





WHERE NO BIRDS FLY

by

PHILIP WILLS

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FOREWORD

GLIDING is largely a matter of ups and downs—a battle against gravity. As I start to write this foreword I am down, literally and psychologically, for I am sitting by the roadside in Dorset between Shaftesbury and Sturminster Newton and my glider is a quarter of a mile away in the field where half an hour ago I landed it prematurely on the ninth day of the National Gliding Championships of 1961. It is a day I would as soon forget. A few minutes ago one of my rivals sailed silently overhead on his way to the West, and I know not how many others will follow him, including the author of this book!*

I am waiting for the arrival of my car and trailer, driven by my "retrieving team" (among them my wife) so that the glider can be "de-rigged" and towed back by road to Lasham for tomorrow—the last day of the competition. Today's flight scarcely bears contemplation. I was doing so well to begin with, too. There was a marvellous thermal at Winchester and a series of quite reasonable ones to Salisbury, but after that I was suddenly in trouble and ridge-soaring hopefully along the north side of Cranborne Chase. The thermal that should have been there was not. Out I went at low altitude into the Blackmore Vale and then inexorably down into a flower bright meadow—and that was that. There was nothing more I could do.

Gliding can bring on occasions a black despair, but on others a glorious glow of achievement. When you have landed after a cross-country flight of say 190 miles in thermal up-currents, there are few more satisfying feelings. You have, so to speak, cheated gravity for five or six hours of a summer's day; you have been flying free in the ocean of the sky; by your knowledge and manual dexterity you have navigated a beautiful artificial bird from one side of England to the other, and you will be healthily and delightfully exhausted, but content. You will probably not have been aware of having been frightened and yet you will regard your day

* He finally landed near Hartland Point on the North Coast of Devon, nearly as far along the set line as it was possible to fly.

as an adventure, and to frighten yourself just a little is an essential ingredient of adventure.

Philip Wills, at the age of 52, is the Grand Old Man of Gliding, pioneer, ex-World Champion still flying in the championship class, holder of many records and Chairman of the British Gliding Association. His Skylark 3F carries the competition number 1, and never in any field was a man more appropriately designated number 1. He is very tall and thin, wears glasses, smokes a pipe and is absolutely kind. It goes without saying that he is a "man of action", but he is also a man of vision.

Soon after I discovered the excitements of gliding (only five years ago) I read his first book *On Being a Bird* and began at once to discover what manner of man he is. Now that I know him, have competed against him and watched him in action as Chairman and principal administrator of the gliding movement in Britain, I am left in no doubt whatever that he is one of the great and original men of his generation. It may be imagined therefore with what pride and delight I received the invitation to contribute a foreword to this new book. In it he tells with delicious humour, and mixed with passages of autobiography, the story of some of his recent gliding adventures, and from his unique experience he forecasts the future of gliding.

I wish the book and its author every success and reflect how lucky we are who enjoy the ups and downs of this absorbing pursuit to have, as champion of our cause, so stalwart a giant.

Slimbridge,
June 1961.

PETER SCOTT

AUTHOR'S PREFACE

THIS book has the same general object as *On Being a Bird*—to paint for my reader a picture of the air, and to show him why we gliding enthusiasts consider that we are the luckiest of men and women to have been born in the twentieth century, when for the first time it has become possible to experience the full range of its glories: from the vast indifference of the high air of the wave and the threatening turbulence of the cumulo-nimbus to the cheerful friendliness of a brilliant summer's day.

In the first twenty years after he started seriously to explore the air without the aid of power, man slowly found that he was copying the technique of the soaring bird, but nowadays we have in some fields proudly surpassed them, and are on our own. I circle up surrounded by darting swallows swooping on the myriad insects carried up by a rising thermal upcurrent, but on reaching the cap of cumulus cloud on top of it, I switch on my gyroscopic instrument and leave the birds below, for they cannot fly blind as I can. And for some reason unexplained birds do not fly in waves. In these, and in the hearts of clouds, the modern glider pilot flies where no birds fly.

I have only very briefly touched on many technical and semi-scientific aspects of the sport; those who wish to go further are referred to the bibliography at the end. If this book is embarrassingly autobiographical, I can only plead that I have now spent the greater part of my non-working life in a passionate devotion to motorless flight, and as I have been fortunate enough to bridge practically its whole development in this country, my own experiences, which are the only ones I can relate with reasonable accuracy and conviction, may be expected to present a fairly comprehensive picture of where we have got to and by what road.

I have tried to show the various parts which fuse together to make the whole: the team, the aircraft, and so on, so that my readers may get a general picture of the people, the equipment, and the knowledge which the history of the past three decades has produced.

P. W.

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WHERE NO BIRDS FLY

*My wings have ridden the silken morn,
They have patterned the silent and sunlit sky,
Under Cancer and under Capricorn
They have flown where no birds fly.*

*My wings have covered the width of the world,
O'er the tapestried earth, the shot-silk of the sea,
O'er the conquerèd mountains, cloud-pennants unfurled
They have whispered their song: "You are free! You are free!"*

P. W.

Chapter I

HOW AND WHAT TO LEARN

I. Clubs, Courses and Tests

THIS is not a book pretending to teach one how to fly, nor have I ever qualified as an Instructor, indeed I have not had the time. Instructors are folk with a definite vocation, and the great majority of instruction in this country is carried out by unpaid enthusiasts, though the larger clubs now manage to afford permanent Chief Flying Instructors.

The way to learn to fly gliders in the U.K. is to join one of the nearly forty established gliding clubs: a map and list of addresses will be found in the appendix to this book. These clubs are affiliated to the central body, the British Gliding Association, 19 Park Lane, W.1.

The B.G.A. is one of the most remarkable organizations I know of, since it consists of a small Secretariat, directed entirely by enthusiasts working in their spare time. It has proved so highly competent that the authorities have been happy to delegate to it practically all the functions that in other countries are officially controlled, so that in our country we are free of almost all the red-tape which elsewhere makes any sporting flying activity a constant battle with the ministries. In the U.K. we have no official requirement for Pilots' Licences, Instructors' Licences, Certificates of Airworthiness, Certificates of Registration, and the like. Instead the B.G.A. set standards which are adhered to by their member clubs and the accident statistics, those impartial measures of safety, show that our self-control produces results as good as, or better than, those achieved elsewhere by the inevitably dead hand of officialdom.

Belonging to a gliding club involves an entrance subscription of the order of six guineas, and a similar annual subscription, whilst costs of flying are of the order of 4s. 6d. per winch-launch, 15s. an aero-tow, and 15s. an hour for flying. Perhaps the best way to get through the preliminary inevitably rather dull first stages, and at the same time to find out if gliding is or is not your own particular *métier*, is to join one of the weekly training courses run by most clubs throughout the summer months, and by a few throughout the year. In this week, costing with board and lodging inclusive around £15, the neophyte may expect to get through the preliminary stages, and may even "go solo", and then can decide if he wishes to join a club and go on with it. There are no half-measures about the sport; you either don't want to do it, or nothing will stop you after you have once tasted it. So—beware!

The various tests to pass are as follows:

"A" Certificate. This requires a straight downward glide of not less than 30 seconds.

"B" Certificate. Two glides of 45 seconds followed by a flight of one minute, including an S turn; or by one right-hand and one left-hand circuit each of one minute's duration.

"C" Certificate. A soaring flight of 5 minutes carried out above the altitude of launch.

These are national certificates, they vary somewhat between different countries, so carry no international validity. Then come the two Badges and three Diamonds, to tests laid down by the F.A.I. (Fédération Aéronautique Internationale).

The "Silver C" requires three qualifications: a duration flight of 5 hours; a distance flight of 50 kilometres (31.2 miles); and a gain of height of 1,000 metres (3,300 feet).

The "Gold C" also requires three qualifications: duration 5 hours (the flight if already done for a Silver C suffices); a distance flight of 300 kilometres; and a climb of 3,000 metres.

The three "Diamonds". A pilot adds a Diamond to his Gold C for each of the following: a flight to a goal declared before take-off of at least 300 kilometres; a climb of 5,000 metres; and a distance flight of 500 kilometres.

The last test is probably the most difficult to achieve in the U.K., for the obvious reason that our island is not big enough, and

one does not want to have to swim home. It took me some ten years to achieve, and a dozen attempts in half a dozen countries, before I finally ran it to earth in Texas. I developed an uncanny knack of missing it by one thermal, and on one occasion in Poland actually achieved 485 kilometres. Each of these flights involved my wife Kitty in a retrieve of at least 700 miles; but in spite of this we both felt quite sad when at last the elusive jewel was in the bag for we had had so much fun in chasing it.

Some of my attempts are described in this book.

II. *Aircraft, Trailers and Retrieving*

A sailplane is a heavier-than-air craft, without an engine. Therefore it must always descend as it flies along, although increasing refinement of design reduces the rate or flattens the angle of descent.

A crude glider may have a best angle of glide of 1 in 15 at 30 m.p.h., losing height at about 3 feet per second, and costing £600; an advanced sailplane may do 1 in 30 at 45 m.p.h., lose height at just over 2 feet per second, and cost £1,350; whilst a government-sponsored exotic, or a machine built by a fanatical technical expert regardless of man-hours, may approach 1 in 35 or even better, and cost up to £20,000.

A gliding angle of 1 in 35 means that from a height of 1 mile (just over 5,000 ft.) the aircraft can fly in still air in any direction for a distance of 35 miles before reaching the ground. Since a glider can land in any suitable field 200 or 300 yards across, there is seldom difficulty in picking a safe landing place providing the pilot starts his search whilst still having a reasonable margin of height in hand.

As for the terms "glider" and "sailplane", the first is a generic term embracing *all* motorless aircraft: thus the wartime troop-carrier was a glider just as much as is a Skylark 3. A sailplane is a refined glider, designed for soaring flight—continuous flight utilizing atmospheric upcurrents in place of vulgar petrol.

Two basic types of aircraft are required. Firstly a trainer, nowadays invariably a two-seater, and secondly a sailplane.

Two-seaters may vary in price from £750 to as much as £1,750,

depending on their performance and quality. In this country we prefer a side-by-side seating arrangement, and a drawing of our latest design for a high-performance trainer, the Slingsby T.49, appears opposite.

Primary glider
Gliding angle of 1 in 10



Advanced sailplane
Gliding angle of 1 in 30

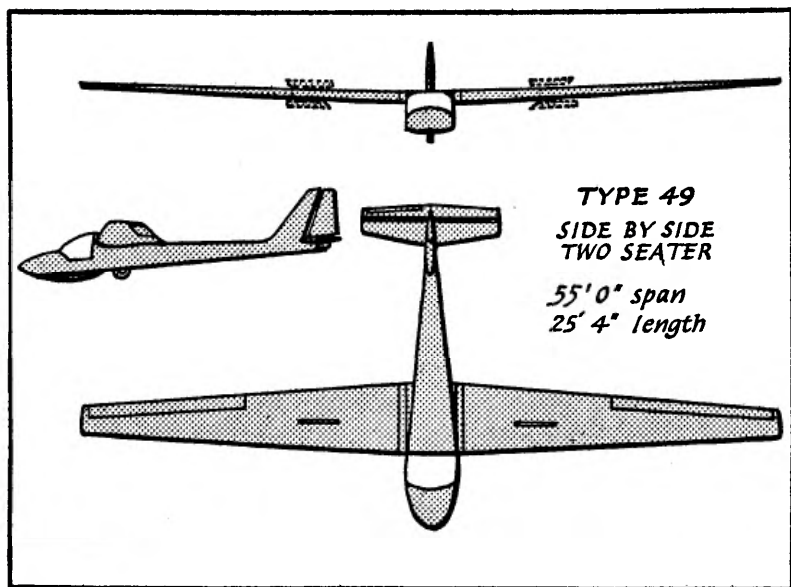


Generally speaking, the larger the span the better the performance, but over 18 metres—about 60 feet—the problems of assembly, handling and weight become tiresome. Internationally two separate classes of sailplanes are recognized: the Standard Class, limited to 15 metres, and the Open (or unlimited span) Class.

Whilst most clubs provide both training aircraft and sailplanes, many single-seater sailplanes are also privately owned, either by individuals or more commonly by groups of up to four or more persons. In this way the cost is shared, and as all gliding involves many people other than the pilot, each member of the group can,

when not flying himself, share in the many tasks associated with every flight: assembling, checking, and launching the aircraft, retrieving it after any cross-country flight, and so on.

Since after each cross-country flight the pilot and his aircraft have to be picked up and returned to base, every private group must

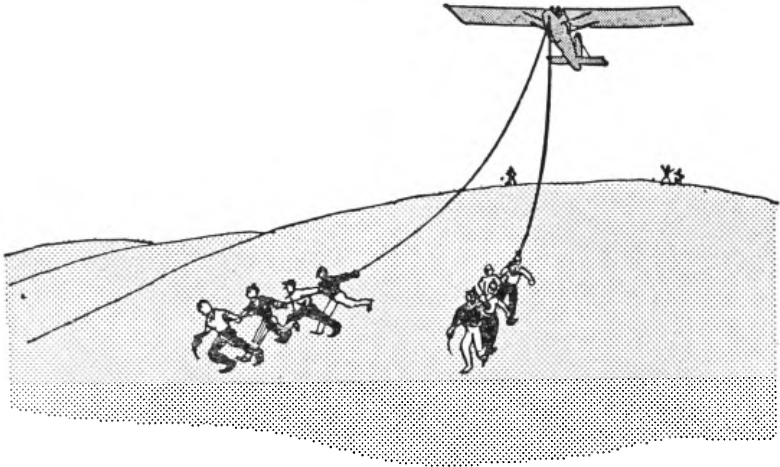


also own a mobile trailer into which the parts of the sailplane can be stowed and transported. The trailer must be as long as the longest single component. If a 60-foot wing is in two pieces, a 30-foot trailer is therefore necessary. Manœuvring a trailer of this size on crowded roads, through narrow lanes, and often across rough open country, by day and by night, is quite a feat in itself, but long practice makes it much easier than it looks. A picture of a typical tow-car and trailer appears facing page 104.

III. Instruments and Equipment

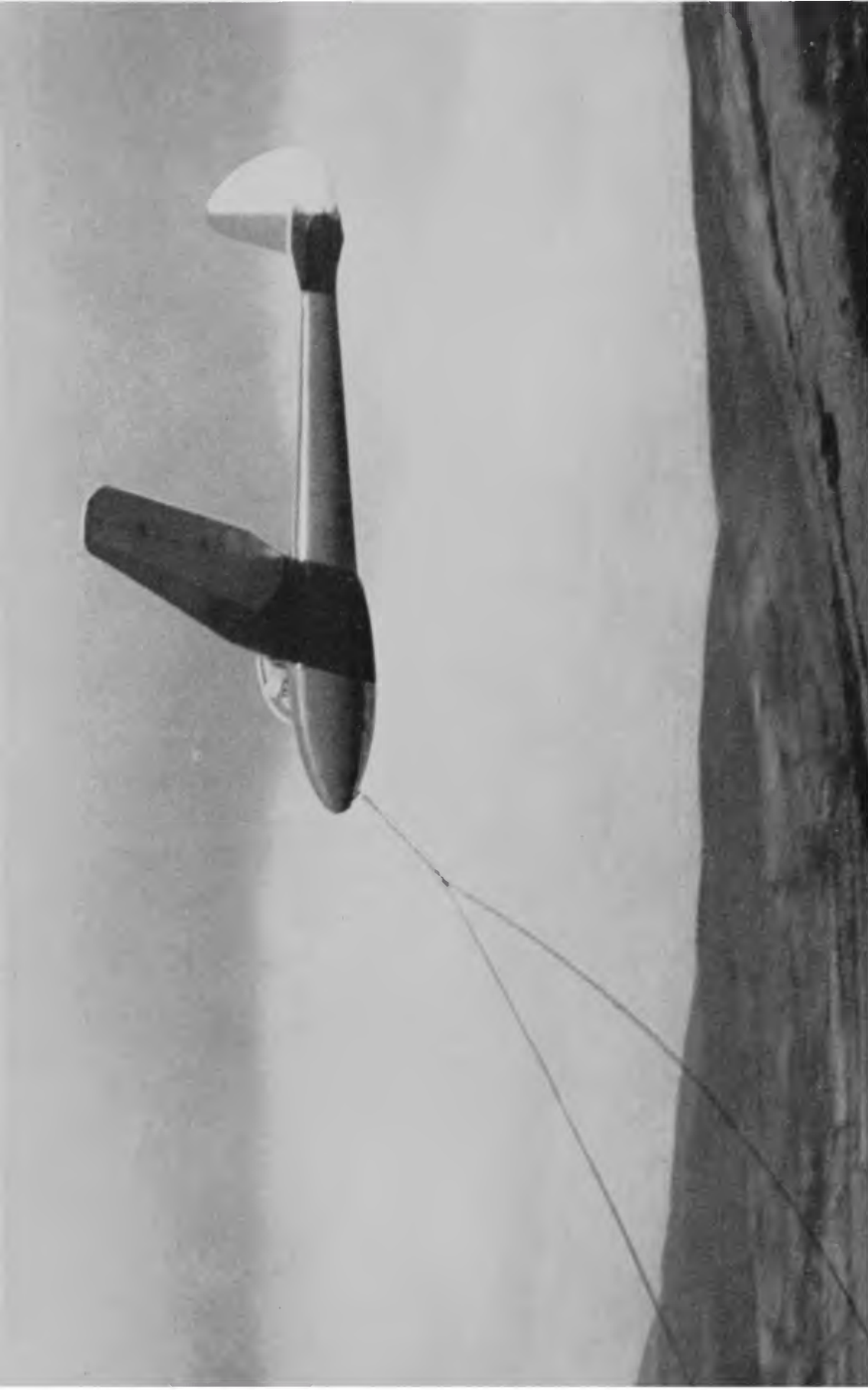
The first prerequisite of any flight in a glider is to get a launch, and this requires the assistance of a number of people and a certain amount of machinery.

When launching from the top of a hill, a simple elastic rope can be used to catapult the aircraft off into the wind, and if this is blowing up the hill, then the pilot can immediately turn, fly parallel to the hill, and climb in the hill-lift.



On large flat sites, however, motor winches or tow-cars are the most common method, the winch winding in 3,000 feet or more of steel cable on to a drum, the tow-car having a 1,000-foot length of piano-wire attached. The glider is attached to the far end, is kited up to a position nearly overhead, and then drops the wire.

The easiest, but most expensive way of getting a good launch is by using a towing aeroplane, and in this way of course the glider can be towed to any suitable height and position before being released. All British gliding clubs own one or more winches and tow-cars, and several of the larger ones own tug aeroplanes as

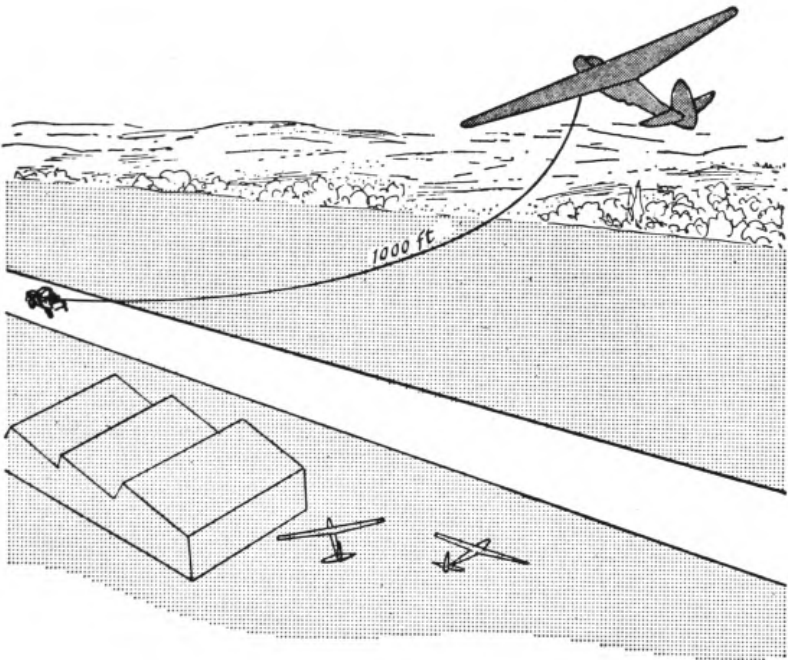


E. Proll

“... a simple elastic rope can be used to catapult the aircraft off.” (p. 16)
Bunji launch of a Sky from the Long Mynd



“... the easiest way of getting a good launch is by a towing aeroplane.” (p. 16)



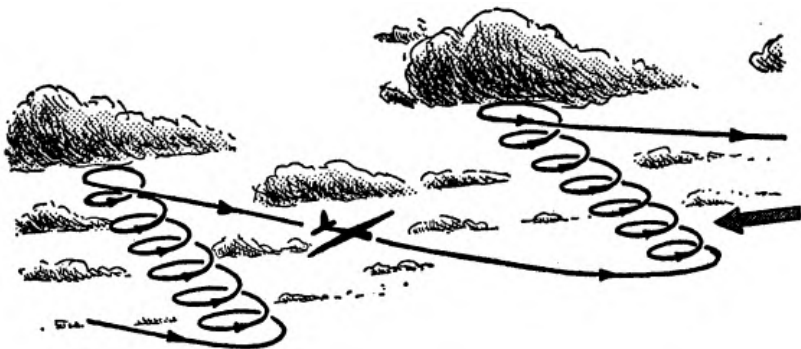
well. Launch fees run from 4s. 6d. for a winch-launch to around 15s. for an aero-tow.

Having now been released at 1,000 feet or more, the glider pilot needs various instruments to enable him to make the best of the day. Different enthusiasts have different and strong ideas on instrumentation, but the following is a fairly inclusive list:



- | | <i>Instrument</i> |
|---|--|
| 1. The pilot wishes to know his speed: | Air-Speed Indicator. |
| 2. He must know how high he is: | Altimeter. |
| 3. Most important, he must know if he is going up or down, and how fast: | Variometer. |
| 4. He wants to know his direction: | Compass. |
| 5. For cloud-flying, when he can no longer see the horizon, he requires an instrument to tell him when he is turning or skidding: | Artificial Horizon and/or Turn-and-Bank Indicator. |
| 6. For records he needs a trace of the altitudes achieved to submit afterwards to the homologating authority: | Recording Barograph. |
| 7. Flying high, above 15,000 ft., he needs: | Oxygen equipment. |
| 8. For efficient retrieving, if he is rich, he can fit: | Radio. |

The most common evolution on a cross-country flight is a series of circles, climbing in a thermal upcurrent, followed by a descending glide in the general direction in which he wants to travel, followed by another circling climb when he finds the next area of lift.



During the climb, the pilot flies at his minimum sinking speed, which is likely to be a few knots above his stalling speed, during the descent he flies at a speed dependent on the anticipated strength of his next thermal. His variometer is fitted with a number of

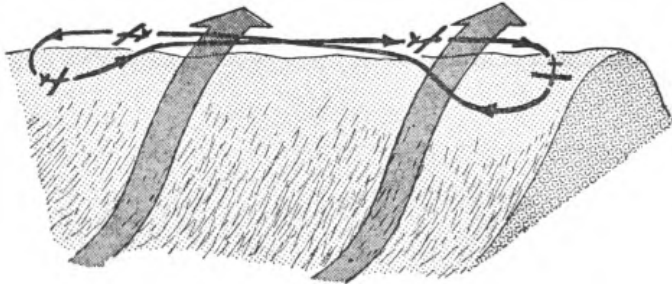
devices to help him select the right speeds at all times, and also to give him the true rate of ascent or descent of the air in which he is flying.

For fuller information about these instruments, my reader is referred to the bibliography at the end of this book.

IV. The Air

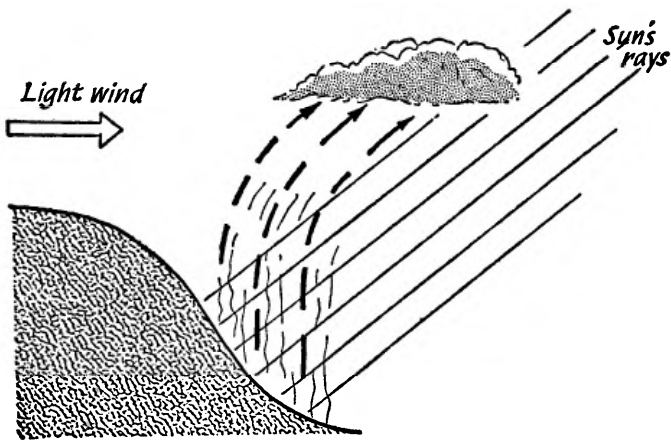
A motorless aircraft must always descend in relation to the air. Sustained flight is therefore only possible if the pilot can find a piece of air which is going up faster than his aircraft is descending, and having found it, manœuvre so as to stay in it.

There are three separate and distinct general sorts of upcurrents used by the glider pilot: hill-lift, thermal and wave currents. The first two are commonly used by the birds, but oddly enough I have not yet met, or heard of anyone else meeting, birds in wave-lift.



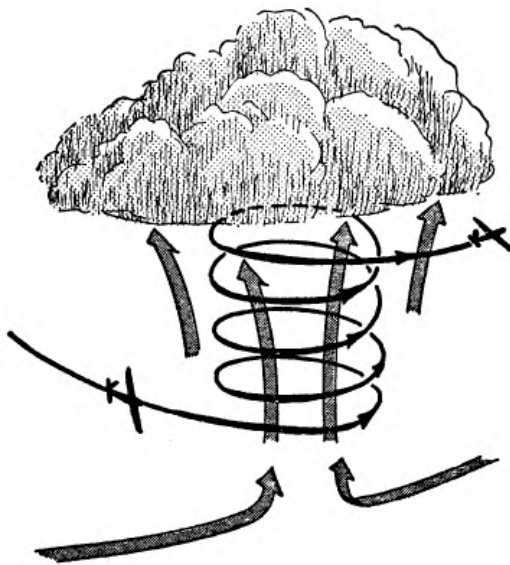
The sea-gull soaring up and down the line of the cliffs at the sea-side is using hill-lift, the inflowing sea-breeze being forced, obviously enough, to rise and surmount the cliffs which bar its progress. Any glider pilot can do the same, and remain aloft, but confined to the crest of the hill, for as long as the wind blows.

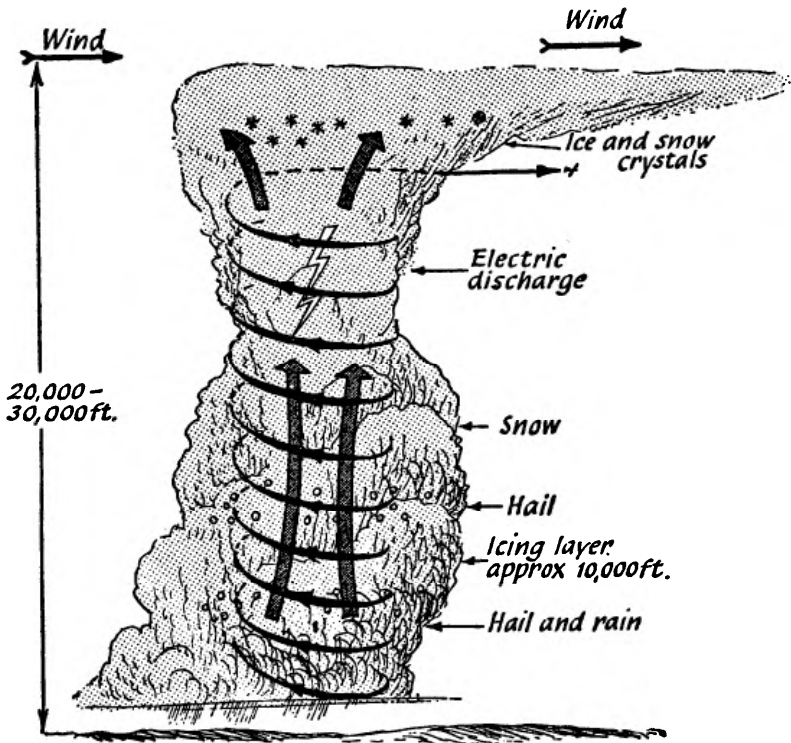
The rooks or vultures circling with motionless wings in a flock together have found a thermal upcurrent, which can be most easily (but rather inaccurately) visualized as a column of warm air rising because it is warmer than the air surrounding it. The thermal source may be the roofs of a town, surrounded by cooler



green fields, or any similar surface discontinuity of texture; or it may be ground in the lee of a hill, and so sheltered from the wind, which consequently is warmed by the sun: such an upcurrent is called a wind-shadow thermal and is illustrated above.

The sailplane pilot again copies the birds, by circling as soon as his instruments tell him he is in a thermal. If he does not circle





he will of course fly through the rising area and soon lose the lift.

As the air in the thermal rises, it becomes cooler, and at a certain height, if it is moist enough, will form a cumulus cloud—the familiar wool-pack clouds of a summer day—see the illustration at the bottom of page 20.

A sailplane circling up into these clouds will usually find increased lift, and on days when they develop into cumulo-nimbus or storm clouds may be able to reach 30,000 feet or more.

The atmospheric wave occurs when air flows over an obstruction such as a mountain range. Waves occur in most parts of the world, where there are mountains or even hills; even a barrier such as quite a low island sticking out of the sea will in some circumstances produce waves. Possibly New Zealand is the country for waves *in excelsis*.

Many of the best things in the world seem to go through a

process of magnification in New Zealand. As everyone knows, the common trout comes to a most uncommon size, and anglers taking fifteen-pounders do not expect an eyebrow to be lifted.

In another sporting field, the gliding enthusiast finds New Zealand air considerably larger than life, and what he is discovering has much interest for both commercial and military aviation and for meteorologists.

New Zealand consists roughly speaking of a chain of mountains running north and south for 900 miles, with a narrow break where Cook Strait divides the two islands. These mountains lie athwart the prevailing west and north-west winds, which reach them after crossing some 1,000 miles of ocean. These are textbook conditions for the formation of standing waves, and the best instrument for the direct exploration of these vast systems of rising and descending air is the modern sailplane.

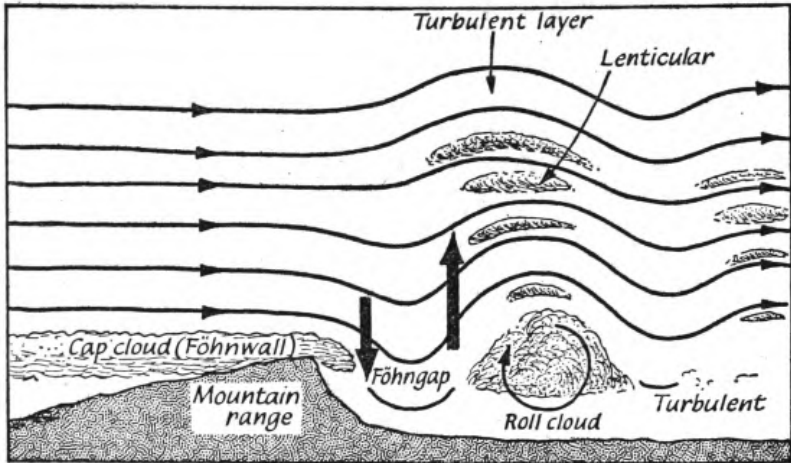
How vast? Well, one pilot exploring the Bishop Wave in California was still climbing at over 44,000 feet when he had to leave the wave and come down, since this is the physiological limit on straight oxygen, in the absence of a pressure cabin.

If you look at the water flowing away from the foot of a weir, you will notice that it humps itself up into one or more consecutive waves, downstream of the weir itself. These waves are stationary (or standing) in relation to the bank of the stream, i.e. the water flows through them and the distance between each succeeding wave, that is the wavelength, is constant.

A stream of stable air (one with a sub-adiabatic lapse-rate) flowing over an obstruction such as a mountain range, behaves in much the same way, only more so. Whereas the height of the standing wave is not very great, because it is damped by the much greater weight of the water in relation to the air above it, no such damping influence restricts the height of the air wave, which can in suitable circumstances impress itself on the air above it right up to the stratosphere and beyond.

The diagram on page 23 shows the layout of an idealized wave-system; the researches of glider pilots have done much to enable us to construct it. It is marked by a number of highly unusual and specialized features which make it easy for any glider pilot to recognize it immediately he meets it.

Firstly, the air in it is quite uncannily smooth. One can be



climbing or descending at rates of 2,000 ft./min. or more in air so creamily quiet that but for the needles of the rate-of-climb indicator and the air-speed indicator one would swear the aircraft was at rest. Many past crashes in mountainous country have been caused by aeroplane pilots flying all unawares, in cloud or at night, into one of these huge insidious Niagaras.

In dramatic contrast, at certain levels and on certain days, air of unexampled turbulence can be encountered suddenly in a big wave-system. These layers are marked sometimes by roll-clouds—huge untidy cylinders of cloud which can be seen to roll over and over, tossing out and sucking in ragged tendrils of cloud-vapour. In 1956 a glider entering a roll-cloud in the Bishop Wave suddenly disintegrated. The pilot escaped miraculously: finding himself falling with the nose of the glider still attached to his boots via the straps on the rudder pedals, he pulled his rip-cord and the jerk of his opening parachute wrenched his feet out of his laced boots. Subsequent evidence tended to show that he had experienced accelerations of the order of 20 G—twenty times the acceleration in free fall in a vacuum.

In fact, everything with these meteorological monsters is dramatic. The air is either dead smooth or deadly wild; one is either going up like a rocket or coming down like a lost soul. The

roll-cloud looks like the pit of Hell; the lenticular cloud like a creation of Fairyland.

Reference back to the diagram will show the peculiar fact that, although a wave upcurrent can go up many thousands of feet, no one particular bit of air in the system rises or descends very far—each piece of air simply oscillates up and down about a centre-line, as it travels along with the wind. It follows that cloud, which is formed by air cooling beyond its saturation point, will only form in layers where the air at the centre-line is already so nearly saturated with moisture that a small further cooling caused by its going up a short way will cause it to condense. From this it results that as soon as this air descends again, as it follows the curve of the wave, the cloud will dissolve. The outcome is that on most days wave-systems are marked by very typical lenticular (i.e. lens-shaped) clouds which hang stationary in space whilst the wind blows through them. At the front or leading edge of these clouds the air is going up, at the trailing edge it is descending.

The glider pilot therefore tries to station himself below and just in front of the leading edge of a lenticular cloud. He turns his aircraft into wind and tries to fly at the same speed as the wind is blowing; in this way he remains stationary over the ground below and beneath the cloud above. If he has judged correctly he can then watch his altimeter wind itself up like the second hand of a watch. As he reaches and passes the cloud, he gets a sight so breath-taking that it is hard to convey.

The whole vast cloud is of a curious milky gauzy consistency. From near at hand it can be seen to be constantly forming itself out of nothing at its leading edge and to be streaming back and up and over, to descend at its trailing edge and vanish again into nothing. It is a spectacle of titanic energy developing and dissipating in an uncanny silky silence.

And now let us get back to New Zealand.

Ao-tea-roa—the Long White Cloud. The Maori name for New Zealand describes what it looked like to them as the first canoes arrived over the horizon. What they must have seen was the typical vast lenticular or banner-cloud which now, hundreds of years later, is becoming the playground of the glider pilot.

My own introduction to a New Zealand wave was in December 1954. In retrospect it has all the qualities of a dream, for by sheer

chance everything fell into place and went right, and the result was the most remarkable flight of my life.

I was spending Christmas with relations in the Mackenzie Country, near Mount Cook. The Mackenzie Country is an extraordinary oval basin of land, coloured a golden brown with tussock-grass, surrounded by a closed ring of mountains, like a huge frying-pan.

It was once a sheet of ice fed by glaciers from the great mountains to the west, and now contains three lakes, fed and emptied by a network of streams. From whichever direction it comes, the wind reaches the basin after crossing mountains and nearly always the sky is flecked or barred with lenticular clouds big or little.

The Canterbury Gliding Club was holding its Christmas camp nearby. I went to look and was strapped into my old Weihe, which I had sold to Dick Georgeson the year before. It seemed a hopeless day, little wind and no cloud, but he insisted on my taking a barograph and the oxygen mask. I have never been more sure that I was simply going to have a three-minute launch, circuit and landing. It was very hot and I took off in the lightest tropical clothes.

I was winched to 500 feet on to the slope of Simons Hill, found a little lift, and climbed in a thermal to 6,000 feet; on the way down I flew into the unmistakable calm lift of a wave. I started to work it out, found a series of waves only about three miles apart, dog-legged my way 40 miles north to Mount Cook, and flew into the biggest wave of my life.

At 30,200 feet the cold was so intense that the cockpit cover started to disintegrate and in my light clothes I was forced to break off my climb and fly home. This flight broke two U.K. records, for absolute altitude and gain of height.

Christmas 1958 I was again in New Zealand. In the intervening three years many fine wave flights had been carried out in the South Island, including one in November by Keith Wakeman, who flew a Skylark 2 from near Christchurch, over Cook Strait to Palmerston North in the North Island, a distance of 290 miles in under 4 hours.

On February 16th, 1959, Dick Georgeson reached 31,000 feet in a Slingsby Eagle near Christchurch, under the famous North West Arch, breaking two N.Z. records and very nearly a world

one, and on December 16th, 1960, he at last won the World Gain of Height record with a gain of 34,000 feet and an absolute altitude of 35,000 feet in a Skylark 3f.

The North West Arch is one of the most remarkable clouds in the world. It forms over and beyond Christchurch in a north-west wind and hangs vast and stationary in the sky at a height of around 30,000 feet, for a day or more. Its leading edge, stretching out of sight to the north, has the curious gauzy definition of all wave clouds. Its underside is heavy with pendulous bulges, it is streaked and serrated like a monster construction of multi-ply wood. In the rising sun it shines out in the still-dark sky a ruby red.

Throughout the day the colours change to pink, to dove grey and all the shades of grey and black, with dazzling white serrated edges. As the sun sets, the last light in the sky is cast down from its pink and bulging undersurface.

Up to 1957, nearly all the big flying in New Zealand had been carried out in the South Island, but just before Christmas 1957, North Island enthusiasts started to explore a new site at Wairarapa, 30 miles east of Wellington. Here the constant wind that gives Wellington its tag overtops the Ruahine Mountains and blows clear and strong over a wide golden valley, running north for half the length of the island.

Flying their Skylark 3, in three weeks Ralph Court and Gordon Hookings showed conclusively that this is one of the finest soaring regions in the world. Starting around 7 a.m. Court did a 200-mile out-and-return flight along the wave and was back on the ground before 10 a.m. A few days later, Hookings flew over 500 kilometres in three legs, between lunch and tea, at heights between 15,000 feet and 20,000 feet. In this gigantic wave, he was able to fly long distances along the line of the leading edge of the lenticular cloud at 100 m.p.h., taking photographs as he went.

That is as far as the exploration of the North Island has gone to date. But between them Wakeman, Georgeson, Court and Hookings have foreshadowed the day when a sailplane will break the world distance record with a flight coupling up the two big systems, which could start from somewhere near Dunedin and end up near East Cape 700 miles away in the North Island.

V. Travelling Hopefully

Let me now describe one of my 500 kilometre Diamond attempts, using mainly thermal upcurrents. In this particular flight I also used what is called the "sea-breeze effect". As most people know, on a warm day the land near the coast heats up more rapidly than the adjacent sea, hence the air over it starts to rise, and the air over the sea blows inwards to create the on-shore sea breeze. If this sea breeze, as it blows inland, then clashes with the prevailing wind coming from an opposing direction, it is easy to see that at the point of conflict the air will blow upwards, and hence on suitable days a sailplane pilot can often find a band of rising air parallel to the coastline, sometimes some miles inland, sometimes out to sea, but running for many miles in the same direction as the coast. Often this band of rising air is clearly marked by a line of cumulus clouds acting as signposts for the veriest tyro. Such a line of clouds is called a "cloud-street", and apart from coastal streets, which run across-wind and parallel to the coast because of the cause of their formation, on really good gliding days cumulus clouds tend to form in parallel straight lines up and down wind, sometimes barring the sky from horizon to horizon. These are days when no glider pilot can keep his attention on anything but the quickest way to the nearest sailplane.

On June 23rd, 1957, I got out of bed at 7.45 a.m. to see a blinding clear blue morning and the first cumulus form and drift slowly to the south-west. At breakfast, 8.30, the first streets were lining the sky. We swallowed our coffee, and rushed to Lasham. On the way there I cudgelled my brains as to how to use what seemed to me not only the best day of the year, but the best day from the glider pilot's point of view I had ever seen anywhere.

By the time we got to Lasham, the plan had crystallized. Declare a 300-kilometre triangle, Lasham—Firle Beacon—then west along the line of the South Downs and on to Tarrant Rushton—back to Lasham. If by the time I reached Tarrant Rushton the chances seemed favourable, abandon the triangle and make for Land's End, and the longed-for 500 kilometre Diamond.

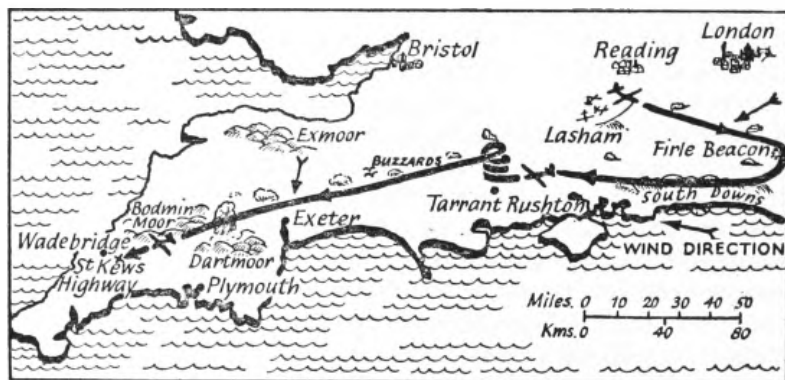
The first leg was nearly into wind; the second was likely to be with a following wind, since one could hope along the coast for

a band of light easterlies from the sea-breeze clash with the light north-easterly prevailing wind; and the last, Diamond, leg also with a following wind, since on it one flew farther inland from the coast, and so would get back into the prevailing north-easterly.

It seemed a rather heroic scheme, but it was definitely an heroic day. What was not quite so heroic, in spite of all our mad efforts, was my time of release—11.15 a.m., about 1½ hours after cloud streets had become really strong.

But it was a day—I released in 8 ft./sec. lift, and for the next four or five hours found regular 12 ft./sec. lift under every cloud, with cloud base at 6,000 feet.

I flew my 95-kilometre into-wind leg in 2 hours dead, and took



my turning point photograph surrounded by the disporting aircraft of the Southdown Club. Then I turned and scalded west along the line of the South Downs. Cruising speed between thermals 70 knots, wind perhaps 5 knots behind me. Not only were the upcurrents fantastic, but unlike in other less favourable climes, the intervening downcurrents were not abnormally strong. The result was that I covered my 157-kilometre leg to Tarrant Rushton in 1½ hours dead, a quite extraordinary performance with a very light favourable wind. It was 2.45 p.m. Now came the big decision of the day. Turn back for Lasham, or go on for the Diamond? The first would probably give me a 300-kilometre triangle record, for although Nick Goodhart had set off on a different course for the same record (which he achieved at 42 m.p.h., so maybe I was being optimistic!) I could hardly believe he could beat me, since

my course had given me so favourable a wind component. Or cut loose for Land's End? Could I do another 250 kilometres, starting at 6,000 feet at 2 p.m.?

I had averaged over 100 kilometres an hour for the last $1\frac{1}{2}$ hours. Conditions were obviously at their peak, and would now start to decline, but I might with luck have $3\frac{1}{2}$ hours to go, so only had to average around 75 kms. an hr.

As I turned to photograph Tarrant Rushton I flew into volcanic lift. It was indeed a heroic day; we must live up to it. I climbed to 7,000 feet, into cloud and turned west.

At this moment the whole atmosphere of the flight changed, for no longer did I have to act as a human calculating machine, working out times, speeds and courses. My job now was simply to go as far and as fast as I could, to identify myself and my Skylark with the air and to coax out of it all it had to give me.

No man could experience a more pervasive and subtle communion than is granted a sailplane pilot on a day such as this, when the whole universe seems especially set for his delight, when the very air is on his side, sparkling like diamonds to the far horizon, studded with fat white cumulus, stuffed thick with hearty Rabelaisian upcurrents; with the earth below glowing with the greens and browns of a ripe summer, and over it all the brilliant sun set in a cerulean sky. Through all this glory he flies in royal silence, shedding space from his outspread wings.

As I reached the edge of the Blackmore Vale country, as deep in the heart of rural England as you can find, ahead of me loomed another splendidly fecund cloud—a regular Rubens cumulus—to which I fled as eagerly as any young swain. And as I flew beneath it and felt the glorious surge of power flowing into my wings, I found I was not its first wooer, two others had got there before me. Two large brown-speckled buzzards were circling blissfully around at over 5,000 feet, and my arrival discomposed them not in the least. We orbited companionably together for a minute or more, then I managed to get my camera on to them, but just as I pressed the shutter one of them flicked himself out of the picture. Nevertheless I have my picture of the other, and to me it is one of the most memorable I have taken, for it is truly a bird's-eye view of the world.

As I approached Exeter the air started to die. In the light

northerly wind I flew round the northern side of Dartmoor, to get the aid of its windward slopes, but found gradually weaker cumulus, for the sinking sun was slowly taking the life out of the sky, whilst to the south the air was already grey and dead. There was a black but lifeless-looking mass of storm-cloud over Plymouth—I sniffed at it but could get no sense out of it. I was getting tired—the eye was still communicating delights, but the mind's eye could no longer enjoy them.

I flew on over Bodmin Moor, getting lower and lower, the sea in sight both to north and south. The highest point of the Moor, granite and olive-green under the slate-grey dying clouds above me, slid a mere 200 feet under my skid, and ahead of me, too far for me to reach, I saw the glistening estuary of a river.

From too much love of living,
From hope and fear set free,
I thank with deep thanksgiving
Whatever Gods there be;
That no life lives for ever,
That dead men rise up never,
That even the weariest river
Winds somewhere safe to sea.

I pulled myself together with a jerk. I had a landing to make in a strange country of small broken fields. The glories of the day had burnt me out, but it was temporary, and I must not let it deflect the precision of my judgment.

At 300 feet I swept over the edge of a generous field, and at 6.10 p.m. after 7 hours in the air, I landed by the railway station of a little village called St. Kews Highway, $3\frac{1}{2}$ miles from Wade-bridge, having missed my 500 kilometres by 50 kilometres, or 30 miles. One more thermal would have done it again.

I left the Skylark de-rigged and flat on the lawn of a friendly neighbour and caught the 10.26 from Bodmin Road which got me to Reading at 4.10 a.m. Kitty met me, I had three hours sleep, then to the Monday morning office, whilst she set off with the trailer on the long retrieve. Whichever way they go, gliding folk have friends on the way. She stopped at Newbury to pick up Tony Goodhart, went on to Cornwall, and was back at Newbury at 1.10 a.m. the following morning.

Heroic days also call forth their heroines.

Chapter 2

THE TEAM

I. Us

“WHY on earth do you want to glide?” say my non-gliding friends and relations with increasing exasperation as the years go by. I can only say that from my youngest days I have wanted to fly and that my best childhood dreams were those in which I could do so. The trick-cyclists may have an unflattering analysis of this, but since these dreams stopped for good from the day I actually started to fly, it seems to me just possible that the reason was simply that I needed it. You dream a lot about things you need, when you haven’t got them.

My father had four sons, mainly I think because he wanted them to follow in his footsteps at Harrow. He made the mistake of having the Best Time of his Life there—scored a century against Eton at Lord’s, together with other Sixth Formers made Winston Churchill stand on a table and sing to them, and all that, but since one has still a long way to go after leaving school, it is a mistake to have one’s peak of happiness so early on.

Anyway, we all failed him, and I myself had an undistinguished and not very enjoyable school career. In spite of this, however, Harrow shaped my life, because there I met Mungo Buxton, who later on introduced me via a cousin to my wife Kitty, and then to gliding, so I suppose Harrow did after all have a lot to do with my peaks.

From Harrow I went for two years’ training in the family business in Australia, returned to England in 1927, and joined the London Aeroplane Club at Stag Lane. I nearly failed to get my pilot’s licence, mainly I think because of an unsympathetic instructor, but eventually went to Hamble where Swoffer of the Hampshire Club soon got me over the stile.

Came 1928, my twenty-first birthday, and my own bank account. I will never forget my poor father’s face as he summoned me to his

office a few days later, to say that my bank manager had just telephoned him to say my first cheque had come through for £300 in the name of the de Havilland Aircraft Company, and was it all right? I had bought myself a second-hand Cirrus 2 Moth, and that was that.

A few months later came tragedy. I flew up to see a brother at Cambridge, landing at Duxford. A young god of a flight lieutenant came up and said he had heard about these new light aeroplanes. Very interesting, could he fly mine? Overwhelmed, I said he could. We took off together. I remember nothing after that, for amnesia is a merciful thing. But onlookers said we reached about 1,000 feet and started to do aerobatics. The machine stalled, spun and crashed.

Dimly I remember someone looking down at me in an ambulance and saying "The other one's dead, this chap soon will be." But he proved wrong on the second count. The verdict was that each pilot thought the other had control. I don't know, but I had never aerobated before and I never have since. This gives me the chance to tell Kitty that I used to be quite handsome, before my face was knocked about.

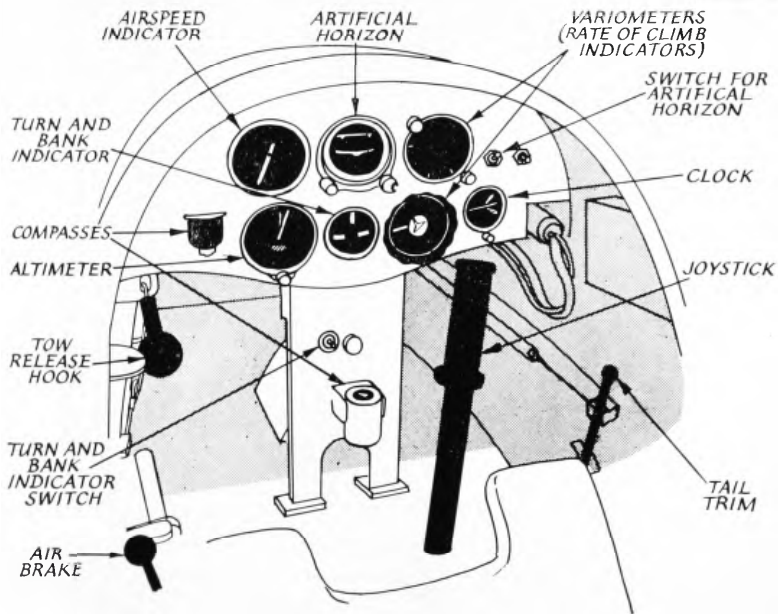
Some months later I was mended again and sneaked up to Stag Lane for a check flight. I was all right. My wretched parents did their best to stop me, fortunately they failed, for if they had succeeded my life would indeed have been a poorer thing.

Then came Kitty, and a honeymoon in a Cirrus 3 Moth generously provided by the British Aviation Insurance Company, who said I wasn't actually covered since I was not pilot at the time, but they would see me through. I spent the next twenty years insuring with them and I think they got their money back.

It was interesting, after my marriage, to hear from Kitty what an unintentional worry I had been to various parents, who in those days could not conceive that a wild young man taking their daughters up in an aeroplane did so only because he loved flying, and liked sharing his passion with someone else who was both nice and decorative. My reputation in the Fisher family was that I had wooed or worse nearly every one of her numerous cousins, and a number of other young ladies who I hope enjoyed flying as much as I did. But we all landed as pure as when we took off, though there was one sad day when I was flying with Rachel



Philip Wills



“. . . different enthusiasts have different and strong ideas on instrumentation.” (p. 17)



T. Elworthy

“... on December 16th, 1960 he won the World Gain of Height record with a gain of 34,000 feet in a Skylark 3F.” (p. 26)
Dick Geogeson putting on his oxygen mask before take-off on this flight

MacCarthy (who is now Lady David Cecil) to a week-end party near Newcastle, where we were going to stay with Leslie Runciman. Over the Dukeries there was a loud crump, a connecting rod broke and showers of hot engine oil splashed over poor Rachel. We landed in a field, but Rachel, fulfilling both qualifications of niceness and decorativeness (though just at that moment falling slightly short in the latter), took it in good part, and we managed to clean her up and get on to a train—where the first person we met was a relative who knew full well that her parents had told her not to go flying with me.

A year or so after our marriage Mungo arrived and said I really ought to try my hand at gliding. So the following week-end we went to a demonstration at Ivinghoe Beacon. In a small strutted open glider called a Pruffling, aided by an immense crowd, we catapulted Mungo off the top and watched him rush it to a field at the foot. Then we ran down, hitched on a rope, and about twenty of us lugged it to the top again. Another pilot was strapped in and shot off. He was not quite so successful. There was a small clump of trees near the foot of the hill, and he managed skilfully to perch in one of them about half-way up. We got him, and most of the Pruffling, down with ladders. It was the end of the display, but I must have been ripe for plucking, for a few weeks later I flew the Moth to Dunstable and was bunjied off the top of the Downs in a Primary. I was never the same again.

The whole thing thereafter hinged on the absolute fluke that in Kitty I found someone prepared to enjoy being a glider pilot's wife. During our gliding life she has towed my trailers, which have gradually grown to a length of 33 feet, over 150,000 miles—covering most of England and Scotland; most of Europe, including Sweden, Poland, Yugoslavia, and Spain; and much of South Africa, New Zealand, and the United States—and has never failed to get me back, usually before the others.

Kitty has a great sense of family pride. She was towing our 30-foot one ton trailer down an Alpine pass one day, in a crazy old Ford ex-war station wagon, and started to relate how her magnificent great-aunts many years before had had to back up this very pass in their primitive vehicle, wearing veils. At that moment we swept round a hairpin bend to meet a Postbus coming the other way, our brakes faded and the gear-lever jumped out of second

gear. Without stopping her ancestral eulogy, Kitty stamped on the throttle, roared the engine, slipped into first gear, let in the clutch, swerved to the edge of the precipice, the trailer behind us seemed to lean out over eternity, then we were on the road again . . . "but really my great-aunts were *terrific* people" Kitty was saying. . .

I have no doubt they were.

In the matter of ancestors, Kitty's and mine typify two contrasted but strong roots of the English social structure.

As regards the Wills, John Galsworthy must have had us in mind when he wrote the "Forsyte Saga". Superior Dossett was surely my great-grandfather, whose family had for generations farmed their land near Moretonhampstead on the fringe of Dartmoor. He had seven children.

In the hungry 'forties, after the repeal of the Corn Laws, he took my grandfather to Exeter, and on its bridge told him that the farm could no longer support the whole family, and he, George, must make his own way through life.

Grandfather George then took ship to South Australia, founded the family business in 1849, later returned to London, and died a warm man. My father was the youngest son, and surely was Soames Forsyte, whilst my mother was Irene. Three of grandfather's four sons carried on the London end of the business, his brother the Australian side, and nowadays the family is in roughly equal thirds in England, Australia and New Zealand.

Kitty's grandfather was tutor to King Edward VII, and his marriage resulted in one of those bursts of genealogical pyrotechnics of which each child proved outstanding in whatever field he or she adopted. Kitty's father lost his life in World War I. If he had lived no doubt he would have been as brilliant an architect as Uncle Herbert (H. A. L. Fisher) was a scholar and historian, as Uncle William (Admiral Sir William Fisher) was a sailor, or Uncle Tom (Chairman of Barclays Bank) was a man of affairs. Amongst the aunts, Adeline married Ralph Vaughan Williams.

Another clue to Kitty's expertise in map-reading and retrieving may lie in her maternal grandfather, Douglas Freshfield, a famous mountaineer and one-time President of the Royal Geographical Society. Of him it is related that, when darkness fell half-way up a mountain, he could lie down on the snow, wrap around him his

maps, and slumber peacefully through the night whilst the other members of the expedition shivered in their sleeping-bags.

Kitty can do a bit of this sort of thing herself, whilst on the ground I definitely cannot, although in the air it is a different story. It is surprising how on a fascinating flight physical discomforts go quite unnoticed, only hitting one all of a heap when, after the landing is over, one scrambles out of the cockpit and stands up.

Whilst therefore one can postulate that Kitty inherited her skills in the team, the only genealogical theory I can surmise for mine is that perhaps one of my distant forbears built in me a longing to fly whilst incarcerated in Dartmoor Prison, although I expect if I checked up I would find that it did not go back long enough.

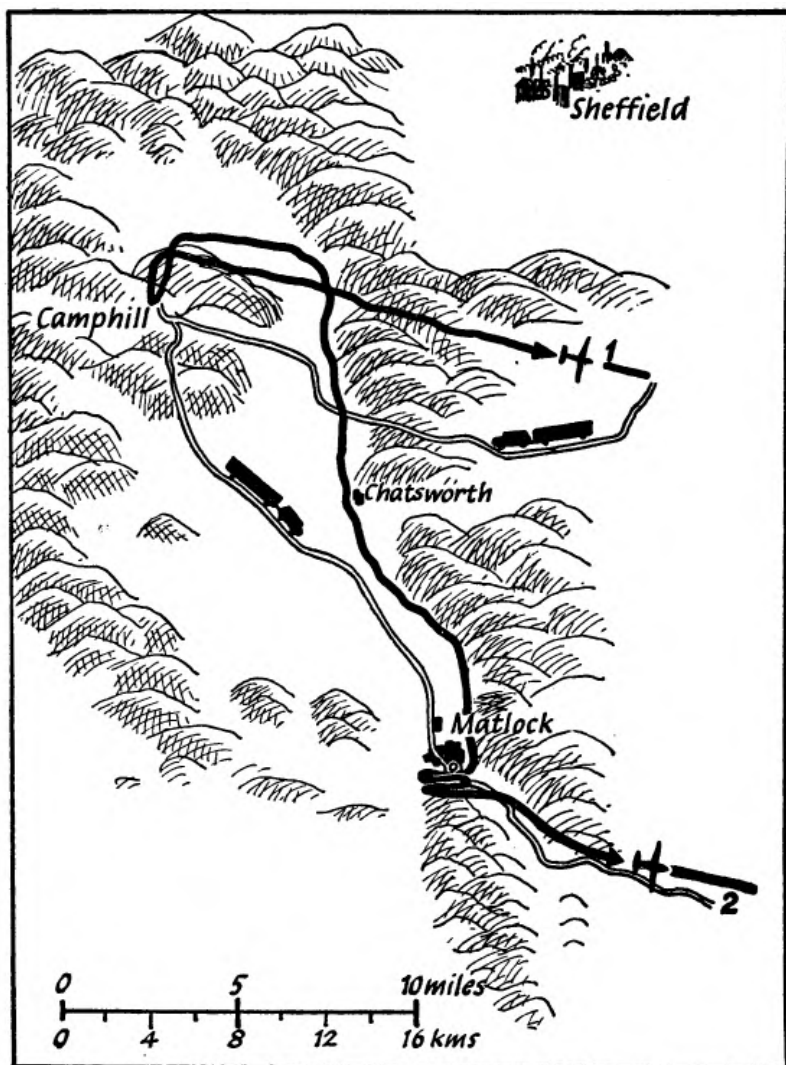
So that is the basic team of two. Let us look at a few flights showing how we work together.

II. Follow My Leader

The World Gliding Championships held at Camphill, near Great Hucklow, in the Peak District, in July 1954 have gone down to history mainly because we showed the pilots of nineteen nations exactly how beastly a British summer can be when it really tries, and for nearly three weeks we sat on our Derbyshire moor shivering in gales, rain and cloud. Actually the place is now known the gliding world over as Damphill. Nevertheless we got in just enough flying to establish a Championship, and Gerard Pierre of France, whom I had just beaten in Spain in 1952, in turn just beat me to become 1954 Champion. I was flying the same Slingsby Sky.

I actually lost to him on July 22nd, when the task for the day was a race to the aerodrome at Boston, 73 miles to the east, although I had two interesting flights on that day.

The weather was grey and windy, and in the ordinary way we should not have even tried to leave the site, but in championship flying of course one tackles the most marginal conditions. I launched around midday, soon found lift to about 2,500 feet, and set off east, hoping to find better conditions when I got over the flat Lincolnshire plains, away from the Pennines. I soon saw I had been too optimistic, and within half an hour of leaving I had



remorselessly sunk to a landing about 10 miles south-east of Sheffield. I had been able to radio my landing place to Kitty in the retrieving car, but, in the further half-hour it took her to find me, I had the maddening experience of watching other sailplanes,

more successful than I, sailing overhead in the direction of Boston. It was after three o'clock when we were packed up in the trailer and rushing back to Camphill. Would there be time for a second chance?

I think we broke most retrieving records because 8 minutes after arriving back the Sky was rigged and I was in the air again, but it was 4.15 p.m. and the air looked deader than ever. The Met. man had told me that there wasn't much chance, but the longer I stayed on the slope at Camphill the worse it would get, so I decided on desperate measures, having heard that Pierre had already landed at Boston.

Camphill is on the westward edge of a fine plateau, 1,100 feet up. Behind to the east this plateau slopes down to the River Derwent, which runs north to south, the east bank of the river being confined by frowning cliffs 800 feet high, from the top of which the moor again slopes down to Sheffield. This cliff runs in a rather broken chain southwards as far as Matlock.

I had been told that my best chance was to get away out of the Pennines somehow as over the plains the chance of sunnier weather was a little better, so immediately after take-off I left the only other machine—a Swiss two-seater—still lagging on the home slope and flew downwind low and fast to the second ridge behind me, called Stannage Edge. To the east I could see Sheffield, but no sign of sun or lift. I waited about twenty minutes, and saw my car and trailer arrive on the road beneath. Then in desperation I decided to try and fly south along the line of hills to Matlock. I radioed Kitty to turn and follow, and struggled off south, over Chatsworth, Baslow, still no sign of the sun, then Matlock. Matlock Castle stands on the edge of a cliff overlooking the town, and here I stuck, tacking to and fro in a narrow belt of lift caused by the wind blowing up the slope of the hill. Twenty minutes later I saw my silver trailer coming down the road from the north.

"Justin from Philip" ("Justin" is the call-sign of my retrieving team). "I am pinned on the slope above Matlock Castle. Doesn't look as if I shall be able to get away. There's a small road that comes out of the town to just below me, I suggest you come out on it and wait below me so you can see where I land. Come into the town and take the second road left round the roundabout. Over." "Philip from Justin. Roger." I watched the trailer drive into the

heart of the town in front of me, into the roundabout—"Left! Left! You've missed it—now, follow that bus round again, and turn left when I tell you." A giggle from the trailer, then "Right-ho!" "Now, left!" and I saw the trailer coming out on the correct road. "Now, in half a mile you come to a fork. I should stop there and wait, then you will be able to go either way when I do." The trailer came to the fork and drew up. Passers-by quickly built up a bit of a crowd around it, and when they heard my voice coming from the loudspeaker in the car and cottoned on to what was happening the crowd grew to quite a size. I could see pink faces turned up to find me, then back to watch Kitty working on the radio.

A quarter of an hour went by. Suddenly the sun came out and almost at once a small puff of cumulus cloud started to form along at the end of my short slope. I dashed towards it and found lift. In a tight spiral I began to climb away from Matlock Castle, to which I had seemed to be stuck for ever. Boston became once more a faint hope. Soon I was high enough to see Nottingham 15 miles to the south-east, and a huge street of cumulus clouds over it leading away towards the coast. "Justin from Philip. There may still be a chance, if I can get as far as Nottingham. Am at 3,000 feet—will have a shot at it. Take the left-hand fork and go like hell."

I turned south-east and set off, gliding as slow and flat as I dared. As Kitty came to the top of the hill out of Matlock on the Alfreton road and could see over the plain in front of her, she too saw the street of cloud ahead, and my Sky above her. "Keep going, you'll make it!"

It was just about as exciting a quarter of an hour as I can remember. If I could get another 15 miles I felt reasonably sure I might for the second time become World Champion, a thing no one had ever achieved before. Every few minutes as I glided along I would find a minute scrap of lift and circle desperately to try and claw another few feet out of the air. But on balance I was losing height. Kitty was thundering along the road behind me, egging me on. I dare not take my eyes off my instruments for one moment, circling and circling. Suddenly I saw out of a corner of my eye an object sweep by. I looked out with a gasp—it was a tree-top. Blast! World Champs be blowed, if I wasn't quick, and

lucky, I should be wrecking the Sky and be out of the running for good. I flicked off the siren voice of the radio and looked madly for a landing-place. Trees below, the ground sloping away ahead, a canal, a railway, another canal, a tiny field on its far bank, then houses and a factory. Thank heavens for the excellent air-brakes of the Sky—we cleared the second canal and grounded on the far side with a bump—but in one piece.

About fifteen seconds later the hedges of my field erupted. About a million children came tearing at me from all quarters of the compass. I jumped out of the cockpit and prepared to defend my precious machine to the last. If one child leans on a wing it will stand it, but if forty do, you have to buy a new glider.

Twenty minutes later I was huddled in my cockpit like a beleaguered knight in the last redoubt. The Perspex bubble lid was down over me, children shouting and screaming everywhere. Every now and again the stick or the rudder-pedals would kick over as one or more enthusiastic children hit or twisted one of the control surfaces. Desperately I was bleating on the radio—"Justin from Philip. Do you read? Over." No reply. Every time I started to call, a dozen noses flattened themselves hideously on the Perspex bubble and clouded it with eager young breath. From being potential Lord of the Air I was reduced to an impotent babbling idiot, almost gibbering with fear and rage. For my beautiful machine to be destroyed in such a way would be the last indignity. Someone looking suspiciously like the village idiot, using his superior strength, had shouldered his way to my side, and glared down at me through the transparency. Every now and again he would shout at me through the little window and the general uproar—"Will ye coom and 'ave a coop o' tea?" If I ignored him, he would summon my agonized attention by smartly rapping the thin plywood side of the cockpit with a huge walking-stick encrusted with appallingly dangerous knobs.

The trouble was, the radio. Being short-wave, its range on the ground came down to not much over a mile, so although I knew that help was very near I could not summon it unless Kitty, in her desperate search, came as near as that, and obviously I dare not leave the Sky for a moment to try and find a telephone.

And so it went on for an age. Bang—wallop—whistling, screaming, shouting—"Will ye coom and 'ave a coop o' tea?"—

“Justin from Philip, *do you read?*—rat-tat-tat—“Come and ’ave a coop . . .” At last—“Philip from Justin—where are you?” “Oh God, *come quickly.*” Ten minutes later the howling suddenly altered in pitch, faces turned away to a corner of the field behind me and suddenly I was almost alone. With a gasp of relief I opened the lid, and scrambled out, looked across the field—and there was the trailer, stuck in the gate, but mercifully drawing off the young dogs of peace from my poor old Sky.

Feeling as if I had just been through an enormous prehistoric laundry, I tottered round her looking for damage. Miraculously there were only superficial scars. And so, half an hour later, we were on our way home. I had landed only 23 miles from Camphill. But it had felt much, much more.

And when we got back, the Swiss two-seater I had left behind on the slope, on the best advice, had a quarter of an hour after I had gone found an entirely unexpected bit of lift, had sailed off down-wind, and landed 70 miles away.

There’s a moral in this, I suppose, but I’m damned if I know what it is.

III. *Cross-Channel*

By 1957 we had had a number of pilots flying across the Channel, by accident, because to do it on purpose was virtually impossible owing to clearance, exchange and customs formalities which at that time could not be fulfilled before a flight which must remain highly uncertain until actually accomplished. I had started to address stern words, as Chairman of the British Gliding Association, about it, because I thought it unwise to give too many people the impression that glider pilots were helplessly carried along on their flights to unknown and possibly hazardous destinations. Came September 15th . . .

Sunday, September 15th, 1957, dawned at Henley a cloudless blue with a fair north-westerly wind, backing to north above 2,000 feet. We hooked up the trailer and fled for Dunstable.

I was launched in the Skylark at 10.45, by which time ragged cumulus were beginning to form, and at 11.00 caught a narrow thermal off the Zoo which took me off on a southerly course. I



Philip Wills

“The conquerèd mountains, cloud-pennants unfurled”
Photo by the author from 30,000 feet on his record flight over
Mt. Cook, New Zealand, in December 1954





Philip Wills

“ . . . wave-systems are marked by very typical lenticular (i.e. lens-shaped) clouds which hang stationary in space whilst the wind blows through them.” (p. 24)

Lenticular clouds over the Mackenzie basin, New Zealand



"The North-West Arch is one of the most remarkable clouds in the world." (p. 26)

Photographed by Dick Georgeson from 20,000 feet during his record climb December 1960

had told Kitty to go to Detling (the site of the Kent Club, about 75 miles south-east and the other side of London and the Thames) with the trailer, and thus had to make a course well east of the wind direction. Actually, no great difficulties were encountered, though at one point near Hornchurch I was down to around 600 feet. I then flew into 7 ft./sec. lift and was off again with little delay.

As I approached Detling the conditions got worse. For some quite unforeseen reason the sun was cut off by a sheet of stratocumulus and visibility deteriorated. However, my ground speed had averaged 50 m.p.h., it was only 12.45 p.m. and the air was still interesting enough, so I continued on towards Hawkinge, Folkestone, Dover, to Deal. The interesting thing was that although the sky looked so dead, there was still lift to be found, and I played around between 1,000 and 2,000 feet in the grey air until at length it looked as if I must land, a half-mile or so north-west of Deal.

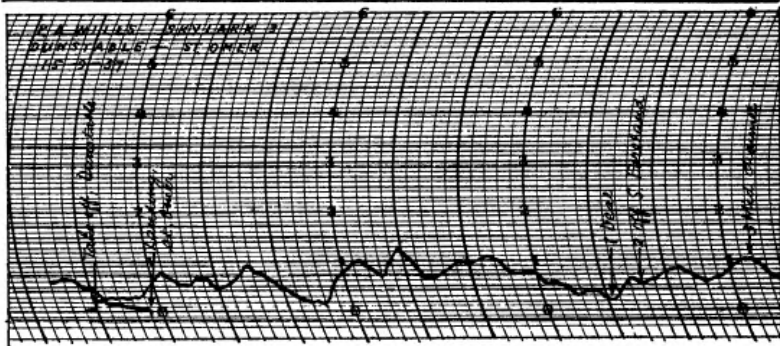
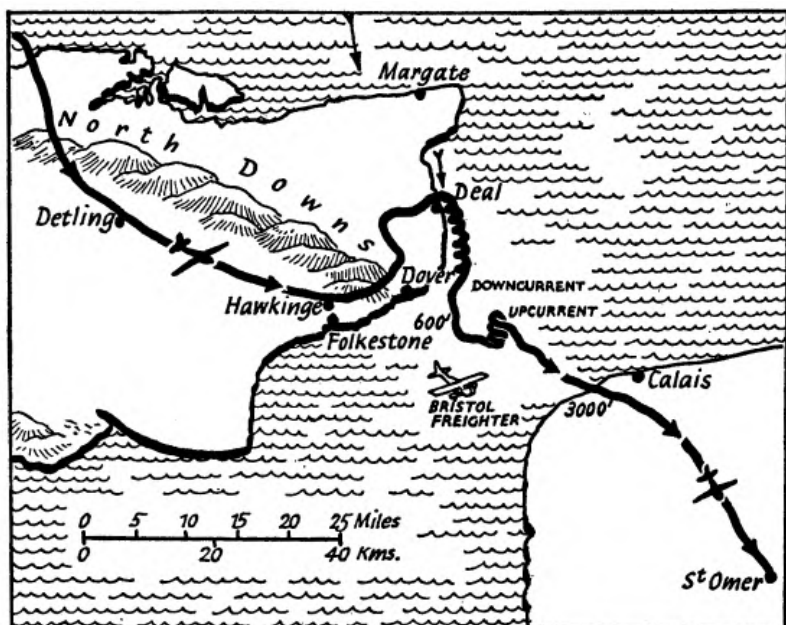
I picked a field and was circling it preparatory to a landing, when at under 600 feet I once more flew into 6 ft./sec. lift. The wind was fairly strong, and was now blowing from the north-north-west, and as I climbed away a fascinating plan offered itself. It turned out to be the piece of cheese in the mousetrap.

Since the sea is uniformly heated, in the general way the air above it contains no vertical currents and a sailplane will descend steadily whilst flying over it. But for many years there has been a theory that, about the month of September, when the land has cooled more rapidly than the sea after the summer months, one might find upcurrents persisting out over the Channel itself.

I now had a chance—the first time anyone had had a chance—of finding out if this theory was correct, and apparently without taking any risks. Reference to the sketch map of the flight on the next page will show the plan. From Deal down to the South Foreland the coast runs roughly north-south, and the wind, although strong, was blowing out to sea at a fairly narrow angle. I could therefore circle along in my lift, only gradually leaving the coastline as I gained height.

If the lift petered out, I could immediately turn inland again at any point; if the lift continued all the way, I would leave it as I came abreast of the South Foreland and fly back to land. Q.E.D.

The plan worked splendidly. Lift continued smoothly and over a



wide area, and as I climbed the wind got stronger. The sky was grey and overcast, and underneath it a milky green sea heaved uncomfortably in the freshening wind. Visibility was perhaps ten miles, so I could not see the French coast. Instead, I kept a watchful eye on the slowly receding coastline of Kent, and was still climbing well, at 2,500 feet, when the South Foreland came abreast of me, perhaps five miles to the west. I had circled and climbed steadily

over perhaps nine miles of sea. Very interesting indeed. Undoubtedly the lifting air went on, but it was not for me. I turned on to a westerly course towards the white cliffs of England.

And I almost immediately flew into 8 ft./sec.—down.

It was as if someone had picked up a bucketful of the turbulent sea below and suddenly thrown it through my cockpit window over me. My first instinctive reaction was to wrench the Skylark round and back into the comforting upcurrent behind me. Next came a feeling of fury at my stupidity. For if in these conditions upcurrents are to be found over the sea, then clearly one should expect compensating downcurrents also to be found around them. And as I could not possibly guess how fierce and how wide this downcurrent was, it was now simply a matter of blind chance as to whether I could get back to the English coast or not, beating across the strong north-north-west wind. The coast, which looked so near, was, in all probability, cut off from me by an invisible cataract of descending air. If one must be a pioneer, at least let one be an intelligent one. But it had looked such an innocent little bit of pioneering!

The alternative both looked and felt desperate, but quick calculation showed it was theoretically the better one. From where I was, although it was invisible in the grey mist and greeny sea ahead, the French coast could not be more than 25 miles away at most. I was still climbing, around half a mile up, and with the following wind my gliding angle in straight flight was over 1 in 45. I only had to circle and stay where I was in the friendly air for a few minutes more and, if I could hold course thereafter and not find any more downcurrents, I was there.

I went on circling and climbing gently until the land behind had faded from sight. Except for one or two ships ploughing short and fading furrows in the cloudy sea below, I was alone in a grey and misty sky. Slightly to the east of my track, I saw a darker smudge in the dull overcast; I flew over towards it—and encountered good strong lift! The backroom boys were triumphantly vindicated.

Just at this moment a Bristol Freighter, smugly carrying its load of motor-cars from England to France, sailed below. I did not know it at the time, which was just as well since I had enough on my conscience as it was, but the pilot saw me circling at 2,500 feet

and wirelessed back that he had seen a glider in difficulties half-way over the Channel, whereupon the air-sea rescue teams were all alerted. My piece of innocent pioneering was giving the maximum possible number of people the maximum possible amount of trouble.

As a matter of fact, of course, it was just at this moment that I was finally and certainly out of trouble from natural causes, although what might happen from outraged international practices remained to be seen, because my mid-Channel thermal took me firmly to 3,500 feet and a few minutes later I saw the French coast. I crossed it at 3,000 feet—having left the English coast 30 miles away at 600 feet. I had produced one of the most startling barograph charts of all time, but it would remain something of a monument to my lack of forethought.

One of the few consolations was that I took, at that blinding moment when the trap into which I had fallen became evident, the correct, if apparently the more difficult, decision to go on into the far mist towards France, rather than make a blind dash to the deceptively close coast of England.

I landed in a ploughed field half a mile short of the aerodrome of St. Omer, about 30 miles inland, after finding one or two bits of lift on the way. The newspapers said it was the field Douglas Bader parachuted into when he was shot down during the war. There ought to be something clever to say about the coincidence, but I can't think of anything.

Seven o'clock—sleepy voice, "What's the day like?" Philip: "Cloudless." Sleepy voice, "What's the wind?" P: "North-west." "Coming to" voice: "That, I suppose means Dunstable." Out of bed in a flash—dress quickly, wake children and cook breakfast, wash up—so the day starts.

Clare, a niece aged thirteen, Justin aged ten, Nell the dog, we scramble into the car (not forgetting Philip) and at 9.30 are at Dunstable, 40 miles from home. Brimming with optimism we rush and rig the glider—stew while there is the inevitable winch trouble—try and tidy the boiled sweets which are very sticky and all over the place: then suddenly everyone is ready and we aren't. However, at last airborne and we collect ourselves and the wheels and tidy the trailer.

At eleven o'clock Justin comes flying down the hill where he has been posted, to say the Skylark has gone off down wind and out of sight. We hitch up, wonder slightly about food, wonder about London—Philip had said go to Detling, through London, Moorgate station on the left, St. Paul's on the right, London Bridge, Elephant and Castle . . .

We hurry along—all goes to plan, a nice sweet shop open—a telephone at Hendon to ring Lasham as arranged and ask if there is any news. Lasham says no news and the weather there is clamped, but he's now been two hours away from base; he must be the other side of London, so we battle on. Moorgate, dear old St. Paul's, just as we were getting worried, and even London Bridge turns up without any trouble. The other side of London. We ring Lasham again. Still no news—weather grey and cold and very windy. We go on to Maidstone; there we make friends with a garage and a coffee-stall and settle down, ringing up Lasham again and giving them our phone number. The coffee-stall is wonderful and we have Coca-Cola and cups of tea according to our ages and hot pasties. We then play heads and tails and wonder rather uneasily as to what can have happened, and one of the party becomes very pessimistic.

At five o'clock we hear the phone bell and everyone jumps a mile. We all rush with maps, paper and pencil. Bill at the other end: "Yes, he's down!" Me: "Where?—Goodness. What, 900 feet? Did you say blown across? A message? Will I let the office know tomorrow? What had I better do?" Bill: "Go home, I should think."

Off again, back through London, West End—this time there was a crowd in Grosvenor Place and we thought perhaps it's Prince Philip—perhaps he'll recognize the trailer and wave—but it wasn't. Called on a friend—she was out. We got home, cooked the supper, and the children went to bed. The phone rings, it was Vanessa who was on her way home from a visit. "I am at West Drayton and Yiewsley." "But why are you there?" In a miserable voice "I don't know." Me, answering, "But you must know, darling." Vanessa, "I can't concentrate, I'm feeling ill." However, she managed to get into a train to Twyford only ten miles away and I got her home with obvious 'flu and into bed with hot water bottles and drinks. Then for a bath—thank goodness everyone's safe and I can go to bed. The*

* As our Patron, H.R.H. the Duke of Edinburgh had opened the National Gliding Championships at Lasham the previous May.

telephone again, the Daily Mirror—now bed—the telephone again—goodness, Philip's voice saying, "I've got back to Ferryfield and some kind friends are bringing me to Esher. Could you meet me at Esher station at 2.15 a.m.?" I answered: "Why couldn't you have stayed in France and let me organize an aero-tow in the morning?" He sounded rather hurt and said: "But I had no pyjamas." I replied "Really, Philip, you've got no drive," but it wasn't really what I meant!

I didn't dare lie down, I knew I'd oversleep. I went and looked at the map. Esher was awfully across country: white roads, Virginia Water, Chertsey, Chobham, Walton-on-Thames, Weybridge, all the places which I've never really been able to sort out, and then three stations all about equidistant from Esher and none of them obviously belonging.

I thought I'd better start at twelve o'clock and tried to work out which car had the most miles in petrol. I decided the Jowett and fetched the lawn-mower petrol which I thought the car would go on in an emergency. I got in, pushed the button—starter jammed—transferred map, torch and petrol to big car, pushed that button, it went. Thunder along little lanes for one and a half hours. Good, Walton-on-Thames; good, Weybridge; five minutes later—blast! Weybridge again—how did that happen?—must sort it out carefully. At last Esher, and I go along A3 looking for someone to ask—there's not a soul. Go to one of the stations on the map. All dark, still not a soul. Try to get back to A3—lost. At last a light. A phone box, thank goodness, the dial sort. I dial O—a lovely comforting voice. I tell him that I'm lost and looking for Esher Station and the call-box number. The voice is charming and puts me straight and at 2.30 I'm there and there's Philip. We are home again, I go to the bathroom only to find an enormous rat in the bath. It rushes at me up the side, each time nearly making the top. Philip says, "Leave it to me, I will get a stick," but I have visions of the bathroom in smithereens and a mangled and not dead rat, so after a desperate sort of bullfight I manage to bottle it up in a towel and drop it all out of the window on to the veranda roof. Thank goodness, and now to bed for three hours!

IV. The Mud of Mazanoovka

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

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

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

The day dawned bright and fairly hazeless, and the weather forecaster gave us winds from the west-south-west, 15 km./hr., veering to west as we flew eastward, with cumulus based at 5-6,000 feet giving lift of 5-7 ft./sec. Towards the afternoon large cumulo-nimbus, tending to spread out and clamp, were expected in the north-east area of Poland, and towards the south-east smaller cumulo-nimbus were forecast with less risk of such overdevelopment. There was a murmur of excitement from the sixty-two competing pilots when free distance was announced as the task for the day.

A glance at the map of Poland on page 50 will show the alternatives facing us. Centred on Leszno, a 500-kilometre radius indicates that to the north-east a considerable sector gave us the opportunity of covering about 510 kilometres before reaching the Russian border. South of this a considerable sector of Russia cuts in and

gives a maximum range of under 500 kilometres; south again, about 535 kilometres is available at one point, with a long sector nicely above the magic 500.

On the forecast winds, therefore, we could either set off straight downwind as far as Warsaw, and then attempt a final leg north of east (across the wind-direction), or start slightly across-wind, making for a point south of Warsaw, then veer slightly south-east to go for the maximum possible distance. Course one gave rather more risk of premature landing behind an overdeveloped cumulonimbus, so most of us (including me) decided to try course two.

Now came a most maddening error. We had been told to have our machines on the starting line by 10 a.m. for take-off to start at 10.30, but at the last moment a question elicited a forecast from Met. that cumulus would not start to develop before noon, and so the take-off was deferred until eleven. No sooner had we got to our machines, however, than the first puff appeared overhead, and the unfortunate rigidity of the organization prevented them from reverting to the original starting-time. So we all sat champing on the ground for an hour (longer for we unfortunates in the Standard Class, launched last) listening to the tinkle of our 500-kilometre diamonds falling out of the window. I was actually launched at 11.35.

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

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

We smaller machines could circle more tightly than the larger ones, and so often could climb more quickly; it was like being a goldfish in a large bowl of goldfish, swimming silently round



Philip Wills

“. . . truly a bird's-eye view of the world." (p. 29)
Buzzard circling in a thermal under a Dorset cumulus cloud



The Minimoa, 1938

Philip Willis

together towards the top. Around the swarm of small fish swam the larger fish in wider circles. Often one would be so near another that every detail of the pilot's face and clothes, and even his instruments, could be seen. But so high is the standard of pilotage that the entire silent and mysterious dance of the swarm felt as safe as it proved to be.

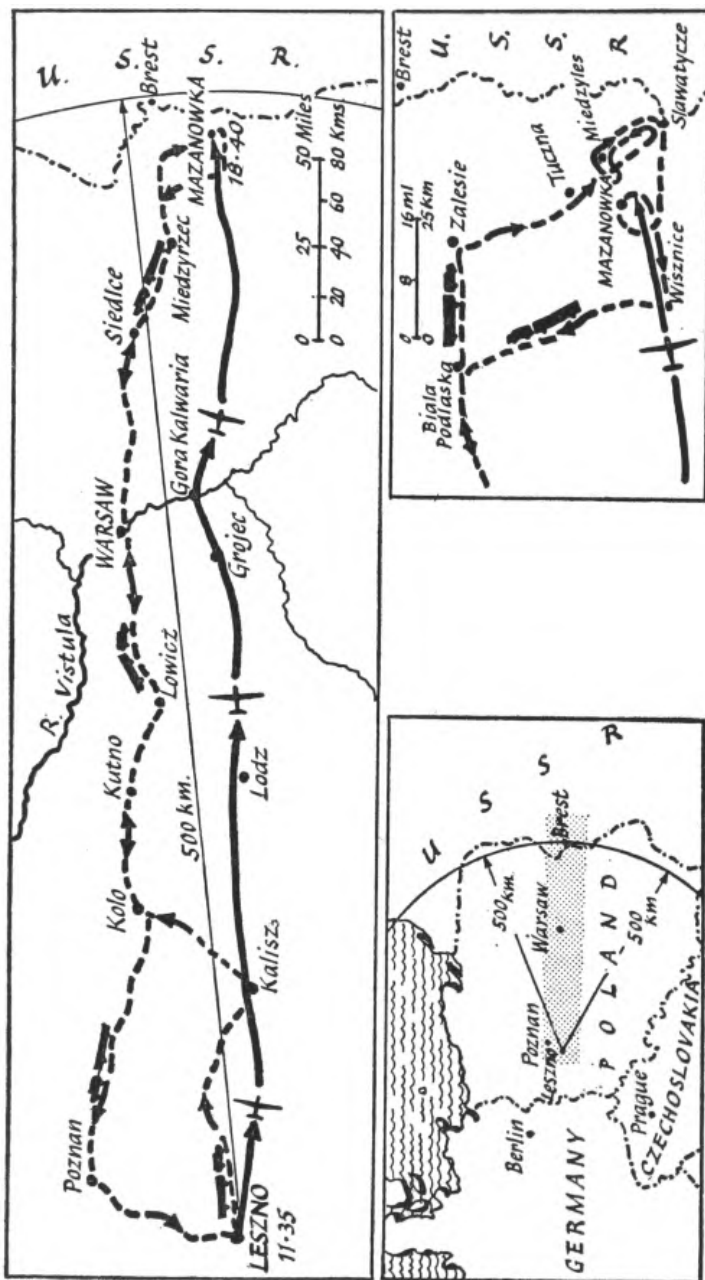
Each aircraft as it climbed near the top of the upcurrent would dart off on its course towards the distant east, and as I myself reached the top I looked down on a 2,000 feet deep column of beautiful aircraft circling in a kind of stately gavotte over the green Polish countryside.

By now the sky was full of cumulus, though it took me 20 minutes' cautious circling to work up to safety at a cloudbase of 4,000 feet. During this time, however, I safely passed the first 15 miles to Gostyn, which had on previous days proved my downfall. On this occasion I knew that my retrieving car was nervously following along on the road below ready to catch me if I fell, for a rush back for a second start at Leszno.

The Polish countryside, except for the mountainous region on the southern border, is not monotonous—in summer, anyway—but it is all very much of a muchness and rather like the flatter parts of Cambridgeshire. For 300 miles to the Russian border it consists of endless flat fields of waving corn, grass and roots with areas of woods and forests and a fair number of slow-moving rivers. There are no hedges, so that we were at last flying in a country where landing was no problem at all, and this no doubt is one of the reasons why in 1958 the exotic, regardless-of-cost sailplanes with higher air and landing speeds at last showed their paces.

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

But this is really more a story of a retrieve than of a flight, for this was the longest and hardest retrieve that Justin had ever done, involving nearly 800 miles with the 30-foot trailer in just 32 hours' motoring. Since the Standard Class aircraft were not allowed to



have radio, a combination of sheer intuition, allied to the rudimentary telephone system of Poland, was all that ensured that I was one of the first pilots to get back to Leszno the next evening. Justin is the name of my retrieving car and team, on this occasion a Vanguard estate car piloted as always by Kitty, and by Harry Midwood. So over to Justin:

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

We collect our pilot's lunch from the jeep which comes round, sort it, putting what we consider eatable in the air into the pocket in the cockpit and the rest into our car. Philip arrives from briefing and gives us our instructions. He tells us to head east towards Warsaw and to shepherd him over the first part in case he comes down early and wants to be driven back in time for a second launch. Last launching time today is 4 p.m. If there is no news of him by the time we reach Warsaw we are to do whatever we think best, according to what we have seen of the weather.

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

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

It's a nice sunny day with rather weak-looking clouds. Harry sits on the roadside looking through his binoculars for Philip, amongst all the groups of gliders twinkling in the sunshine coming towards us. Nick is overhead at 11.15, then we see Tony—they go off over our wood. A shout from Harry: he has found Philip on aero-tow,

he can see his red wing with one white tip. We can hear Nick's voice getting more cheerful as he gets a bit more height, and Tony's voice is getting fainter.

Our pilot is dumb, as he is not allowed radio in the Standard Class, but we see him overhead—it is now 11.45. We dash to the other side of the wood and pick him up again. He is gaining height quickly, and goes to the north of the road. We dash on as fast as we can but he is out of sight, flying fast, at 12.10.

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

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

A very short conversation; "Nieme komunikaizi," he says to us. We beam all over, to his surprise (he not knowing that no news is welcome news to us). We thank him very much and say good-bye, using some of the very few Polish words we have off pat. We offer to pay but he says Nie, so we rush down and out and into the car.

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

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

Meanwhile, what had been happening to the Skylark 2—the egg this ardent spoon was chasing so devotedly? I had settled down happily to the routine of speed flying on a good day. In every second or third thermal I timed myself from moment of entry to leaving, and calculated my average rate of climb—which worked up as the day wore on to never more than 350 ft./min.—good but not epoch-making. Setting my speed-cruise chart at this figure, I was flying on course between thermals at a speed of 55–65 knots.

In these conditions there is practically no difference in technique and in speeds to fly between a Skylark 3, to which I was so well accustomed, and the smaller Skylark 2, although the achieved average ground-speed is, of course, rather less. Every half-hour or so I spotted and ringed my position and time on my map and worked out the average speed achieved, which remained throughout the day remarkably constant at 72 km./hr. The clouds were mostly quite shallow, and experiment showed me it was hardly worth climbing into them, although later on I found one or two which gave me an extra 1,000 feet of good lift inside.

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

As I flitted on from cloud to cloud, the countryside below hardly changed: the faster you ran, the more you seemed to stay in the same place. At 2.30 the large town of Lodz came into sight to the south of my course. Here at last, I thought, is a place I can pronounce. However, the Poles had it again—they pronounce it Wooj.

For the past hour I had seemed alone in the dazzling sky, but now another white sailplane swam quietly into my thermal below me, and we circled and flew on together for another twenty minutes before I lost him. It was a reminder that in fact I was not on a lone joy-ride. In a radius of twenty-five miles or so were sixty-one other pilots, all mad-keen to get on a little faster and farther than I.

I was all the time crabbing slightly across the wind to make my

easterly course, and at 4 p.m. a large river ahead was clearly the Vistula. As I got nearer and located myself by the town of Gora Kalwaria on its banks, I was about 35 kilometres south of Warsaw, and now was the time to alter course a little more towards the south-east, to get the maximum distance.

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

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

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

Certainly all chance of exceeding 500 kilometres within the Polish border had gone. Should I risk all and try to overfly it into Russian territory? The hazard here was, not that I should not get back at all, but that formalities would be so protracted that I

should miss one or more days' flying and so fall out of the Championships.

I turned this problem over and over as I spiralled myself up in a tired thermal under a decaying cloud over a large wood near Radzyn Podlaski, 85 kilometres from the border. When I left it at 4,000 feet I knew that, if I could find but one more such area of lift before the day finally died, the choice would have to be made. Dammit, only the week before, during the practice period, I had had my fourth attempt at this flight, and had landed at Jordanow in the Carpathians, only 15 kilometres short, after $8\frac{3}{4}$ hours in the air. I could not throw away this chance, which literally might never recur. If it was offered, I would take it. Khrushchev, here I come.

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

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

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

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

We get to the fork, and have to decide. The weather has been looking better to the east for a long time, so we decide to go straight

on. If necessary there is a road running south along the border when we reach it.

We find the police station at the next town of Minsk Mazowiecki and settle down for another two hours' wait. We entertain the inevitable pink blancmange of children's faces pressed against the car's windows. We play our radio at them, then we talk to Frank on the wireless, and finally I go to bed in the back of the car, to their great interest.

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

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

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

Soon a young man produced a battered two-stroke motor-bike and waved me on to the pillion, and we set off. But instead of going to a post office or police station in the village, we bumped straight through the street and out on to an appallingly muddy

track of beaten earth which wound away through the fields towards some distant woods.

The track was slightly raised above the level of the fields, which seemed very wet, and the potholes were full of mud and dirty water, which made it quite impossible to judge their depth. We skidded and weaved along at about 10 m.p.h. for some 700 yards and then my driver misjudged a pothole; we slipped into it and fell off with a loud splash, whilst the engine spluttered to silence. The carrier bracket caught my shin a gristly crack, and for a short time I wondered if I had suffered structural damage; but after hobbling about a bit and wiping the mud off the more important parts I decided I was still operational.

The bike, however, did not seem so certain of this fact, and refused to go again in spite of determined kick-starting—until I pointed out that the carburettor intake was blocked by a film of mud. After cleaning this off very roughly (everything was very rough by now) it stuttered to life again and we set off again more gingerly than ever, with me hanging on to the waist of my driver for dear life. By now I had discovered that the nearest telephone was some ten kilometres away. I was exceedingly worried that I had left my glider untethered in its field, but it was more than I could face to return to it after having suffered so much already.

And so we slithered and skidded through the fields and entered the woods. The track got even worse, and suddenly we were off it altogether and weaving a crazy path along a narrow sheep-track among the trees, with branches whipping my face and tree roots shaking my weary bones. This produced another and horrible problem.

It was blindingly obvious that, whether or no there was a route by which Justin might reach the Skylark, this was not it, and furthermore it seemed more than likely that I was not going to get back to the machine that evening. And so it became vital that the message on my Understanding Form, to be telephoned in Polish to Leszno and then passed back to Justin, must not be that the car and its crew should go to the machine for, if that got through, Justin might spend the evening of its days hopelessly bogged in the edges of what I now realized were the famous Pripet Marshes. I was going to the village of Tuczna which I gathered was on a

possible road, and clearly this is where Justin must come. Then it could pick me up and we could set off to try to find a way back. But could I get this essential alteration to the Understanding Form across to my Polish friend?

After an age the wood track led back to a sand road and then to a rough metallated surface which brought us into a rather larger version of Mazanowka, but boasting a navigable connection to the outside world. We halted in a cloud of smoke outside the militia post. I produced my form to the militiaman inside and started trying to explain, in my few words of German, the vital variation.

My motor-cycle friend joined in, together with the assistant militiaman, but after a quarter of an hour's hard pounding I had not the slightest idea as to whether I had been successful or not. But the telephone was seized, a number obtained, and much shouting went on—shouting over the Polish telephone system being an absolute necessity. When it was all over, the militiaman managed to convey to me (*a*) that he had been talking to his chief in Wisznice, and (*b*) that he could not get Leszno that night, but I would now be advised to *schlafen*.

Appalled by this prospect, I pointed once more to the bit on my Understanding Form underlining urgency, and produced all the other documents I could think of. This resulted in us leaving the house and clattering off down the village to the post office. After we had beaten on the door for a while the postmistress let us in and led us into a tiny wooden room with a small telephone exchange, which she started to manipulate.

Time went on, and news filtered in from the outside world. Two other glider pilots, it seemed, were down in the vicinity, one a bearded Englishman whom I had no difficulty in identifying as Tony Goodhart. At Miedzyles, Pani Tomawicz's baby had been born and was well. I was clearly in the very centre of the village life. But Leszno was still far away.

One or two other folk edged their way into the tiny room, including one man with a few words of English. I seized him and tried again to explain—please could my team come to Tuczna not go to Mazanowka—*die Strasse ist nicht gut fur die Wagen*—do you understand? It is very important, please? Yes, yes, I understand—I think. Oh hell!

With a crescendo of shrieks Leszno was announced and everyone seized various telephones and started talking at once. A brief silence straining for the reply; more, louder shrieks; then someone thrust a phone into my hand. It was now nearly dark in the tiny brown room, and the noise and heat were almost insufferable. I clapped the receiver to my ear, and above the roar of electric crackles heard, faint and far off, a very canned rendering of "Body and Soul". Later on I learned that, through some diabolic technicality, the Leszno telephone picked up Warsaw radio, but at the time I thought this was the aerodrome public-address system engaged in broadcasting music to the locals. Whatever it was, it added the last touch to the nightmare.

For exactly twenty-five minutes we each took turns to shriek into the instrument in an endeavour to get our message through the barrier of jazz. My efforts got no further than to elicit a broken English voice repeating, "What is your telephone number?" I howled back the answer at least twenty times.

Now I like Kitty; in fact, I don't know what I would do without her. I have nearly lost her once or twice during our reasonably long married life (notably to a rogue hippopotamus in Zululand, which once chased and very nearly caught her, but that is another story), and I could not bear the idea of her finally sinking without trace in the Pripet Marshes trying to the last to reach my glider, whilst I was dry and safe ashore in Tuczna. And whether or no this happened seemed to depend entirely on whether or no I could shout down Mr. Elvis Presley. And so I shouted. How I shouted; I was hoarse for days afterwards. But when it was all over, and in despair and exhaustion we hung up the instruments, the handles moist with perspiration and the mouthpieces with saliva, I still had no idea whether my message had got through. As a matter of fact, it hadn't.

I had had over seven hours in the air, nearly an hour on a skidding motor-bike carrier, followed by two hours' shouting and gesticulating, I had shot my bolt and was utterly tired. A guide led me out of the tiny post office, and down the dark rutted road until he dived down a footpath between two decrepit small houses which led across the muddy fields to a farmhouse. Here I was greeted by the farmer, Pan Jana, and his wife and numerous small children and relatives, and in a steamy warmth took off some of my

muddier clothes, washed, and sat down to a blessed meal, my first since breakfast.

Soon we were joined by my friend the militiaman and his assistant, and a bottle of vodka. We ate enormously, talked broken German, and I got very sleepy indeed. Finally, I was put into the Janas' double bed, and the light switched off. The last thing I remember was the double doors opening and a tin jerry being courteously poked inside. The Poles are a dear people, and they like the English.

At last, news. Both pilots close to each other and near the border straight ahead, so we had guessed right. Philip is at a village called Mazanowka; it is not on our map but the policeman puts a cross on where it should be. It's now dark and 10.30 p.m. We dash on to Biala Podlaska and turn south off the main road, as Harry thinks we had decided to get to our pilot from that side. Frank, however, calls us on the radio to keep straight on; Harry and I have another look at the map, and decide he is probably right; and so we back and follow Frank. This turns out to be a very important decision.

Some way on we turn off on to a secondary road, and immediately our speed is reduced to 15 m.p.h., mile after mile of it. We reach a fork and suddenly a man looms up with a bicycle. He says, "Piloten schlaffen." We think, How lovely, they must be in this village. We all rush after this policeman, go into a house expecting to hear snores at every turn, and walk right through it to find that we are mistaken and that the policeman is only putting his bike away in a shed at the back.

Out we go again to the trailers, the policeman (smelling strongly of beer) climbs into the car and we go off farther along the road.

We stop, the policeman gets out and dashes off down a grassy path, we following him, this time a bit doubtfully. After what seems a long time, however, there is a house on our left. The policeman dashes up to a window and says, "Psst," and, like a miracle, out pops Philip's head!

By chance, by intuition, by good judgment, by a miracle, Justin had come down towards Mazanowka by the track passing through Tuczna, and so had found me on the way. The situation was saved—that is, if there did actually exist some track smooth enough

to enable us to reach the Skylark and get her out again in the trailer in one piece.

In our combined broken German we again tried to explain our problem. The militiaman did, we thought, indicate that we might get through by going first to Miedzyles, and then striking for Mazanowka from the west; but, to our disappointment, he failed to underline his confidence in this course by accompanying us to show us the way.

Saying good-bye to the blessed Janas, who indignantly refused all idea of payment, we set off back over the fields to where the trailers of Justin and Frank loomed out of the dark like two prehistoric monsters. Waving good-bye to half the village who, in spite of the hour (it was now 2 a.m.), had assembled to see us off we set off down a new road to the east.

We reached a fork where we said farewell to Frank, and bumped off to the south-east towards Miedzyles. The moon had risen and shed its quiet light over the lonely flat land on each side of us, and eventually we came to a few cottages, and a rough earth road leading off on our right towards our goal. It looked a hopeless prospect, but we saw a dim light in a cottage and stopped to ask if the route was likely to be navigable.

As we stopped the engine, the night filled with the croaking of frogs; and two weed-covered ponds beside the track reflected the moon. I opened the gate of the tiny garden, walked between tall bushes to the door, and knocked. Instantly the light went out, there was a scuffle inside, then silence. I knocked again, and peered in through a window. For a second I saw the dim shape of a large old crone rolled up in a mass of greyish knitting, peering at me through a door, but instantly she vanished. I tried a few words of my halting German, hoping my voice would sound friendly and unafrightening, but without result.

Later we were told we had possibly interrupted the operation of an illicit still, but at the time I was stumped, and eventually sadly returned to the car. We decided the side-road looked too risky and drove straight on to the south. After a few miles, however, this intersected a fairly good road running east-west, which clearly was the main road from Wisznice to the border; and, indeed, a mile or two along it to the east we saw the powerful beam of what looked like a searchlight at the frontier post. We were

very surprised to think that the Polish-Russian border was protected in such a drastic fashion, but two days later the news of Nagy's murder in Hungary and the associated political repercussions made me wonder whether, just at that time, this border was as friendly as I had imagined, and what might have happened to me if that one additional thermal had after all appeared and wafted me over to the Russian side of it.

Evidently we had overshot, and the earth track in the village was the one which appeared on our map and had been recommended to us. Wearily we reversed and drove back, and turned left along it. It got rougher and narrower, and banked up from the surrounding muddy fields, and after some miles we realized it was far too dangerous to risk going farther.

The moon had set, it was 4.30 a.m., and in the darkness we unhitched the trailer again and gingerly hauled it round on the embankment to face the other way. Now came the problem of turning the car and getting it round again to the front, but various perambulations down the ramp into the adjacent fields showed a possible way which proved just navigable. We hitched up again and set off. The last hope was to go back through Miedzyles, on to the cross-roads, turn west towards Wisznice, and try to get up to Mazanowka this time from the south. If this failed, we should have to think in terms of horses and days.

We reached the cross-roads and turned right, and as we did so a faint light appeared in the east—the sun was rising, and with it rose our weary spirits. Somehow we felt that if we got bogged we could push harder in daylight; and, anyway, we could always find help.

Harry and I decide to open and eat our reserve of food—the cake. It's delicious, like plum pudding, and puts heart into us. We try another road. I lie flat in the back on the mattress while we rush boggy holes, one at a time, and Philip and Harry get out after each one to see how best to get through the next, prodding it with sticks to see where it is shallowest. I hit the ceiling, and it's a miracle the trailer hasn't gone over.

We reach a village with a main street like a tank exercising-ground and, at last, there is the Skylark sitting looking very charming in the dawn at the edge of a maize-field. As we get to it two old

bearded shepherds dressed in ragged sheepskins rise up—I think they have been looking after it all night.

It's now 6 a.m., and the village turns out to see the glider put away. Last of all a small boy of five who has obviously woken up to find the house empty and leapt into his elder brother's clothes—long, holey black trousers, coat and enormous cap with a peak. He's such a comic figure we all laugh and feel sorry when he turns back pouting and, shuffling each bare foot, makes off back to the village. However, he is coaxed back and I give him one of Philip's sweets out of the cockpit for each cheek and he's happy.

We put the machine away with intelligent and kindly help, and are shown a way out through the fields which on the face of it looks no better but turns out to be not half so bad.

We then start off on an endless drive and a deviation which we should have thought impossible if we hadn't met an old bus coming along it the other way. Back on the main road I drive till 8 a.m.—the other two are too far gone to notice that I'd fallen asleep twice and found myself on the wrong side of the road. At last a town, and we ask for a restaurant for breakfast. A man shows me where there is one, and after breakfast we find him outside and I am presented with a bunch of flowers, roses and all, the best out of his garden. They are like that in Poland.

Not long after leaving Biala Podlaska it became all too clear that, in addition to breakfast, I had there also acquired a flea. Now to many people this would be a trivial matter, to be dismissed with a light laugh, but not to me. For I have a peculiar effect on fleas, and they on me. Whatever my attractions may be in other directions, any flea within half a mile of me acquires all the homing instincts of a carrier-pigeon. I have been known to get into a Continental railway carriage with six friends, and get out with fifteen fleas, whilst not one of my companions had one. (The summit of my career in this field occurred in Yugoslavia on July 17th, 1955, when I established a record that will possibly stand for years. So far as I know I am still the only British pilot who has flown a Bosnian flea from Rosario to Krusevac in a Weihe on a Tuesday. And when Kitty caught it, such was its size that the cake of soap in which it was embedded could be seen to febrilate. But that again is another story.)

The trouble is that, once my unwanted guest is aboard, I find all the discoveries of modern science all too inadequate to persuade him to abandon me, and he raises such bumps that I have sleepless nights, which in a gliding championship can easily destroy one's chance of success. But all my Great Deterrents were nestling in our tent in faraway Leszno, so there seemed nothing to do but grin and suffer.

Around 11.30 we entered the outskirts of Warsaw, that extraordinary capital city rising from the ruins of the war. Here the Poles have performed miracles of reconstruction, but the old scars are all too visible. The whole city is dominated by the fantastic Palace of Culture, built and presented to Poland by the Russians. This cloud-piercing elephantine wedding-cake may or may not indicate a high level of Culture on the part of the donors, but it is a sad reflection on their sense of humour.

In Warsaw we met the Goodharts on their way home. They were lurching grandly at the British Embassy, but I was in a fever to get back to my D.D.T., so we went on. We also met a very sad Swedish crew-member still searching for his pilot, having so far been completely defeated by the Polish telephone system, and so felt we might consider ourselves among the lucky ones.

Racing along the first-class Warsaw-Poznan road I tried stern measures on Algernon: I removed my trousers and hung them flapping out of the window. Turning a corner we flashed past the Deane-Drummond team drawn up by the side of the road, and I retain a vivid memory of Evie's look of consternation as she took in our flying caravan with its unusual banner streaming in the gale of our passing.

We took turn and turn about to drive and doze in the back for the rest of the day. This is the dangerous part of a retrieve, when tiredness steals on the driver and before he knows it car and trailer start to sway and snake into an irrecoverable skid. We met one such unfortunate, with his car and trailer destroyed but the all-important glider miraculously undamaged; and when we got back we heard of two teams hopelessly smashed and out of the contest. But we soldiered on and at last, in the evening, as 800 miles came up on the speedometer, we crept into the airfield and tethered our mudsplashed trailer in the still-empty park. Then I



Us

E. Proll



“... as our patron, H.R.H. the Duke of Edinburgh had opened the National Gliding Championships at Lasham the previous May.”
(p. 45)

*Photos:
Picture Service and Wing Features*

fairly fled for our tent, the D.D.T., the showers, and a complete change of clothes. We ate, half-asleep, and fell into bed.

It is possible (though perhaps barely conceivable) that the reader would like me to conclude, so far as I know it, the life history of one of the characters who hopped unexpectedly into the story of the flight just recorded: Algernon, the flea of Biala Podlaska. In any case, it is one purpose of this chronicle to show those interested the full scope of those problems of Nature with which the ambitious sailplane pilot must be prepared to contend.

On June 27th I got up after a fairly dreamless night and, although still a little thick in the head, was delighted to find that the depredations of Algernon appeared to have ceased. Possibly he was even now hopping in a puzzled way along the Warsaw-Poznan road, or maybe he had succumbed to the stifling clouds of D.D.T., or even be still sharpening his fangs in my discarded clothes. No matter, I appeared to be alone again.

At briefing, although exhausted pilots were still arriving back from the Russian border after the flights of two days before, a task was set to fly as far as possible along a line to the north-east crossing the town of Inowroclaw.

Once more my ever-faithful team and I went through the preliminaries, and as I walked up to the Skylark, again parked for take-off in the back row, my epidermis flashed a ghastly suggestion to my brain. Could it be?—no—yes—it was—a hasty examination produced conclusive proof; Algernon was back. How the little devil did it I shall never know but, without doubt, he was in residence again.

I had about half an hour before my take-off time. Was I to go off on a tricky flight carrying my little incubus, which might well take my mind off the all-important green ball of the variometer? No—I must act, and quickly. Leaping into the car, I rushed to our tent, snatched the tin, fled to the wash-house, stripped to the bone in the tiny cubicle of the shower, seized the tin and peppered myself liberally—with Nescafé. I had grabbed the wrong tin.

I flung on my clothes again, ran back to the tent—the right tin this time—back to the showers—further powdering operations—re-dress—hurry back to the Skylark—just in time—I jumped in, sat down, producing a puff of smoke like a tiny explosion—straps

on, shut the cockpit cover—we are off. But are we alone? . . .

Time brought the answer: yes, we were. What did the trick, the Nescafé, the D.D.T., or the sheer breathless determination of the onslaught, I do not know. I like to think of Algernon marching indignantly away, muttering under his tiny breath, “Not at all the thing, definitely non-U.”

Whether or no this was the reason, this day proved my best, and also Justin’s triumph. For that evening, as I came into land over some trees into a field 120 miles away, to my amazement, I saw, waiting in the road below, Justin and my incredible team. Another 300 miles’ motoring after the 800 miles of the previous two days’ saga had produced in Kitty a state of mind akin to telepathy, and she was there. As I have said before, I don’t know what I should do without her.

Chapter 3

SLINGSBY SAILPLANES

I. Birth of an Industry

THE history of British gliders is almost the history of Slingsby Sailplanes. From time to time other small firms have tried to build gliders, but have not survived. At the present time in the U.K., apart from Slingsby's, excellent aircraft are also built by Messrs. Elliott's of Newbury, whose main business is in furniture. Slingsby's however, which nowadays in effect belongs to the British Gliding Movement, stand or fall by their one product: motorless aircraft. They have stood for over twenty-five years and show no immediate danger of falling.

My flying log tells me that it was on May 26th, 1934—which happens to be my birthday—that I flew with Mungo Buxton up to Scarborough. At that time Mungo and I were having built for us a new and advanced sailplane, of his design, which he had christened Hjordis, and we had asked Fred Slingsby to build it.

Sling was (and is) a man with an unusual blend of a very strong and practical common sense, a craftsman to his finger-tips, and a streak of poetry. The third quality had made him a glider pilot and enthusiast, the second led him in 1931 to try his hand at building his own machine, and the first eventually made him the world's most successful large-scale manufacturer of motorless aircraft.

At this time he had started to build our machine in his workshop at Scarborough, which was so small that the spars had to be assembled in the passage, and Mungo and I flew up to discuss progress. Also two years of hard and complicated negotiations with the Ecclesiastical Commissioners had just achieved a lease for the British Gliding Association at Sutton Bank, and we were all determined to show that, given security of tenure of a soaring site, it was possible to build up a new gliding club which could

stand financially on its own feet. For up to then, only the London Club at Dunstable had achieved any sort of stability, and elsewhere the movement seemed to be in the doldrums.

So we had hatched a plan to raise money on five per cent debentures, build a hangar-clubhouse and pay our contributors back out of the proceeds of national competitions and meetings, which we eventually succeeded in doing, as the Yorkshire Club today bears witness.

We landed in my Monospar, and waited for Sling to arrive. Whilst we were waiting, an Avro Cadet landed and taxied up to the clubhouse. I saw everyone start to look very polite, then the engine stopped and out got the largest man I have ever seen. Jack Shaw must have been about six feet five inches high, but unlike most tall men he was on the same scale in the other dimensions. He had a thick thatch of blond hair, a blond moustache, and a round, rather cherubic face. As he walked up to us he dug into his pocket and produced a gigantic pipe, into which he inserted about a quarter of a pound of tobacco, which he then set fire to, with resultant immense clouds of smoke. He seemed to put the rest of us out of scale: one thought of Vikings, with two-handed swords, cleaving serfs from the chine to the brisket.

Shaw came up and welcomed me, as a visiting pilot, in a soft, rather drawling voice, then was borne away by the locals like tugs steering the *Queen Elizabeth* into harbour. Sling now arrived and, as we drove away, told me that Shaw was a wealthy landowner who was interested in private flying and gave much financial support to the flying clubs. He lived in a huge house called Welburn Hall at a near-by village called Kirbymoorside, had his own private aerodrome, owned two aeroplanes and employed his own private pilot. He also took an interest in local industries, and amongst other things owned a small building firm in Kirby. In fact, he sounded so exactly what we were looking for that I turned back to the aerodrome to see if I could interest him in our project at Sutton Bank.

Apparently he was rather accustomed to being approached for donations to wild schemes. I discovered later that for some years after the 1914-18 War, any man coming to Welburn Hall who had fought in the war was given a free meal and a small sum of money to see him on his way, but this scheme, rather naturally, eventually

led to such an elastic interpretation of war service that it had to be suspended.

When I had said my piece, Shaw immediately offered to give us a tarmac in front of our hangar; but, drawing myself up to my full height, I explained that we were very anxious not to depend on gifts, and what I would really like would be for his firm to construct our building for us at the cheapest possible price. This must have been almost his first experience of a rejection of such an offer, and from then on I think he took gliding to his heart.

We got our building—it was a combined clubhouse and hangar—and I think we paid £350 for it, though I also think it must have cost Shaw double that. But as it started to rise from the ground, and Sling and I got to know Jack Shaw better, the plan began to hatch which a short while later resulted in Slingsby, Russell & Brown Ltd., and eventually Slingsby Sailplanes Limited.

I remember saying to Shaw that he must not think that he would ever make much money out of it, but if it was successful it might make both ends meet, and it would certainly put the British movement on its feet to have its own reliable source of British-made gliders. I was wrong on the first count, although at first only in a negative sort of way. Shaw at that time owned a large yacht, with a full-time captain and crew, in which he used on occasion to go tunny-fishing. It must have cost him around £5,000 a year to run. But the new glider factory soon supplanted this in his interests, and he sold the yacht, thus saving himself far more money than the new project cost him even in its early days.

At first Slingsby, Russell & Brown Ltd. operated in a couple of brick sheds attached to the building company and garage sponsored by Shaw, but after a year or two Shaw's enthusiasm got the better of him and he decided to erect a new works, next-door to his aerodrome, about a mile outside Kirby. What was Sling's and my despair can be imagined when we were told that he was not going to have the beauty of his estate ruined by a shoddy factory of the ordinary kind. He bought the Neasden carriage-washing sheds from the London & North Eastern Railway, transported them to Kirby, and clothed them with huge buttressed walls, producing a building which, to our fevered imaginations, looked something like a miniature York Cathedral.

Slingsby's one idea was all along to build a financially sound

Company (he was to be nobody's lap-dog, however kind the master), whilst I also felt a personal responsibility that I should not have helped to persuade Shaw into a project which might lose him large sums of money. But again I was wrong. No sooner was the present large and imposing building finished than the war broke out. Slingsby Sailplanes was completely flooded with work, and today what this building cost would hardly build a couple of pre-fabs.

But whilst one may therefore say that in some ways Shaw was fortunate, in one way he must be judged as deserving this success. He picked in Fred Slingsby a man of unequalled integrity and determination, whose initial enthusiasm for gliding, much aided by his dry Yorkshire humour and solid sense, outlasted all the difficulties and the incredible amount of work involved in building up an entirely new industry from scratch, and who has in twenty years turned the idea of a glider factory from a wild-cat scheme into a sound and solid reality, with immense benefit to the gliding movement the world over.

Jack Shaw died on April 21st, 1955. He was a man of a kind which today is decried by the many, and which is dying or being killed off by the modern developments of the Welfare State. He inherited great wealth and spent it lavishly, but by a combination of generosity and enthusiasm he enabled one or two gifted people to develop their talents to the permanent advantage of their country.

During the five pre-war years of its existence Slingsby Sailplanes, of course, had a great struggle to exist at all. Its sole customers were a small number of struggling clubs and private owners in our own country, and with little design experience it was forced to base its main products on German designs. The ubiquitous and unbeautiful Primary trainer, at £45 a time, offered little profit to anyone. A series of machines were produced based on the German Grunau Baby, a strutted training secondary glider; a one- and two-seater version of the swept-wing Falke; a gull-wing version of Jacob's Rhoadler.

Just before the war the firm struck out on a new line and produced the Cadet, a simple strutted single-seater trainer selling for £85.

Then came the war and a flood of work. Pieces of Ansons, and

other wooden aircraft, were ordered in their hundreds. A vast prototype troop-carrying glider was designed and a small number built, but the idea behind the Government specification proved unsound. In the early war days the view was that a troop-carrying glider should be a kind of giant sailplane, capable of a long flat glide, which would be released a long way from the target and steal in at night with its load of troops. But radar cooked that goose, and the ultimate troop-carrying glider was the reverse of this machine—a weight carrier which could be towed to the actual point of landing and then dive as nearly vertically as possible to a crash landing, thus reducing to a minimum the time of greatest danger.

Towards the end of the war the R.A.F. started the Air Training Cadet scheme, of which one main attraction was elementary training in gliders, and Slingsby Sailplanes resuscitated the Cadet and were given a large order. They were also given a contract for a prototype two-seater trainer with a specification drawn up by the Ministry of Aircraft Production.

As might have been expected, this specification produced such a ludicrous monster that the prototype was abandoned after one incredulous inspection, and Slingsby's then produced their own design. This eventually became one of their most successful sellers, the T.21b Sedbergh, and is still in production and in use in many countries all over the world, as one of the safest and most reliable and practical gliders ever built.

After this, officialdom realized that Slingsby's could be relied on to produce sensible aircraft on their own, and generally speaking Service requirements have been based on buying the same sorts of gliders as are needed by civilian clubs and pilots.

And Slingsby's went on from strength to strength. Based on the experience of the German Olympia and Weihe, which gave a target to beat, they eventually in 1951 produced the Sky, an 18-metre advanced sailplane which we planned to fly in the 1952 World Championships in Spain.

To our dismay this aircraft got into trouble during its flight tests with the Air Registration Board, but the experts in the British gliding movement disagreed strongly with the official criticisms, and something of a struggle developed. By now, however, our reputation for knowing what we wanted, for technical expertise,

and for general reliability and integrity had resulted in a mutual trust and confidence which won the day. The Board gave way after a few concessions which could be met, and how right did this turn out to be. For in the Sky I won the World Championships in Spain, and British sailplanes have since remained amongst the world's leaders.

In Spain in 1952 our team finished first, third, ninth, and eleventh in a field of thirty-nine single-seaters; other nations also flying Skys finished fourth, seventh and fourteenth.

In England in 1954 (the Championships run every two years) seven Skys were flying in a field of thirty-three aircraft—the best took second place.

In France in 1956, a Sky again took second place, and Slingsby's new advanced two-seater, the T.42 Eagle, won the two-seater contest.

In Poland in 1958 the new Skylark 3 was again second, and in 1960 a Skylark 3b flown by the Argentine pilot, R. Hossinger, won the Open Class. In all these Championships we were flying against many aircraft built with State aid and costing up to ten times as much as our own.

I have mentioned the Skylark above, and this was Slingsby's next development after the Sky, and his greatest technical triumph. For many years it had been known that with a wing of a certain shape or family of wing-sections, much better performances could be achieved. But the difficulty of these so-called "laminar" sections was that, to be efficient, the wing had to be much smoother and more accurately finished than with the old sections, and to achieve this the cost of the aircraft would be prohibitive.

One or two nations and individuals did in fact build prototypes which flew well, and in the U.S.A. Richard Johnson built his extraordinary R.J.5 in which he obtained the World Distance record with an astounding flight of 545 miles. But he spent literally thousands of hours hand-finishing the wings, and the final result was a laboratory product not only too expensive but insufficiently rugged for ordinary use.

This tough nut was finally cracked by Slingsby, who used a new type of plywood made of West African gaboony (a kind of mahogany) which had characteristics which enabled him to build aircraft with "laminar" wings costing no more than the conventional sail-



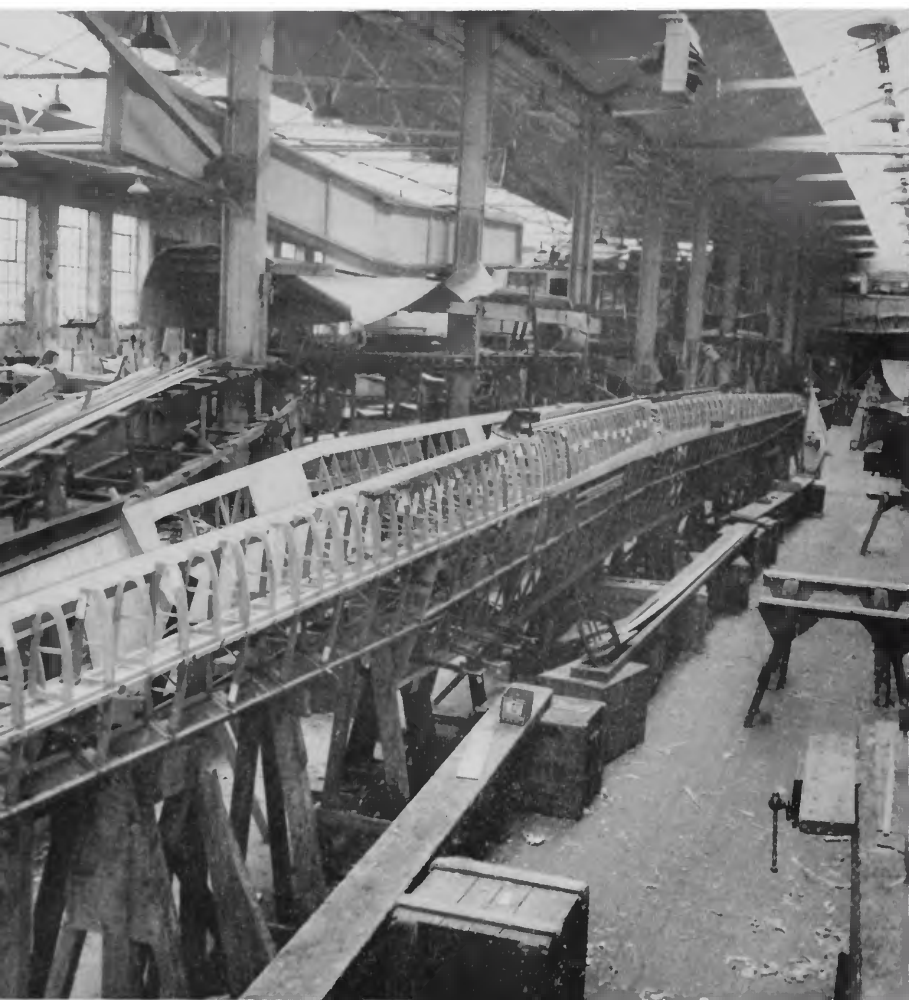
Sally Anne Thompson

The Slingsbys and Wills at ease at Kirbymoorside



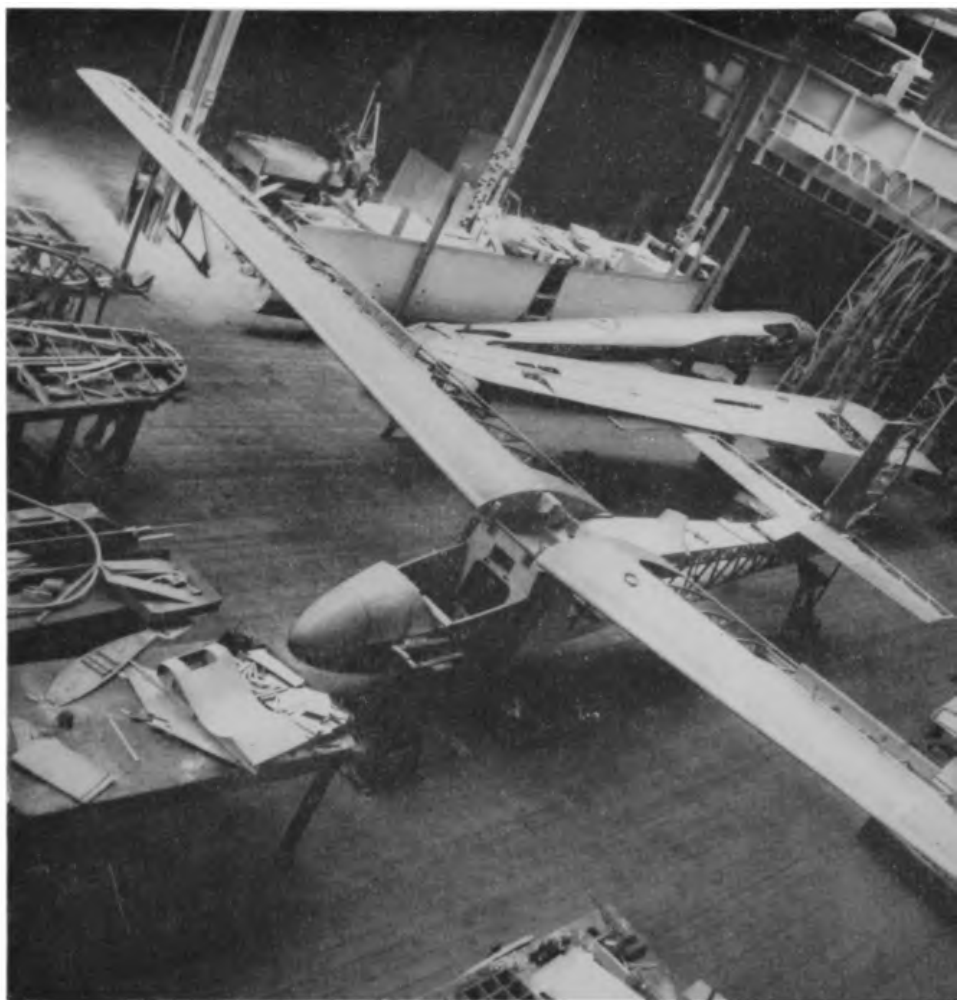
Philip Wills

“. . . the K1 was a curious-looking animal.” (p. 74)
Photograph of a model



Philip Wills

Skylark 3 wing under construction at Kirbymoorside



Slingsby Swallow in the making

Philip Wills



Eagle two-seater flying over the New Zealand Southern Alps

Guy Mannering

plane. This was the birth of the Skylark series, which have flown to fame in every country in the world which has bought them.

Lastly came the T.42 Eagle, a high performance two-seater of simple design but with the same general wing construction and lay-out. I don't know whether or no Slingsby's were stirred into this design by our British Gliding Association's efforts in the same direction, the K.1. I hope so, because otherwise the K.1 must be set down as an expensive, if unlucky, failure. And yet we took the Best Advice at all stages. But the Best Advice does not always have to have its feet on the ground, it does not have to think in terms of £10,000 or even £1,000 being a lot of money.

It is a great temptation in this sort of book to record only one's successes, but life is not like that. The original idea which gave birth to the K.1 was mine in 1944 and I was closely associated with the project right up to its collapse, ten years later.

The idea was sound. I came back from an investigation on war-time developments in gliding in Germany and reported that in my view we would need a high-performance two-seater trainer for the rapid post-war build-up of our own gliding movement. Before the war we had given only elementary training, largely on single-seaters, after which each pilot had to train himself to the degree of skill required to carry out cross-country or high-performance flying. This took so long that most people gave up before reaching it, and only a handful persevered to the stage where their achievements became at once useful and fascinating.

To shorten this time and so reduce the wastage of pupils and enthusiasm, the obvious need was a two-seater efficient enough to give instruction right up to the advanced stage.

It was some two years before this idea caught on, and then the B.G.A. declared a competition for the best design for such a machine. A large number of entries was received, and a highly expert judging committee eventually declared Hugh Kendall's design as the winner. Now came the problem of raising the finance necessary to build a prototype, and eventually this was resolved through the combined aid of the Kemsley Flying Trust and the Ministry of Aircraft Production, each of which put up £4,000.

But whilst this was going on the experts had been at the design. The judges had deliberately elected as winner a machine with several rather advanced features, but now to these were added one

of the new "laminar" wing sections, and as if that was not enough it was decided to make it, not of plywood, but of a new plastic material.

In retrospect, to attempt so many jumps into the future in one design with strictly limited funds was a ridiculous error, but in these early post-war years the air was full of such fantasies, scaling right up to such absurdities as the Brabazon I and the Princess Flying Boats.

A contract was carefully drawn up for two prototypes and placed with a well-known aircraft manufacturer. But after vast files had grown and some two years had passed, some £6,000 of our £8,000 had gone with nothing to show for it but a single wing which had broken on test at a small fraction of its calculated load.

The contract was therefore abandoned (incidentally, the money was not altogether wasted, for with the experience gained the manufacturer went on to make a name for himself by making other things in this plastic material which were very successful. And to this day one wing decorates the entrance hall to his works.) and Elliott's of Newbury, who had done such sterling work for us immediately after the war in building 100 Olympias for clubs and private owners, undertook to build a prototype in plywood for what remained of our money.

It was now a race against time to get the machine flying for the 1954 World Championships, which were to be held at Camphill in Derbyshire. By March of that year she was ready for her first flight, which took place at Lasham.

The K.1 was a curious-looking animal—a side by side two-seater with a 60-foot wing, a short tubby fuselage, and a "butterfly" tail. It was quite a moment as the cable tightened for the first slide, which seemed to go all right; then came the first "low hop". As she left the ground it became clear that she was unduly sensitive on the elevator, and the pilot did a good deal of "pump-handling", but finally she landed safely.

And so the trials went on, alternating with mad bouts of "modifications", until the day came for her spin tests. Seventeen years earlier I had run into trouble doing the spin tests of our first International sailplane design and nearly broke my neck. This time the tests were being carried out by Hugh Kendall, the designer, and on a machine containing many more unknown features. So we

watched anxiously as he was towed up by his aeroplane, until he released at around 4,000 feet.

First he did a couple of gentle, straight stalls, and each time the nose dropped and the machine picked up speed and flew on. Then we saw him pull up the nose and, as the machine stalled, put on rudder to stimulate a spin. The starboard wing dropped smartly, the nose fell away, and the aircraft started to spin at a fast rate, with the nose steeply down. After about one complete turn someone said, "Come out, Hugh!" but the machine went on corkscrewing down the sky for another breathless age, then we saw it hesitate as Hugh applied corrective action. The spin slowed, and just as we began to draw a sigh of relief it seemed to do an extraordinary side-wise tumble, and the next thing we knew it had done a sort of slipping bunt and was on its back. There was a muffled gasp from the watchers, then the nose was coming round in the second half of a loop, the machine picked up speed—much too much speed—and was right way up pulling out of a steep dive. It looked horrid.

Hugh landed with a grim face, and then ensued a nightmare month. With the date of the World Championship all the time drawing nearer, and the day when my final decision must be made as to whether or no to fly the K.1 in them, the technicians worked at top speed trying one modification after another to try to locate and cure the fault. Every few days she would again be towed up for another test, but each time the horrid gymnastics of the first spin were repeated. The accelerations experienced were from $-1\frac{1}{2}$ G during the bunt to $+4$ G in the recovery and it was clear that the machine was unacceptable for advanced cloud flying in its then state and would not be given a Certificate of Airworthiness enabling it to fly.

And we lost. We lost everything. Six years work went for nothing. We worked until our tempers stretched and snapped. The basic reason for the trouble has never been determined, even to this day. We had tried to advance too far in one single step, and Nature would not forgive us.

Shortly after this, Slingsby's produced their own version of a two-seater high-performance trainer, and their approach was, as usual, a sensible one. They had taken one big technical chance in the laminar flow wing of the Skylark series, and it had been

splendidly successful. Therefore they now put a very similar wing on to a tandem two-seater fuselage of fairly simple shape, and the result was another brilliant success. After the minimum of development, Goodhart and Foster took an Eagle to the 1956 World Championships in France. It was greeted with friendly derision. So crude did it seem as compared with many of its gleaming competitors from State-subsidized countries that it was christened "the soap-box". The soap-box ran away with the Championships. It won by a margin so handsome that it was almost ridiculous.

Pilots of Skylarks and Eagles and Skys have put up record flights and won national or international championships in the last six years in England, Argentine, Canada, New Zealand, Italy, the U.S., Holland, France, Spain, Switzerland, South Africa and Rhodesia. In 1959 the first British aircraft of any kind ever to be sold to Soviet Russia was a Skylark 3. Jack Shaw did a great many things on a larger scale than this, but he and Fred Slingsby will be remembered with gratitude all over the world for what happened as a result of that chance meeting on my twenty-seventh birthday.

As I have already written, Jack Shaw died on April 21st, 1955, and a little later, I told Slingsby that, if Jack's death involved any change of ownership, I would like to know about it, because above all we must ensure that the main source of our supply of British gliders did not fall into unsympathetic hands.

I knew that the Company had been successful, but it did not follow that a new owner would not find that it would do still better if switched to making boats or pre-fab. houses, or even transferred from Kirbymoorside or wound up in a take-over deal.

The situation took over three years to crystallize, and when it did it was precisely on these lines, and I found myself handling what in fact was a take-over bid—a surprising outcome to an enthusiasm for gliding!

Since some of my readers are possibly rather vague about what a take-over bid actually is, I will try and describe a highly simplified one—a Tiny Tot's Take-over; it had better be because in these matters I am a fairly medium-sized tot myself.

II. Tiny Tot's Take-over

William Brown was a bright young lad, who as a boy took his first job as a haberdasher's assistant. One day he had a Bright Idea for a new kind of Men's Braces. Full of enthusiasm, he rattled round his friends and relations, persuaded nine of them to put up £100 each, put in his hard-earned savings which also totalled £100, and gave everyone 100 shares of £1 each in a little Company which he formed and called W. Brown & Co. (Braces), Ltd.

With this £1,000 he hired a small shed and started making Brown's Braces. He worked all hours of the day and night, and at the end of the first year found to his pride and joy that he had actually made £1,000 profit.

Being as prudent as he was hard-working, Willy paid his shareholders a 10 per cent dividend, costing him £100, and put the remaining £900 into gilt-edged securities, to be available for a rainy day should it arrive. His friends, uncles, and aunts who had backed him felt proud of him.

The next year he worked as hard as ever, made another £1,000 profit, and in addition he received £50 interest on his gilt-edged securities. Again he gave his shareholders a 10 per cent dividend and bought more gilt-edged securities with the balance.

Ten years later Willy was in Easy Street. By now he had £20,000 tucked away, earning him £1,000 a year without any effort on his part, he owned the factory which was a bit larger, he had two or three girls stamping out Brown's Braces, and did not have to work anything like so hard. Every year Aunt Mabel and the rest of the shareholders got their £10 and seemed happy enough. A pleasant and peaceful scene—but soft! There are Wolves prowling around in the forest!

Andrew Wolfe was a City Financier. One day he happened to come across the latest Balance Sheet of W. Brown & Co. (Braces), Ltd. After a few minutes' perusal his long red tongue came out and he licked his lips.

A week or so later Willy Brown's Aunt Mabel brought in the bacon and eggs from the kitchen to her hungry family at breakfast and found an envelope by her plate, addressed by one of those

expensive typewriters that look as if the sender owns his own private printing press. She opened it, read it, and gave a cry of surprise and joy. It read:

Dear Madam,

I understand you hold 100 shares of £1 each in W. Brown & Co. (Braces), Ltd., and as I am very interested in this Company I should be happy to pay you £3 each for these, providing 90 per cent of the shareholders are agreeable to accepting this price. I hope you will be able to advise me that this would be acceptable. I am writing to the other shareholders making them the same offer.

Yours faithfully,

A. Wolfe

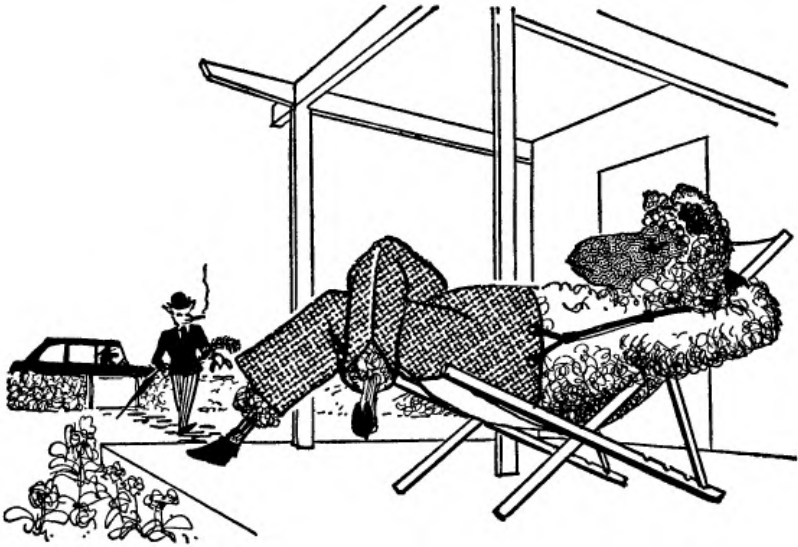
Now Aunt Mabel was vaguely aware that Willy had been a credit to the family, but she was delighted at this proof that Important People thought so too. She was having a bit of a tough time since Uncle George had died, in keeping the family clothed and fed. The £10 a year she had been getting on her shares had helped, but a windfall of £300 now would be a real blessing. She replied and said she would willingly sell, and hoped the others would too. They did.

A few weeks later, Willy was sunning himself after lunch in a deck-chair on his veranda. He felt full and rather sleepy and contented. Only yesterday a nice cheque had come in for the dividend on his War Loan, and one of his Premium Bonds had come up lucky and given him a pleasant surprise. Life was good. He must stroll down to the factory some time before tea and see how they were getting on. Pity they weren't so busy these days, somehow. But it didn't matter so much, since he had been so careful to save over the last ten years. Prudence—that was the thing.

At this moment a large Bentley drew up at his garden gate, and a rather saturnine gentleman with a thin nose and red lips emerged, opened it, walked up to the veranda, and sat himself down next to William.

“Good afternoon. Mr. Brown, I believe? I am Andrew Wolfe—my rather few friends call me Andy. I've come to talk to you about your factory.”

Willy didn't like the feel of this chap at all. He answered, rather surlily “And what can I do for you about my factory?”



“Well, as a matter of fact, I got the tense wrong. It *was* your factory, but just at present it’s *my* factory.”

“*What?*”

“Yes, I wrote to Aunt Mabel, your cousin Tom, and the other shareholders. I felt so impressed by your Company that I offered them no less than £3 each for their shares and of course they were *delighted*. Cousin Tom’s eldest daughter can now go to the Girl’s School on which she was so keen, and Uncle Arthur can get the TV on which he had set his heart. I do find such pleasure in helping such *dear* people in these days when everything has got *so* expensive. So now of course I own 90 per cent of the shares and, as you no doubt know, the Law lays down that I can force you to sell me yours for the same price. I have brought my cheque, here it is.”

Willy collapsed like a punctured tyre. “Are you saying that you have bought my business for £3,000?”

“Indeed I have, dear boy, and a nice business it is. But to tell the truth, I am not very interested in braces actually. Always wear a belt myself. So I am proposing to sell it. Would you by any chance care to buy it back?”

Willy experienced a surge of relief. It was a bore, he would have to build it up again, but anyway, here was a way out.

"Why yes, I suppose I must. I will sell some of my gilt-edged securities and give you the cash. How much do you want?"

"My dear sir, *what* gilt-edged securities? If you are talking of the ones I see mentioned in your Balance Sheet, they belong to the Company, not to you, and *I* own them now."

"*What!* Do you mean to sit there and tell me that for £3,000 you have bought my factory *and* my £20,000 worth of gilt-edged?"

"My dear sir, that is precisely what I *have* done. And very nice too, in its own small way. I suppose that by the time I've sold the factory and cashed the securities, I will have about £19,000 profit, though of course it's cost me a bit in postage stamps and such like. But I suppose I mustn't grumble, as it is a tax-free capital profit anyway. That Bentley there, it's not *quite* what I need. I think I shall have to sell it and get a Rolls. Though, come to think of it, it might make a reasonable shopping car for Mrs. Wolfe. I'll buy the Rolls as well.

"Well, I mustn't stay, afraid I always seem to be in a rush. I'm sorry you can't buy back the factory, so I'll just pop down, fire the staff, and put my padlocks on the door. Can't have anyone getting in there to pinch my tools, and so forth. Why, they might even get at the Petty Cash!"

With which Mr. Wolfe rose out of his deck-chair, walked sharply down the garden path, and got into his car, which glided smoothly and for ever away.

William's ex-shareholder friends and relations had mixed feelings when they heard what had happened. But they certainly found Mr. Wolfe's cash useful. As for William himself, he had not very much time for speculation though he did occasionally dimly reflect that, in business, there seemed to be rather a narrow dividing line between Prudence and Sloth. And that perhaps shareholders are more important people than he had realized. But he had to find himself another job quickly, and eventually got taken on as assistant at a local haberdashers—one of a chain of nearly three hundred shops which had recently been the subject of a fierce take-over battle won by Mr. A. Wolfe.



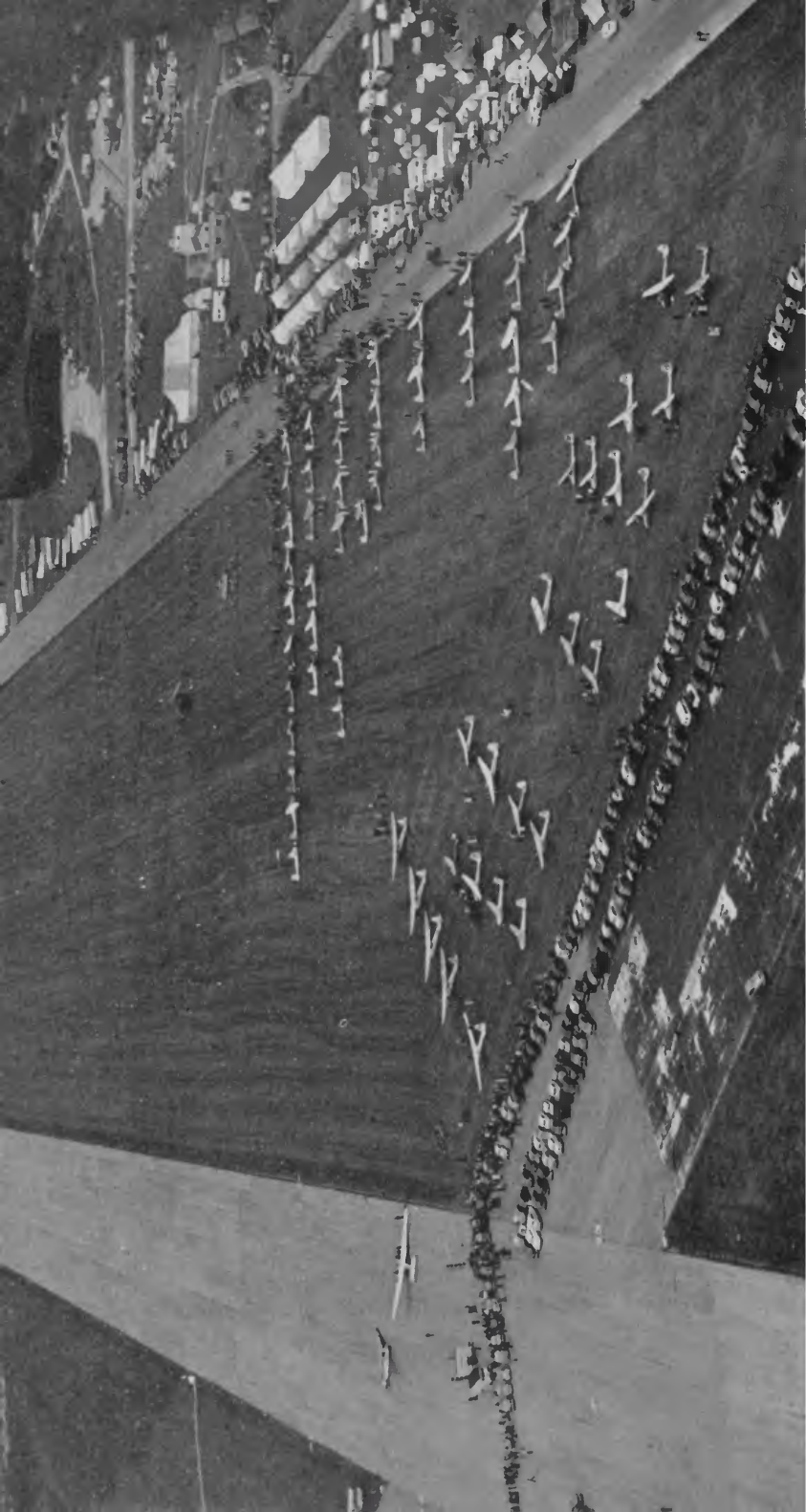
Mistrzostwa Swiata

“ . . . Competition flying is the focal experience of the whole sport of gliding.” (p. 85)

*Above: The 1958 World Championships at Leszno, Poland
Below: The 1959 Nationals, Lasham*

Keystone Press





Charles Brown

“. . . Lasham below dotted with bright-hued aircraft, disciplined rows of trailers; spectators and cars; the patterned lines of tents and caravans.” (p. 94)

III. Birth of a Trust

From my story I don't want my readers to conclude that all take-overs are conducted by city wolves descending on country sheep, far from it. Most of them take place because both parties wish it, and it is only a few which are carried through against the wishes of the Board of a particular company.

By 1958 Slingsby Sailplanes was in a wolfable position, but it is hardly necessary to say that the reason had nothing to do with Sloth. To get at it, it is really necessary to go back to the day in 1944 when, with a loud explosion followed by a clap of thunder, the first V2 went off somewhere in Hampstead.

Fourteen years later, the successors to this ingenious weapon had produced a situation where governments all over the world were sharply reducing the size of their fleets of aeroplanes and instead buying bigger and better rockets. The big aeroplane manufacturers were feeling the draught, their smaller brethren were at their wits' ends.

After Jack Shaw's death, his executors found it necessary to sell his shares in order to pay death duties. So here was a Company for sale manufacturing a species of aircraft for which there was still a keen demand, since gliding enthusiasts in their fuddy-duddy ways still seemed to like flying about with wings.

Mr. Wolfe in this case was a perfectly nice chap—I had known him for years, and his only defect, though admittedly a grave one, was that he was not a gliding fanatic. Amongst other things he owned a small aircraft factory in the South of England. What more natural than to buy Slingsby Sailplanes, close it down at Kirbymoorside, sell up the factory, which should show a nice profit, as it had been built in 1938 and was now worth treble what it originally cost, and transfer the work to his own partly idle one? He telephoned me to ask my support.

I had to say I did not support the idea. Firstly, the workers in the factory at Kirby had been building sailplanes now for a generation—some sons had now followed their fathers into the works. It was by now a stable and highly skilled trade in the district, and a major employer in a small and rather isolated community. Secondly, the

economics of building gliders were entirely different to the Alice-in-Wonderland economics of an aircraft industry which had for decades been mainly employed on government contracts. Training in the conventional aircraft industry must entirely unsuit anyone to producing wooden aircraft at a price which ordinary people could afford to pay. If this operation were to take place, I could see the price of our gliders doubling or trebling in a year or two. No one could afford to buy, and our hard-won success in the gliding world would collapse, for Slingsby Sailplanes produced over 80 per cent of all the gliders used in the British gliding movement. Thirdly, Slingsby Sailplanes, Kirbymoorside, was bone of our bone and flesh of our flesh. To see it absorbed into a larger and more impersonal organization elsewhere would be like having a limb amputated.

My acquaintance rang off, rather disgruntled, and I put in an urgent call to Fred Slingsby.

This was at the end of July 1958. There was not much time to waste, for if the executors received a good offer for their shares before I could make one myself, they might be bound to accept it, whatever their desire based on sentiment. My one asset was that neither they nor the other shareholders would wish anything of the sort to happen.

The best solution, to avoid any possibility of this situation ever recurring, seemed to me to try and set up a Trust to take over the whole thing once and for all. Sling agreed, because even if he himself had bought the Company, which he could have done, neither he nor I were getting younger, and the day would arrive when once more the future of Slingsby Sailplanes hung in the balance.

I wanted a lot of money quickly, but I did not know how much or where to get it. I couldn't make an offer for the shares until I knew where I could get the money, and I couldn't find out what price the shares would be until I could make an offer. If I thought up a scheme I couldn't write round to possible interested parties because that would be a Prospectus and would be a criminal offence under the Prevention of Fraud (Investment) Act, 1958, unless it first got official approval which would take too long.

It was like one of those juggling acts where you see three or four balls being kept in the air all at once, except that whilst in mid-air

any one ball could change its shape and come down quite different, and it would then become necessary to change the shape of the other balls so that they would fit into a pattern. And, of course, I had to keep on juggling whilst still running my own business because, contrary to some people's impression, I too have to Earn my Living.

The subsequent months unreeled rather like a difficult cross-country flight. At one moment all would seem well, a clear plan ahead, enough height in hand to reach the goal. Then an unexpected set-back would have me once more at tree-top height struggling to keep going.

To anyone thinking of setting up a Charitable Trust I would say—don't, unless you simply must. The law on this subject dates back to 1601, and gives as valid charitable objects such things as: The relief of aged, impotent and poor people; the maintenance of sick and maimed soldiers and mariners, schools and scholars; the repair of bridges, churches and highways; the relief, stock or maintenance of houses of correction; the marriage of poor maids, the supportation of persons decayed; and aid and ease of any poor inhabitants concerning payment of taxes. (This last seems a pretty wide one.)

It can be imagined that the intervening three and a half centuries have seen some elasticity creep in, but even today a purpose is not charitable unless it is within the spirit and intendment of this original Statute, so that any up-to-date object such as the encouragement of gliding requires considerable legal skill to frame in words calculated to fall within the meaning of the act; and even then the final advice is "Well, that's the best we can do, now go ahead and suck it and see."

September came, with a warning that the Other Side was shaping up to Make an Offer in October, and I was still miles away from the goal. It was a time for stern measures, so I asked for a price, was given one, and bought the shares myself. With exquisite sang-froid the shareholders gave me (or my nominees) until December 31st to pay for them. Seldom has anyone so nervously owned a business. By December 31st I had to find £35,000 or else: it was a wonderful spur to my imagination, for I still had no workable method for raising such a sum.

My lawyers assured me that they would have the Trust operating

by that date—I replied that, if they failed, they would have to follow me to Carey Street with their bill.

Then, suddenly, whilst driving one day to Lasham, and only just in time, I thought up the final scheme for raising the dough, an idea which seemed a novel one. My accountant, after a rather breathless pause, said it Would Do—after some thought he christened it an Un-Bank, but I had better not describe it here in case it counted as a Prospectus (naughty word).

I need not have worried on the money side. As soon as I had a feasible idea, gliding clubs and devotees, bodies like the Air League, the Royal Aero Club and the Kemsley Flying Trust, all sorts of people rallied round with enthusiastic offers of support.

There was a desperate moment when, just before Christmas, I entrusted a vital document to the post, which promptly disappeared into the five hundred odd million Christmas card rush. If it got lost, so was I, because I could not replace it in time. But it was delivered two days late, and the Shaw Slingsby Trust held its inaugural meeting on December 29th. On the 30th it opened its bank account, and on the 31st I carried the necessary bankers' drafts proudly to a meeting at Pontefract where the deal was completed.

From now on, Slingsby Sailplanes will not only produce aircraft which will, I hope, continue amongst the world's leaders, but its profits will go to support British gliding in its future expansion and success. And the Shaw Slingsby Trust recognizes over the years to come the debt of gratitude owed by all who sail the skies to two Yorkshiremen I have been proud to call my friends.

Chapter 4

COMPETITION FLYING AND RECORDS

I. Introduction

COMPETITION flying is the focal experience of the whole sport of gliding. It brings together at one time almost all the many strands of interest which make our art the most fascinating and absorbing adventure of the twentieth century.

Competitions are won by the most skilled pilot flying the best machine, using the best equipment, possessed of a faultless ground-crew, and added to all a tantalizing spice of good luck. Only by flying in competitions can a comparison be made of this extraordinary synthesis of technical skill, human personalities, and mechanical perfection.

The essence of a gliding championship is that every pilot is set on each day the same definite task to perform, and at the end of each day each performance is marked relatively to the best on that day. Thus, if the task set is Free Distance, to fly as far as possible in any direction one pleases, then if the maximum distance flown is 200 miles, that pilot will receive the maximum of 1,000 marks, and any pilot flying 100 miles will receive 500 marks, and so on.

Other tasks which may be set are: a goal race to a point laid down by the organizers; a race round a triangular or other course (in these speed will also count for marks); a free distance flight along a course set by the organizers.

International and national records include most of the above, there being separate records for single-seat and multi-seat sailplanes, and in addition there are two altitude records recognized: absolute altitude achieved above sea-level, and gain of height (the difference between the greatest height reached and the height of

release or previous lowest point); and a distance flight to a goal previously declared by the pilot.

Newcomers to the sport are often still surprised to find that duration records are no more, but some years ago it was decided to scrap them, for duration in these days involves no more than an ability to keep awake over the longest possible time, and to land safely just before one drops off. We are happy to leave this sort of thing to the pole-squatters.

The preparation of a team for a championship is a major operation. First, the team itself. The pilot will need at least two, and possibly three helpers.

Each should be capable of driving endlessly with the large trailer on tow, and of map-reading. They will need also to be practised in rapid and efficient rigging and de-rigging of the aircraft. They must not make mistakes, for a mistake might prove fatal. It is good if at least one member can execute minor repairs to both car and aircraft. When radio is used, experience in the operation of radio transmitting and receiving is absolutely necessary. Above all, they are going to go together through a hard and nerve-tautening period of up to three weeks, with new and unexpected problems calling for rapid decisions—they must get on with each other!

For this period, and this period only, their pilot must be handled with the utmost care—encouraged when he needs encouragement, restrained if he shows signs of becoming foolhardy, rested whenever possible; if he shows signs of becoming a spoilt prima donna, he will probably fly better if he is tactfully brought down to earth. If he loses confidence in himself, he is almost certainly lost. The greatest pilots are those who meet adversity without allowing it to affect their skill or technique. There are pilots who time after time have lost the lead by sheer bad luck, but next year, or the year afterwards, their skill undiminished, at last have achieved their deserts. One of the surprises of the past twenty years is to find that in our game, age (or at least middle age) seems no barrier—at fifty-two I am still flying reasonably well, and the average age of many international teams is in the late thirties or even forties.

But on top of all the technique, the tenacity, and the luck there is an impalpable something, a sudden certitude, a flash of the butterfly's wings, and there comes a time when you know that the lift is *there*, that *that* cloud is alive, a long straight glide to *that* wood will

bring you low but safe into the next upcurrent, here you must stop and wait, or there fly on. When this mood is on you, it will persist, and you are protected.

The power-pilot, locked blindly within the thunder of his ten thousand horses, slave to his hundred dials and gauges and to the commands of his radio, never knows this inner intimacy of the air. Behind him, the passengers sip their champagne and engorge their caviare, staring dully out at the unreal panorama so far from their perception. They are flying, it's a bore, and most of them hope it will soon be over. Each has an uncomfortable feeling that he has surrendered his personality, he is a mere number on a passenger list, until he once more sets foot on the ground. Was the last stop Rome or Cairo? He can't remember, all airports look exactly alike.

Then there is the equipment. The aircraft is of course the main thing, and a book could be written on this subject alone. But in addition there are the instruments, the trailer, tools and tow-car. All must be fettled to the top pitch, for the failure of a single item may lose one the day.

The kind of sailplane you need will depend on the anticipated conditions of weather and the terrain. For difficult weather, light thermals or broken country, a light slow machine is the best; whereas in good weather with strong thermals and large landing areas, a heavy fast machine will win. In good championships one may hope for a mixture of all kinds of weather and country, light lift, strong lift, cloud flying, waves, mountains and plains.

So in the best type of championships what is needed is a compromise—an aircraft with fairly low minimum sinking speed for poor conditions, with a good turn of speed for strong ones, with excellent stability and handling qualities for rough flying in storm-clouds, rugged on the ground to withstand landings in bad country, easy and quick to rig and de-rig, and simple to repair.

Many countries and individuals have spent thousands of pounds and man-hours in producing exotic prototypes to win championships, but curiously enough most of these have failed, because the designers have concentrated on heavy, fast, record-breaking machines which fail to show up well in weak conditions. Thus we have the unusual situation in our sport where time and again the World Champion has flown to victory in a production aircraft costing a fraction of the price of many of the mounts of his

competitors. Competition gliding is one of the few sports in which money is still not everything. May it long continue so.

II. Goal Flight

1956 World Gliding Championships, St. Yan, France

THE morning forecast gave moderate conditions, building up to cumulo-nimbus and storms in the afternoon, with a west-south-west wind of 10 knots across the southerly course to St. Etienne, which involved flying 20 miles down the valley of the Loire as far as Roannes then across 20 miles of rough and semi-mountainous country through which the river twists a devious course, and from which it emerges into a broader valley which leads, after another 20 miles, to St. Etienne aerodrome.

The competitors lined up on the airfield in six rows, each of ten beautiful aircraft.

At 14.15 hours the take-off started, but everyone rapidly came down again. Many pilots took a second launch around 15.00 hours, but nearly all again came unstuck, and at about 16.00 hours a large cumulo-nimbus cloud appeared upwind, drifting steadily towards us. There ensued a breathless pause whilst everyone waited for the psychological moment to take-off: too soon would mean losing one's third and last chance, too late might mean, for those at the bottom of the list, trying to take-off in a high wind and impenetrable rain. For in front of those heavy storms we often got a sudden blast of wind gusting up to 60 knots, which on a later occasion nearly blew a number of trailers over at their moorings. In the event five or six unfortunates left it too late, and could not take-off at all.

In front of the cumulo-nimbus cloud, which was raining heavily, was a large shelf of cloud, the underside of which was waved and bulged in a mammiform formation, and I took off fairly early, thinking to find lift here, way ahead of the turbulence—and expected overcrowdedness—of the storm-cloud itself.

In this I proved correct, and soon found myself circling up in strong, smooth lift at 10 ft./sec. to a cloud base at 5,000 feet, which was strangely coloured with bulges, dark grey on the downwind,

eastern side and a dark and angry red from the declining sun shining beneath the cumulo-nimbus from the west.

Five miles to the west I saw a strange and beautiful sight, for the mottled and pendulous ceiling of my shelf-cloud there merged into the black of the towering cumulo-nimbus, and from this descended a heavy curtain of rain. On the far side the setting sun threw brilliant shafts of blinding silver light through this tremendous curtain of water, and against this coruscating backcloth were pin-pointed a great number of black and circling midges, which were the other competing sailplanes. To my way of thinking, all of these appeared far too close together for comfort.

On the radar screen at St. Yan a little later no fewer than twenty-five gliders were seen, all circling blind in this one vast cloud, a spectacle which must have turned grey the hair of any self-respecting air traffic controller. But these occasions turn out to be safer than they sound, and there were no collisions.

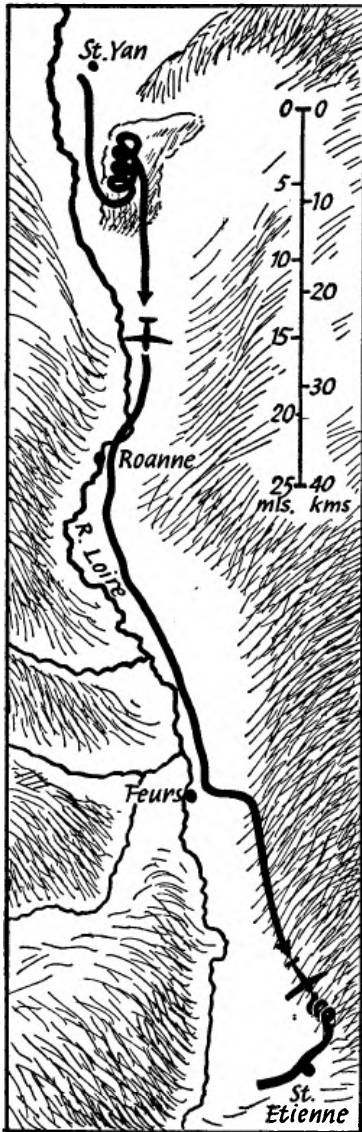
I called up Justin on the radio, adjusted my oxygen mask and was up in the cloud. Lift rapidly increased to 15 then to 20 ft./sec. and I turned west to get into the heart of the cloud and also back on course. It started to rain, then hail, and the cockpit cover frosted over with frozen moisture. I turned on my oxygen—and cursed loudly.

This was the first time I had actually used this excellent new equipment, and although I had checked it on the ground, I had never actually switched on the gas whilst wearing the mask. I now found that I had the wrong size mask for my oddly-shaped face, and when I breathed out it gaped around the bridge of my nose, and I exhaled moist breath over my spectacles. Even with clear glasses I could only just see my instruments in the prevailing murk, but when misted I was flying blind indeed.

The only course was to try and hold the mask tight to my face with one hand, whilst flying with the other, and as in these conditions one usually needs one hand for the stick and the other for the trimmer and radio, I rapidly ran out of hands, and found I wanted yet another one to wipe my glasses clear each time I had to let go of the mask.

In these conditions my flying fell rather below world standards, and although I turned my oxygen on fully, a certain amount of anoxia began to show in my rather drunken comments on the

radio. One remark sounded even drunker than it was when the listeners at St. Yan heard me say, "I can't see where I am! Where



are you?" They had not been able to hear that this was in fact an answer to a question from Justin, now near Roanne and so beyond their range. My ground team also got very cross with their loudspeaker, which produced such a thunderous roar whenever I switched on that they could hardly hear what I had to say, though later this proved to be no defect of the set, but a faithful transmission of the roar of the hail on the Perspex cockpit cover, on which my microphone was mounted. Blue needles of static electricity were zipping from metal fittings and pricking my hands and knees, and even the back of my neck.

I was now at over 20,000 feet and still climbing off the top of the clock, and working this altitude out at around 6 kilometres, I only required a gliding angle of around 16 to reach my goal. As the Skylark 3 should do better than twice that, I thought I had enough in hand and came out of my circle, on my Cook compass, on course. Still climbing, I reached 22,000 feet before hitting the downcurrent I had expected towards the rear of the storm. Here I began to lose height with a vengeance.

Suddenly there was a flash of

blinding light which lit the cockpit and my compass needle, hitherto faithfully glued to a course of 200 degrees, flicked round to point east, into the heart of the storm. The lightning flash must have produced some electric field which had completely upset this delicate and ultra-sensitive instrument and I was left feeling really lost. Would the needle recover, or was it permanently disarranged? If so, all chance of completing the flight was gone, as I had no hope at all of keeping anywhere near my course without it and I was in a cloud of vast extent and full of torrential downcurrents.

Slowly the needle seemed to recover from the shock and started swinging back again—or was I turning the machine instead? I had to take the hopeful assumption, and got it back and settled down again at 200 degrees.

A few minutes later it flicked again, though this time the lightning was too far away to be seen. Again it recovered and I roared on, coming down like a brick; red ball of the variometer off the clock until, at only 8,500 feet I came out of the rear western edge of the cloud to find myself still short of Roanne, only 15 miles on my course—a loss of some 13,000 feet in 15 miles—a gliding angle of 1 in 6, in a machine which, in still air does better than 1 in 30. Seldom have I gone so rapidly from a situation of apparently certain success to one of extreme doubt and almost despair.

What to do? It was certainly hopeless to turn east again, back into the cloud; I could obviously never hope to penetrate the violent downcurrents along its rear and reach again the upcurrents which were still there at its far edge. There was nothing for it but to set course southwards and see what might be found along the track to St. Etienne.

At Roanne I reached the southernmost boundary of the storm, and ahead the sky looked rather dead, but not entirely so, though the next 20 miles of hilly country offered most unhappy-looking landing possibilities. I had just over 5,000 feet in hand, with only a third of the course covered. As a race the thing was out; to get there was the only thin hope.

There followed one of those long grey struggles which give no highlights to describe, which only sailplane pilots facing long odds can envisage. But at last the grim country was overflowed, and I found myself in the northern tip of the final valley, struggling in zero lift at 2,000 feet over the little town of Feurs.

Down below I saw a competitor, even less fortunate than I, circling seemingly among the rooftops. If he could see anything on his variometer at that height there must surely be hope for me!

And now I saw that the eastern edge of my valley was bounded by a low but fairly steep slope which seemed to continue on southwards, almost to my goal. Although the wind was all too light, it was still on the whole westerly, so this slope should help with hill-lift, late as it was, for it faced the setting sun which would warm it up and assist any would-be thermal to trigger off. In one bound my chances of success increased from, say, 5 per cent to 25 per cent. As I circled in my zero lift, without gaining or losing height, I was slowly carried nearer the slope and at last, at only 1,150 feet I reached it and found—oh-so-gentle lift.

I set course south again, keeping over the crest of the slope, and flew tentatively and slowly on. After twenty minutes or so of this the aerodrome—could it really be the goal?—appeared in the distance. It was out of my reach in the centre of the valley, but at that exact moment a bowl appeared in the slope below me, concentrating the lifting wind into a funnel. My green ball rose to 2 ft./sec. and in cautious, tightly disciplined circles I climbed back to 4,000 feet. I was home! I put my speed up to 65 knots and darted out from my hill straight for base. The green aerodrome got nearer and nearer; at last I could see the hangar and one, three, five, six other sailplanes—only six out of sixty on the ground. So others too, had had their troubles. I increased my speed to 85 knots and flashed over the finishing line at 300 feet. No one else arrived.

III. Where No Birds Fly

Sunday, May 10th, 1959, the first day of the 1959 British Nationals. Lasham looked like a mixture of Piccadilly Circus, Farnborough and Derby Day. The biggest championships ever held in the world brought together eighty gliders, over twenty tugs, many hundreds of enthusiasts, including pilots, teams, organizers, Met. officers and general hangers-on; cars and trailers weaved round the perimeter track; between the huts and tents people hurried around with barographs, maps; as 09.00 hours approached everyone was polarized towards the briefing marquee.

Wally Wallington the Met. officer gave us a slightly equivocal forecast: wind south-south-east, thermal activity later on; in the north of England, if we got so far, conditions likely to be better on the eastern side.

Task-setter Ann Welch gave us Free Distance. No one seemed unduly excited at the prospect.

Kitty and I went back to our team, and we hitched the Skylark on to the back of the car. Wally had produced an occasional hesitant cumulo-nimbus, so I went to the kit to get out the oxygen mask. I opened the cardboard box and took it out. Horrors! the little plastic balloon that fastens over the nose was missing. A quick search through the box gave no result—alas! in the absence of a lock my tool-kit is far from sacrosanct. Remembering the Normalair stand in the Glider Trade Fair at the opposite end of the airfield, I sent Kitty dashing off to see if she could buy me a spare balloon, and she duly came panting back triumphantly. We clipped it on in a hurry—and little did I realize that I had lost my Distance Diamond again.

The almost endless procession of sailplanes wound out to the starting point. I got my name down for take-off around 11.00. The sky was clear blue and uninteresting. The long queue of sailplanes formed itself up to the take-off point on the runway, the waiting bevy of towing aircraft sprang to life, and the disciplined gavotte of a contest launch began.

Everyone watched eagerly as the first few sailplanes released 2,000 feet over our heads, searching around the sky, one or two making hesitant circles; but with little delay all returned to earth.

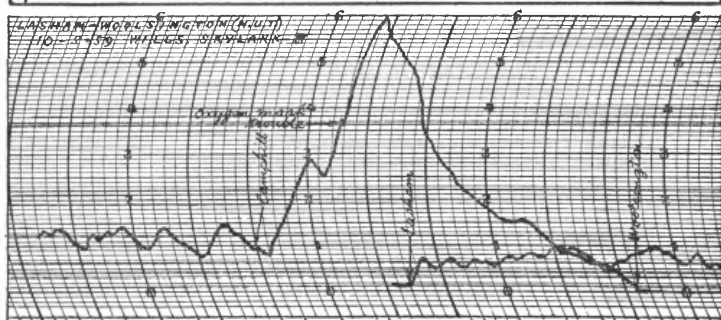
By the time my turn came the sky was showing a little more life, but no one had managed to stay up more than a quarter of an hour or so. Neither did I. I landed and rushed to the board. The next empty time was 12.30. I hung my disc on the appropriate hook, and went back to watch the fun. Everyone was looking up at the Olympia 419, flown by Tony Deane Drummond; he had found lift and was circling low down and tightly, steadily drifting away from the airfield. He was only just making height, but stuck to his guns, and quite soon it was clear he had burnt his boats, and had gone too far to be able to get back even if he wanted to. For what seemed hours we watched him until at around 2,500 feet over Basingstoke, 7 miles downwind, he was gone. Everyone envied him, but, poor chap, his courage brought him low—he tried to pluck the fruit before it was ripe, and landed not very far away; his team rushed him back but his second launch came too late to make good his day.

By the time of my second take-off all rational hopes of a big day had faded. Nick Goodhart had had two launches and landed back. Just before me, his brother Tony had taken off in the Fauvette, had contacted lift and was circling away. The sky was looking better, a few weak cumulus overhead, but downwind, away from the South Coast, things looked better. However, after midday is not the time to start for distance records.

Soon after release I found weak lift, and circled up in company with several others. The sky full of sailplanes and tugs, and Lasham below dotted with bright-hued aircraft; disciplined rows of trailers; spectators and cars; the patterned lines of tents and caravans: when this no longer seems the pinnacle of life I shall be old. Riding the hesitant air on a tight rein, I tiptoed away.

The first 20 miles went by, and the sky filled out with robust cumulus. The Skylark and I put our noses down and went for it. With a following wind of perhaps 15 knots, the earth below slid behind at a satisfying speed. The clouds began to street, and ahead build up to perhaps 8,000 feet, but, alas, we approached and crossed into the Birmingham airway, and so were confined to the clear air beneath them.

Nevertheless, cloudbase was now 5,000 feet, and we made good speed across the airway, and soon emerged in the familiar country



approaching Camphill, over the southern foothills of the Pennines. Before long Camphill itself was directly below, with several gliders earthbound, unable to get away. But now, ahead just beyond the Hathersage Valley, my course led straight into the heart of a gigantic wall of cloud, towering up over 20,000 feet, running east and west from horizon to horizon. This had not been on Wally Wallington's menu, but it seemed a very acceptable variation. I swung my oxygen mask, on its elastic band round my neck, to a point under my chin, and we plunged in. I switched on my turn-and bank indicator, and the comforting hum of the little electric gyroscope, that instrument which gives us an advantage over even the birds, filled the cockpit. I performed the trick of isolating my judgment and reactions from my senses (which become entirely and dangerously misleading when blind) and pinning them to the needle of the instrument instead.

In no time we struck powerful lift, and wound upwards at over 1,000 ft./min. Approaching 10,000 feet, I took my mask, slipped it upwards on its elastic band over my nose, and turned on the oxygen regulator. Nothing seemed to happen. I squinted down at the mask—and saw that the rubber balloon had half slipped off its spigot. I tried to slip it on again, and it came right off—its neck was a little larger than my own mask, and it was a loose fit.

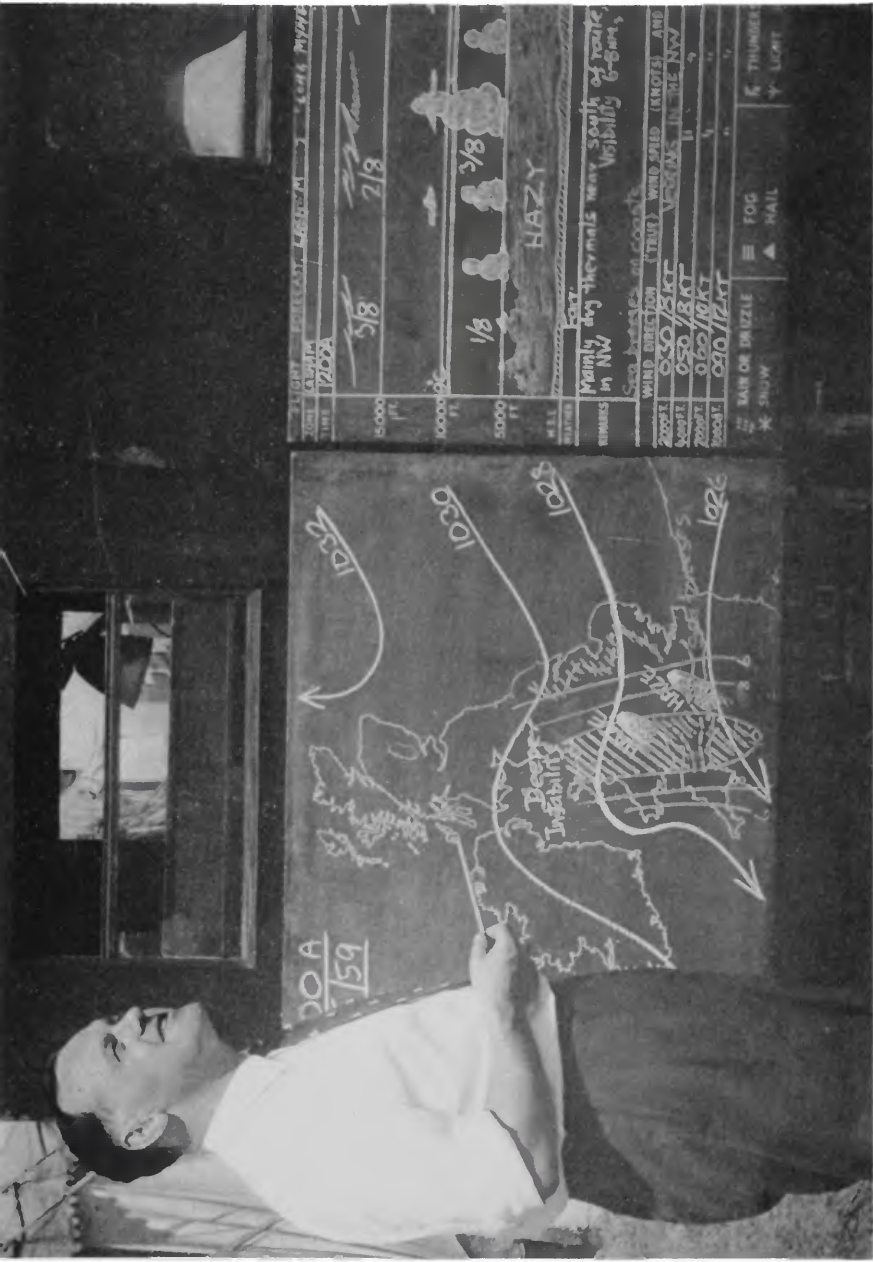
The cloud outside was by now dark and rough, but the only thing to do was to trim the Skylark to fly herself as well as possible in a circle, and try to refit the balloon. With both hands I struggled to undo the clip of the elastic band round at the back of my neck. In my struggles I knocked off my spectacles, and had to retrieve them and store them away, then take off my hat to get it out of the light. The Skylark's stability is a miracle but in the rough air we were now rocketing round in a series of dizzy swoops, speeds varying from 40 to 70 knots.

Thank goodness, the mask was off. Where is the balloon? Down on the floor between my knees. Fish it up, stretch its neck to slip on the nozzle, squinting at it from a distance of a foot: a hasty glance outside, to see nothing but an iced-up sheet of Perspex. The air got suddenly rougher still, and a spatter of hail drummed on the wings and fuselage. A glance at the altimeter showed 11,500 feet. Suddenly nausea hit me like a wave; the balloon jumped off again, and I was back nearly at scratch, but in far



Kitty Willis

“ . . . against this coruscating background were pin-pointed a great number of black and circling midges.” (p. 89)



Sally Anne Thompson
 "Wally Wallington, the Met. Officer . . . produced an occasional hesitant cumulo-nimbus."

worse shape to try again. However, try I must, and at last I succeeded, clipped on the mask, slipped it over my nose, and turned on the oxygen at emergency flow.

The blessed cold stream of gas filled my lungs, and I breathed deeply to try and overcome the deadly feeling of sickness which now was beginning to sap my consciousness. The altimeter wound up even faster, but soon the rough air became really vicious, and I realized with a nasty cold feeling that I was on the edge of passing out. At 20,000 feet I straightened up, there was no time to lose. I dare not head back on course through unknown thicknesses of cloud, I must make back south to the known nearest clear air. The cloud got lighter, and practically swooning I burst out through the usual narrow edge of wild air, into the blessed sunlight. I cannot read a book on a bus without feeling sick, this had been a far more drastic effort to focus on a small near object in an unsteady vehicle.

I took a look round. To the north of me, the cliff of cloud still stretched from east to west as far as I could see, and I was in no shape to tackle it. Wally's words returned to me—if you get as far as the Pennines, it is likely to be better towards the East Coast. I set her nose east along the cloud wall and we set off. The ground below was invisible through a dark haze. With the irritation of ice on her wings, the Skylark lost height rapidly, and when down to 8,000 feet, Leeming aerodrome showed up dimly, and I was able to turn north again under a grey and shapeless sheet of cloud. There seemed to be nothing more to go for, so I slowed down to minimum speed and we whispered along in dead air. Soon I was able to detect a marked westerly shift in my course, the wind had clearly veered to the east, and seemed to have freshened.

Over the railway line at Northallerton I came on an absolutely unexpected area of no sink at 3,000 feet, clearly some sea-breeze effect, although overhead the sky was still a dull flat grey. But for some 10 miles this enabled me to drift along holding height like a balloon, and almost as silently, at a bare 38 knots.

The wind now was east of south-east, so assuming the line of lift was parallel to the unseen coast on my right, I had to cut across wind quite a lot, but this seemed to be the right answer. Constantly I had to revise my likely landing place. Could I make Usworth, the home of the Newcastle club, for whom I have had a particular

affection for years, as they have made me their B.G.A. representative since longer than I can remember. Yes I could . . . easily . . . too easily. I must go farther . . . how about Woolsington, the official Newcastle airport? . . . I think so . . . yes I can . . . just! And just it was. With about 250 feet to spare I crossed the boundary and landed in front of the hangar: 6 p.m., 5½ hours, 270 miles. Rather more than I had expected, after a 12.30 take-off. Had anyone done better?

An hour or two later came news that Anne Burns had, she had landed not far away, farther inland, after covering 281 miles. But much later came the staggering news—Nick Goodhart's record-breaking flight to Portmoak, the site of the Scottish Gliding Union, 15 miles north of Edinburgh, 389 miles from Lasham. How had he done it? Time brought the answer.

Nick had after briefing declared the home of the Scottish Gliding Union, at Portmoak on the banks of Loch Leven. After two false starts, he realized this was hopeless, but there was no point in cancelling his declaration, so it still stood when he took off for the third time at the ridiculous hour of 1 p.m. For the next 3 hours his flight was the echo of mine, then he was faced with the cliff of cloud beyond Camphill. He entered it, and his oxygen mask did not fall off. Things like that don't happen to people who win.

He climbed to 18,000 feet, where he found it very rough, and went off on course, blind. After a few miles he found another core of lift, and climbed again. Again he set off on course, with very little idea of wind direction he had no notion of where he would be when he broke cloud. However, he finally came out still over what was clearly the Pennines and remorselessly lost height in grey air. He was approaching to land in a valley when, at only 500 feet he ran into the unmistakable smoothness of a wave. With cautious juggling he regained several thousand feet, and set off north again. By the time he sighted and crossed the Forth the weather was filthy—a strong easterly wind, grey sheet-cloud overhead, low cloud blowing in from the coast. He reached Portmoak at 4,000 feet, and as he had, what seemed a year ago, declared it, he landed there to the astonishment of its citizens and subsequently of the gliding world.

In one flight he had done everything, thermal, cumulo-nimbus

and wave-flying and broken five records. It took his crew two days to get him back. The change of weather half-way up the course, exactly where the Pennine Chain made wave conditions likely, may not happen again in a hundred years. But that is not the end of it, because once again to have at the same time a pilot able to interpret and successfully use it when it arrives may take longer still. And where, after all this was my blasted oxygen-mask balloon? In the tool-kit after all, in another corner of it. I deserved everything that had happened.

IV. No Diamond Out of the Blue

The 1959 Dutch Championships took place at their well-equipped National Centre at Terlet, 5 miles North of Arnhem. On May 24th the pilots were set the task of Free Distance. The wind was light and east of north-east, and there was not a cloud in the whole western European sky. Without the glider pilot's signpost to upcurrents, the cumulus cloud, long flights would in general be regarded as impossible. Nevertheless on this day several pilots exceeded 300 kilometres, and I flew south-west over half Holland, the whole of Belgium, and a third of France, over the historic names of the two world wars. Making the longest flight of the meeting, in my scarlet and white Skylark 3 I sailed silently over the battlefields across which the armies of the white races had struggled to destroy each other over two agonizing generations of men.

At 10.40 a.m. I was launched by winch from the sandy heath at Terlet, and a quarter of an hour later was looking down at the busy streets of Arnhem, for ever engraved in the minds of my generation for quite a different sort of gliding. But no ghostly shapes of lumbering troop-carriers sailed past me as I flew quietly on towards Nijmegen, only one curious little memory. For just after the battle, the ground still littered with the wreckage of troop-carrying gliders, I had delivered a Tempest to a nearby airfield, and whilst waiting to be collected for my return to England I noticed on a table in the tent which served as the pilot's mess a copy of a highbrow periodical of the day—an unexpected thing to find in such surroundings. Idly flicking the pages, I came

on a review of a new book of poems and one of the poems has oddly stuck in my mind. It was a sea shanty, and it ran:

“The nightingales are singing in the orchards of our mothers,
And hearts that we broke long ago have long been breaking others.
Tears are round, the sea is deep, so roll them overboard,
And sleep.”

But there was no sleeping for me, never a certitude that ahead I could find another swelling upcurrent to help me on my way. My best aid was a road-map, which showed all dry sandy areas of Holland in brown, because these and towns were the only hopes I had of thermal sources.

My general plan was first to fly somewhat across the wind, south-west to Brussels, in order to keep a safe distance inland from the possibly damping effect of the sea-breeze, and then turn west-south-west and make for Rouen and if possible on to the tip of Brittany. In the unlikely event of success, this involved overflying two frontiers without clearance papers, but we would have to sort this out if and when it arose. Actually, on our return by road we had no difficulty at all, the explanation “*Un vol de concours*” opening all barriers.

Faced with a retrieve, which in the event, required 750 miles of almost non-stop driving towing my 30-foot-long trailer, my wife and her friend had in the meantime set off in a general south-westerly direction, telephoning back every hour for news to Terlet; in the event of none, they continued on their open-ended way.

My great aim was, of course my Third Diamond, and this meant reaching Deauville, just south of Le Havre. This quest of mine for a 500 kilometre flight was by now reaching the proportions of an Odyssey, for six times had I been within one last thermal of achieving it, once within 15 kilometres or 9 miles.

Two hours after take-off I had passed west of the walled fortress of Louvain and was circling and climbing over the south-western outskirts of Brussels and from now on every name on my map was charged with blood and history. Mons, Valenciennes, Cambrai, Bapaume, quietly I circled and floated in the bright blue air over towns and the dotted white etchings of the cemeteries of the First World War, an Englishman in his English sailplane taking his day's sport out of the peaceful sky.



Just past Cambrai a shadow crossed my cockpit and I looked up to see, just above me, I had been joined in my thermal by a comrade, a Frenchman in a Breguet 901, the most beautiful of all beautiful sailplanes, having a quiet afternoon's flight from his local club. For a while we circled amiably together then we waved to each other, he turned for home, and I went on.

A short while later, and I was down to 150 feet preparing to land, when a gentle twitch of air on one wing-tip gave me a wild hope of last-minute recovery. Here lies another enormous advance over the years, because our latest aircraft are so efficient and our instruments so sensitive, that even from such low heights luck and skill can still save the day. But by the time I had ground my way up again to 2,000 feet I was lost, and remained so for the next three hours, sliding silently downwind across northern France.

The sun was declining and drawing the life out of the air when I located myself again, for ahead of me I suddenly saw a splendid serpentine river flowing along a royal valley—the Seine. The agonizing moment was at hand. I had covered about 450 kilometres, the sky was dying, could I find one last thermal to say 4,000 feet and make good my task? At this point the river flows between verdant and magnificent cliffs, and in desperation I soared along the southern line of them, hoping to catch a thermal triggered off by the light wind attacking their slopes, but it was in vain. With my last 1,500 feet I set off south and landed a quarter of an hour later at the isolated village of Quatremare, 465 kilometres from Terlet.

I had been in the air for 7 hours 20 minutes, and had averaged just on 40 m.p.h. but it was not enough. My Diamond was still to come.

V. The Tuesday that Came on Tuesday After All

The 1960 Whitsun National Gliding Week at Perranporth was splendid fun: almost every day hot blue sunny weather. An anti-cyclone controlling the situation produced dogged south or south-easterly winds which had set George Collins the most appalling problems in giving us tasks to fly: problems which he overcame

with the greatest skill. But the big day for which we were all hoping eluded us: yet just to the west of Ireland hovered a tantalizing front behind which unstable south-westerlies were waiting to help us on our way up the Cornish Peninsula, across the breadth of England to the Norfolk coast over 500 kilometres away.

Bank Holiday Monday was our last chance, and for days beforehand we were all saying that of course *Tuesday* would turn out to be The Day, just as, after ordinary duff week-ends, Monday always produces the best gliding weather. But when we arrived for our Met. briefing on Monday morning, June 6th, the chart put before us looked exactly like one which we would have dreamed up if given One Wish by a Good Fairy.

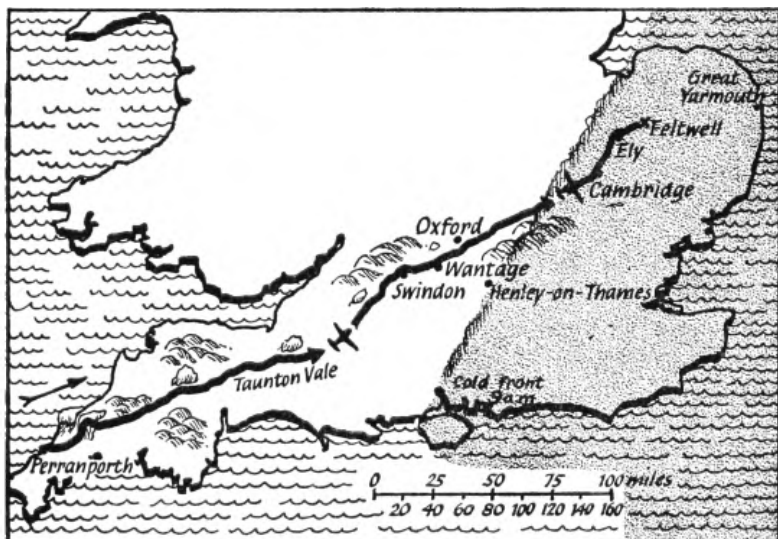
Suddenly out of nowhere a cold front had gone over, and was stationed at 6 a.m. on a line from Southampton to the Wash, with unstable south-westerlies behind it, and a good gradient to ensure that it moved east and would clear the Norfolk coast long before we could get there. By 09.30 B.S.T., streets of cumulus lying exactly along the Cornish Peninsula were forming, with nice flat bases as high as 2,000 feet. At last! My Third Diamond, of the superior British brand, was offered on a plate. About time too—this was my ninth or tenth effort. I had already flown over 4,000 kilometres in pursuit of it, and I dare not think how far Kitty had had to trail to get me back—certainly 10,000 kilometres, all in search of a 500 kilometre distance flight.

At 10.00 hours punctually I was towed off in the Skylark, barograph ticking, oxygen turned on, everything on the top line. At 10.10 John Garood released me at 2,100 feet under a cumulus about five miles south-west of Perranporth, and the trial was on. Cautiously does it—at only 9 a.m. by God's time one must not take anything at its face value.

Lift was indeed gentle, but firm, and I circled away on the line to Great Yarmouth, with a following wind of 15 knots to speed me on my way, to north and south the blue sea, below me the green and brown Cornish countryside, on each side the indented Cornish coasts. With little to trouble me I approached Bodmin Moor, over which a medium-sized cumulo-nimbus offered me my good-bye to Cornwall. I circled up into it, keeping a watch for the icing altitude, which was 7,000 feet, and at 9,000 feet had accumulated such a load of ice on the leading edges of my wings, that I

decided for the rest of the day to keep below 7,000 feet. So I straightened up on course, and came out of cloud just on the Devon border. I lost height fairly rapidly, with the ice dragging me down, and saw it break away from the red part of my wings at 4,000 feet, but my white wing-tips kept its jagged nose cap of sparkling ice until right down to 2,500 feet, when it detached itself in a long ribbon and sailed back out of sight.

From this height I was back to caution, and circled earnestly and gently until I reached the north-west corner of Dartmoor,



where once again I sailed up to cloudbase at 3,000 feet and with good clouds ahead set off on my 150 ft./sec. speed chart. The next bit of trouble was at Taunton Vale, where the air became distinctly listless, and I had quite a bad moment approaching the southerly edge of the hills, but from then on as far as Swindon was easy going, although the clouds were now much flatter and not streeting so well. But just after Swindon things became remarkably unstuck, and I descended steadily until I was struggling along using wind-shadow thermal and anything else I could lay my wings on, between 1,500 and 2,000 feet. I had so far been averaging a satisfactory 45 m.p.h. and this gave me plenty of time to reach the



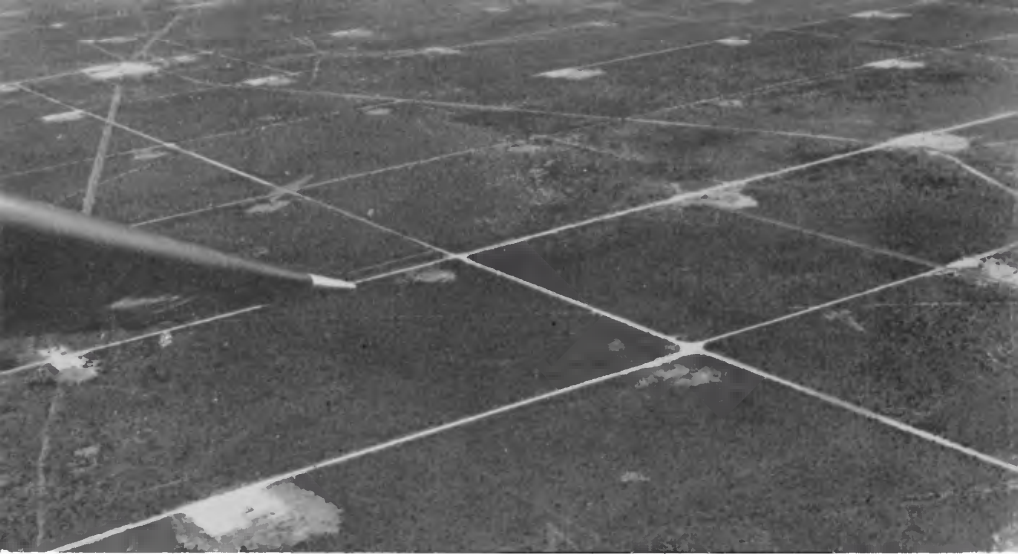
John Simpson

The author in his Skylark 3F at Lasham

Car, trailer and team in Willemstadt, Holland

Philip Wills





Photos: Philip Wills

“. . . an oil-field is cut into squares by a series of dirt roads.” (p. 108)

“. . . they fly over a chessboard.” (p. 108)
Odessa, Texas, the first cumulus appearing at 11.00 hours





Photos: Philip Wills

“ . . . struggled round and round in plus or minus 100 ft./min over the inhospitable ground.” (p. 118)

Sailplane circling low down over the Texan mesquite

“ . . . a curious little machine, looking like a mechanical elephant.” (p. 108)





Photos: Philip Wills

"... Kitty thundering to my aid ... with Gale and Bob." (p. 122)

"... the clouds streeted at about 15.00 hours." (p. 109)



Norfolk coast before conditions might be expected to fade, so I was not worried by the time being lost, and eventually got up to cloudbase again by Wantage.

But now things ahead looked far from bright, and for the first time a nasty thought crept in that the piece of cake might have caraway seeds in it after all. I seemed to be plugging into an increasingly dense sheet of overhead stratus, and cumulus beneath became fewer and greyer. By the time I had reached Oxford it was quite clear that that beautiful front, expected to run ahead of me sweeping the sky clear like the busy sweeper in front of the bowls of those earnest gentlemen one see on the curling-rinks in Switzerland, had slowed down or even stopped, and the rest of my flight must consist of pushing on into an ever more strangling noose. For the following wind was now down to about 10 knots, and I had only come 200 miles, so could not simply stop where I was and drift on behind the slowly receding front ahead.

Common sense told me to stop: to turn and land as near home at Henley as possible, or to fly to Dunstable, which would ease poor Kitty's lone saga going on below, and ensure we got to bed in reasonable time. But these 500-kilometre opportunities come so rarely in England that I was loth to abandon this one until forced to do, so struggled on, ever lower, until another opportunity of being sensible occurred by turning and landing at Cambridge, which now was just in range. By now it was crazy to go on—in fact it had been crazy for the past three-quarters of an hour. The sky was completely overcast, with thick stratus lowering all the time. Visibility was down to two or three miles, and I was actually running into patches of drizzle. I was flying at minimum speed, wafting gently towards any faint sketchy alteration in the colour of the overhead sheet I could see. Every now and then I would find zero sink, or perhaps $\frac{1}{2}$ -foot climb on part of a circle, and turn around gently and endlessly drifting with the wind. I don't suppose anyone has ever seen as much blood, sweat and tears built into a barograph chart as is shown in the last $1\frac{1}{2}$ hours of mine on this flight. Even the barograph seems to have been weeping for me, as a series of curious chips on the ink line shows. I think in fact they were caused by the tapping of my shoulder-straps, which pass back by the barograph, as I constantly fidgeted about in my torture chamber ahead.

So, Cambridge or not? Not. If I was to be defeated, let the defeat be inflicted on me by Nature, not by my own weakness. Down to 1,000 feet over Ely I found my last patch of weak lift. The 500-kilometre line on my map was now only a finger-length away, perhaps now I could let the wind finish the job for me.

But it was not to be: gradually the diminutive lift faded to zero, turned to sink, and I sailed on in lifeless grey air, the flat Norfolk countryside came up to arrest me and I grounded at Feltwell: 292 miles—about 18 miles short.

Kitty arrived, unperturbed, at midnight, having motored alone, except for Nelly the dog, 350 miles in 13 hours. We loaded up the Skylark and turned back to Henley and home. As we drove up our drive at 4 a.m., the eastern sky was lightening for the sunrise of what proved to be the best and easiest 500-kilometre day I have yet to see. From 9 a.m. to 7 p.m. streets of cumulus barred the sky from Land's End to Great Yarmouth and out to sea.

Tuesday had come on Tuesday, after all.

VI. Success in Texas

Like every other sailplane pilot in the world, it had been my dream one day to come to grips with the legendary thermals of Texas, so when in November 1959 I received out of the blue a letter from Boulder, Colorado, the writer, Gale Abels, proposing that if I brought my Skylark to the 1960 U.S. Nationals he would buy it from me afterwards, I had no hesitation at all in accepting the offer.

Some nine months of fervid paperwork followed, since the U.S. authorities by no means give American gliding the freedoms which our B.G.A. has won and retained in Britain, but finally, armed with my Private Pilot's (Power) Licence, an A.R.B. Certificate of Airworthiness, and an M. of A. Certificate of Registration allotting my Skylark (I hope not with intent) the most inappropriate sounding letters G-ARBJ, Kitty and I, the Skylark and trailer, Gale Abels, and Bob Morrissey, all arrived together in the Morrissey Chevrolet station wagon in a raging thunderstorm at 2 a.m. on the morning of Monday, July 25th, in Odessa, Texas, where the Championships were due to unroll themselves from August 2nd thru' (as the Americans succinctly say) the 11th.

Our hope was for a practice week of spanking Texan weather, to enable us to go for a few records, and then for the contest days to include at least some sub-standard ones, to give the Skylark with its wide spectrum of performance a chance to beat the U.S. super-heavies specially designed for the sole purpose of fast flying in strong conditions. But unfortunately as it turned out we got exactly the reverse: a week of very indifferent, almost cloudless, weak thermals, which on the day the contest started reverted to "normal" Texan streets of generous cumulus every day.

Monday morning, however, we drove out to Ector County Airport (one of the three in the Midland—Odessa area) and parked our trailer in the glaring sunlight. Al Parker came up, and in one minute we had made our first Texan friend. Al looks and behaves like one's idea of a typical Texan, and had undoubtedly born the brunt of the local organization. He introduced us to his gigantic tug—a version of the war-time Harvard—which subsequently gave us the nearest to a rocket launch which I shall ever get, gave us a hangar to ourselves, and then we set off to investigate the nearby Motel, which proved to be practically the key to a successful trip, for without its air-conditioned comfort, its swimming pool, its handy restaurant and endless supply of ice-cubes I believe Kitty and I would not have been able to survive the overpowering heat and dust of each succeeding day.

We spent Monday settling in, having the problems only too well underlined inherent in the fact that British and U.S. screw-threads are different and dry batteries have different dimensions, fixing our tow-rope, and so forth. Tuesday seemed a fair day, so I set off north on my eleventh 500-kilometre attempt, which proved once again that I can go over 480 kilometres almost anywhere, for I landed that distance from Odessa at a little airfield at Dumas, and we motored sadly home all night. The remaining days before August 2nd were all cloudless and poor, and although I determinedly flew a number of 100-kilometre and 200-kilometre triangles my times were nowhere near even the current British records. But at least I got to know the country.

The first thing to know about Texas is that it is flat—flat as your hat, flatter than that. The country slopes so imperceptibly up from the coast as one travels north-west from Houston that it is almost impossible to believe when one reaches Odessa that it is 3,000 feet

above sea-level, but so it is. The next point to realize is that Odessa is the centre of the world's largest developed oil-field—16,000 wells (I think) within a radius of 100 miles. The outcome is that one flies over an exact picture from *Alice Through-the-Looking-Glass*—the part where the Red Queen takes Alice by the hand, and screaming “faster, faster!” they fly over a chessboard, remaining exactly in the same place. For an oil-field is cut into squares by a series of dirt roads, at the intersection of each road a curious little machine, looking like a mechanical elephant, dunks away with its trunk in the ground, each dunk lifting several dollars worth of oil into someone's pocket.

Apart from this chessboard, the country is covered over large areas with mesquite—a species of low bush which would make for expensive landings—though the more watered areas produce endless large fields of corn, fallow or roots where landings are easy, though inhabited roads and telephones may be far away.

The country therefore is flat and brown and dark green and dusty, and over all blazes the sun. This really was a problem, for it affected ones efficiency, led to bad sunburn, gave us nightmares, and ruined the film in my camera when once I thoughtlessly left it on the ground for five minutes, when it became too hot to hold in the naked hand. We learned to take salt tablets; how to operate our individual air-conditioning machine so that it did more than pump the used air round and round our bedroom; to wear a small wet towel on our heads under our hat, not to move too fast, to put a wet towel over the Perspex canopy until just before take-off, not to touch any metal objects lying in the sun; that the local tarantulas, which appeared in their thousands the first night after the storm, but never again, are thought not to bite, though a single one's appearance on me would have caused me to drop dead with fright; that if you hear a rattlesnake rattling, you can't tell where he is so the only thing to do is to walk carefully backwards in your own footsteps. We learned that it is erroneous to think we talk the same language, though with patience and goodwill ideas may be successfully exchanged. By the end of our visit Gale was picking the best root for us to take, instead of rowt, and we were talking of ships constructed of aloominum. One morning Kitty asked for a roll for breakfast, and was brought a kind of Chelsea Bun: on describing what she meant the waitress said “Oh, you

want a *biscuit*", and hurried off to return with a scone. We started putting gas into the petrol tank. Honours were even and Anglo-U.S. entente remained at top pitch.

By the evening of August 1st thirty-six competing ships had arrived, two of them on spec., because their pilots had not yet done the 300-kilometre Gold C flight which was a requirement by the organizers: both these heroes were rewarded by getting the distance in time to compete. Such is Texas. Names I had known for years became real people, historic aircraft I had read about were there to touch and inspect. We were not amongst strangers, we knew as much about each other as many daily friends.

The first day came, and we were given a 132-mile triangle—Odessa—Andrews—Wink and return. The weather forecast was for cumulus—which we had hardly so far seen—from noon onwards. It was a three-hour flight or so, and I selected 12.30 for take-off. This proved to be an hour and a quarter too soon, and as a result, although I arrived back first (to be met by a microphone from the local radio service) I only scored fifteenth which was a bad start. I averaged 36.9 m.p.h. Schreder in the H.P.8 was first with 52.6 m.p.h.

From now on the thing fell into pattern. Day after day the weather was exactly the same. The first tender cumulus appeared on the dot at 11.00 hours, lift worked up to 1,000 ft./min., between 13.00 and 16.00 hours under a Rabelaisian sky, the clouds streeted at about 15.00 hours, lift faded between 18.30 and 19.30 hours. Surface wind was strong, too strong for record-breaking triangles—south-east 20–24 knots. Above 3,000 feet (6,000 feet above sea-level) this became south-west 10–15 knots.

We were not allowed to cloud-fly—indeed to ensure this we were not allowed to carry gyro instruments at all, so that stability and handling qualities were relatively unimportant. There was, of course, no wave-flying. In these circumstances nearly all the uncertainties of normal championship flying were removed, and the contest came down to nearly a straight comparison of the right hand side of each sailplane's polar curves. And the daily and final results between the top bracket pilots (who in such conditions could hardly make a serious mistake) clearly mirrored these.

There were two kinds of tests—short ones involving flying across the three or four central hours of the day, and long ones involving taking off as early and landing as late as possible.

After this first day on which I started too early, I found my best take-off time for a short task was 13.45 hours, whereas the heavy stuff took off around 14.15, and passed me on the way. My average speeds would be between 40 and 42 m.p.h., Schreder's between 49 and 52 m.p.h. Average rates of climb would be actually 650 ft./min. Someone from this could probably work out the relative points in our polar curves.

On the long days, however, the position was more interesting, because I could get up to forty-five minutes start on the big stuff, and whisper on to a chance small field in the evening whilst they would be sore tempted to call it a day at the handiest airfield before the lift had entirely gone, to save themselves a dicey arrival amongst the mesquite and the rattlesnakes.

The second day's task was interesting: Odessa, west-south-west 73 miles to Pecos, return to Odessa, and then straight on as far as one could go. In fact a flight along a fixed course across wind so arranged as to reduce retrieving mileage as much as possible. This was the stuff—I drew my course out as accurately as I could (but not accurately enough, because my final landing point, exactly on my line, lost me $6\frac{1}{2}$ miles on the official line, which was not displayed at briefing) and took off at 10.45, a quarter of an hour before the first cumulus.

Odessa has another kindly aid to sailplane pilots, in the shape of several carbon-black plants which produce immense volumes of Stygian smoke. These very exactly show when the morning inversion breaks down, since the smoke stops streaming away low down-wind and starts billowing upwards. They also provide certain and hectic lift at all hours.

There was little difficulty in keeping afloat on dry thermal, and by 11.30 hours, when the H.P.8 and Co. were in the air, I was 20 miles on my way.

Rather a long time ago I remember a story of the Babes in the Wood, who escaped from the forest into which they were lured by dropping a trail of white pebbles behind them. On the villain's third attempt they ran out of pebbles and used bread. The local wolf chased up and gobbled the bread and eventually the Babes—or have I got it mixed up?

Anyway, I now found myself in a similar situation, because as

I plodded on and marked each succeeding thermal it was occupied by followers, so that by the time the Wolves were airborne they had a clear course to follow. Actually I am of course exaggerating, but this is what it felt like! Anyway, on this day as on all the days, conditions rapidly improved and I flogged on across wind in a superficially empty sky until the turning point at Pecos, where the air suddenly seemed full of circling sailplanes, then marked the ground signal, back to Odessa, and on to the east. I had before take-off marked the 500-kilometre point on my projected line, as so often before in so many different countries, but not really thinking that even in Texan conditions one could exceed 500 kilometres across a 20-knot wind, but soon I found I was averaging 50 m.p.h. for hour after hour across the flat country, and after 7 hours in the air, covering 20, 40, 50, 50, 50, 40 miles, the long-awaited Diamond was clearly in sight. Lift was dying, but one last thermal to 7,000 feet put the evasive jewel at last—at last—in the bag. I landed after 8 hours' flying at a small town called Haskells, after covering in all 329 miles, of which $322\frac{1}{2}$ scored along the line. Schreder was a few miles farther on, the Skylark lying second. This was pretty good, in conditions of this kind. The only surprise of the day had been when Smith on his LO.150 came sailing by me in absolutely level flying, the Skylark doing 60 knots and the LO at least 5 knots better. This was a machine with wings smoothed with micro-balloon plastic, and the improvement this treatment brings about is undoubtedly tremendous, for Jensen's standard LO.150 which I met from time to time performed in relation to the Skylark no better than it should have done.

So—my Diamond was home, after a dozen tries in nearly as many countries. To make sure of it (I think probably this *is* a record), I did it again the next day.

August 4th was really the major triumph of the task-setters—indeed one of the best tasks I have ever seen set. It was an out-and-return flight along almost the same track (without the first westerly leg) east to Stamford and return. If successful, this would be a world record, but in case anyone getting back should still be hungry for more, they could overfly Odessa and go on west, scornfully thumbing their noses at the Fédération Aéronautique Internationale and its records. In the event, this measured the day

with micrometric precision, for two pilots (Schreder and Smith) got back, two (Carris on the R.J.5 and myself) missed it by one thermal (my speciality) and landed 18 miles short, and the rest of the field spotted the line back to the turning point.

The day could have been better than the one before from the weather point of view, because around 16.00 hours some cumulus built up into sweet little cumulo-nimbus, and if I had been able to use them there is no doubt the Skylark, and some others, would have joined the H.P.8 and LO.150 at Odessa, but, alas, the rape of our blind-flying instruments made this impossible. But in two consecutive days to do 329 and 328 miles on virtually the same course emphasizes the absence of uncertainties of weather or skill—one felt an electronic pilot could have done the job just as well. However, they were two grand days I would not have missed for worlds, though having spent 15½ hours of the previous 32 in the Skylark cockpit I almost endorsed John Randall and Fritz Sebek, both large and splendid airline pilots, who as they hobbled out of the somewhat exiguous cockpits of their Ka 6's said "Our airline pilots' association would not approve of this!"

After this triumph I regret to say the standard of task-setting deteriorated, for the age-old reason that it got distorted for non-contest reasons. The sponsors of the meeting were a body called the Chuck Wagon Gang, who were not at all what one might think, but a branch of the Odessa Chamber of Commerce, devoted to publicizing this remarkable city. In return for their support, for which naturally we were all most grateful, they had required an Air Display on the Sunday. This now caused the task setters to give us short and easy tasks on the next two sizzling days, so that we should be young and fresh when we came to don our spangled tights for Sunday. Even in Texas the weather won't be mucked about like this, so by the Monday and the longed-for Free Distance, a giant front which had been hovering about up north during the week had descended to place a curtain within 200 miles north of us. Free Distance was, I fear, a disappointment, and the front then came on south so we only had one final short day. On short days we had almost reached the point where we could jot up the marks before take-off.

If these last sentences, however, imply that by now I was bored,

I have written badly, for even a plug-round on a short task in these sizzling conditions, to an Englishman with a variometer suffering from years of repression within the confines of English thermals, was as good as a psychoanalytical course to a neurotic. I am simply saying that caviare is wonderful, but it is not a whole diet.

One of the consolations of short tasks was that there was usually time at briefing to ask for any pilot who had had a particularly interesting time on the previous day to get up and give us his story. Thus we were told by John Ryan how just as he reached his turning point he felt an agonizing nip on his behind. Since this could have been caused by anything between a scorpion and a tarantula, he dived madly to a landing and scrambled out before the poison might incapacitate him. He never found the cause, but an enormous and painful lump on the affected spot made him sit down with care for several days.

Another pilot landed in what proved to be the grounds of a mental asylum, and when he appeared in its corridors demanding a telephone, he was curtly told he could not use one without an official chit from his medical supervisor: a very natural mistake, as anyone who has seen a glider pilot emerging from his cockpit after a tough flight will acknowledge.

Again, Bill Ivans seemed to possess an uncomfortable genius in selecting outlandish places to come to earth, necessitating incredible sagas and many miles of walking through untracked country before he could find a telephone.

An incident during the Sunday air display produced a typical example of true gliding sportsmanship. During a high speed pass in front of the spectators, the tailplane of the H.P.8 suddenly developed flutter and disappeared into a rapid blur, whilst a stream of white smoke behind it indicated the disintegration of the plastic filler which covered it. Whilst everyone froze in horror, Dick Schreder pulled the machine into a climb, and as it slowed down we gasped with relief to see the flutter damp out; he gingerly turned into wind and landed. On examination the back end of his glider proved a horrid sight, rivets gone, tail surfaces distorted, metal skin bent. It looked like a week's work, but not in America. Dick towed the machine into a hangar, he and three

or four of his closest competitors worked on it all night, and it flew again, as good as new, in the morning. Dick and four other very tired pilots put up as good a show as ever.

What of U.S. gliding? Here is a country with more exciting and more entirely unexplored air than I thought could still exist, with roads and telephones and ground facilities, with a wealthy people possessing unexampled talents of technology and energy. Yet the number of sailplanes in it are about the same as here, and the amount of flying they do is much less. Why? It seems rather nerve after a three-weeks' visit to express views, but many people both there and here have asked for them, so I will try.

One obvious answer lies in its very size, and the difficulty of organizing a gliding movement in any central way. In these circumstances the talented folk who in England have managed to get together and organize a network of self-control satisfactory to our authorities, and some reasonably equipped gliding clubs, have been driven in on their individual resources, and we see unbelievable aircraft like the H.P.8, designed, constructed and flown to victory by one man. The H.P.8—(Dick Schreder has previously built seven other prototypes!), the SISU, well-nigh incredible creation of one man working with few elementary tools in his own garage, and many others. But a sport which requires supermen for its participation cannot expand beyond a certain point, and expansion only comes when things such as clubhouse (permitting an ordinary man to be a glider pilot and also happily married), hangarage and repair facilities become available. Up in Elmira Paul Schweizer has for twenty and more years been working to this end, by producing his well-known range of gliders. But here in Texas that was 3,000 miles away. And any damage to one's craft had to be repaired by the pilot or such friends as he could hope to retain; whilst wives and children standing in the middle of the sundrenched dusty field, might easily die of thirst and sunstroke, whilst hubby disported himself overhead.

However, after nearly three decades in this field, I am getting a nose for it. I predict the sport has now got over top-dead-centre, and that from now on U.S. gliding will accelerate exponentially. And this meeting, acknowledged by all to have been the most successful to date, will have helped to achieve this. Certainly Kitty and I will never forget it.

After it was all over, we drove the 900 miles to Boulder, stopping off at Las Vegas, New Mexico, on the way, where we had an aerotow to see if I could fly the last 300 miles, in the lee of the Rocky Mountains, and so triumphantly deliver the Skylark by air. But the weather failed to co-operate, and after 80 miles I landed within 10 yards of the main road for an easy retrieve.

On our last evening the Abels held a barbecue in their garden attended by members of the local clubs. As we were chattering gliding, someone suddenly said "Look! there's the latest satellite!" and overhead we saw the bright star moving against the original background provided by the Creator. We uttered our "Oohs!" and "Ahs!" and put our heads down again into the fascinating discussion on variometers. It seemed no time at all before someone said "There she is again!" and lo whilst we had been talking the damned balloon had been right round the globe and was moving up the south-western sky again. Progress, or something.

The next morning we completed the transfer, and now the Skylark belongs to Gale Abels. I can wish him no better than that he gets as much joy out of her as she has given me.

VII. The Epilogue of the Oklahoman Cow

It was a calf really which produced the epilogue to this flight, possibly assisted by a pony, but I don't want my title to be ambiguous.

Although a lot of people try to hide it, the fact is that most sailplane pilots (and I am very definitely amongst them) really adore nothing so much as a good old vulgar down-wind dash on a corking day. This gives the maximum amount of trouble to everyone, including the pilot; but particularly the retrieving crews, and the organizers don't like it much because it means Operations has to stay up all night waiting for landing reports, and a blank rest day the next day whilst everyone struggles back. So, as I say a lot of people pretend they are superior to the siren call of Free Distance, but I suspect that few are without the hunger. Like sex.

Certainly at every morning briefing at the 1960 U.S. Nationals at Odessa we eagerly awaited the announcement of this task, and there was mounting disappointment as it was delayed. For as

already explained, the weather situation meant that time was not on our side, as up north a giant front looped across the United States like a 2,000-mile girdle across the stomach of a wide woman and this moved slowly south, eventually reaching Odessa and blanking out the thermals with clouds and thunderstorms on the ninth day.

Since strong winds every day blew at the surface from the south-east, and above 5,000 feet (8,000 feet above sea-level) from the south-west, a down-wind dash took one up to the approaching front, and as one got nearer the winds veered or backed so one could turn and parallel the front either way. Thus:



Because of the air display on Sunday the 7th, the big day was delayed until Monday the 8th. By this time the front was barely 200 miles north, and the decision to be made was whether to attempt a cross-wind flight into the lee of the mountains to the north-west in New Mexico (where the upper winds were westerly), into a region of subsiding air and dry thermals, or towards Oklahoma in the north-east, where conditions looked better but the cross-wind component on the way was much worse. After much agonizing thought, I and most of the leaders chose north-east, but in the event it made little difference, as both contingents made almost the same distance.

By now the days already flown had made it clear that on short tasks, simply involving three hours or so flying across the best of the day, the Skylark could not be expected to keep up with the leading Flying Bombs designed exactly for this comparatively narrow spectrum of conditions, whereas on long tasks using everything the day had to offer, my ability to start earlier and finish later than them gave her a better chance, so this was in another sense a Big Day for me, for by now Dick Schreder in his H.P.8 had piled up a maximum score of 5,000 points in the five tasks we had flown, and I was lying fifth, with an annoying Ka 6 (slightly cleaned up) piloted by Kit Drew just on my toes at fourth place.

The first small cumulus could be expected exactly at 11.00 hours, the heavy stuff to take off about 11.30, so I put myself down for 10.45, intending to hold the air on dry thermal for the first quarter of an hour. In the blinding hot blue heat we dragged our way to the head of the line. I was packed in in my shirt and shorts, my hat on my head over a small wet towel; another wet towel over the Perspex cockpit canopy; a bottle of drink also wrapped in a wet towel; my maps, food, pen and ruler in the canopy pocket; both barographs installed, sealed and ticking; oxygen on; my devoted and perspiring crew buzzing around, running out the tow-rope, last minute polishing of wings and canopy, holding the wing-tip, flagging the tow-plane, running, letting go—we were off.

Wheels dropped, we left the runway, the flat and chequered brown landscape of Texas opened up and widened to the ever expanding dusty horizon all around. We climbed in a wide left-handed circle which brought us round over the runway again at

2,000 feet, the tug wagged its wings, and I released and turned right. Looking round, I saw a few of the earlier starters had struggled off downwind in a northerly direction and were now circling in a small bunch low down about 3 miles away. I wanted neither their direction nor their altitude, so forged ahead towards the town of Odessa itself to try for lift off its roofs, which I duly found. I held this without much difficulty for a quarter of an hour, being joined by a contingent who were also clearly destined for Oklahoma, when dead on time the first barely visible puffs of cumulus started to form in the sky around and above, based about 4,000 feet above it. The upper wind was much stronger than forecast, and retained the south-easterly direction of the surface, so it was with a sinking heart that I set off across and slightly into it to the north-east. In a wild way I had declared a goal at McAlester, 425 miles to the east-north-east, as near the line of the advancing front as I dare go, but I had warned my crew that I might have to fly north of the track to begin with, and this became clearly a must.

The lift was still only around 250 ft./min., but the game was on, and I struck off at 55 knots, for the shadowy hint of high white steam some 5 miles over the mesquite bush to the north east, followed closely by three of four other aircraft. Within half an hour the sky had developed into the usual Texan elysium of dappled cumulus based at 7,000 feet above the surface, their shadows below racing across the ground, alas, at right angles to my course. There was no hope of holding my track, and furthermore I was finding unexpected difficulty in striking the lift areas, coming in as I was from the side of each upcurrent, and suddenly I missed one altogether. Before I knew where I was I was down to 800 feet, one hour and 20 miles from base, in a sky looking like silent dynamite. Only sailplane pilots will feel my agony—was this to be the end of my Big Day? No thoughts now of speed or holding my track, I struggled round and round in plus or minus 100 ft./min. over the inhospitable ground, not daring to go further afield. I knew that almost certainly in one direction or other I could find strong lift if I could reach the heart of the thermal in whose edge I was clearly confined, but if I took the wrong one I would be certainly swept in the strong surrounding downcurrent to an ignominious—and possibly expensive—landing. In such a circumstance a sailplane pilot seems to run out of eyes. All one's

attention is needed for the instruments, yet some has to be spared for the ground below and some for the sky above, and suddenly in the latter I saw my salvation. A soaring hawk on rigid outstretched wings came into my line of vision from the south. Clearly he had been in my thermal, and on seeing this Brobdingnagian brother circling in the distance he had assumed my wisdom was in proportion to my size, and had come over to see if I had found a better bit than he had. He did a couple of circles just over my head, and I could almost see his beak curl into a contemptuous sneer as he tasted the miserable rags of my lift, then he turned and glided straight back the way he had come. No thought of saving the face of my theoretically superior species prevailed on me to hesitate—I straightened up and followed my feathered friend and in two minutes was circling up at 500 feet a minute to cloud base and competition again. I was once more in the running, but sadly off course and perhaps half an hour of distance lost. Lamesa was just to the north of me, and since distance was the order of the day irrespective of direction, I must now clearly reduce my attack on the wind and alter course as far north as I dare. Poor crew, struggling away to the east! If I had had radio, I am not sure that at this moment I would not have called them up and set off for New Mexico, but the prospect of my landing point finishing up around 800 miles from them that evening was too daunting, so I carried on.

Twenty miles covered the first hour was followed by 42 miles the second, and south-east of Lubbock I came over a wide stretch of wet irrigated land, with large round muddy ponds in every field, which I had been warned might be a trap. But no, all went well, and soon I flew over a line of low hills, and for 50 miles or more a stretch of wild bush-covered country cut into by a series of jagged sandy dry river-beds, which the thermals alone made safe for me. Then we approached and crossed a larger river which, having clearly been discovered by some devotee of TV Westerns, goes by the name of Prairie Dog Town Fork and the country below became greener and kinder. We were in Oklahoma, the ground had imperceptibly receded to only 1,500 feet above sea-level, the time was 17.00 hours, our average speed was only 40 m.p.h. The wind had almost dropped and the day was starting to die. But there was still no sign of the dreaded front in the sky to the north.

Out of the haze to the north-east appeared a few high granite outcrops—the first sign of hills we had seen in three weeks, and south of them the last cumulus in the dying sky lured me over the town of Altus. There I climbed gently to 7,000 feet and set off on my final glide. I was now off my original map, so the exact direction to fly away from Odessa as far as I could was rather a guess, but I set off north-east, scanning my map for suitable airfields, and at last it seemed as if one on the south-east of the small town of Hobart might just about come up and meet my skid. But as I got lower I entered a strong southerly wind and this carried me farther than my chart had led me to expect, so that I reached this airfield at 1,500 feet. A comfortable and safe landing, or another 9 miles to an uncertain and possibly lonely one?

But this was exactly the advantage I had over the heavy boys, who needed much more in the way of large landing areas than I did, so fatigue after nearly eight hours in the cockpit notwithstanding, I flew on along a main road running north, lower over fields of cotton, maize, corn and fallow, until the time had come, at 400 feet I turned into wind and landed in a large soft ploughed field running up to the outbuildings of an impoverished-looking single storey wooden farmhouse standing amongst a few trees by the side of the main road.

It was after 7 p.m. and I had been over eight hours in the air; I climbed rather stiffly out of my cockpit on to the soft and sandy plough, with a few old maize stalks sticking out of it, a warm breeze from the south and a smell of earth and green growing things again brought back that feeling, known to all sailplane pilots, that the workaday world had once more taken over, and much organizing and sweat lay ahead before my team could arrive and bear me and the Skylark off back to base. A couple of young men in jeans climbed over the fence ahead of me and came ploughing through the soft earth. There are not many sailplanes in Oklahoma and none had ever been seen in these parts, let alone one inhabited by an Englishman speaking a strange and nearly incomprehensible dialect, but in due course I got my needs across—a telephone and then help in de-rigging the Skylark and carrying the parts out of the field to the borders of the road before the onset of darkness.

Eventually, however, it was done. I had phoned Odessa and asked that Kitty, when she got my message, should ring me and say where the crew had got to; the wingtips and tailplane were stowed on the lawn in front of the farmhouse, on the very edge of the road. The heavier fuselage and centre-section, however, had us so exhausted by the time we had carried them over a quarter of a mile each through the soft earth and up a bank that, at the farmer's suggestion, we had left them in a small empty enclosed yard at the back of the farm, with a track to the road which the trailer, when it arrived, could easily negotiate. We went back indoors and with typical hospitality, I was sat down with the family at a simple but enormous farmhouse meal, before which, as the visitor, I was bidden to say Grace.

After this, the farmer, his son-in-law, and I sat smoking on the veranda whilst the womenfolk washed up (no use asking to help in this chore on an American farm) and put the children to bed, and we chatted on into the gathering darkness, lit by a naked electric bulb, of farm prices, horses, the ways of rattlesnakes, the price of things in England as against Oklahoma and all the things that come up at these casual and unexpected meetings of people from different worlds. Kitty had phoned, the team were 160 miles south of me, so could be expected to arrive between midnight and 1 a.m. I did not wish to keep my host up so late, and around eleven o'clock he asked if I would like to lie down for an hour's nap. I gladly agreed, said I would get up and wait by the roadside at midnight, and promised not to wake anyone when the trailer arrived, but pack up and steal silently away.

I was shown to the spare bedroom at the back of the house, washed some of the sticky dust off my face and hands, thanked my host for all his kindness, and as I dozed off heard his son-in-law go out into the yard at the back and return to the house, which sank into silence except for the occasional ping of a prowling mosquito in the warm darkness around me.

At midnight I got up, tiptoed out of the sleeping house and sat down on the dry grassy verge of the road. The road ran as straight as a ruler right and left from horizon to horizon. The moon was nearly full and riding high, and opposite me was etched the rounded and rustling outline of a large tree from which shrilled the stridulation of a thousand crickets. From the farmhouse behind

me came the occasional mutter of a half awakening child. Time passed—and I thought of many things. I thought how fortunate I was in this extraordinary sport of ours to have seen so many lands and scenes and met so many kind people. Of how two years before I had been faced with a similar but more uncertain wait in the Pripet Marshes of Poland; then, as now, Kitty had been thundering through the night to my aid, then with Ray and Harry, now with Gale and Bob. I thought of my various sailplanes, and where they were; the Scud still in England, a little anonymous now after more than twenty-five years, Hjordis a wreck in a hangar at Germiston near Johannesburg, the Minimoa in Iceland, the Weihe in New Zealand, my victorious Sky in Holland, and now my dear Skylark sitting in a field in Oklahoma bound for its new owner in Boulder, Colorado.

The surface wind still blew lightly from the south, but a light haze of high cloud was drifting from the north, and the moon was going out of focus. The horizon was lit up by the headlights of an approaching car, but it was a good ten minutes before it reached me, and swept trailer-less by and on and over the reciprocal skyline.

I mused on, on love, on hope and on despair. Looking at the fading stars I thought on the universe, and touched on the greatest question of all: What in Heaven's name is it all about? The crickets chirped louder than ever; they knew as much about the answer as I.

What arrogance, the thought that interstellar travel could be possible—for implicit in it is the assumption that we, in our insignificant out-of-the-way planet, are the most advanced beings in the immensity of the universe, if not someone else would have reached earth already. For myself, I fear we are for ever stuck in the parochial confines of our solar system. We shall have to worry it out as best we may from here.

The haze had thickened, a ragged cloud drifted across the moon, and a distant flash of lightning and mutter of thunder to the north showed that the front was on the march again, and coming my way. My mind touched on bills of exchange, the Bank Rate and four per cent Consols, by alliteration on my home at Kits Close, on Khrushchev, on *Quennelles Brochet* . . .

A few drops of rain brought me round with a snap, and a glow of light to my right brought me to my feet. It was after 1 a.m.,

this must be the trailer. It was. Ten minutes later, still cheerful after their 500-mile drive, and facing over 400 miles on the home-ward run, my team drew up beside me. Quickly I explained the form, we put the wing-tips and tailplane into the trailer, then turned up beside the farm on to the track to the yard behind. As I laboriously undid the wire gate leading into it, the storm broke. A violent northerly wind brought with it a blinding cloud of dust, and as we drove into the yard and tried to unhitch we found it difficult to weathercock the trailer into the wind, and get her hoisted on to her legs. Then I led the way to the white fuselage looming on the ground—as we got near I heard a cry of horror from Kitty. At the base of the rudder yawned a horrid jagged hole, the ply in the fin was gashed, another shout from Gale, leaning in the streaming dust over the centre section, signalled a staring ragged panel in the fabric near one tip. I stood stupidly gaping. This was *impossible*—in an empty yard? When I had explained so carefully, as is my wont, how delicately the Skylark must be handled on the ground. But now came more shouts and scuffles in the darkness and gritting wind, and round the corner of the trailer, in the light of Kitty's torch, came the flying shapes of a small calf and a pony, racing for the open gate behind me and freedom. Instinctively I shot ahead of them and closed it—I could not repay my host's kindness by letting the beasts loose, whatever they had done. But there was no more to be said. For some reason for ever unexplained, the son-in-law, when he went out after I had laid down, must have turned these two frisky animals into the yard where we had put the Skylark and retired to bed. Sadly we locked up our wounded craft, sadly we stole out on to the windswept road, sadly we drove away into the night, drove until the sky brightened, the sun rose again, the day's heat returned, alternately we drove and slept in the back, and about 11 a.m., exactly twenty-four hours and more than 900 miles after we had left it, my crew and I were back in Odessa.

How we needed sleep! But we were inexorably driven by the necessity to repair the ravages of the night on the Skylark. In this Gale took the major brunt, with willing help from others, since this is a field in which I am woefully deficient. Apart from the damages we had seen the paint was rasped by tongue and teeth, since dope has a taste irresistible to cattle, but on the whole we

were lucky. The next day the front had caught us up and there was no flying, so by the following and final day I was once more in the air, and put up a reasonable flight.

As for The Day, on the whole it had been worth while, for this was the only day in which the H.P.8 lost first place, the R.J.5 being ahead of me by 10 miles, and the Skylark, with a distance of 298 miles clocking an honourable second place, by virtue of my extra hard-won 9 miles, and ascending to fourth place in the Championships which it held to the end. But for the Oklahoman cow it would have been quite a triumph. But I was left with a serious social problem. I had promised to write a letter to my host of the night on my return to England. What was I to say?

Epilogue

THE CRYSTAL BALL

IN the 1930s a good sailplane cost £200–£300. It had a best gliding angle of around 1 in 25, and a minimum sinking speed of around 2 ft./sec. At 60 m.p.h. the gliding angle would be down below 1 in 20. The problems of stability and good handling were still being tackled empirically, and air-brakes which, by limiting speed in a dive to a safe maximum, largely overcame the risk of break-up in clouds, were still to come. Thus blind flying in big clouds was a difficult and rare art.

Today's gliding prices, as with most other things, show a more than fourfold increase, but for this money an average pilot can today explore a whole new world of experience which before was only possible to the exceptionally skilled few. His best gliding angle may now be better than 1 in 30, and although surprisingly enough his minimum sinking speed will be no better than twenty years before, at 60 m.p.h. he will be doing better than 1 in 25, and on good days may find it desirable to cruise between thermals at speeds of up to 80 m.p.h. The stability and handling qualities of his machine are now so good that, with normal blind-flying instruments he will be able to explore in reasonable safety storm-clouds bursting 6 miles and more into the sky. And the range of instruments available to him is such that he will be able to keep going in conditions which would have been impassable to him before the war. Above all, he has behind him a background of knowledge and experience which enables him to foresee and cope with aerial phenomena which were then only dimly, if at all, understood; and he will have received a training far more thorough than was then possible.

What, then, of the future—what may a pilot in the 1970s hope to have at his disposal so that he can extract yet more experience from the air?

In this last chapter I will not explore the sad possibility that in

1970 the amateur will not exist at all—that the air will by then have become the exclusive preserve of the professional, and all flying as a sport will have been forbidden by authority. Such an end to our hopes and dreams is all too possible, for the values of sporting gliding are those of the human spirit, and in an increasingly materialistic and overcrowded world they may well be sacrificed for the values of war and commerce. Ignoring this, however, what lies ahead?

In the immediate future the most likely development in the aircraft itself is in the use of entirely new basic materials; instead of the well-tried classical ply-wood and steel, some sort of plastic material seems the most likely answer, either in a ply-wood and foam-plastic sandwich or else in some structure of glass fabric. Already in France the Breguet Fauvette is being produced in quantity, using the first of these methods, and one or two prototypes are flying using glass-fibre and polyester resins to good effect. The main gain so far has been a much lighter structure weight, but so far both methods seem considerably more expensive than our existing conventional ones, and only if really large quantity production can take place does there seem much prospect of cheaper plastic structures.

Few people realize how much we have learned and how much we take for granted after 100 years' and more experience with wood and steel. We can exactly assess the strength of a metal bolt or a sheet of ply-wood of known size and composition. But we can still take two apparently similar plastic rods and on breaking them find that they differ in strength, nor do we yet know for certain how strong they will be in, say ten years' time after use in a hot damp climate. The hair-like threads of glass-fibre cloth are to some degree soluble in water, and whilst on craft such as boats such thicknesses can be used as to render this characteristic of negligible importance, the same is not true of aircraft. And since many gliders have lives in excess of twenty years, we cannot take any risks.

But the goal is there, and we must reach it. For whereas today when I want to go flying in my Skylark 3 I need a powerful car to haul the trailer and three stout friends to help me rig and derig it, by 1970 I hope my son and his wife will be able to set off, as Kitty and I did in the 1930s, with a 10 h.p. car, and rig and launch from the crest of any suitable hill without outside assistance.

Apart from this, however, I do not foresee in the aircraft itself any dramatic new aerodynamic features, although still further ahead there may be exciting possibilities in the use of boundary layer control. By sucking the air flowing over the wings and fuselage right down on to their surfaces, very great performance increases can be achieved, but a tremendous amount of research and development lies ahead before this can be hoped for at a price which any private individual or club could be expected to pay.

The remaining and really exciting advance lies in the field of instruments. If only we can discover a method of detecting up-currents from a distance, the whole sport will be transformed. It may become less of an art and more of a science, I do not know. But then this is what people said of the variometer in the 1930s, and how wrong they were! In any case, man must go on exploring or he is no longer man.

There seem to be only two possible ways in which such an instrument can be expected to work. One is to measure the temperature of the air at each wing-tip, on the theory that, near a thermal, the wing-tip nearest the upcurrent may be in warmer air. Such a device was designed by Peter Temple, and tried out by me as early as 1952, and has since been invented and tried out by others. Unfortunately I came to the conclusion that it did not work, or rather, it did work but the indications it gave were not of use. In fact, the air does not seem to be made that way, and subsequent theory and experiment on the structure of thermals, notably by Betsy Woodward, seems to confirm my conclusions at the time. In fact, the latest theory is that sometimes the descending air immediately around a thermal can actually be colder than the surrounding air, instead of warmer. But it was a fascinating instrument, and one I sadly regret.

Its interpretation was a frightful task—far more exhausting than blind flying, and after doing a four-hour cross-country flight on it one day on which the thermals seemed to be obligingly structured, I emerged an exhausted wreck. The difficulty was that, immediately one put on bank, the lower wing of course descended into warmer air, and the needle of the instrument immediately swung over to that side. The zero reading was thus altering all the time, and one had to assess the speed and amount of the deflection

of the needle and try and subtract what was being caused by the very fact of banking.

The next problem was whether it led one into lift more or less often than if one had been searching for it in the normal way, for sometimes it succeeded and sometimes it did not. Indeed only after doing a large number of flights could one form an impression on this, and even then there could be no statistical proof. Next, it did not ever work in waves, or in cloud. But it was a brilliant effort, and bad luck on Peter that his incredibly sensitive instrument came to nothing.

And so we come to the second hope—the measurement of the atmospheric potential gradient. This involves measuring a quantity of electricity so incredibly small that it was out of the question to try until the invention of electronics and radioactive ionizing agents. The subject is too technical for this sort of book (which is fortunate, as it is also a good deal too technical for me!) but nothing is too difficult for the gliding fraternity, and several people are at the time of writing working on the problem. If we are successful, today's record flights will become the everyday performances of the average pilot, and we may see the sailplane become a reasonable way of travelling to a business appointment, at least in the summer months. Possibly we shan't like it, but we must go on.

These, then, are the possible hopes for the ordinary sporting pilot, but for the research worker, sponsored by Government funds, there are other prospects. A sailplane with a pressurized cabin would make it possible to explore the air at far greater altitudes, possibly up to 60,000 feet. At these heights flights in the jet-streams become possible, and distances of over 1,000 miles may be achieved. There are still wellnigh limitless vistas of discovery and excitement ahead for the devotee of motorless flight.

When you come to a gliding meeting, you will see one of the very few remaining air spectacles to which you are not contributing as taxpayers, for we have no subsidy (unlike most European countries) and we are proud to pay for our own sport. When we lack money, we substitute hard work. Much of our equipment is made by ourselves. Much of the instructing, all the winch and car driving, most of the administration and organization is carried out by club members in their spare time.

I hope this book will have shown that we cast our net pretty wide. If you are good with your hands, if you have a head for figures, if you can wash-up or make curtains or repair a car, or serve behind the bar, if you can help to run a committee or dig trenches for drains, if you like a spot of adventure every now and then, providing it is well-disciplined adventure and not simply an urge to "show off" (which is apt to be more expensive than we can afford, and which is consequently strongly discouraged), if you want to find friends in any country in the world where gliding flourishes (for if you wear a gliding badge you will not walk the length of the main street in Cape Town or Melbourne, in Bulawayo, Auckland, Belgrade, Nancy, Madrid or Rio, without being "picked up" by a fellow enthusiast) then a gliding club is the place for you, and you will find yourself actually in the air as well, from time to time!



LASHAM GLIDING CENTRE

- Lasham Gliding Society
- Surrey Gliding Club
- Army Gliding Association
- *Imperial College Gliding Club
- *Crown Agents Gliding Club
- *Polish Air Force Association G.C.

Service clubs underlined

Asterisks denote club membership limited to organisation concerned

APPENDIX I

GLIDING ORGANIZATIONS AFFILIATED TO THE BRITISH GLIDING ASSOCIATION (1961)

Londonderry House, 19 Park Lane, London, W.1.

Secretary, Miss A. E. C. Russell, *Telephone* HYDe Park 3341.

AIR TRAINING CORPS: The Gliding Officer, Sqn. Ldr. M. J. Armatage, R.A.F. H.Q. Flying Training Command, Cadet Branch, R.A.F. White Waltham, Nr. Maidenhead, Berks. *Telephone*, Maidenhead 2300.

ARMY GLIDING ASSOCIATION: *Site*, Lasham Aerodrome, Nr. Alton, Hants. *Secretary*, Major T. G. Potts, Officers' Mess, Headquarters, Eastern Command, Hounslow, Middx.

BRISTOL GLIDING CLUB: *Site*, Nympsfield, Nr. Stroud, Glos. (Tel., Uley 342). *Secretary*, T. R. H. Parkes, 9 Cornwallis Avenue, Clifton, Bristol 8.

CAMBRIDGE UNIVERSITY GLIDING CLUB: *Site*, Marshall's Aerodrome (Tel., Cambridge 56291). *Secretary*, J. Deas, 1 Malcolm Place, Cambridge.

CORNISH GLIDING (AND FLYING) CLUB: *Site*, Perranporth Aerodrome (Tel., Perranporth 3177). *Secretary*, Major J. W. E. Berry, Pare Sparbles, Carbis Bay, St. Ives, Cornwall.

COVENTRY GLIDING CLUB: *Sites*, Baginton Aerodrome (Tel., Toll Bar 3177) and Edgehill Aerodrome. *Secretary*, J. Large, Baginton Aerodrome, Coventry.

DERBYSHIRE AND LANCASHIRE GLIDING CLUB: *Site*, Camphill, Gt. Hucklow, Derbys. (Tel., Tideswell 207). *Secretary*, I. Bayley, 18 Hunters Avenue, Barnsley, Yorks. *Telephone*, Barnsley 5444 (home) Barnsley 2713 (office).

***IMPERIAL COLLEGE GLIDING CLUB:** *Sites*, Lasham Aerodrome, Nr. Alton, Hants. (Tel., Herriard 270) and Redhill Aerodrome. The *Secretary*, Imperial College Gliding Club, Imperial College Union, London, S.W.7. *Telephone*, KENsington 5111.

KENT GLIDING CLUB: *Site*, Lympne Airport, Nr. Folkestone, Kent. *Secretary*, Mrs. R. M. F. Parkinson, Lodge House, Brabourne Lees, Nr. Ashford, Kent. *Telephone*, Sellinge 3221.

LONDON GLIDING CLUB: *Site*, Dunstable Downs, Tring Road, Dunstable, Beds. (Tel., Dunstable, 419). The *Manager*, R. C. Stafford Allen, at the Club.

- MIDLAND GLIDING CLUB:** *Site*, The Long Mynd, Church Stretton, Salop. (Tel., Linley 206). *Secretary*, S. H. Jones, 43 Meadowbrook Road, Halesowen, Worcs.
- NEWCASTLE GLIDING CLUB:** *Site*, Carlton Moor. *Secretary*, Brian Hartness, 107 The Broadway, Grindon, Sunderland.
- OXFORD GLIDING CLUB:** *Site*, Weston-on-the-Green Aerodrome. *Secretary*, L. A. Speechley, 139 Castellain Mans., London, W.9.
- SCOTTISH GLIDING UNION:** *Site*, Portmoak, Scotlandwell, Kinross (Tel., Scotlandwell 43). *Secretary*, W. A. Shanks, 7 Stanmore Avenue, Lanark.
- SOUTHDOWN GLIDING CLUB:** *Site*, Firlie Beacon, Bo Peep Farm, Itford Hill Ridge, Nr. Lewes, Sussex. *Secretary*, Miss C. Chapman, 25 Bywater Street, London, S.W.3.
- SURREY GLIDING CLUB:** *Site*, Lasham Aerodrome, Nr. Alton, Hants. (Tel., Herriard 270). *Secretary*, Miss L. Boucher, Surrey Gliding Club, c/o Lasham Aerodrome.
- YORKSHIRE GLIDING CLUB:** *Site*, Sutton Bank, Thirsk, Yorks. (Tel., Sutton 237). *Secretary*, J. K. White, 11 South Parade, Wakefield, Yorkshire.
- ROYAL AIR FORCE GLIDING AND SOARING ASSOCIATION:**
Includes Home Counties Gliding Club, R.A.F. Hornchurch; East Anglian Gliding Club, R.A.F. Duxford; Four Counties Gliding Club, R.A.F. Wittering; Suffolk Gliding Club, R.A.F. Wattisham; East Yorkshire Gliding Club, R.A.F. Driffield; Moonrakers Gliding Club, R.A.F. Upavon; Chilterns Gliding Club, R.A.F. High Wycombe; East Midlands Gliding Club, R.A.F. Swinderby; Windrushers Gliding Club, R.A.F. Bicester; Wessex Gliding Club, R.A.F. Andover; Fenland Gliding Club, R.A.F. Marham; Cleveland Gliding Club, R.A.F. Leeming; Red Hand Gliding Club, R.A.F. Ballykelly; Bannerdown Gliding Club, R.A.F. Colerne; White Rose Gliding Club, R.A.F. Finningley. *Secretary*, Group Capt. P. A. Cooper, R.A.F., R.A.F. Upavon, Pewsey, Wilts.
- ROYAL NAVAL GLIDING AND SOARING ASSOCIATION:**
Sites, Lee on Solent, Arbroath, Gosport, Culdrose. *Secretary*, Lt. Cdr. L. F. Coulshaw, Royal Naval Repair Yards, Fleetlands, Gosport, Hants.

Associate Member Clubs of the British Gliding Association

- ABERDEEN GLIDING CLUB:** *Site*, Dyce Aerodrome. *Secretary*, F. C. Main, 141 Fauld Gate, Kincorth, Aberdeen.

- *AVRO GLIDING CLUB:** *Site*, Woodford Aerodrome (Tel., Bramhill 1291). *Secretary* C. Ellam, c/o A. V. Roe & Co. Ltd., Greengate, Middleton, Manchester. *Telephone*, Failsworth, 2020 (Ext. 67).
- *B.E.A. SILVER WING GLIDING CLUB:** R.A.F. Booker, Nr. Marlow, Bucks. *Secretary*, P. R. Green, c/o Planning Office, B.E.A. Engineering Base, London Airport, Hounslow, Middx.
- BLACKPOOL AND FYLDE GLIDING CLUB:** *Site*, Blackpool (Squires Gate) Airport (Tel., South Shore 43529). *Secretary*, J. S. Aked, 99 South Promenade, St. Annes on Sea, Lancs. (Tel., St. Annes on Sea 297).
- *COLLEGE OF AERONAUTICS GLIDING CLUB:** *Site*, Cranfield Aerodrome. *Secretary*, J. B. Hargrave, College of Aeronautics Gliding Club, Cranfield, Bletchley, Bucks. (Tel. Bletchley 258.)
- *CROWN AGENTS GLIDING CLUB:** *Site*, Lasham Aerodrome, Nr. Alton, Hants. (Tel., Herriard 270). *Secretary*, J. E. G. Harwood, 33b Eccleston Square, London, S.W.1. (Tel. (office), Abbey 7730 (Ext. 669)).
- DONCASTER AND DISTRICT GLIDING CLUB:** *Site*, Doncaster Airport. *Secretary*, J. G. Riddall, 39 Osborne Road, Doncaster.
- DUMFRIES AND DISTRICT GLIDING CLUB:** *Site*, Townfoot, Thornehill, Nr. Dumfries. *Secretary*, G. Binns, 14 Braid Square, Shawhead, Dumfries.
- EAST MIDLANDS GLIDING CLUB:** *Site*, Rearsby Aerodrome, Nr. Leicester. *Secretary*, K. Moseley, The Ginn Stables, Coleorton, Leicester.
- GLASGOW AND WEST OF SCOTLAND GLIDING CLUB:** *Site*, Bankhead Farm, Carnemouth, Lanark. *Secretary*, D. C. Stevenson, 18 Netherpark Avenue, Netherlee, Glasgow, S.4.
- HALIFAX GLIDING CLUB:** *Site*, Ringstone Edge. *Secretary*, F. Lees, 4 Law Lane, Southowram, Halifax, Yorks.
- *HANDLEY PAGE GLIDING CLUB:** *Site*, Radlett Aerodrome (Tel., Radlett 5651). The *Secretary*, Handley Page Gliding Club, Park Street, St. Albans, Herts.
- LAKES GLIDING CLUB:** *Site*, Tebay Gyll, Westmorland. *Secretary*, Mrs. R. Allen, Quietways, Fell Foot, Staveley, Nr. Kendal, Westmorland. (Tel., Staveley 331.)
- LASHAM GLIDING SOCIETY:** *Site*, Lasham Aerodrome, Nr. Alton, Hants. The *Manager*, at Lasham.
- NORTHAMPTON GLIDING CLUB:** *Site*, Podington Aerodrome. *Secretary*, D. W. Woodford, 58 Ashburnham Road, Northampton, Northants.

NORFOLK GLIDING CLUB: *Site*, Tibbenham Aerodrome. *Secretary*, J. T. Wilkins, Southernwood, 93 Taverham Road, Taverham, Nr. Norwich.

NORFOLK AND NORWICH AERO CLUB (GLIDING SECTION): *Site*, Swanton Morley. *Secretary*, H. E. Rushmer, 5 Opie Street, Norwich, Norfolk.

***PERKINS SPORTS ASSOCIATION GLIDING CLUB:** *Site*, Westwood Aerodrome, Peterborough. The General Secretary, Perkins Sports Association Gliding Club, Eastfield Factory, Peterborough, Northants.

POLISH AIR FORCE ASSOCIATION GLIDING CLUB: *Site*, Lasham Aerodrome, Nr. Alton, Hants. (Tel., Herriard 270). *Secretary*, T. Krzystek, 279 Holmesdale Road, South Norwood, S.E.25.

***ROYAL AIRCRAFT ESTABLISHMENT GLIDING CLUB:** *Site*, R.A.E. Farnborough, Hants. *Secretary*, G. I. Lewis, 67 Broomhill Road, Farnborough, Hants.

ROYAL ENGINEERS GLIDING CLUB: *Site*, Lymyne Airport. *Secretary*, Capt. J. E. Joiner, R.E., H.Q.S.M.E. Brompton Barracks, Chatham, Kent.

SHORTS GLIDING CLUB: *Site*, Newtownards Airfield. *Secretary*, W. D. Monteith, Belair Avenue, Ballybarnes, Newtownards, Co. Down, N. Ireland.

SWANSEA GLIDING CLUB: *Site*, Fairwood Airport. *Secretary*, R. J. Comley, 76 Frederick Place, Llansmalet, Swansea, Glam.

SWINDON GLIDING CLUB: *Site*, South Marston Aerodrome. *Secretary*, Miss B. Saunders, c/o Education Department, Civic Offices, Swindon, Wilts.

TAUNTON VALE GLIDING CLUB: *Site*, Dunkeswell Aerodrome. *Secretary*, W. B. Knowlman, "Hunters" Foxdown, Wellington, Som.

OVERSEAS CLUBS

GERMANY: H.Q. 2nd T.A.F. Gliding Clubs. *Sites*, Sylt, Brüggen, Jever, Gellenkirchen, Gütersloh, Laarbruch. *Secretary*, Flt. Lt. G. G. Graham, Headquarters, R.A.F. Germany (2nd T.A.F.) B.F.P.O. 40.

MALAYA: Perak Gliding Club. *Secretaries*, Messrs. Y. C. Kang and Warren, P.O. Box 136, Ipoh, Perak, Malaya.

GHANA: Ghana Gliding Association. The Secretary, P. F. Handscombe, P.O. Box 50, Accra, Ghana.

KENYA: East African Gliding Association. The Secretary, P.O. Box 970, Nukuru, Kenya.

NON-MEMBER CLUBS which the Association is helping in the process of formation

ESSEX GLIDING CLUB: *Secretary*, M. G. Raynor, 855a London Road, Westcliff-on-Sea, Essex.

WEST WALES GLIDING ASSOCIATION: *Site*, Haverford West Aerodrome. *Secretary*, A. R. Squibbs, 36 High Street, Tenby.

SOUTH WALES GLIDING CLUB: *Secretary*, I. A. Shattock, 59-61 Church Street, Bedwas, Newport, Mon.

THE BORDER SOARING CENTRE: *Secretary*, Group Capt. N. W. Kearon, R.A.F. Carlisle, Cumberland.

* These Clubs have a restricted membership and are only open to employees of the organization concerned.

APPENDIX II

FOREIGN CENTRAL GLIDING ORGANIZATIONS (1961)

- AUSTRALIA: Gliding Federation of Australia, 34 Oxford Street, Kingswood, N.S.W.
- AUSTRIA: Oesterreichischer Aero Club, Dominikaner, Bastei 24, Vienna.
- BELGIUM: Aéro Club Royal de Belgique, 53 Avenue des Arts, Brussels.
- CZECHOSLOVAKIA: Aeroklub Republiky Ceskoslovenske, Opletalova 29, Prague 3.
- DENMARK: Kongelig Dansk Aeroklub, Osterbrogade 40, Copenhagen.
- FRANCE: Service de la formation Aeronautique et des Sports Aériens, 155 Rue de la Croiz Nivert, Paris XV^e. Aéro Club de France, 6 rue Galille, Paris XVI^e.
- GERMANY: Deutscher Aero Club, eV., Bookenheimer Landstrasse 19-11 Frankfurt-a-M.
- HOLLAND: Koninklijke Nederlandse Vereniging voor Luchtvaart, Jozef Israelsplein 8, The Hague.
- HUNGARY: Magyar Nepkoztarsasag "Fehervari Miklo" Kozpont Repulo Klubja, Engels Ter. 14, Budapest V.
- ICELAND: Flugmalafelag Islands, Reykjavik Airport, Reykjavik.
- IRELAND (EIRE): Irish Aviation Club, Dublin Airport, Dublin.
- ITALY: Aero-Club d'Italia, via Cesare Beccaria 35, Rome.
- NEW ZEALAND: N.Z. Gliding Association, Box 2239, Christchurch, N.Z.
- NORWAY: Norsk Aero-Klubb, Karl Johansgt 18, Oslo.
- POLAND: Aeroklub Polskiej Rzeczypospolitej Ludowej, Krakowskie Przedmiescie 55, Warsaw.
- SPAIN: Real Aeroclub de Espana, Carrera de San Jeronimo 19, Madrid.
- SWEDEN: Kungl. Svenska Aeroklubben, Malmskillnadsgatan 27, Stockholm.
- SWITZERLAND: Swiss Aero Club, Hirschengraben 22, Zurich.
- UNITED STATES: Soaring Society of America, P.O. Box 66071, Los Angeles 66, Calif.
- YUGOSLAVIA: Vazduhoplovni Savez Jugoslavije, Uzun Mirkova 4-1, Belgrade.

APPENDIX III

GLIDING RECORDS JULY 1961

WORLD RECORDS

Distance	<i>Single-seaters</i>	<i>Multi-seaters</i>
Height Gain	R. H. Johnson (U.S.A.) 535·2 miles	U.S.S.R. 515·6 miles
Absolute Altitude	P. F. Bikle (U.S.A.) 42,303 ft.	U.S.A. 34,425 ft.
Goal Flight	P. F. Bikle (U.S.A.) 46,267 ft.	U.S.A. 44,255 ft.
Goal and Return	M. Veretennikov (U.S.S.R.) 443·7 miles	U.S.S.R. 377·7 miles
100-km. Triangle	D. Burns (U.K.) 351 miles	Poland 321·7 miles
200-km. Triangle	M. Veretennikov (U.S.S.R.) 69·2 m.p.h.	U.S.S.R. 59·71 m.p.h.
300-km. Triangle	R. E. Schreder (U.S.A.) 66·98 m.p.h.	U.S.A. 50·64 m.p.h.
	R. E. Schreder (U.S.A.) 60·14 m.p.h.	U.S.A. 51·17 m.p.h.

BRITISH NATIONAL RECORDS

Distance	<i>Single-seaters</i>	<i>Multi-seaters</i>
Height Gain	J. A. G. Goodhart 384 miles	L. Welch/F. G. Irving 254 miles
Absolute Altitude	G. J. Rondel 29,100 ft.	A. D. Piggott/B. Whateley 15,240 ft.
Goal Flight	H. C. N. Goodhart 37,050 ft.	W. A. H. Kahn/J. S. Williamson 194 miles
Goal and Return	H. C. N. Goodhart 360 miles	D. J. Corbett/H. Hilditch 148 miles
100-km. Triangle	D. Burns 353 miles	D. B. James/D. Marshall 35 m.p.h.
200-km. Triangle	A. J. Deane-Drummond 47·5 m.p.h.	F. A. O. Gaze/Rosemary Storey 27·5 m.p.h.
300-km. Triangle	Anne Burns 49 m.p.h.	
	G. A. J. Goodhart 48 m.p.h.	

British National records can be set up by citizens of the United Kingdom in any country. The following single-seater British National records were set up overseas: Distance, France; Absolute Altitude, U.S.A.; Goal and Return, South Africa; 300-km. Triangle, Australia.

UNITED KINGDOM RECORDS

	<i>Single-seaters</i>	<i>Multi-seaters</i>
Distance	H. C. N. Goodhart 360 miles	L. Welch/F. G. Irving 254 miles
Height Gain	G. J. Rondel 29,100 ft.	A. D. Piggott/B. Whateley 15,240 ft.
Absolute Altitude	G. J. Rondel 30,500 ft.	
Goal Flight	H. C. N. Goodhart 360 miles	W. A. H. Kahn/J. S. Williamson 194 miles
Goal and Return	A. J. Stone 222 miles	D. J. Corbett/H. Hilditch 148 miles
100-km. Triangle	F. Foster 46.3 m.p.h.	D. B. James/D. Marshall 35 m.p.h.
200-km. Triangle	A. J. Stone 40.5 m.p.h.	F. A. O. Gaze/Rosemary Storey 27.03 m.p.h.
300-km. Triangle	H. C. N. Goodhart 41.2 m.p.h.	
100-km. Goal	D. Goddard 67.2 m.p.h.	D. B. James/K. O'Riley 60 m.p.h.
200-km. Goal	H. C. N. Goodhart 58.8 m.p.h.	J. S. Williamson/D. Kerridge 34.9 m.p.h.
300-km. Goal		W. A. H. Kahn/J. S. Williamson 43 m.p.h.
500-km. Goal	H. C. N. Goodhart 56.4 m.p.h.	

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

Women's Records—Single-Seaters

	<i>International</i>
Distance	Olga Klepikova (U.S.S.R.) 465.5 miles
Height Gain	Anne Burns (U.K.) 30,000 ft.
Absolute Altitude	Betsy Woodward (U.S.A.) 39,994 ft.
Goal Flight	Pelagia Majewska (Poland) 327.2 miles
Goal and Return	Anne Burns (U.K.) 268 miles
100-km. Triangle	Anna Samossadova (U.S.S.R.) 57.85 m.p.h.
200-km. Triangle	Anne Burns (U.K.) 49 m.p.h.
300-km. Triangle	Anne Burns (U.K.) 42 m.p.h.

	<i>British National</i>	<i>United Kingdom</i>
Distance	Anne Burns 325 miles	Anne Burns 282 miles
Height Gain	Anne Burns 30,000 ft.	Anne Burns 16,750 ft.
Absolute Altitude	Anne Burns 35,000 ft.	Anne Burns 18,400 ft.
Goal Flight	Anne Welch 327 miles	Anne Burns 194 miles
Goal and Return	Anne Burns 268 miles	Anne Burns 94 miles
100-km. Triangle	Anne Burns 37.3 m.p.h.	Anne Burns 37.3 m.p.h.
200-km. Triangle	Anne Burns 49 m.p.h.	Anne Burns 32.6 m.p.h.
300-km. Triangle	Anne Burns 42 m.p.h.	Anne Burns 27.6 m.p.h.
100-km. Goal (Speed)	Rika Harwood 51.6 m.p.h.	Rika Harwood 51.6 m.p.h.
200-km. Goal (Speed)	Anne Burns 42.3 m.p.h.	Anne Burns 42.3 m.p.h.
300-km. Goal (Speed)	Anne Burns 39.7 m.p.h.	Anne Burns 39.7 m.p.h.

DURATION RECORDS

	<i>Single-seater</i>	<i>Multi-seater</i>	
1911	O. Wright (U.S.A.) 9 m. 45s.	1938	W. B. Murray/J. S. Sproule (U.K.) 22 hr. plus
1922	A. Martens (Ger.) 1 hr. 6 m.	1952	Carras/Branswick (France) 53 hrs. 4 m.
1922	A. Maneyrol (in U.K.) 3 hr. 21 m.		
1952	C. Atger (France) 56 hr. 16 m.		

Duration records are no longer recognized. Some world records of historic interest, together with the last ones to be set up, are given above.

BIBLIOGRAPHY

The following list, by no means complete, covers most aspects of the sport and practice.

GLIDING by Derek Piggott (A. & C. Black, 1958, 25s.)

A very complete handbook for the instructor and pupil, and advanced pilot.

THE SOARING PILOT by A. & L. Welch and F. Irving (John Murray, 1957, 18s.)

For the enthusiast and expert, covering pilotage, design aspects and a wide field of practical and technical knowledge.

COME GLIDING WITH ME by A. C. Welch (Frederick Muller, 1955, 9s. 6d.)

For the young beginner.

ELEMENTARY GLIDING by Paul Blanchard (British Gliding Association, 1953, 5s.)

Textbook for the beginner.

BEAUTY OF GLIDING (Max Parrish, 1960, 35s.)

A gift-book of nearly 100 photographs, with introduction by Philip Wills.

GLIDER MAINTENANCE MANUAL by R. C. Stafford Allen (British Gliding Association, 1959, 5s.)

The maintenance and repair of gliders.

ON BEING A BIRD by Philip Wills (British Gliding Association, 1953, 7s. 6d.)

The air as seen by a glider pilot. How and why to glide.

FLYING TRAINING IN GLIDERS by A. & L. Welch (British Gliding Association, 1956, 5s.)

METEOROLOGY FOR GLIDER PILOTS by C. E. Wallington (John Murray, 1961, 25s.)

Essential reading for all glider pilots.

TACKLE GLIDING THIS WAY by John Simpson (Stanley Paul, 1961, 12s. 6d.)

A book for the beginner covering a wide field.

SAILPLANE AND GLIDING (3s.)

Bi-monthly magazine of the British Gliding Association.





