we would like to wish all other clubs a happy and prosperous New Year.

If anyone ever runs short of glide-distance, drop in and see us: there are two Motels at the edge of the Airfield. J.D.

BLACKPOOL AND FYLDE

DEVELOPMENT of our hill site at Nickey Nook has continued since our last report in October. We have been busy, when no flying was possible at Squires Gate, in clearing access to two alternative areas at the top of the Fell. These two sites permit flying in a wide range of wind directions, and hill soaring along a north-westerly ridge. Their development has necessitated cutting a path through bracken and dry-stone walls and has provided many Sundays labour for all hands. To add to our troubles, our "one-off", portable winch went temperamental on us and started boiling at the least provocation. It has now been provided with a large fan and works efficiently, although the gyrations of the manual pay-on operator give the casual observer the

impression that we hand-crank our gliders into the sky. An automatic pay-on is our next project.

In November we paid another flying visit to the Fell with the Eon Baby. Access to the top of the Fell proved less difficult than we had imagined, and in no time at all, our C.F.I., Jack Aked, was airborne over Scorton. Jack flew from each of the new sites. He did some ridge soaring, found some thermals, and was highly delighted with the site which we all think offers great prospects for the summer months.

At Squires Gate, Bill Dodds and Ken Payne have gained their A and B certificates.

K.R.P.

CAMBRIDGE

On a cold, foggy November evening, it is certainly a pleasure to sit in a nice warm room, watch a colour film with sailplanes circling happily or scraping dicily, and listen to Jock Findlater, the meteorologist, talking about bigger and better thermal bubbles. This happened on the first of this winter's Social Evenings organised by Frank Lindsell. The social events of the season will, as usual, culminate in the Club's Annual Dinner which is expected to be held on Saturday, 14th February.

Work in the field, however, is less of a pleasure these days. The required enthusiasm is best whipped up by setting a good example, and this is where Gil Phillips and his Mechanical Sub-Committee are scoring high. Let us survey the important innovations on the mechanical side. The duty instructor of the day is now joined by a duty engineer. All solo-pilots are either winch-drivers or winch-drivers under training. The various items of mechanical equipment are now looked after by sponsors, specialists and project-chasers. This imaginative feat of organisation has, of course, the object of spreading the burden.

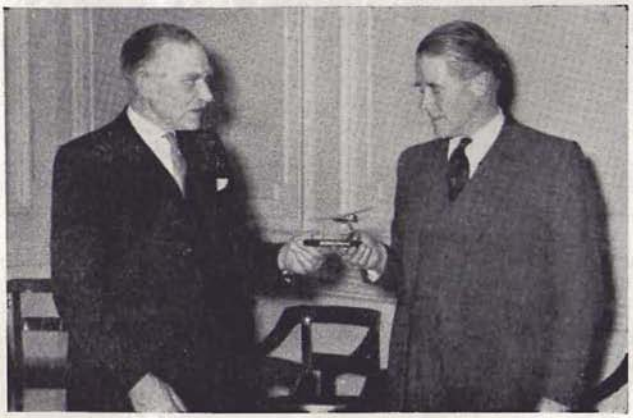
G.S.N.

CORNISH

The major news for this report is the fact that we are now safely in possession of our airfield for the foreseeable future.

The campaign which we reported running in the last issue resulted in the magnificent total of nearly 5,000 signatures on a Public Petition headed by the Lord Lieutenant, the High Sheriff, the Lord Bishop and the Grand Bard of Cornwall. In addition we had resolutions from the County Council and from most of the Local Authorities in the County. Associations, commercial undertakings, trading organisations, Clubs, Show Societies, all were rallied to our support; but perhaps that four successive weeks of questions in the Commons, from members on both sides of the House, was the final straw which weighed with the Minister to accept the Tender for the aerodrome which the Club wanted.

We are very proud of the work which we as members managed to do to attain our ends, but we are also most grateful for the support which came so widely and so strongly from all those, inside and outside the Duchy, who felt with us in the project. We have, of course, recorded our heartfelt thanks to our new landlord, who is now



Air Commodore G. J. C. Paul, founder of the R.A.F. Gliding & Soaring Association (right) is presented by Air Vice Marshal Sir Raymond Hart with a silver model Sedbergh, on retiring from the R.A.F.

Courtesy of "The Aeroplane"

engaged in the legal process of taking over his latest responsibilities.

The campaign and its result brought to the Club a most welcome volume of Press and other publicity, not the least of which were the successions of mentions on Television, and Radio.

But that isn't all our news, of course. Everything has gone on as usual and we can report a number of new A, B and C Certificates, as well as three Silver C duration legs. Furthermore, we now have two more Instructors who have gained their B.G.A. categorisation: Arthur Bosanko and Bill Robins. Our distinguished visitors have included Air Cmdr. Paul, of the Air League of the British Empire, and W. H. Perry, the Asst. Div. Controller from the Ministry of Transport and Civil Aviation.

On the social side we have again had a most successful Christmas Draw, with its welcome profits to Club funds, and our second Annual Dinner and Dance, which was again so enjoyably organised by Pip Phillips and Bill Ratcliffe.

We do have one regret: our Hon. Treasurer, Russell Muirhead, has been transferred by his Bank to a Managership in the Isle of Wight, but we are consoled by having as his successor Arthur Steward, who is an ex-Fleet Air Arm Pilot.

The Officers and Committee have been much exercised in trying to decide on a Course Programme for this year (1959). Accommodation at our nearby Holiday Camp has not been all that satisfactory in the past so we have now arranged to put up our Course Members at a fully-licensed Hotel in Perranporth itself, convenient to the airfield, but within 100 yds. of miles of golden sands, some of the best surfing in the country, and all the amenities of a holiday resort. We think we must be the only Club in the country to be able to offer such facilities. Are we?

C.M.-H.

CROWN AGENTS

News has come from Dick Kuyper, now back in Kenya, that he has been doing some instructing and joy-riding. There appears to be a certain amount of "collision risk" out there, as he writes:—". . . I damaged the single-seater by flying into an eagle at 3,000 ft. The blasted bird came head on in a rough thermal, smashed two ribs and the leading edge ply. An 18 in. hole made surprisingly little difference in the

flying, but I was glad to put her down on the aerodrome again". It looks as if the Kenya Game Wardens have not been teaching their charges to fly the right way round in thermals, and we congratulate Dick on his lucky escape. J.E.G.H.

DERBYSHIRE AND LANCS.

On Sunday, 19th October, John Tweedy, our new joint deputy C.F I., reached a height of 12,300 ft. above take-off height. He has now installed one of the new Cook electric variometers in the private "Sky". Lawrence Robertson flying in the Olympia Peveril was sighted by John at 8,700 ft., but has not yet disclosed details of his flight.

We are delighted that Harry Harris achieved a well-earned C on 7th December in wave assisted slope lift. Usually he misses his turn to fly because he works so persistently on the many petrol engines which are so essential for "Flight without Power".

On 1st November, a steady "Damphill Downpour" did not succeed in damping a very enjoyable bonfire and barbecue party arranged with great skill and energy by Peter Boneham, Karl Birkett, Dorothy Kaye and Woolley, Brian Jefferson and other members of his new committee. The rain caused some unexpected delays in rocket take-offs but the casualties were few and Basil, our chairman, could discard his bandages after some days.

The Annual Dinner and Dance at the St. Anne's Hotel in Buxton was even more splendid than in previous years. Our guests of honour were Fred and Fluff Slingsby, who gave us one of the best gliding club after dinner speeches yet heard. O.W.N.

HALIFAX

Well, after a long drawn-out paper struggle and many trips to London by our President, we finally had to leave Sherburn. But not before we acquired a solo machine and tasted the joys of having no back-seat driver. Most of the old stalwarts who have kept the club going for the past three years managed to get their A and B. We hadn't enough time left on the airfield to catch any C's. So here we are back in the Pennines before we were really ready. Two sites to go at but not enough experience to say which, we'll likely get established quicker on our hill site than if we'd been able to stop at Sherburn.

FEB 59

Our annual dinner was quite a success in spite of our Sherburn disappointment. The next social "Do" will be the house warming party at our new site sometime in February.

Our President leaves in January on a Goodwill tour of the U.S.A., so he'll probably come back full of Spatz and canned beer, sometime in August. By that time we hope to show him some C's, maybe silver.

Well there's our news, some bad, some hopeful. All the best in the New Year to all the clubs.

D.M.

KENT

THE Kent Club is now reinforcing the instructors' list. The C.F.I., Roy Hubble, and Mickey Gilbert, obtained B.G.A. instructors categories and Richard Parkinson was granted a provisional category. A training programme is functioning for a group of u/t instructors, and other instructors (some with A.T.C. categories), are being encouraged to take a B.G.A. category.

Just to prove that soaring in November is a reasonable hobby, Philippa Buckley kept the Olympia up for an hour and Roger Neame kept her company in the Syndicate Skylark. Unfortunately, neither pilot seemed to have a very clear idea on the source of the upcurrents. On the last day of November, Glynn Richards was allowed to fly solo, having achieved the all-time high (for him) of 16 years, zero months and two days in age. Two other members to solo that day were Owen Maddock and John Baldock.

M.G.

LAKES

RECENT reports submitted from this club might give the impression that local activities have been restricted only to hangar-construction and social evenings, all to the detriment of active gliding. True, the former have certain news value, but not so the regularity of a full Sunday's series of circuits and bumps on the Fell.

The autumn and winter weather here has been unkind on occasions, low cloud having suspended operations more than once, but high winds have been absent for some time now. On 30th November, a long narrow cloud could be seen along the Cross Fell—Great Dun Fell ridge on the Eastern

The Kent Gliding Club's tie and badge.

Pennines. This was possibly the "White Helm", a local designation, but something which might suggest an interesting venue for the sailplane pilot.

Returning to the subject of the Hangar, the adjoining Clubroom is now completed, and awaiting suitable furnishings. In voluntary organizations such as this, members talents are given chance of expression and two names whose ability have been perpetuated in this building are Bryan Daykin and John Wright.

The Annual Dinner Dance was held on 11th December, at the Royal Station Hotel at Carnforth, and proved as before, an undoubted success. Chris. Riddell from Yorkshire, had some nice things to say about our progress. J.W.A.

LASHAM

In spite of the gloom cast by Great Fog of November the hard core of foul-weather members has appeared each week-end and the training of next year's soaring pilots continues unabated.

We cheered ourselves up on 8th November with a multiple-stage rocket competition in place of a standard bonfire. There were about a dozen entries, most of them exotic in form and some of them downright terrifying. The winner was Frank Kinder with a silver affair with fins. All three stages were fired satisfactorily in flight, the debris descending neatly at the feet of the audience. Julian Merfield's No. 2 rocket was a close second and John Holder staggered onto the field with a man-sized rocket that had to be fired by having a lighted cigarette pressed into its innards. Our congratulations go to Ted Shepard and Katherine Pridham, who got married on 12th December, and to James Adair and Jill Mettam, who are to be married on 10th January. Also to David Hooper and Ann Newton on their engagement.

A very successful ten days were spent at the Long Mynd under the supervision of David Darbishire, during the "Wave Safari". Flying took place every day, but only on the first day was the wave in action, when David Hooper and Ann Newton in the Eagle went to 8,300 ft.; the wind that day was over 50 knots on the ground, but only 40 knots at the top of the climb.

We are sorry that Lt.-Commander Phillips will not be staying with the centre but we welcome as General Manager, his successor, Lt.-Commander Dennis Lough. Outward and visible signs of General Managership can already be seen in a splendid path from Clubhouse to car-park, the filling in of the deeper puddles and the introduction of "the Ritz", the re-decorated bunkhouse intended primarily for course members, but otherwise open to members at 4/- a night.

There is a strong rumour that Derek Goddard will be back from Assam next summer, but whether he could be persuaded back onto the staff has not been revealed.

B.H.

Fields around Lasham photographed from the Weihe by Hans Pietsch.

LONDON

There is little to report since our last notes, the weather having been rather bad and the soaring winds almost non-existent; except for a light soaring wind on Sunday, 14th December, when practically the whole Club fleet was pushed into the air.

During the winter months much useful work is being put in. A new trailer of novel design has been constructed in an incredibly short space of time—very largely due to the efforts of Chuck and Bonnie Bentson. Other trailers are being built by private owners; and work is going ahead on the new high performance two-seater of Vic Ginn to be called "The Kestrel". Gangs can be seen most week-ends digging and working on the new garage foundations.

We are glad to welcome John Westhorpe as a new permanent member of the staff.

Ray Stafford-Allen, author of the "Glider Maintenance Manual" to be published by the B.G.A. shortly, and General Manager of the London Gliding Club, numbers welding amongst his many talents.—Photo by Tony Marshall.

John spent the past season as course instructor, and the Club has found him a very valuable asset.

The Christmas Dance on Saturday, 13th December, was very successful, and went on until the early hours of Sunday morning. We shall be holding our Annual Dinner Dance on Saturday, 28th February, at the Clubhouse; and as tickets are limited, all persons wishing to attend are advised to send their bookings to Mrs. A. Walker, c/o London Gliding Club, Dunstable Downs, Beds., as soon as possible. Actual Dance tickets for those people who cannot get to the Dinner are not limited.

P.F.

MIDLAND

AFTER a long absence, the westerly winds returned on 16th October, and produced a wave which sat over The Mynd all day. Three members reached heights between 7,000 ft. and 7,800 ft. a.s.l. and were able to view other waves to the south-west, considerably higher, which were alas, not for us. But we were very content, and the whole club fleet enjoyed good flights until dusk.

Our Roder-Rootes winch has been made more homely, by a wonderful metal cabin, designed and built by the fair 'ands of Jack Minshall, our resident M.T. engineer and Instructor. Now, whatever the icy blast without, one may winch in comfort.

The Blue Prefect too, has had a mod. by Teddy Proll, which is a very nice fully enclosed canopy, giving much comfort and silence. Improvements in the Clubhouse are a super Calor Gas cooker in place of our oil-burning stove, and approved improvements to the Bar counter, giving more elbow room for those that lean.

Rumour has it that there is something in the water at the M.G.C. Another marriage. This time, hardworking club member and Mag. Editor John Anstey, to one of the fast dwindling single ladies at the Club, Esme Johnson, who has also done a tremendous amount for the Club in her own time.

A tramps' party held on 1st November, was a great success, and continued till the early hours to the sound of fireworks, and swallowing.

We were pleased to welcome home from America Doc. Butler, who has spent the last twelve months there. Mike Randle too, has returned to the fold after his National Service in Canada, and promptly did his Diamond Goal flight to Great Yarmouth.

Again a reminder that we are holding our Easter Rally as usual, and will be delighted

to see old and new faces in March, when we will try to provide some weather.

As we go to press there is news of another club member getting spliced, this time Ted Shepherd to Surrey member, Catherine Pridham. To them we offer our very best wishes for a long and happy life. C.G.

MOONRAKERS

THIS club is now at Royal Air Force Station Upavon on the northern edge of Salisbury Plain. Our club fleet consists of seven aircraft including a T-21B, a Gull IV and it is shortly to be augmented by a Kite I, a welcome addition as our only intermediate, a Grunau IA, lacks air brakes or spoilers. Hence the Gull at present closely resembles the carrot on the stick. Our Kranich is now nearly ready to take up slack thanks to the skilled ministrations of Chief Technician Owens, Junior Technician Chandler and the boffin-like machinations of Dick Stratton and much communal elbow grease.

Dick Stratton's energy, foresight and know-how has given our M.T., winches and tractors a new look and they now successfully withstand even the most enthusiastic efforts of their least trained operators.

On the flying side we have with the greatest regret relinquished Roger Mann as our C.F.I. on his release from the R.A.F. He was with the club only for a year but his work acted as a much needed tonic. Our new C.F.I is Flight-Lieutenant Ken Fitzroy who flies Beverleys out of Abingdon when he is not busy gliding.

A club with a scattered clientele like ours (we serve some eight R.A.F. stations) needs a number of instructors and Flight-Lieutenant Eric Reeves (our secretary), Junior Technician Geoff Chandler and Corporal Mike Mantripp have all returned triumphantly from courses at R.A.F. Hawkinge. Eric's fine reverberating voice will stand him in good stead in this new role. In addition to our service instructors much hard work has been done for us in this line by Dick Stratton aforementioned, and Major John Evans, both from Boscombe Down.

The club has recently been joined by Sergeant Williamson more familiarly known as Willie and we hear that both he and Ken Fitzroy are in the B.G.A.'s seeded fifteen for the 1960 World Championships. We will give them all the backing that we can and we wish them well.

Once more winter is upon us and once more the hard core of enthusiasts gather round to supply from their ranks the C aspirants of another spring. R.D.P.

NEWCASTLE

KEATS called this time of the year the season of mists and mellow fruitfulness and though I can't say anything about the latter, I can certainly vouch for the mists, as Usworth, in common with the rest of the country, has been plagued with fog. Strangely enough the flying hasn't been

Steve Green gives a trip to "Harry", the only non-paying member of the Kent Club.—Photo by Pace of Sidcup.

seriously restricted but as is usual on a flat site in winter, training has taken precedence over soaring and the T-21 has been working at full pressure. There is, as a result, little news of flying to report except the appearance of one new Gold C and one new Silver C in the field. Andy Coulson's distance flight from Lasham has been recognised, thus giving him his final leg, and Doug. Collinson's 70 miles, also from Lasham, has gained him the distance leg of his Silver C and completed his certificate.

Owing to unforeseen circumstances the A.G.M. with its many changes which took place earlier this year has not been reported, so on the principle of better late than not at all, here are the details. The main changes were the decision to abandon the City headquarters in Newcastle and concentrate all social and secretarial activities at Usworth, the other changes being among the officials.

The meeting commenced under the chairmanship of Mr. A. P. Miller, who conducted the first part of the business and after presenting his report made known to the meeting that he did not wish to stand for re-election as chairman and handed over to Andy Coulson who presided over the rest of the meeting. As several other officials, including our Secretary, Miss Dorothy Hailes and the Treasurer, Doug. Collinson, had also declined re-election, the rest of the meeting was taken up with the elections and the following changes were made:—Chairman, Andy Coulson (vice Mr. Miller), Secretary, Doug. Collinson (vice Miss Dorothy Hailes), Adam Dodds was elected Treasurer and our new C.F.I. and Flight Secretary is Allan Pratt, who up till now has been acting as deputy C.F.I. Three other sub-committees were also elected to take care of aircraft, M.T. and clubhouse maintenance respectively, and after announcing the results our new chairman paid tribute to the vast amount of work that the retiring officials had put in during their terms of office. He also thanked them for their offers of help and then brought the meeting to a close.

L.A.C.

NORFOLK

A GLIDING club has now been formed in Norwich. A committee of eight have been investigating the possibilities of several airfields in the neighbourhood.

When several problems have been solved, we hope to be flying at least one two-seater in the coming season.

M.R.C.

OXFORD

WHATEVER the year may bring, we can but hope it will be better than 1958. Of its weather let it suffice to say that it is a long time since we were grounded for so many days.

Of our modest achievements let us recall Chris Hurst and the Olympia, 105 miles to Bridport and that unfortunate time of 4 hrs. 50 mins.—John Matheson's Silver C Duration at The Mynd, in the Blue Gull and our C.F.I.'s frequent excursions around Oxfordshire on marginal days in the same aircraft.

First solos in the T-21B have been a popular success, despite the—ahem—unfortunate contretemps—in October. This is hardly surprising, for the idea, initiated by people better qualified than we, has been operated elsewhere for several years without incident, and we are sorry it fell to us to spoil the record.

We were fortunate, however, that a hectic day spent by Joy Taylor on the telephone resulted in top line co-operation by "Tich" Holmes, the Underwriters and our good friends at Lasham. Within 48 hours of the accident, the T-21B was on its way to the Surrey Club's workshop, and in less than five weeks was back in service, its cockpit and port wing evidence of a first-rate job.

A visit by Ann Welch was the occasion for the first of a series of film shows and lectures, as well as a time of trial for our Instructors.

The name "Ann" is now freely associated with "aspirin", but three limp Instructors are nevertheless agreed that it was an experience of great benefit. For the ordinary member it was an occasion to improve our operating efficiency by 50%. With more care and less cleverness our ground crews could achieve this on any day, and we could promise more flying and less frustration for everyone.

L.A.S.

SOUTHDOWN

THE year 1958 ended with some weak northerly winds giving hill soaring as a pleasant replacement to the circuit weather of the autumn. Les Booth took the opportunity to gain his C, and Beresford Taylor and Stuart Brooker both went solo.

Use of a new cable and a certain amount of guile in extending the cable run, has resulted in 1,200 ft. launches in light winds and a near miss with the cable on our visiting landlord.

An ingenious device has been erected in the hangar during the winter months, in the form of a portable "working area" made up of movable sections with a polythene roofing to give maximum light. This not only has the advantage of concentrating the area to be heated, but also allows that area to be positioned wherever is most convenient inside the hangar.

Peter Fletcher, after asking us to complete covering the wings of his newly reconstructed Cadet, took the opportunity of test flying it at Firle. It performed remarkably well, hill soaring with everything else. That is, until Peter, drunk with power, failed to notice on his second launch going up, that everything else was coming down. The result was inevitable, and when we went to retrieve him from the top of Firle Beacon, he made a brave sight reminiscent of the 1922 meeting.

But we're coming into the season for north-easterlies, when Firle is a site second to none in this country—and who knows, Peter may yet have the last laugh when he hill soars the Cadet the 50 miles along the Downs to Petersfield.

R.M.

SOUTHERN CROSS

THE Southern Cross Gliding Club of Sydney, now has a membership of about 75 active flying members, and three aircraft, a Kookaburra two-seater, a Kingfisher and a Grunau Baby. The first two machines were manufactured by Edmund Schneider of Adelaide and although they are good solid Club machines, their performance leaves very much to be desired.

Operating headquarters are at Camden Airfield about 35 miles from Sydney. There are a number of active Clubs in Sydney and all operate from Camden.

Winching with 5,000 ft. of $\frac{1}{8}$ in. dia. solid drawn piano wire gives launch heights from 1,200 to 2,400 ft., a launch costs 5s. and we fly at the rate of £1 per hour.

The Sydney Soaring Club also operate from Camden with their Skylark and use Aero-tows with a Tiger Moth which actually belongs to the G.F.A. but they care for and keep it, but it is there for Aero-tows for all if desired.

The big chief of the Sydney Soaring Club is Merv Waghorn, possibly you have heard of him.

Gliding in Australia has to be a very full participation sport, I'm afraid, lacking capital and receives very little publicity.

There have been several good designs of glider built and flown here, but not up to European standard of course. However, we have the young men here who, with a little encouragement, and help, could design sailplanes of a very high standard and performance and we certainly have the country here that will give us the conditions to produce flights of outstanding performance.

I might mention that there are several

"Briegleb" Sailplanes well under construction here and I feel that they will be as good as a shot in the arm to the gliding movement here, they certainly look like being a mighty machine.

R.A.F.

SCOTTISH G.U.

OUR first full year's flying at Portmoak produced 666 hrs. for 2,779 launches (to 7th December). Soaring took place on 81 out of 137 flying days. Comparison with our best year at Balado shows that flying time has been almost doubled, while the number of launches is about halved.

While fewer launches are required on a soaring day at Portmoak, the reduced launching rate is certainly due in part to a slower turn-round than could be achieved at Balado. This is largely caused by cable-retrieving delays, partly due to the rough state of the ground in places and partly to the speed of our tractors. We shall buy a diesel tractor as soon as we can afford one but in the meantime we are experimenting with a completely new answer to the problem—the Hendry-Sambale Electric Hare. This is a cable retrieving device on the endless belt principle, and consists of a loop of heavy wire rope, stretching the length of the runway, with a tensioned pulley at each end and driven through the second drum of a two-drum Wild winch. Cables are retrieved by a sled clipped by a self releasing clamp to the loop. Although still being developed, the equipment can already provide a launch every five minutes. More details will be given when we have had more experience of using the equipment.

Our existing T-21 is shortly to be joined by another and we have also ordered a Swallow to replace the written-off Prefect. When the Skylark III now being built from a kit by Rae, Pinkerton and Ross, is completed, probably in the late spring, ten aircraft will be operating at Portmoak—a good stimulus to improve the launching rate.

Apart from two climbs in wave on 2nd November, to 10,000 ft. by Bill Lawson in his Eagle and to 7,000 ft. by John Hendry in a Club Olympia, there is little of note to report in the flying line. Steady progress is being made with *ab initios*, and sending people solo at Portmoak is no longer considered the hazardous business we thought it was going to be when we moved there.

At the Christmas Party held at the Bridgend Hotel, Kinross, on 13th December, the Parker Cross-country Cup (the Span Pan) was awarded for the second successive year to Charlie Ross for his 93 mile flight to Kilberry in the Mull of Kintyre. The Boyle Altitude Trophy or Up Cup went to Tom Docherty for a 9,600 ft. climb in a cu-nim. The Clot Pot, a splendidly ornate example of a well-known piece of bedroom ware, which is awarded annually for performances of outstanding reprehensibleness, was awarded jointly to Jimmy Rae and Charlie and Jane Ross. It would be unkind to tell you why.

D.B.

L. to R.—John Pinkerton, Charlie Ross and Bill Shanks getting up steam at the S.G.U. Christmas party. We don't know the girl.

TAUNTON VALE

By the end of the year, we should have completed 1,500 launches, with only two gliders, and weather permitting, hope to improve this total next year.

The local council inform us, that by September 1959, they have agreed to replace a road which was closed in 1939 and ran right across the airfield. At the moment, there are a number of alternative schemes, including the building of a new road right across the airfield, but we are pressing for the cheapest one involving the use of the Northern taxi-track. The taxi-track is in first class order and wider than most "A" classified roads. Should a new road be cut through the airfield our operation would be severely restricted and auto-towing hardly practical. In case the need should arise, we are looking out for an alternative site.

Aero-towing was a new feature at the club a few weeks ago and those who experienced their first tows were much impressed. Our C.F.I. and his pupil had an extremely rough ride when at about 900 ft. and flying in the lee of our South-West slope, spent an anxious few minutes in some of the worst turbulence he has experienced.

Ann Welch's visit to the club at the end of November, had to be cancelled at short notice owing to foggy conditions but we hope she will be visiting us at an early date.

Plans for our 1959 courses are well advanced and we may be having a few members of the C.C.P.R. on some of them. Given better weather conditions than those of 1958, the courses should prove popular and we look forward to the New Year with "high" hopes.

P.E.B.

ULSTER

We started the 1958 season with a tremendous spurt and the Tutor was soared 26 hrs. by 6th July when Gordon Mackie, nephew of our founder member Jack Mackie, lost himself in low cloud, hit the mountain with repairable damage to himself, but irreparable damage to the dear old Tutor. On the same day Sven Mackie flew his new Jaskolka at Newtownards. Meantime Beck, Heaslip and Rountree, are without means of aerial transport.

The 30th September was the end of our six months' season during which Liddell soared his Gull 34¼ hrs. He, Douglas, Robinson and Skillen, attended two courses in July at the Long Mynd and totalled between them 26 hrs. and a cross-country. We would like to express our sincere thanks to Bob Neill and all at the Mynd who made these courses memorable. We have exchanged flying visits with the Ulster and Dublin Gliding Clubs and hope they enjoyed their visit as much as we enjoyed their hospitality. Now we are hoping to procure a new Club glider before the 1959 season.

W.L.

YORKSHIRE GLIDING CLUB

Site: Sutton Bank, Thirsk, North Yorkshire (1000 ft. a.s.l.)

Excellent Hill, Thermal and Wave Soaring available on the Hambledon Hills.

Full Training Courses Available for beginners in summer season.

Good Club house facilities, including dormatories. Resident staff.

Fleet includes: SWALLOW, KITE 2, TUTORS & T-21B.

Visitors Welcome, Write for further details:

Secretary, Sutton Bank, Thirsk, Yorks.
Tel: Sutton (Thirsk) 237.

DO YOUR GLIDING ON THE CORNISH RIVIERA

THE CORNISH GLIDING CLUB

OFFERS COURSES BETWEEN APRIL AND OCTOBER ON ITS MAGNIFICENT COASTAL CLIFF SOARING SITE IN THE HEART OF THIS FAMED HOLIDAY AREA

Training and Solo Machines—Aero-tows Available
Visitors always very welcome

Visitors accommodated at a fully-licensed hotel in the centre of Perranporth, within 100 yds. of miles of golden sands—one of the best surf bathing beaches in the country—and all the usual holiday resort amenities.

Apply: CHARLES MILNER-HAIGH,
HAWKES POINT, CARBIS BAY, CORNWALL
Telephone: St. Ives 93

LASHAM

(pronounced LAZZHAM)

"THE HUB" OF BRITISH GLIDING

offers you unrivalled facilities for thermal soaring on almost every day throughout the year. Situated some 600 feet a.s.l., midway between Alton and Basingstoke, the Gliding Centre is managed by the Surrey Gliding Club in association with the Army G.C., Imperial College G.C., Crown Agents' G.C., Polish G.C., B.E.A. "Silver Wing" G.C., B.B.C. Gliding Group, and many Private Owner Groups. An experienced permanent Staff enables Courses to be run at all Seasons.

For details write to

THE MANAGER,
LASHAM GLIDING CENTRE,
ALTON, HANTS.

LONDON GLIDING CLUB

Founded in 1930

BRITAIN'S BEST KNOWN SITE

DUNSTABLE

has every facility for all the year soaring

Dual Instruction — Aero Towing — Instrument Flying
Link Trainer — Aerobatics — Holiday Courses
Reciprocal Membership — Ab-initios Welcome

T-21Bs — Grunau Baby — Prefect — Tutors — Olympia
Skylark II — Sky — Skylark III

Resident Staff — Full Catering. Entrance Fee 6 gns, Subscription 7 gns.

R. Stafford Allen, Manager, London Gliding Club
Dunstable Downs, Beds. Dunstable 419

KENT GLIDING CLUB

Gliding training will continue through the winter, but when the snow-line rises too high the clubhouse provides chair-borne comfort and excellent bar service. Entertaining and Instructional talks by club members.

Write for illustrated brochure to:—
MRS. PARKINSON,
LODGE HOUSE,
BRABOURNE LEES,
NR. ASHFORD, KENT

SCOTTISH GLIDING UNION LTD.

Portmoak, Scotlandwell, by Kinross

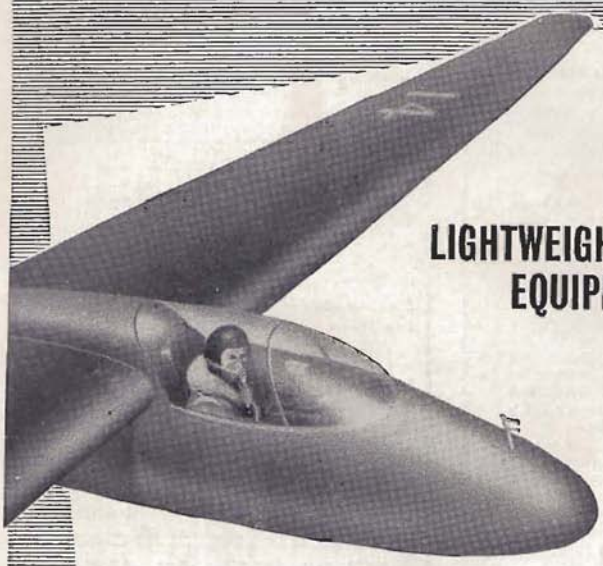
Initial training, and excellent hill, thermal, and wave soaring in beautiful surroundings.

7 Aircraft including T.21b two-seater.

Summer Holiday Courses of seven days duration are held each year. Beginners and others are welcome

Accommodation in good local hotels.

Subscription £6-6-0 **Entry Fee £2-2-0**
Launches 3/- **Soaring 15/- per hour**
Write to the Secretary for further details



LIGHTWEIGHT OXYGEN EQUIPMENT

NORMALAIR lightweight oxygen equipment was fitted in the sailplane flown by the runner-up in the Open Class at the 1958 World Gliding Championships—Commander N. Goodhart of Great Britain. This pilot also achieved the greatest distance flown along a set line, with a flight of 209 kilometres.

The equipment used is part of a range of items being produced by NORMALAIR for use in light aircraft, small transport aircraft and sailplanes. Both portable sets and fixed installations are in production, component design allowing wide variation of layout to suit individual requirements.

A feature common to all the equipment in this range is very low weight. For example, a fixed installation of 750 litres capacity weighs as little as 12¾ lbs. complete. Provision is made in all cases for the selection of different flow rates, the actual rates being variable by adjustment during manufacture. An illustrated catalogue of this equipment is available on request.

NORMALAIR

YEOVIL ENGLAND

Normalair (Canada) Ltd.
Toronto

Normalair (Australia) Pty. Ltd.
Melbourne