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December 1962

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1962-1963

CHRISTMAS is here again, and we look back on a year with its quota of triumphs and disappointments.

Aston Down was a triumph. Summer took place that week and no other. 82 aircraft flew 60,000 miles in over 2,300 hours. How unbelievable would this have seemed to our founders in 1929!

Our new aircraft appeared in the air: the Skylark 4 a resounding success from the start; the Olympia 463 is now appearing in numbers and should have a glowing future in the Standard Class; the Capstan experienced last-minute troubles which have been at length overcome. In the hands of the many instructors who have now flown the prototype it has shown convincingly that it will be exactly what is needed.

At the time of writing the 1963 World Championships in Argentina are still on, in spite of the many (non-gliding) troubles of this unfortunate country. Our planned team, pilots and aircraft, will be one of the strongest we have sent for some time.

New clubs have appeared, and one or two clubs have achieved the basic pre-requisite of stability—security of tenure.

The battle for air-space goes on—as it will go on, for ever and ever. At last we have formulated a line of approach which, if common-sense is allowed to intervene, should succeed in rationalising the problem (see page 423).

SAILPLANE AND GLIDING continues on the up-and-up. I hope, dear reader, you noticed that our August issue gave you over 100 pages and this issue nearly 100 for the same price as before — probably your cheapest buys of the year.

And so, for a short time, our pens drop from our ink-stained fingers, and before we doze off in a mist of holly and rum punch, we wish all our readers everywhere, as usual:

A Very Merry Christmas and a Happy New Year

WORLD CHAMPIONSHIPS APPEAL

Approximately another £1,000 are urgently needed for this fund to meet the expenses of sending a British team, and it is not too late to send contributions to the British Gliding Association. A total of £76 6s. has already been gratefully received from the following:

Sir Theodore McEvoy
J. A. MacGregor
T. W. Bevan
M. Wilson
R. D. M. Harper
Flying Officer Revell
R. Partridge
J. V. Inglesby
Aberdeen Gliding Club
A. Coulson
R. L. Neill
T. W. E. Corbett
Surrey Gliding Club

Sea Breeze Summer

by John Simpson

MANY of us find it difficult to do three or four things at the same time until we have practised doing it so often that it has become automatic. In my own case, for example, it was at least two years before I was able to circle in a thermal, read a map and be sick out of the window at the same time.

So far, only a very few of the Masters have been able to tune their minds to hill, thermal, wave and sea-breeze lift in the same flight. To most of us, sea-breeze lift is still in the class that wave was 25 years ago—"unexplained lift".

I made a short sea-breeze flight on 13th May, 1961, and in 1962 I was fortunate enough to be able to spend the whole summer at Lasham chasing the sea breeze as my main occupation. These notes are a preliminary report.

Sea-breeze lift was first used as long ago as 1938 by Philip Wills on his pioneering flights to Cornwall. He soared along the meeting line between the on-shore sea-breeze and the N.E. wind out over the sea in Lyme Bay. The lift was marked by a line of fat cumulus.

Sea-breezes are likely to occur on the kind of day which distracts a glider pilot from his other work. After some hours of sunshine, the air above the land becomes heated to varying heights, with consequent expansion. So at the 2 or 3 thousand foot level there will be a greater mass of air overhead inland than over the sea at the same height. Therefore the pressure there will be greater and a flow of air will start towards the sea. This will have the effect, however, of making the pressure over the sea *at ground level* greater than that just above the land, and hence a flow will start inland at the low levels.

The nature of this flow inland will depend greatly on the wind pattern due to the general pressure gradient over the country (called the "gradient wind").

If the gradient wind is already off the sea, then the sea-breeze will merely slightly reinforce this wind; but, as members of Gliding Clubs near the coast know, it will "damp down" thermals, often for the day. The land for many miles from the coast will slowly be flooded with stable air.

If the gradient wind is parallel to the coast, then more attractive things may happen. The meeting line of the land and sea air may remain quite sharp for several hours, a "self-stoking" sea-breeze front being formed. As most glider pilots know, the ground is hardly porous at all, so the incoming sea-air must move upwards at the front. In winds up to 20 knots parallel to the coast, a line of cumulus or even cumulonimbus may form for several hours, a few miles inland.

If the gradient wind is offshore, i.e. has some component towards the sea, then the frontal effect is likely to be more intense. If the gradient wind is less than about 10 knots, then the front may move inland, its precious line of rising air being an essential factor in keeping itself going. Sea-breeze fronts in the tropics have been traced inland as far as 100 miles. In England they rarely penetrate more than 50 miles. Conditions seem favourable on the E. coast, especially in the southern part near Felixstowe. The S.E. coast is better still, especially in Hampshire.

The behaviour of sea-breezes near the coast has been studied quite thoroughly in many parts of the world, but very little has been published about the behaviour of the front as it travels far inland.

J. K. Mackenzie, flying at Lasham on 6th July, 1956, in a soaring flight of about three hours, used lift from the front, and in a very interesting article in SAILPLANE AND GLIDING described his findings. The main feature was a narrow line of rising air, too narrow to circle in properly, on the inland side of a line of thin ragged curtain-like clouds. These were forming a thousand feet below the normal cloud-base of the cumulus in the dry inland air.

Two years later, Aylett Moore flew along a sea-breeze front at a height of about 3,000 feet. In this case the front was only marked by a haze line, the poorer visibility being in the sea-air.

John Corbett's flight from Lasham to Dunkeswell and back on 4 August, 1959, was a fine achievement. For the return journey he used lift under long sausage-shaped clouds associated with the sea-breeze, arranged parallel to each other, roughly at right angles to the coast.

An American meteorologist, R. E. Stevenson, spent the summer of 1959 investigating the coastal sea-breeze at Flamborough Head. The locals said "it blows every day", but he only found it properly on 13 days. The only really vigorous day was 19th July, 1959, and on that day he traced the front inland to its maximum depth of 15 miles. It is interesting to note that on the same day Peter Scott met what appears to have been a similar front over Norwich in his 419.

Some studies were made round about 1930 by S. P. Peters, the meteorologist at Worthy Down, near Winchester. He found that a sea-breeze front passed the station on the average about 9 days a year, and that the most likely months were May and June. The most frequent time of arrival was just after 6.00 p.m. (B.S.T.). He found wind changes varying from 0 (just a slight intensification) to 180 degrees. There was a slight fall in temperature in half the cases. In two-thirds there was clear increase of relative humidity, up to a maximum of 30 per cent. In nearly all the cases there was an increase of vapour pressure or dew point. Half the days had cloudless skies, and on the others there were small detached cumulus, but no noticeable change in cloud at the front.

He investigated records at Larkhill (near Salisbury) and at S. Farnborough, and found 6 cases in 6 years when the front was traceable at both these stations, showing the front had penetrated 35 miles inland over a zone at least 45 miles wide.

From balloon ascents he found the height of the sea breeze to be over 1,000. feet. On the four Larkhill-Farnborough days for which he published records it is noteworthy that the sea breeze had the greatest vertical extent—over 2,500 feet. On one occasion he recorded a fact which I think may be very significant. On 29th May, 1928, a balloon ascent half-an-hour before the arrival of the surface sea-breeze front showed the presence of the sea breeze, not at 1,000 feet, but between 2 and 3 thousand feet.

This presumably means that the sea-breeze front had a "nose" elevated over 1,000 feet from the ground, a form de-

duced to be present in some large-scale cold fronts. This was the only occasion he recorded, but without a very close sequence of balloon ascents it would be an easy phenomenon to miss.

This "nose" was also observed in balloon ascents during sea-breeze studies near the coast at Gdansk (Danzig). The moving spirit in this work was Dr. Harald Koschmieder, who had previously worked at the Gliding Research Institute at Darmstadt and published work on "Upcurrents for Sailflying". His research was on a large scale with five ground stations, balloon ascents and measurements from light aircraft.

Koschmieder established that the speed of passage of the front was just over half (0.62) of the component of the sea breeze at right angles to it, and distinguished between the sea breeze and the "sea-air" as a whole. The top third of the sea-air was moving towards the sea, the cause of this being friction and entrainment with the offshore gradient wind engaged in piling up the cold air. This top layer was, of course, not easily detectable as sea air by plain balloon ascents only, but the two parts were distinguished by D. E. Pedgley at Ismailia, 30 miles inland.

My work in 1962 has in general resulted in more questions than answers—but here is a summary of it.

Five thermographs and hygrographs were installed in shelters between Lasham and the coast, and some records of temperature, humidity, and wind obtained from several Met. Office stations. For the 8 days when a sea-breeze front reached Lasham in 1962, dew points were worked out at hourly intervals for all the stations. The changes in dew point together with wind records and any other evidence when available were used to plot the position of the front at hourly intervals. The map shows the average position of the front on these 8 days.

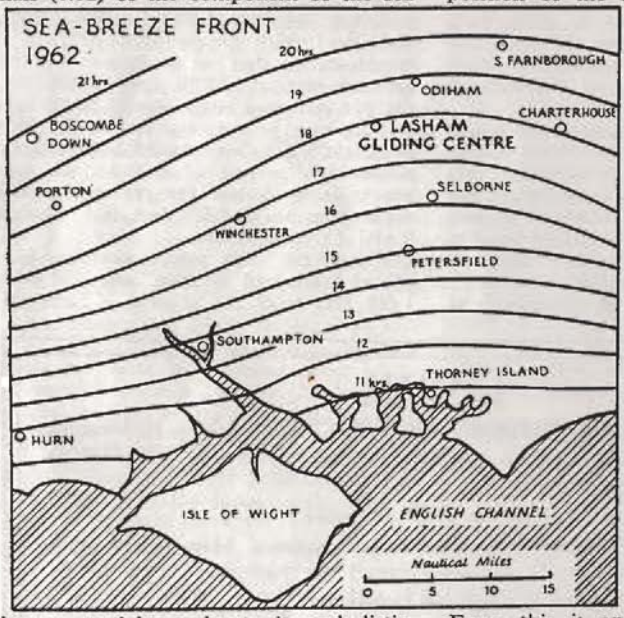

Fig. 1. Average position of sea-breeze front on the eight days in 1962 when it reached Lasham.

From this it appears that the average rate of advance along a line from Thorney Island to Lasham was about 4 knots, roughly half the speed of the sea breeze itself.

Altogether, from April to September inclusive, I observed some sign of the sea-breeze front in Hampshire on 28 days. Glider pilots used lift at the front on 7 of the 8 days when it passed Las-

Sea-breeze front near Winchester, 8th August, 1962, 13.00 hrs. Looking south, showing "curtain clouds". *(Photo John Simpson.)*

ham Gliding Centre.

The first day was Easter Sunday, 22nd April, when a distinct sea-breeze front passed Lasham at 7.10 p.m. Gerry Burgess released from a winch launch to 800 feet and soared along the front for 30 minutes, seeing streamers of haze beneath him, like smoke. About an hour later the wind at Farnborough changed from 4 knots, 250 degrees, to 10-15 knots, 180 degrees, in a few minutes. The day had been mostly cloudless at Lasham, as in most of the cases recorded in 1952, but there had been cumulus developing at a convergence line over Stoney Cross to 5 or 6 thousand feet, and isolated cumulus turrets had been visible from Lasham to the south. Lift was limited during the day to about 2,500 feet.

Two of the sea-breeze days fell during the Nationals, early in June, and most of League 1 pilots have been kind enough to send me accounts of their experiences with the sea-breeze front near Cerne on Sunday, 3rd June.

An anticyclone covered the country, and there were light N.E. winds in the S. of England. The sea breeze moved inland from Poole Harbour in the morning, and from about 1 to 2 p.m. the front was in the neighbourhood of the turning-point at Cerne Abbas. It lay W.S.W.-E.N.E.; the wind to the north was N.E., about 12 knots; to the south it was S.E., 8 knots. Most pilots had difficulty with cloud obscuring the turning-point. The base of the Cu to the north was about 4,500 feet; at the front, which was marked by intermittent patches of low "curtain cloud", the base was about 2,500 feet. There was no cloud to the south of the frontal area. Lift was found to the north (landward) side of the front. Some pilots found only 1½-2 knots; the best lift anyone found was 5 knots, obtained by circling in and out of the cloud on the landward side.

Patches of lift were usable along the line of the front from about five miles east of Cerne to about 30 miles west. Nick Goodhart in particular rejoined the front 3 miles north of Blandford, was able to climb to 4,000 feet and to fly straight at 60 knots for about eight miles along the front.

Inland it was necessary to fly some way north in order to find good lift. Most pilots flew north as far as Salisbury, and there was little cloud from there to Lasham.

The front also moved in past Southampton and Thorney Island, reaching Lasham at 5.30 p.m., 20 minutes after the last pilot had passed the aerodrome. It just reached S. Farnborough, where autographic records showed a very gradual

change, with at first some slight reversals. Dry air reached Petersfield at 6.30 p.m. A vigorous sea-breeze front, however, travelled to the N.N.W., passing Porton and Boscombe Down with a sudden marked wind-change after 7.0 p.m., reaching Lyneham by 10.30 p.m. In the Farnborough section the sea breeze was S.E., up to 10 knots; in the Boscombe Down area it was S.S.W., 5-7 knots. The Crawley tephigram for 11.30 G.M.T. shows limit to convection at 3,500 feet, with a possible break-through to 7,500 feet. The lift actually found by glider pilots reached to 5,000 feet.

On 30th May and on 16th June, shortly before the passage of the surface front at Lasham, streets or "bar clouds" appeared, about four or five miles apart, in the direction of the gradient wind. They appeared to have darker Cu embedded in them, a pattern also noted by Anne Burns on the Cerne day. Pilots who climbed up and used the lift beneath them reported passing through a layer of turbulence and finding the wind at cloud base still from the land.

I have taken some time-lapse films of the cloud forms, speeded up about 50 times. On days of moderate cumulus of perhaps a thousand feet depth the "curtain clouds" appear at irregularly spaced sections on the front, forming very rapidly in patches up to a quarter of a mile long.

On three days of light winds and small flat Cu forming at an inversion level, the cloud forms at the front well south of Lasham were small isolated "turret clouds" of greater vertical development than the land-air clouds, with both lower bases and higher tops. They showed much more vigorous growth than the land-air clouds.

So we have apparently three distinct cloud forms associated with the front, the "curtains", "turrets" and "bars". Are they evidence of three different processes at work, either at the same or different times?

Although the general line of the front is detectable, and has in fact been "seen" as such by radar by Dr. Eastwood from Chelmsford, it seems likely that some non-continuous processes are at work.

The cloud forms do not appear regular and smooth as in the cloud formed for instance at the advance of the cold air from a precipitation downdraught. I have seen one of these lines arrive as a 30-knot squall, marked by a sinister, smooth, grey shelf-cloud, perfectly smooth from horizon to horizon. The sea-breeze front does not produce a smooth non-varying pattern like that.

Fig. 2. shows a possible picture for glider pilots to confirm or pull to pieces in the bar in the winter and during the next soaring season. The slope of the first section may be at least 1 in 3 or 1 in 4 to 2,000 feet, and behind that at 1 in 100 for three or four miles horizontally. These figures are partly based on Koschmieder's findings and on the fact that

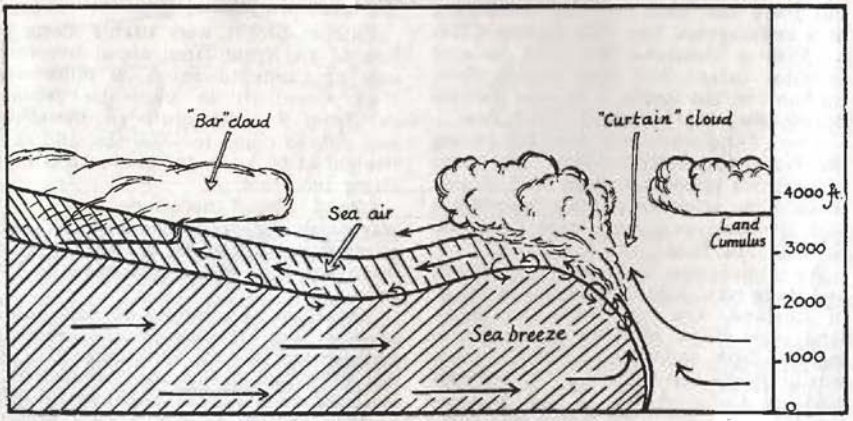

Fig. 2. Section of sea breeze front.

we have had pilots soaring 4 miles away over Alton under the bar clouds just before the surface front arrived at Lasham.

The layer of turbulence found is presumably the shear line between the sea breeze and the sea-air which is flowing back with the gradient wind.

The front moves forwards, pushing up curtain cloud or haze lumps, producing an intermittent nose at different places, like fingers or even waves running up the beach. These noses must collapse more or less regularly due to their native instability, sometimes with consequent turret clouds. This drawing of a section by a plane at right angles to the front cannot give the whole picture in a non-steady motion, and we must also think of the plan-view from above (see Fig. 3).

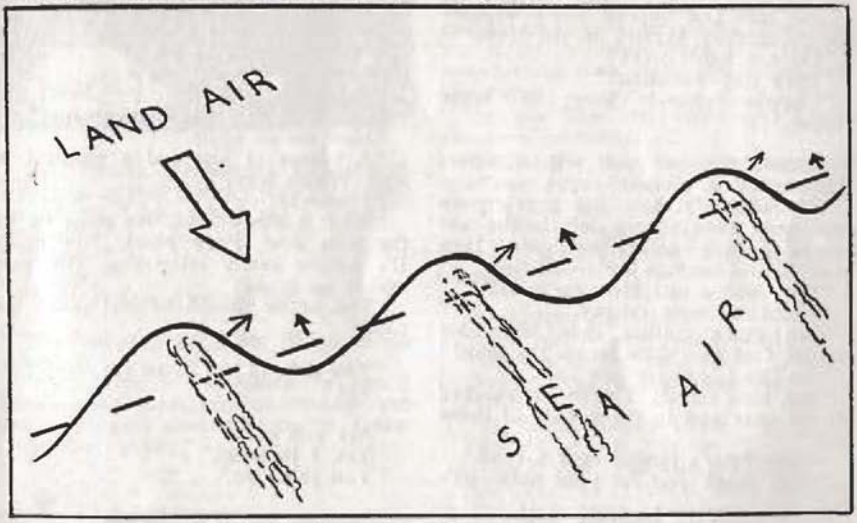

Fig. 3. Plan view of sea breeze front.

Ridges directed into the gradient wind, but moving along the front, would explain some features of the bar clouds, and some rhythmic changes of about half-an-hour period in dew point recorded at Petersfield and Selborne; also the effect seen in some anemograms when the front is reaching the end of its run.

I must thank the Flounders Trust and the Goldsmiths Company for their grants and the Royal Meteorological Society for assistance in the purchase of film. My thanks also go to Gordon Hookings who aided and abetted me on several occasions, to the kind individuals who maintained my recording stations, and to the many meteorologists and glider pilots who have assisted me.

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Son of Retrieve Noeturnal*

by Alan Purnell

*SAILPLANE AND GLIDING, October 1958, p. 268.

"Alan, Peter's landed the Skylark at 'Thresholds'."

"Good oh! Where's 'Thresholds'?"

"Four miles from here near Leebotwood."

"Not too far. How's the Club's transport problem?"

"U/S, of course!"

"Better take my car. We'll need four volunteers—you, you, you, and you. Right, let's get cracking. Only an hour's daylight left."

"All set? Did anyone check whether there's another Skylark in the trailer?"

"Do the lights work?"

"They do? Fantastic!"

"Cheerio chaps! Save us some supper."

"Excuse me, can you tell us where 'Thresholds' is, please?"

"'Thresholds'? Aah, yer goes on up rood 'ere, then shaarp left before yer gets to the pub—before, mind yer— then over 'ill and through Smethcott then..."

"Hey, wait a bit! How far is that?"

"'Bout five mile I'd say."

"But that's further than when we started. Can you show us on the map?"

"Go 'long 'ere, up 'ere and..."

"Say, look there's 'Thresholds' marked all the time and in the middle of those hills."

"Hope Peter's landed near a road."

"Well, thank you for your help—let's go."

"You going to navigate, John?"

"O.K."

"I'll go wherever you say."

"I should think so, too."

"Fork coming up!"

"Right. *Left.*"

"Too late. I've gone right."

"Left hand down a bit."

"Right hand down a lot."

"*Stop*!"

"O.K. I'll start again."

"*Stop*! You're going into the hedge."

"*Stop*! Now you're going into the other hedge."

"Why didn't I ever learn to reverse?"

"Good, we're clear now."

"Be more careful next time."

"Well, you should have warned me earlier."

"O.K. The next junction should have a turn to the left."

"Well, it seems to have a turn to the right."

"Anybody got any bright ideas?"

"This place has never heard of signposts."

"We'll keep straight on. Much better road anyway."

"Ah! Here's our turning."

"We'll never get round there."

"We'll have to try."

"Left hand down a bit."

"*Stop*!"

"Gee, that sure was a tough one."

"Here we go again."

"A village at last and a signpost as well. Which way?"

"Thataway."

"What a bleak road. We must be on the hills now. Pitch black. No moon. It's getting really interesting. Anybody wanna go home?"

"The house should be just down the road."

"You did say just down the road?"

"Yes."

"Are you sure?"

"Yes, I think so."

"You think so."

"Surprise, surprise. Here's a house. Try here, John. You got us here—you enquire."

"Where on earth have you been, John?"

"Trying to get some sense out of them."

"Really!"

"They said a long trailer has already gone by and collected him."

"Oh!"

"They also said the glider is just down the road, first lane on the left, and we can see it easily."

"But it's pitch dark!"
"I know."
"Oh!"
"Queer about the trailer."
"Yes."
"Who could have sent it?"
"I dunno. There's no more at the Club."
"I reckon they were batty. Let's look for the Skylark; their directions were clear enough anyway."

"Well, here's the turning. No sign of a wingtip against the sky. Search around the nearest fields. Who's got a torch?"
"Torch?"
"Torch?"
"Torch?"
"Well, at least I've got one!"

"No use—nothing here. What to do now?"
"We'll have to telephone to see if Peter's given them another message and also to enquire about that trailer. Queer about that trailer."
"Yes."
"Yes."

"The telephone should be just round the corner."
"Hey, look, isn't that Peter in the road?"
"Hello, Peter. Where's the Skylark?"
"Back there."
"Oh no, more reversing. Do you know anything about another trailer picking you up?"
"No."
"There you are, I told you they were batty."
"What's all this about another trailer?"
"Hop in. We'll tell you on the way back."

"So the Skylark is at the end of that lane, is it? Can we turn round down there?"
"No."
"Oh! I suppose it's steep and boggy, too?"
"Yes."
"Oh!"
"Sounds as if we should have brought the tractor."
"Well, I'm not going down there with my car until I've seen it myself. I'm walking."
"Let's all go."

"It's not too bad, considering there's a sheer drop on one side and a water-filled ditch on the other. I reckon we could turn the trailer round here, then run it up that slope then turn the car round there then move the trailer over there then..."
"Sounds like an engine and trucks shunting problem."
"I thought they were for armchair mathematicians only."
"Not this time they're not."
"I'll go and get the car. You lot can take the Skylark to bits. And mind those cowpats."

"Now turn the trailer."
"Easy now—swing round gently."
"We're stuck at the front."
"We're stuck at the back, too."
"Oh!"
"Try again further along."
"Should be O.K. this time."
"That's what you said last time!"
"At least we're more than half-way round. How much room your side?"
"Bags of room."
"*Stop*!"
"I thought you said there was bags of room."
"There was if you had pivoted on the other wheel."
"How much clearance left?"
"None. We're in the ditch."
"Anyone got any bright ideas?"
"Hurry up. I'm standing in a foot of water."
"Stop exaggerating. It's only six inches."
"We'll rock it from the back. You lot

stop it going over the cliff when it comes free. O.K.?"

"It's all right for you."

"No it's not. We're standing in a foot of water."

"Heave. Heavens, it's not budging."

"Shall we take the brake off?"

"Yes, you . . ."

"And again. Heave. It's coming."

"Heave."

"And again. Heave. It's coming."

"Heave. There we are. You chaps still with us?"

"Yes—just."

"We'll get round if we pivot on the other wheel this time."

"Good. I'll go and turn the car round."

"I think we've forgotten something."

"What?"

"We've got to get the car past the trailer."

"Oh!"

"Lucky we remembered before we put the Skylark in."

"Everything securely packed? Right, let's go."

"Not too far now."

"Hairpin bend ahead."

"What angle?"

"About one hundred and seventy-nine and a half degrees."

"Unhitch!"

"Coward!"

"Hitched again? Good."

"Easy—slowly forward."

"O.K."

"*Stop*!"

"What's wrong now?"

"The trailer is leaning over at forty-five degrees."

"Oh! What's stopping it toppling over?"

"I am."

"Oh!"

"Ease slowly back."

"It's clear of the bank now."

"Home, here we come."

"What's the time? Eleven? Four hours—not bad for a four-mile retrieve. What does the trip mileometer say?"

"Thirty."

Wot! No Trailer Design?

by M. Wilson

AFTER a fully equipped sailplane, the next most important single piece of necessary equipment must be the trailer. Looking through several years of SAILPLANE & GLIDING one can find many articles on instruments, aircraft design, flying techniques and the like, but what disappointment for those who wish to design their "dream" trailer! Only two articles are apparent: on the Trailer Design Competition in December 1955 and Nick Goodhart's Trailer Building Notes in December 1957. Why? Can it be that trailer-building is such a "one-off" and individual business that it is not considered important to impart information to the masses?

Whichever way one looks at it, a lot of trailers have been built in the last seven years (the period under consideration). But how many have had the same design and workmanship put into their construction that the rest of the equipment has? How many have had axles come adrift, roofs leak and so little torsional rigidity that they were only stiff when the glider was put inside to hold them together? A typical comment is, "Oh, well, we needed a trailer quickly for the Comps." Or, "We had some wood left over from building the clubhouse".

No, the glider trailer is, with the possible exception of the winch, the poor relation of gliding impedimenta. This is a terribly short-sighted policy. It is almost as expensive to construct a poor trailer as a good one, and certainly more expensive in the long run. The trailer design competition requirements of December 1955 still hold good, and sum up to a light, stiff and stable trailer. Some of the best designs of recent years have emerged from Dunstable, showing good structural design (i.e. every piece of wood working for a living and not just going along for the ride), light weight, extreme torsional stiffness and excellent suspension.

Perhaps the answer is to have a Standard Class for 8-metre trailers; but it must be worth any potential builder's time to look at the two articles in SAILPLANE & GLIDING, and then inspect two or three really good trailers (a list of approved ones can be sent under plain cover!). This might prevent a rush to the workshop and the production of yet another hardboard-skinned, plank-floored, heavy-chassised, twisting horror!

Let's design trailers with an aeronautical approach rather than an agricultural one.

INSTRUCTIONAL LECTURES AT THE KRONFELD

In response to many requests a three months series of instructional lectures will be held at the Club on Mondays at 8 p.m. starting the 7th January, 1963.

The series which will include lectures suitable for both ab-initio, soaring pilots and pundits will open once again with two lectures by Derek Piggott on "The Theory and Technique of Soaring" and will also include four talks on elementary meteorology, two on advanced meteorology and a series on navigation, and such other titles as glider maintenance, glider instrumentation and regulations.

The fees will be as follows: For any four lectures booked in advance: 10s. 0d. to members, £1 to non-members.

Single lectures: 3s. 6d. to members 5s. 0d. to non-members.

Registration forms and further details are available from the KRONFELD CLUB, 74 Eccleston Square, London, S.W.1.

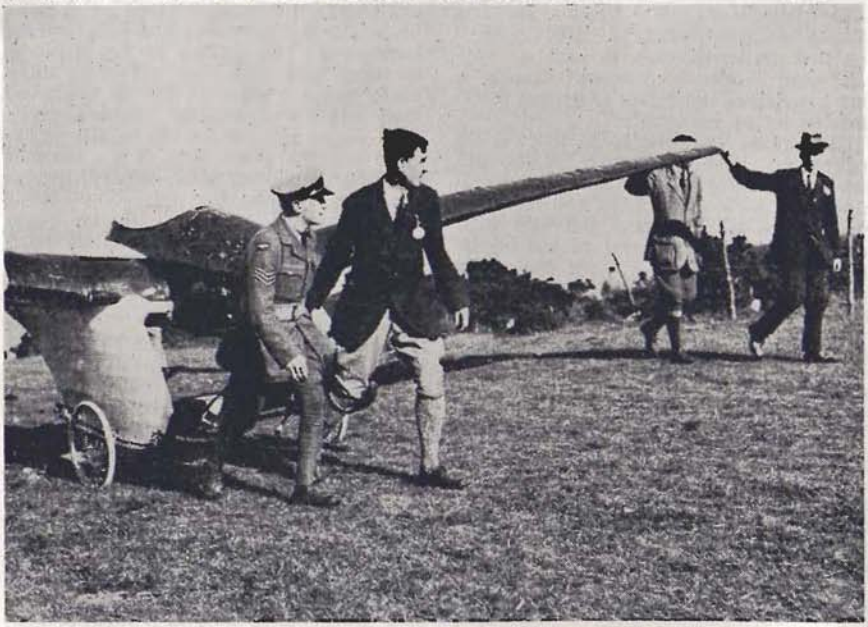
Y. C. B.

Itford Reunion: 1922–1962

by A. E. Slater

THREE participants in the first British gliding competition spoke at the Kronfeld Club on October 17th, forty years later, of their recollections: Eric Gordon England, whose soaring experience went back to 1909; Rex Stocken, another competitor; and Geoffrey Dorman, who reported the meeting for *The Aeroplane* and helped me to locate some of the participants. Five others intended to come if they could, but were prevented at the last moment for various reasons: Hubert Broad, who flew a De Havilland monoplane; Sir Sydney Camm, who designed Raynham's machine; Clarence Winchester, who entered a non-flying biplane; Paul Bewsher of the *Daily Mail*; and John Yoxall who photographed the meeting for *Flight*.

Alec Gray, pilot of the "Brokker", could not come on that day but hopes to pay a visit later. John Jeyes, who flew the Aachen, was travelling and got my letter just too late, but called on me the following Sunday and spent the day at the London Gliding Club. Frank Courtney wrote an amusing letter from La Jolla, California, wishing he could be present; so did Frank Entwistle, the official meteorologist, who was traced from Cossor's at Halifax, Nova Scotia, to his new job as Director of Civil Defence at Yarmouth, N.S. Both wanted to be remembered to their old friends. Entwistle reveals that he and Alec Gray organized a gliding unit in the R.A.F. in 1923.



John Jeyes (centre) transporting his Aachen monoplane on its trolley at the Itford meeting; showing a streamlined "leg" on the left. (Photo Daily Mail.)

Correspondence involved in trying to collect all these people amounted to 44 outgoing and 33 incoming letters. There

were three failures to contact. Harry Knott, entrant of a pedal-driven machine, who flew gliders over 30 years ago on the present site of the Swansea Gliding Club, was well known in the district but could not be found. H. S. Dixon, entrant of an ornithopter and later ground engineer to the London Club, had left his old firm of R. F. Dagnall for the Pneumatic Tent Co., but they had not heard of him for six years. Donald Herne of the warping wings was reputed to be in America, but Courtney could only remember that he had a brother, T. Elder Herne, who was a professional magician; so I contacted the Magic Circle, but they had no record of Herne's brother on their books.

Of the five pilots who soared for over half-an-hour, four are no longer alive; Maneyrol died in 1923, Fokker in 1939, Raynham about seven years ago and Olley about five years ago.

Following are condensed accounts of what the speakers said, and extracts from letters by two who could not be present.

GEOFFREY DORMAN

THE idea of holding the Itford gliding contest was born when Paul Brewsher of the *Daily Mail* came to see Geoffrey Dorman at the editorial office of *The Aeroplane* (then in Piccadilly) to talk about the remarkable gliding feats in Germany. Dorman took him to see C. G. Grey, the editor, and Grey suggested that Bewsher should tackle Lord Rothermere, who had recently taken over the paper from his brother Lord Northcliffe. So Rothermere was reminded of how his brother had given £1,000 for the first cross-Channel flight in 1909 and £10,000 for the first aeroplane flight from London to Manchester in 1911, and was persuaded to follow in Northcliffe's footsteps and offer £1,000 for the longest glider flight in Britain exceeding half-an-hour during a week's competition.

The *Daily Mail* kindly made a number of prints from their old 1922 photos, specially for showing at the Kronfeld Club, and Geoffrey Dorman used these to illustrate his own amusing accounts of the highlights of the Itford competition, together with slides he had previously given to the B.G.A.

One of Geoffrey Dorman's stories concerned Maneyrol's winning tandem biplane. It looked so unairworthy that the officials were reluctant to let it fly; then someone suggested this might lead to war with France. So it was allowed to take off in the hope that it would hold together—which it did for over three hours.

E. C. GORDON ENGLAND

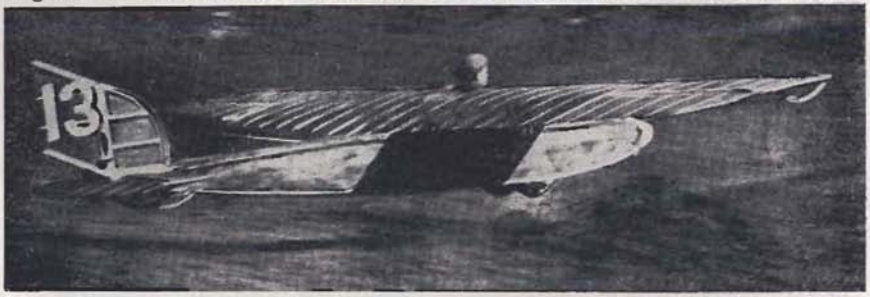
SINCE Eric Gordon England had soared a glider 13 years before any of the Itford competitors, he began his reminiscences with his first entry into aviation at the age of 18, ushered in by an immense family conclave called together by his maternal grandmother to dissuade him from doing anything so absurd. But when Grandma brought out her trump card: "If the Lord had intended you to fly, He would have fitted you with wings", her grandson irreverently replied: "Grandma, if the Lord had intended you to go by train, He would have fitted you with wheels".

The two were not on speaking terms for the next 18 months, but Gordon England entered aviation through the first British Aero Show which opened at Olympia in March, 1909. He tackled the various exhibitors for a job. Handley Page offered him one but said he had no money to pay him; Howard Wright said the same. But Pemberton Billing exclaimed: "That's the spirit—you've got a job!" and offered him 25s. a week as aerodrome manager. On the aerodrome was José Weiss, having trouble with his motor. So Gordon England made it work and became Weiss's mechanic, as by that time Pemberton Billing was finding the 25s. a strain.

And this is how Gordon England came to make the first British soaring flight on June 27th, 1909, on Weiss's first man-carrying glider called "Olive", at Houghton Hill, a few miles north of Arundel. It had behaved well in short glides, so they waited for a wind and then he was launched from the hill top by a push from behind by Weiss. The glider was a crescent-shaped "flying wing" (see SAILPLANE AND GLIDING for June, 1939, p. 172) with 15 deg. wash-out at the tips; it had no lateral or longitudinal

control, being very stable, but could be steered directionally by actuating two little drag flaps on the wings. Weiss told him to keep it straight, which he did, first gaining height in the slope lift and then sinking slowly to earth, landing after a flight of 58 seconds.

"We were awfully pleased," Gordon England told the Kronfeld Club, "but need was the immediate establishment of a school on Firle Beacon if the Movement was to be protected, stabilised and put on a firm foundation. One pleaded this cause with all the kind visitors who came to wish one well. How different would have been the history of gliding in this country if only at that enthusiastic moment the step had been taken."



Eric Gordon England makes a trial flight at Itford on October 15th, the day before the competition opens. (Photo Daily Mail.)

we were more interested in power, so we took it into the shed and José Weiss decided to put an engine in"—an Anzani.

Coming to the Itford contest of 1922, Gordon England said he built his glider himself and, apart from its being a conventional straight-wing machine with a tail, modelled it as far as possible on Weiss's "Olive", with the same weight and other dimensions.

He made four competition flights at Itford, as well as preliminary trials, but on the last day he was blown back into the curl-over, stalled and hit the ground at a steep angle. He tried to pull up his legs, but one foot got stuck and took the full impact, and he was surprised to see his shoe upside-down in front of him. At the hospital in Eastbourne, the house surgeon said the foot would have to come off, but the visiting surgeon, an ex-Navy man, said he had once removed a foot unnecessarily in a similar case, and he wasn't going to make the same mistake again, and the patient would soon be playing tennis.

Writing in the 10th anniversary issue of THE SAILPLANE AND GLIDER, Oct. 14th, 1932, Gordon England said:- "Reflecting in hospital subsequently, it was clearly borne in my mind that the one

R. H. STOCKEN

WHEN Air Chief Marshal Sir Theodore McEvoy took up Rex Stocken for a ride at this year's Championships, before the latter presented the prizes, it was not the first time they had met. Forty years earlier, Sir Theodore had been Stocken's mechanic when preparing the glider for Itford; but the Air Ministry would not give him leave to attend the contest.

Before it started, Stocken went round with the meteorologist, Frank Entwistle, letting off met. balloons to locate the best lift, which they found on a portion of Beddingham Hill facing N.N.-E. They entered these observations on a six-inch map, which Rex Stocken has very kindly presented to the Kronfeld Club, along with a photo of Robert Kronfeld in his Wien taken eight years later, probably on the same site.

On his first trial, Stocken came to a stop on the brink of the hill and rocked to and fro after a shaky launch, but he was still more shaken on seeing an ambulance brought up.

When at last he got a proper launch, all went well until there was a crack and the rudder bar snapped in half. But he glided on and on until he touched down at the bottom, whereupon all the piano

wires went "ping ping" and the loosened wing slid forwards and blocked his exit from the cockpit. But he extricated himself, pulled the wing back into position, and made the whole thing look intact again, for fear some Royal Aero Club official should come to inspect the wreckage and stop him flying it any more. This flight earned him a distance prize from Col. Bristow.

The machine was repaired during the night and was about to be launched into the fierce wind next day when a Rolls Royce drove up and out came a gorgeous creature exclaiming: "Rex, *darling*, how *marvellous* to see you again." But before all was ready once more for a launch, a sudden gust from one side turned the glider right over on top of the lady.

F. T. COURTNEY

The following extracts are from a letter from Frank Courtney, an Itford competitor, who writes from California:-

FROM a technical standpoint I think the most interesting feature is something most of us tried to forget not long afterwards. At the time the meeting was organized, most or all of us seriously believed that the Germans (whose glider activities had been forced upon them by Peace Treaty conditions) had discovered some new and secret aerodynamic principle which enabled them to keep their gliders up as long as they were doing. In fact, I am sure the *Daily Mail* prize was offered with a vague idea that Britain could penetrate this secret.

To come to our own S.C.W. effort: it was feeble enough but no more feeble than most of the others. I forget how it came about that Maurice Wright and I got this deal started and joined up with Bill Sayers to do the aerodynamic and structural design. It was originally known as the C.W.S. glider; but after the twenty-third idiot had asked us what the Co-operative Wholesale Society had to do with it, we switched the initials. Bill, quite soundly, plumped for a cantilever wing, but we didn't know enough then about torsional stiffness. When Maurice and I tried it out, the ailerons were simply acting as tabs which warped the wing, and we got reverse lateral control. Sayers worked his slide-rule until it practically melted, but we had to fali back on external struts. By the time we got them fitted the show was over. After the competition Wright and I kept the thing at Itford (with much farmer trouble) in an old canvas hangar, for further experiment. One breezy morning we went from London to Itford for some flying; the hangar had blown down on the glider, which was beyond repair.

A notable feature of the meeting was the arrival of the Great Tony Fokker. I always enjoyed trying to come as near to being rude to him as he was to everyone else. One evening, at the bar, I told him that he owed me a drink because this was October 21st, the seventh anniversary of the day that Immelmann shot me down with Fokker's lousy imitation of a Morane which he called the E.2. Fokker (who didn't drink himself) gave a loud and long explanation of the fact that he was not personally responsible for what Immelmann did, and seemed slightly afraid that I was going to sue him. I had a lot to do with Tony

in New York in later years, and I tried this on him a couple of times more—I never did get my drink.

As we all know, the victory of Maneyrol over Gray and the Brokker was simply due to a good breeze and the fact that the Peyret went up first. But Tony tried to spread a subtle impression that the German "secret" was embedded in the ancient Fokker wing.

PAUL BEWSHER

The following account of a flight of 7 min. 3 sec. in Antony Fokker's two-seater, on the first day of the Itford contest, has been sent by Paul Bewsher of the "Daily Mail," who thus became the first passenger to be carried in a glider in Britain:-

I HAVE the most vivid recollection of my flight as a passenger in Fokker's glider. I sat on a very narrow strip of wood and held on to two wooden struts on either side. Fokker, a round-faced genial Dutchman, sat slightly below me, with his head against my chest.

Fokker was a superb pilot, and also a very humorous one. He was talking most of the time as we soared and swooped just beyond the crest with the wires of the glider whistling loudly.

The conversation went something like this:

Fokker: "Vind! Vind! Good! Vind! Up! Up!"

(A pause)

Fokker. "No vind! No vind! Down! We go down! No vind!"

(A pause)

Fokker (excitedly):-"Vind! Good! Up Up! We go up! Good! . . ."

And then, alas, there came the final "No vind" and we got definitely out of the up-currents, and we glided right down to the bottom of the hill where, with superb "hands", Fokker actually brought the fuselage through an open gate as he landed--very gently . . .

P.S. There is a legend that a photo of myself being launched with Fokker shows me looking terrified!

EDITORIAL NOTE.—The table shows the officially timed flights (described in October) but omits test hops and Fokker's evening glides on the 20th.

TIMED FLIGHTS AT ITFORD — OCTOBER, 1922

Pilot & Glider	Mon. 16 *h. m. s.*	Tues. 17 *h. m. s.*	Wed. 18 *h. m. s.*	Fri. 20 *h. m. s.*	Sat. 21 *h. m. s.*	Total *h. m. s.*
A. Maneyrol (Peyret)	—	—	—	—	3.21. 7	3.21. 7
F. P. Raynham (Handasyde)	-. 1.58 -.11.23	-. 3.15 1.53. 2	—	—	-. 8.30 -.11.54	2.30. 2
G. P. Olley (Fokker)	—	—	—	-. 3.21	-.49. - -.38.47	1.31. 8
A. Gray ("Brokker")	—	—	—	—	1. 0. 4	1. 0. 4
A. H. G. Fokker (Fokker)	-. 7. 3 -.37. 6	—	—	—	—	-.44. 9
E. C. Gordon England (Own)	-. 4.32	-. 2. 7	-. 1.31	—	-. -.52	-. 9. 2
J. T. Jeyes (Aachen)	-. 3. 1	—	-. 2.47	—	—	-. 5.48
R. H. Stocken (Airdisco)	—	—	—	-. 3.18	—	-. 3.18
E. D. C. Herne (De Havilland)	-. 2.38	—	—	—	—	-. 2.38
H. S. Broad (De Havilland)	-. 2.18	—	—	—	—	-. 2.18
Total per day	1. 9.59	1.58.24	-. 4.18	-. 6.39	6.10.14	9.29.34

TWITCH?

AN INDEPENDENT SURVEY OF GLIDERS ON TODAY'S MARKET

(Definitely not approved by the Flying Committee or anyone else)

by Mike Bird

Courtesy London Gliding Club Gazette

MUCH ill-informed talk has been circulating about the very high accident rate in 1961, the work, it is said, of careless and irresponsible pilots. We of *TWITCH?* resent this imputation. It is not yet realized that most of this widely-publicised prangery has been a planned programme of testing carried out by the secret *TWITCH?* test group. Without regard for personal safety or repair bills these devoted and fearless pilots have been compiling reports on the stalling, spinning, bouncing, bending, breaking and repairing characteristics of every type of glider in Britain today.

Most official glider-testing is of the namby-pamby, stalls-at-5,000-feet variety. "What use is this", one may ask, "when compared with the true-to-life conditions under which *TWITCH?* test-pilots operate — whenever they can get off the two-seater!" How true; *TWITCH?* pilots simulate the average pilot's stupidity with immense skill, so that you can hardly tell one from the other. A *TWITCH?* pilot's briefing runs roughly as follows:

10.30: RIGGING — Trailer doors deliberately left open all week; aircraft's resistance to rain, rats, etc., noted carefully. Attempts at rigging in small space with one helper too few. Omits pip-pin/locking-wire/safety pin according to taste. Pulls glider behind car to launch point on short wire rope with nobody at nose of glider.

11.00: READY (?) TO LAUNCH — Spends 15 minutes talking to pretty girl, 10 seconds getting into glider and cockpit-checking as cable arrives.

11.15: LAUNCH — Spinning on the cable takes skill but is not beyond the powers of our team; having the brakes open is a great help. Remember to make up your mind firmly before taking off that in the event of a cable-break you will invariably attempt a circuit.

11.15: GENERAL FLYING — The scope for ingenuity is wide open here. *TWITCH?* pilots have a saying: "First to give way is chicken". On no account use new batteries for cloud-flying. Those reliable old ones have served you well enough for the last five years, haven't they?

13.00: APPROACH AND LANDING — Why use brakes on the approach when the rate of sink at stalling-speed is just as good? Now for a really snappy last turn boot the rudder hard and keep the wings level, that's what the ailerons are for.

TWITCH? pilots who survive this far are all set for a landing that will bring the others all running out of the bar. You may:

(a) Round out at plus ten feet;
(b) Round out at minus ten feet;
(c) Catch the wing on a fence, a parked glider, a car, the C.F.I. or the ground itself.

If possible, walk away from the glider after landing. Left to itself it will, with luck, blow over on its back.

First glider *TWITCH?* tested was the German *Föhnschlepper*, an all-iron two-seater. Mischa Byrdbrayne (specialist in heavy landings) reports: "The problem of repairing iron gliders had been much debated when we smuggled the Föhnschlepper into Britain in the guise of Volkswagen spares. We saw that it was our duty to put these theories to the test. Landings in category (a), (b) and (c) were carried out with the same observer aboard to take notes. He was conspicuous by his refusal to sit down at all for two weeks after each test. The large rubber hammer and amateur welder's kit given away with each model proved to be value for Deutschmarks; the glider recovered in rather less time than the pilots".

Then followed the *Strogonov* 6 from Puritania. Veteran bender Alfred Crump reports: "We soon sorted out which knob was which on this superficially smart and modern machine before we were half-way through the aero-tow,

including the undercarriage retraction which was tested early in the take-off run and proved somewhat noisy in operation. On releasing we dispensed with the illegible dago handling notes and went into a few inverted flick manoeuvres and terminal velocity dives at 180 k.p.h. (or was it knots?). This treatment, which is meted out impartially to British and foreign gliders alike, soon brings out any signs of shoddy workmanship that might otherwise lie hidden beneath the surface ply.

"An unpleasant vicious streak in this machine revealed itself when hard rudder was applied to speed up the rather sluggish last turn. The wing dropped and the machine needed all of 50 feet to recover. Sad to say, the manoeuvre began at 40 ft. Naturally the remains could not be given a C. of A., and they were posted back to Auto-Export Inc. with the laconic telegram: 'Tough!' Being foreigners, they seem not to have taken this in very good part".

A sounder proposition altogether is the British Buglark 5 (Ellingsby Corporation, 20 metres, £2,000).

Neddy Nurgewater (veteran of five solos, five prangs) reports: "The progressive policy at Crasham field allowed me the privilege of taking up this completely untried design on my first solo, making an exciting day both for me and Mr. Ellingsby. The small size of Crasham aerodrome and the generous airbrakes were to blame for a slight undershoot on my first circuit; however, I am glad to say that, due to the teak construction throughout, the Buglark 5 took the downwind boundary hedge in its stride. I made up for this error by overshooting on the second circuit. Again, Buglark 5 made short work of our flimsy hangar doors, suffering a few scratches.

"Rigging the Buglark 5 soon sorts out the men from the boys — it takes ten of both. The controls demand rather more effort than flying the Southampton man-powered project. Altogether I was very grateful for the free set of Charles Atlas exercises that came with the handling and rigging instructions".

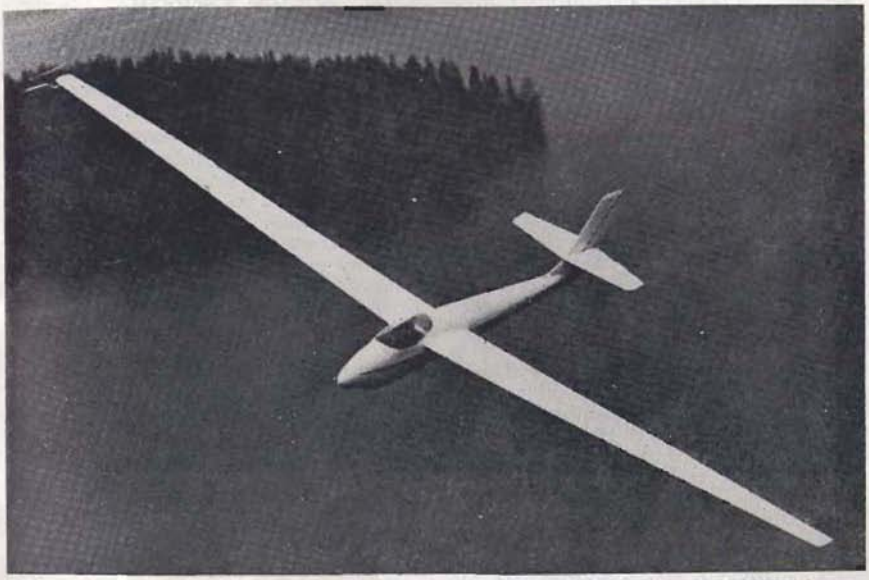
Finally we examined the *Fletcherette* (or *Super Prüfling*), 10 metres span, £50 f.o.b. Hong Kong. The only member to have six crashes while still on the two-seater, Myrtle Kerr-Ash, reports: "I was all of a flutter when they said they saw no reason why I should stay on the two-pew any longer. Solo at last! Strangely, the instructor didn't send me off on a club machine but said that Mr. Fl-tch-r, who was on holiday, would not mind the teeniest bit if I had a little flip in his Super Prüfling.

"Well, I took a nice high launch and did my circuit just like on the two-seater, but I seemed to be no nearer the ground and so I did another circuit; it was awfully bumpy — and another, and so on round and round and round . . . It was a very hot sun, so I decided to toddle along in the shade of a bit of cloud which seemed to stretch a long, long way. This went on for ages and I got bored as anything — it being tea-time by now and me being a growing girl and that, so I crossed the controls and slithered down on a nice flat bit of field not a bit like rough old Dunners. Then a man came up and said, 'Have a stick of Plymouth Rock, deary'. Well!"

TWITCH? says: *Best buy, Fletcherette.*

VASAMA

Finnish Standard Class Sailplane



THE original prototpye of the Vasama (type PIK 16b) had a "V" tail, but this has been changed to a more conventional type. Four samples have now been built by the Finnish Aeronautical Association at Jämi Flying School.

The wing is of laminar-flow type, with a maximum thickness of 14% and a wooden main spar situated at about 36% chord. The production version has fabric aft of the main spar, shortened air-brakes of Foka type, and a leading edge of sandwich construction. Ultimate load factors are +7 and −4. Principal data:

Span, 15 m. (49 ft. 2½ in.).
Aspect ratio, 19.2.
Weight empty, 185 kg. (408 lb.).
Max. load, 110 kg. (243 lb.).
Wing loading, 25 kg./ sq. m (5.1 lb./ sq. ft.).
Glide ratio, 34.5 at 85 km./h. (52.8 m.p.h.).
Min. sink, 0.6 m. (1 ft. 11½ in.) per sec. at 73 km./h. (45.4 m.p.h.).
Sink 1.0 m./sec. at 111 km./h.
Sink 2.0 m./sec. at 146 km./h.

NORDIC CHAMPIONSHIPS

THE first Nordic Gliding Championships were held at Vesivehmaa airfield, 20 km. N. of Lahti in Southern Finland, from 15th to 24th June. Competitors were Ib Braes (Denmark), Lars Fredriksson, Gate Olsson and Sture Rodling (Sweden, and Juhani Horma and Matias Wiitanen (Finland), flying two Ka-6, two Zugvogel IV and two Kajava.

Bad weather allowed only five competition days, and the tasks given were 2 x 108-km. triangle, 236 km. out-and-return, 150 km. out-and-return, 107 km. goal flight and a 60 km. triangle. Final results: J. Horma, 4,067 (Nordic Champion); Ib Braes, 3,457; M. Wiitanen, 3,289; S. Rodling, 3,150; L. Fredriksson, 2,516; G. Olsson, 2,311.

The Finnish team competition, held simultaneously, with 20 participants, was won by the Hyvinkaa Flying Club.

The total distance flown during the competition was about 8,000 km. (5,000 miles) in about 350 flying hours.

Improving Thermal Soaring Flight Techniques

by Paul B. MacCready

President, Meteorology Research, Inc., Altadena, California.

This paper first appeared in the O.S.T.I.V. Section of the Swiss "Aero Review", and is reproduced here in response to many requests. The author was World Gliding Champion in 1956, and has been United States Champion three times.

LOCATING and utilising thermals are obviously vital factors in efficient soaring, and yet it seems that rather little attention is being paid to the subject. When one considers the tremendous investment in time and money throughout the world devoted to improving the breed of sailplanes it does seem odd that much greater effective performance benefits obtainable through improving flight techniques are neglected. Perhaps it is really not surprising, for aerodynamics and structures constitute scientific fields in which accurate calculations can be made, while the subject of "thermals" is a vague thing based at present on incomplete physical understanding and is a field in which accurate equations cannot apply to a specific case.

Finding and using thermals in an efficient manner can be thought of as involving a system approach based on (1) knowledge of the characteristics of thermals, (2) developments in instrumentation, and (3) intelligent use of the knowledge and equipment. This article investigates these factors in hopes that it may help stimulate some enthusiasts to help develop this field in a logical fashion. Various of these techniques can easily and inexpensively be utilised by, and improved by, the average sailplane pilot.

Thermal Factors

GENERAL—In brief, thermals can be considered simply as rising volumes of air which carry aloft some air from near the ground while mixing somewhat with the environment. Thus a thermal has value to a sailplane because it represents a vertical velocity; for locating and using it, one can consider this vertical velocity, the factors causing it, plus other characteristics of air flow and symptoms of its origin near the ground. All these items must be considered in their relation to the surrounding environment and in their variations in the thermal throughout time and space. Obviously there are too many variables and interrelationships to permit detailed investigations, but some main features stand out.

Many of the points to consider stem from the fact that the initial roots of the thermal core are near the ground where the source of heat lies. There the thermal acquires characteristics associated with the ground air—higher temperatures, and more water vapour, space charge dust, turbulence, etc. Later on and higher up, that air parcel, although getting somewhat mixed with the environment, will be distinguishable from the environment because the environment does not have those items in the same concentrations.

BUOYANCY FACTORS—Temperature and Water Vapour

(*a*) The buoyancy which powers the thermal depends both on the temperature and water vapour content, at all elevations; therefore measurements of temperature plus measurements or assumptions about water vapour can give information on buoyancy and on the future actions of the thermal.

(*b*) Near the ground the temperature excess is large, and the water vapour excess generally small. High up in the thermal, the water vapour excess often becomes large relative to the drier air outside the thermal, and the temperature excess may be small (or even reversed). These characteristics have direct bearing on the use of thermal detector devices.

(*c*) The air temperature in the root layer is closely related to ground temperatures—so predictions of ground temperature as it varies with ground cover, cloud shadow and topography and actual measurements of ground temperature will aid thermal seeking.

FLOW FACTORS — Vertical Velocity; Lateral Velocity; Turbulence

(*a*) Vertical velocity constitutes the payoff for the glider pilot and so is the most important thermal factor and warrants the best possible instrumentation.

(*b*) Lateral velocity of inflow can help locate the thermal, especially the inflow in the root region. Knowledge of rotational velocity and lateral velocity within the thermal may assist the pilot in finding the optimum spiral.

(*c*) Near the ground there is a lot of energy in small-size turbulent eddies, so this turbulence could be deemed a thermal symptom. The situation is complicated because this initial turbulence decays and simultaneously turbulence develops from the thermal motions. Turbulence therefore may be of little value for locating thermals, but the way it affects other factors should be understood.

ROOT SYMPTOM FACTORS—Dust; Foreign Bodies; Smells; Ions and Space Charge; Conductivity; Condensation Nuclei

(*a*) Since the source of many vapours and particles is at the ground, the thermal core can contain higher concentrations of these items than does the environmental air.

(*b*) Space charge can be detected from a distance; the other items are only measured at the sensor.

(*c*) Space charge, conductivity, nuclei, and chemical constituents can vary in time due to other factors than dilution with environmental air, which complicates their use as "identifiers".

Forecasting without Measurements

Consideration of topography, wind direction, stability and the whole synoptic weather situation and forecast can give clues as to the specific areas where thermals are most likely. This subject, which is beyond the scope of this article, is touched on in many articles in sailplane publications, for example References 1, 2, 3 and 4. In general, in non-flat land the high elevations provide earlier and higher thermals. Good source regions tend to produce upcurrents regularly—so a good spot to try is one where clouds have shown thermals earlier or experience has shown thermals on similar previous days.

Because of the regular production of thermals by good source regions, and because of the tendency for upcurrents to line up along the wind when there is a pronounced wind shear, it is often best to hunt for thermals straight upwind or downwind from where you are already using one.

Forecasting with Measurements

Since the primary cause of thermals is the heating of air as it blows over the ground, exact knowledge of the surface temperature will help immeasurably in the locating of thermals. The temperature depends on the past history of radiation at that point, reflectivity, evaporation, heat conductivity, specific heat, and surface structure—so trying to guess at the temperature variations is usually impractical. However, the recent developments in infra-red radiation equipment imply that a radiometer may be worth considering. Portable equipment is available to measure temperature remotely, but at present costs more than a sailplane. Using wavelengths in which the radiation from the air itself causes no problem, the instrument reads essentially temperature of the ground (or cloud) at which it points (say with a 2° beamwidth). For sailplane use, relative temperatures are adequate, which can greatly simplify the apparatus. The instrument would be pointed ahead and down; it could be programmed to sweep laterally or longitudinally, or could be rigid in the sailplane and the sailplane manoeuvred as required.

With absolute accuracy, and with prior knowledge of the temperature lapse rate of the air mass, the ground temperature unit can even show whether or not any thermals would be expected over a broad region. Relative measurements would permit determining the most likely local source region.

The subject of infra-red measurements is reviewed in the Proceedings of the I.R.E., September, 1959. Reference 5 describes a portable instrument and various manufacturers such as Barnes Engineering, Servo Corp. of America, and Williamson Development Co., have developments along this line.

Locating Thermals from a Distance

Ascertaining the definitive existence of an upcurrent while still a distance away

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from it requires a measurement based on radiant energy field of some type. Passive measurements would be (1) visible light; the appearance of a cloud after it has formed, or optical effects associated with the nuclei or contaminants in the rising air, (2) radiation in the infra-red spectrum, from air which has a different temperature, water vapour, carbon dioxide, or ozone content, (3) acoustic radiation, or (4) the electrostatic field due to electric charge in the thermal. A non-passive measurement would be by radar where the energy source is at the sailplane—the echo would come from the radio refractive index fluctuations due to turbulent mixing in the presence of a gradient of water vapour. The radar and infra-red techniques may offer real promise, but are beyond the scope of the average sailplane enthusiast to pursue and so will not be considered here. Infra-red equipment for finding ground temperatures is more simple and practical. Acoustic methods do not appear operationally fruitful.

The visual use of cumulus clouds as thermal indicators is the main thermal locating technique. The cloud simply marks the top of a thermal. The detailed appearance of the cloud gives clues as to the upcurrent characteristics; large size, firm edges, and a dark, well-defined base usually mean a strong thermal. The most accurate way of getting thermal information from cloud appearance is to watch the shape and size change over a period of a few minutes.

When no cloud is visible, there may still be other things which show visually that a thermal is present. Sometimes condensation nuclei will become visible in an "almost cloud", when a true cloud does not quite form but the air does show a fog-like character. Soaring birds or other sailplanes can mark a thermal. Dust and foreign objects swept up from the ground can also make it visible. A dust devil is an extreme example. Certain shades of dark glasses or polaroid glasses can apparently make "dusty" thermals more readily observable (and distant cumulus clouds, too).

Even in fair weather there tends to be a weak, net positive charge in the air near the ground, residing on ions collected on condensation nuclei. Thus a thermal may have a charge in it, of between 1 and 1,000 elementary charges per cubic centimetre. By conductivity about half of the charge will leak away in 20 minutes near sea level (in just a few minutes at 3,000 metres), so the charges from "old" thermals slowly disappear and only new thermals are charged. Theoretically, at least, this charge should be detectable from a distance by measuring the electrostatic field from the sailplane. Such potential gradient equipment has been developed for aeroplanes (see, for example, References 6, 7 and 8), and in Reference 9 application to soaring is suggested. The apparatus can be light and relatively simple. Two standard techniques are available. In one the air voltage (relative to the aircraft) at a probe is measured: the probe is "coupled" to the air via a radioactive tip which makes the air within a few inches of it highly conducting, and this coupling lowers the probe-to-air resistance enough so ordinary electrometers and insulations can be employed. In the other the gradient at the surface of an object (say the wing or fuselage) is detected by cyclically covering and uncovering a conductor and noting the bound charge that enters and leaves it. In either case, two sensors must be adjusted and located so that the potential gradient caused by charges on the sailplane affects each probe equally and so is automatically cancelled when the probe voltage differences are measured.

There is a vertical fair-weather field of about ½ to 1 volt per centimetre and the instrumentation must not be confused by this field. In thunderstorms the charges in clouds can give gradients outside clouds of many hundreds of volts per centimetre but during such conditions the cloud appearance tells even more than electrical measurements would. In ordinary conditions, a recommended method would be to measure the gradient along the direction of the line of flight, for this line stays close to horizontal (say one radioactive probe at the nose, one at the tail). Then if the sailplane is flown in a direction making the observed gradient maximum, it should be heading towards (or away from) the charged thermal.

Figuring out a Thermal from Measurements of Vertical Velocity

Every soaring pilot has wished he could fly into or through a thermal and then know immediately just where to manoeuvre in it to get the maximum climb and know whether it will be getting stronger or weaker. Measurements from the sailplane, coupled with intelligent interpretation, can go a surprisingly long way toward providing the information.

The definition of a thermal—and its use to the soaring pilot—is its vertical velocity. Therefore, vertical velocity is worth measuring well, and the state of the art permits this.

The vertical velocity of the air, rather than the sailplane, is what the pilot really wants. A standard rate-of-climb indicator shows the vertical motion of the plane. The indication is corrected for airspeed changes by a "total energy" venturi or diaphragm unit, and can be corrected by drag loss (ordinary sink) by a throttled pitot. The basic subject is reviewed in Reference 10 and the new total energy device is discussed in Reference 11. Reference 12 shows how to improve the total energy unit still more by filtering out the effects of the longitudinal turbulence on the "total energy" correction. References 13 and 14 offer further pertinent information. To summarise the situation now, excellent variometers are available, and with special correction techniques they can give satisfactorily fast and accurate readings of vertical air velocity under any typical flight condition. The electric variometers are especially fast acting, such as the Crossfell unit (see Reference 15), any of which can be obtained with a total energy diaphragm corrector.

The biggest single improvement in thermal soaring performance can come from optimising the use of the variometer. This means manoeuvring the sailplane jointly to get the maximum vertical motion and the maximum information about the thermal. The average pilot does not know how to get back to a particularly good spot in a thermal through which he has just traversed. This requires a good memory of the variometer record and experience in precision manoeuvres. To obtain a good memory, a logical tool to utilise might be a recorder which plots a continuous trace of the variometer reading, within easy view of the pilot, with about 100 seconds of the record visible at one time. With judicious use of a pilot-operated event marker on the recorder to show the sailplane is entering a cloud or on the north edge of a spiral, this recorder can greatly assist the pilot in determining the thermal structure without lost motion. Even without a recorder it is not difficult to remember the readings at the four cardinal points during circling flight, so as to estimate the direction to the thermal centre.

There is a large variety of useful precision manoeuvres which the pilot can compute and practise in calm conditions. Most would involve tight precision turns, at fairly low velocity, at bank angles of 30-45°, for strong, sharp thermals—and even a wing-over or Immelmann may be optimum for a fast efficient direction change. For large thermals more intricate probings would be appropriate. For example, with an 18-second turning rate, and a turning radius R of about 65 metres (a 30-45° bank), a 270° turn to the left then a 90° turn to the right brings you back along the original flight line about 18 seconds after you start the manoeuvre, meeting the original line a distance R back. For setting up a parallel reverse course, a 180° turn, in 9 seconds, establishes a reverse course $2R$ distant from the original course. If your bank angle changes, say from 45° to 30°, the turn radius changes by over 50%, so precision manoeuvres must be carefully done. Gyro instruments are helpful. The total flight patterns you select will depend on what the variometer and other instruments are showing you. In most cases you will want a straight pass through the thermal so as to learn as much about it as possible—but this is only best if you interpret and utilise the information properly. Sharp turns are most efficiently done at slow speeds.

Another aid for visualising exactly what is in a thermal is to mark it as you fly through. You can release paper, balloons, bubbles, or smoke. The bubbles and smoke can be released continuously by small special gadgets. The bubbles may be the best method because each bubble remains for a minute or

two as a discrete entity, while smoke can quickly diffuse until it is invisible. To help preserve visible smoke, it can be released along the outer trailing edge of the wing where it is rolled up into the tip vortex and protected from diffusing until the tip vortices interact and break up.

Thermal Growth Measurements

If the air within a thermal is much warmer than the surrounding air at the same level, the thermal has buoyancy and will be accelerating, becoming better and better for the soaring pilot. Because water vapour is lighter than air, if the thermal has significantly higher humidity than the surrounding air at that level it will have buoyancy just as though it were warmer, and thus be accelerating (a thermal *is* more humid than the environment, and more so the higher it gets, reaching 100% at cloud base). The drag of the surrounding air slows down the upward acceleration, so the measurement of buoyancy is not a perfect predictor; also all the environment and thermal characteristics should be considered as they vary in height (perhaps in one minute the buoyant bubble will rise to an environment where it is no longer buoyant). Many of these factors are as yet the subject of considerable controversy in convection theory, but from the standpoint of the sailplane pilot one can summarise: a thermal with a good buoyancy is likely to stay as strong or get stronger in the next minute or two, while a thermal with little buoyancy or even negative buoyancy is likely to weaken.

To summarise the acceleration due to buoyancy (neglecting drag, which has an unknown effect at the centre of a thermal):

$$\text{Acceleration} = g\left[\frac{T_i - T_o}{T_o}\right] + 0.6\,(w_i - w_o)$$

where g is the acceleration of gravity, T is absolute temperature, w is the mass ratio of water vapour to air and the subscripts "*i*" and "*o*" refer to inside and outside the thermal respectively. In a typical case, 1°C. of temperature excess will cause an upward acceleration of about 100 metres per minute velocity change in one minute, and near cloud-base the water-vapour buoyancy effect may be about as big.

Measuring the buoyancy terms requires measuring T_i, T_o, w_i and w_o, all at the same height. One can get useful information by measuring only T_i and T_o because one knows that the moisture buoyancy term is always positive; the humidity inside the thermal is always greater than outside, and the maximum amount can be predicted as a function of height reasonably well from previous knowledge of air mass characteristics and thermal theory. In temperature measurements, dynamic heating of the probe should be corrected by means of a vortex housing. The big problem in measuring T_i vs T_o is that your height changes as you traverse a thermal, and so you encounter temperature changes due to the temperature gradient from adiabatic heating of the atmosphere. What you want is a "potential temperature" thermometer, one corrected for altitude by subtracting about 1°C. per 100 metres. One approximate way to provide this is to have a temperature difference sensor measuring the difference between outside air and air contained in an expandable balloon or envelope. As you ascend or descend the balloon air expands or contracts and cools or heats adiabatically, providing a compensated reference temperature. Because of conductivity heating at the balloon walls, an error will slowly appear, so with this system one would adjust for zero difference just when entering a thermal, and the readings would be valid for perhaps a minute or so later. It is possible that the air capacity for the variometer would suffice as the balloon, "breathing" rather than expanding, but its small size might make conductivity effects too great. Alternatively, an altitude correction can be made electronically (with some complexity) with the altimeter.

Turn Direction Information

If the centre of a thermal is warmer than the surroundings, then logically one could measure the temperature difference between the wing tips and so determine which way to turn to head toward the centre. Many people have constructed "thermal sniffers", but definite accounts of their successful application are hard to find (see References 16, 17, 18 and

19). The previous discussion of buoyancy points out one problem—a thermal can be buoyant due to water vapour without being warmer inside. When the thermal is warmer, it may be so by only an average of say ½°C. in 1,000 metres—a small amount to measure—and yet random turbulent temperature fluctuations exceeding this amount can be present as "noise" on the instrument. Thus following the "thermal sniffer" would have a weak tendency to direct you properly, but with many false instructions included. Finally, when you bank toward an imagined centre, the lower wing goes into warmer air—since the vertical temperature gradient is generally an order of magnitude greater than the horizontal temperature gradient, making the pilot observe a false favourable indication. Reference 20 discusses recent developments with a "thermal sniffer".

There are improvements in tip temperature sensors to overcome some of these problems, but the value of even an ultimate unit is still a question. To eliminate tip speed dynamic heating effect and tip elevation differences, Temple developed a trial system where at each tip the temperature difference between the present time and one second earlier is measured.

Other gradients than temperature may be more meaningful. Consider water vapour content. It may vary by 500 per cent across a thermal, while temperature varies only by a fraction of a per cent. Near the top of a good "dry" thermal the moisture in the surrounding air may be 2 grammes of water per kilogram of air, and 8 grammes per kilogram in the thermal centre. A fast-responding water vapour sensor at each wing tip might thus indicate the direction to the centre of the thermal far more reliably than a temperature-activated "thermal sniffer" could, even though turbulent fluctuations will still cause lack of reliability. Fast water-vapour sensing poses instrumentation difficulties; tiny wet-bulb thermistors are feasible, and several experimental methods show promise.

Other variables could conceivably also be used. Ions, pollutants and conductivity are characteristic of the inside of thermals due to the thermal having its original roots in air representing surface conditions. Thus variations of these could give thermal orientation clues.

The difference in vertical velocity between the wing tips also obviously will show the direction of the thermal centre (with some "noise" signal, however). Accurate measurement of the velocity gradient in a sailplane is difficult, although in extreme cases a strong lifting of one wing shows the pilot which way to turn. It seems likely that an instrument indicating this variable qualitatively could be developed, at least for use in straight flight.

Optimizing Flight Manœuvres

Some of the factors in manoeuvring in thermals have already been discussed. For improving your knowledge of a particular thermal, precision manoeuvres are a must. The optimum manoeuvres in probing and utilising the thermal may be rather complicated to compute, as the factors of instrumental performance, turn radius, turn time, sailplane performance and control, and drag energy loss, should all be considered with respect to meteorological factors.

In the case of true dynamic soaring (getting energy from horizontal or vertical gusts) performance gains are conceptually feasible but actually not practical. The subject is thoroughly covered in Klemperer's classic paper, Reference 21.

For determining the best speed for flight between thermals, the use of an optimum speed selector is now standard. It is based on the downcurrent strength, the sailplane performance curve, and the expected strength of the next upcurrent. With the drag correction device built into a total energy variometer the speed selector can be redesigned and will immediately indicate the optimum speed (rather than indicating just faster or slower) and so permit faster and more decisive flight corrections (see References 10 and 22). Various mechanisms can be constructed to make the indication even more readily available to the pilot—say, having optimum speed indicated as a second needle on the airspeed indicator—and in the ultimate a servo could even be made to supplant the pilot. Reference 23 cites an automated approach.

In any case, in rough air the effective glide ratio of the sailplane can be in-

creased by fast optimising control. This can be considered a form of simple dynamic soaring. However, the magnitude of the effect is very small. An error of 5 m.p.h., or even 10 m.p.h., from the optimum speed makes surprisingly little difference in the effective glide ratio or average flight speed in thermal conditions. For example, with a Schweizer 1-23 in a 4 f.p.s. downcurrent in a 5 f.p.s. thermal situation, the net cross-country speed decreases only 2% if the pilot flies at 70 m.p.h. or 90 m.p.h. instead of the optimum 80 m.p.h.

Horizontal gusts constitute a different situation. Here fast speed (altitude) control may be more beneficial, for it is the entering or leaving the new flow régime which is important, rather than the time in it. Because lift is a non-linear function of velocity, the sailplane obtains more energy as its airspeed is increased in a horizontal gust than it loses in an identical airspeed decrease from the same original speed. Fast and accurate pilot control of optimum airspeed, perhaps aided by a "G" sensitive bob weight in the control system to emphasise G-forces, can thus presumably increase the effective sailplane performance—but the net effects would be small except under unusual circumstances of large variations in the horizontal and vertical motions of the air (see Reference 21).

The Future

With some practical, available, inexpensive instrument improvements, and with some careful practice, a pilot could decrease his sink between thermals, have a better chance of locating the position of the next thermal from a distance, and with one pass through the thermal could estimate its future actions and select and return to its best part. In a typical flight the gains from these techniques might greatly exceed the performance differences between typical contest sailplanes.

The most vital instrument is a fast variometer with velocity change and drag corrections and with an optimum velocity unit. With this instrument, and with some training in manoeuvres, big gains could be made. For further gains, but with more complex or new (but still practical) instrumentation, try adding a velocity recorder, presenting optimum speed automatically, installing a temperature buoyancy device, fitting on a bubble generator, adding a potential gradient "director", and devising water-vapour gradient instrumentation. The infra-red ground-temperatrue instrument may prove economically feasible—and it offers such great promise that it should be emphasised.

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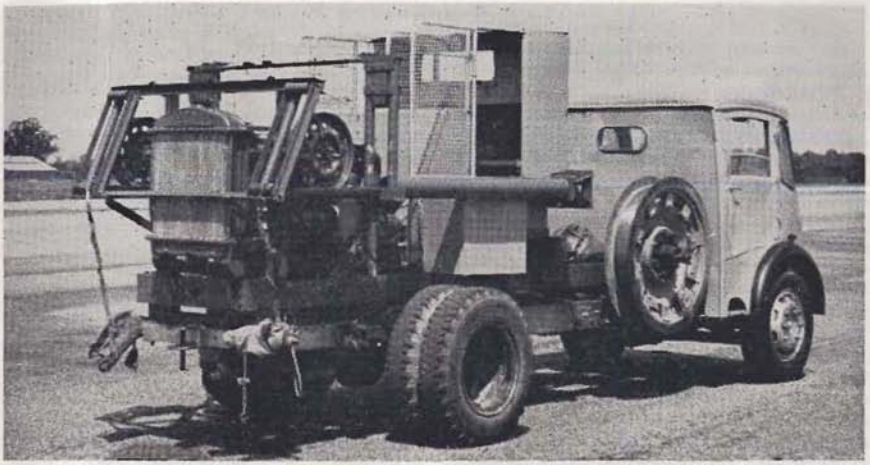
A TWO-DRUM DIESEL WINCH



THE normal method of launching at South Marston has been with tow cars operating on the runways or by Terrier tug. Under certain conditions auto-launching is not the most suitable method. A two-drum diesel winch has been built by club members to meet these conditions and to provide a mobile launching equipment for future visits to other sites.

METHOD OF OPERATION.—The cables are anchored at the launch point and the winch is driven at approximately 15 m.p.h. to its launching position. In this way the cables are laid in place as the winch proceeds. Solid cable (11 gauge) is proving satisfactory.

CONTROLS.—These comprise electric starter, hand-operated clutch, hand throttle, and independent brakes for each drum. The cable-released gravity guillotines have H.S. steel cutting blades with 35-lb. weights acting on case-hardened anvils.

TECHNICAL DATA.—Winch engine: A.E.C. diesel engine type A.173, 6-cylinder—7.7 litre; 95 h.p.; 1,800 r.p.m. max.; max. torque 330 ft.-lb. at 1,000 r.p.m.

The winch is mounted on a steel frame bolted to the lorry chassis. The engine drives through its standard clutch and gearbox—top gear (straight through 1:1) being used to launch. The drive is then taken through a Bedford gearbox (reversed), third gear being permanently engaged, giving a step up of 1:2. This in turn drives a modified Bedford rear axle of ratio 7.4/1. The axle has been modified to allow for push-pull half-shafts, only one of which can be engaged at a time. The driving half-shaft locates on extended studs in the wheel.

The drums are built up from Bedford centres and tractor rims with additional flanges giving effective circumference of 10 ft. The drum flanges are 7 in. high, 4 in. apart. The present length of cable is 6,000 ft. on each drum, but up to 20,000 ft. per drum could be accommodated. Maximum revolutions on drums are 500, or approximately 57 m.p.h.

Each cable is fed through a fixed inclined gate of gravity rollers, round one 17-inch car wheel centre and past the guillotine at the entrance to a 5-inch diameter steel tube alongside the winch cab. Exit from the tube is controlled by another fixed gate of gravity rollers before the cable passes on to the top of the drum. The cable finds its own position on the drum.

M. A. HILL

Artificial Horizons and Inverters

by R. Brett-Knowles

Co-ordinator of Instrument Development

MOST pilots will agree that cloud-flying without an artificial horizon is difficult, and that the additional weight and bother of a horizon is well worth while. The purpose of this first article by me in my new capacity is to describe the features of the various types that are available.

There are four varieties generally in use in England at the present time, namely, the Ferranti Mark IV series, Sperry Mark III series, Bendix J8 and the Anschutz Wendehorizont. Future appearance of the Ferranti Mark VI series on the surplus market will be welcome, and the firm propose soon bringing out a similar type, but less exacting in its power requirements, needing only single-phase a.c. drive.

Gyro Precession Control

Mark IV series have pitch-bank control, which means that during a turn, if more than 0.18 *g* of centrifugal acceleration is applied, the roll correction motor is disconnected from the roll sensing mercury switch and transferred to the pitch mercury switch. The reason for this is that the gyro has a false roll datum due to *g* in a turn, and if there should be any roll error, after 90 degrees further turn this roll error will be converted into pitch error, for which it is assumed the gyro has a correct datum. So roll sense indications are misleading, whereas pitch is correct. The quickest way to restore the gyro to vertical is to use the pitch error signals to cause precession in both pitch and roll. When no pitch error exists at all positions of the turn, there can be no roll error either, due to the interchange of pitch and roll error every 90 degrees during the turn.

This transfer of the roll motor to the pitch mercury switch is not an unmixed blessing, for if, on run up or during straight flight, more than 10 degrees of roll error (equals 0.18 *g* in a turn) exists without any pitch error, no correction of roll error will take place until the aircraft starts to turn. To obviate this, a fast erection button is fitted, which, on being pressed, applies correction at a rate of 120 degrees per minute in both pitch and roll, regardless of the amount of error existing. This button should not be pressed in a turn or when the gyro is running slowly, and for no longer than one minute as the torque motors don't like the overload that they get with it pressed.

The torque motors are single-phase and are connected between pins B and C. Of the remaining pins, A is a.c. supply; C must be linked to F to give fast erection voltage and D linked to E to give normal erection.

Mark III has normal control with no provision for correcting turn error electrically (gyro is offset from vertical and slightly pendulous), nor has it a fast erection button. The remainder of the series, which have suffix letters, have a roll mercury switch cut-off when the gyro is rolled more than 10 degrees relative to the case (i.e. 0.18 centrifugal *g* in a turn), and a fast erection button in case more than 10 degrees roll error should exist on run-up or during straight flight. The same remarks on the use of this button apply.

The torque motors are again single-phase, but are connected between pins A and C, and B is the other a.c. supply lead. Of the remaining pins, D links to E to give normal erection voltage, but F must be left blank, for it us used to short out the roll cut-out when testing.

Bendix J8 and Anschutz Wendehorizont have normal control with no roll cut-off, but manual caging of the gyro is provided. The Anschutz also has a turn gyro and a slip indicator. The torque motors are 3-phase.

Power Supplies

All instruments except the Anschutz require 115-volt 400 cycles per second 3-phase a.c. The Anschutz, run on its own rotary inverter (Umformer), gets 37 volts at 500 cycles (at any rate mine does!) but will work adequately on 400 cycles.

Present practice is not to use rotary inverters, which are more efficient electrically and are lighter. There are pitfalls, however. The easiest type of inverter to make generates a single-phase square wave, and a fixed capacitor is used to supply the third phase lead. For Bendix J8 and the Anschutz, this works satisfactorily at moderate efficiency, but the Ferranti and Sperry instruments require 0.75/UF for start and 0.25/UF for running, unless one is prepared to wait a long time for enough gyro speed to permit safe operation of the fast erection button.

Use of square waves means more than necessary heating of the gyro and therefore less efficiency than if a sine wave inverter were used. An 85 per cent efficient sine wave inverter can be made and commercial A.R.B. approved models are offered in the £60 to £70 range, of which the Ferranti FI14 and EKCO E210 (illustrated) are typical examples. Both need 24 volts d.c. and the E210 needs a phase-splitting condenser. The power required for Mark III and IV series is about 18 watts to run and 75 watts for fast erection. Anschutz takes a little more, as there are two gyros, working out at about 22 watts. Bendix needs 12 watts.

Private constructors produce inverters at about £10 to £12 each, and addresses of makers can be forwarded to interested owners who are not in a position to make their own. One point to watch here is that some home-made inverters use a principle known as saturating output transformer to switch the transistors at 400 cycles. The use of this principle causes the circuit to draw heavy current at each switching period, and this heavy current will upset any radio which is using the same battery and can interfere in some cases even when a separate battery is used. Better is the saturating base drive transformer, and even better still though not so simple is the sine wave circuit.

While only the fringe of the technical side has been touched here, through the generous assistance of the firms concerned, further information can be provided on request to the B.G.A. or by personal contact with me at H.M.S. Collingwood.

The EKCO type E210 transistor inverter, which can supply Mark III or Mark IV Artificial Horizons.

A Howidunit by Peter Scott

Dunkeswell through Rose-tinted Spectacles

SO I said to myself: "Something's got to be done about it. Maybe if you didn't have to go to New York for dinner, and if you watched those final glides. . . ." And the next thing I knew we were on our way to glorious Devon where John Fielden and his merry men, women and children, were about to run a smashing comp. with a field of 23.

The tasks, they said, would all be closed circuits, so the first contest day was Free Distance, with the London Control Zone as a bunker in the fairway. It was one of those murky days when there constantly seemed to be no future ahead, and I started one "final glide" after another. From one of them near Upavon at 500 ft. above the downs I crept up again under the lash of Alf Warminger's progress report on the radio. He was on a parallel course 20 miles further south and already approaching Lasham. At the Goring Gap I made a determined effort to deflect

him round the north side of the Control Zone. "It is very difficult," I told my crew, "to decide which way to go, but on the whole I think it looks more promising to the north." If Alf came too it would put him at least 15 miles astern of me, so I was well pleased when he called his crew and said he too had decided to turn north. Ten minutes later a wholly misguided sense of fair play made me tell my crew that a great black cloud barred the northern route, and immediately Alf announced that he had changed his mind, and was now going south of London. Pity, but it had been a good try. A powerful weapon this radio if used without scruple.

The great black cloud meant a final "final glide", along the edge of the Chilterns to a gravel pit where they were sailing. Perhaps I could have a sail while waiting for Mike Garside and Liz Douglas to arrive—though the 600 feet I still had would take me another couple of miles; and then, two miles ahead, up came Halton with gliding in progress. "Always flop among friends," Peter Collier used to say, so down I flopped among the T-21's and T-31's of the A.T.C., 127 miles from base. Alf landed soon after at Godalming which was happily a mile or two closer to Dunkeswell.

Whatever may have happened in the past to Camphill's weather, we learned next day that Dunkeswell can, on occasion, be damp as well; and on the day after that we spent several hours trying to persuade some other obdurate pilot that there was no future in being launched at the time he had selected. "Sky looks hopeless to me for the next hour at least, don't you agree?" There were glittering displays of guile and deception as the discs hopped over each other like Halma men. By these dubious means I managed to get myself the worst possible launch-time, and set off at once to escape from the circle of dead

air which seemed to sit firmly over the plateau with the aerodrome at its centre. In next to no time I was on the ground at Upottery and soon afterwards playing halma again.

My relight was at 3 o'clock and I flew on tiptoe, cautioned and at the same time encouraged by the news that the Warminger 419 was on the ground at Yeovil just short of the turning point, after which the line turned north-east through Stone in Staffordshire. By special request we were asked to circle once over the turning point. Because of the bend in the line the turn was in excess of 400° and I made mine in fairly strong sink at 1,000 ft. After that everything depended on the ridge leading towards Castle Cary. A little bluff produced an unusable thermal with which I dallied for ten minutes, and a tiny village produced another when I was already below the top and couldn't make anything of it. So out I went into the valley to get on to the line and landed in the furthest field of a farm at North Cadbury.

"Ar," said the cowman who walked the mile-and-a-half with me up to the farmhouse on the hill, "there was another one of them gliders over 'ere about a hour ago—'igh up, 'e were," and there were two more he hadn't seen. But none of them had got much past Castle Cary, so my fourth still produced a reasonable number of points.

August 1st was as difficult as it looked for a flattened 100-km. triangle, upwind to Crediton first. Three thermals in a clamping sky took me to the first turning-point where I popped out of cloud to find the marker almost directly below, rounded and popped back in again. But the cloud had spread out and Tiverton failed me. So, too, as a last resort, did a row of straw fires at Chevithorn where I came to earth—though they worked a treat for Chuck Bentson on his way out an hour later, and he went on to make the best flight of the day—which did not quite reach the second turning-point. Although four scored, there was no contest.

The following day seemed no less difficult, with some promise of improvement to the eastward. We were to turn at Thruxton and come back to the west, if possible as far as St. Just. More Halma at the take-off board and I came back from my first scrape having seen Chuck Bentson and Brennig James go off, and watched Alf Warminger land at Upottery. Soon after 2.00 I was away again in rather better conditions. The clouds were working well if you got to them at exactly the right time, and I had two 7,000-ft. climbs at better than 500 ft. per minute. Between clouds it was gloriously clear with Berry Head and Channel shipping visible on one side and South Wales on the other, and a clearcut Steepholm rising out of the Bristol Channel.

Although the task was along a line, it was necessary to go far off track to make any progress, and at one stage I found myself heading for a cloud over Wells, more than 15 miles north of the line. The gaps were awe-inspiring, but Salisbury Plain was good and by 4.30 I was on the way back fortified by an encouraging report from Alf that he was "delayed" near Boscombe Down.

My crew had waited at a high point on the A.303 east of Mere and soon I came back into their sight—but by now the sky was overcast ahead of me and before long I was on a final glide which brought me almost to their feet. Brennig had landed only two or three miles away, but two hours earlier. He and his crew arrived at my field and together we watched Alf creeping towards us to land only a few fields short. Chuck was stopped by the same overcast after a flight of many hours and many diversions. And so to a convivial dinner at the Pepper Pot at Ilchester.

August 4th was a day of days, and we had a splendid race to Swanton

Morley. The first hour had something of the sticky quality of the morning before, but I stayed high, flying from cumulus tower to cumulus tower, all above 5,000 ft., and covered 48 miles. There were 12-15 kts. of wind which we had to cross at about 25 deg. The second hour was better at 53 miles. The downs from Devizes to Marlborough produced the best conditions of the season—indeed as good as any I can remember in this country—with 600 f.p.m. under every cloud and 800 under some. 57 miles in the third hour and 59 in the last—224 miles in 4.00 hours flat at an average of 56. There is a tremendous exultation to be had from flying fast with the comfortable certainty that the next cloud will be at least as good as the last. Cloud base was high enough for the crossing of the airway to be quite painless, and the only regret was having to land at 3.25. 500 kms would have been simple but for the North Sea.

A concession to the crowded roads was a special dispensation allowing a part-retrieve by aero-tow, so half an hour later I was heading for Cambridge on a 50 ft. tow-rope behind a Tiger—an hour of pretty intense concentration and very bumpy too. I released at 2,000 over Marshall's, having failed to raise my crew on the radio. No sooner was I in free flight than they came up at Hitchin. I scraped valiantly and struggled a few miles upwind towards them, landing beside the Royston Road south of Trumpington. We stopped for supper at Dunstable and were back at Dunkeswell about 1.00 a.m. Although my time had been the fastest, a remarkable flight by N. Stevenson in a cooking Oly gave him the thousand points on handicap.

On August 5th John set us a 100-km. triangle in deteriorating conditions due to an advancing warm front. Thanks to a Herring Gull which lead me to a humdinger soon after release, I was able to make a racing start at maximum height (4,120 ft.) at 100 m.p.h., though I was down to 1,500 ft. before I found another acceptable one over Merryfield. It took me to the first turning point at Ilchester and very uncomfortably round it with four other gliders, all no doubt feeling as gloomy as I was. The only thing seemed to be to stay on course, grit one's teeth, and push on into some sunshine on the outskirts of Yeovil—sunshine which happily worked rather weakly until, back at 2,000 ft., I moved under the edge of a spreading patch of dark grey cloud and boosted the climb from 150 to 450 feet per minute.

Ahead the sky looked very unpromising. A few miles inland from the south coast was a line of cumulus trailing a curtain nearly 2,000 feet lower than the inland cloud base. Somewhere under or beyond it was the second turning-point—an orange tent in the middle of a hill-top field a mile or two from a virtually unidentifiable village that was also hidden by the curtain. Alf Warminger (who was my nearest rival on points) reported to his crew first that he was in difficulties at the first turning-point and a little later that he had climbed up, but that conditions over the second turning-point were so poor he intended to hang around and wait for an improvement. This, no doubt, was designed to slow me down, but I refused the bait and pressed on into the murk.

I had taken rather too much height in the dark grey cloud, and as I emerged and the lift stayed with me for half a mile, I realised that even by selecting a gap in the sea-breeze curtain ahead in order to read the map all the way, I would still be in cloud at the turning point if I flew at the correct speed. To get through the chink in clear air I had to fly about 5 miles at 90 knots, and with the dark sea-breeze cloud about 100 ft. above me, I came to the second turning-point. Another glider was also

approaching it, rather uncomfortably low, I thought. As I watched him reach the orange tent he suddenly stopped. He had landed 30 yards away from it.

I had less than 2,000 ft. as I turned back to the west and flew the length of the sea-breeze cloud, trying various different lines. Under the blackest part seemed best, but this was only slightly reduced sink. I came to the upwind end of the cloud at Crewkerne, no more than 1,500 ft. above sea level, and then I saw the Swifts. They were hunting insects high above me under the cloud, and as I turned towards them I flew into gentle 200 f.p.m. Four turns and then I moved more directly under the Swifts and "wallop"—I was in 6 knots up.

There is an incomparable feeling of triumph and relief in a good last thermal. This was going to get me home, and fast. Now when once you have ground to a halt 150 yards short of a finishing line and lost 580 points by doing so, and when you are going up at 600 f.p.m. on a day of poor conditions with plenty of sink around, there is a great temptation to take a trifle more height than is strictly necessary for that final glide. It was a temptation I could not resist.

By the table I must fly in at 70 knots —but I took 1,000 feet extra in case the wind was stronger than I thought, and another 500 for good measure. At 6,500 I set off and flew the first 5 miles in cloud. When I emerged, Dunkeswell still seemed a long way off, so I reduced to 60. Chuck Bentson, they told me on the radio, was just arriving. Though he had started before me, no one seemed to know how long before. I stuck the nose down to 65, then to 70 again and finally to 100 for the last mile. 1 hour 30 minutes at an average of 42, with Chuck taking 2.17 and Brennig 2.29.

As far as I was concerned it could rain the next day—and it did. But what a smashing comp. it had been!

DUNKESWELL COMPETITIONS: PROVISIONAL RESULTS

The official results of the Regional Competitions at the Devon and Somerset Club are not yet available. The following table, for which we are indebted to Mike Garrod, gives the provisional results issued during the meeting.

Final Pos'n.	*Pilot or Pilots*	*Sailplane*	*Comp. No.*	*Date (July or August)* 29th	31st	2nd	4th	5th	*Total Points*
1.	P. M. Scott	Olympia 419	10	668	493	1000	985	1000	4146
2.	A. H. Warminger	Olympia 419	44	512	183	987	892	802	3376
3.	D. B. James	Skylark 3	160	—	545	852	842	789	3028
4.	C. W. Bentson	Skylark 3F	161	111	245	911	864	810	2981
5.	M. P. Garrod	Sky	64	78	580	179	884	768	2479
6.	C. Duthy-James & M. J. Smith	Skylark 3B	176	0	564	182	840	745	2331
7.	P. O'Donald & P. W. James	Skylark 2	56	0	0	811	652	802	2265
8.	D. Clayton & P. Berriman	Skylark 3	200	542	474	422	177	115	1770
9.	J. N. Stevenson	Olympia 2B	208	0	0	239	1000	352	1591
10.	J. Cardiff & G. Camp	Weihe	167	0	441	66	911	164	1582
11.	C. R. Hurst & L. J. Smoker	Skylark 2	169	89	0	282	884	352	1507
12.	J. Matheson & J. Mackenzie	Skylark 3	171	0	0	243	534	606	1383
13.	Redman & Brenner	Sky	206	82	352	85	81	298	903
14.	T. J. Lapham	Swallow	151	11	0	150	254	404	819
16.	H. Tarnow & A. McDonald	Skylark 3B	20	65	—	365	89	195	715
15.	M. I. Gee	Olympia 2B	109	0	0	63	279	310	652
17.	Anita Schmidt	Olympia 463	181	0	0	197	403	0	600
18.	Salisbury-Jones, D. Lowe & D. Roberts	Olympia 2B	170	0	0	335	78	48	451
19.	M. Aspinall & R. Ludgate	Olympia 2B	154	13	0	0	60	281	314
20.	P. Wildbur & R. Walker	Olympia 2	93	0	0	0	21	204	225
21.	N. A. Brett	Skylark 3B	165	0	0	77	109	0	186

Special Category Certificates of Airworthiness

by F. G. Irving

Introduction

Various foreign gliders of reputable origin, enjoying full certification in their countries of origin, do not necessarily meet British Civil Airworthiness Requirements. In general, the policy of the BGA has been to assume that such gliders are satisfactory from the stressing point of view, possibly with modified limitations. The granting of a BGA C. of A. is then mainly dependent on satisfactory handling qualities and engineering features (e.g. installing Ottfur tow-hooks). Even when B.C.A.R. are interpreted in the most liberal fashion, some machines cannot reasonably be granted a C. of A. since there is no formal correlation between certification and the degree of skill of the pilots who will fly the type in question. If such machines were certificated solely on the basis that they were considered airworthy in their countries of origin, British manufacturers could reasonably claim unfair competition.

The consequences of this policy are:-

(a) It strongly discourages examples of interesting foreign gliders being brought into the country, since practically nobody is prepared to risk having a type refused certification.

(b) If somebody does have the courage to bring in such a machine, they may be faced with a great deal of expense if certification is refused, or with operation under restricted conditions. Not surprisingly, they point out that pilots in Ruritania seem capable of dealing with the machine's idiosyncracies, so why should British pilots be so mistrusted?

The B.G.A. Technical Committee has therefore approved a new category of C. of A. to overcome most of these difficulties.

This "Special Category" C. of A. would convey the following significance:

"This machine is properly certificated in its country of origin, although it does not meet British Civil Airworthiness Requirements. It is maintained and overhauled to the normal B.G.A. standards. The B.G.A. considers it safe within the conditions imposed by the C. of A."

Procedure

If a new type from a reputable source is imported, it will be subjected to the normal B.G.A. procedure for certificating foreign gliders. There are then three possibilities:

(a) It receives a full C. of A., possibly with some modifications to the limitations or other conditions.

(b) It is rejected.

(c) It receives a "Special Category" C. of A.

In this context, it is unnecessary to discuss (a) any further.

It is likely that (b) will be unusual if (c) is a possibility.

Conditions

(i) The proposed importer must notify the Technical Committee before importing the machine so as to seek their advice on whether (a), (b) or (c) above is likely to apply, or (iii) or (iv) below.

(ii) Only gliders in current production with certificates of airworthiness of the country of origin will be considered.

(iii) Because a "Special Category" C of A. implies that a machine does not fulfil B.C.A.R., only one example of the type will be certificated. If another example of the same type imported, it will not be certificated.

(iv) It is recognised that a given type may be modified so that its characteristics are sufficiently altered to make it a different "type" for the purpose of these conditions.
If an applicant wishes to submit a modified example of a type for certification ab initio, he must satisfy the Technical Committee that sufficient modifications have been carried out to render its characteristics (in so far as they prevented the granting of a full C. of A.) substantially different from those of the original example.

(v) If the Technical Committee agrees that the machine is likely to receive either a full or Special category C. of A., the usual documentation for the certification of foreign gliders must be submitted, and such flight tests as the Committee may require shall be carried out at the applicant's expense.

(vi) If a Special Category C. of A. is granted, the Technical Committee reserves the right, in doing so, to modify the limitations and conditions of the C. of A. of the country of origin, and to impose such additional limitations or conditions as they think fit.
For example, a S.C.C. of A. might be granted subject to:
Reduced never-exceed speed.
More restricted C.G. limits.
Silver C pilots only.

(vii) At the discretion of the Technical Committee a S.C.C. of A. may be granted to a machine of British origin (e.g. a single prototype which just fails to satisfy B.C.A.R.).

(viii) The S.C.C. of A. should not be confused with an Experimental C. of A. The latter is intended to apply to a machine which is continuously being used for experimental purposes.

(ix) On making application for certification, a fee or £15 15s. is payable to the B.G.A.

Major Overhauls

THE Major Overhaul scheme, commonly known as the "Ten Plus", has now been in operation for several years, and both the Senior Inspectors and the Technical Committee have now accumulated considerable experience of operating it.

On the basis of Senior Inspectors' opinions and the evidence of their strip reports, the Committee has decided that in future Major Overhauls shall be carried out as follows:

(a) The first Major Overhaul to take place ten years after the date of construction of a glider;

(b) Subsequent Major Overhauls to take place at intervals of five years.

In the case of most gliders, this means that Major Overhauls will take place at intervals of 10, 15, 20 . . . years after the date of construction. However, there are some gliders of pre-war or immediately post-war construction whose first Major Overhaul took place more than the ten years after the date of construction. In such cases, subsequent Major Overhauls will still be required at five-year intervals *after the first one*, so the sequence might run at 12, 17, 22 . . . years, for example.

Owners and Senior Inspectors are referred to Ray Stafford-Allen's notes on Major Overhauls on page .

F. G. IRVING,
Chairman, Technical Committee

THE British Gliding Association have appointed John Everitt as National Coach. It is hoped that he will start work with the Capstan in the near future. John has very extensive experience as both amateur and professional instructor on hill and flat sites, and is also a tug pilot. He has been a member of the Instructor's Panel for several years, carrying out Category tests, and is well known in the gliding movement.

His work will include touring round the country, assisting clubs with their instructor-training programmes, and testing instructors. He will be available also for giving cross-country flying, instrument, and aerobatic training to instructors and experienced pilots in clubs where facilities for advanced flying do not yet exist. New clubs may also obtain his services to help start their instructional and operational methods on the right lines. In addition, the Coach will run a small number of ab-initio courses in order to keep in touch with elementary training practices. One of the problems is going to be to ensure that he gets enough days off, and is not worked to a standstill.

In the next few weeks all clubs will be circularized to ask what their requirements are likely to be, and a programme will then be made out to fit everyone's requests as nearly as possible, priority being given to smaller or newer clubs in the first instance.

We are most grateful to the Ministry of Education for making possible the appointment of the Coach, and to W. D. and H. O. Wills for the Capstan. They have provided the greatest possible opportunity to improve our instructional standards throughout the country, with the far-reaching benefits of fewer accidents, and the capability of efficiently training more pilots, particularly younger ones.

I am sure that everyone will want to wish John the best of luck in this interesting and valuable job.

EFFECT OF EFFECTS

Many clubs have a rule that a pupil may be sent solo only after check flying with the C.F.I. If the instructing has been carried out by someone who in all other respects is regarded as competent to teach, and to take full charge of the launch point, this check is unnecessary. It may well reduce the effectiveness of some instructors, since they may feel that the subsequent safety of the pupil is not wholly their responsibility—the C.F.I. will always pick up any inadvertent gaps. For those instructors who can and want to take the responsibility—and all good instructors do—then to have to pass their pupils on to someone else deprives them of the sense of satisfaction in having completed a job well.

More important than when and by whom a pupil is actually sent solo is the care and intelligence with which the first basic lessons in flying are given. So often these first lessons, when the instructor is doing the take-off, climb, and landing, are given to new or less experienced instructors to do. Such instructors rarely appreciate the impact of the experience on the pupil, or the vital need, not only for putting over the right information well, but to tailor these lessons with all the skill that they can produce to the requirements of the particular pupil.

These first lessons are preparations

for flight, including cockpit check, effects of controls, their co-ordination in gentle turns, and speed control, and the philosophy of gliding and its objectives—or, in simple words, basic airmanship. They must be given with skill and patience, and above all they must not be hurried. There is an idea at the present time that pupils should be doing the whole flight with prompting in a circuit or so. I am sure that this is wrong. There is a great deal which is new to the pupil in flying and he cannot take much in for a surprisingly long time. If he is given too many things too soon, he may feel that he is getting on quickly, but in fact he is not. The basic grounding is not sufficiently established, and later, when he has circuit planning and everything else to think about, he will find himself getting stuck and often muddled.

Take-offs, etc., done by the instructor early in the training are not time wasted for the pupil. They should be given as a demonstration, so that when the pupil gets on to them himself he has a yardstick, and knows better what he is trying to achieve.

If the first basic lessons are given with great thoroughness by skilled instructors, or the C.F.I. himself, and regarded as the most important part of a pupil's training, the later stages will contain fewer difficulties, and the early solo flying will be safer. Effect of controls is not just a rather simple exercise; it is the foundation of all subsequent flying.

ANN WELCH

FRED FUMBLE

. . . . is an average (well, almost) Gliding Type, and, like most Gliding Types, he is quite keen.

Whilst we would hesitate to label anyone "accident prone", things do seem to go wrong for Fred more than for most people. At present he seems to be getting a bit snarled up with the "Laws and Rules".

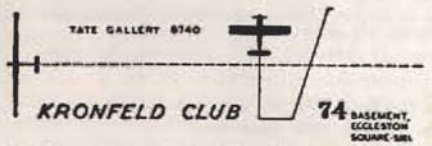
We hope that this series may serve as a reminder, not only to the would-be C pilots, but also to the experts who have long since forgotten "all that stuff". Perhaps you may even profit from some of "Fred's Fumbles". Incidentally, you will find him on pages 430 and 434.

"The World's Sailplanes"

"The World's Sailplanes" has been out of print for some time, but so many enquiries have been received by OSTIV for copies that it has been decided to produce a reprint of Volume 1 by the Xerox method. This is a paper-backed edition which will be identical with the first volume as originally printed, except for the disappearance of the advertisements and the introductory technical note. This Xerox method of reproduction does not give a fully satisfactory half-tone, so that the photographs are not as good as they were in the original edition, but all the figures and line drawings are entirely satisfactory.

The reprint is obtainable from: The London Gliding Club, 22 Half Moon Street, London W.1., and the British Gliding Association, Artillery Mansions, 75 Victoria Street, London S.W.1. and the price is 10s. per copy including postage for OSTIV members, 12s. per copy including postage for non-members.

Payment must be sent with the order, as it is impracticable for the London Gliding Club or OSTIV to provide credit. It will be noted that the cost of this reproduction is considerably less than that of the original publication.



101 members and guests greatly enjoyed the club's annual Dinner and Dance held at the Eccleston Hotel on the 5th October. The occasion also marked the 40th Anniversary of the first gliding competition at Itford Hill and a surprise item on the menu was a giant glacé gateau ablaze with 40 candles and topped with a splendid model of the glider that won the competition, made by Ferelith Wills. John Stanley designed the excellent Menu card which also depicted many old types.

The guests were Colonel and Mrs. Preston and Dr. A. E. Slater. Unfortunately Group Captain Goodbody was prevented from attending through illness—we wish him a speedy recovery.

Other speakers were Philip Wills, Cliff Tippett and Hugo Trotter.

Also on the same evening Ken Owen of *"Flight"* opened the club's 3rd Photographic Competition and on the following Wednesday the entries were judged by John Yoxall and the winners were as follows:- Black and White prints: 1st H. Hilditch, 2nd W. F. Jordan. Colour prints: G. McA. Bacon. Colour slides: 1st P. A. Wills, 2nd R. Willbie and Hon. Mention W. F. Jordan.

Another most notable event was the evening organised by Dr. Slater to commemorate Itford Hill. This was probably one of the most fascinating evenings we have ever held (see page 386).

To end on a sad note, as many members will already know the club has been given notice to quit next spring by the new owners of 74 Eccleston Square, although we are still hoping we might be granted a new lease.

STOP PRESS

Art Competition winners:

OVERALL WINNER.—Margaret Kahn.

OILS.—GLIDERS: 1st, Margaret Kahn; 2nd, Ann Welch; commended, B. Warren. POWER: 1st, J. Palmer; 2nd, H. Cooper; commended, F. Tosoni.

WATER COLOUR.—1st, V. H. Veevers; 2nd, Rawlings-Smith; commended, D. Wilkes.

GOUACHE AND POSTER.—1st, T. Eccles; commended, A. Achard.

LINE, PENCIL, CRAYON, ETC.—1st, T. Wykes; 2nd, T. Shreeve; commended, C. Coy.

Y. C. B.

Diary of Lectures and Film Shows

Wednesdays at 8 p.m.

Nov. 28. "Helicopter Marine Commandoes." Talks by Cds. Murray-Hayes, R.N., and others.
Dec. 5. "Victory at Sea" film.
„ 12. Air Touring by John Furlong.
„ 19. Club Christmas Party. All members and friends welcome.
„ 26. Club closed.
Jan. 2. "Victory at Sea" film.
„ 9. Philip Wills (provisional).
„ 16. Post-war glider development, by Frank Irving.
„ 23. U.S. Film, "Friendship 7" (provisional).

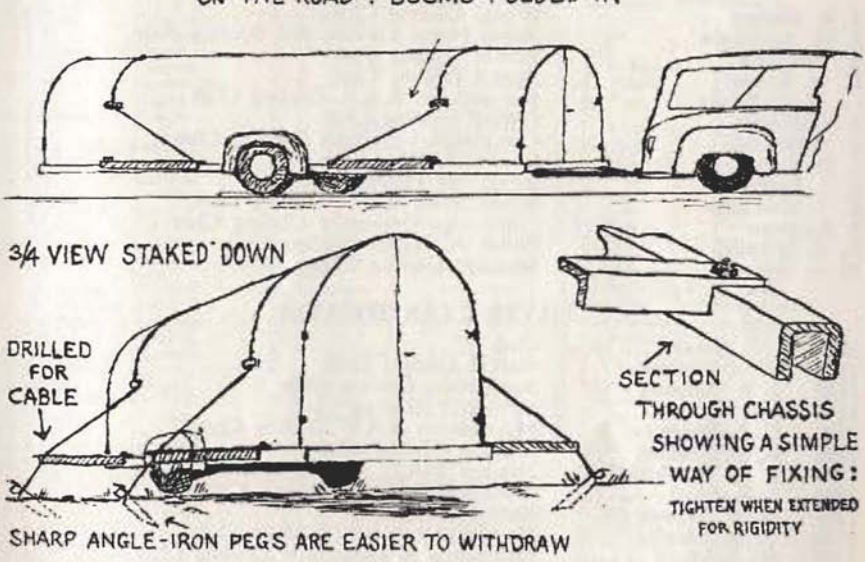
Suggestion for Securing a Trailer

by J. Wheeler

THIS device can be made with four lengths of angle iron, fixed to the frame so that they may be folded into the sides for travelling. Launching cable could be used as the "guy ropes", being run over the top and secured to the sides about the positions shown to prevent the trailer moving under the ropes. Securing pegs to be driven into the ground at an angle. This should provide sufficient leverage against most strong winds. With various modifications this would be an inexpensive means of anchoring most trailers.

The smaller drawing shows a simple method of fixing to the chassis; slacken the nut for folding, and tighten when extended for rigidity. But various fixings could be made to suit different trailer frames.

The idea came through seeing an illustration of a large light load lashed down in a similar manner, as a deck cargo.



Gliding Certificates

DIAMONDS FOR GOAL FLIGHT

No.	*Name*	*Club*	*Date*
2/119	J. R. Philpot	Bristol Gliding Club	4.8.62
2/120	M. J. Smith	Coventry Gliding Club	5.8.62
2/121	C. R. Hurst	Oxford Gliding Club	5.8.62
2/122	J. N. Stevenson	Royal Naval Gliding and Soaring Assn.	4.8.62
2/123	T. Pentelow	Bristol Gliding Club	5.8.62
2/124	K. R. Brown	Bristol Gliding Club	5.8.62
2/125	G. McA. Bacon	Bannerdown R.A.F. Gliding Club	4.8.62
2/126	J. D. Cardiff	London Gliding Club	4.8.62
2/127	E. J. Lusted	Royal Air Force, Germany	3.6.62

2/128	E. J. Chubb	Bristol Gliding Club	16.6.62
2/129	E. J. Meddings	Bannerdown Gliding Club	25.8.62
2/130	S. Redman	Cambridge University Gliding Club	25.6.62
2/131	P. Hanneman	R.A.F. Bicester Gliding Club	5.8.62
2/132	E. B. Jerzycki	Polish Air Force Gliding Club	5.8.62
2/133	D. A. Benton	Midland Gliding Club	4.8.62

GOLD C CERTIFICATES

No.	*Name*	*Club*	*Completed*
99	M. J. Smith	Coventry Gliding Club	5.8.62
100	C. R. Hurst	Oxford Gliding Club	5.8.62
101	E. J. Chubb	Bristol Gliding Club	16.6.62
102	P. Hanneman	Royal Air Force, Bicester	5.8.62

GOLD C DISTANCE LEGS

Name	*Club*	*Date*
J. R. Philpot	Bristol Gliding Club	4.8.62
J. N. Stevenson	Royal Naval Gliding and Soaring Assn.	4.8.62
T. Pentelow	Bristol Gliding Club	5.8.62
K. R. Brown	Bristol Gliding Club	5.8.62
G. McA. Bacon	Bannerdown R.A.F. Gliding Club	4.8.62
J. Matheson	Oxford Gliding Club	4.8.62
P. O'Donald	Cambridge University Gliding Club	4.8.62
J. D. Cardiff	London Gliding Club	4.8.62
E. J. Lusted	Royal Air Force, Germany	3.6.62
E. J. Meddings	Bannerdown R.A.F. Gliding Club	25.8.62
S. Redman	Cambridge University Gliding Club	25.6.62
E. B. Jerzycki	Polish Air Force Gliding Club	5.8.62
D. A. Benton	Midland Gliding Club	4.8.62

SILVER C CERTIFICATES

No.	*Name*	*Club*	*Date*
1194	W. D. Evans	Oxford Gliding Club	3.6.62
1195	J. R. Simeons	Southdown Gliding Club	20.7.62
1196	M. Wood	Newcastle Gliding Club	8.7.62
1197	C. J. Wride	Moonrakers R.A.F. Gliding Club	23.6.62
1198	A. E. Whaten	London Gliding Club	5.8.62
1199	L. G. Stanbridge	Nimbus R.A.F. Gliding Club	29.7.62
1200	J. S. Aked	Blackpool & Fylde Gliding Club	4.8.62
1201	M. P. Wilson	Kent Gliding Club	18.8.62
1202	C. M. Morris	Moonrakers R.A.F. Gliding Club	10.8.62
1203	A. C. Wood	Derbyshire & Lancashire Gliding Club	5.8.62
1204	G. Mackie	Ulster Gliding Club	12.8.62
1205	G. Harrison	Derbyshire & Lancashire Gliding Club	31.7.62
1206	S. J. Curtis	Midland Gliding Club	4.8.62
1207	N. Marriott	Coventry Gliding Club	4.8.62
1208	A. J. Vincent	Handley Page Gliding Club	25.8.62
1209	D. C. Reynolds	Windrushers R.A.F. Gliding Club	22.8.62
1230	P. W. Winkley	Coventry Gliding Club	22.8.62
1211	S. A. Southam	Oxford Gliding Club	9.8.62
1212	R. F. Holland	Cambridge University Gliding Club	27.6.62
1213	P. Goodwin	Moonrakers R.A.F. Gliding Club	18.8.62
1214	J. Steel	Dumfries & District Gliding Club	1.7.62
1215	P. J. Bullivant	No. 616 A.T.C. Gliding School	2.8.62
1216	D. J. Baldwin	Perkins Gliding Club	5.8.62
1217	A. R. Jury	Bannerdown R.A.F. Gliding Club	12.8.62
1218	C. L. Ryan	London Gliding Club	8.7.62

1219	D. C. Sadler	Coventry Gliding Club	18.8.62
1220	A. A. Bowen	Norfolk Gliding Club	5.8.62
1221	W. J. Hall	Coventry Gliding Club	30.8.62
1222	M. J. F. Bagnell	Coventry Gliding Club	18.8.62
1223	I. L. A. Eyers	B.E.A. Silver Wing Gliding Club	13.7.62
1224	L. E. Rotter	Midland Gliding Club	9.9.62
1225	R. Cousins	Kent Gliding Club	16.9.62
1226	R. Wilson	Yorkshire Gliding Club	16.9.62
1227	J. S. Fielden	Devon & Somerset Gliding Club	19.9.62

C CERTIFICATES

Name	*Gliding Club or A.T.C. School*
D. D. Gay	South Wales
R. Seaman	104 G.S.
G. J. Wedgwood	R.A.E.
R. C. Cobbold	Norfolk
M. W. Morgan	633 G.S.
A. Billington	Crusaders
J. Stringer	Midland
R. G. Harding	Northants
M. P. Taknow	London
J. Bushnell	Cambridge
G. Clark	Doncaster
R. E. Thomas	R.A.E.
P. O. Gray	Perkins
T. J. Ward	644 G.S.
E. R. Underwood	Northants
J. G. Paxton	Midland
T. B. Green	Coventry
M. J. Butterfield	643 G.S.
K. M. Wallace	614 G.S.
D. E. Cadisch	London
G. A. Nevisky	635 G.S.
J. Burt	Kent
M. A. Seabrook	London
B. M. W. Fletcher	Suffolk
A. J. Middleton	Aberdeen
A. J. King	Fenland
R. G. Gardner	Coventry
R. A. F. Edwards	Four Counties
G. R. King	London
H.C.H.Whiteside	635 G.S.
A. M. Hewitt	Cornish
A. P. Pool	East Anglian
D. S. Rigby	635 G.S.
J. M. Nagda	663 G.S.
B. Froggatt	Coventry
F. Packard	Essex
W. J. Morris	631 G.S.
B. R. Hunt	633 G.S.
B. J. Bigham	632 G.S.
P. Morris	Condor
H. P. Nunes	Essex
J. S. M. Dannatt	Kent
A. A. Cummings	East Anglian
D.A.S.MacLaren	Scottish
J. Wilkinson	Kent
A. V. Wiper	646 G.S.
K. S. Fowler	635 G.S.
H. C. Clark	Scottish
P. Dainton-White	Swindon
H. G. Griffin	Essex
M. R. Hollis	Windrushers
D. C. Millard	Coventry
J. G. Smith	Scottish
C. C. Handley	Condor
P. Hart-Davis	Windrushers
R. Craig	Bristol
V. K. Yalden	London
K. J. Whitehead	631 G.S.
T. Shepherd	Newcastle
W. R. Cirin	RAF Swanton Morley
W. E. Delahunty	635 G.S.
W. R. Bowers	Coventry
P. T. S. Brown	East Anglian
P. E. Kumar	Imp. Coll.
A. B. Watson	Windrushers
R. Hartog	London
C. A. G. Talbot	London
K. C. Aston	Moonrakers
D. W. Avery	London
C. F. Devon	Cambridge
C. D. Mackenzie	Aden Services
K. H. Doetsch	Imp. Coll.
J. H. Scrivener	London
A. D. H. Embling	London
W. J. Causland	Empire Test Pilots
A. A. Vincent	Essex
D. C. Kelly	631 G.S.
K. T. Blank	Lasham
A. Parker	Yorkshire
R. A. Jones	Cambridge
S. I. Matthews	Yorkshire
D. Bryan-Jones	South Wales
G. R. Smith	Midland
B. W. Brighton	Newcastle
P. M. Rama-chandran	Empire Test Pilots
D. S. Prout	South Wales
R. L. Merritt	Empire Test Pilots
C. F. Dance	Kent
G. E. Croft	Surrey
R. C. R. Chesters	London
M. J. Wilshere	Midland
P. D. Hansford	Windrushers
S. D. Mitchell	Phoenix
C. H. Ottley	E. Midlands
R. C. Atkinson	Fenland
R. H.2Powell	Crusaders
P. T. C. Bush	621 G.S.
M. J. Baker	Imp. Coll.
A. J. M. Stoneley	621 G. S.
B. P. Keeler	611 G.S.
D. S. Jackson	621 G.S.
D. G. Thomas	Cornish
A. Davie	London
C. D. Laming	Red Hand
W. T. Bailey	Doncaster
A. P. Rowe	Halesland
A. Rowell	635 G.S.
K. A. Beverton	Doncaster
G. N. Halliday	Four Counties
P. Hunt	Suffolk
F. Bell	Devon & Somerset
C. H. Gardner	Devon & Somerset
J. A. J. Turner	Cornish
G. O. Elliot	611 G.S.
G. A. Kirrage	Surrey
D. S. Tyler	Essex
A. Ker Milne	Devon & Somerset
S. J. Coy	621 G.S.
H. Hill	Newcastle
W. S. E. Monks	Doncaster
M. D. Singer	Fulham
R. A. Rice	Derbyshire & Lancashire
R. F. Whittaker	Red Hand
H. Budding	Ouse
T. N. McGeen	London
A. R. Walker	London
W. Fuller	643 G.S.
S. L. Butt	Ouse
J. D. Waters	Fenland
K. L. Edwards	Moonrakers
R. P. MacAllan	Red Hand
R. A. Woodward	Perak
H. A. Bellingham	Crusaders
M. Berridge	Portsmouth
B. V. Williams	Portsmouth
D. G. Bennett	643 G.S.
J. F. Lomas	RAF Centre
S. R. Cannell	London
D. Williams	633 G.S.
R. C. Jevons	621 G.S.
V. Cronk	642 G.S.
R. F. J. Spier	Midland
D. O. H. Messent	Doncaster
A. J. Stones	RAF Kirton-in-Lindsey
J. A. Lynes	Fenland
K. A. Ward	Wessex
H. R. Hobson	Lasham
H. D. V. Leech	Wessex
M. Truman	Newcastle
I. Harrop	633 G.S.
F. H. Wooldridge	Midland
P. V. Mooney	Fulmar
J. M. Ridlwell	London
G. C. Greenslade	Surrey
J. L. Williams	Empire Test Pilots
J. H. Whitney	Nimbus
J. H. H. Barrow	Cornish
K. Taylor	London
M. Bialkiewicz	Polish
P. I. Normand	West Wales
J. H. Minchin	West Wales
D. M. Pillans	Derbyshire & Lancashire
A. Freeman	Surrey
L. G. Dobson	Yorkshire
G. G. Bedward	London
B. P. Huggins	London
D. L. Ray	Windrushers

B.G.A. News

Annual best flights

Last year, unfortunately, several Cups and Trophies were not awarded because no one had put in a claim, although it was known that some good flights had been made.

Please put in your claim this year, even though you may think you have heard of a better flight. Some claims had to be disallowed because of insufficient evidence, and some flights had not in fact achieved their rumoured end. Claims to be sent to the office not later than 7th January, 1963.

Records homologated

BRITISH NATIONAL DISTANCE: 460.5 miles by P. D. Lane in Skylark 3F, Geilenkirchen (Germany) to Angoulême (France): 1st June, 1962.

UNITED KINGDOM 100 KM. SPEED: 86 miles by M. Bird in Skylark 3F, Camphill to Ingoldmells in 1 hour 13 minutes, speed 71.09 m.p.h.; 4th August, 1962.

Regional Competitions 1963

The following Clubs have been given approval to run Regional Competitions, the result of which may count for Pilot Rating.

MIDLAND GLIDING CLUB

The usual Easter Competitions will be held at the Long Mynd from Friday, 12th April, to Tuesday, 16th April, 1963. Entry forms and regulations will be available from 1st January, 1963, and entries will close on 1st March, 1963.

No acceptance of entries will be made before the closing date for entries. If more entries are received than can be accepted, the entries will be reduced to the acceptable maximum by selection based as follows:-

(a) To obtain a fair proportion of pilots of all grades from the most highly rated to the unrated.
(b) Consideration will be given to those pilots and clubs that have supported the competitions over the past years.

Entry forms and regulations may be obtained on or after 1st January, from Lieut.-Col. G. Benson, O.B.E., Marston, Pembridge, Leominster, Herefordshire (Tel: Pembridge 203).

LONDON GLIDING CLUB

August Bank Holiday: 27th July to 5th August, 1963. Details will be announced later.

NORFOLK & NORWICH GLIDING CLUB

Easter: 12th April-18th April, 1963. Entries after 1st January.

Coach and Capstan

John Everitt has been selected as the National Gliding Coach from a number of outstanding candidates. We wish him every success in his new appointment.

Tissandier Diploma

AT the Athens General Conference of the *Fédération Aéronautique Internationale*, a Paul Tissandier Diploma was awarded to Cedric O. Vernon, of the B.G.A. Technical Committee, "for his technical work in connection with glider airworthiness."

Annual General Meeting and Ball Saturday, 9th March, 1963

As reported briefly in the last issue, the A.G.M. and other Meetings will take place at the Duke of York's H.Q., Chelsea, on Saturday, 9th March, 1963. These will be followed by a Dinner and Ball at the Kensington Palace Hotel to welcome home the British team from the Argentine Championships. Tickets, which will cost 30s. each, will be limited and will not be available after Monday 4th March. Seating will be at tables of eight, so why not get up a party, but do apply for your tickets early, and do remember to tell us whose table you wish to sit at. Tickets for student members for dancing only (10 p.m.—1 a.m.) will be available at 12s. 6d. each. The Annual Awards will be presented at the end of the Dinner and it is also hoped to have a short cabaret. Ticket application forms will be found in all clubs or tickets may be purchased direct from the B.G.A. or a Member of the Committee.

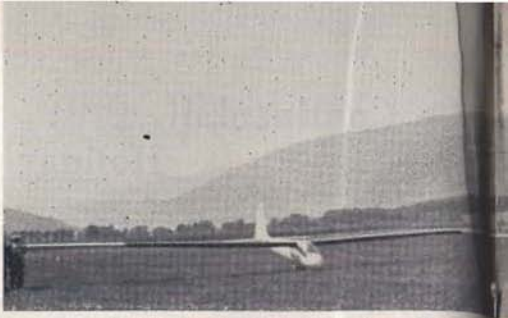
YVONNE BONHAM,
Chairman—Ball Committee.

A Continental Holiday

by Philip Wills

Grenchen is the centre of the Swiss watchmaking industry. A beautiful grass airfield at the foot of the Jura. Lots of light aeroplanes and two gliding clubs with Ka-6's, Mucha Standards, a Foka, a Phoenix, and so on. Hangars, bar and clubhouse. A terriffic Olympic-standard swimming pool next door.

From Grenchen through Berne and Interlaken, and over the Susten Pass. Mungo and Racy Buxton and Kitty peer over the edge whilst the Vanguard is ▼ given a breather.



Ancient and modern! A tug of the

Near the top of the Susten P
fully, six-up and

◀ A great welcom
they got out the E
her: 20-metre sp
flaps, up-and-dow
the lot. Terrific per
the complications

Down the other side of the Susten, then up to Andermatt, and over the St. Gotthard. A bit of overtime involved with the steering-wheel, snaking down from the top to Lugano and Italy. ▼

0's towing off the Skylark 4, 1962 model.

Pass. The Vanguard went man-
towing the trailer.

me at Varese, where
Eolo and let me fly
, retractable wheel,
ailerons, V-tail —
rformance — but oh,

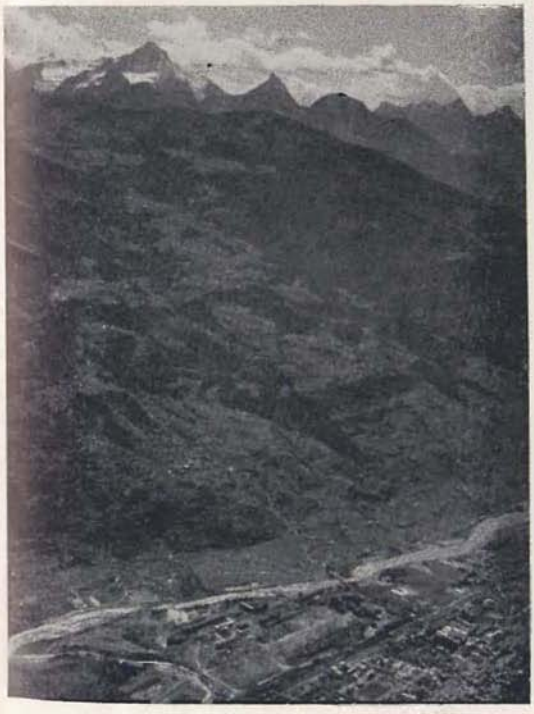
Out of the hangar, over the road and on to the airfield, which runs down to the lake.

◀ I delivered the Skylark 4 to Adele Orsi, to supplement my "Three" which Georgio Orsi bought last year. So two Skylarks in the Wills' colours now sit side by side, eyeing each other in a friendly way. When Spring comes . . .

On the terrace at the Orsis' house, a meeting between (l. to r.) Professor Georgii, Mr. de Lange (OSTIV), General Nannini (head man of Italian gliding) and Giorgio Orsi, discussing possible future OSTIV activities at Varese.

Renato Vitelli was at Varese for the day, and everyone told us we simply must, on our way home, visit the new Gliding School at Aosta, at which he is chief instructor. (He speaks English, and has a splendid sense of humour.)

The Blanik (Czech) two-seater at Aosta. All-metal, beautifully constructed, very nice to fly. A low sinking-speed even with the flaps, air-brakes and wheels all down! Radio in all aircraft at Aosta.



▲ In a M-100S, 4,000 ft. over the airfield at Aosta, looking west up the valley to the town. Mt. Blanc, 15,800 ft., is half-right out of the picture. The Gt. St. Bernard Pass is to the right, up the valley out of the town.

◀ 5,000 ft. over Aosta looking south towards Mt. Paradiso, 14,000 ft. The M-100S is an Italian Standard class design, excellent to fly and of good performance and simple construction. Being built also in France under licence. Designer, P. Morelli.

Waves occur through 180° of wind directions, over surrounding mountains up to over 15,000 ft. I anticipate climbs to around 40,000 ft.

Control tower, restaurant and sleeping accommodation, baths *et al.*, for 10s. a night! A glider to yourself for a week at 15s. an hour! Courses throughout the year. The address: Centro Permanente di Volo Veleggeato di Alta Quota, Aeroporto Regionale di Aosta, Northern Italy.

The "Ten Year Plus" Overhaul

FROM many conversations lately it is clear that there are a lot of people who are still a bit in the dark about the Ten Year Plus Overhauls on gliders. An idea persists that this overhaul is some sort of super C. of A. in which the glider is torn open and generally stripped down to the last degree. This is not the idea at all.

The rule is that when a glider is ten years old the C. of A. shall be signed by a Senior Inspector, and the Technical Committee of the B.G.A. have decided that this shall be repeated every five years thereafter. Just that and nothing more.

The idea behind the establishment of the Senior Inspectorship was simply that the need was felt for a corps of inspectors who had rather more experience than average, and in particular, who could be considered experts in the deterioration of materials, glues, etc. and in the detection of corrosion.

The idea of the Ten Year Plus Overhaul should now be fairly obvious. It is to catch the badly maintained or repaired glider or the machine that has been badly stored, and to see that it is put into a serviceable state before its deterioration becomes dangerous. I would stress that, in the case of the properly maintained machine, which has got all its repairs and adjustments properly signed up in the log book by an approved person, the Ten Year Plus should not be much more than an ordinary C. of A. The Senior Inspector has full authority, of course, to decide exactly how far he shall go in the way of stripping down, but if the state of the machine on inspection is good, and the maintenance is fully signed up in the log book by an approved person, then he is perfectly justified in accepting the machine as being in good structural condition and in taking the closed components fairly on trust.

However, if the machine does not appear in good condition, and the log book does not supply the evidence of the maintenance duly signed by an approved person, then the unhappy inspector has nothing to go on. He is failing in his duty if he does not open up pretty extensively until he is absolutely certain that there is no deterioration inside the machine, and that he has chased out and eliminated all the corrosion.

The Technical Committee did not start this idea for fun. Several cases had come up of machines that had been found to have deteriorated to an extent which made them highly suspect. The log books of these machines were very reticent on the subject of who had done what to them and when. It was felt that to allow this state of affairs to go on was asking for trouble, and this Ten Year Plus scheme seemed the simplest way of dealing with the problem.

I would repeat that the properly maintained machine has nothing to fear from this scheme. The badly maintained machine is the one that the scheme will penalise, and it is the purpose of the inspection to prevent that machine from becoming a death trap.

R. STAFFORD-ALLEN,
for Technical Committee.

First Hour Without Motor

by Arthur Martens

Just forty years ago, the art of prolonged soaring flight was mastered at a competition held on the Wasserkuppe mountain in Central Germany. Here is a translation from an account of the world's first motorless flight of an hour, which the pilot wrote for a newspaper immediately after the event. The flight won him a prize of 100,000 *marks (the currency being inflated at the time) for the first motorless flight of over* 40 *minutes. In the same machine the world's record was raised next day to* 2 *hours and on August* 24*th to* 3 *hours* 6 *minutes by F. H. Hentzen, who is believed to be now in Cairo, but we have been unable to contact him so far. Martens unfortunately lost his life in an air liner crash in* 1937.

IT is August 18th, 1922, late in the afternoon. The Wasserkuppe gleams in the bright sun. A wind of 6-8 m/s. (13½-18 m.p.h.) blows across the plateau. Shortly before, it had turned sharply to the west — a good chance for an attempt on the big prize.

I announced to the officials: "Flight in the Vampyr, attempt on the big Industrial Prize". Quickly the machine was lifted off its trolley and stood ready for the launch. A short look-over, a quick test of the controls, and amid jokes and laughter I was forcibly helped into the cockpit — for getting into our sailplanes was not so simple for anyone equipped with long legs.

"All ready?"

"All ready!" came the reply.

"Wind strength?"

"Fluctuating between 6 and 8 metres a second."

The launching rope hung from the hook. The launching team were all in their places. We could start.

"7 — 7 — 8 — 8½", shouted the man with the anemometer. Clear and sharp from the cockpit came the command: "Look out — ready — off!" The machine came to life. It rolled lightly on our special chassis, made of inflated "Conti" balls, over the gently undulating ground. Lightly our big white bird lifted off.

The wind blew fairly steadily, so that I didn't have to work the controls much, and the proud bird climbed, mocking gravity, towards the blue sky. To the left I could see the Pferdskopf, a promontory that stands out clearly from the mountain massif. It sank lower and lower and, with the machine lying oblique to the wind, I came nearer to it. On its summit I recognized the figure of a single observer following my silent bird through glasses. Now I was poised high above the Pferdskopf and began to turn the machine slowly back towards the launching point.

With a sudden sharp turn I was off towards the launching point at great speed with a partial tail-wind, and while some way off I heard the cries of several hundred voices which grew louder and louder. Now I was 100 metres above the launching point and, with a sharp left turn above the mass of spectators, headed once more into the wind.

How long had I been in the air? I looked at my watch and realized I had forgotten the starting time. Already I was back over the steep west slope and had to be careful not to shoot out too far over the valley and lose the lifting power of the wind. I let the big bird drift across wind onto the previous track. Again I saw the lonely observer on the Pferdskopf sink lower and lower, and hovered silently like a great antediluvian bird above him, turned again, flew over the crowd, quickly saw the great massif of the Kuppe coming at me, tipped the machine over and was once more above the starting point.

"How long have I been flying?" I shouted down. They heard me and became silent. I called again, and then hundreds of voices shouted independently and I could make out nothing.

For the fourth time the sailplane set course for the starting point. There I saw a strange sight: on the ground there lay a giant number "18". A brilliant idea! Enthusiasts had laid out the number with their bodies — a number that lived, gesticulated and shouted wildly. For me this moment of

wireless intercourse with the earth was one of the finest of the whole flight.

For a fifth time I returned — low, very low. Thoughts came and went like lightning! What had gone wrong? Had the wind let up? Had it veered? Was I flying badly? I tried by every possible means to regain height . . . in vain.

I flew over the starting point with 25 metres to spare. Below lay a living "24". Shouts . . . questions came up, but I could only understand fragments. I called down: "I can't hold it; the wind is dropping." Silence below. "What is the wind strength down there?" A single voice called out loud and clear: "Wind's much less, 3 to 4 metres a second" (7-9 m.p.h.).

So I should have to give up — an unpleasant feeling, after the goal had been in sight.

I held the controls perfectly still, with nerves tensed to snatch any kind of airstream that would lift me again. With alarm and sadness I noticed that the machine had almost sunk below starting level. I looked around at the countryside . . . quiet . . . dumb . . . apathetic. I could have cried.

Suddenly the machine gave a jolt and I felt myself heaved up as in a lift. A strong gust had seized the machine and threw it higher, higher, even higher. On the left the Pferdskopf sank lower. Suddenly I felt a strong wind; the climb became surer, gusts struck the machine blow upon blow. Swiftly I tried to capture as much energy as I could from the gusts.

Arthur Martens (left) and F. H. Hentzen, world record holders in 1922.

Again I was high above the Pferdskopf and made my sixth turn over the Wasserkuppe to the accompaniment of loud jubilations from below. At this height a stronger and almost uniform wind was blowing. In the west the sun was sinking; haze enveloped the valley. By the Eubeberg a pair of buzzards circled sliently at my height.

Over the Pferdskopf for the ninth time, I saw a living number in the distance and heard cheers from the expectant crowd. I approached, and made out the number — it was "40"!

I shouted: they became silent, and heard from above the words: "Now I shall go into the valley and fly to Gersfeld". A confusion of voices, then up came a clear voice: "Don't fly to Gersfeld; the distance is too short."

Another turn, then over the Pferdskopf, and then I set off towards the valley and the setting sun, leaning back and holding the controls still. After a while I turned my head and saw the Wasserkuppe massif outlined against the evening sky. Deep, deep under me the village of Poppenhausen went by. Dogs barked, hens fled to their coops, men looked up and shouted . . . shouted. I approached the Ebersburg on the left and looked down on the ancient castle ruins. I must have been in the air 50 minutes. The thought suddenly flashed through my mind: "I must complete the hour".

I avoided every unnecessary movement of the controls, sacrificing height inch by inch (*Zoll für Zoll*). Out of the haze emerged a white church tower surrounded by houses. That must be Weyhers. I looked at my watch: Hurrah! the hour had passed — by how much, I knew not. I estimated my height as 150 metres and decided to land. A few hundred yards ahead was a meadow; beyond it a brook, and by it a water mill clattered. I put the nose hard down. The wind began to whistle! I dived the machine to just above the ground, charged across a cornfield, arrived over the meadow at high speed,

and floated . . . floated . . .

Just above the ground I threw the machine onto its left wing, which was grasped by the earth; then the great bird fell exhausted onto its inflated Conti balls. A short jolt, a sharp left turn, and it came to a stop just before a cornfield. I sat in the cockpit for a moment, re-living the experences of the flight, then tore off the wind protector and was joyfully received by the villagers, who surveyed the great monster from the Wasserkuppe in astonishment with unbelieving eyes.

Jingle Bells at 71.09 m.p.h.

by Mike Bird

BEFORE I forget, here are some basic details. Date: Saturday, August 4th. Aircraft: Skylark 3F. Distance: 86 miles from Camphill to Skegness (Ingoldmells). Time of start, 13.44; finish, 14.57.

The other relevant fact is perhaps the wind, which averaged 28 knots over the course at an angle of track which gave an actual downwind component of 24 knots.

There were three distinct phases to the flight, all of which helped to make it quite short. Firstly, a dash through lift marked by several competitors over the first 15-20 miles; secondly, a set of short but powerful cloud streets; and lastly, a 30-mile final glide which left 200 ft. to spare at the goal.

While pressing upwind to make a proper racing start, I saw out of the corner of my eye a string of other gliders circling vigorously at regular intervals downwind of the site. These markers were too good to lose, and I turned and dashed obliquely across the line at 1,900 ft. through heavy sink to the first marker. A couple of circles and on to the next glider—but in steady lift. Without circling we reached numbers three and four at Sheffield, 12 miles out in 10 minutes.

In a few more minutes, however, the sky was empty of gliders, and I had to find my own thermals instead of stealing them. However, I now had an idea of what to expect in the way of streeting, thermal strengths and sink. The rate was 75 knots across the gaps, 55 knots in zero sink and 40, no circling, in lift up to 400 f.p.m. One serious climb was made, 2,000 ft. in 3 minutes, just short of Lincoln. Here, I learnt later, some

Mike Bird (left) with his winning Skylark 3 at Camphill.

people happily continued on to 8,000 ft. or more, but with 35 miles to go it seemed about time to think about coming down rather than going up.

When I emerged from the end of that last exhilarating street there were 30 miles left and 5,500 ft. in hand. The rest was an anxious minute-by-minute plotting of height against distance using a tatty piece of graph paper taped to a quarter-inch map. I don't believe much in glide calculators which make exact assumptions about glider performance, but prefer to mark height lost against distance covered on a graph; you can make instant visual checks of whether the achieved glide-angle can be projected to the goal or safely beyond it. If not, the extra height needed can be worked out in a couple of seconds. No moving parts and no polar curves.

The worst bit was not knowing precisely where Ingoldmells airfield was except that it was right next to Billy Butlin's—which looked about 10 miles wide when we arrived. It came into view to my intense relief when I had 700 ft. left and three miles to go.

Postscript on future records

It seems that 70 m.p.h. is really pretty slow assuming a good tailwind and a final glide covering a third of the distance. A determined attempt to make a really fast speed (say 100 m.p.h.) would be to choose a goal exactly 62.1 miles downwind and to start when a massive cloud street was in the right position. Such attempts would be freaks, of course, but they could be a way of enjoying cracking conditions when the wind is too strong for a closed-circuit and you are too broke to go a very long way downwind.

Cable-Tangles

THIS year has provided, in addition to the usual crop, a small growth which seems to be distinguishable as a new growth, or perhaps more correctly, a survival of a weed which it was hoped had been eradicated. I have now labelled this growth as the CABLE-TANGLE.

The first of this year appeared as a report of an auto-tow cable which, becoming entwined with a winch cable, lying too close to it, pulled the latter taut; the winch cable then broke free, and in doing so damaged the tail plane of an adjacent aircraft. The second concerned a Tutor which, during the launch, drifted, so released its cable to one side of its expected track. The inexperienced pilot cannot be blamed, but the pilot of the tug of a Tiger/Swallow combination, taking off close behind the Tutor, was obviously in an unsafe position, because the dropping cable fell across the combination, which broke up in disorder.

Number three in this series is best described in the words of the pilot involved, and of an observer. The pilot reported thus:-

"The launch appeared normal. At about 500 feet above take-off the pull on the launch cable ceased in a manner consistent with winch failure. I pulled the release cable twice, and was satisfied that the cable had gone. I started a right-hand circuit. The speed fell off rapidly and it required forward stick pressure to maintain a satisfactory speed. I checked the trimmer lever position and found it in the normal take-off position. I put it fully forward. This had no effect. Now I heard a whining noise, as though a cable was dragging over some part of the aircraft. This stopped, and was replaced by a slight irregular jerking movement. I pulled the release knob again to make sure that the cable had really gone. I had now completed about 90 degrees of my right-hand turn, and had lost height rapidly. I continued my turn which took the aircraft beyond the western boundary of the airfield, and after about 200 degrees of turn, back over it at a height of about 70 ft. I took off turn to land straight ahead. The whining noise restarted, and it became difficult to maintain flying speed. The aircraft finally refused to fly any more, and without altering its attitude, which was quite nose down,

FRED FUMBLE

EXTRACT FROM "LAWS AND RULES"

"F.14.—All pilots must report any suspected defects or heavy landings to the instructor in charge before the aircraft is flown again."

it dropped what seemed a considerable distance, and struck the ground with no forward speed whatsoever."

The observer, who was wing-tip man, reported thus:-

"The glider before taking off fouled the adjacent winch-launching cable with its tailskid. This cable, which was staked at the launching end, cut a groove in front of the skid plate, and became firmly attached, pulling the stake out of the ground. The launch continued, despite a stop signal, and the dead cable was carried up with the glider, the parachute hanging about 200 feet below it. At about 500 feet the winch driver saw the cable attached to the tailskid, stopped the launch, and guillotined the dead cable. The pilot, presuming a winch failure, released the live cable and attempted a circuit."

Report number four describes a launch in which the pilot of a T-31 dropped his wing to a degree which somehow permitted his tailplane to foul another cable, and to become entangled with it. The fouled (dead) cable was promptly cut, and the launch and circuit thereafter proceeded normally.

These four accidents suggest to me that there are Clubs, Instructors, pilots, winch drivers, and Launch Masters who are no longer as alert as desirable to the lethal properties of an uncontrolled cable. The precautions necessary when about to launch are all quite well known. May I now, as your Accidents Analyser, respectfully suggest to all those Clubs, Instructors, pilots, winch-drivers, and Launch-Masters who have not been alerted by being involved in these four particular incidents, that you have a look at your launching arrangements. It may save you some money; it could save something far more important than that.

G. J. C. P.

EDITORIAL NOTE.—Since writing the foregoing article, Air Commodore Christopher Paul has resigned from the office of Accidents Analysis Officer.

Thank you, Berne

by Major Donald Scarfe

HAVING been persuaded by the 'Other Half' that for two weeks out of the fifty-two She was to be permitted to spend my off-duty moments elsewhere than "on a ******* airfield", I took the family to Lake Thun this last summer. Besides, I'd read in the Mag. about a chap with a gliding centre at a place called Gstaad, and that too sounded as if it could be somewhere in Switzerland. Like the rest of you, I had of course also seen a photo of our Chairman airborne over an Alp, so it looked as if the trip had possibilities if played carefully.

The first day was inevitably a blinding dash down the autobahn, under a perfect sky . . . it would probably have been quicker by Ka-7 . . . and the night was spent in a hotel at Mulheim. Incidentally, we chose the hotel because of a display frame full of gliding photographs which my youngest spotted on the wall, and happily the enthusiast turned out to be the cook. Steak *au poivre à Vol à Voile* is now a firm favourite with us.

Arriving at Faulensee, we spent a day on our backs resting and watching a resident Cu over the Niederhorn just across the water. That evening a glider appeared under the Cu, and I resolved to organize a mystery tour by car the following day. The 'O.H.' rumbled the destination at once, but was sweet enough to pretend to be mystified! This was, in fact, the first of many such tours, each of which was unfruitful, and although we certainly saw a bit of the Bernese Oberland, at least one Spirit was getting pretty low. Then one evening I watched a U.K.-based Auster land at the local airfield (situated rather quaintly in my opinion in the Thun rifle range), and the pilot, who was out for a few days' holiday, told me that there was certainly gliding at Berne, where he had just cleared customs.

At 9 a.m. on the Sunday, I reached Berne airfield in time to see two Ka-8's and a Rhönlerche being towed simultaneously behind a jeep to the launching point. A quick word with the driver, who turned out to be the elegant Max Fischer, duty instructor, and I was made welcome by all present.

What a field! Restaurant, bar, hangars, a commercial aircraft concrete strip, a vast grass area for gliding, all surrounded by farm land stretching away to wooded slopes on three sides and the city on the fourth. Quite the most magnificent two-cable winch I've come across, purring away quietly, and aerotows from about 11 o'clock, "after most people have been to church". The wind was unfortunately very feeble, but it did change direction during the proceedings—to our disadvantage, as it seemed to come away from all three slopes.

I was given the first flight in the Rhönlerche as a check, and in almost

******* A strange word she brought from the Navy.

no time we were at 400 metres.

What a view! A whole line of snowy peaks above the yellow cornfields and green trees, Eiger, Mönch, Jungfrau . . . the sun blazing out of a blue sky and . . . hullo! 150 metres, cut in a bit and land back at the launching point. I suppose in the end one can overlook even the Alps, but for a dual check they constitute an additional hazard, even when 30 miles away.

After a while out came the tug, and off in a Ka-8 for half-an-hour of hill locked thermal. -This was my first experience of aero-towing without a horizon—I was released at 400 metres above the strip, but still below the height of the surrounding hills; happily the rope was over 100 feet long and not the 20-metre job so popular now in Germany.

Meanwhile a thrice diamonded Volkswagen had arrived at the launching point and its owner had disappeared upwards in the only Sky in the country, leaving his wife to sunbathe. She was charmingly decorating. a *chaise longue* beside the car from which dangled the hand set of the radio, giving what seemed to me to be continual reports of 2 metres sink at 30 miles distance. People like that make me see red, the way they fly without thermals.

All except the sunbath and the radio contact stopped for the customary continental lunch "hour" which I had already run up against at Fontainebleau, and as the afternoon attendance had grown to quite a milling crowd I departed shortly after three leaving someone else to put 'em away. Don't think harshly of this, however, because Berne gliding is on commercial lines—one reports to the Luftpol zei office for a bill at the end of the day—and I'm sure that a visitor is not expected to take part in stacking.

Certainly the welcome and the friendly atmosphere were greatly appreciated, and so was the kindness shown to my efforts at French. I shall be watching next year's World Championships with even greater interest than usual to see whether the Swiss National Champion ever came back to collect h's wife! Good Luck to him, and to a delightful club. Thank you, Berne.

FRED FUMBLE

EXTRACT FROM "LAWS AND RULES"

"F.2.—A pilot on meeting hazardous conditions in flight shall, as soon as possible, report to the appropriate Air Traffic Control information helpful to the safety of other aircraft."

* * *

A Rational Approach to Air Traffic Control

by Philip Wills

I HAVE over the past year been writing a number of articles on air safety, and particularly in relation to the risk of air collisions. Some of these have been widely published in many countries, because the problems of Air Traffic Control have been frustrating the growth of aviation all over the world.

These articles have all been leading up to the following proposal, since this is the best line of approach we can see to a solution of these problems on common-sense lines, permitting the maximum growth of the use of the air consistent with known and acceptable standards of safety.

I hope that this article may also be published in other countries, for this is an international problem, and is most likely of solution if we all attack it in the same way.

Existing A.T.C. policy is perforce based largely on emotion, in the absence of sufficient factual information. The pressure of vested interests has produced a conviction that collision risks are too large, and ought to be, and can be, reduced by increasing restrictions as fast as additional equipment makes it possible to do so. Increasing restrictions lead to decreased use of the air by those sections of aviation which are unable to afford or carry the necessary airborne equipment. The technical state of the science is still so inadequate that A.T.C. proceeds largely on the assumption that the air is flat (since altitudes are not normally measured from the ground) and that all pilots are blind, and so unable to avoid collisions, even in clear air, by simply looking out of their windows. Hence the paradox that, whilst A.T.C. declares their special brand of air is overcrowded, pilots (other than professional ones who are not worried by the cost) find that the real, three-dimensional air is quite empty, and resent their growing exclusion from increasing volumes of airspace.

Appeals of these pilots to the facts fall on ears almost deaf, partly perhaps due to the feeling that these facts have not yet sufficient background to be statistically reliable, but mainly to the enormous impetus the current philosophy has achieved, and the vast and expensive plans in the pipeline towards further controls.

Since the number of collisions in the world involving airliners and gliders remains at zero and this figure is hardly susceptible of improvement, the deadlock between opinion and policy based upon it, and fact, appears to be complete.

Attempts to break it founder upon such disingenuous statements from other interests as: "There can be no compromise with safety". The kindest thing that can be said about this is that it is dangerous nonsense—dangerous because it *is* nonsense. To achieve the benefits of aviation everyone—public included—is forced to accept a compromise with safety—the only completely safe device would be a padlock put on the hangar, and the key thrown away. Every time an aircraft takes off is a compromise with safety: the operation is carried out within certain safety standards which could equally well be called danger standards.

In the design of an aircraft factors are called for involving risks of the order of 10^{-8} (one in a hundred million) of such things as simultaneous engine failures, spar failure and the like. Higher factors would involve higher costs, which are considered socially undesirable. The benefits of technical progress are devoted mainly to improving services, either to cheapen flying or to speed it up, and safety standards are hardly increased at all.

In A.T.C. matters, however, such an approach is instinctively rejected, and it has been very difficult to produce reliable figures. If they *could* be produced,

the whole situation would be revolutionised, and pilots, the public, and the authorities would be in accord on the restrictions necessary to keep the collision risk within known limits. Discipline in the air would be improved and hence safety.

Traffic density in U.K. airspace is currently so low that the risk of collision in much controlled airspace arising from human error may well be greater than the random risk in uncontrolled airspace. Hence we get the remarkable suspicion that in some areas air traffic control achieves *increased accountability for collisions at a cost of increasing the risk of them happening.*

Before we glider pilots suffer from a frantic exodus of commercial traffic from their existing controlled airspace into our free air, may I quickly point out that risks in both classes of airspace are exceedingly small.

Current risks of a fatal airliner accident from all causes are believed to be of the order of 1 in 500,000 hours of flight, within which figure the risk of fatal collision is an infinitesimal part. Efforts are of course constantly made to improve this record, but not at the cost of seriously contracting the whole scope of aviation. For instance, no one overtly states that all forms of aviation except military and commercial aviation should cease, although if this were done obviously risks would be reduced, if only infinitesimally. No one requires that all four-engined aircraft should at all times be able to reach an airfield in the event of three engines failing, because the cost of such increased safety would be prohibitive.

When we consider the conflict arising from this cause between public safety and private flying, we must distinguish between the degree of risk the public *must* accept to achieve the benefits of aerial transport, and the additional risk they should be subjected to in order to achieve the much more diffuse national and social benefits arising from, say, private flying and gliding. This is a difficult equation, and one that is political more than technical.

If, for instance, it is agreed that gliding was nationally valuable to the extent of taking an actuarial risk of 1 collision in 250 years, restrictions acceptable to all could be based on this formula, and an immense advance would have taken place in this at present most unsatisfactory field.

If this policy were accepted, the British Gliding Association is prepared to advance formulae applicable to gliding for study.

Icing in Standing Wave

AT an Aircraft Ice Protection Conference at Luton, a B.E.A. Vanguard was reported to have experienced "extremely severe" icing when climbing out from Madrid on the way to London, resulting in a loss in performance equivalent to 40 per cent of the maximum available power. The ice formed in about 10-15 minutes during the climb from 6,000 to 14,000 ft. "The probability of meeting icing conditions of similar severity", it was stated, "is in the order of once in 20 years of airline operation."

The incident is said to have occurred "in standing wave conditions in advance of a warm front" on October 6th, 1961. The sloping surface of a warm front usually differs little from the horizontal, and if the "warm" upper layer is above freezing point and the "cold" lower layer below freezing, rain can fall through from above on to an aircraft in the lower layer and immediately freeze. If the front is thrown into waves, the rain could be concentrated into the regions near the wave crests.

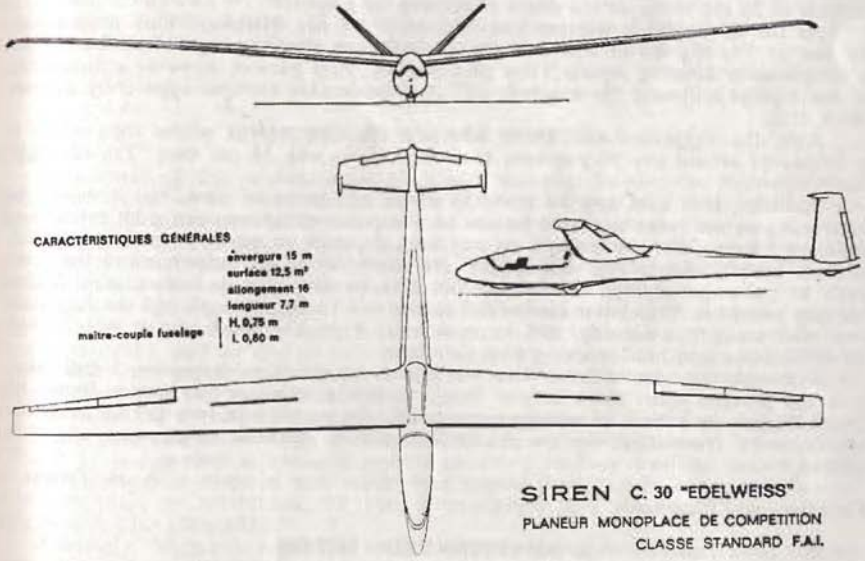
Examination of the surface weather chart for this day shows a warm front approaching Madrid at noon, lying in a direction N.E. by N. to S.W. by S. This is just about the course along which the aeroplane would fly, and if the waves were approximately parallel to the line of the front, it could have been flying continuously in the region of concentrated rainfall. The pilot saved the situation by asking for clearance to a lower level.

A.E.S.

EDELWEISS — A French Standard Class Sailplane

THE SIREN Company, known since 1952 for its production of equipment for diverse aircraft, has launched out into the production of sailplanes, beginning with a Standard Class machine, the Edelweiss. The Company's *Président-Directeur Général* is E. Gottot, and its *Directeur des Etudes et Fabrications* is J. Cayla — a name well known in the gliding world. It has *centres d'activité* at Versailles (S. & O., 13 rue Saint Honore), Argenton-sur-Creuse (Indre), and Brussels.

Series production of the Edelweiss is expected to begin in spring 1963, and meanwhile the prototype is destined for the World Championships in Argentina. The general structure is of sandwich construction with a filling of plastic foam. This allows maximum reduction of longerons, frames and ribs, and so simplifies repairs. The pilot lies back, allowing a small fuselage cross-section. The tail is of V-type.



Principal Data

WING
- Span 15 m. (49 ft. 2½ in.).
- Area 12.5 sq. m. (134 sq. ft.).
- Aspect ratio 18.
- Dihedral 4°.
- Taper 0.375.

FUSELAGE
- Length 7.6 m. (24 ft. 11 in.).
- Max. diam. 0.6 m. (1 ft. 11½ in.).
- Max. height 0.72 m. (2 ft. 10 in.).
- Frontal area 0.35 sq. m. (3.77 sq. ft.).
- Wetted surface 9.7 sq. m. (104 sq. ft.).

TAIL
- Projected span 2.8 m. (9 ft. 2 in.).
- Area 2.2 sq. m. (23.7 sq. ft.).
- Aspect ratio 4.25.

WEIGHTS
- Empty, 203 kg. (448 lb.).
- Equipped, 290 kg. (639 lb.).
- All-up, 380 kg. (838 lb.).
- Max. wing loading, 30 kg./sq. m. (6.14 lb./sq. ft.).

PERFORMANCE
- Best gliding angle 1 in 34 at 95 km./h. (59 m.p.h.).
- Min. sink 0.7 m. (2 ft. 4 in.) per sec.
- Sink at 120 km./h., 1.2 m/s.
- Sink at 140 km./h., 1.8 m/s.
- Sink at 160 km./h., 2.7 m/s.

Correspondence

TRAINING WITH AN ENGINE

Dear Sir,

May I, as an ex-founder member of Mr. Hickson's club, be permitted to comment on his letter criticising Derek Piggott's article on curing frustration?

I would venture to suggest that frustration is more usually caused by lack of team spirit and club politics than by the type of machine to be used. Surely, in the early stages, active participation and time in the air do most to build enthusiasm and whet one's appetite for the better things; and any machine, whether part powered or not, cannot fail to help in this direction.

Perhaps if Stan reads Derek's article again he will find that it said the performance would be identical with the ordinary glider, so how this would lead to suicide later on I cannot imagine. In what sense does he use the word "suicide"? Suicide to fly the thing, or the death of soaring as a sport?

As the membership wastage and "crashery" of Mr. Hickson's club must surely be one of the highest in the Country, I would say there is a problem. Let us do a simple sum: Gliding equals Time plus Money. Any person, however enthusiastic, at some stage will say, "Is it worth it?" A considerable number apparently do not think it is.

Also, the suggestion that those who win through emerge whiter than white is a fallacy—I would say 50 per cent true enthusiasts and 50 per cent "I'm all right Jack" type.

Statistics, it is said, can be made to prove any point of view, but it would be interesting to see some unbiased figures on the relationship between pilot rating and personal income, for competence at anything depends so much on practice, which in turn usually means financial outlay. No doubt there are ways around the cost, such as passenger flying, whether or not this be disguised as instructional flights for day members. This latter cannot fail in the end to frustrate all but the fortunate few who enjoy this subsidy, and so turn away from the sport people who would be enthusiastic and hard-working club members.

Although this sort of frustration has ended my active participation, I still think it is the greatest sport there is, and would certainly welcome any means found by Derek Piggot, or others, in getting more people interested and into the air with the minimum of frustration, be the frustration due to weather, equipment or club politics.

A. H. TWIGG

Peterborough, Northants.

A DISAPPOINTED VISITOR

Dear Sir,

The great British gliding centres are held in high regard by overseas pilots, generally speaking. Accordingly, I quite casually passed by the French centres in the south-east this September, and made directly for the best known of the English areas. I was most impressed by the equipment and facilities for the ab-initio pilots. the private owners and the members of syndicates. I hastened to pay my five shillings, and made my way in a state of considerable elation to the instructor in charge, where in a retiring fashion I stated my qualifications (ex-R.C.A.F. pilot, 12 hours on a Schweizer 2-22), and my need, which I felt was for dual time in an advanced two-seat aircraft—in this case, the Eagle. During the next four and one-half hours I retrieved countless T-21s, and one Swallow countless times. This latter aircraft was driven by a young man of pyknic habitus who was apparently cultivating command presence. Shortly after 4 p.m., without having been off the ground, I was retrieved by my host, a B.O.A.C. captain, who whisked me off to a near-by public house where suitable tranquilizers were administered in adequate dosage.

In retrospect, with the hackles a little flatter, and bearing in mind the advance bookings and need of the students, does it not seem that visitors from abroad, keenly interested in the continued happy state of British gliding, might be fitted, however briefly, into the day's flying activities?

MACKENZIE HUME

New Hampshire

HUNDREDTH SILVER C

Dear Sir,

Congratulations to the Cambridge Club on their hundredth Silver C!

Though proud of our nine completed Silver badges this season, no one in the Surrey Club knew what our grand total was, as we don't keep a Notable Flights book. However, Ken Machin's challenge in the October issue just had to be answered if possible, so a member was dispatched post haste to Artillery Mansions to look through the old B.G.A. files. Her researches revealed that 119 Silver C's have been completed by Surrey Club members to-date, though prior to 1953 the archives are a little sketchy. Working backwards from this figure through the records, it seems we unknowingly achieved our century in August 1960.

PATRICK GARNETT
Chairman, Surrey Gliding Club

BRITISH SAILPLANES OVERSEAS

Dear Sir,

After making the acquaintance of Roy Proctor at Masterton, New Zealand, I read with interest his observations on the growing imports of foreign gliders into erstwhile predominantly British markets and Slingsby's comments thereon.

Of the 50 gliders registered in this country in November, 1961, no fewer than 23 were of non-British origin. Of these 23, nineteen were (W) German (9 Rhonlerches, 5 KA-6's, 1 KA-7, 2 Bergfalkes, 1 Spatz and 1 Weihe).

The time when the Slingsby T-31 was the only basic trainer used by the emerging N.Z. gliding movement came to an end in 1958 with the appearance of the first Rhonlerche, and by dint of its manufacturers offering a full range of follow-on types, clubs and private individuals have since tended to at least consider its lightweight, low-priced stable mates as well.

It would be correct to state that British manufacturers have lost at least part of the export market through the neglect of the light-weight basic trainer field. (The T-31 is regarded as obsolete in this country). In New Zealand, where many a new gliding club finds its first wings in a robust, low-priced German two-seater, a pattern may be established for future purchases and the local "Buy British" slogan may have little effect.

Certainly, Slingsby's have held their own in the narrow 18-metre class and we even have two Swallows and an Eagle flying here, but most of these machines are owned by private individuals or syndicates.

Import restrictions have now been lifted and about twenty new gliders are on order at the time of writing. The only British gliders ordered so far are, to my knowledge, all single-seaters for private ownership; practically all club aircraft are again coming from Germany and for one obvious reason: a high price-performance ratio rather than high performance at any price.

FELIX KNOEF

Upper Hutt, New Zealand.

SLINGSBY SAILPLANES writes: Our business (our manufacturer's business) depends primarily on the home market. In this country it is a highly sophisticated one: the clubs require a machine capable of training to an advanced standard, including blind flying, which is not permitted in Germany. Such a machine must cost more, although in operation it may eventually cost less. Hence the T-49. The Rhönlerche does not sell in England, presumably for this reason.

We do realise the world needs both types of aircraft, but we could not afford to build a type only for export, which constitutes about 30% of our trade, nor could we develop and service it to the standards we consider essential.

We think the evidence shows that in our own field we have succeeded—Mr. Knoef says rather over 50% of gliders in New Zealand are British. We believe much more than this percentage of the really big flying in his country—records and so on—is done on our aircraft. But don't think we are complacent—we would much rather have 100% of the market, if we could!

COMMEMORATIVE MEDALS FOR COMPETITORS?

Dear Sir,

It is suggested that commemorative medals be struck for presentation to participants in British gliding contests as is the custom in continental and international contests. These would constitute souvenirs which would make an interesting collection for pilots to make over the years. As a refinement the contest winner would have a gold-plated medal, day winners would have silver-plated medals and those failing to finish in the first ten would have their medals specially tarnished or twisted.

D. B. JAMES

Marlow, Bucks.

BEST SPEED TO FLY

Dear Sir,

May I, through your columns, make some comments about the "Best Speed to Fly" on a cross-country flight? First, I would like to state that the rate of climb as measured over the whole flight or part of it, or the anticipated rate of climb of the next thermal, are not very reliable criteria for assessing the best speed to fly. The only criterion which is important is the achieved average speed *through the air*. This speed can be fairly easily assessed by measuring ground speed and making some allowance for wind speed. The steps leading up to the above conclusion are as follows:-

1.—A slightly higher average speed is achieved if the best speed to fly is geared to the average rate of climb over the whole flight rather than having a cruising speed varying with each thermal.

2.—The average rate of climb when calculated should include not only the thermals used but also time spent investigating thermals which are subsequently discarded and, more important, any height lost over and above the normal sink rate of the aircraft while cruising through sinking air. With these last two included, the average rate of climb is virtually impossible to calculate.

3.—If the chosen cruising speed is 5 knots higher or lower than the best speed, then average speed only suffers by half a knot.

4.—Thus by choosing a cruising speed depending on whether the day appears bad, medium or good, a factor readily assessed after the first two thermals, the average speed will only suffer by, at most, 1 knot. After, say, the first hour, the average speed achieved can be measured and an adjustment made to the cruising speed.

The table below shows the best speed to fly against average speed achieved for a Skylark 3F.

Average speed achieved through the air	*Speed to fly*
10 kts.	48 kts.
20 kts.	52 kts.
30 kts.	59 kts.
40 kts.	69 kts.
50 kts.	80 kts.

To sum up, therefore, I feel that theories such as choosing a cruising speed on the anticipated rate of climb of the next thermal or on the achieved rate of climb over the first 500 ft. of a thermal are only devices for getting nearer to the

average rate of climb achieved during a flight. The most reliable measure of this average rate of climb is the average speed achieved, and this should be used for calculating the best speed to fly.

I would be interested to hear other readers' comments on this subject.

TONY PENTELOW

Finedon, Northants.

Avoid Newmarket Heath

The following letter has been received by the Air Traffic Control Officer, R.A.F., Swanton Morley.

Dear Sir,

I will be grateful if you will draw the attention of the Flying Club at Swanton Morley to the fact that considerable inconvenience is caused when gliders come down on Newmarket Heath, which is the private property of the Jockey Club and is used solely for the training of racehorses. Vehicles are not allowed on the heath as they cause damage.

At 2.30 p.m. on 27th July, glider No. JXW 358 came down on the training grounds and of course had to be towed off.

W. N. GRAY,
Agent to the Jockey Club

Book Reviews

American Soaring Handbook, CHAPTER 6, "CROSS COUNTRY AND WAVE SOARING." Published by Soaring Society of America, Box 6607, Los Angeles 66, California. Price $1.00 (75 cents to S.S.A. members).

THE Soaring Society of America is producing a series of booklets to cover various phases of gliding activity. Each booklet is one of the ten chapters of the American Soaring Handbook. So far only Chapter 4 (on air towing) and now Chapter 6 have been published.

Chapter 6 is in two sections written by different authors. Dick Johnson has written the section on cross-country soaring, while the wave-soaring section is by Bill Ivans, and one could not ask for more qualified authors than these since Johnson currently holds the World Distance Record, 535 miles, and until recently Ivans held the World Height Record, achieved in the Bishop Wave.

The section on cross-country soaring is not quite what one would have expected to find; basic information for the beginner on the techniques of successful cross-country flying is condensed into 10 pages, while some 14 are devoted to a mathematical discussion of the technique for best speeds between thermals; this latter section is based on an assumed downdraft between thermals rather than the generally accepted technique based on the instantaneous downdraft. There is a good deal of very useful information for the budding cross-country pilot, but it cannot be said to approach a complete guide to cross-country flying.

The section on wave-flying is excellent. Here is a real guide to all the problems which need to be discussed before indulging in this particular kind of soaring. Of course it is written from the point of view of flying in the really big waves, but this is not to say that these problems should not be considered before operating in our British waves. In Scotland, particularly, there seems to be a good probability of reaching very respectable heights where cold and oxygen problems, not to mention turbulence and cloud cover, could easily get the unprepared into serious trouble. The booklet is well printed on good quality paper with good photographs

included. Anybody who wants to improve his general knowledge on cross-country soaring or get fully informed on the subject of wave flying should not be without this bargain.

H. C. N. G.

Flieger Kalender 1963. Price DM 5.80. **Wer fliegt was?** Price DM 3.40. **Der Wetterschlüssel.** All published by Luftfahrt-Verlag Walter Zuerl, München 19, Landshuter Allee 49, W. Germany.

THE calendar has a photograph for every fornight; one shows a sailplane over the Alps, and another the Southampton group's man-powered aircraft, photographed this year in a Hatfield hangar. "Wer fliegt was?" is a list of registration letters of all German powered aircraft, including 24 helicopters and two airships; the list includes at least 7 tugs owned by gliding organizations — 4 Pipers, 2 Jodels and a Klemm. The "Weather Key" gives all the weather codes, a long section of questions and answers, and a dictionary which appears to be correct except for the classic mistake of translating *Aufwind* "up wind" and *Fallwind* "down wind". In English, "up wind" means against the wind, and "down wind" is with the wind; a vertical movement of air is not a wind but a current.—A. E. S.

OSTIV STANDARD CLASS PRIZE

AS in Leszno, Poland, in 1958, and Cologne, Germany, in 1960, the best Standard-class sailplane will be chosen in February 1963 by an international jury in Junin, Argentine. For the evaluations, an example of each competing type in standard condition must be available and flown by members of the jury.

Each competing type must be registered in writing to Dipl-Ing. H. Zacher, 8 Munich 8, Erminoldstrasse 149, Germany, before 20th January, 1963. The following data in French, English or German should be sent as soon as possible to the same address, or at the latest handed to the jury in Junin at the beginning of the Championships:

(a) Confirmation that the registered sailplane conforms to the approved design and the "Draft Specification for F.A.I. Standard Class Gliders" which is available from the OSTIV Secretariat, N.L.M.-Atoomgebouw, Schiphol Airport, Holland.

(b) Data sheet as used in "The World's Sailplanes" and available from the OSTIV Secretariat (see also Swiss *Aero Revue*, December, 1959).

(c) Performance data with an indication whether they are guessed, calculated or measured. In addition, the position error is to be given.

(d) Flying qualities report, if possible on the lines described in OSTIV "Airworthiness Requirements for Standard Class Sailplanes", available from OSTIV Secretariat, but at least with the following information: Limits of trimmable

speeds at forward and aft centre of gravity positions; general appreciation of the controllability in low and high speed flight; spinning characteristics; time for reversal of bank from $-45°$ to $+45°$ at $V=1.4\ V^{min}$; effectiveness of air-brakes during approach and in a steep glide; and remarks on any unusual flying characteristics.

(e) Completed "Air Brakes Document" according to the "Draft Specification for F.A.I. Standard Class Gliders".

(f) Reports, drawings, photos and other data considered by the competitor to be of importance.

The sailplanes are to be available to the jury for at least two days. A crew must be available for ground transport and assembly. Every jury pilot must have the opportunity of making at least one flight in each type to a height of 1,500 metres (5,000 ft.). These flights will take place during the Championships, but early in the mornings before the daily competitions begin.

The evaluation on the ground includes:

Design
Maintenance
Useful load
Ground handling
Appearance
Ease of assembly
Price
Cockpit arrangement
Practicability for home-building

taking into account data supplied by the competitions.

In the flight testing, the feel of the controls, low speed and high speed flight, turn reversal, side-slip, landing characteristics, the general handling qualities and all subjective impressions will be evaluated.

Sailplanes which are removed by the competitors before completing the jury's flight testing, or for other reasons are not available, will be considered as withdrawn from the competition for the OSTIV Prize.

H. ZACHER.

Obituary

ALLAN PRATT

WITH the passing of Allan Pratt, Chief Flying Instructor of the Newcastle Gliding Club, on Thursday, 18th October, as the result of injuries received in an accident at Carlton when the T-21 was blown over, the movement has lost one of its most dedicated workers. Allan was not just an enthusiast—he was obsessed with gliding and drove himself unmercifully. In his comparatively short life he managed to instil a love of soaring in many hearts which will grow and endure.

Allan first flew with the Air Training Corps in 1945 at Usworth and continued whilst in the R.A.F. in Germany, obtaining his Silver C in 1948. From 1949 to 1954 he worked for Slingsby Sailplanes as a draughtsman and did much testing of various prototypes, putting in countless hours at Sutton Bank. He shared a Kite 1 with other members and flew it occasionally, but most of the time he was "duty-bound" to the T-21.

The loss of this dynamic personality will be deeply felt by his numerous friends whose sympathies go out to his widow, Sylvia, and two sons in their great sorrow.

A. COULSON

JON D. CARSEY

AS we go to press, we learn with much regret of the death of Jon Carsey, formery President of the Soaring Society of America. According to the Kansas Soaring Association Newsletter, it happened on September 11th following an operation. Mr. Carsey was in England on the occasions of the 1954 World Championships.

Masefield on Safety

"AT the annual convention in Bournemouth of the Guild of Air Traffic Control Officers, Mr. Peter Masefield, managing director of Beagle and a former chief executive of B.E.A., was blunt about the matter, averring: 'Safety does not come first, otherwise we should never get out of bed.' The statement was qualified by Group Captain Bader, who said: 'If we really want 100 per cent safety we would not only not get out of bed, we would not lie on a raised bed at all in case the mattress fell off.'

"The point both were making was that, in spite of the startling increase in air traffic in Britain since the war, the air is still fairly empty—Mr. Masefield had worked it out at one aircraft to every 20,000 cubic miles of controlled air space, or the equivalent of only 25 cars on all roads in Britain. Therefore the aims of safety must be kept in balance with those of the widest possible use of the air.

"Air space must be so regulated as to cope adequately and without undue restrictions with a predominance of general aviation (rather than airline) movements. An acceptable standard of safety as something less than the absolute must be defined."—*The Times.*

Argentine Entries

NEWS has been received by Joe Ortner in Buenos Aires that 30 different countries have already entered 85 sailplanes for the World Championships at Junin in February. From various other sources we have heard of the following pilots being chosen:

GREAT BRITAIN
H. C. N. Goodhart (Skylark 4)
J. S. Williamson (Skylark 4)
A. J. Deane-Drummond (Olympia 463)

UNITED STATES
R. H. Johnson (Sisu 1A)
R. E. Schreder (HP-11)
John Ryan (Austria Standard)

POLAND
Josef Pieczewski (of Lodz)
Jerzy Popiel (of Jelenia Gora)
Edward Makula (of Katowice)

SWITZERLAND	HOLLAND
Hans Nietlispach	J. Selen
Rudolf Hächler	A. Breunissen
Markus Ritzi	J. Krols

ITALY	FRANCE
Vergani	C. Labar
Brigliadori	D. Barbera
Pronzati	F. Henry

GLIDING ROMANCE

A FEW years ago, a member of Kent Gliding Club, while soaring along Detling ridge, proposed by radio to a member of his ground crew down below, and was accepted—also by radio. Now two members of the Yorkshire Gliding Club have gone one better: Stuart Cox, who came over from Australia to take a job as instructor with the Club, took up Miss Victoria Stothard for a lesson in the T-21 over Sutton Bank. After an aerobatic descent they announced that they had become engaged to be married, and dashed off to buy the ring before the shops shut.

Sixty Years Ago

DJRING 1902, Wilbur and Orville Wright were flying gliders at Kitty Hawk, North Carolina, and statements have sometimes been published that they made soaring flights of up to two minutes in that year. However, examination of "The Papers of Wilbur and Orville Wright" (edited by M. W. McFarland and published in 1953 by McGraw-Hill) shows this to be incorrect.

They first made short glides in 1900 down Kill Devil sand dune, 100 ft., high with a slope of 1 in 6. In 1901 they were back there and their longest glide was 389 ft.

The 1902 machine, a biplane like the others, had a span of 32 ft. with a wing area of 305 sq. ft. and front elevator area of 15 sq. ft. Empty weight was 116½ lb. It made between 700 and 1,000 glides and was only once damaged, though they flew in winds of up to 35 m.p.h. The longest glides were made on October 23rd, 1902, in a wind blowing at 11 m.p.h. at first, but dropping later. The longest of the day was 622½ feet by Wilbur Wright and lasted 26 seconds.

Longer times were put up in 1903, after they had returned to Kitty Hawk in mid October, two months before their first successful aeroplane flights. The first glide to exceed a minute was by Orville Wright on October 21st; he put up 1 minute and half a second in a wind blowing 24 m.p.h. at the hill top. Then, on October 26th, out of 20 glides, six exceeding one minute were made. The longest of these was 1 min. 11.8 sec. by Orville Wright, and he wrote that the wind at the hill-top was "probably about 13 m./sec." (29 m.p.h.) at the time of this flight, and added: "In one of my glides when up at a considerable distance the wind suddenly struck the top of the surface, jerking the machine clear away from under me excepting my hold on the front rudder bar. Winds frequently shifted 45 or more degrees in a second or two, sometimes two or three times in a glide." Most of the flights were "at heights from 40 to 60 feet, by far the highest gliding we have ever done."

It follows that E. C. Gordon England's soaring flight over Amberley Downs on June 27th, 1909, which lasted 58 seconds, was not only a record for Britain, Europe and the Eastern Hemisphere, but came within 14 seconds of beating the world record. The next gliding record known to history was Orville Wright's 9 min. 45 sec. on October 24th 1911. It was first beaten by Wolfgang Klemperer's 13 minutes on August 30th, 1921, in Germany.

What Flying is For

EXTRACTS from an article by Oliver Stewart in the *Daily Telegraph*:

"The only journeys I have completely enjoyed as an air passenger were those (between London and Paris) made in the Handley Page 42 airliners which Imperial Airways introduced in September 1931. They were immense, untidy-looking, four-engined biplanes and they were so old-fashioned that, when cruising, they did not even do 100 m.p.h. But what relaxed and enjoyable travel they gave! . . . ."

"Look at the faces of those boarding a modern high-speed jet liner. Do they appear relaxed? Do they seem to be keenly looking forward to the flight? Have they the jollity of, for instance, a coach party? Or do they look as if they were about to face their doom? . . . ."

"Until operators and manufacturers look on aviation as an aid to good living rather than a tool for commercial exploitation, it will continue to be a disappointment."

Advertisements with remittance should be sent to Cheiron Press Ltd., 3 Cork St., London, W.1. (Regent 5301). Rate 1/- a word. Minimum 15/-. Box numbers 4/- extra. Replies to Box numbers should be sent to the same address.

PUBLICATIONS

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 2/-. *Model Aeronautical Press Ltd.*, 38 Clarendon Road, Watford, Herts.

"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.

FOR SALE

CLUB BADGES. CAR badges and SELF-ADHESIVE stickers. CLOTH badges for flying suits or blazers. Send for Price List to P. and R. Publicity (Dept. 13), The Broadway, Pitsea, Basildon, Essex. VANge 2123.

PARACHUTES. Seat or back type, complete with pack, harness and quick-release mechanism. £10 plus 5/- carr. Ex-R.A.F. surplus, sent on approval against remittance. THOS. FOULKES (SG), Lansdowne Road, London, E.11. Tel. LEYtonstone 5084.

1959 Jaskolka in top quality condition, with instruments. 12 months C. of A. Sliding canopy. Flaps. Dive brakes. Retractable wheel and quantity of spares. Complete with first-class trailer. £1,150. Replies to Doughty, 66 Ellerman Ave., Twickenham, Middlesex.

England's finest WEIHE, with trailer, parachute, instruments. Complete outfit £750. Box No. 133.

EAGLE 3B. New condition. Approximately 160 hours flown. Prang free. £1,400 including trailer, basic instruments, and parachute. Apply F. Pozerskis, 24 Exeter Street, Kettering, Northants. Telephone daytime, Kettering 5552, after 6 p.m. Kettering 2995.

T.31 spoilered mainplanes, as new, £200 f.n.o. T.31 and tutor main struts, other spare components. Warren Storey, Thruxton Aerodrome, Andover.

T.31B with instruments and spoilers. 10 year inspection and C. of A. in progress now. For details write Main, 141 Faulds Gate, Aberdeen.

SKYLARK 2, Comp. No. 41, all-red finish. Excellent condition with current C. of A. and full competition instrument panel. £780 or near offer. R. Rutherford, Ollerton Hall, Knutsford, Cheshire (Knutsford 3149).

MOTOR TUTOR (Mod.) G-AKEY for sale. Current permit, take-off 56 yds., excellent condition. A gift for £340. Also V. W. Ardem aircraft engine £59. Spare motor Tutor fuselage £20. Rudder elevator stabiliser £7. Swinn, West Moor, Aislaby, Nr. Eaglescliffe, Co. Durham. Tel. Eaglescliqe 2411.

For Sale

Complete Gliding Outfit

consisting of

OLYMPIA 2B with instruments

(less than 200 hours)

Specially designed Trailer which converts to a four-berth Caravan having built-in beds, sink unit, cooking stove, lighting, cupboards etc., complete with all necessary bedding, crockery and cutlery. Entire equipment in first class running order. Original cost £2,000.

Offers in writing to—

Soaring Holidays (Glider Hire) **Ltd.**

121 Commercial Road, Southampton

FOR SALE (Cont.)

SWALLOW, Nov. 60, privately owned, basic panel, C. of A. No. 63. Offers. Box No. 131.

EAGLE T42c complete with instruments, oxygen equipment, radio aerial, parachute and Slingsby trailer. All as new. Slingsby maintained. C. of A. till April 1963. £1,350. W. Lawson, 1 Davidson Road, Edinburgh 4.

SKYLARK 3. Some instruments. Winner League 2 Nations 1962. £975. Trailer available £165. Norman Brett, 42 Saint Giles Street, Norwich.

NEW Lightweight Trailer, 28 ft. long, £150. J. Pavelin, Suttons Farm, Barling Magna, Essex.

SKYLARK 2, 500 hrs. flown. Yellow, red tips, seen Nympsfield. £800 with instruments. Samuels, 1 Upper Belgrave Road, Bristol 8.

KITE 1. Completely reconditioned. Immaculate. 12 months C. of A. Basic instruments. Trailer. Offers? G. Leat, 4 Northcote Terrace, Honiton, Devon.

SKYLARK 3B/3F (aileron servo-tabs) for sale complete with flying instruments including electric variometer. Slingsby's extra finish in light blue and viory. C. of A. March 1963. Offers. Matheson, Dee Cottage, Headington Hill, Oxford.

"TELECOMM" Portable VHF Radiotelephone, fully transistorised, weight 4 lb. including battery, £150 complete. Radio Communications Company, Telecomm Works, Crewkerne, Somerset.

WANTED

WANTED: a secondhand Olympia or similar glider built after 1950. Pelleg Alexander, Ilfar Bitzaron, Israel.

WANTED — Glider, any type, in flyable condition, with trailer if possible. Will collect anywhere. Anything considered up to £150. Box No. 130.

WANTED. Ka6, Weihe, or similar in good condition. Without instruments. Write to A.N.C.U.P.A., c/o H. Stouffs, 149 Av. Ad. Buyl, Brussels, Belgium.

Sell me that old OLYMPIA II. Full details please to Goldsbrough, 50 Second Ave., Caister-on-Sea, Norfolk.

WANTED (Cont.)

MODERN advanced sailplane, full particulars to Wheatley, Mill Lane, York.

OLYMPIA 2B, also trailer, barograph and parachute. Box No. 129.

Pair TUTOR WINGS in good condition with or without spoilers. Please advise details and price. Box 132.

WANTED: T21 Fuselage only. Secondhand. Repairable condition Box No. 128.

SITUATIONS VACANT

COURSE INSTRUCTOR (B.G.A. Category) reqd. for 1963 courses commencing April 1st. Or qualified Ground Engineer with category full time. High salary. Devon & Somerset Gliding Club, Hunters, Foxdown, Wellington, Somerset.

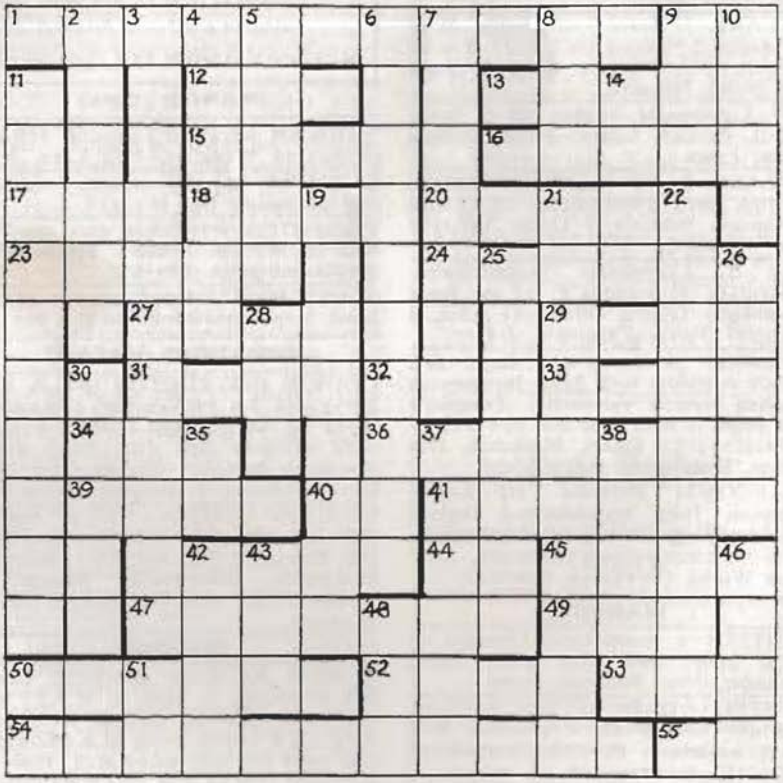
LONDON GLIDING CLUB. Applications are invited for the position of Gliding Instructor for the 1963 season at Dunstable, commencing March 1st. Applications, with full details, to the Manager.

PERSONAL

A NEW Air Cadet Week-end Gliding School shortly to form at R.A.F. Manston will provide gliding training to ATC/CCF cadets living in Kent. Vacancies exist for instructing staff. Posts are honorary (but certain out-of-pockets and travelling expenses are paid) and should appeal to ex-Service pilots with or without gliding experience and to civilian gliding enthusiasts. Further details may be obtained from Headquarters Air Cadets (TRG 1), R.A.F., White Waltham, Maidenhead, Berks.

1962 Christmas Crossword

A Gliding Tie or Square (depending on the sex of the winner) will be awarded to the sender of the first correct solution. These should be addressed to: The British Gliding Association, Artillery Mansions, 75 Victoria Street, London, S.W. 1—each envelope being marked "Crossword" in the bottom left-hand corner. All envelopes will be opened on Monday, January 7th. Solution in our next issue.



ACROSS

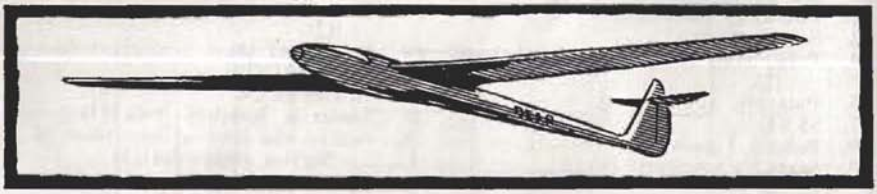
1. One of 11 (11).
9. Pronoun (2).
12. Invariably the last item on the agenda (3).
13, 24. Wild rhyming (5, 5).
15. Seen in fancy stones (4).
16. Murmured by bees on a summer's day? (5).
17. The boss (3).
18. How to make friends and influence people (4).
20. The offer of a wild artist? (5).
23. No knocking? It sounds like her.
24. See 13.
27. See 30.

29. Number of German refusal (4).
31. Casual flight (4).
32. Preposition (2).
33. Monster lake (4).
34. Tear the epitaph (3).
36. Feigns (7).
39. See 5.
40. See 43.
41. Poetically smother (6).
42. See 42 down.
44. Presumably cockner 9 lived here (2).
45. Pats (4).
47. SS (7).
49. Behold, I gush (3).
50. Seats for spinsters? (6).
52. Install (4).
53. Weather encounter (3).
54. Circles to port (11).
55. "Poems are made by fools like——" (2).

DOWN

2. Prelude to fire (6).
3. One of 11 (11).
4. Finger or toe.
5. 39 across. One of 11 (5, 4).
6. One of 11 (6, 4).
7. It's a rumour (7).
8. Up with war! (3)
9. See 41 across (3).
10. Jane's heroine (4).
11. A 30, 27. (5, 5).
14. The chap who offers in 20 (2). (2).
19. One of 11 (8).
21. One of 11 (10).
22. One of 11 (9).
25. Stores a hundred bids (7).
26. Not in the least a description of a Service restaurant (5).
28. The basis of all the fun (3).
30. 27. 11 is one (5, 4).
35. Public relations (2).
38. Assert (5).
42. How the bell-boy gave a 42 across ? (4).
43. 40. Inclusive (3, 2).
46. Prerequisite of all gliding clubs (4).
48. In massed array (3).
51. To Latin (2).

Independent SUSPENSION



FOR GLIDER TRAILERS

With this Rubery Owen Axle Unit, you can have independent suspension on your glider trailer. No chassis modifications are necessary for fitting. Everything about this axle is designed for complete running efficiency. Laminated square torsion bars allowing 4" of wheel movement provide a supple but well damped action. Ground steel sleeves running in fabric bearings ensure long life. Continental standard high efficiency brakes, lower chassis heights, and lower centre of gravity give exceptional handling. Hydraulic Dampers are available as an optional extra.

Why not specify these axles for your trailer.

Enquiries to:

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TRAILER EQUIPMENT DEPARTMENT

P.O. BOX 10. DARLASTON, WEDNESBURY, STAFFS. Tel. JAMES BRIDGE 3131

A Hundred Years Ago

A MOTORLESS flight to more than 30,000 feet by two aeronauts without oxygen, from which they both got down alive, was made over England 100 years ago this year.

On September 5th, 1862, James Glaisher, a scientist aged 53, and Henry Coxwell, balloonist aged 43, ascended at 1.03 p.m. from the Wolverhampton gasworks in a balloon of 90,000 cubic feet capacity, made of American cloth. The instrument board, as illustrated in "Travels in the Air" (published 1871), supported 24 scientific instruments and other pieces of apparatus but no "statoscope" (the balloonist's equivalent of a variometer).

At 1.13 p.m. they entered a cloud layer 1,400 ft. thick, and emerged at 1.17 under a cloudless sky. Freezing level was at 10,000 ft. Coxwell, the more active of the two, began "panting for breath" at 18,000 ft. Glaisher, whose only exercise was noting observations and occasionally working the aspirator for the hygrometer with his foot, found difficulty in seeing clearly at 27,000 ft., and after passing 29,000 ft. his arms became powerless; soon after, he fell backwards against the basket, then he blacked out, and finally he became unconscious. This happened, he estimated, at 1.56 or 1.57.

Meanwhile Coxwell felt insensibility coming on, and decided to open the valve; he had to climb into the rigging to disentangle the valve line and then, having lost the use of his hands, pulled it with his teeth.

At about 2.04 Glaisher regained consciousness, and at 2.07 he began observing again, finding the balloon was at 26,600 ft. and descending at 2,000 ft. a minute. At his last observation at 29,000 ft. at 1.54, it had been going up at 1,000 ft. a minute, and these rates led him to estimate he had been up to 36,000 or 37,000 ft., especially as a "very delicate" minimum thermometer read minus 11.9 deg. F., the temperature to be expected at 37,000 ft.

Difficult as it is to believe that both were conscious and active at 29,000 ft., it is almost incredible that Coxwell could have been still conscious at 37,000 feet, or either of them still alive. They could hardly have become acclimatised by their only two previous ascents to 26,200 and 24,000 ft., and modern opinion is that they could not have gone much above 30,000 ft. It may have been anoxic lack of judgment that induced them to keep throwing out sand, and the last lot was flung overboard at 26,500 ft.

Anyway, any reader tempted to emulate these two gentlemen's oxygenless feat in a glider should re-read Flt. Lt. R. P. Saundby's article in SAILPLANE AND GLIDING for last February on "Oxygen Equipment in Sailplanes", and start using oxygen between 10,000 and 15,000 ft., "otherwise consciousness will probably be lost just above 20,000 ft."

The balloonists landed at 2.45 at Cold Weston, 6 miles N.N.E. of Ludlow. Although the Ordnance map shows a "Cold Weston Court" near by, they were unable to find a conveyance, so while Coxwell looked after the balloon, Glaisher had to walk all the way to Ludlow—as far horizontally as he had just climbed vertically.

A.E.S.

CLUB AND ASSOCIATION NEWS

SEVERAL Clubs appear for the first time in this issue. On page 466 we have the Clonmel Gliding Club who are now flying from a site in the Comeragh Mountains, County Tipperary. The Glasgow and West of Scotland Gliding Club who have been getting going over the past three years, also report progress. We welcome a most interesting report on the A.T.C., now called the Air Cadets in the Service Section. In the overseas section we have news from Brian Masters (ex Lasham) now in Hollywood and also news from Japan.

Very best wishes for Christmas and good soaring in 1963 to all Club News readers and contributors throughout the world.

The final date for copy to reach me (at 14 Little Brownings, London, S.E.23.) for inclusion in the February issue is Wednesday 12th December.

YVONNE BONHAM,
Club & Association News Editor

ABERDEEN

ONCE again the so-called summer season is over, and there is great speculation amongst our members as to what sort of results are going to be obtained when the unstable Northerlies start to blow. The total number of launches so far this year has already broken last year's record, and more soaring flights have been accomplished than ever before.

A recent expedition to a site near Turriff produced excellent results. During the afternoon of October 7th, conditions gradually improved and flight times became longer and eventually Bob Gordon was launched in the Swallow, and contacted wave which took him rapidly to 5,500 feet. Our grateful thanks go to the land-owner, Mr. George Anderson, whose co-operation helped to make the week-end a success.

A new club trailer capable of carrying a T.21 or similar two-seater is now taking shape, and many willing hands have contributed to its remarkably rapid progress. The two drum winch is about to undergo a well earned overhaul and engine change and annual aircraft inspections are about to commence.

F.C.M.

BLACKPOOL AND FYLDE

THERE is little doubt that the summer of 1962 has been the worst on record since the Club was re-formed in 1950. The all too frequent gales and heavy rain coupled with the temporary unavailability of our Home Site at Blackpool, and the non-existent accommodation at Samlesbury where we have been flying since the end of March, have all contributed a measure of frustration particularly to Members who are not quite true dyed-in-the-wool enthusiasts.

Samlesbury is, in many ways, an excellent site and we are exceedingly grateful for its continued availability to us.

We shall be returning to our Home Site at the end of October by which time our two-way radio—now compulsory—will be operational.

During July, Howard Sturrock, Harry Hargreaves and Martin Fish gained B certificates and Bill Kendrick, Alan Howard and Tony Hewitt secured C's. Jack Aked, who has been requiring an officially recorded "Height Leg" for fourteen years, not only remembered to fit a barograph but also managed to make it record for his final "Leg".

Later in August, Gordon Bleasdale, Ivor Stretch, John Gibson, Gil Haslam and Shirley Clapham set off for Lasham with our Olympia 2b. They covered the 270 miles in the day and, before dark, aero-towed check flights had commenced in the Eagle. Unfortunately our Northern brew of weather followed them to Lasham. The Motor Tutor was made available and was flown by Gordon and Ivor.

Ivor provided the high-light of the Camp by taking an aero tow behind Stuart Morison's tug as far as Andover where he released and set off to his declared goal, Wisley. All went well until he reached Aldershot where a landing was made inside the old Tattoo ground.

We introduced our English Electric Flying Club friends (who are affiliated to us) to a taste of two-seater flying on Saturday, 23rd September, in return for the frequent lectures and film shows given in our Club-house. A recent talk by their Communications pilot Mr. D. Moore on Airways and several Polish gliding films were much appreciated.

J. S. A.

BRISTOL

THE sun does short circuits round the grey sky, the thermals have gone into hibernation, and the members into thick sweaters. The workshop hums with activity and the bar fire attracts an increasing number of chilly mortals.

Some talk of wave expeditions, and in fact, on the last week-end in September, a small band of hopefuls armed with an optimistic forecast, three gliders and a Tugmaster, set off to the Gaze ranch at Caradoc, near Ross, in search of the elusive waves.

Lift of 10ft./sec. was found by Denis Corrick after a tow to 7,000 ft, but he did not allow for the 75 m.p.h. wind and was blown back to Nympsfield. No

The syndicate Swallow "Kiwi", built by Ray Jefferies, Joe Grimes and Gordon Mealing (all in foreground), after its first flight at the Bristol Club.

other contacts were made but with a bit more experience these Black Mountain waves should be usable.

Incidentally Tom Bradbury flew out of the side of a large cu. over Ross on August 22nd, straight into wave lift and climbed to 11,000 ft. in a series of waves. Shows it can be done!

Amongst several recent solos, we have had two more of the fairer sex elevated to the ranks of the two gulls, namely Mary Kerridge and Joan Walker.

Quite a bit of syndicate swopping has been going on as people get more ambitious, although some of the arrangements at the moment are "in the air". Latest aircraft to inhabit the site is the modified Oly 242, which was rebuilt by Ralph Jones and partners from a write-off.

C's of A are proceeding, the Scud has had a few more ply panels glued on, and the magnificent new winch constructed by Brian Mumford and dazzle-painted by Joy Jones is due for its maiden flight.

Other jobs in hand are levelling parts of the field and painting the hangar structure.

It is with deep regret that we record the death of Shaun de Salis. He had flown with us at Nympsfield since 1957 and obtained his Silver C earlier this year. He took a great interest in all aspects of flying and was a member of the Tiger Club, which in itself was recognition of his flying abilities. It was while performing with that club at a display in Ireland that he was involved in an accident.

Two more members have just qualified for the reduced joint sub.; congratulations to Ray and Pat Bishop on their marriage.

The bar has acquired a three-handled four pint tankard for which the record stands at 4 min. 55 sec. Anyone keen to make an attempt on this can do so at the Christmas Party which will be held at Nympsfield on 15th of December.

A.L.

CROWN AGENTS

Peter Fawcett from Nigeria and Mike Wilson (with hat) discuss with Bill Gotch the flying qualities of the Crown Agents' Swallow.

CAMBRIDGE

WHATEVER other clubs have to say about this year's weather, we seem to have thriven on it. For us 1962 has been a record year for flying hours and above all for cross-country miles. In about 100 flights, the seven Club-operated sailplanes covered 5800 miles, more than three times the annual average of the last 10 years.

About 30 per cent of the year's mileage was flown in closed circuits, i.e. in triangles and out-and-return flights. We also gained a record number of Gold C legs, 4 distances and 2 climbs.

Our 18 C flights and 31 Silver C legs show that the budding soaring pilot had his share too.

The most outstanding flights at the end of the cross-country season were John Firth's 150-mile dash in the Skylark 2 from Nympsfield into Norfolk on 24th August, and two trips round the 67-mile Slazenger Triangle by John Firth and Ralph Ismail five days later.

The September Camp at the Long Mynd gave 35 members a total of 163 flying hours. Five pilots logged 5-hour flights, among them Harry Boal who thereby completed his Silver C. We do treasure our excursions to this splendid hill site.

After four years with the Club, the Eagle has now been sold by its owner, Stewart Johnstone, who had it shipped to South Africa. A vote of thanks to Stewart for letting us operate this fine, versatile sailplane.

This summer Stanley Woolston again organised five Elementary Gliding Courses at Marshall's. Ted Warner, our resident Instructor and Ground Engineer, was very pleased to have some help with the Courses by other Club instructors, notably David Braham, John Deas and Jack Aked. Two of the Course members who went solo gained their C certificates, and Jack Aked completed his Silver C.

G.S.N.

COVENTRY

THE most outstanding event of the last two months has also been an important milestone in the club's history. We have been successful in buying a plot of land and obtaining outline planning permission to use it as a gliding site.

This, of course, is only the beginning of a new base and the date for moving there is still uncertain as there is still much work to be done to convert the land to a site for a club.

As the best of the year goes we have had a slight slackening of the tempo of flying, particularly since our tug is away for a rather prolonged engine overhaul. Despite this the first week-end of October produced two C flights by Messrs. Bateman and Longstaff.

On the same day Ivor Tarver did a short out-and-return and Alwyn Findon set out for Stratford but fell short. Previously to these end of the season efforts Ken Davies had followed the example of the rest of his syndicate by doing his Silver distance to Podington.

Bill Hall has had his efforts crowned with success when he completed his Silver C by flying to Cranfield. One of our younger pilots, Clive Williams, flew the club Olympia to near Sywell.

Apparently this was just too short to beat the 'one per cent rule' for his distance leg. Ab initio training has proceeded steadily so that we have been able to take in more new members; we are now ahead of last year's figures for membership.

The club's hard-worked, and voluntary, ground engineer, Reg Ludgate, has had to resign from the post, for non-gliding reasons, and while we wish his successor well with this task he will find that Reg has set him a high standard to match.

A very pleasant buffet dance was held in mid-October. This was organised by Elsie and Bill May, who have also undertaken the running of the annual Dinner-Dance in December.

C. D. D.-J.

DONCASTER

THE 3 cable launching system is now working well and we had passed last year's total of 5,500 launches by the end of September. We hope to do about 6,000 this year which will be an average of about 60 per member.

There is not much soaring going on now but the odd scrape is still possible but other events are worthy of mention. Brian Fox who has only one arm completed his A. and B. at the beginning of September and two days later was launched into a "Mugs Thermal" and by the time he had found his way out had qualified for his C. Apart from this his dexterity with tools has to be seen to be believed and his fully transistorised all mod. con. push button control van is one of our most useful assets.

Bernard Thomas paid us a visit to check out John Stirk and our first "Home Grown" instructor is now in possession of a brand new provisional category.

M.C.U.

DORSET
(formerly Blackmore Vale)

NO sooner do you build a hangar large enough to house the Club fleet than the fleet expands, new syndicate aircraft appear, and you have to think about extending the hangar again. We now have two syndicate owned Olympias, and look forward to some friendly rivalry between the syndicates —a trophy is being presented for the best performance in a syndicate aircraft.

The first C to be gained at our new site goes to Ted Andrew, who was taken up by Olympia 110 for 50 minutes. Several soaring flights have been made from the site, and the prospect for next year's soaring looks good, although the sea breeze seems to arrive rather early, as we had expected.

We were very pleased to be visited by Ann Welch and John Everitt recently. Ann put on a Slide show and Map reading exercise. We were able to get some advice and ideas about our site from the experts.

It is with regret that we announce the retirement of our Treasurer, John Jackson, due to pressure of work. John has been a tower of strength in the first year's operations, and we hope that he will still be able to find time to advise and restrain the committee in the future.

His place as treasurer has been filled by Chas Wesley at very short notice, and we extend our thanks to John for his work in the past, and our best wishes to Chas in taking on this onerous and responsible position. G.B.W.

DUMFRIES AND DISTRICT

WE have now done about 1,400 launches this year, which is a great improvement and the figures for flying fees and running costs are beginning to make sense. The Humber is still doing well although in no wind conditions the T.31 can sometimes only make about 600 ft.

Alastair Grierson and Bill Gibson have got away solo and we are looking for some newcomers to add to the two-seater list.

A successful skittles evening was held and further social activities are planned for the winter.

The Chev winch and tractor are ready at Thornhill and a further work party is required before hill soaring can be resumed. Several keen types are champing at the bit to get up on that ridge.

G.J.K.

EAST MIDLANDS (Leicester)

THE Club organised its first expedition during October, when four days were spent at Edgehill with the intention of introducing our members to the gentle art of hill soaring.

Unfortunately, the 'high' which had been absent all summer chose this period to exert its influence, and no ridge work was possible. However, the outing was voted a success and we are looking forward to further ventures in this direction.

Keith Moseley chose more suitable weather when he took the Club Olympia to the Mynd on August 21st to gain his 'five hours' and he went on to complete his Silver by flying "Jacobs Ladder" to Spalding on September 16th.

The "Ladder" had already covered much of this route on August 4th when Chris Simpson reached his goal of Ingoldmells, watching John Brooks arrive in the Club Olympia a short while later. It would seem that all this Olympia activity has been set off by Ivan Vesty, who took his Grunau Baby 70 miles from Baginton to Lincoln on July 20th.

The four hours which Ivan spent on the flight proved but a small proportion of his Grunau time that day, since he decided that it was unsafe to leave the aircraft, and it was only by chance that his unattended van and trailer were discovered at Baginton—at midnight!

C flights have been made by Messrs. Furr, Holmes, Newbold, Reichenbach, Richards, P. Smith, E. Tracey; and Jill Machin has become our first lady member to gain her C.

An Olympia flight of over 4¼ hours by Chris Simpson on June 23rd, and a T21 ride to cloud base of 7,500 feet by Mike Smith on July 8th have, it seems, finally dispelled the rumours that Rearsby does not produce proper lift, and we are eagerly awaiting the 1963 type thermals.

Arthur Luff, Peter Martin and Keith

Moseley have been categorised, and Peter Reichenbach has accepted the job of Transport Officer, from which John Whiteley, to our regret, has had to resign. On the social side, a successful party on October 12th was organised by the ladies.

P. M.

ESSEX

THE O. & M. man has certainly made his mark in the club. We have now appointed project leaders responsible for each major item of equipment used. This has not meant regimentation to a standstill, but a fresh girding up of loins so that every flying member has an added responsibility to each other.

This, coupled with the purchase of a single drum Wild winch, has enabled us to increase the number of launches to 94 on the first day of operation to a record—for the club—of 117 on the second day. Members are highly delighted with this step up in the number of launches.

The club-house has taken the air of the affluent society since we fitted out the dining room with some very smart furniture—easy clean tops to tables and upholstered seating.

The record for members achieving their A and B has been increased by 5 more including, E. Bully, R. Tanner, J. Wheeler and F. Sage, whilst both D. Tyler and R. Simpson have gained their C.

We would like to extend Christmas Greetings to all our friends throughout the Gliding World, coupled with the thought of stronger thermals next year.

M.G.R.

GLASGOW (Balgairmoor)

THROUGH the three years of our Club's life, we have gained immense experience—from brick building and sand shifting to club organisation—from moments of sheer exhilaration to utter frustration.

Through it all the 'hard core' of enthusiasts has kept the wind sock flying until now we have a T21B Cadet, reasonable winch, tractor, plenty of good cable, a retrieve winch almost ready for use, a small hangar, and the usual host of bits and pieces—and all paid for.

For these past 3 years we have operated at Carnwath, Lanarkshire, but we realised from the beginning the site was limited in size and soaring possibilities, and was also subject to frequent flooding from a boundary river.

After a great deal of prospecting, we have now moved to a much better site on Balgair Moor, close to the Fintry Hills, north of Glasgow. Here we are housed temporarily in a wooden hut.

The area offers tremendous possibilities for thermal, hill and wave soaring—our T21 has already had several hours on the nearby Fintry escarpment.

Our next main project is a larger hangar. However, like all clubs, one of our two major problems is finance—the other problem being that of qualified instructors.

D.C.S.

KENT

SINCE the last notes were written David Ward, Keith Lester, Frank Williamson, and Peter Trivett, have soloed and Alan Middleton has qualified for his C certificate.

Recent cross-countries have included one to Otford by Denis Crabb, another to Wye by Ken Brissenden, and another to Charing by Philippa Buckley. On the same day as the last two, Ron Cousins flew to Ickham and so completed his Silver C. "Mac" Macpherson has also flown the third leg of the Silver C with 5 hours in the club Olympia.

The latest piece of equipment to appear on the field at West Malling is an automatic signaller devised by the electronics expert, Bill Gartland.

New private owner syndicates are being formed in the Club, and the result of one of these, in the shape of another Olympia, should be appearing on the field soon. Other syndicates are planning to purchase new machines next spring.

P.B.

LASHAM

THE main change at Lasham this year has undoubtedly been the increase in aero-towing. Our four Auster tugs will have completed well over four thousand tows this year. Our overall launch rate including auto and winch launches is running level with last year. Silver C legs are substantially up on

any previous year and with various expeditions planned for the winter, we expect the Gold C height legs to show a marked increase as well.

The nine clubs which make up the "Lasham Gliding Centre" are still going from strength to strength. It is not generally realised that the Centre trains pupils up to a certain solo standard whereupon the pupils are accepted back into their respective clubs in order to fly the club's high performance machines. The Imperial College Club does not take part in this scheme as their members are trained on a T.42 and will next year convert to a shiny new Skylark 4.

Our staff at Lasham have performed wonders again this year and we are all extremely grateful. Bob Lintern—that bearded genius who nurses our M.T. equipment, has been given an old Grunau Baby which he is partially rebuilding on his days off (there ought to be an anti-biotic against the gliding bug). It is rumoured that the drawing room wall in Derek Piggott's house is covered with plans of a new 15 metre glider, Toon or Indian Diamond C height barman has taken unto himself a wife, Derrick Goddard is preparing a new whip for next year's crop of tug pilots, Don Gerard our excellent winch/tow car driver is preparing a new set of lectures for would-be launching pundits and John Cochrane and Kathy Ramsdale in the office are busily sharpening pencils for next season's admin.

W.K.

LONDON

A NEW development in summer courses in 1962, was the two-week intensive Training Course, designed for keen new members who wish to become 'compleat soaring pilots'.

Having sent 80 per cent solo during these courses we feel justified in cutting out all the short Holiday courses in 1963. In fact the word 'Holiday' is no longer used. It all sounds deadly grim and earnest, but the inmates love it.

Other plans for 1963 include a Regional Competition, which we hope to hold in the August week.

The main change in our ground equipment in 1962 was the purchase of two small David Brown 2D tractors. These

look more like insects than the monsters we have been using for years, but for all purposes except pulling winches they are ideal, using a fraction of the fuel consumed by the old ones.

If you feel like dropping in at Dunstable during the winter months, you will not be disappointed. It may not always be hill-soarable, but there are evening entertainments laid on by an energetic House Committee, with programmes ranging from pundits in the flesh to Gregory Peck on celluloid.

M.B.

MIDLAND

THE second visit this year of the Cambridge University Gliding Club began with a Sunday of excellent wave conditions. A Cambridge member reached 11,500 feet with Midland members Louis Rotter and Mike Randle reaching over 10,500 feet and 10,000 feet respectively, whilst most of the Club fleet was above 6,000 feet, all a. s. l.

Impressed with the syndicate 463 which is on the Mynd, the Club now has one on order.

The 1962 course season has now finished and our sincere thanks for making the season a success are extended to all the staff, to the Club Instructors and winch drivers who volunteered their services and last but not least to the Course Secretary, John Harnden.

We congratulate Norman Groucutt, Michael Randle, Ken Woolley and Bobby Neill on gaining their B.G.A. Categories.

We shall be holding our Christmas Dinner at the Club-house on the 23rd December.

After Christmas we shall be pleased to welcome various clubs who have made arrangements to spend a week or more on the Mynd in the hope of some winter soaring.

The Easter Rally will be held as usual for the five days of the holiday, i.e. 12th—16th April 1963 inclusive.

K.R.M.

NORFOLK (Tibenham)

WE have progressed quite happily since the last newsletter and with our ancient but trusty Tutor being flown regularly on Thursdays as well as at week-ends, we have every intention of maintaining the satisfactory launch rate —2,400 launches being made over the first half of the year.

Training continues well, with a steady recruitment of new members to replace those who have graduated to "higher things". Recent solos have been Ivan Esgate, D. Hrdlicka and Martin Pumphrey.

By the time this is in print we shall know the result of an experimental "passenger flying for the public" week-end which has been organised to enthuse a few more of the uninitiated into our sport.

Our friends from Southdown have packed up camp again for the season but we hope to see them again next year. I hope they enjoyed their stay as much as we did having them.

B.C.G.L.

NORFOLK AND NORWICH (Swanton Morley)

THINGS have been fairly quiet during the last two months. The only flight of note has been Alfred Warminger's out-and-return to Henlow on the 13th September. He covered the 144 miles at 32 m.p.h. Ten field fires, caused by burning stubble, all produced thermals on the way back.

A 100 Km. triangle was set on the 1st September, but conditions deteriorated and Barrie Goldsbrough sank amongst our friends at Tibenham after 48 miles.

Alfred Warminger has twice been aero-towed out of fields lately, showing the useful size of some local fields when the corn is cut. The first time was because rain forced him down only one mile short of the Club after a 62 mile out-and-return to Great Yarmouth on September 16th.

Messrs. Reekie and Goldsbrough pottered up to around 8,000 ft. on 8th September, but we do not seem to have contacted any really good clouds this year. As late as 29th September, however, there was lift up to 6,500 ft.

We have been pleased to have a Swallow syndicate flying with us and some short cross-countrys indicate that we may get some more Silver C's next season.

A Capstan is on order for delivery next spring, and our faithful Kranich is for sale. We are also looking for something in the "Tutor/Oly" range.

After the success of our Easter Rally, we are planning a 10 day, B.G.A. Regional Contest next year. J.B.G.

NORTHAMPTONSHIRE

NO cross-country flights have been possible during the two months under review and only local soaring has been possible from our flat site at Podington. Ted Lewin however obtained his C certificate at the end of August in the Cadet.

Four members—E. Underwood, R. Harding, P. Dunmore and D. Ludlington have transferred to the Swallow from the Tutor and C. Letts has gone solo.

A Summer draw was held this year which resulted in a nice contribution to the club finances.

Work on the conversion of a van into a mobile C.F.I.'s office, store and cable anchorage continues and systems of cable recovery are being investigated, together with the possibility of launching by auto-tow in the event of winch failure. Details of any other Club's experience in auto towing would be welcome.

Harvey Britten's Tiger Moth syndicate has continued to provide aero tows when required. R.N.W.K.

OUSE (Rufforth, Yorks.)

ANOTHER accident to our Tutor has reduced us once again to a one-glider club, but luckily, although the fuselage is a complete wreck, neither the pilot nor the wings suffered any damage. Repairs are now in hand.

We are all looking forward to our first Social event, a dinner-dance organised by Adrian Guerri, at which Mr. Fred Slingsby has kindly agreed to be our chief guest and speaker.

The Anthony Forster Memorial Cup presented to the best all round club member under 25 has been won by Alan Park. We all congratulate him on his success, and our congratulations also go to Syd Butt for his C certificate flight. P.A.C.

OXFORD

THE first full year of our "Group Scheme" should have enabled the ordinary member to fulfil a pent-up desire to go somewhere and although the cross-country mileage for club owned aircraft is greater than for many years, the total of 332 miles by 9 of the 23 pilots eligible for such tasks is disappointing.

However, despite some very excellent performances by our private owners at other sites, the comparative figure of 397 miles flown from Weston on the Green by 8 of 16 members owning 4 aircraft suggests that if there be any fault in this matter it lies elsewhere than in ourselves.

The end of September saw our operations down by 400 launches but the total flying time of 657 hours is only three hours short of the equivalent figure for 1961.

It has been our pleasure to welcome Skylark 3F, No. 168, into our fleet since it has now been purchased by a new syndicate, Messrs Adams, Pratelli, Roberts and Simpson who, at one time, seemed to have one at least of every new aircraft on a drawing board on order. The times produced by their familiarisation flights in marginal conditions suggests that they should do much to swell the private owners figures for next year.

We learn that a group of service types is forming a club with the object of decending from great heights in the shortest possible time and they may require our aerodrome for their purpose.

As a result our officers may have to assume a biblical role and lead us down the Bicester Road into a wilderness of ploughed up aerodromes and derelict run-ways.

Already from Lasham comes a generous offer of assistance for which we are most grateful. May we soon have the pleasure of celebrating with them news that help is no longer required. L.A.S.

PERKINS

THE last three months have been rather uneventful. In July, Dennis Baldwin completed the fourth five hour leg at Westwood this year, thus com-

pleting his Silver C.

Doug Phythian and John Brown have been promoted to passenger flying and the Olympia. George Bell, Colin Donald and Roy Taylor took their B.G.A. Instructor Categorisation on Sunday 14th October.

C.C.D.

SCOTTISH

THE late summer activities produced some interesting events this year. Noteworthy among these were the two Scout Courses, where Tuck Shop receipts bettered the Bar receipts of the Holiday Courses. In return for gliding instruction, some of our instructors were initiated into the mysterious habits of the Chiff-chaff and other wild life.

The third week of September saw the start of the first S.G.U. "Meteorology and Gliding" Course, and according to all accounts, this was enjoyed both by meteorologists and pilots alike.

The unwary visitor during that period found himself pressed into 'Met' service for the duration of his stay, as Dave Lowe and Toon Ghose found to their cost. It seems likely that this course will be repeated next year, this, at the demand of this year's course members.

One practical result of the study of waves was a flight by Charlie Ross in the Skylark 3F to Yeadon Airport, a distance of 170 miles. This flight puts Charlie in the lead in the club championship.

Wave flights during this period have been quite frequent, notable among these being an Out-and-Return flight by J. Rae to the West Coast while oscillating from 5,000—10,000 ft. C. Ross—a local flight to 8,500 ft. and John McLaughlan (Swallow) to 7,500 ft. to gain his Silver C height leg.

A group from Turnhouse complete with Weihe had a successful visit early in October, when Tom Moffat completed two Silver C legs (Height and Duration) and another member of the group, a duration leg.

W.A.S.

SURREY

OCTOBER is very much the New Year's Eve of club secretaries and committee members who, together with many other club members, tend to look back upon the season's activities: sometimes in the light of promises fulfilled but, all too often, in the light of "things we intended to do but never actually got round to".

Although the number of hours flown has improved considerably and the number of Silver C's gained (*vide* lists in other portions of SAILPLANE AND GLIDING) has also increased, far too much has, as usual, been left undone.

Far too many out-and-returns have not been undertaken: far too many good soaring days have been wasted and, in general, progress has conformed with the writer's school reports which usually used to say "he has not fulfilled his early promise".

Probably this was written in a mood of "*fin de saison tristesse*" because we do have a lot to be grateful for but, really, why do gliding clubs invariably seem to intend to do something tomorrow or have done something yesterday but never seem to be doing anything to-day?

Perhaps it was with this feeling in mind that a scheme for permanent cross-country competitions on Saturdays next season has already been submitted to Surrey Committee for consideration.

The weather at Lasham has not been very soarable for some time and this spurred Roy Brigden to take his Skylark on aero-tow to the ridge last Saturday where a very enterprising three hours soaring was obtained. We are not sure of the longest flight at Lasham on this day but it must have been a very mere fraction of this.

A.W.B.

YORKSHIRE

AUGUST and September were very successful wave months at Sutton Bank. On the 23rd August, Ron Helliwell climbed to 13,500 ft. a.s.l. in the Club's Skylark 2 to qualify for his Gold C Height.

Ron's flight which lasted three hours took him right across to the Pennines although he found his best height over Sutton Bank. The waves on this occasion were extensive and Ron felt it would have been possible to have flown up to Scotland in them once he had reached the Pennines.

On Sunday the 23rd September, Bob

Wilkin rose to 7,000 ft. in the Skylark 2 while Joe Provins, John Iceton and Tony Smallwood all got above 4,500 ft. in wave conditions.

This was the same day that Charlie Ross flew from Portmoak to Yeadon and it was possible to fly in the weak wave conditions all over North Yorkshire.

Our Club House is now nearly complete with the exception of decorations. Club members have been putting in a good deal of work painting it over recent week-ends.

Among the recent solo flights has been one by Christopher Stothard who went solo on his sixteenth birthday. Christopher is the son of Ralph Stothard, one of our Senior Instructors, and Chris has been a very useful member of the Club for some years. We are very pleased that he has gone solo so soon.

In addition Hugh Hayes went solo a few weeks ago. Hugh is a convert from sailing to Gliding.

Stuart Cox the Australian who has been with us this summer as Assistant Instructor is leaving us shortly with a brand new wife. Stuart gets married in a few days to Vicky Stothard and they will be going back home to Australia. We wish them both every happiness in their new life together.

J.C.R.

The new Yorkshire clubhouse, designed by a local architect.
Photo by J. E. G. Harwood

Service News

AIR CADETS

IT is a long time since this column carried any news from what used to be called the A.T.C. gliding schools. It is intended to contribute a few notes in each future issue and by way of introduction this first effort is intended to bring the record up to date.

Many readers will have been given their first launches at A.T.C. Gliding schools in the days of wheezing balloon winches, beaverettes, low hops and high hopes. They would hardly recognise the organisation now. Even the name has now been changed.

The Air Training Corps and the R.A. Section of the Combined Cadet Force are looked after by one headquarters—Headquarters Air Cadets, and the gliding schools are now called Air Cadet gliding schools.

Our gliders, with 'Air Cadets' in foot high letters on the sides, are a familiar sight at 28 airfields up and down the country. We still use Sedberghs, Mk. III's and Prefects but our ground equipment has improved a great deal in the past four years or so.

Each School now has two Landrovers, a one-ton truck and two excellent twin-drum winches specially designed for our use. On the whole the aircraft we have were designed for their present task and we see no reason for radical changes but we have recently introduced a ballast modification for the Sedbergh so that it can be flown solo.

Our Schools and full-time Centres between them clock up about 120,000 launches a year and train 2,400 air cadets to the A and B standard. What is perhaps not so widely known is that we also train about 200 boys each year to the C standard, and another 60 or so to an Advanced standard of our own somewhere between B and C.

The popular misconception of an Air Cadet instructor teaching his pupil to fly mechanically round the circuit by tracking over specified landmarks is many years out of date.

Our instructors number 400 devotees who give up most of their weekends to introduce cadets to the delights of gliding; and I mean delights, because no thrill compares with that first solo. These characters accept with surprising good grace the inevitable paper work, restrictions and discipline that must go with any Service organisation.

Many of them are young ex-cadets who learned to glide at the Schools where they now teach, many are also instructors at Gliding Clubs; all of them are given a thorough examination in instruction skill and allied ground subjects each year by regular Royal Air Force officers.

To keep their categories which, for example in the case of a B instructor means that he has at least 759 launches and for an A. 1500, they must reach a convincingly high standard in their annual test or go down a grade.

A large number of our instructors are qualified on aerotowing and we have access to several hooked Chipmunks. The combination of Chipmunk and Air Cadet glider has been seen at many air displays this year and last. Even more frequent are the occasions when our instructors collect legs for Silver C's in aircraft which are rather more at home in a sinking posture.

M. A.

BANNERDOWN (Colerne)

THE most exciting flight, productive of no certificate but a promise of great things in store, was Alan Yates's 9th September launch at 1430 hours. After thermalling to 2500 Alan contacted wave and climbed to 7800 ft. a.s.l., then flew forward and climbed to 5600 ft. in the next wave upwind—wind direction was south south west 18 kts at the surface.

On the same day the A.T.C. were wave soaring at 5000 ft. over the Mendips at Halesland. A careful record has been made of the met. conditions and now that Met. Officer 'Chalky' White has his A & B Certs you can bet he will say when the Mendips will be waving to us.

Also to solo were P. Fincham and P. Willimont, J. Stockwell had over an hour in the Tutor; Alan Jury flew Bicester—Duxford during the comps week to complete his Silver. Your Scribe scrabbled off to Ashampstead, 47 miles.

Mention of equipment brings us to the new Meddings mobile motel which must be the most luxurious retrieve vehicle in the country. Based on a Commer chassis this motorised mansion has 7 seats or 4 berths, lounge, wall and eaves cupboards, table, cooker, water supply, radio, all mod. con. a telescopic roof and does 20 m.p.g. on tow. Imagine de-rigging and trailerising in the middle of a field at 4 a.m. to the sound and smell of 'eggs and! The list for volunteer retrieve crews closed weeks ago!

CLEVELANDS (R.A.F. Leeming)

SINCE our last report we have bidden farewell to our Chairman, G/Capt. James, who leaves us, bound for the Air Ministry.

High spot of our flying this year was Dick Feakes second placing at the R.A.F. competition at Bicester. Flying our treasured Olympia he covered a total of 278 cross-country miles and brought it back without a dent.

Two new instructors whom we welcome to the club are J. Kemp and Mike Hollis, both from the Crusaders, Cyprus. Mike contacted a wave after an aerotow to Bedale recently and climbed to 8,500 ft.

Willy Taylor and Danny Kaye also sampled the delights of wave flying on

the same day—the club Grunau being put to good use.

Recent conversions: Willy Taylor to the Olympia and Dave Arum and Dave Messer to the Grunau. Dave Arum also collected his C in September. Messrs. Franklin and Zurek have joined the solo ranks.

R. F. P.

EAST ANGLIAN (R.A.F. Duxford)

OLD cable, non-existent spares and bad weather have somewhat curtailed our activities over the last two months. Althea Braithwaite and Roger Pratt both soloed in the Tutor and gained their A and B.'s.

Jim Morris and Graham Martin converted to the Skylark and "Marty" our all American friend is carrying passengers.

Paddy Hogg and Danny Daniels both returned from Bicester with C categories, and are supplementing our ever-growing band of instructors. Our Olympia was unfortunately written off when it spun in from 300 ft. The pilot was unhurt.

John Hulme has kindly modified our Skylark trailer to carry a T21, so next summer we can expect some cross-countries by Barge. New members to date are the Morely family and Steve Wolf, yet another American.

A. H. W.

EAST YORKSHIRE (Driffield)

SINCE our last newsletter we have had quite a few interesting occurrences to report. Bill Bailey has got his Silver C. Two Silver heights were gained by Pete and Jim Smith, they both got over 6,000 ft. on the same day.

Ian Matthews has gone solo (after a long wait for his 16th Birthday), he also got his C 5 days later. Tony Hockley got his C on 6th October when he took the Tutor up to 2,500 ft. (with a flight of 43 minutes).

Bill Ott has returned to the States, his post as C.F.I. is now filled by Doug Bridson. At the time of writing the Grunau and T.31 are undergoing thorough major inspections, keeping Les Manley and Ray Poxon very busy.

Looking back we seem to have done very well this summer in view of the weather. A number of us are now looking forward to some wave soaring in the Lake district during the coming winter months.

J. G. S.

Peter Dawson, East Anglian Club, ready for his Diamond Goal flight.

FENLAND (Swanton Morley)

DURING our brief ownership of the Olympia 403, Peter Kevan did very well to come fourth in it during the Nympsfield July Competition. The 403 is now with the Bannerdown Club, and we congratulate Max Bacon and Ed Meddings on their goal Diamonds achieved in this aircraft.

Terry Donegan completed a well deserved Silver C with a climb to 9,000 ft. which enabled him to go from Bicester to Oakington (Cambridge), and Al Pengelly completed his with a five hour thermal flight in the Swanton area.

George Ross has joined us from Moonrakers and adds his Silver C and Instructors Category to our list, as does Dennis Edwards who has done most of his gliding in Germany.

Meanwhile Peter Kevan has left us on a course. Ian Strachan may well be leaving shortly too.

Chris Delf, Rick Atkinson and Ivor Orrey are taking the Olympia to a ridge site for a week. We wish them the best of luck with 5 hour attempts.

I. W. S.

PORTSMOUTH NAVAL

WE have been experimenting with the "reverse launching" system details of which were kindly supplied by Dublin Gliding Club. It deals adequately with our single seaters but has, so far, not been too successful with the T21. However, we shall persevere.

Jim Gunter, our C.F.I., took the Skylark to Rye on 25th August.

Sandra Williams and Derick Marpole have been converted to the Olympia while June Swindell soloed recently. Peter Gay took the Olympia up long enough for his C certificate.

A Club tie has been designed and it is hoped to have it available shortly.

L. D. V.

WINDRUSHERS AND R.A.F.G.S.A. CENTRE (Bicester)

THE economics of all glider operations, as of any other aircraft operations, depend on aircraft utilisation. At the Centre this year we have made great efforts to improve utilisation in order to reduce costs. With this in mind we are proud of our August statistics, during that month we flew 401 hours from 1,650 launches.

The secret of this lies in good reliable winches and aerotows for the soaring aircraft. One of our winches now has a diesel engine which launches for an all time low in fuel costs and we hope to convert more winches to diesel engines. Aero-tows continue using the Chipmunk and Tiger Moth.

Recently Dick Stratton brought a Beagle Terrier over and we experimented with double tows. This has proved perfectly feasible provided the pilots are properly briefed. The take-off performance is reduced and discretion must be exercised when operating from small grass aerodromes in light winds.

Club news is that the Novices Trophy has been awarded to A. C. (Boff.) Hall. A. C. Hall has been flying since last winter and by virtue of keenness and a great deal of hard work has progressed at a remarkable rate. He is also one of our most valuable members.

Another notable new member this year is Squadron Leader Burgess who has almost abandoned golf to spend every week-end gliding. Recently he did a very creditable flight when he set off on a cross-country under very poor conditions and made 25 miles never climbing above 3,000 ft.

R. P. S.

Overseas News

CANADA

MR. BILL YANKEWICZ, of the Virden Flying and Soaring Club in Canada, writes to correct some misspellings in the accounts of visits to Canada published in our October issue, written by two British visitors, Ted Stark and Anthea Russell.

The 395-mile flight mentioned by Mr. Stark was by Julian Audette from Pincher Creek to Moose Jaw, near Regina — *not* by Odett from Panther Creek to Moosjoe near Rejoiner. The flight was described in *Soaring* for June, 1962.

The club visited by Miss Russell was Virden in Manitoba, not Wirden. Mr. Yankewicz continues:

The "two-seater hybrid" glider that Miss Russell refers to is no such thing! It is a Corocoran-designed WW2 type Cinema two-place training glider. There are at least three in active training use in Western Canada, and a greater number are in use at the various U.S. training sites.

Her report also mentions that at Virden the pilots "have not as yet explored the delights of soaring". This too is not overly accurate, for the former C.F.I., Murray Wood, soared the Cinema on several occasions, his best being a 30-minute flight from release of 1,000 ft. Since that time such people as Instructor Lewis Monteith, in early July of this year, soared for over an hour, while ad-

vanced students have consistently had 20 and 30-minute flights. All of this being done with only a standard light-plane rate-of-climb indicator and sensitive altimeter and no variometer. You can just imagine what the boys would do with this gadget!

The further report, "a mere 200-odd miles, shattering the pilots at that club who did not believe such a thing possible in a clear blue sky," again should be clarified. Certainly all the members know that soaring is possible and that "200-odd mile flights" are also possible; Didn't we have one of the top Canadian pilots give freely of his own time and knowledge to get the club started? We have had some of the finest sailplane pilots in Canada, other than Julian Audette, visit us and give freely of their knowledge.

CLONMEL
(Co. Tipperary, Eire)

THE Clonmel Gliding Club was established twelve months ago, and the task of equipping a club in a provincial area, where little or no interest had been shown in aviation, appeared to be formidable. Hard work by an energetic committee, however, resulted in the club becoming operational last September.

The Permanent site, donated by Count de la Poer, Vice-Chairman of the club, is a large expanse of heath, 1500 ft. a.s.l., beautifully situated in the Comeragh Mountains, about 6 miles from Clonmel. A hangar has been built and the area bulldozed.

The club's initial purchase has been a two-seater Rhönlerche II, and the C.F.I., Martin Mulhall, has a new Ka-8. A very efficient launching winch has been constructed by club member William Stone. Communication is by field telephone with the lines laid permanently along the runways.

We have broken new ground (in the Republic, at least) by employing a permanent winch operator. During the winter it is planned to build a retrieve winch to replace the car being used at present. Ideas on the best method of construction would be greatly welcomed.

Our site is ideally situated for ridge-soaring, and, geographically, as a take-off point for cross-country flying we expect it to be in great demand.

Some of our members plan to visit Britain for gliding courses during the coming season, and we, in turn, hope to have visitors from the United Kingdom, to whom we can offer, not alone gliding facilities, but a holiday in an area of great scenic beauty, with excellent fishing, shooting, boating, etc, in an atmosphere of traditional Irish hospitality.

Inquiries may be sent to:- Jim Phelan, 13, O'Connell St., Clonmel, Co. Tipperary.

J.P.

EAST AFRICA
(Nakuru, Kenya)

CONDITIONS of late have been moderately soarable—and C certificates have been gained by "Taff" Davies and Collin Elliott, both in the Cadet. Al George, George O'Meara and Willy Wilson all qualified for their A and B's.

Our fleet at present consists of a T.31; Cadet Mk. 1 and a Grunau Baby, until recently syndicate owned, but now thrown open for general club use.

Providing the Nuffield Trust help the forces element in the club, we hope to have a T 21 and an Olympia 463 in the near future.

Our regular evening Storm Fronts have been providing the usual, and expected 20 ft/sec. lift, for the Grunau Pundits, but unfortunately our other two aircraft are not suitable for these conditions, as our C.F.I. John Ryde found out a couple of weeks ago. He had a rather nervous lady passenger in the front of the T 31 and ran into the storm front from an 800 ft. launch. Despite full side-slip and 55 knots indicated, the aircraft was ascending at a steady 3 ft/sec. so John very wisely disappeared into the wild-grey yonder, depositing himself and his thrilled passenger 6 miles away, in a farmer's field. Belated congratulations on Brian Hext's Silver C height, obtained on the Cadet Mk.1.

C.R.E.

JAPAN (Osaka)

WITH great appreciation we read every issue of SAILPLANE AND GLIDING which a friend from Coventry has sent us.

We have gliding clubs here in Japan but their activities are not so remarkable and many have no gliders or gliding sites. Nevertheless, we have sent a pilot to the Internationals in France, Poland and West Germany. It is very sad that this is our only sufficiently qualified pilot to be able to enter in World Contests.

We have no officially supported gliding clubs or schools in Japan. Launching is mostly done by auto towing costing about 6s. per launch, we have no tow planes.

We have regular training twice a month and in summer we have two day courses. There are two Slingsby Skylarks in Japan; one was bought by the Sony Electric Co. and the other by Honda Engineering Co. Both are the representative Companies of current industrial Japan.

Y.O.

Members of Osaka Glider Club; Mr. Yasuo Oishi is 4th from left in back row.

U.S.A.

DICK SCHREDER'S latest all-metal high-performance HP-11 features a Vee tail and a water ballast system so the wing loading can be varied from 5.77 to 8 lbs./sq.ft. The water is carried in tubes extending over the full wing span of 52 ft.

Unfortunately, the ballast system was not operational for the contest. The straight tapered wing has an aspect ratio of 26 and uses the NACA 65 (sub 3) 618 airfoil. Two-thirds span flaps deflect 90 degrees for braking and the ailerons droop 15 degrees for thermalling. Maximum L/D has not been measured yet but is expected to be 42 to 1.

The new all-metal, two-place Schweizer 2-32 flew for the first time on July 3rd. It is currently undergoing flight testing while a cost study is being made before putting the sailplane into production.

Comments from those who have flown it indicate that the all-moving horizontal tail with anti-balance tab makes it a real pleasure to fly and the ball-bearing push-rod aileron controls help keep stick forces down.

Performance has not been measured but appears to be close to 35 to 1. Ernest Schweizer, the designer, was one of the three U.S. recipients of an F.A.I. Tissandier Diploma this year.

Another new sailplane first took to the air on October 6th, Irv Prue's Super Standard. This is derived from the Prue Standard but has a different airfoil, a more shallow fuselage, and a convential empennage.

It is thought that the slight increase in drag from the third tail surface will more than offset the extra induced drag a Vee tail gives in circling flight, because of both "rudders" being deflected.

Comparative flight tests with the two prototype Prue Standards (which placed

4th and 5th in the Nationals) will be made before deciding which configuration to put into production.

L.M.L.

Brian Masters writes from Hollywood:-

THE Agva-Dulce Soaring club, which is a 50-minute drive from my home is situated high up in the San Gabriel Mountains and has thermals up to 12,000 ft. and good winter waves.

The school has been operating about a year and is owned by Gene Hann and the fleet consists of a Schweizer and L.K. two-seater and one solo machine. The longest flight so far was by a Mr. Thompson, 211 miles to Las Vegas.

The country is very rugged with mountains, then desert and no roads for hundreds of miles and soaring in this region calls for a high degree of skill.

I have left gliding as a full time job and am now a charter pilot and instructor.

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