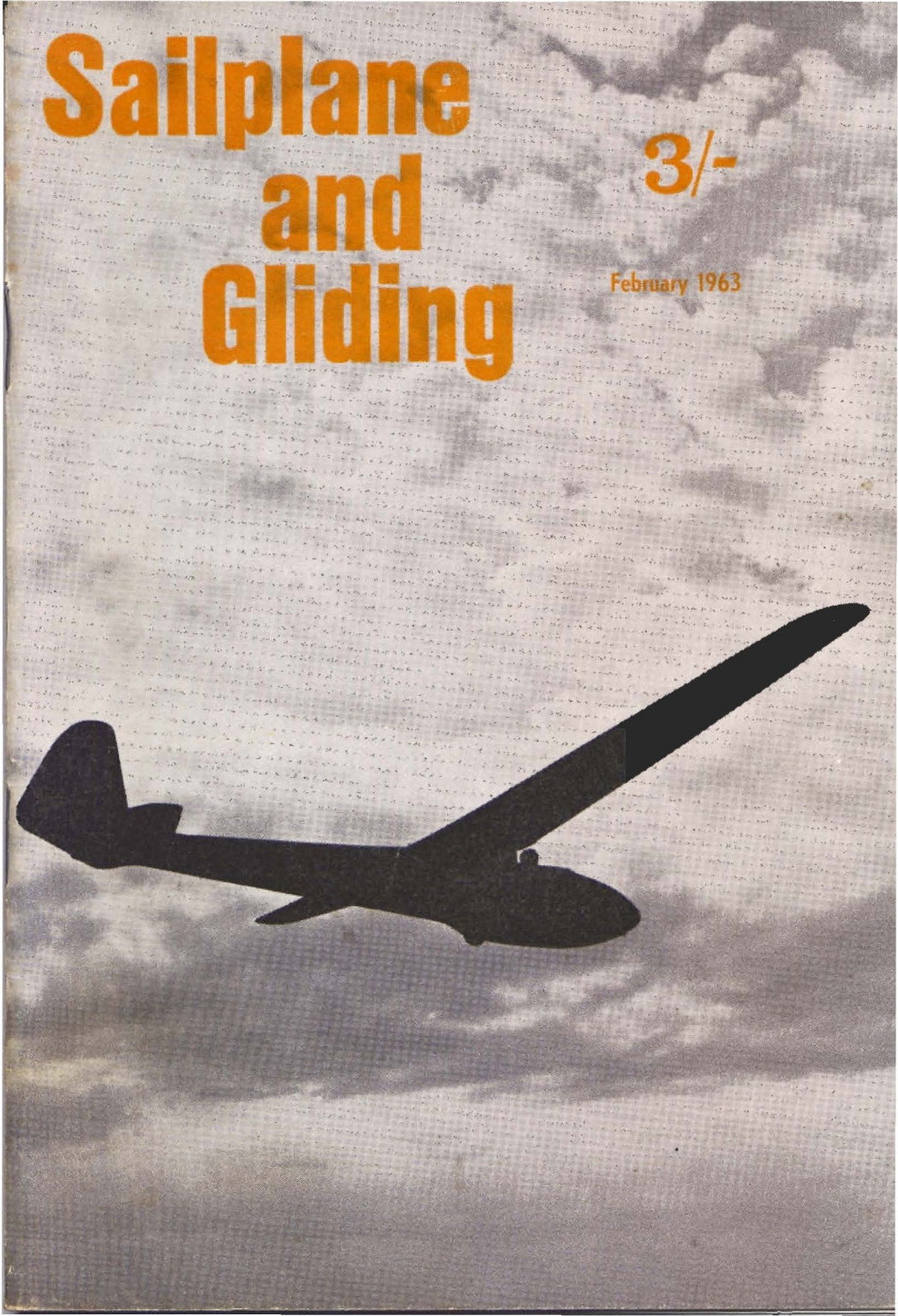
Sailplane and Gliding

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* * *

Air Traffic Control and Logic

by PHILIP WILLS

REACTIONS to my last paper, "A rational approach to Air Traffic Control", have at least been numerous, and varied from approval to flat incomprehension. It is depressing, if instructive, to find out how difficult it is even for informed people to take in a simple proposition if it goes counter to what Galbraith calls the "conventional wisdom"—ideas which have been accepted so long that they are defended uncritically and even with passion from any attack.

Yet what I am trying to get across is a point of view commonly accepted in most fields of flying, the concept of the Safety Factor. Perhaps the best way to start is by quoting one of my most unfriendly critics. He writes: "We have to put the principle of complete safety as firm as a rock before we can open a fertile discussion on the best obtainable compromise".

This is the only sentence I have ever read which goes round in a circle, bites its own tail, consumes itself, and leaves —absolutely nothing. Yet it summarises succinctly the conventional wisdom on this subject. Complete safety cannot, by definition, be compromised. Flying cannot be completely safe. The solution which has been reached is to impose Safety Factors. A Safety Factor is a compromise between the unattainable complete safety, technical possibilities, and social and economic requirements. This has proved to be the only logical way to make the inherently dangerous practice of aviation acceptably safe.

Surprisingly enough, the one field to which this approach has not so far been applied is to the hazard of Collision Risk. Nicholas Goodhart's paper, published below, is as far as I know the first attempt to quantify this problem, and its conclusions will, I expect, surprise many people. As soon as we know the size of a danger, we can begin to see what degree of control is necessary to keep it within acceptable limits.

Many critics have assumed that I am trying to attack and upset all Air Traffic Control, or at least A.T.C. in its existing form. Nothing could be further from the truth. David and Goliath were all very well in their time, but not in 1963.

In a final article, in our next issue, we hope to analyse more precisely what could come out of these proposals, but in sum all I am asking for is the same analytical approach to the Collision Risk as is the practice in other aspects of aviation—the application of a measuring rod to the problem.

The outcome of such an investigation (given present A.T.C. equipment) would undoubtedly in the main confirm our existing U.K. system of Control Zones, T.M.A's and airways. Various nonsenses would be abandoned, and the increased respect for what was left would lead to increased safety. In other countries, less fortunate, large volumes of air at present controlled without a vestige of reason would be freed, with immense advantage to all. In some areas (but not in the U.K. I am sure) it might even be found that existing controls were inadequate. Logic and reason would take over from the conventional wisdom. We should no longer have places like Manchester and Jersey more restricted than New York and Chicago. May I live to see the day.

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The Probability of Collision between a Commercial Aircraft and a Glider

by NICHOLAS GOODHART

THIS paper was written some time ago for submission to the Ministry of Aviation. It is currently under study by the Ministry, and while they have accepted that an analysis on these lines is possible, they have not yet finished studying the many assumptions on which it is based. I am the first to admit that I have made many simplifying assumptions in the paper, but in general I think these will cause an overestimation of the risk rather than any false indication of safety.

In general, it is difficult to estimate the probability of collision between powered aircraft since they tend to confine themselves to specific heights and routes and thus their motion is very far from random. Probability theory could only be used if the degree of concentration in particular areas could be defined.

In the case of gliders on cross-country flights, however, it is not far from the truth to consider their motion as being truly random both as regards route and height, though within certain limits.

In order to use simple probability theory to predict the possibility of collision between aircraft, it is not necessary that both the parties to the collision shall have random motion. Provided one does, then the degree to which the other is canalised or concentrated at particular points is immaterial.

In the case of glider versus commercial aircraft, simply probability theory can therefore be used to predict the collision risk, provided the limits can be specified within which the glider motion is reasonably random.

It would not, for example, be fair to assume the glider flying spread over the whole U.K., when in fact it is largely concentrated in Southern England, as this is where the major part of commercial flying is also concentrated.

The area in which glider flying may be considered to be substantially random is shown in Fig. 1. South-East England



FIG:1

has been excluded as an area in which a relatively large proportion of commercial traffic exists and in which some regulation of glider traffic is appropriate. The size of the area in Fig. 1 is about 25,000 square miles.

The other limit to the volume in which gliders fly randomly is height. Though very occasionally they may be found at heights up to 30,000 ft. in this country, it is reasonable to assume that in general they move randomly in the lowest 12,000 ft. of the atmosphere.

The gliders can therefore be assumed to move randomly in a box of base 25,000 square miles and height 12,000 ft.

Now consider a single airliner flying in this box at the same time as a single glider. For a collision to take place it is necessary, at any given instant, for a part of the glider to occupy the same point in space as a part of the airliner.

The two aircraft may collide in any relative attitude, but the worst case is when the glider is banked and crossing in front of the airliner at right angles.

It is proposed to take this case, but as a balancing factor it is proposed to eliminate the tails of both aircraft. They can then be considered as flying bars of length equal to wing span.

In order to give numbers to the problem, the glider is assumed to be of 60 ft. span in a 45° bank and substantially stationary. The airliner is assumed to have a span of 140 ft. and to be flying level at 400 ft./sec.

The glider projects a span of 42 ft. to the airliner; thus a collision takes place if the glider is within 21 ft. above or below the airliner and anywhere along its 140 ft. span. The "collision cross-section" is therefore 42 ft. × 140 ft. = 5,900 sq. ft.

In one second the airliner sweeps out a volume of 400 × 5,900 cubic feet = 2.36×10^6 cubic feet.

Thus in any particular second the probability of the glider being in the volume swept out by the airliner is

$$\frac{2.35 \times 10^6}{8.35 \times 10^{15}}$$

Converting from per second to per hour of airliner flight, we get

$$\frac{2.35 \times 10^6 \times 3{,}600}{8.35 \times 10^{15}}$$

$= 1 \times 10^{-6}$ per hour of airliner flight.

Application to the present situation

Having obtained the basic probability of one glider versus one airliner, it is now necessary to consider the application of this figure to air traffic over U.K.

The latest available statistics (1961) indicate that about 3,000 hours of glider cross-country flying was done in the year. There are 8,760 hours in a year, thus the average glider population of U.K. airspace is

$$\frac{3{,}000}{8{,}760} = 0.35 \text{ gliders}$$

Airliners over U.K. are not confined to the box, thus on average each spends only a limited percentage of its flight-over-U.K. time in the box. Examination of the latest available statistics indicates that approximately 15% of airliners airborne over U.K. are on average in the box at any one instant.

Thus the probability of collision between an airliner and a glider over U.K. is

$$1 \times 10^{-6} \times 0.35 \times 0.15$$

$= 5.3 \times 10^{-8}$ per hour of airliner flight. Or, to put it another way, the probability is one collision for every 19,000,000 hours (2,200 years) of airliner flight.

And all this is based on the assumption that all the flying takes place in solid I.M.C. or alternatively that both pilots are blind.

The real risk

At this point it is difficult to go further since, in the absence of any statistics other than the present perfect record, no figures can be assigned to the effectiveness of "see and be seen" as between gliders and airliners. That it is effective in V.M.C. there is no doubt; but whether it eliminates 9 out of 10, or 99 out of 100, or 999 out of 1,000 incipient collisions is hard to say. Taking a really pessimistic view let us assume a figure of 9 out of 10.

Experience indicates that glider flying is largely done in V.M.C., and again in the absence of exact figures a reasonably pessimistic assumption is that one-tenth of glider cross-country flying is in I.M.C.

Thus 10% of incipient collisions will be in I.M.C. and will actually take place, but the other 90% are in V.M.C. and 90% of these are avoided by "see and be seen". Therefore only 10% plus 9% of collisions take place and the real risk becomes

$$5.3 \times 10^8 \times 0.19$$

$= 1 \times 10^{-8}$ per hour of airliner flight.

This is one collision per 11,000 years of airliner flight.

Since on average there are about 30 airliners simultaneously airborne over the U.K., airliner hours are being scored up at the rate of 30 per hour. Thus, while any one airliner could expect to average one glider collision per 11,000 years of continuous flight, there would be on average one collision over U.K. every 370 years. To put this into perspective, *if there was no controlled airspace anywhere except the South-East of England*, if the last collision had been in Queen Elizabeth I's reign we would be keeping up to the average if the next one was about now, provided of course commercial and glider flying had been at the present level during the intervening period.

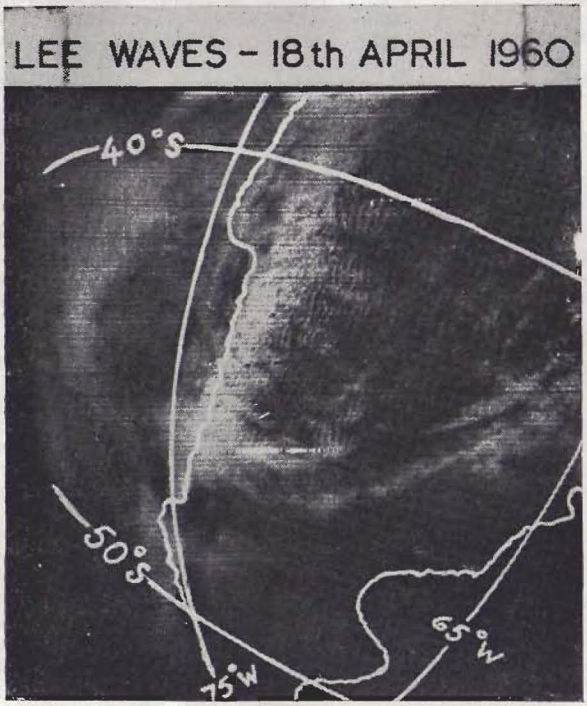
The Spaceman's View of Lee Waves

by C. E. WALLINGTON

SINCE the beginning of 1960 Earth satellites, specially designed for making meteorological observations, have been taking photographs showing cloud cover over the Earth. So far four of these satellites, called Tiros I, II, III and IV, have been launched from Cape Canaveral and put into orbits at altitudes of between 400 and 500 miles. At these altitudes a satellite takes about 1½ hours to circle the Earth, during which time the Earth rotates about 20 degrees. On each circuit the satellite takes a series of photographs of the land, sea and cloud cover in a 750-mile-wide belt beneath its orbit, the pictures being recorded for transmission to ground stations at convenient times.

Interpretation of the photographs is by no means easy; illumination and viewing angle vary not only from one picture to another but also between parts of any one picture. Snow-covered regions show up as white areas which look the same as large sheets of cloud. Convection cloud is often distinguishable because of its globular form and its exceptional whiteness, but exceptional whiteness can also be caused by an image of the sun.

Despite the difficulties, however, the satellite photographs reveal fascinating cloud patterns which are not easily discernible from meteorological observations made on the Earth's surface. Bands or streaks of cloud are sometimes revealed spiralling in towards the centre of a hurricane. Cloud streets in trade winds over the oceans are sometimes seen to extend for hundreds of miles.



Cloud over Argentina photographed from a weather satellite. Bars of lee wave clouds are visible over a large area east of the Andes.

(Photo by courtesy of the U.S. National Aeronautics and Space Administration and the U.S. Weather Bureau.)

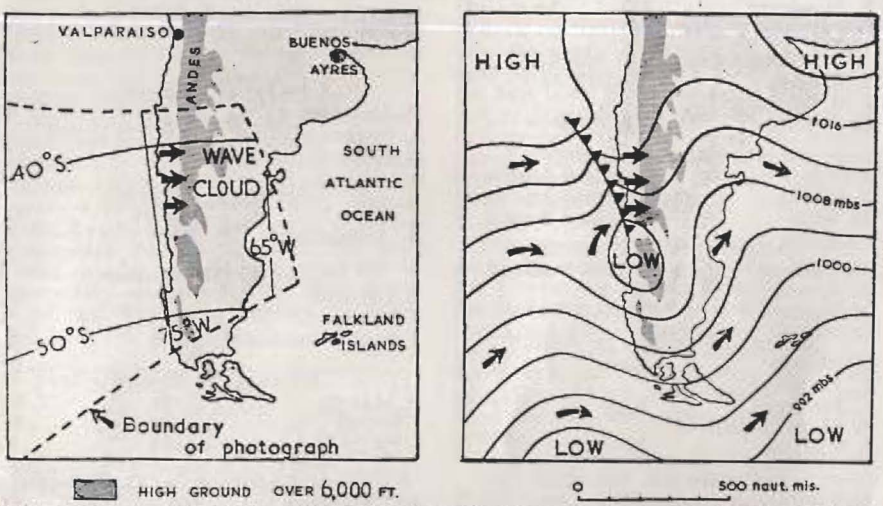
Even lee-wave cloud can occasionally be detected, and the photo opposite shows a particularly good example of wave cloud over Argentina. The lines of longitude and latitude and the coast-lines have been drawn in white on the photograph. The area covered by the photograph is that bounded by the broken lines on the left-hand map of the diagram. At the time of the photograph westerly winds (as denoted by the black arrows) were blowing up and over the Andes and producing orographic cloud. This cloud appears in the photograph as a broad white band just inland of and parallel to the coast of Chile. The photograph also shows a number of bars of cloud in lee of the Andes. These are bars of lee-wave clouds. The spacing between them is about eight miles. Their altitude is not known for certain, but we may guess that they were at low or medium cloud levels; the reasons for this guess are that lee wavelengths are usually longer at high cloud levels and that high-level lee-wave clouds would look whiter on the photographs and would probably have streaks of ice crystals trailing down-wind.

The synoptic situation at the time is shown in the right-hand map of the diagram. Notice that in the southern hemisphere the depression with its cold front looks upside-down to us, and that the winds blow in a clockwise direction around the low-pressure area.

The area covered by the wave cloud pattern is roughly 250 × 400 miles. It is interesting to speculate how far pilots of World Championship standard may go on a "free distance" day in such an area. Perhaps we shall see during this month. Although the winds at Junin, where the World Championships are to be held, are somewhat variable at low levels in February, the upper winds are often between west and south-west and tend to increase further south.

Meteorological information is rather sparse in the region, but it is likely that lee-waves covering a large area are very frequent in the southern half of Argentina at least. Perhaps future satellite photographs will confirm this. More meteorological satellites are to be launched, and one of them, called Aeros, will orbit the Earth at 22,300 miles so as to remain vertically over a fixed point on the Equator, its cameras constantly covering a hemisphere.

LEE WAVES – 18th APRIL



The area covered by the satellite photograph is bounded by the broken lines in the left-hand map. The synoptic situation is shown on the right.

Argentine Entries

ENTRIES for the World Championships to 31.12.62 are shown below. Name of country is followed by Team Manager. O denotes Open and S Standard Class.

ARGENTINA: J. Bertoni		
R. Berretta	(?)	S
R. Hossinger	(?)	O
J. S. Ortner	(?)	O
AUSTRALIA: J. R. Müller		
R. S. Rowe	Skylark 3F	O
J. M. Iggulden	Ka-6	S
D. G. Reid	ES-39 Arrow	S
AUSTRIA: H. Kreis		
J. Fritz	Standard Austria	S
F. Ulbing	Standard Austria	O
H. Wödl	Standard Austria	S
BELGIUM: W. Grandjean		
M. Cartigny	Mucha Standard	S
H. Stouffs	Ka-6	S
M. Baeke	Skylark 3	O
BRAZIL: H. Lisboa de Araujo		
G. Münch	Ka-6	S
G. Pessoti or		
C. Junquera	Ka-6	S
A. M. de Oliveira or		
J. Machado	BN-1	O
CANADA: R. Grady		
C. Yeates	Ka-6	S
W. J. Mix	Ka-6	S
D. Webb	Skylark 4	O
CHILE: C. Sanfurjo Gomez		
(?)	Blanik	O
(?)	Blanik	O
(?)	Ka-6	S
DENMARK: A. Feddersen		
I. Braes	Ka-6	S
W. H. Jensen	Lo-150	O
N. S. Sejstrup	Ka-6	S
FINLAND: O. A. Rautio		
M. Witanen	Pik 16c Vasama	S
J. Horma	Pik 16c Vasama	S
H. Tandefelt	Pik 16c Vasama	O
FRANCE: M. Lamort		
D. Barbera	Edelweiss	S
C. Labar	Siren-Wa 23	O
F. Henry	Edelweiss	S
GERMANY (W.): E. G. Haase		
H. Huth	Ka-6	S
R. Spänig	Zugvogel 3	O
R. Kuntz	S.B. 7	S
GREAT BRITAIN: Ann Welch		
H. C. N. Goodhart	Skylark 4	O
J. S. Williamson	Skylark 4	O
A. J. Deane-Drummond	Olympia 463	S
HOLLAND: M. Manting		
E. van Bree	Sagitta 2	S
J. Selen	Ka-6	S
A. Breunissen	Skylark 3	O
ISRAEL: R. Eitan		
M. Bar	Skylark 3	O
D. Arber	Ka-6	S
ITALY: P. Rovesti		
W. Vergnani	M-100-S	S
L. Brigliadori	EC-3959 Uribel	S
A. Pronzati	Eolo	O
JAPAN: T. Shizuru		
I. Oda	Sky 34	O
A. Shimamori	Ka-6	S
NORWAY: H. Martisen		
H. Ijensvoll	(?)	O
T. Hernes	Ka-6	S
T. Sand-Johanessen	Ka-6	S
POLAND: T. Rejniak		
E. Makula	Zefir	O
J. Popiel	Zefir	O
J. Pieczewski	Foka	S
SOUTHERN RHODESIA: A. G. Tattersall		
J. C. Saunders	(?)	O
E. J. Harrold	Ka-6	S
E. Pearson	Ka-6	S
SPAIN: M. Tauler Gelabert		
N. Ara	Ka-6	S
L. V. Juez	Ka-6	S
SWEDEN: J. G. Karlsson		
L. Fredriksson	Foka SZD24	S
S. Rodling	Ka-6	S
SWITZERLAND: H. Ruckstuhl		
H. Nietlispach	Sky 34	O
M. L. Ritzi	Skylark 3F	O
R. Hächler	Ka-6	S
U.S.A.: P. Schweizer		
R. H. Johnson	RHJ-6 Adastra	O
R. Schreder	HP-11	O
J. D. Ryan	(?)	S
YUGOSLAVIA: P. Crnjanski		
C. Kriznar	Meteor	O
J. Mrak	Meteor	O

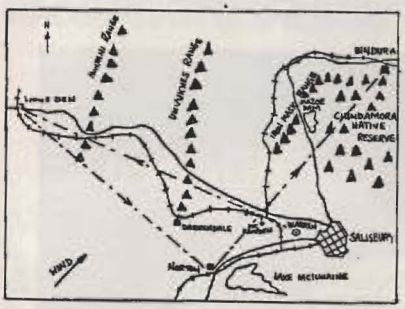
WHAT A RIDE!

by TED PEARSON

Ted Pearson and Jim Harrold are representing their country in Argentine, and in the previous World Championships Jim finished 10th in the Standard Class.

EIGHTH day of the 1962 Rhodesian National Gliding Championships at Warren Hills Airfield, Salisbury. Visibility, as for the whole of the previous week, not much better than one mile—even from 10,000 feet above ground. All the bush fires in Central Africa must be feeding smoke into the area.

Met. give a wind of 18 to 25 knots from south-west which will take us straight into a thousand miles of uninhabited Africa. A reciprocal wind would make 1,000 kilometres fairly simple. Dave Ryland talked the rest of the Task Committee into an optimistic 307 kilometre dog-leg race. Across wind out to Lions Den, back to Norton, then downwind past Warren to Bindura. Each leg just over 100 kilometres.



Jimmy Harrold with the Swallow and I in the Air-100 have kept jealous tabs on each other right through the competitions. To-day we are at the end of the list for selection of aero-tow take-off times. The other vultures leave little to choose from and Jimmy takes 10.56 whilst I get the end of the line at 11.36.

No messing, as usual, Jimmy shoots over the starting line into good lift straight after release. At 11.54 I set course and reckon I have missed the bus. After one thermal I also discover myself completely lost. Some frantic fumbling, then what can only be the northern suburbs of Salisbury appear through the murk. Next time I shall believe these met. stories of 25-knot cross-winds.

Back on track with nose pointing well into the south. A struggle to get higher than 9,000 feet (airfield 5,100 a.s.l.) for the first hour. Thermals have been difficult to hold all week and are broken up still more by the wind. It is also rough. Speed well down with wing stuck right into the very narrow lift and the bird often flicks out or goes over semi-inverted.

The new road to Northern Rhodesia crabs by underneath, winding through the Umvukwes range. Painfully slowly the Hunyani hills come into view. Was that a red and white Swallow swimming by into the haze? If so, Jimmy is on his way back to Norton but must be struggling. Lion's Den coming up, but what dreadful time—three hours for the first leg.

Now running close to cloud base at 15,000 feet and not dropping below 13,000 between thermals. Round Lions Den with camera doing overtime. This is the end of the railway line where goods are transferred to lorries for transport through rugged, thickly forested mountains and down the Zambesi Escarpment to the Kariba project. Elephants are one of the main hazards on the south access road to Kariba.

After Jimmy on the second leg. No main roads or recognisable features. Odd farms drift below. At long last a railway line—Norton. No. you clot, it's Darwendale—remember that cursed wind. Nose south again—oh for a glimpse of Lake McIlwaine!

Perhaps I'll just make Norton. Lift is getting weak but it would be nice to round the second turning point. Not far from five o'clock and clouds all disappearing. There's Lake McIlwaine—just like that out of nowhere. Nip into the smoke from the bush fire south of Norton and it might give enough lift to get

back to Warren to save a retrieve by road.

More pictures as we drift over the railway station, which is the turning point. Slow, difficult lift between three and five feet per second and what have we here? It's the Swallow 500 feet below. What kept you, Jimmy boy? Way down about 6,000 feet under him the Skylark 2 is coming into the same thermal with Ray Smith aboard.

Hug the lift up to a few wisps of cloud at 15,000 with the beautiful smell of smoke taking you up in the last thermal. Cold now and yawning a lot; that's five hours around 15,000 feet without oxygen.

Jimmy is away on course 060° I slide in above and behind. Ten minutes past five and passing Mount Hampden airfield. Watch Jimmy carefully, as quite obviously he will turn off now and sit down at Warren for a beer. Sunset will be 5.35 and dark about twenty minutes later.

But he doesn't. Jimmy you can't possibly propose shoving off straight across the middle of the Chindamora Native Reserve at this time of night. It's stuffed with mountains, got no roads and without so much as a cabbage patch to land on in the 50 miles to Bindura. Besides, there's a State of Emergency declared at present.

A bit more speed, Pearson; every time the Swallow gets more than a few hundred yards ahead it dissolves into the haze. Jimmy seems to be going so that commits me too. How much height have we left? Saints alive!—we left that last thermal after Norton with 15,000 and still have 14,000.

Look at Mazoe dam sliding by to port with the setting sun on the water. Incredible to be streaking over the reserve and hardly losing height at all. Just like being in orbit and about as cold.

Follow Childe Harrold—he's on home ground and must know his way to Bindura. He throws a circle over some hills and I go round with him, still 500 feet above. Good gracious—downdraught! James, I believe you're trying to ditch me here to spend the night in some uncomfortable cooking-pot.

On track and leave him to his fate; the whole sky is giving zero sink. Got to put the speed up—there's only about



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15 minutes daylight left. Just watch the hills reeling off backwards with this beautiful 25-knot wind. Every fibre keyed up for the inevitable down-draught and mounting exhilaration when it simply doesn't come. Increase airspeed to 100 m.p.h.

Edge to port a bit. Must hit the road before Bindura or might miss the township and press on into the night. There's a white patch in the haze—it's the tailings dam at Botha Mine and that's only four miles from Bindura. Here it comes, the beautiful airfield and not another sailplane on it. Airbrakes out to lose the 3,000 feet still left after a straight glide of nearly 100 kilometres on the last leg in only 40 minutes. What a ride!

* * *

Dave Ryland drove all the way to Bindura to time the birds in, but after the sun set he hadn't expected to see any. I opened my canopy and he pointed silently to the Skylark 2 getting rid of altitude in aerobatics, thus disposing of my complacency. For Ray Smith this meant his diamond for 300 km. nominated goal flight and .very well earned. Ray told us he had come from Norton at 100 m.p.h. and lost less than 2,000 feet in the process.

Jimmy rammed his Swallow down to us through the dusk. He had found lift in the Reserve but didn't need it. I was shaken to find he didn't know the way to Bindura and hadn't even seen me with him after leaving Norton.

We lined up cars ready to de-rig the birds by headlights when—Glory be!—out of the hills crept Corney Meyer in the little Hütter 28. He had left Norton after us and scratched across the reserve at low altitude. Corney climbed out of the tiny bird with half-frozen tears on his cheeks (he, too, collected a Diamond) and promptly gave us enough material to fill the line-book for a month:—

"As I cleared the mountain by 500 feet the lights of Bindura appeared in front."

and—

"I had to put down on that field with three other sailplanes on it because there wasn't time to look for Bindura airfield."

Nice flying Corney! This was his first competition and before that he had done only one gliding cross-country.

"Gliding" and "Sailplane and Gliding"

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A Stochastic Cross-country

or

Festina Lente

by ANTHONY EDWARDS

Cambridge University Gliding Club

"Whatever do you mean by that?"

"By what?"

"A stochastic cross-country? What does 'stochastic' mean?"

"It means that there is an element of chance in the flight: you might not reach your goal."

"But all flights are like that."

"Yes."

"Then why bother to call them by a long word when everyone knows this fact?"

"Well, it's like this . . ."

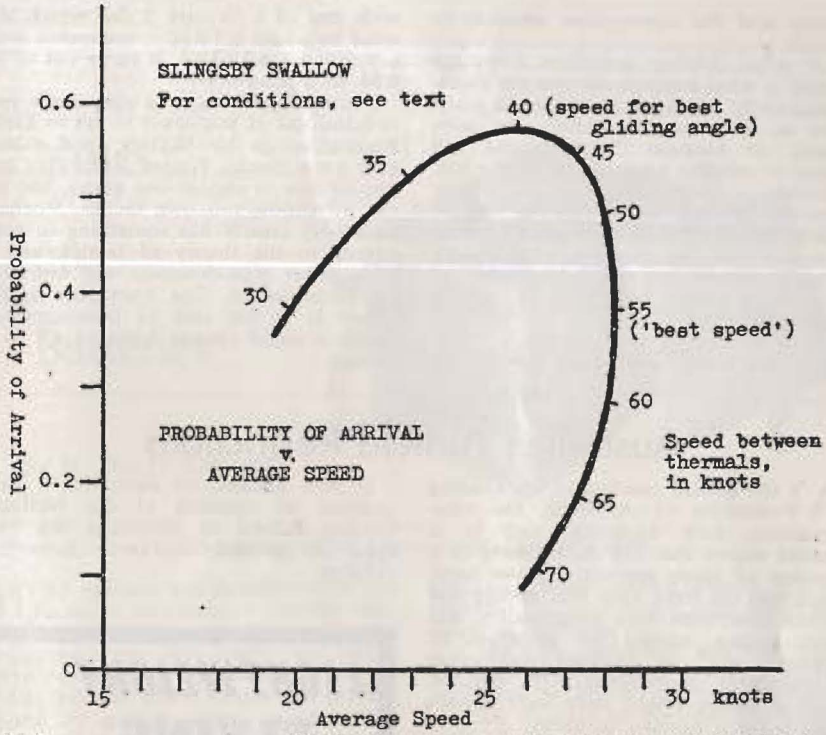
EVERY cross-country pilot knows that his primary task is to stay up. Only when he is reasonably satisfied about this can he start thinking about the best-speed-to-fly, and why Little Rissington hasn't turned up yet, and other such things. And yet, when he comes to work out his best speed, he will certainly not take into account, mathematically, the possibility of a premature landing, although he will do so in his mind ("Better not fly as fast as that . . . might get too low"). But there is no reason why he shouldn't feed the chance, or stochastic, element into his calculator. Much is known about Stochastic Processes nowadays, and in this article I want to introduce them to gliding in a very simple example: so simple, in fact, as to be rather unrealistic. But one has to start somewhere.

Today there is no wind. Thin cumulus are randomly dotted over the sky, and I have declared Little Rissington. I am determined not to stray from my track, and a cursory glance at the clouds reveals that thermals will be randomly spaced along the route, every d ft. on average. My operational height-band will be h ft. deep, and—another glance upwards—my rate of climb in thermals will be u f.p.s. And, best of all, no down between thermals! Since Little Rissington is nd ft. away, I'll need about n thermals to get me there. And I mustn't forget my glider—she sinks at $s = Av^3 + B/v$ f.p.s. when flown at v f.p.s. All ready? Right! Hook on, and let's go.

The distance between adjacent thermals is a random variable, x, which is evidently exponentially distributed with probability density $1/d$. exp. $(-x/d)$. (Help! He's in cloud already!) If you don't know about these things, just shut your eyes for the next few minutes. Now, consider the glide from the top of one thermal to the next one, x ft. distant, during which the glider is flown at v f.p.s. The glide takes x/v seconds, and thus consumes sx/v, or $x(Av^2+B/v^2)$, feet of height. If this loss exceeds h ft., the glider will land; that is, if x exceeds $h/(Av^2+B/v^2)$. But the probability of this happening is

$$\frac{1}{d}\int_{\frac{h}{Av^2+B/v^2}}^{\infty} e^{-\frac{x}{d}}\,dx$$

which equals $\exp[-h/d(Av^2+B/v^2)]$. Thus the probability of still being airborne after n glides between thermals



(which, you may remember, will take me to Little Rissington) is

$$P=(1-\exp[-h/d(Av^2+B/v^2)])^n.$$

This is the probability of my reaching the goal. A little thought shows that it has a maximum at $v=(B/A)^{0.25}$, which is the speed for best gliding angle, as *The Soaring Pilot* will tell you. This is as it should be, and we deduce that the maximum probability of arrival is

$$(1-\exp-h/2d\ AB)^n.$$

The Soaring Pilot also tells us that the average cross-country speed is

$$w=uv/(u+Av^3+B/v).$$

In order to maximise this I would have to fly faster than my best-gliding-angle speed, as everyone knows, but the probability of my reaching the goal would then be reduced. By how much? Let's look at an actual example.

Suppose Little Rissington is 100 km. away, and the thermals are 4 miles apart on average. d is thus about 21,000 ft., and I will need about $n=16$ thermals. Suppose the operational height-band, h, is 3,000 ft., and the rate of climb in thermals, u, 5 f.p.s. If my glider is a Swallow we may guess $A=4.5\times10^{-6}$ and $B=100$ roughly.

Now the last two equations relate the probability of arrival, P, to the average speed, w, by means of the parameter, v. We may therefore draw a graph of P against w, keeping an eye on v at the same time. I have done this in the figure. We see that if I fly at the best-gliding-angle speed, 40 knots, the probability of arrival is 0.57, but if I fly at the "best-speed-to-fly", 55 knots, the probability is only 0.38, and the average speed has only gone up 2½ knots. An increase of 10% in the average speed costs a reduction of 33% in the probability of arrival. Is it worth it? Well, that depends upon the object of the flight, whether it is a race or not, and, if it is, what marking system is being used. The expectation of points on any given system can be maxi-

mised and the appropriate speed-to-fly found.

A more striking deduction from the graph is what happens around the "best-speed-to-fly". It is often said, quite truly, that so long as one "stuffs the nose down" in between thermals, one will come to within a knot or two of the best possible average speed. Thus, in our example, all speeds between 46 and 65 knots lead to cross-country speeds within one knot of the maximum. But look what happens to the probability of arrival: it ranges from 0.54 to 0.18—a factor of three!

It is interesting to compare a Swallow's maximum probability of arrival with that of a Skylark 3, for which AB must be about 2.5×10^{-4}, compared with a Swallow's 4.5×10^{-4}. It turns out to be 0.84, as against 0.57.

From all of which we may draw two conclusions: if you want to get to Little Rissington, go by Skylark; and, whatever your mount, *festina lente*! We are not all free to choose our glider, but we can all choose our own tactics. Stochastic theory clearly has something to contribute to the theory of tactics, and I hope other pipe-dreamers will continue the investigation. One immediate application is to the task of handicapping, which it could change from an art to a science.

Australian Airfield Restrictions

AT the annual meeting of the Gliding Federation of Australia, the vice-president, Jack Iggulden, said in a special report that D.C.A. thinking at a number of levels seemed to have hardened into the fixed view that gliding and power operations were incompatible, and that gliding should be progressively "phased out" of licensed and other Government aerodromes. If effected, such a policy would have very serious results for a number of clubs.

Informal enquiry indicated that the line of thought leading to this attitude was mainly based on the danger of winch and auto launching cables to power aircraft.

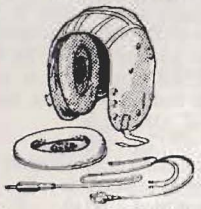
In some cases (e.g. a pilot arriving at a strange airfield not knowing gliding was in progress) these dangers could be quite real. On the other hand, it would be clearly unreasonable to ban gliding operations from country airfields, and those having infrequent or little power traffic, on the off-chance that some odd power bod may come along and fly into the cable.

He suggested therefore that G.F.A. should frame a standard procedure which obviated the dangers. His suggestions included standard ground marking of a restricted area for gliding launching, at any airfield where power traffic could be expected, with restriction against power traffic to 2,500 feet above ground.

It was decided to carry on a programme of research at the National Gliding School to determine the best type of ground markers.—*Australian Gliding.*

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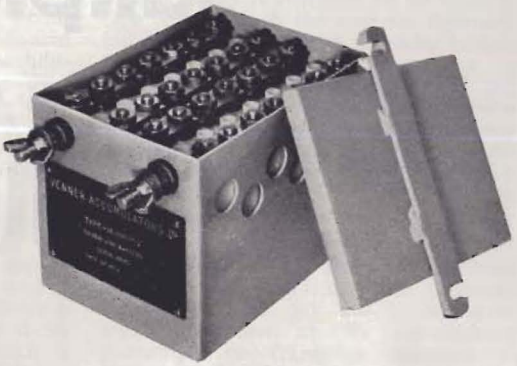
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Notes on Batteries

by R. BRETT-KNOWLES

Co-ordinater of Instrument Development

MOST owners are familiar with the lead-acid accumulator and the common dry battery, which is of the Leclanche type, but there are other varieties, whose properties are not so widely known. These others are characterised by greater initial expense, but examination of their characteristics is worth while.

The Venner Silver Cells

Two varieties are made, silver zinc and silver cadmium, both being rechargeable accumulators of lighter weight than the corresponding lead-acid cell. Bearing in mind that the lead-acid cell has a nominal 2 volts and the silver zinc cell only 1.5, comparison on an ampère-hour basis gives lead-acid 10 A.H. per lb. and silver zinc 40 A.H. per lb. Taking into account this voltage difference gives power storage figures of 18–20 and 50–60 Watt hours per lb. respectively. However, the catch is in the short life of the silver zinc cell, which is guaranteed up to 17 months on a sliding rebate scale, starting on the day that the cell is filled. Unlike the lead-acid cell, these cells should be left discharged if they are to be stored for any length of time, and, before storing, should be connected to a load which will run them down in 40 hours.

If the high initial cost and very short life can be disregarded in favour of the very great weight saving, type H should be used as it is suitable for the higher rates of discharge such as a glider pilot would wish to impose. In connection with the discharge, it should be noted that the first third is at a value of about 1.8 volts per cell, and the remainder nearly constant at 1.5 volts followed by a sharp drop which must not be allowed to go below 1.2 volts unless the cells are to be stored.

The only Venner silver cadmium cell to be made at the present is the CD5, suitable for 1 amp. at 1.1 volt for 5 hours, at which rate it gives 22.8 W.H. per lb., a little better than the best lead-acid cell. The life is estimated by the makers at 200 charge/discharge cycles spread over a period of up to three years. The cost is still much greater, though.

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and mechanical abuse. They are unfortunately very bad for power weight ratio, having 10 A.H. per lb. and 12–13 W.H. per lb. and cannot really have much application except for rechargeable low power stand-by supplies (turn-and-slip?). To use them in a car would save many of the troubles of lead-acid cells, but the expense would be prohibitive. They do retain their charge over long periods of idleness and are stored charged.

The Mallory Zinc Mercury Dry Cells

For many years the Leclanche dry cell has been a very popular primary cell, but there is now a rival on the market. The Mallory cell is more expensive initially, but has between 3 and 4 times as much energy stored in it as a similar ordinary dry cell, in figures about 50 W.H. per lb. at 1.25 volts which is as good as the silver zinc cell. In addition, the cell is leakproof and in any case does not contain either acid or alkali.

To run an artificial horizon from Mallory cells would involve a battery of 10 cells weighing only 3 lb. 11 oz., costing just over £6. Assuming 1 amp. drain, this would last for 14 hours of continuous running (what a thought when you have left it switched on all night!). One pays through the nose for lightness, but for a low power or stand-by battery this cell is worth considering, as its shelf life is better than the ordinary cell and such a large battery as quoted above would not be needed for a turn-and-slip or electric variometer. There are special low-temperature versions and these function down to −20 C. Altitude has no effect on any version.

CORRECTION to the article on Horizons and Inverters, SAILPLANE AND GLIDING, December, 1962, pp. 404–5. An error makes nonsense of the introductory paragraph on transistor inverters. It should read: "Present practice is to use a transistor inverter to supply A.C. from a 12-volt D.C. supply because it is both lighter and more efficient than a rotary inverter".

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Kronfeld Aeronautical Art Exhibition

Report by ROY NOCKOLDS and DAVID SHEPHERD

JUDGING this year's show was by no means an easy task, and before mentioning any particular work, we would like to say how impressed we both were by the generally high standard and also by the number of works submitted. This surely illustrates the great interest in this most relaxing and rewarding combination of art and aviation.

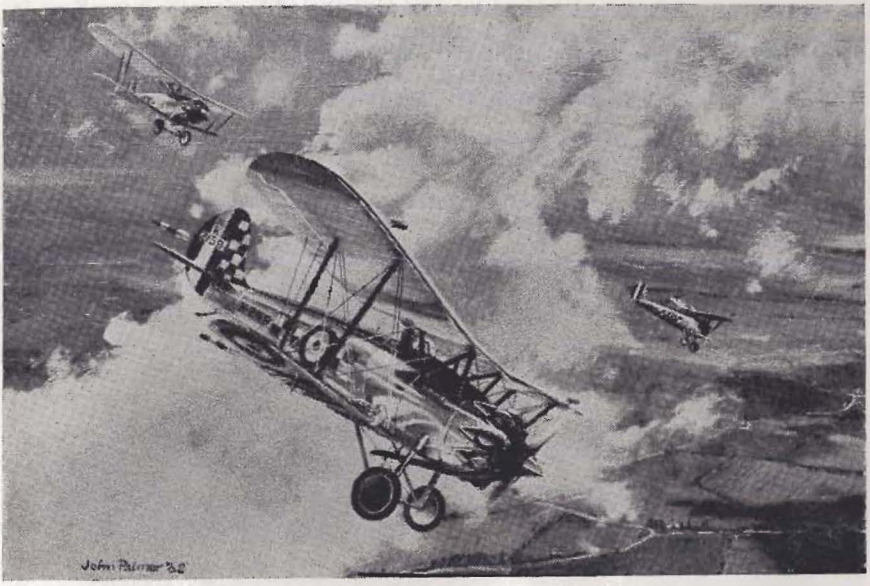
As we endeavoured to point out in our impromptu talk on "line and colour" at the Club, the important points we both looked for in the judging of the paintings were those which indicated that the artist was trying to "say" something by putting his own personality and viewpoint into his drawing or painting. Whilst we naturally believe from the professional angle that accuracy is important, this is by no means everything, and if too much attention is paid to every detail the work becomes photographic and lifeless. Half the battle is to know what to leave out, whilst still keeping the client satisfied.

In the overall winner, No. 10, Mrs. Margaret Kahn's "Going Places" showed just how to paint clouds. Remember that clouds are after all only vapour though they do indeed often look solid. In this painting the artist captured a very real sense of the loneliness of solitary flight above cloud, though in her other painting entitled "Perranporth Goal" her muddy colour and the application of the paint showed that she had something to learn about landscape painting. Another important point that we cannot



David Shepherd (left) and Roy Nockolds, the judges, with Margaret Kahn, looking at her winning painting "Going Places".

Courtesy of "Flight"



"Bulldog Trio" by John Palmer, winner of the oil painting section.
Courtesy of "Flight"

overstress, of which Mrs. Kahn's No. 10 is a good example, is how a bad frame can ruin a good painting. Surely it is worth going to a reputable framer, and if the artist is in any doubt, just leave it to them to frame the picture. This need not of necessity cost a fortune, and a good painting deserves something better than a piece of Victoriana dug out of the attic. This applied to so many of the pictures.

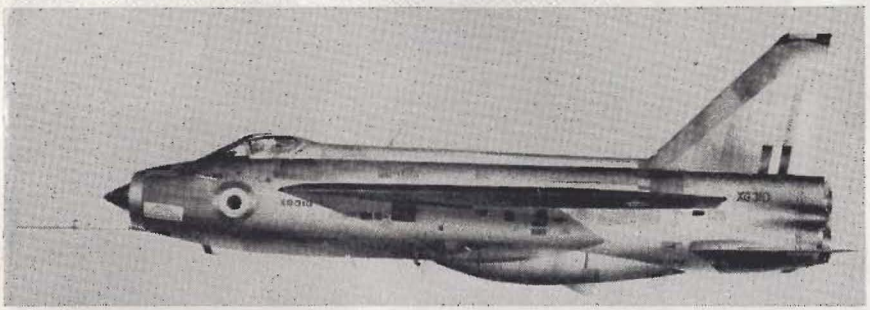
The winner of the oil paintings was John Palmer, whose painting "Bulldog Trio" showed again a nice feeling of cloud and an excellent composition. The whole painting was tied together as a unified whole while still keeping the eye in the right place. But his sense of colour is inconsistent. The hard and unreal green of the fields, with no receding distance, spoilt this picture—green in the distance can never be so green as that below, and does it really look green anyway when flying? Certainly it is no green straight out of a tube. Furthermore, we felt that he had paid too much attention to every detail in the nearest "Bulldog". The angle of the three aircraft gave them some movement, but this was counteracted by painting almost every rivet and bracing wire on the nearest aircraft which tended to halt its flight. In any case one would not be aware of these details if one is supposedly keeping formation in another aircraft.

We gave No. 29, Fiarello Tosoni's impression of two Vulcans, a "highly commended" as it showed courage in not being afraid of putting the paint on. It broke many rules, and his sense of tone was poor—we felt that he had struggled to get the sun gleaming on the glistening white of the Vulcan with the purest white paint on his palette. But even this extreme failed purely and simply because the massive cloud in the background was almost as white. If he had "killed" the clouds to prevent them competing, the Vulcan would then have gleamed in the sunshine without another brushmark being applied to it.

In No. 26, Ken Tilson made a very brave attempt at the "Battle of Britain",

but his obviously great efforts to achieve accuracy over-ruled everything else and the aircraft looked like models. This is a case where the artist should strive to be more impressionistic, fly as much as possible and possibly study the professional painter. Claude Waller fell into the tempting trap of copying a photograph of a well-known incident in his portrayal of Lufthansa's 707 doing a nosewheel-up landing—we feel that this sort of thing is pointless as it does not look at the gliders on the ground or in the air.

In No. 122, Terence Shreve's "Old Timer" was a plain statement of fact, no more and no less. This line drawing succeeded admirably in putting over the atmosphere of flight in the well chosen angle of the aircraft, and whilst personal opinion might come in here we both felt that this achieved very much more with much less effort than the undoubtedly skilled air brushwork of



"Daylight Patrol," one of four pictures submitted by Tom Eccles.
Courtesy of "Flight"

say anything new. The artist has some quality in his work and he will gain far more by painting from his own imagination and observation.

In the water colour section, V. Veevers had a delightful painting in his No. 81, "Soaring". This again showed an excellent mastery of cloud painting; in No. 82, his "Launching Point", whilst being equally well painted, was spoilt by bad composition—there were two centres of interest and we didn't know whether to Tom Eccles. His Lightning was a perfect Lightning, but one surely cannot air-brush the aircraft and then paint the background in gouache? His "Whirlwind", No. 89, painted in gouache throughout was far more successful.

We would both like to thank the Kronfeld Club for this most enjoyable but difficult task. We were both stimulated by the freshness of the work sent in. To keep this quality is so important, but above all, enjoy doing it!

WORLD CHAMPIONSHIPS APPEAL

WE are indeed grateful to the following donors who have given contributions to the World Championships Fund since the last issue went to press; the contributions to the Fund now total £137 19s. 6d.

Anne Burns	F. G. Irving	T. H. B. Bowles
A. W. Doughty	J. S. R. Salmond	J. Delafield
T. A. McMullin	T. O. M. Wedderburn	Oxford Gliding Club
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R. Neaves	J. R. Hodsman	Fenland Gliding Club
P. M. Scott	T. Oulds	N. W. Kearon
	Kronfeld Club	

The pilots have elected Ann Welch as Team Manager. Other crew members are F. G. Irving, C. F. Wallington, Lorne Welch. Dr. Slater will accompany the team.

Air Chief Marshal Sir Theodore McEvoy

ON 30th November the Royal Air Force Gliding and Soaring Association were hosts at a Dinner in honour of Air Chief Marshal Sir Theodore McEvoy to mark the end of his term as President of the Association. Members of the Executive Committee of the R.A.F.G.S.A. and representatives of all clubs were present. Sir Theodore was presented by the Association with an oil painting and an illuminated address. The oil he chose, when asked by the Executive Committee to select a picture, was Margaret Kahn's "Going Places" which subsequently won the Kronfeld Art Competition. It is a happy thought and fitting that the painting by the wife of a soaring pilot, herself a pilot, should be presented by a gliding association to a distinguished and eminent aviator.

The illuminated address which was presented is a beautiful work of art produced by "Be Be" Sharman and signed by a pundit, a C.F.I., a "bigge wheel", an airman beginner, a glider pilot's wife, and members of the Executive Committee.

Even before 1923 when Sir Theodore entered Cranwell, where he won the sword of honour, he was involved with gliding. He was with the aircraft firm which produced the glider Rex Stocken flew at Itford in 1922. This friendship was to be resumed 40 years later at the British National Championships at Aston Down, when Sir Theodore took Rex Stocken for a flight in the R.A.F.G.S.A. Eagle. They both became so absorbed in "lift" that they stayed airborne longer than planned and caused widespread fears that they would be late for the prizegiving, which was to be undertaken by Rex Stocken. It should be added that the fears were heavily outweighed by delight that these pioneer pilots should be disporting themselves



Sir Theodore (right) with Hugo Trotter, chairman, at the Kronfeld Art Exhibition.
Courtesy of Barratts Photo Press

in the thermals and displaying a proper sense of proportion.

Throughout his life Sir Theodore has had an insatiable love of the air. He has always been well known for his eagerness to fly every type of aircraft whether powered or unpowered, and he has seized every opportunity to fly new types. In fact, he has gone to great lengths to find the opportunities and to continue as an active pilot throughout his career.

Much of his early flying was with fighter squadrons, both in this country and Iraq, and during the war years he was mainly concerned with fighter operations. He formed the first Polish fighter wing in 1941 and was Senior Air Staff Officer of No. 11 (Fighter) Group in 1943. During 1943–45 he was Senior Air Staff Officer of No. 84 Group. This was one of the two tactical close support groups which took part in the Normandy invasion and which advanced through France, Belgium and Holland into Germany where it took over German bases. Included among these bases were the German Glider Schools which were to become the birthplaces of the R.A.F.'s interest in gliding which resulted in the formation of the R.A.F.G.S.A.

After the war he was Director of Command and Staff Training at the Air Ministry and took the Imperial Defence College course in 1948 before being appointed Air Officer Commanding, No. 61 (Eastern Reserve) Group in January, 1949. In November, 1950, he returned to the Air Ministry as Assistant Chief of the Air Staff (Training), relinquishing that appointment to become, in 1953, R.A.F. Director of Studies at the Imperial Defence College. In May, 1956, he was appointed Chief of Staff, Allied Air Forces Central Europe. His Headquarters was at Fontainbleau where he was prominent in the development of the Allied Gliding Club. In May, 1959, he took up his appointment as Air Secretary at the Air Ministry.

It is the custom that all Service Sports Associations should be presided over by officers serving on the active list. Sir Theodore's retirement from the Service therefore necessitates his relinquishment of the Presidency of the R.A.F.G.S.A. which he assumed in May, 1959.

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A President is usually regarded as being adequate if he acts as a figurehead, and more than adequate if he lends his influence when asked to do so. Sir Theodore, when he assumed the Presidency of the R.A.F.G.S.A., did far more; he immediately took up gliding actively and enthusiastically and has continued to fly ever since with the various R.A.F.G.S.A. Clubs and several civilian clubs. On 15th August, 1960, he completed his Silver C and became the first Officer of Air Rank to do so. He has since pressed on, with the intention of gaining his Gold C. He took part in the R.A.F. Wave Project in Cumberland in 1959, 1960 and 1961 and made a number of interesting wave flights. In August this year he took part in his first competition when he flew the Olympia 401x in the R.A.F. Summer meeting.

Sir Theodore's active participation in the sport has been a great encouragement to members of the R.A.F.G.S.A. and a large factor in getting gliding fully accepted in the Service. He urged Commanders-in-Chief, Station and Unit Commanders to provide facilities for gliding and to enable glider pilots to pursue their sport. He takes a keen interest in, and encourages, pilots of all

ranks and follows their progress closely.

He has used his influence to attain closer co-operation between the British Gliding Association and R.A.F.G.S.A. Progress in this direction has been rapid during his Presidency. The efforts to achieve the integration of the R.A.F.G.S.A. and B.G.A.'s Instructor and Examiners categories, which have now been crowned with success, were urged on and supported by him. He was the main instrument in obtaining the use of R.A.F. Aston Down for the B.G.A. for the National Championships, which it is hoped may set a precedent for the future.

In 1962 he became Vice-President of the B.G.A., and has since taken a keen and active interest in B.G.A. affairs.

The R.A.F.G.S.A., which is deeply grateful to Sir Theodore for his leadership and for his great services, has invited him to become a life Vice-President which carries with it membership of all R.A.F.G.S.A. Clubs. The Air Marshal has accepted, and all look forward to seeing him frequently in the future both on the ground and in the air.

N. W. K.

B.G.A. News

Annual General Meeting

This will be held at the Duke of York's Headquarters, Chelsea, on 9th March, starting at 10.30 a.m. Again this year arrangements are being made for lunch, which will be 6s. 6d.

National Championships

The National Gliding Championships will be held at Lasham from Saturday, 25th May, up to and including Monday, 3rd June.

Easter at Swanton Morley

BY kind permission of the Commanding Officer, Group Captain P. C. Cleaver, O.B.E., the Norfolk & Norwich Aero Club, assisted by the Fenland R.A.F.G.S.A., and the Norfolk Gliding Clubs, propose to hold the Eastern Gliding Competitions at R.A.F. Swanton Morley, lasting seven days from Friday, 12th April, to Thursday, 18th April, inclusive. The entry fee is £5, to include pilot(s) and crew up to four members, plus £8 15s. for ten aero-tows: i.e., a total of £13 15s. The number of aircraft participating will be limited to 25.

It is anticipated that billeting will only be available at Swanton Morley for Service personnel, but there is a caravan site in the adjoining village and ample hotel accommodation available locally. The closing date for participation in the event will be 1st March, and accordingly prospective entrants should now apply for entry forms and details from the Competition Secretary, Mr. W. B. Reekie, 62, Charles Close, Wroxham, Norwich, Norfolk, NOR. 3Z. Tel: Wroxham 110 (evenings).

Easter at Long Mynd

Closing date for entries is March 1st. Apply to Lieut-Col. G. Benson, Marston, Pembridge, Leominster, Herefordshire (Tel. Pembridge 203).

Northern Gliding Competitions

By agreement between the Yorkshire Club and the Derbyshire and Lancashire Club, the Northern Competitions are to be held at Sutton Bank for 1963, from 27th July to 5th August inclusive. Twenty-five entries will be accepted, and the competitions have been recognised by the B.G.A. as qualifying for the Nationals. Launching will be by winch or aero-tow. The entrance fee will be £7 7s., not including launches.

Ann Welch has accepted an invitation to act as task-setter.

Accommodation for tents and caravans and full catering will be available.

Further details and Entry Forms can be obtained from The Competition Secretary, Yorkshire Gliding Club, Sutton Bank, Thirsk, Yorks. Closing date for entries is 23rd March.

* * *

Daughter for Yvonne

We are pleased to announce the birth of a daughter to Mrs. Yvonne Bonham, our Club News Editor and formerly Secretary of the British Gliding Association.

Another Version

"FAIR BLOWS THE WIND"

by R. W. SOMERSCALES

THE glider was lined up on the runway and the tug taxying into position a tow-rope's distance away. There seemed to be a sense of urgency, on this occasion. Don was looking a little grim beside me and no doubt I was looking as I felt—somewhat overawed. We had not done a long tow like this before—well, not *quite* like this.

Checks completed and rope attached, having been thoroughly briefed, it but remained to signal our readiness to take-off and receive encouraging waves in return from those on the runway. The take-off was rather prolonged but quite normal in the still, spring air, and as we climbed over the quiet English countryside a certain relaxation was noticeable. We were committed.

The lack of turbulance and other signs of thermal activity were welcome on this occasion—we had to stay on the end of the tow-rope somehow, for the importance of getting the glider to its destination was vital. At 2,000 ft. the glider was keeping position almost by itself and a period of near monotony set in. Our main interest was with our maps, as we had not visited our destination before. As the sun rose in the sky and the haze thickened, we donned sunglasses and peered ahead for the glint of water. Sure enough, land gave way to sea. Even behind a tug, the English Channel where we were crossing seemed a long, long way, and the sight of the French coast was, surprisingly enough, welcome.

The intercom crackled into life: "Hello Matchbox, Wombat calling, landing zone three miles ahead—can you see it?" Two anxious eyes peered ahead into the haze: yes, the shape was familiar; we had studied our photographs at briefing to some tune.

The stream of Stirlings, Dakotas and Horsas was packing in now for the run-up, capital ships and destroyers below looked like toys, and the fighter cover above and below was comforting in its intensity. Dark puffs kept appearing in the sky around us. Just beyond the beaches we released, and the normal pandemonium of a massed landing commenced. Unorthordox flying was normal and normal flying non-existent. A Dakota tug in front with one engine blazing was dropping his supplies prematurely, and the gaily coloured parachutes were drifting across the approach path and threatening to become effective cockpit covers to the blunt noses of the weaving Horsas.

The glider defences on the L.Z. had obviously not been cleared as expected, and it appeared that the Hamilcar zone some distance away had received preference, as the huge gliders were already disgorging their tanks into action unimpeded.

The real nature of these defences now became clear. Telegraph poles about 30 feet high were planted with German precision at intervals of less than a wingspan in a neat and orderly pattern of squares and cross-braced with steel wire in all directions at the uppermost ends. Well, thank goodness it had not been in their nature to plant the poles at random. The whole effect was rather like a gigantic hop field. The "Lanes" of poles were near enough into wind thank goodness.

With only seconds now before inevit-

— V. G. —

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able landing nasty thoughts raced through my mind. Those wires! Too fast and too low and chances of decapitation round about the neck were high. Too high and too slow and a stall on top of a wire may well decapitate one londitudinally as it were. With speed and height just right perhaps we should get away with it.

At a hundred feet and 80 knots on the clock we pulled out of our 75-degree approach angle and slowly lost height and speed until we were just clearing the wires, and at what I judged to be the right moment I dropped the nosewheel into a wire. The effect was immediate and quite helpful, almost as good as a deck arrester. As we rapidly lost flying speed the wingtips were neatly removed by impact with the poles, and the glider came to rest in a cloud of dust.

The sounds of flight now gave way to the sound of mortar bombs exploding and small-arms fire. Incendiaries were making sickening patterns across the landing zone and some gliders were in flames. There was an urgency to get out. We felt slightly safer prone under the glider and adding a little to the weight of our small-arms fire. Occasionally we could hear frantic movement in the fuselage section and seconds later the rear fuselage and tail fell away with a crash. Chains were released and Jeep and Six-Pounder emerged with its crew of eight Ox and Bucks Light Infantry looking more happy than I had seen them since take-off. They were now in *their* element. We waved as they screamed off to their rendezvous in low gear and suddenly we realised that many months of training had "paid off".

The area was no longer healthy and we moved off at the double in the direction of our rendezvous but paused in the shelter of a ditch to look back. Our Horsa was proudly showing its invasion stripes to the sky and not yet burning.

Don said quietly: "Well, that's one we shan't have to b****y well retrieve".

COOK VARIOMETER

The first four places in the 1961 National Championships were taken by pilots who used Cook Variometers.

Cook Variometers are not damaged by heavy landings or vibrations and seven years world-wide experience has proved it to be the most reliable instrument of its kind.

Accuracy is not affected by temperatures between −15°C and +45°C.

Write for descriptive leaflet and address of our agent in your country to:

The Cobb-Slater Instrument Co. Ltd.,

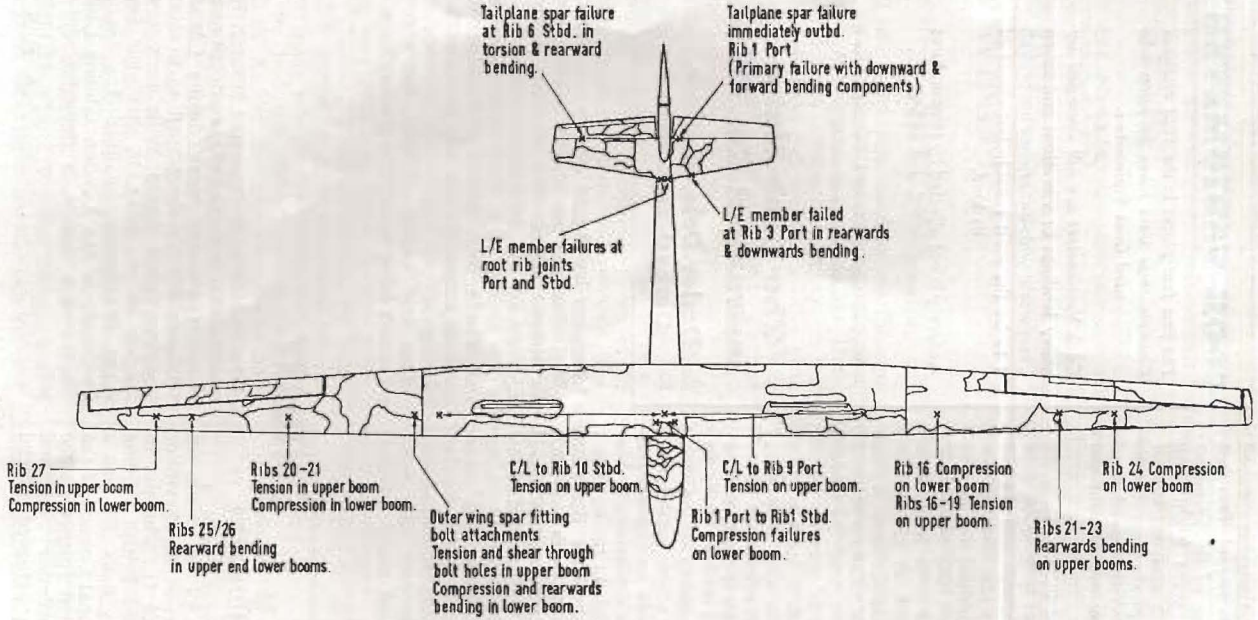
Darley Dale, Matlock, Derbyshire, England

OBITUARY

SEYMOUR WHIDBORNE

WE regret to learn of the death, on December 17th, of B. Seymour Whidborne, M.C., C. de G., who put in much hard work for the British Gliding Association in its early days. He was a member of the Provisional Council of the B.G.A. when it was first formed at the "gliding lunch" in December 1929, and when the Association achieved official status in 1930 he became its treasurer. He retained this post till 1933, and continued to carry out the work during Claude Grahame-White's short spell as nominal treasurer, until Philip Wills took over the job in late 1933. In that year Seymour Whidborne qualified for his C Certificate at the London Gliding Club. He leaves a widow, a daughter and a son.

A. E. S.



SLINGSBY SKYLARK 3F. B.G.A.No.983.

DIAGRAM OF MAIN BREAKAGES WHICH TOOK PLACE IN THE AIR

PLAN VIEW SHOWING MAJOR SPAR FAILURES
AND UPPER SURFACE MAJOR SKIN BREAKS

Reproduced above is one of the five diagrams in the Report.

Civil Accident Report No. C. 738

THE Ministry of Aviation has now published the report on the Accidents Investigation Branch enquiry into the accident to Slingsby Skylark 3F, B.G.A. 983, which occurred at Fen Ditton, Cambridge, on 27th May, 1961, in which Flt.-Lt. E. W. Clarke was killed.

The Ministry has done a valuable service in publishing the report and it deserves to be widely circulated amongst the gliding community. The informed reader, looking between its concise lines, will be impressed by the painstaking effort involved in even a relatively straightforward investigation. Lack of space precludes reproduction of the whole report, but a few important extracts are given below. It should be remembered, however, that the sections quoted should properly be read in the context of the complete document. It may be obtained from H.M. Stationery Office, P.O. Box 569, London, S.E.1. Price 1s. 9d.

Extracts from the Report

2. Brief Circumstances

"The sailplane was launched by aerotow from Cambridge Aerodrome at about 15.10 hrs. and cast off from the tug aircraft when at a height of about 2,500 ft. The pilot's intention was to engage in thermal soaring and, if conditions were suitable, to achieve a gain of height of 10,000 ft. to complete his qualifications for the Gold C badge. The sailplane remained in the air until about 17.45 hrs., i.e., for over two-and-a-half hours, at which time it was seen by witnesses on the ground to execute rolling manoeuvres and to break up at a height of about 2,500 ft. The pilot was killed."

3.6. Subsequent Examination

"3.6.1. The wreckage was re-constructed and examined in considerable detail but no evidence of a fault in manufacture that might have caused the structural failure was revealed. Neither was there evidence of any flutter or of malfunctioning or jamming of the flying controls."

Subsequent paragraphs describe the failures and the sequence of failure in detail.

5. Conclusions

"5.1. The sailplane was airworthy and had been properly maintained.

"5.2. The pilot was competent and very experienced.

"5.3. There was no evidence of any pre-crash defect which could have caused the accident.

"5.4. The port tailplane collapsed in flight due to overstressing. This brought about the immediate collapse of the wing structure from overstressing in down-load.

"5.5. Immediately before the tailplane failed the sailplane was rolling.

"5.6. Rolls are not permitted under the conditions of the Certificate of Airworthiness."

6. Opinion

"The accident was the result of structural failure due to overstressing during rolling manoeuvres."

* * *

This accident gives added point, in the saddest possible fashion, to the notice from the Technical Committee published in SAILPLANE AND GLIDING in October, 1960 (and reproduced in the Report). This warned pilots, owners and instructors that the limitations of semi-aerobatic gliders must be observed, pointing out that inverted flying or manoeuvres such as slow rolls, barrel rolls or inverted loops are not permitted in such aircraft.

Since that warning was published, tests of rolling manoeuvres in a suitably instrumentated Swallow have shown that, in such circumstances, it is relatively easy for even skilled pilots to achieve and sometimes exceed the design stressing cases of the semi-aerobatic category, even in a very manoeuverable machine.

The possible penalty for exceeding the limitations is demonstrated very clearly indeed by this report.

F. G. IRVING,
Chairman, B.G.A. Technical Committee.

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SCHWEIZER

Featuring Unique All-Metal Construction.



Schweizer 1–26 Kit or Complete
Best Flights: Altitude — 36,000
Distance — 373 miles

Schweizer 2–22C
Best Flights:
Altitude — 17,000
Distance
196 miles

1–23H & Standard
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Best Flights:
Altitude — 46,200
Distance — 450 miles

The time tested, all weather-metal construction of Schweizer sailplanes is unique — guarantees years of maintenance free, safe flying — excellent performance with minimum depreciation.

The availability of the 2–22C two-place trainer and 1–26 one design sailplanes in kit form offers clubs and individuals, ATC'd sailplanes at substantial savings.

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Just a few extracts from the latest James Bend thriller (published by Bird & Bird at £17.3d.).

"Diamond Fever"

by IAN PHLEGMING

alias

M. BIRD

THE STORY SO FAR:—*James Bend, ace pilot and agent of G.A.B. (Gliding Association of Great Britain) is in pursuit of three priceless Diamonds, the attainment of which is vital to Britain's prestige and Bend's ego. Two Diamonds have fallen to him as he scoured Britain, leaving behind him a trail of wrecked gliders, ruined girls and cleaned-out poker schools. But the third eludes him, ever tantalisingly out of his reach (largely through the machinations of Dr. Yesandno, the sinister met. man, master of the ambiguous forecast).*—NOW READ ON . . .

M waited alone in the luxuriously appointed Unstable Gliding Club bar, savouring, as only a connoisseur can, their magnificent South African "Treble Glug" sherry. It was ice-cold. His appreciation was tempered by concern—Bend had not arrived; it was two seconds to five.

He was not to be disappointed. A splintering crash caused him to turn his head; a lean-jawed figure, immaculately clad in Millets' shot-silk flying overalls, sailed in an unbroken curve through the only open window to land lightly on the deep-pile Axminster carpet. A faint aroma of Yardley (for men) hung in the air.

"Remembered our appointment just twenty seconds ago, at cloudbase", he said nonchalantly.

"That's why they call you the T.V. star", quipped M. Then, suddenly serious: "From now on you work under 173, Bend".

The dreaded 173 prefix—the ace's licence to cloud-fly in airways! M must be desperate.

"You'll have to go abroad for this bauble, Bend. You know what to expect out there".

"Yes sir—foreigners". Bend shuddered.

"Remember, when you hand in your passport and bankbook at Calais, it's as good as won. Spare no expense and don't forget the Unstable reputation for high living and low flying". " 'Voir".

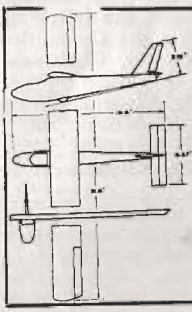
* * *

Bend had no illusions. The All-Asia Soaring Championships, held each winter in the Gobi Desert, were the fiercest test of man and machine yet devised.

Trackless wastes, jagged mountains; no living creature beyond the all-seeing vultures, the all-hearing wolves and the all-smelling nomads, who spoke no civilised tongue and did not know one end of a pip-pin from the other. Bend pensively hummed an Oriental dirge:

There's a little yellow handle
To the north of Katmandu,
I can't rig my Skylark now,
Allah, what shall I do?

He was driving alone, and fast, in his 4½-litre supercharged Bentley, his all-fibreglass Butt trailer rock-steady at 80 m.p.h. on the treacherous Alpine curves. His plan was simple. He would recruit his crew from the most hardy of the luscious women that would inevitably fall under his spell between Calais and Tashkent.



BUILD the little all-metal D-8 sailplane. 32ft. span. Easy to build—rugged. Engineered by designer of world-famous aircraft. Plans including full scale rib and bulkhead layouts only £10.19s. Specs. 3-views description—7s.

Pacific Aircraft Company
5942 Avenida Chamnez,
La Jolla, Calif., U.S.A.

Then he saw her, the girl of his dreams, standing for no particular reason by the roadside. Those biceps! She could manage the centre-section single-handed. Desire steamed in Bend's eyes.

A screech of servo-assisted brakes. "Get in!"

They roared off together.

* * *

After five gruelling contest days Bend was in the lead. It had been hard, it would get harder. Of his seven devoted crew members, three had been blown over precipices while de-rigging in high winds. ("Look after the glider first, last and always", he would snarl.) One had to be traded in for gasoline with a passing camel train. Affection was a weakness; he had no weaknesses.

Nevertheless he felt ill at ease, and adjusted his straps irritably. Surely nothing could go wrong now? His nickel-plated Dalton computer nestled snugly in its shoulder-holster; the Crossfell-Audio emitted a satisfying whine as the desert floor dropped away. He had just celebrated passing the current World Absolute Altitude record with Bollinger '57 and a Corona cigar, when suddenly . . .

(*Continued on page* 573)



At our recent A.G.M. a most successful year was reported and the following were elected to serve on the Committee for 1963: H. S. S. Trotter, Chairman; C. Tippett, Secretary; Yvonne Bonham, Treasurer; R. T. Willbie, Chairman Wine Committee; M. Fenton, News Editor; Jill Walker, Committee Secretary; Rosamund Hervey, Lecture Organiser; E. Clothier, E. Pollard.

The important job of organising the weekly Wednesday Programme which has been done by Yvonne Bonham since the Club started has been taken over by Rosamund Hervey, who will be most grateful to hear from anyone who has any ideas or suggestions for possible talks or film shows.

The most successful single event organised by the Club during the year was the 5th Aeronautical Art Exhibition and Competition. There were over 140 entries and during the 10-day period over 300 people saw the exhibits. Twelve paintings and drawings were sold. The judges' report on the competition appears elsewhere.

Members and others are reminded that the popular series of Instructional Lectures for glider pilots continues on Monday evenings until April. Yet to come are two lectures on Navigation by John Neilan; Glider Instrumentation by Frank Irving; and Ray Stafford-Allen on Maintenance; also two lectures on Advanced Met. by Wally Wallington.

Further details and registration forms from the Club. Admission to single lectures is 3s. 6d. to members and 5s. to non-members.

As we go to press we still have no definite news on the renewal of our lease at 74 Eccleston Square. Our notice to quit takes effect in mid-April, so if anyone has any ideas please do let us know.

Y. B.

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

Jan. 30. The Hazards of Aerospace Journalism, by Ken Owen of "Flight".

Feb. 6. Man and the Atom. A Walt Disney Production.

„ 13. Flying in the Swiss Gliding Championships, by Chris Riddell, with slides.

„ 20. Flying in the Arabian Peninsula and Pakistan. Films by Colin Richardson.

„ 27. Victory at Sea film series.

Mar. 6. Welcome home British Team.

„ 13. Ballooning Today, by Anthony Smith.

„ 20. Far Eastern Tour, by David Shepherd.

„ 27. Nigerian Slides, by David Smith.

GLIDING CERTIFICATES

DIAMOND FOR GOAL FLIGHT

No.	*Name*	*Club*	*Date*
2/134	K. W. O'Riley	Surrey Gliding Club	5.8.62

GOLD C HEIGHT LEG

	J. H. Wheeler	United States of America	15.8.62

GOLD C DISTANCE LEG

	K. W. O'Riley	Surrey Gliding Club	5.8.62

SILVER C CERTIFICATES

1228	S. A. C. Gildea	Nimbus R.A.F. Gliding Club	29.7.62
1229	T. F. Donegan	Fenland R.A.F. Gliding Club	2.8.62
1230	M. J. Surrey	Wessex R.A.F. Gliding Club	27.8.62
1231	R. C. Chesters	London Gliding Club	10.8.62
1232	K. Moseley	Midland Gliding Club	16.9.62
1233	T. Coldwell	College of Aeronautics Gliding Club	9.9.62
1234	M. J. Roberts	Oxford Gliding Club	17.8 62
1235	D. H. Scarfe	R.A.F. Germany	10.6.62
1236	G. C. T. Macpherson	Kent Gliding Club	9.9.62
1237	H. T. Boal	Cambridge University Gliding Club	16.9.62
1238	P. Purdie	Moonrakers R.A.F. Gliding Club	30.9 62
1239	P. Nethercott	Devon & Somerset Gliding Club	16.9.62
1240	J. L. Williams	Empire Tests Pilots' School	21.8.62
1241	N. Christy	R.A.F. Brüggen	19.8.62
1242	R. T. Duckett	Surrey Gliding Club	14.9 62
1243	L. G. Frakes	Handley-Page Gliding Club	10.8.62
1244	C. A. Reilly	Midland Gliding Club	9.9.62
1245	A. N. Phipps	White Rose R.A.F. Gliding Club	14.9.62
1246	A. M. Gover	Southern Command Gliding Club	4.8.62

C CERTIFICATES

Name	*Gliding Club or School*	*Name*	*Gliding Club or School*	*Name*	*Gliding Club or School*
R. R. Simpson	Essex	W. J. Hemmings	Chilterns	C. E. Day	Derbyshire & Lancashire
K. Barton	London	S. R. Cannell	London		
H. R. E. Rumsey	Midland	R. Miller	Surrey	A. T. Guest	645 G.S.
F. Richards	E. Midlands	J. H. Cock	644 G. S.	R. N. Swanton	Moonrakers
H. Peterson	Crusaders	R. J. N. McAnulla	616 G.S.	M. B. Hill	Swindon
W. A. Kendrick	Blackpool & Fylde	J. P. Hurst	643 G.S.	D. A. Law	Midland
		G. S. Newbold	E. Midlands	P. Jackson	635 G.S.
D. J. Bellis	615 G.S.	A. J. Hobbs	633 G. S.	J. E. V. Wallace	Phoenix
G. Senior	Surrey	M. D. Branley	663 G.S.	J. A. Sangster	B.E.A.
C. Couston	663 G.S.	M. C. Richardson	White Rose	P. F. V. White	Midland
D. D. Biggs	Portsmouth Naval	R. D. Carswell	663 G.S.	P. R. Crosby	642 G.S.
		K. A. Plant	633 G.S.	L. A. F. Allen	611 G.S.
G. R. Holmes	E. Midlands	E. A. Douglas	Cornish	S. H. Carrie	Aberdeen
T. P. Quinn	London	J. R. H. Elliott	Windrushers	E. B. Sower	Coventry
R. A. Hardon	621 G.S.	J. A. Hardie	Condor	J. C. P. Stott	Derbyshire & Lancashire
B. M. Masters	Devon & Somerset	R. G. Stevens	Coventry		
		M. Brocklehurst	Bicester	A. E. Carne	616 G.S.
P. E. Reichenbach	E. Midlands	E. A. Parkes	Derbyshire & Lancashire	G. Lamb	Laarbruch
P. R. Rosevear	Devon & Somerset			L. Woods	London
		M. R. Robinson	Cambridge	S. E. Richardson	616 G.S.
E. D. Leaviss	Northampton	P. Nethercot	Devon & Somerset	R. S. Winning	Swindon
D. R. Hills	Surrey			P. C. C. Smith	Derbyshire & Lancashire
A. R. Hockley	E. Yorkshire	W. Galley	Yorkshire		
P. W. Cole	Derbyshire & Lancashire	L. R. Simnett	London	R. J. Ryan	Fenland G.C.
		J. R. Furr	Midland	K. A. Davies	London
R. J. Cunningham	London	D. S. Wirglesworth	Cambridge	J. Zapasnik	Crusaders
A. L. Middletor	Kent	J. S. Machin	E. Midlands	J. R. Miller	Bicester
I. H. Adam	621 G.S.	M. K. Kenny	Derbyshire & Lancashire	A. G. Dudgeon	Kirton-in-Lindsey
P. G. Swete	663 G.S.				
D. M. Paton	663 G.S.	I. C. Lemon	616 G.S.	C. White	Yorkshire

Across the Border in Wave

by CHARLES C. ROSS

Build me straight, O worthy Master!
Staunch and strong, a goodly vessel,
That shall laugh at all disaster
And with wave and whirlwind wrestle!

(LONGFELLOW)

INTO the west wind, under the dull grey overcast sky, the red Tiger slowly climbed, the Skylark trailed easily behind, the only brightness lay ahead, a shaft of sunlight penetrating the cloud. A wave slot, I hoped. At 5,000 feet (a.s.l.) wisps of cloud streamed past and then, slowly at first, the vario began to rise—two, three and now four feet per second. Changing to high tow, I released and saw James in the Tiger plummet SGU-wards.

Settling down to a cross-wind beat under the lee edge of the slot, I climbed slowly up through the gap, at about two feet per second, and at 6,500 feet a tremendous vista began to open up. To the north, as far as the eye could see, lay great troughs of cloud like sand dunes rolling for mile after mile. They lay north-south and appeared to be about one mile from crest to crest, and in the valleys only the occasional hole was to be seen. This great undulating cloud-cover stretched both to east and west.

At 9,000 feet the lift above the hole petered out and cautiously I began to explore, always keeping an eye on my line of retreat, in case it should close. Moving up-wind (west) and crossing two troughs, I again encountered lift at one-and-a-half feet per second—this time there was no gap below. At 10,000 feet this, too, faded out. As I cruised around, it became obvious that a cross-country of some magnitude could be accomplished in practically any direction that geography and good sense dictated. Navigation looked to be the biggest problem, and this is not one of my best subjects.

I chose to go south, as this offered the chance of flying along the wave—not such rugged terrain below, and it would be possible to go further! Thus decided, at 50 knots indicated, off we went. The lift cancelled the sink at this speed at just under 9,000 feet, and after a few minutes a large hole appeared, showing Edinburgh and lots of small "cu" tops about 5,000 feet. I crossed this in dead air and, reaching the far side at 5,500 feet, I flew down one of the wave troughs just above the "floor". Again the slow, smooth climb southwards, and again 9,000 feet seemed to be the limit. This trough stretched for about ten miles and terminated in a flat, dead cloud mass about the same level as the wave dunes.

In order to lessen the risk of being carried over the sea, I flew west where another system of wave clouds was. I reached this at about 7,000 feet, just above the cloud crest, and found lift just as before. This, too, lasted for about ten miles—indeed for the next two hours I moved up or down wind at the termination of each wave trough in a



similar manner and covered a fair distance very quickly (for me).

About this time, I began to be a little concerned about my whereabouts. In the distance, both up and down wind, I could see holes, but not what lay beneath; then a few minutes later a hole became visible ahead, to the south. Through this lay Barnard Castle, which according to the map was 150-plus kilometres from Portmoak. So far, so good.

Pressing on south, and stepping upwind when required, all went well for an hour, but now the wave crests were shallower, and soon I was down to 6,000 feet just above the crest. No gaps were visible, nor could I get high enough to find one. Quietly the lift vanished and I let down on turn-and-slip into the wave cloud. By flying 240° I hoped to make good 180°. At 5,500 feet the lift improved and, like a porpoise, I reappeared, then sank again. After ten minutes of this I had had enough, and on the next strengthening of the lift I turned on to 270° and reappeared slowly out of the cloud.

At 7,500 feet I saw a hole down-wind about four miles and, like a timid rabbit, I scuttled down it—into industrial haze—visibility one-and-a-quarter miles. Now, at 4,500 feet, I determined to glide it out. A few minutes later I saw an airfield, then, still boring down-wind, a Dakota with wheels down passed below. Realising that the airfield was active and that I must be on "final" but the wrong way, I turned and landed behind the Dakota, but on the grass. Time 3.15 p.m. Place Yeadon, Leeds. Distance 170 miles. What a fool! But thanks, James, for the tow and retrieve, and Rab for helping us to build the staunch and strong "174".

R.A.F. RESERVES BALL

ON Thursday 7th March, the R.A.F. Reserves Club is holding a Ball at the new London Hilton Hotel in Park Lane. Tickets for dinner, dance and cabaret, at £2 12s. 6d. each, are obtainable from the Club Secretary at 14 South Street, Park Lane, London, W.1.

BRITISH GLIDING ASSOCIATION

ANNUAL BALL

Kensington Palace Hotel
London, W.8.

Saturday, 9th March, 1963

Dinner 7 for 7.30 p.m.

Annual Gliding Awards to be presented by The Rt. Hon. The Lord Brabazon of Tara P.C., G.B.E., M.C.

CABARET

Dancing to BILL SAVILL'S Mayfair Orchestra until 1 a.m.

All friends of gliding welcome

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GLIDING SITES IN

Club	*Name of Site*	*Tel. No.*	*Position*	*Height Height ft. a.s.l.*	*Lat. and Long*
ABERDEEN (from April 1st)	Litterty	—	4 m. N.E. of Turriff	560	57.34 N., 02.22 W.
AVRO	Woodford	Bramhall 1291	5 m.N. Macclesfield	300	53.20 N., 02.09 W.
B.E.A. SILVER WING		High Wycombe 6053	3 m. S.W. High Wycombe	520	51.37 N., 00.48 W.
BLACKPOOL & FYLDE	Squires Gate	Blackpool 41526	Boundary of Blackpool	34	53.46 N., 03.02 W.
BLACKPOOL & FYLDE	Samlesbury Aerodrome	—	Mid between Preston and Blackburn	250	53.46 N., 02.34 W.
BRISTOL	Nympsfield	Uley 342	3½ m. S.W. Stroud	700	51.43 N., 02.17 W.
CAMBRIDGE UNIVERSITY	Cambridge Airport	Cambridge 56291	3 m. N.E. City Centre	50	52.12 N., 00.11 E.
COLLEGE OF AERONAUTICS	Cranfield	—	8 m. S.W. Bedford	360	52.04 N., 00.37 W.
CORNISH	Perranporth	Perranporth 3177	¼ m. S.W. of Town	320	50.20 N., 05.10 W.
COVENTRY	Baginton Aerodrome	Toll Bar 3377	3 m. S.S.E. Coventry	270	52.22 N., 01.28 W.
DERBYSHIRE & LANCASHIRE	Camphill	Tideswell 207	8 m. N.E. Buxton	1,350	53.18 N., 01.43 W.
DEVON & SOMERSET	Dunkeswell Aerodrome	—	5 m. N. Honiton	800	50.52 N., 03.14 W.
DONCASTER & DISTRICT	Doncaster Aerodrome	Doncaster 56066	1½ m. S. of Town	20	53.30 N., 01.10 W.
DORSET	Gallows Hill	—	4 m. W. of Wareham	240	50.43 N., 02.13 W.
DUMFRIES & DISTRICT	Thornhill	—	19 m. N. Dumfries		55.15 N., 03.50 W.
EAST MIDLANDS	Rearsby Aerodrome	Osgathorpe 260	8 m. N.E. Leicester	220	52.43 N., 01.02 W.
ESSEX	North Weald Aerodrome	North Weald 222	2½ m. N.E. Epping	329	51.44 N., 00.20 E.
GLASGOW & W. OF SCOTLAND	Balgair Moor, by Fintry	—	16 m. N. Glasgow	600	56.06 N., 04.14 W.
HALIFAX	Ringstone Edge	Ripponden 3289	5 m. S.W. Halifax	1,050	53.40 N., 01.56 W.
HANDLEY PAGE	Radlett Aerodrome	Park Street 2266	2 m. S. St. Albans	260	51.41 N., 00.11 W.
KENT	West Malling	—	2 m. S.W. Malling village	300	51.11 N., 00.24 E.
THE LAKES	Tebay Gyhll	Orton 280	Fell Top E. Tebay	1,000	54.27 N., 02.35 W.
THE LAKES	Walney Island Aerodrome	—		10	
LASHAM GLIDING SOCIETY: ARMY; BOY SCOUTS; CROWN AGENTS; IMPERIAL COLLEGE; LEIGHTON PARK SCHOOL; POLISH A.F.A.; SURREY; UNIVERSITY COLL., LONDON	Lasham Aerodrome	Herriard 270	Between Alton and Basingtoke	600	51.11 N., 01.12 W.
LONDON	Dunstable Downs	Dunstable 63419	1 m. W. Dunstable	500	51.52 N., 00.33 W.
MIDLAND	Long Mynd	Linley 206	4 m. S.W. Church Stretton	1,500	52.31 N., 02.53 W.
NEWCASTLE	Carlton	—	10 m. S. Middlesbrough	1,200	54.25 N., 01.12 W.

THE UNITED KINGDOM

Description	*Aero-tows*	*Service or Civil*	*Days operating*	*Slopes*
Grass runways	Yes	Civil	Weekends	None
Used for testing		Civil	Weekends	None
R.A.F. active aerodrome	Yes	Civil	Weekends and some weekdays	None
4-runway aerodrome	Yes	Civil	Weekends; Thursday evenings. Restricted summer flying	Nickey Fell
3-runway aerodrome	No	Civil	Sundays, and also many Sats.; spring and summer only	Temp closed
Field ½ m. long running E.W. Cotswolds	Yes	Civil	Every day	W., N.N.W.
Grass aerodrome, one runway; heavy powered traffic.	Yes	Civil	Weekends; summer daily; winter by arrangement	None
Runway aerodrome, training flying	Yes	Civil	Weekends	None
3 runways; plateau on top of cliffs.	Yes	Civil	Winter: Thursdays and weekends, May-Sept. daily	W. & N.N.W.
Coventry City airport	Yes	Civil	Weekends	None
Grass strip N.S.	No	Civil	Weekends and summer weekdays	W. & S.
Disused aerodrome	Yes	Civil	Summer—daily, Winter—weekends, midweek by arrangement	S., S.W. & W.
Grass aerodrome	No	Civil	Weekends, evenings and most days in summer	None
Flat grass	Yes	Civil	Weekends	None
Rough heather land	No	Civil	Weekends	Yes
Grass	Yes	Civil	Weekends, public holidays	None
R.A.F. emergency aerodrome	No	Civil	Weekends	None
Moorland	No	Civil	Sundays	N.W.
Smooth moorland	No	Civil	Weekends	S.W. to N.W.
Firm's aerodrome, runways	No	Civil	Weekends	None
R.A.F. aerodrome	Yes	Civil	Weekends, public holidays	None
Hillside moorland	No	Civil	Weekends	S.S.W.
Aerodrome with runways	Yes	Civil	Winter only	
3 runways, some aeroplanes, land on grass	Yes	Civil	Every day	None
Hill site, grass	Yes	Civil	Every day	W. & S.W.
Heather-covered hill top	Yes	Civil	Every day	W. & E.
Large hill-top site	No	Civil	Weekends	W. to N.E.

NOFOLK	Tibbenham Aerodrome	Tivershall 207	15 m. S.W. Norwich		52.28 N., 01.05 E.
NORFOLK & NORWICH	Swanton Morley	Swanton Morley 274	15 m. W. Norwich		52.45 N., 00.55 E.
NORTHAMPTONSHIRE	Podington Aerodrome	Sharnbrook 474	Nr. Wollaston	330	52.13 N., 00.36 W.
NORTHUMBRIA	Currock Hill	—	Nr. Hedley-on-the-Hill	800	54.56 N., 01.50 W.
THE OUSE	Rufforth Aerodrome	—	4 m. W. of York	65	53.57 N., 01.11 W.
OXFORD	Weston on the Green	—	7 m. N. Oxford	260	51.53 N., 01.14 W.
PERKINS SPORTS ASSOCIATION	Westwood Aerodrome	—	W. of Peterborough	34	52.35 N., 00.17 W.
ROYAL AIRCRAFT ESTABLISHMENT	R.A.E.	Aldershot 24461	Farnborough	233	51.16 N., 00.46 W.
SCOTTISH GLIDING UNION	Portmoak	Scotlandwell 243	1 m. S.E. Loch Leven	360	56.12 N., 03.20 W.
SHORTS, N. IRELAND	Maghaberry	—	3 m. W. of Lisburn, Co. Antrim	330	54.31 N., 06.11 W.
SOUTHDOWN	Bo-peep, Firle	—	4 N.E. Newhaven	500	50.50 N., 00.07 E.
SOUTH WALES	Mynyod Mayo	—	3 m. E. Caerphilly	1,056	51.35 N., 03.15 W.
SWANSEA	Tor Cloud	—	12 m. N. of Swansea	1,040	51.43 N., 03.55 W.
SWINDON	South Marston	Stratton St. Margaret 3391	Nr. Swindon	360	54.35 N., 01.45 W.
WEST WALES	Withybush	—	1 m. of Haverfordwest	250	51.45 N., 04.45 W.
YORKSHIRE	Sutton Bank	Sutton Thirsk 237	5 m. E. Thirsk	920	54.15 N., 01.13 W.

ROYAL AIR FORCE GLIDING & SOARING ASSOCIATION CLUBS

Every one of these is based on an R.A.F. Station. All operate at weekends, and aero-tows are laid on

Club	*Name of Site*	*Tel. No.*	*Position*	*Lat. and Long*
BANNERDOWN	R.A.F. Colerne	Hawthorn 283	7 m. W. Chippenham	51.26 N., 02.14 W.
CHILTERNS	R.A.F. Benson	Wollingford 2292	3 m. E.N.E. Wallingford	51.37 N., 01.05 W.
CLEVELANDS				
EAST ANGLIAN	R.A.F. Duxford	Royston 2291	5 m. S. Cambridge	52.15 N., 00.15 E.
EAST MIDLANDS	R.A.F. Swinderby	Swinderby 241	7 m. S. W. Lincoln	53.09 N., 00.41 W.
EAST YORKSHIRE	R.A.F. Driffield	Driffield 2274, Extn. 491	3 m. S.W. Great Driffield	54.00 N., 00.28 W.
FENLAND	R.A.F. Swanton Morley	Swanton Morley 261	15 m. W. Norwich	52.43 N., 00.58 E.
FOUR COUNTIES	R.A.F. Wittering	Grantham 850	1 m. E. Grantham	52.54 N., 00.36 W.
MOONRAKERS	R.A.F. Upavon	Upavon 7	8 m. N. Amesbury	51.18 N., 01.47 W.
RED HAND	R.A.F. Ballykelly	Limavady 2201, Extn. 210	15 m. E. Londondessy	55.03 N., 07.01 W.
SUFFOLK	R.A.F. Wattisham	Needham Mkt. 234	5 m. S.W. Stowmarket	52.08 N., 01.25 E.
WESSEX	R.A.F. Andover	Andover 2381, Extn. 505	2 m. W. Andover on A303	51.13 N., 01.43 W.
WINDRUSHERS	R.A.F. Bicester	Bicester 501, Extn. 36	1½ m. N.N.E. Bicester	51.55 N., 01.08 W.

UNITED KINGDOM (contd.)

Runway aerodrome	No	Civil	Weekends	None
Runway aerodrome, active flying club	Yes	Civil	Weekends, some weekdays	None
Runways	Yes	Civil	Weekends	None
Site of old drift mine	No	Civil	Weekends	None
3 runways, grass strips each side	No	Civil	Weekends	None
Grass aerodrome, R.A.F. dropping zone	by arrangement	Civil	Weekends, public holidays	None
2 grass runways	No	Civil	Weekends, occasional summer evenings.	None
Large aerodrome	Yes	Works	Weekends, summer evenings	None
2 grass strips	No	Civil	Weekends, some weekdays	W., N. & S.
Disused airfield	Yes	Civil	Weekends	None
Top of Downs	No	Civil	Weekends, public holidays	N.E.
Rough mountain grass	No	Civil	Weekends	S.W., W., N.W. & E.
Mountain ridge	No	Civil	Weekends, Weds. evenings in summer	S.E., E. & N.
Active aerodrome, test flying	Yes	Civil	Weekends, Weds. afternoons; weekdays by arrangement	None
3 runways	Yes	Civil	Weekends and Wednesdays	
Unpaved runways on heather moor, and grass strip.	Yes	Civil	Weekends and most days in summer	S., S.W., W. & N.W.

ROYAL NAVAL GLIDING & SOARING CLUBS

Every one of these is based on an R.N.A. Station. All operate at weekends, and aero-tows are laid on at Fulmar and Heron

Club	*Name of Site*	*Tel. No.*	*Position*	*Height*	*Lat. and Long*
CONDOR	R.N.A.S. Arbroath	Arbroath 2201	Arbroath, Angus	160	56.35 N., 02.37 W.
FULMAR	R.N.A.S. Lossiemouth	Lossiemouth 2121	Elgin, Morayshire	39	57.43 N., 03.20 W.
HERON	R.N.A.S. Yeovilton	Ilchester 333	Ilchester, Somerset	75	51.01 N., 02.38 W.
PORTSMOUTH	H.M.S. Ariel	Lee-on-Solent 79143	Lee-on-Solent, Hants	30	50.49 N., 01.02 W.

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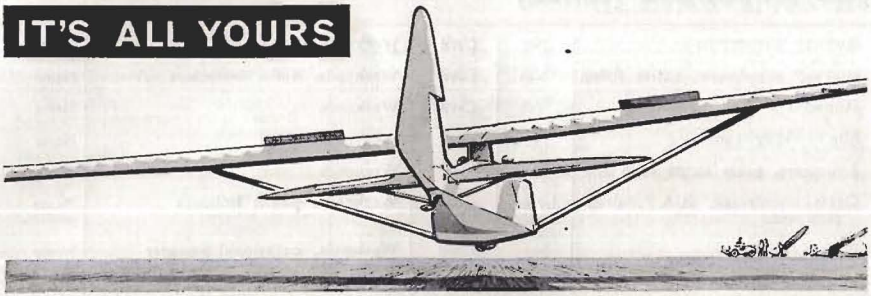
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SAILPLANE DESIGNERS' GUIDE

A HANDBOOK for sailplane designers, particularly young engineers and amateur designers, is being prepared by OSTIV, Boris Cijan writes. For the past ten years, development in sailplane design has brought remarkable advances, and experts in this field who are contributing to the handbook include, beside Mr. Cijan, Prof. P. Morelli, A. Skarbinski, W. Stafiej, W. Stender, C. O. Vernon, F. G. Irving and Dr. F. X. Wortmann.

IT'S ALL YOURS



ONE of the best ways of understanding why accidents occur is to read other people's accounts of what has happened to them. Information is not given about accidents reported to the British Gliding Association because such reports are confidential, and it needs a club, in a moment of public-spirited feeling, to offer to become a guinea-pig. The following is from a C.F.I. who has the interests of all at heart, and demonstrates the sort of problem that instructors are up against every day, and the order of care and cunning that is needed to avoid this sort of unspectacular but tedious accident.

I hope that SAILPLANE AND GLIDING will receive more accounts, particularly of the "how I made a muck of it" variety, because the person who has the most to offer in reducing accidents is the person who has had the misfortune to learn the hard way. He, and sometimes only he, has the power to prevent the same thing happening again.

INSTRUCTING ACCIDENT REPORT

WEATHER CONDITIONS.—Wind estimated at 20–25 knots, gusting 30–35 knots.

PREVIOUS FLYING.—Apart from making drift allowance in the circuit and using an appropriately high approach speed there had been no problems. Wind gradient had to be watched during the final stage of the approach.

EXERCISE.—Pupil had had 70 launches but had not flown this type (tandem cabin two-seater) before. Instructor proposed to let him take off, fly the circuit, and then take over for the landing. Briefing was normal, with mention of the use of the tail trimmer and that backward force on the stick during climb would be much less than on the T-21.

ACCIDENT.—Take-off started normally, but airspeed did not increase beyond 30 knots.

Pupil was instructed verbally not to climb away, but he allowed the aircraft to climb in a fairly flat attitude. Speed remained at 30 knots and there was no normal feeling of acceleration or climb. Instructor said: "Stick forward",* and then took control. By this time the glider was at about 30 ft. in a flat attitude and the cable had in fact broken, although, due to the slow launch, there was a barely perceptible deceleration. The pupil was completely confused and, at first, resisted the instructor's forward movement of the stick. By this time the aircraft was descending rapidly in a semi-stalled condition and the instructor was unable to prevent a heavy landing. Ground run was zero.

DAMAGE.—Centre skid mounting structure damaged.

Instructor's Comments

It turned out that the winch driver had deliberately given a slow launch because he felt that the wind speed required it. Probably the sight of the glider climbing caused him to slacken off somewhat.

Our ground speed whilst airborne was probably never more than about 10 knots.

---

* He should have said "nose down". The command "stick forward" on failed launch procedure is known to be a classic way of breaking gliders.—A. W.

It was difficult to appreciate the moment of cable break from the rear seat; the "seat of the pants" was no guide, as it would have been on a faster launch, and I could not see the cable.

Had the cable not broken, normal instructional patter would have sorted the situation out, and the pupil would have continued in level flight until the winch driver had corrected his launch. As it was, we were caught out with a cable break:

(a) In a slight nose-up attitude.
(b) 30 knots or a bit less on the clock.
(c) Insufficient height to regain attitude and speed.
(d) A severe wind gradient to cope with.

Lessons

1.—We probably need to teach a safety speed, below which the climb will not be started. Aircraft to be held just clear of the ground until this speed is reached.

2.—Although it is a good thing not to take over from a pupil without good cause, wrong handling immediately after take-off must be pounced on at once, because if a cable break occurs, the instructor has no chance of retrieving the situation.

3.—I am sure that many pupils are not clear about the importance of relating a safe climb angle to airspeed. A safe angle at 40 knots may be unsafe at 30 knots. I have frequently pointed this out to pupils, but wonder if everyone realises how important this can be.

C.F.I's Comments

One of the more difficult decisions an instructor has to make is how far to let a pupil go before taking control. No two cases will be the same, because pupils' reactions to verbal instructions will vary from immediate to no reaction at all. We must be particularly alert when the aircraft is near the ground, either on take-off or landing, for any sign that the pupil is not going to cope, and must take control to prevent damage or to prevent the glider reaching a position from which damage is inevitable.

Another factor which should be noted is the strong wind. While it may be safe to fly solo in very windy conditions, dual instruction may very well be an unacceptable risk, due to the inevitable lag between noticing something is wrong, and taking over. In conditions of marked wind gradient, things may happen too quickly for any instructor, thus making him take over too soon, with the resulting lack of benefit to the pupil. If it is necessary to give pilots experience in windy weather, discretion must be exercised as to how much the pupil will be allowed to attempt. It may be advisable in these conditions to do the take-off and landing oneself, until the pilot fully realises the problems involved.

The safety speed for climbing away is very important and should not be neglected in any conditions. Instructors must make a conscious effort to point this out when briefing and demonstrating the take-off and climb. Noise and feel should be the guide, rather than the A.S.I. Just as in landing, when the wind is strong more speed must be gained.

The quality of winch driving will seldom be constant and, in any case, pilots must fly in such a way that winch failures, cable breaks or just plain bad driving are not allowed to affect the safety of the flight.

I am satisfied, therefore, that the cause of this accident was:—

1.—The instructor allowed the glider to be put in such a position that, when the cable broke, a normal recovery was not possible and a heavy landing resulted.

2.—A contributing factor was that flying was being allowed to take place in weather that was not entirely suitable for the proposed exercise, bearing in mind the experience of the pupil and especially his lack of knowledge of the glider type.

3.—No blame is attached to the winch driver.

* * *

THE B.G.A. INSTRUCTOR CATEGORY

HOST to the Instructors' Panel meeting in November was the London Gliding Club, who made their 17 visitors very welcome. The object of the meeting was to finalise the link between the R.A.F.G.S.A. and B.G.A. categories. From 1st January, 1963, the two similar

categories have become one, and will be administered through the B.G.A. office. The R.A.F.G.S.A. examiners have automatically become B.G.A. Examining Panel members, and contribute both experience and geographical cover to the Panel.

Negotiations involved, of necessity, exploration into all aspects of the category test system, and into the qualifications required from candidates, and the levels of acceptance. Adjustments were needed from both sides to achieve a common standard, and it was unanimously agreed that any modifications should be in the direction of raising, and not lowering, the standard. It was felt that with more people taking up gliding, and with the desire of so many pilots to get on to soaring and cross-country flying as soon as possible, it was necessary for the quality of the instructor to be as high as possible. The problems of small clubs were discussed at length, and provision has been made in the new standards to avoid hardship where the instructor is not, at the time, quite up to the requirements, or is short temporarily of one of the qualifications.

Briefly, after 1st January, 1963, instructors applying for category tests will have to have 75 hours as PI, a Silver C, and completed a course of instructor training. Full details are available at the B.G.A. Office.

ANN WELCH.

R.A.F. Alpine Wave Expedition

by PETER LANE

AS in 1961, this R.A.F. expedition was mounted at Zell am See, near Salzburg, using aero-towing facilities kindly offered by the Austrian Alpine Gliding School with their Piper Cubs. After a 500-mile dash down the autobahn, the fleet consisted of two Ka-6's and a Ka-7 by 2nd November 1962 but some rather thick fog persisted in the valley. The fog was still around on the 3rd, but all the aircraft systems were checked and the met. people said that the Föhn was likely to blow from the south the following day.

On the morning of 4th November a lenticular could be clearly seen through the fog, stretching the length of the Salzach valley in a south wind—most frustrating! However, the 5th dawned clear and the lenticular was still there!

Hansi Resch, the Austrian C.F.I., was towed away first in his Standard Austria, followed closely by Wg.-Cdr. Joe Croshaw in the Laarbruch K-6. They both reached over 30,000 feet a.m.s.l. in the first wave, being airborne for nearly two hours. Dave Bryce, in the Geilenkirchen K-6, gained Diamond Height over the lake in the second wave, but Stew Mead had barograph finger trouble and did not score. Morgan and Stanbridge made a gain of 15,900 feet in the K-7, which they are hoping to claim as a record.

During the next three days the wind moved west and the best heights achieved were around 14,000 feet a.m.s.l., but Chas Morgan made his Gold Height

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Members of the R.A.F., with their Austrian tug pilots, at Zell am See.
Courtesy Air Ministry

from an 800-ft. winch launch on the 8th, mainly in rotor lift. The following day Mead gained Gold Height above the Fuchatal, but had to leave 2 metres/sec. up at 18,500 feet because the oxygen ran out. Later in the day Mead and Blake climbed to 13,200 feet in the K-7 in almost the same spot.

By this time everybody had flown either on the ridge or in the wave, and some of the less experienced pilots had been given dual aero-tows or been converted to the K-6. The K-7 was really proving her worth! Slack winds and low cloud kept everybody grounded until 16th November by which time the Skylark had arrived from Brüggen towed by Pete Lane.

On Saturday 17th the wind was still light, but from the south, and rotor cloud was forming in the Salzach valley by ten o'clock. A recce in the Piper Cub confirmed rotor lift in the Stubachtal, but a high tow was needed. Peter Lane was airborne at midday in the Skylark. He gained 14,000 feet and reached 23,000 feet a.m.s.l. in the wave after three hours, and the K-7 reached 15,100 feet with Mead and Shea.

The light south wind continued to blow on Sunday and the valley was full of mixed rotor and Cu cloud. Three more flights were made in the wave, the highest being by Stew Mead, who reached 18,500 feet again.

The last flight in wave was made by Major Don Scarfe in the Skylark on Monday 19th. He reached 13,500 feet a.m.s.l., but there were already signs of the Siberian high, and the following day it was clear and calm. For the next ten days the weather provided all the winds but south, and a good share of snow, so with a forecast of more high pressure the aircraft were derigged at the end of the month and everybody headed north along the autobahn.

Apart from one Diamond and three Gold Heights, perhaps the most valuable part of this expedition was experience of soaring among the mountains. This was something completely new and very exciting for most of us. We came away convinced that there was still a lot to learn, and that we ought to ask our Austrian friends to accommodate us again next year.

Pilot's Rating List, 1963

THE following is the Rating List for the whole of 1963. It will not be altered (except for correction of errors) until December 1963.

As was anticipated earlier this year, experience gained in compiling this list has suggested certain alterations which would make it more equitable next time. It is proposed to hold a discussion following the A.G.M. on Saturday, 9th March, at Duke of York's Headquarters, Chelsea, to hear the views of the gliding movement as a whole.

JOHN FURLONG,
Chairman, Flying Committee.

Order	*Pilot*	*Rating Figure*
1.	Goodhart, H. C. N.	598
2.	Williamson, J. S.	574
3.	Wills, P. A.	562
4.	Burton, G. E.	548
5.	Deane-Drummond, A. J.	544
6.	Scott, P. M.	518
7.	James, D. B.	501
8.	Burgess, P. G.	500
9.	Piggott, A. D.	499
10.	Stone, A. J.	490
11.	Stephenson, G. H.	488
12.	Burns, Anne	484
13.	Cretney, F. D.	483 =
14.	Mann, R. A.	483 =
15.	Dunn, R. E.	476
16.	Dimock, H. R.	473
17.	Irving, F. G.	468
18.	Strachan, I. W.	467
19.	Bentson, C. W.	465 =
20.	Smith, D. A.	465 =
21.	Shephard, E. G.	462
22.	Kahn, W. A. H.	457 =
23.	Stark, E.	457 =
24.	Kaye, D. M.	455
25.	Fielden, J. S.	452
26.	Ince, D. H. G.	447
27.	Jefferson, J. B.	443
28.	Carrow, D. D.	441
29.	Gough, A. W.	439
30.	Mackworth-Young, C.	436
31.	Coatsworth, G. A.	435
32.	Warminger, A. H.	430
33.	Jones, J. D.	428
34.	Paul, I.	425
35.	Delafield, J.	423
36.	Fairman, M. C.	415
37.	Croshaw, J. G.	414
38.	Ellis, C. A. P.	413
39.	Kearon, N. W.	410
40.	Jefferey, C. P. A.	409
41.	Tonkyn, W. N.	408
42.	Gaze, F. A. O.	406
43.	Spottiswood, J. D.	404
44.	Bird, M.	403
45.	Rutherford, R.	399
46.	Snodgrass, D. C.	396
47.	Bacon, G. McA.	392 =
48.	Bayley, J. L.	392 =
49.	Kerridge, D. C.	390
50.	Collins, G. T.	387
51.	Dickson, R. D.	382
52.	Newholme, K.	379 =
53.	Wills, C. P.	379 =
54.	Loveland, A. S.	375
55.	Hanneman, P.	371
56.	Neumann, G. S.	362
57.	Green, C.	361 =
58.	Gregg, H. N.	361 =
59.	Collier, P.	359
60.	Minton, P.	355
61.	Purnell, A. D.	354
62.	Mettam, H. S.	349
63.	Doughty, A. W.	347
64.	Corbett, D. J.	346
65.	Riddell, D. M. R.	345
66.	Coulson, A.	344
67.	Aldridge, K. R.	341 =
68.	Davey, B. J.	341 =
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78.	Ware, E. T.	301 =
79.	Thomas, B.	300
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81.	Procter, R. G.	293
82.	Goldney, L. P.	290 =
83.	Whitfield, G. R.	290 =
84.	Stafford-Allen, R. C.	289
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87. Alexander, A. L. L. 281
88. Jeffries, J. R. 281 =
89. Morison, S. M. 281
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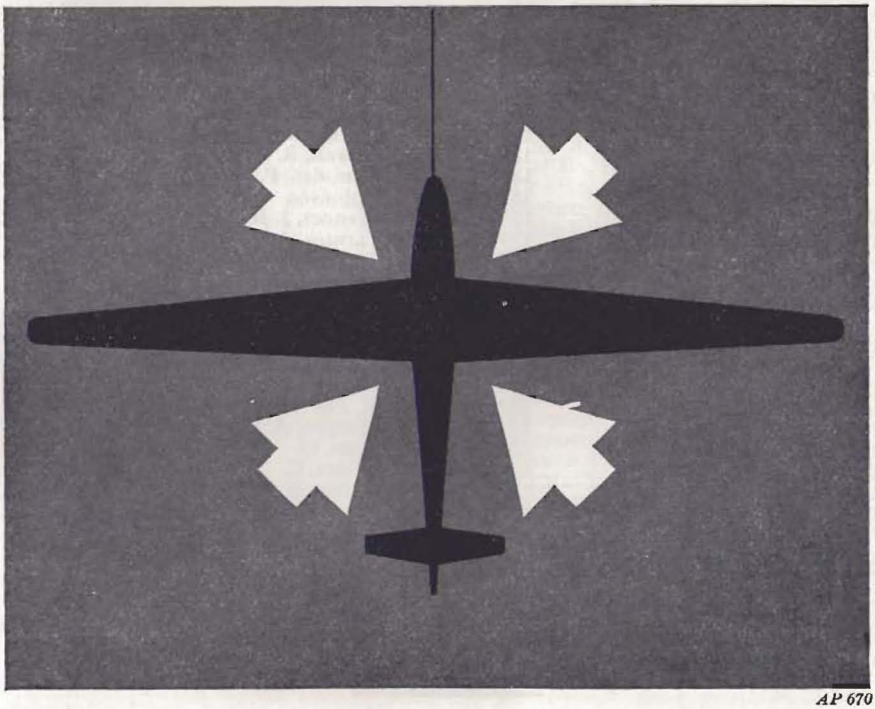
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AP 670

Alterations to Code Sportif

THE following alterations to the *Code Sportif* were decided upon at the meeting of the C.V.S.M. (Motorless Flight Commission of the Fédération Aéronautique Internationale) held in Paris on 30th November and 1st December, 1962. They are to come into effect with the publication of a new edition of the Code on 1st January, 1964.

1.—From 1.1.64, Silver C distance flight increased to 100 kms., either in a straight line, broken leg (see 2 below) or triangle.

2.—"Broken leg" flights: in future only two legs allowed (i.e. one predeclared turning point) and minimum angle between legs to be 38° (equivalent to 28% rule for sides of a triangular flight). [EDITORIAL NOTE: the tangent of 38° is 0.7813.]

3.—Overflying of goals permitted, but evidence must be produced that the predeclared goal was actually passed within 1,000 m. both horizontally and vertically. No one flight will qualify for more than one goal, or one distance, though a single flight may qualify for one of each, e.g. 300-km. goal and 500-km. distance will be acceptable for two Diamond Legs, but a 500-km. flight will not qualify for both 300-km. Distance (Gold) and 500-km. Distance (Diamond).

This 1,000-metre requirement will of course not apply to *turning points*, as distinct from goals overflown.

In tabular form, F.A.I. Badge requirements will then be as follows:—

	Time hrs.	*Height metres*	*Distance kms.*
Silver	5	1,000	100
Gold	(5)	3,000	300
Diamond Goal	—	—	300
Diamond Distance	—	—	500
Diamond Height	—	5,000	—

4.—The task programme for World Championships is completely revised. The Obligatory and Optional Tasks are cancelled; instead, two classes of task, for Distance and Speed, are created. A Championship must fly a minimum of 4 tasks, a minimum of one from each class. The classes will be:

A. Distance.
   (i) Free Distance.
   (ii) Flight to a point fixed by the organisers, thereafter free distance.
B. Speed over a course.
   (i) In a straight line.
   (ii) Out and return.
   (iii) Over a triangle with a minimum size of 100 kms.

5.—Par. 1.6.5 is interpreted that a given course may not qualify for a badge or record if it is 100 kms. or more longer than the course required. Thus a 399-km. triangular course may qualify for a 300-km. record, but a 401-km. triangular course will not.

6.—A Drafting Committee will sit to incorporate the above proposals and associated details in the 1964 Edition of the Sporting Code.

Notes by P. A. Wills

It is certain that some of the above decisions will create a furore, but they were the results of majority votes of the Commission.

Everything that could be said or written on the 100-km. Silver C distance was said and has been written—there is no more to say (or write).

Goal overflying, so deceptively attractive, may prove to be a horror, given the near impossibility of showing by simple photographic and barographic methods that the glider really did get within 1,000 metres of the declared goal-point. It will presumably be up to each nation to lay down its own requirements so far as National records and badges are concerned.

The new World Championships task regulations of course imply that a future Champion might be declared without a Free Distance Task having been flown at all. Task A (ii) can be so set (by setting the fixed point far away from the start) as to constitute a flight along a course set by the organisers—indeed it should so be set for at least one event. But this writer devoutly hopes that at least one true Free Distance task is included in all future Championships, holding that this is in many ways the greatest test of individual skill, and the most sporting task of all.

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Xmas Xword

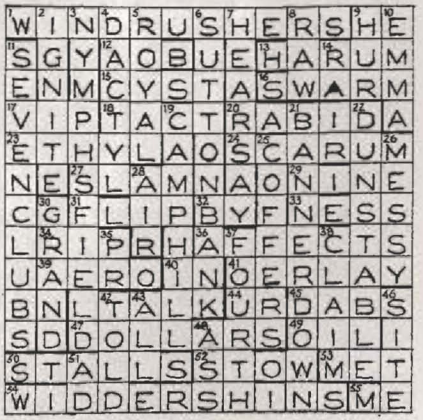
COMPETITION was surprisingly unX by our errors, particularly in omitting the clue for 37 down—in fact, Mrs. Worley kindly remedied the omission with a suggestion: "6 is of 11".

The winner (who enclosed a small brick with his solution) is Lieut.-Cdr. L. D. Vine, R.N., of Cosham, Portsmouth. Runners-up were Mike Gee of London, who added the following rather incomprehensible poem at the end of his solution:

So through the day the Bristol sheep all reeled
Among the mountains as in ancient lay,
Until at last their shepherds found the field
Of those with whom to gaily come away

and Mrs. Worley, of Woolstone, nr. Cheltenham, who is undefeatable, since she also sent a correct solution to our last teaser for Christmas 1960.

We have decided to treat this distinguished trio alike, and send a gliding tie to the eggheads and a square to the eggheadess, with our congratulations.



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CORRESPONDENCE

A DISAPPOINTED VISITOR

Dear Sir,

I read with great interest Mr. Mackenzie Hume's letter; the cap does, of course, fit us here at Lasham.

I wonder first of all whether Mr. Hume fully appreciates that, unlike most foreign countries, Lasham runs quite unsubsidised, a Gliding Centre built up—as all British clubs are—on the solid foundation of hard voluntary work by the members, who thus pay doubly for their privilege of membership. Surely, therefore, nobody would suggest that visitors should take actual priority over the regular members when it comes to the flying?

Equally, however, we do extend a very warm welcome to our visitors; we try to show them round and make them feel at home, and we have various schemes under which they may fly. One of the most popular is a short-term Summer Membership for Overseas Visitors, who sometimes camp with us for two or three months and enter fully into the life of our Centre. We also offer, like other British clubs, five-day courses, and we find many gliding people, both from Home and Overseas Clubs, enlisting on these courses and benefiting greatly from the intensive period of instruction we can thus give them.

The really difficult chaps to cater for, both visitors and members, are just exactly those who arrive at 11.30 a.m., after the winches are out, the aircraft inspected, and just as soaring is starting, and who leave, satisfied, or unsatisfied, at 4 p.m. precisely. I venture to suggest this is rather a universal problem in Gliding! Seriously, though, I am fully aware that we do sometimes disappoint "one-day visitors", and although the Centre and its member Clubs have no less than three advanced British two-seaters on order, and although we are advertising for a fourth mid-week staff instructor (Mr. Hume visited us mid-week), we shall never fully solve this problem. How can we do so, within the limitations of unsubsidised, economic operation?

Lastly, a word on foreign Centres. Colleagues tell me their hospitality is unsurpassed, their friendliness far in excess of our dour British reserve. But usually, I gather, one needs interminable paperwork—a month's advance notice—evidence

of insurance—a medical certificate—the lot!

Please come again, Mr. Hume, stay a little while and we'll try and do better for you. And also I particularly want you to show me—privately—the local pub where I can quench my thirst at 4 p.m.!

DAVID CARROW,
Chairman, Lasham Gliding Society.

Lasham Gliding Centre, Hants.

Commenting on the same letter, Mr. BOB SMITH, of New York, writes:—"On reading the December issue, I was rather concerned by the letter of 'A Disappointed Visitor' from New Hampshire. Certainly the hundreds of true gliding enthusiasts throughout the world cannot be left with the impression that this is the type generally found in the U.S.A. . . ."

SAILPLANE MARKET: BEST SPEED TO FLY

Dear Sir,

The sailplane market pro and con discussion is interesting. One must remember that the manufacturer must show a profit to directors, therefore it is essential that he must concentrate on the particular model or models that show the greatest profit. Fortunately, the various manufacturers are not all making their greatest margin on the same aircraft, or the gliding movement would suffer. Germany concentrates on the light stuff and Standard Class, Slingsby the 18-metre class, and the Schweizer products showing the best return on their investment are the 2-22C trainer and the 1-26 "one-design class" type of 40-feet span which is available to the home builder in kit form. Each in his speciality gives the glider pilot the closest to what his individual taste requires, or as near so as his financial situation will allow. May we never reach the stage where all the glder pilots want the same aircraft model!

For the "best speed to fly" discussion, may I throw in yet another?

$$\frac{GLH}{3{,}000} \text{ , } \frac{3{,}000}{\text{max. L/D}}$$

or, "Go Like H*** over 3,000 feet but maximum L/D when under 3,000 feet".

BOB SMITH.

New York

THE COMRADESHIP OF GLIDER PILOTS

Dear Sir,

Two years ago, I visited a small gliding club in Germany without giving previous notice of my arrival. My reception was such that only after my fifth flight was I, by my insistence, allowed to pay. They did not know my name.

During the previous year, I had visited a French gliding club, after having previously written to the C.F.I. On arriving from England in a dishevelled state, I was almost immediately ushered towards a Breguet 904 two-seater, one of the highest performance sailplanes in the world.

Many other British glider pilots besides myself have received similar hospitality from gliding clubs all over the world.

Could this happen in Britain? Obviously there is a different set of circumstances here. Our clubs are all full of hard-working members and there are many more pilots to fly each glider. It may also be necessary to prevent visiting pilots from flying in case they might break the gliders.

However, would it not be possible at least to find out whether they are safe by checking them out "dual", and inspecting their log books? My log book has never been inspected by any instructor in this country. One almost begins to wonder as to whether the sanctity of a log book is in question!

Because of the above attitudes, it is often difficult for visiting pilots to fly at our clubs. Some of our clubs have abolished "daily membership" and have

instituted "country" or "weekly" membership fees, as if the cost of gliding for the day visitor was not high enough already.

Now, it seems that foreigners are being urged to visit Lasham, as here they will have their best hope of flying at an airfield which is representative of British gliding. What reception will they get? Will experienced visiting pilots be allowed to fly a Skylark 3? Is it not time that we made things easier for them?

I have looked at British gliding from abroad and have heard some unfriendly things said about the "closed shop" attitude of our clubs.

I have done my best to look after foreign pilots but have often been placed in embarrassing positions through lack of support. Are we now to urge foreigners not to try gliding in Britain? If this attitude persists, we may become outcast from other gliding communities.

CHRISTOPHER WILLS.

Henley-on-Thames, Oxon.

BRITISH SAILPLANES OVERSEAS

Dear Sir,

I have never been angered to such an extent to enter into contentious correspondence but the reply attributed to Slingsby Sailplanes to a letter titled "British Sailplanes Overseas" in your August issue really deserves "shooting down".

It is absolutely incorrect to affirm that "N.Z. orders would be forthcoming tomorrow, but no currency whatever is available from the New Zealand Government for the time being". As a true blue Kiwi let me state that there are more sailplanes of German manufacture sailing N.Z. skies than of Slingsby manufacture. This state of affairs is sad, as Slingsby's agent in N.Z. is a very popular bloke, and at a time when we are trying to get the U.K. to buy more of our butter, cheese, meat and wool we should buy British. However, it is a law of commerce that the buyer will always buy the best quality at the best price and at the moment the Germans are offering just that.

At the Central Districts Gliding Championships held at Masterton recently there were 18 sailplanes entered, five of which originated at Kirbymoorside, the rest being predominantly of German manufacture. The standard N.Z. trainer has become the Rhönlerche, the standard 15-metre sailplane the Ka-6, four of which were seen at Masterton. Three of these are no more than two years old! The winner of the Champs was the popular bloke I previously mentioned flying a 3F and the runner-up flew a Ka-6.

The conclusion your correspondent has come to is absolutely right! U.K. gliders are too expensive, but I would also like to add that alongside the four Ka-6's I have seen your quality isn't up to the same standard either. Remember too that German sailplanes have to compete on a 10% duty rate whereas British is 3%. A Skylark 2 in N.Z. is approx. £1,530; a Ka-6 is £1,200. The Ka-6 can fly rings round a "2", so what would you buy if you were us? Until Kirbymoorside can market a 15-metre sailplane of better performance, better quality and better price than a Ka-6 their workers will not be as well fed as they deserve. Already more Ka-6's are on the way to N.Z., so if you want the sales, produce the goods!

O. A. HANDLEY.

Wanganui, N.Z.

SLINGSBY SAILPLANES writes: We are most distressed to read Mr. Handley's letter. His statement on the availability of New Zealand currency is probably due to the time lapse between us writing our comments and his reading them. When we wrote them, they were correct; no N.Z. funds were available. Since then they have become available, and our further statement proved correct: orders for Skylark 4's from N.Z. (and many other countries) have arrived in highly satisfactory numbers.

It is rather unfair to rub in that the Skylark 2 (a first-class aircraft in its day) is not competitive with the Ka-6. We know it; it is an obsolete type and has been out of production for over two years. We would not expect anyone to buy a new

one and could not produce any more anyway, since the jigs have been dismantled.

May we repeat: to meet the priority demands of our customers, we have recently concentrated on a top-class 18-metre sailplane and a top-class two-seater. This has more than fully employed our capacity (Kirby is a small town!) and the 15-metre—the biggest problem of all, since it is no mean task to beat the Ka-6 and other excellent Standard Class aircraft now available—is next on our list. We shan't offer a 15-metre machine until we have one we can really recommend our many friends to buy, rather than any other available type. It's a vast job; please don't shoot the man at the piano—he is doing his best.

BOOK REVIEW

Cloud Types for Observers, prepared by the Meteorological Office. Published by H.M. Stationery Office, 1962. Price 8s. (postage 9d. extra).

THIS booklet, with its 37 cloud photographs, is primarily to enable meteorological observers to send useful reports of clouds to the people who do the forecasting. It therefore shows the general reader what particular aspects of cloud scenery are useful for making weather forecasts, and though it does not say what forecasts are made from which clouds, those who listen to gliding met. briefings should be able to guess.

The object of learning cloud names is economy of words; for instance, the official definition of altocumulus runs to 54 words, and it is an obvious advantage, when gossiping about clouds, not to use 54 words where one would do. Yet you cannot make a forecast from a simple report that there is altocumulus in the sky. It could be lenticular, showing the presence of waves; or castellated, suggesting a thundery tendency; or formed from spread-out cumulus, giving the glider pilot's "over-convection"; or the "progressively increasing and thickening" sort, which may herald an occluded depression.

So the forecaster can do little with mere cloud names; he wants a word picture of the general look of the sky, and gets the next best thing—in code. The code letters and numbers have been going for many years—CL, CM and CH for low, medium and high clouds respectively, and nine of each of these levels, designated by numbers. In general, the code remains much the same as before, but there are changes in detail, agreed at the latest international conference, which this book has been produced to incorporate. It is sad to note the disappearance, from the new code, of "polar bands"—those great parallel strips of upper cloud which cross the sky and converge on opposite points of the horizon; they have had their place in much popular forecasting lore, but your modern scientific forecaster evidently has no further use for them.

One important innovation is that the cloud reporter does not just scan his list of code numbers, but has to go through them in a definite order, using a process of elimination. For instance, if he sees a single cu-nim in the sky, it does not matter how many other forms of low cloud are there too—he must ignore them and report only CL9 if it has a fibrous top and CL3 if it hasn't. Similarly, he may only report CM1 for "semi-transparent altostratus" or CM2 for "opaque altostratus or nimbostratus" if there is absolutely no altocumulus present as well.

The internationally agreed instructions for distinguishing altostratus from nimbostratus are rather odd: "If only the denser parts of the cloud hide the sun or moon, it is defined as thick altostratus whereas if the cloud is sufficiently opaque throughout to obscure them it is nimbostratus. On moonless nights this type of cloud is called nimbostratus if it is raining or snowing." Why not use the moonless-night definition for all times of day, and be consistent?

Only one of the photographs appears unsatisfactory: the "stratus fractus of bad weather" on page 10, which is said to depict "ragged clouds" but the rags are



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scarcely distinguishable; a more contrasty photo is needed. All the other photos are excellent, and it is remarkable that 13 of the 37 are by that doyen of cloud photographers, the late G. A. Clarke, whose classic book of photographs, "Clouds", was published 42 years earlier. Our own "Wally" Wallington has supplied one of "small cumulus" which shows a sailplane in the foreground.

All the pages are of stout card for outdoor use; I have tried water on them, and they do indeed react like the proverbial duck's back, for identifying nimbo-stratus on moonless nights. A. E. S.

* * *

Mechanics of Flight, by A. C. KERMODE; 7th Edition. Published by Sir Isaac Pitman and Sons, Ltd., London. Price 37s. 6d.

THIS work was originally written in 1932 and has apparently been in great demand ever since. The author enjoys a considerable reputation; the scope of the book is vast and its aim is entirely admirable. It is therefore sad to record that not only are the consequences of 30 years of re-hashing very obvious, but its numerous pages are liberally sprinkled with errors and misconceptions.

This sort of book is presumably aimed at relatively young readers and it is therefore a pity that it conveys an olde-worlde air, despite the photographs of modern aeroplanes. Many of the diagrams are based on the "Spitfire" outline and biplanes are much in evidence, whilst gliding enthusiasts are unlikely to be impressed by one photograph of the Wien and two of the Gull 4. I know that the principles remain the same but, nevertheless, the impression given is unfortunate.

Potentially, many of the topics are of great interest to glider pilots. Some, such as longitudinal stability, merit careful lucid explanation, since they directly influence a pilot's actions and impressions. Such explanations in simple physical terms are quite possible, as shown by the sort of lectures given to the Empire Test Pilots' School. The reader of this book is continually frustrated by being offered half an explanation which is then qualified by a suggestion that it is really too difficult to be easily understood. My favourite quotation is: ". . . the problems involved in the stability and control of aeroplanes are sufficient to baffle the greatest mathematicians of the day".

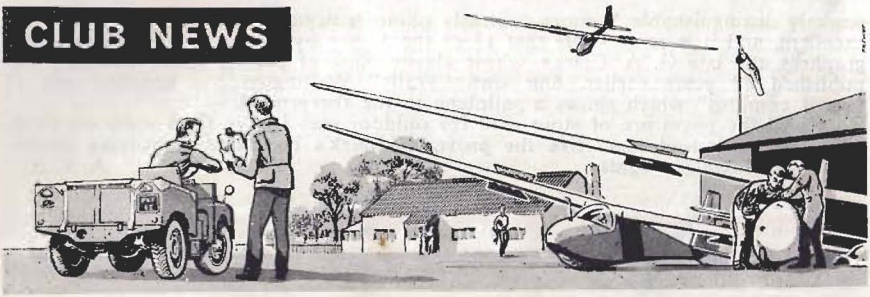
Specific defects are: drag and boundary layers are badly explained, transition and separation being confused; the section on low-drag aerofoils is very poor—they are not always thin; induced drag can be explained much more clearly; the formula given for induced drag coefficients applies to elliptical, not rectangular wings. And the section on stability is really rather dreadful: the function of the tailplane is shown as being one of trim rather than of stability and the reader is thoroughly confused by so-called "longitudinal dihedral". Likewise, lateral and directional stability is poorly treated: damping in roll is confused with stability and we are told that a directionally stable aeroplane returns to its original course after a disturbance. It does not.

Chapter 10, with its anthropomorphic plui aeroplane, is likely to make most readers squirm fairly hard. For those interested in supersonics, the explanation of the schlieren apparatus is quite defective and the lower diagram on p. 358 is inverted. Finally, the aerofoil data in Appendix 1 are taken from the pre-war "Handbook of Aeronautics" and are thoroughly antiquated. These are only the more blatant shortcomings.

It is only fair to say that such a book is extremely difficult to write and quite easy to criticise. But its potential readership is pretty intelligent, and deserves better than this. One cannot really commend a fairly expensive book which is quite so misleading in many fundamental matters.

F. G. IRVING.

CLUB NEWS



I HOPE you all approve of our new heading. It has been drawn by a professional designer so there should be no quarrels.

In this issue for the first time we welcome the Northumbria Gliding Club, who operate from Hedley-on-the-Hill, eight miles west of Newcastle.

The last date for news to reach me for inclusion in the April issue is Wednesday, 13th February, 1963. Copy to be typed double spaced on foolscap and sent to 14 Little Brownings, London, S.E.23.

YVONNE BONHAM, *Club News Editor.*

ABERDEEN

AS a result of our successful expedition to North Litterty, near Turriff, a long lease is being negotiated. The site is on the top of the Hill of Cotburn and covers approximately 66 acres. It is planned to have two grass runways of 1,000 yards and 900 yards and the Site Sub-Committee is busily engaged in producing costs for buildings, drainage, etc. We hope to move in to Litterty this spring. Should all our plans bear fruit, more details will be available in the next issue.

At Dyce, flying has been proceeding as usual at the week-ends and on the 2nd December, wave appeared over the site and Ian Robertson promptly gained a Silver C height in the syndicate Olympia after an aero tow. Robin McGregor showed all the aero tow pundits how to achieve almost similar results by having a winch launch in the Swallow. John Walker, who suddenly appeared the previous day from Ghana, did 35 minutes in the Tutor and so claims a C. Even the T.31B, of which this summer Bengt Micrander said, "It flies like a grand piano thrown out of a 10-storey window", was managing on the odd occasions to fly extended circuits.

One of our T.31B's is about to be replaced by a Kranich imported from Sweden and a syndicated GB with canopy will also appear soon.

Moray Slater, our Course Secretary for the past three years, will no longer be able to continue in this capacity, and we would take this opportunity of thanking Moray and his wife Anne, who has ably assisted him, for having so successfully carried out this task.

F. C. M.

BRISTOL

THE major activity at this time of the year is in the workshop, where C's of A and trailer and winch rebuilds are progressing apace. The Skylark has reappeared with a high gloss finish which is the result of much elbow grease expended by the Skylark pilots, and there will now be no excuse at all for flopping. The T.31 has been sold to the recently-formed Bath Club and will be replaced in due course by the long-awaited T.49. It was with mixed feelings that the T.31 was disposed of, but there are many who have had experience on aero tow of the tearing gale in the back seat who are not sorry!

In order to obtain a constant water supply we are tapping a local spring and piping it up the hill, each member being required to dig one yard of trench. The taskmaster has not been appointed to date.

As the existing bunkhouse is bursting at the seams, member Freddy Guest has prepared plans for a new one, and these have been approved by the local planning committee. The next stage is to obtain quotes for building and then we hope to be able to get on with the actual construction. Around the site, repairs are being carried out to the drystone walls, and some of the deeper ruts in the tracks are being filled in.

One of the indefatigable Scud rebuilders has complained that they have not had a mention recently. Having looked under the pile of shavings at the end of the workshop we are pleased to report that it has been turned over again and now sports many new ply panels. We congratulate one of these indefatigables, Peter Philpot, on his recent engagement.

For once we haven't talked about the weather!

A. L. S.

CAMBRIDGE

THE Club year ending in September 1962 was indeed a record year for us. In addition to the exceptional cross-country mileage already reported, we logged 1,665 flying hours, which is twice the average for the preceding 12 years. The average time per flight was also doubled and came to 20 minutes. Only seven years ago, a flight of more than five hours in thermals was rare punditry with us; in 1962 there were 18 such flights, including four exceeding seven hours. Much of our progress has been due to the acquisition of a Tiger Moth for towing in 1960 and to the gradual improvement of the Club fleet, which is now composed as follows:—

A T-21 is used for initial training and a Swallow for first solo flights. Pilots then graduate to the Olympia 2, the Skylark 2 and eventually to the Sky. The Olympia 460 is at present available to instructors only. The Olympia 2, the 460 and the Sky are privately owned, but operated as Club aircraft.

Two new developments in the Club's administration and social life are worth mentioning:—

Since time immemorial, members had flown on account and received bills at intervals. With our steadily increasing flying activities, the Assistant Treasurer's job became rather unattractive, and the floating debt alarmingly large. In May, at last, we switched over to a cash-on-the-field system. Implemented by John Deas, this step has proved beneficial, though somewhat bewildering to the unprepared who found themselves writing out cheques for 5s.

Before the war the Club maintained a club-room in Cambridge for some time. Since then, from lack of enterprise or fear of decadence, no serious attempt had been made to establish one of those luxurious centres of confabulation of which most clubs can nowadays boast. In November, however, Douglas Heyhurst and his wife bravely embarked upon turning the store-room of the Club's workshop into a club-room. A most welcome move!

G. S. N.

CORNISH

AT this time of year most of the Club's news comes from social activities.

At the Annual General Meeting we learnt of the retirement of Ted Berry from the post of General Secretary. Ted, who was one of the founders of the Club, has done a great deal of arduous, and often unnoticed, work which has helped to put the Club in its present firmly established position. He is, however, even more resolute than Caesar in refusing laurels and cannot be persuaded to become our first president.

If the A.G.M. did not produce any fireworks, the 5th November did, together with the usual lively bonfire party.

The annual Dinner-Dance was organised by the ladies' committee this year to the great satisfaction of the large number who attended.

In Group Captain and Mrs. Kearon we had very popular guests of honour. We were pleased that they could attend as Paddy had become a great favourite with us on his previous visits to the Club. His after-dinner speech further enhanced this popularity.

Pip Phillips is once again organising the Christmas draw. This is not only the occasion for a cheerful money-raising event this year, but also marks the opening of our new Club House.

The old "tea hut" has done us proud

for a couple of years but the greater comfort and space of the new premises should do much for the Club's social life.

The foregoing might suggest that we have given up flying—this is not quite true, as there have been very few week-ends when the hardy ones have been unable to keep in practice.

It has mostly been circuit flying due to an unusual lack of north-westerlies, but our youngest solo member, David Langhorne, did well to win the Flying Efficiency Cup in the Tutor.

J. E. K.

COVENTRY

THE last quarter of the year is running true to its usual form, which means that a number of flying days have been lost to the Midlands fog, and a few more to winds that kept the aircraft in the hangar. The workshop has been busy as various private aircraft have come in for their annual overhauls.

In the last issue the retirement of the last ground engineer was recorded, we now have his successor. Michael Aspinall has agreed to take on this task.

Recently we had a visit from the National Gliding Coach to test candidates for instructors categories. Apart from that break in the routine the period has been a steady pupil training time, whenever the weather permitted, and the two-seaters have done a reasonable number of launches, although the high-performance machines seem to have been little used.

We have been very lucky recently in having the promise of the services of a second Tiger Moth, a private group-owned machine, on a part-time basis, which should give us even more aero-tows in the coming year.

C. D. D.-J.

DERBYSHIRE AND LANCASHIRE

THE social season is now in full swing. On 3rd November we reaped the benefit of the February gale with a magnificent pagoda shaped bonfire, constructed with loving care by John Riddell from the old roof timbers. Ignition was by rocket launch.

At the Annual Dinner and Dance in Buxton on 7th December our President, Basil Meads, presented the Peak Trophy to Mike Bird, winner of this year's Northern Championships.

Guest of honour on this occasion was Ann Welch, who the following evening led a discussion on competition flying. This was tape recorded for the benefit of Mick Kaye, who is having an enforced rest in Lodge Moore Hospital, Sheffield. We all wish Mick a complete recovery in time for the soaring season.

We report with regret that our appeal to the Minister for planning permission to aero-tow at Stanley Moor Farm has finally been turned down.

A visit by five pilots from Swinderby recently unfortunately coincided again with poor weather, but in spite of this they sampled a little hill soaring.

The success of the new rota system for winch drivers has exceeded expectation. May be the purchase of new winches and efficient fettling of old has had something to do with this conscientiousness.

J. M. N.

DEVON & SOMERSET (Dunkeswell)

1962 has been a year of achievement for the Club. We have flown for 1,162 hours, nearly double the 1961 figure, also 341 hours have been done by private owners, plus 416 hours during the Competition. Launches from the site were 8,100 against 6,000 last year and Club gliders have covered 425 cross-country miles. Private owners did 860 miles and 6,872 miles were flown during the Competition. Twenty-two C certificates have been attained, together with

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14 Silver C legs, one Gold and one Diamond leg. With aero-towing being more readily available more wave flights have been possible, and earlier in the year 11,000 feet was reached by John Fielden. A second Swallow has been added to the Club fleet and an Eagle has just been collected from Scotland for a recently-formed syndicate.

The Club is running two Task Weeks during 1963, the aims of which are to give pilots of intermediate experience, training and exercises in cross-country flying, field landings and competition procedure. The minimum requirements will be C certificate, a glider (T.P.I. £2,500), trailer and suitable towing vehicle, plus one crew member and preferably a second pilot. Maximum number of gliders will be 12. Each day there will be comprehensive briefing before flying and de-briefing on pilots return. Launching will be by auto-pulley at 5s. per launch and entry fee per glider £5.

We again have a full-time B.G.A. Instructor to run the 1963 Courses, which were such a success last year. Also the Committee have agreed to purchase a second-hand Skylark 3, which will relieve the load on the Swallows and should be a great incentive to further pilots' experience and ambitions.

P. E. B.

DONCASTER

THIS airfield has returned to its winter state of mud/pure and mud/water covered. For the last few weeks flying has been stopped by either fog or howling gales. An inch more rain and we'll be a yacht club.

Advantage of this is being taken to get some work done. The single-decker tea bus is to be sold and replaced by a double-decker and the two-drum winch is to be replaced by a self-propelled version. We shall soon have more buses than the L.P.T.B.

The club-house has been improved by the addition of a nice smokey stove which only categorised instructors seem able to light successfully, but once going produces the good 'earty fug so beloved by glider pilots.

On the aircraft side our T.31, now a veteran of well over 10,000 launches, is shortly going in for C. of A.

Ted Gee's Olympia is coming on well; this has been built entirely from kit and should fly very soon. We shall then have 11 aircraft here and there are rumours of a Tug.

M. C. U.

DUMFRIES & DISTRICT

THE old Humber has continued to pound up and down the runway to good purpose. Ian McNaught and Brian Ross have graduated to the solo list, and for the first time we are finding solo flights out-numbering the dual.

The arrival of a privately-owned highly-polished Skylark 2, formerly of Oxford, has caused some excitement. On his first outing in the new arrival Gordon Pearson contacted a wave right over the site and got his C. It looked very easy and so at the same time Charlie Park took the Tutor up to 3,400 for his C! Unfortunately it didn't last long enough for anyone else to have a go.

Our other news is that we have leased the old fire section building for a club-room and are busy with painting and furnishing and hope to move in soon.

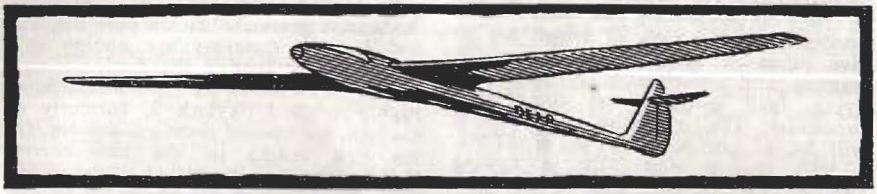
This has been a good year for us with our launches totalling well over 1,500 and flying membership of 54. Although we didn't manage up to Thornhill before the winter weather arrived—and it does up there!—we have plans for two-site operation next year with another tow car, two winches and if current searching is successful another glider.

G. J. K.

KENT

THE main news this time is more on the social than the flying side. The Club's Dinner and Dance was held on Friday, 26th October, at Greenway, West Malling, when we were very pleased to have with us our President, John Furlong, and also the Secretary of the B.G.A., Miss Frances Leighton. The Chairman, Hugh Gardiner, in his speech, commented particularly on the growth of the Club, the number of cross-countries flown and Silver C's and Silver C legs achieved, both of which were a record. John Furlong presented the Mickey Gilbert Memorial Trophies, which will be awarded annually in future, to this year's winners. Ken Bris-

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senden received the shield for the *ab initio* making the most progress, Glyn Richards the instructor's rosebowl, Denis Crabb the cross-country cup, and the C.F.I., Roy Hubble the aerobatics trophy.

On 1st December Denis Crabb took advantage of weak thermals to remain up for half-an-hour in the Skylark 2, while several enterprising members have explored the ridge of the North Downs near Wrotham, which has proved soarable in south-west winds. Bill Gartland, in the new syndicate Olympia, has soared there twice, and managed three-and-three-quarter hours of a five-hour attempt. Glyn Richards, in the Club Olympia, accompanied him, flying along the ridge as far as Sevenoaks and back to Wrotham. He reported that soaring was possible most of the way. Vic Ovenden, Charlie Harvey, Alan Middleton and Neil McHarrie have all converted to the Olympia recently.

We were very pleased to welcome the National Coach, John Everitt, to the Club on the week-end of 8–9th December. The weather was not the best ever for flying, but some launches were possible and as a result of this visit Ron Cousins is the latest club instructor to be recommended for a Category.

Ron Cousins is also very much concerned with the winter programme of trailer building, with plans for four trailers built to his design. One of these is intended for the T.21, and will fulfill a long-standing need. The other three are for private aircraft. Plans are also going ahead for the completion of the two-drum diesel winch, which should be operational next summer.

P. B.

LONDON

WAVES are not confined to the frozen north; down here in the frozen south waves are quite common, though we are just beginning to exploit them properly.

On 2nd and 9th December the Dunstable ridge was in phase with Welsh waves and heights of 3,000 feet were reached. Admittedly this is small by comparison with John Jeffries' flight in August; he thermalled 40 miles up-wind to Edgehill to meet a warm front approaching from the west, then wave-soared to 10,100 feet. After several hours' exploration he flew back to Dunstable with the aid of thermals.

1962's statistics showed 140 cross-country flights from the site with an average distance of over 60 miles per flight. Five thousand miles were flown in closed circuits, more than in 1960 and 1961 put together. Dunstable pilots took fewer launches in 1962 but enjoyed more soaring hours.

We hope some enterprising cross-country flying in the off-season or on marginal summer days will be stimulated by the new Lasham-Dunstable "pot". This trophy will be claimed (very temporarily) by the first pilot to soar from his own Club to the "Other Place" in 1963. Then it will be up to the other lot to fly in and take it back, and so on *ad infinitum*. . . .

M. B.

MIDLAND

THE Annual Trogs Party held in November was attended by some 45 members and was a great success, although some staunch supporters of previous parties were amongst those who gallantly tried but failed to overcome the snow which fell heavily all evening. The warmth of the Club-house seemed all the more attractive for the blizzard which raged outside. By next morning the snow-drifts on the Asterton road were five feet high and those with cars on top had to find alternative transport home and retrieve their cars the following week-end.

Flying statistics for 1962 when compared with those for 1961 (which was a record year) reveal more hours from less launches; 3,150 hours from 8,000 launches in 1962, compared with 3,070 hours from 11,000 launches in 1961. This is presumably the result of fewer good days. Club launches averaged 15 minutes each.

In place of one of the Olympias, which is to be sold, the Club acquired on the 1st January the Skylark 2 (No. 41) which was the remaining one of the original three privately-owned Skylark 2's on the Mynd. The syndicate concerned has ordered a Skylark 4, which it is hoped will be available for the Nationals.

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the West Wales Club should, by now, be on their way home from Fayence with, we hope, a few diamond heights to their credit.

Entries for the Easter Rally close on the 1st March, after which date entrants will be advised of their acceptance or otherwise.

K. R. M.

NEWCASTLE (Carlton Moor)

THE year 1962 has been a mixture of achievements and disasters. During the summer our hangar at Carlton was erected and we had the best year's flying in the history of the Club. However, September brought the tragic ground accident to the T.21B which resulted in the death of our C.F.I., Allan Pratt, as reported in the last issue of SAILPLANE AND GLIDING. This was followed a fortnight later by a fire which completely destroyed our temporary Club-house, two privately-owned gliders and four trailers.

Now at the beginning of 1963 with the T.21B back in service and the appearance of a syndicate Weihe we are hoping for even more flying and particularly more cross-countries. Ian Paul is now C.F.I. and Maurice Wood has taken over as Vice-Chairman from Les Kiloh, who left us in October to take up an appointment in Australia.

The site of the old Club-house has been levelled and a Daimler bus, destined later to become a winch, is serving as temporary accommodation until the first stage of our permanent Club-house is completed in the early spring. We are now looking further into the future and considering the erection of more buildings, the provision of electricity, water and a telephone, and the acquisition of a second Club two-seater.

R. C. S.

NORFOLK (Tibenham)

WE are at the moment suffering from the vagaries of the Norfolk winter winds and rains which are rather curtailing our flying activities. No time has been wasted, however, and the big job of the C. of A. inspection of the T.21 has been successfully com-

pleted. Obstructive undergrowth has been cleared from the sides of the runways and numerous odd jobs about the place have been attended to in this slack period.

On 8th December we held our Christmas party, which turned out a great success, and made us determined to repeat the performance early in the New Year. Anything is possible at such functions as can be witnessed by the set of bare footprints striding up one wall, across the ceiling and down the other side!? The highlight of the party was the presentation of the Club's silver trophies to their new owners. Roy West earned the Chairman's Cup for the longest flight of the year from Tibenham—28 miles, and John Lawton, our hard-working Secretary, was presented with the Podolski Cup for the greatest height recorded at the site—5,600 ft. Considering the past soaring conditions these were no mean achievements.

Congratulations go to John Narey and R. Cobbold on converting from the Tutor to the Swallow. This aircraft now has a trailer and will, we hope, pile up the cross-country mileage for 1963.

B. C. G. L.

NORTHUMBRIA
(Hedley-on-the-Hill, Newcastle)

THE Club was formed, with a caretaker Committee, at an inaugural meeting in May and founder-membership closed at 74. There are now 95 members from all over the area, the majority being new to gliding.

Flying started in mid-August on delivery of a new T.31 and our two instructors, Dave Wilson, C.F.I., and Tommy Ruffell, have pushed the launch-rate along to a total of 700 by the end of November. In spite of the unattractive weather, a score of enthusiasts continue to turn up each week-end to Hedley-on-the-Hill, 830 ft. a.s.l. and some eight miles west of Newcastle.

The 80-acre field, and the V.8 winch, were formerly used by the Kite 1 Syndicate, who are now also members of the Club. We are looking forward to seeing this glider back from the repairers, together with the Cadet which some of the boys are rebuilding in the evenings.

The stress and strain of de-rigging in the dark makes a hangar the number one priority; and preparatory work has just started on the prefabrication of beams for this.

Our future plans include attendance at at least one course in 1963 and the replacement of the present machinery as funds permit.

R. C. G.

OUSE

THE most notable event of the last few months has been our first Annual Dinner and Dance, at which we were delighted to have Mr. and Mrs. F. Slingsby as our chief guests. Mr. Slingsby gave a most entertaining if lurid account of the early days of gliding in Yorkshire and we all enjoyed an excellent evening.

The other notable event has been the return of our Tutor. Despite a day of exceptional cold, members queued up to fly, and we were all thankful for the hot food provided by the canteen.

Congratulations to Audrey Boddy and Peter Weston on their first solos.

P. A. C.

SCOTTISH GLIDING UNION

THE Club's Annual Dinner-Dance was held this time in a new venue, the Station Hotel, Kirkcaldy, and as usual was well attended and thoroughly enjoyed.

The presentation of cups and trophies was made by the President's wife, Mrs. E. V. Anderson, and the collection of flying awards was effected by Charlie Ross — Club championship (Maclay Trophy), Best Distance (Boyle Cup), and Best Height (the Parker Trophy). The Service Salver was awarded to the Secretary, Bill Shanks.

Our flying activities during this period have been above average for the time of year, many wave flights have been noted. The best day being Sunday, 9th December, when D. Hendry reached 13,500 ft. in the Skylark 2, Jim Duthie 13,000 ft. in the Swallow and then to Arbroath, Charlie Ross—10,500 ft. in the 3F and John McLauchlin to 7,500 ft. in the second Swallow. This shows remarkable powers of recovery since this followed the dinner-dance of the Saturday evening.

Re-organisation of our flying and

airfield organisation has been announced by the Directors and early steps are being taken to prepare for S.G.U. Productivity Year in 1963. More later.

W. A. S.

SOUTHDOWN

FOLLOWING the poor summer we seem to have had a rather good autumn so far as flying figures are concerned. This is mainly due to the number of week-ends when we have been able to ridge soar with N. or N.E. winds, including a number of days when the bungey has been in action. (We welcome any pilots who can bring an aircraft along on such occasions.)

We are happy to report that Dick Vanson is now on the road to recovery following his prang in the Olympia. We hope that by the time this appears he will be up and active again.

A record number of pilots have converted to the Olympia this year and it is difficult nowadays to find anyone to fly the Tutor. Recent converts include Ron Catten, Derek Holland, Tony Wraight and John Lloyd. Norman Williamson and Ray Cook both soloed on the Tutor during the August Camp and Tony Wraight flew his five hours on the ridge in November. John White is to be congratulated on going solo after only 42 launches on our present, far from easy, field. Peter Henderson flew to Bexhill in August and Tim Tucker made his first cross-country flight to Broadoak in September.

Looking ahead we hope to be flying off on our old field again early in the new year as soon as the grass has had time to get established, and looking even further ahead we hope to have a Ka-7 added to our fleet in the not too distant future.

P. W.

SOUTH WALES

AFTER two years as C.F.I. Ivor Shattock has felt the need for a rest and can look back with some considerable pride on his achievements. Over this period he has been largely responsible for the formation and development of the Club, now established on an excellent soaring site. What he has done can be measured by the results last summer, when for the first time we were able to operate a two-seater and a solo aircraft.

Despite the unfavourable weather in the second half of the summer the Club gained seven C certificates and two Silver C legs.

All this has been done on a solid financial basis, no money having been raised outside the Club. Thanks Ivor for everything and all the best to Alan Newton who is taking over the position.

D. E. F.

SURREY

WE held our Annual General Meeting on the 8th December (this being as good a way as any of filling in the cold winter evenings at Lasham!) and Pat Garnett was re-elected Chairman, assisted by the following Committee members: Tony Barker (Secretary), Peter Hoskin (Treasurer), Mike Gee, Ted Hatch, Ken O'Riley (Master Instructor), Allan Purnell, Sidney Swallow.

It has been necessary to amend our rules regarding visiting members. The shortest period for which we can accept temporary visitors is one week and day membership of the Surrey Club is no longer available. This does not mean that we do not welcome visitors (who can always, of course, join the Society for a day and fly their Swallow if qualified) but that we have found that it is not possible to guarantee to check people who fly our Skylarks in as short a period as one day.

A Wave Safari to the Long Mynd has been planned for January and it is hoped that this will be as successful as previous expeditions have been.

A. W. B.

SWINDON

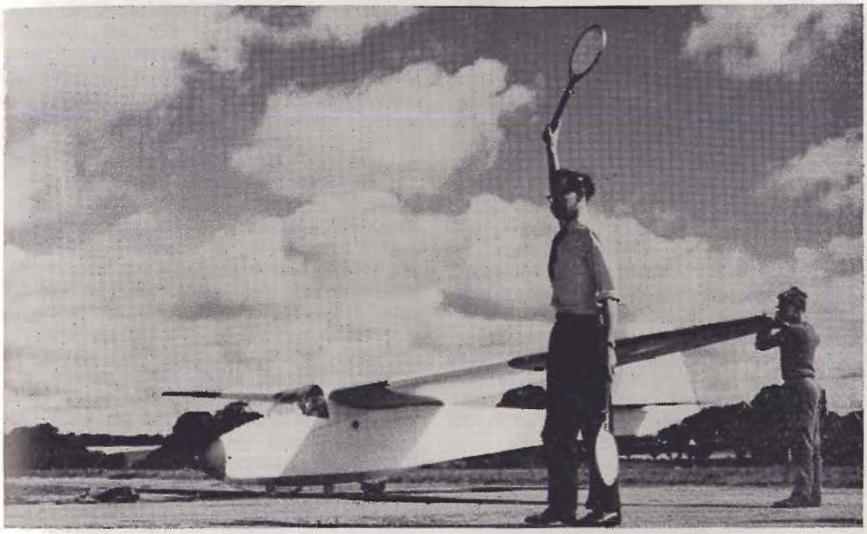
IMMERSED in frost and fog, it is painful to remember that day when Fred Butcher soared the new Swallow (Vario not then fitted) for 45 minutes to gain his C.

However, there are many jobs to help the dark evenings by—a mobile control office / canteen / instructor's hideout, based on a disused milk-float has been started and a Jensen Interceptor (disc brakes! Under new management) is being given a new bonnet, etc., to compensate for a brief engagement with

an army lorry. Future tow-car drivers may be required to take the advanced driving test.

Recently members of the Club were guests at a meeting of the Swindon Aeronautical Society, when Mr. Yates, Principal of Bath Technical College, gave a most interesting talk on Gliding, ending with the film "Whispering Wings." Even being a vulture has its compensations.

M. B. H.



Swindon Club's Hon. Treasurer, Ray Clark, gives the "Take up slack".

SERVICE NEWS

BANNERDOWN (Colerne)

SOMETIMES we hear a comment on the influence of the weather on our daily round, and someone will guess what is the opening conversational gambit in Bombay or Quetta. Do the Hawaiians say "nice weather we're having" after four weeks of unbroken sunshine!

Interesting thought but it is good that gliding people are nearer to nature than most and will speculate on our climatic cocktail with intelligent enthusiasm, albeit the probable course of a depression is itself the basis of "what the charts foretell."

In the last two months the charts have been kind and grim in turns, occasionally even the birds were walking and our achievement of 28.08 hours for 356 launches represents the best possible. It has been good to see Jim Arnold a-solo in the Tutor and a band of determined young men filling a long Sedburgh list. The winch has proved to be a typical standenjerkeupflingermachine; there will be less jerke when the drivers train on, but it is certainly a most excellent if temporary addition to our equipment.

P. H.

EAST YORKSHIRE (Driffield)

OWING to Service commitments the future of the Club is not certain. Nevertheless we hope to do some soaring during 1963 before we are forced to close. Our Tutor has thus been allocated to the Fenland Club and the T.31 to the new Club forming at Acklington.

This leaves us with the T.21, Grunau, and Olympia.

The Grunau's major has been completed and is airborne again. It looks very smart and is much more pleasant to fly.

A record winch launch was achieved by Les Manley and Bill Bailey in the T.21 during November with a launch to 2,250 ft. The average launch height for the day was 1,800 ft.

Recent conversions are Dave Leggott, Tony Wood, and Dave Rhodes to the Grunau, and Jim Smith to the Olympia.

J. G. S.

FOUR COUNTIES

ONE of the characteristics of a G.S.A. Club is the continuously changing membership, arising from postings. In 1962 it seemed that at last we had managed to build up a sizeable body of experienced members, which was reflected in the growing Olympia list, the increased number of Prefect and Olympia cross-countries, and even at times in launch point efficiency!

Nine Silver Legs were shared between Malcolm Gorely, Eric Hales, Paul Lea, who completed his badge, Mac McKenna, Robin Teesdale and Len Wilkes. C Certificates were gained by George Halliday, Rod Edwards and Simon Morrison, who became the 1962 winner of the Tutor Pewter. David Brooke ably represented the Club in the R.A.F. "Olympia Class" competition at Bicester, finishing in the top half of the list.

Regrettably, however, the end of the year sees the loss of some of our most stalwart members: to C.F.S. David Brooke, whom we are hoping will be posted to this part of the world on completion of his course, Eric Hales and his daughters various, Brian Swift, and Mac, to all of whom the best of luck. We also welcome several promising new faces, including the "old" face of Martin Hands, who was with us as an A.T.C. cadet and now flies V-bombers. He has taken over as Club Treasurer.

The Club year ended with the A.G.M. combined with a most successful Social Evening, the highlight being John Teesdale's commentary to his excellent gliding film.

S. N. H.

RED HAND (Ballykelly)

OUR talk of wave at Ballykelly has not been unfounded and instead of the odd contact (usually in the T.31 or Tutor) the Olympia was at last in the air at the right time with right pilots. The 6th and 7th of October were both good days. On the 6th all aircraft, except the Tutor, contracted wave from auto-tow, from our flat site. Gordon Mackie in his Gull I had a smooth 35 mins.; Spider Webb another 35 mins. in the Olympia and the T.31 managed to contact, at 500 ft., some 5 f.p.s. wave. These flights were very encouraging, but it took Lt.-Col. Christy, W.R.A.C., to show us what this week-end's potential was. On the 7th, a 12-knot wind from the south-west blew across a nearly all-blue sky. A few Lenticulars could be seen—none, of course, near the airfield, but the colonel made contact from 900 ft. and continued her climb to 9,500 ft., lift of up to three metres was experienced. Alan Farmer, newly-categorised C instructor, found the only seat going skyward was in the back of the T.31, he introduced himself to the pupil and then swiftly climbed straight to 4,000 ft. He worked a six-mile beat finding lift of up to 20 f.p.s. During the rest of the day Fred Hindley flew his C in the wave, the T.31 again contacted and finally "Zot", after a superb piece of positioning, climbed from 800 ft. to 9,000 ft., where he spent a pleasant couple of hours touring Donegal.

Apart from the wave, the Club continues on an upward path. "Brock" Brocklehurst has soloed, Scott Anderson flew his vital 15 minutes and then together with Dave Laming converted to the Olympia. The Olympia, in the hands of John Prince, gave a display on Battle of Britain day at Aldergrove.

Visitors have included Bill Goldstraw from the Windrushers and our rivals from Kinloss. Having seen our wave really work the race across the channel is on!

Sad to relate, on 21st October, the Gull I, privately-owned and flown, was written-off. The old story of a spin from a low turn was the cause. The pilot, on his second flight in the machine, suffered a broken leg.

J. T. P.

WINDRUSHERS (Bicester)

THE Centre in its first year has proved very successful. With 11,500 launches and flying hours in excess of 2,000 in the year the utilisation of the aircraft available has been good. Over 100 certificate legs have been achieved from the site, the most notable of which was L.A.C. "Boff" Hall's flight to Ross-on-Wye in mid-October, a distance of 63 miles. It was only the Welsh mountains looming up that prevented him going further. For this flight Boff has been awarded the Maygothling Cup for the best flight of the year.

We welcome Flt.-Sgt. "Jock" Keay, who has taken over from Ken Poole as the Centre Secretary.

We are organising an expedition to Nympsfield in early March with the object of getting as many Silver C legs as possible. This, due to the difficulties involved, has had to be restricted to Club members only.

R. W. B. N.

PORTSMOUTH NAVAL

HUMPHRY DIMOCK had a climb to 10,300 ft. on the last Sunday in October. Below cloud his rate climb was three knots and inside rising to up to ten knots. On the same day, Sandra Williams managed her C duration.

Stan Davis has soloed and John Reeve has been converted to the Olympia.

Our activities have been curtailed lately, either by high winds or too soft a landing area. We hope to make up for this around Christmas during the closed flying period at Lee.

Our C.F.I., Jim Gunter, has recently had a spell in R.N. Hospital, Haslar. I am glad to say that he is now out and about again and we hope that he will soon be flying once more.

Trevor Thomas, our Ground Engineer and Deputy C.F.I., had a sudden draft to H.M.S. Ark Royal. We wish him a happy commission.

L. D. V.

OVERSEAS NEWS

ADEN

THE Aden Services Gliding Club is shortly to celebrate its first birthday, for it is barely twelve months since flying commenced, already the membership is well up in the 80's and one is immediately aware of the enthusiasm existing.

Situated on the old South Arabia airport at Bir Fadl, 12 miles to the East of Aden, we are just outside the circuit pattern for R.A.F. Khormaksar. The airport has many disused buildings, one of which we have taken over for a Club-house, and a large hangar, which is doing good service as a storage space for the gliders and tow-vehicles.

Our aircraft now consists of one T.31, two T.21's, one of which is owned by a civilian syndicate affiliated to the Club, and one medium performance T.45, on to which most of the original members have now converted.

Conditions here enable us to fly every day of the week with most of the "green" being found in the early mornings, when a considerable amount of cloud is beginning to form. The cloud base is around 2–4,000 feet, but as it dissipates about mid-day, we have to rely on "blue thermals" and to locate these a sharp lookout is kept for circling buzzards and "dust devils". One complaint often heard is that the buzzards have not yet learnt to keep an eye out for gliders in a thermal!

One minor hazard often experienced is due to the fact that the main runway is also a road to the outlying Arab villages, and as no airport boundaries exist we occasionally have the odd Arab-driven Land Rover or lorry loaded up with every kind of imaginable article—including the kitchen sink!—driving down the runway.

In getting him to stop, the language is quite unprintable at times.

A daily sight is the herd of camels making their way across the airfield towards a nearby waterhole just as one is about to give "Take-up-slack". As this usually occurs about 4 o'clock in the afternoon we know what to expect. Even so, our retrieve car drivers are becoming quite expert at camel herding.

An Open Day was held on 21st October and our C.F.I., Tom Bobbin, had everything laid on with his staff of instructors and ground crews and for us a record number of 90 launches was recorded. Apart from those guests who were there primarily for a "joy-ride", numerous others turned up with cameras and picnic hampers to make a day of it.

Although the climate would lead one to believe that conditions are suitable for all-the-year-round flying, in actual fact this is not the case. Our flying is confined to the cool season which extends from September to May, as during the really hot weather the winds experienced exceed at times 40 knots and ground visibility is down to five yards. The latter being, of course, during one of the frequent sand storms!

Because of the local working conditions we are able to fly for only three hours in the afternoons and eight hours on Sundays, but since the start of the present season we have been averaging 700 launches per month. We have every hope that this will be increased in the coming months.

CANADA

CANADIAN soaring has moved ahead this year, with Julian Audette of the Regina Club being the first Canadian Diamond badge winner. He flew his 500 km. starting with wave lift at the Pincher Creek, Alta., site. Incidentally, other pilots at the field did not think it worth rigging until too late.

During the Nationals Dave Webb, of our Montreal Soaring Council, completed his Gold badge, becoming the first in our Club. He only needs the 500 Diamond to complete that and we all hope he manages that in the Argentine.

Canada hopes to be well represented in the Argentine, the pilots being Charlie Yeates, Wolf Mix, and Dave Webb, with Gordon Oates as reserve. The first two are flying borrowed Ka-6



A. O. Boudreault with the Saskatchewan Government's tropy awarded for long service to Gliding in Canada.

and Dave has ordered a Skylark 4 to be delivered to Argentina.

After the contest the Skylark will come on to Canada, to replace the two that Dave Webb and Ben Price now own.

Other interesting new gliders imported last year are a Foka and a Mg.23 that are now at Ottawa. Eastern Canada now boasts the following types: Schweizer 1-26, 1-23D and 1-23H, Skylark 2 and 3, Ka-7, Fauvette, Mg.23, Foka, L Spatz, with the Skylark 4 and a Sisu due to arrive in Montreal next year, and the possibility of an Austria at Toronto. A handicapper's nightmare!

T. R. B.

THE CRUSADERS (Cyprus)

WITH the closing of the gliding year, since November 1961 we have almost achieved the target of launches we aimed for, namely, 4,000. In addition, over 250 hours have been accumulated. A very promising start to this achievement came from our founder-members, Ray Salmond and Bill Owens, to whom we are all grateful for starting gliding in Cyprus. All this principally with three aircraft: the T-21, T-31B and the Swallow. Our Tutor being out of commission for some time with a major overhaul and wing recovering.

Thermals at Akrotiri are more elusive

than on most sites, situated as we are on a peninsula with the sea on three sides and subject to all the vagaries of the wind and weather. Experimental flying on the salt lake, the surface of which dries sufficiently hard during the summer months, has produced some reasonable thermal flights, probably because it is nearer the main land mass. However, all members agree that salt lake flying, with its barren unsheltered wastes, the intense heat, flies and frequent need for slaking thirsts, demands much enthusiasm.

Recently we had to say our reluctant farewells to several staunch members returning to the old country. These include Gerry Kemp, our deputy C.F.I., who now flies with the Clevelands Club; Conrad Greaves, who hopes to fly at the East Midlands; Brian Clisby, our hard-working Treasurer, and Doug Charteris. Good luck to all of them.

Pete Lane, about whose epic trip we all read with envy, is with us for a short stay. He finds flying out here quite intriguing.

Over the year we have soloed no less than 20 pupils including three lady members; Sadie Saunders, Ann Billington and, just recently, Vanessa Bushnell. A fourth lady is near solo stage. Ten conversions to the "Swallow" and six C certificates have also been gained. Our winches, the old Wild and the German Pfeiffer, continue to give good service and we think we know "all the ropes" on using piano wire for launching.

Jim Saunders and Jan Zapesnik are now at Bicester and we hope they return with their instructor tickets. Like most clubs we can rarely boast too many qualified people.

A further invitation is extended to anyone of the gliding world passing this way. Contact the C.F.I., Jim Blundell, gliding every week-end, weather and conditions permitting.

J. H. B.

HOLLAND

THE replacement of the Dutch glider fleet is nearly completed. With only a few outstanding orders we have 47 two-seaters (2 T.21, 6 G.84, 20 Rhönlerche and 19 Ka-7) 37 trainers (10 Grunau, 7 Prefect and 20 Ka-8) and 26 performance gliders (13 Skylark 2, 2 Skylark 3, 4 Ka-6 and 7 Sagitta). In addition to the above, 19 more caseine-glued gliders are still serviceable. Most of the aircraft are owned by the Royal Netherlands Aero Club, who hires out a standard outfit of four machines (two-seater, performance two-seater, trainer, performance machine) to every one of the 21 clubs (or combinations of clubs operating on the same site). The rest are based on our National centre Terlet or Club—c.q. private owned. All this is the result of a ten-year programme, realised in two five-year periods.

The Sagitta passed the last tests (similar to the American F.A.A. requirements and are amongst the most severe in the world) for its complete C. of A. and is now fully aerobatic except for forward loops. One machine has been exported to New Zealand.

On 20th September the Director of Civil Aviation presented the 1,000th Glider Pilots Licence to 17-year-old Toon de Buyzer.

Miss Annebé Slotboom (woman Silver C number 5) set up a new women's duration record of 7 hr. 17 min.

On 7th November John van Melzen got his third Diamond for gain of height with a flight to Innsbrück, Austria, on Ka-6 being the fourth Dutchman with three Diamonds.

Two Ka-6's and a Ka-7 will be stationed at Issoire from 1st December till 9th February. Five parties of six people will go there for two weeks to try some wave-soaring.

J. Th. v. E.



Annebé Slotboom after her record.
Photo H. V. M. Schwing

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