

British Gliders and Sailplanes

1922-1970

NORMAN ELLISON



In the main part of this book over 160 different types of glider produced in this country and some light aircraft built by the glider industry are described by Norman Ellison, a member of one of Britain's glider design teams. Also included are details of many fascinating projects that were designed but not built for various reasons. Most of the gliders described are also illustrated in general arrangement drawings (many published for the first time) and in photographs showing gliders in course of construction.

In addition there is a full list of the individual gliders built, brief histories of the various companies that have produced them, a short review of British gliding history and a chapter devoted to the "self-launching" sailplane, a current problem child of the gliding movement.

Amongst the appendices are notes on the various types of constructional methods and an analysis of glider production for the home market.

BRITISH GLIDERS

1922–1970

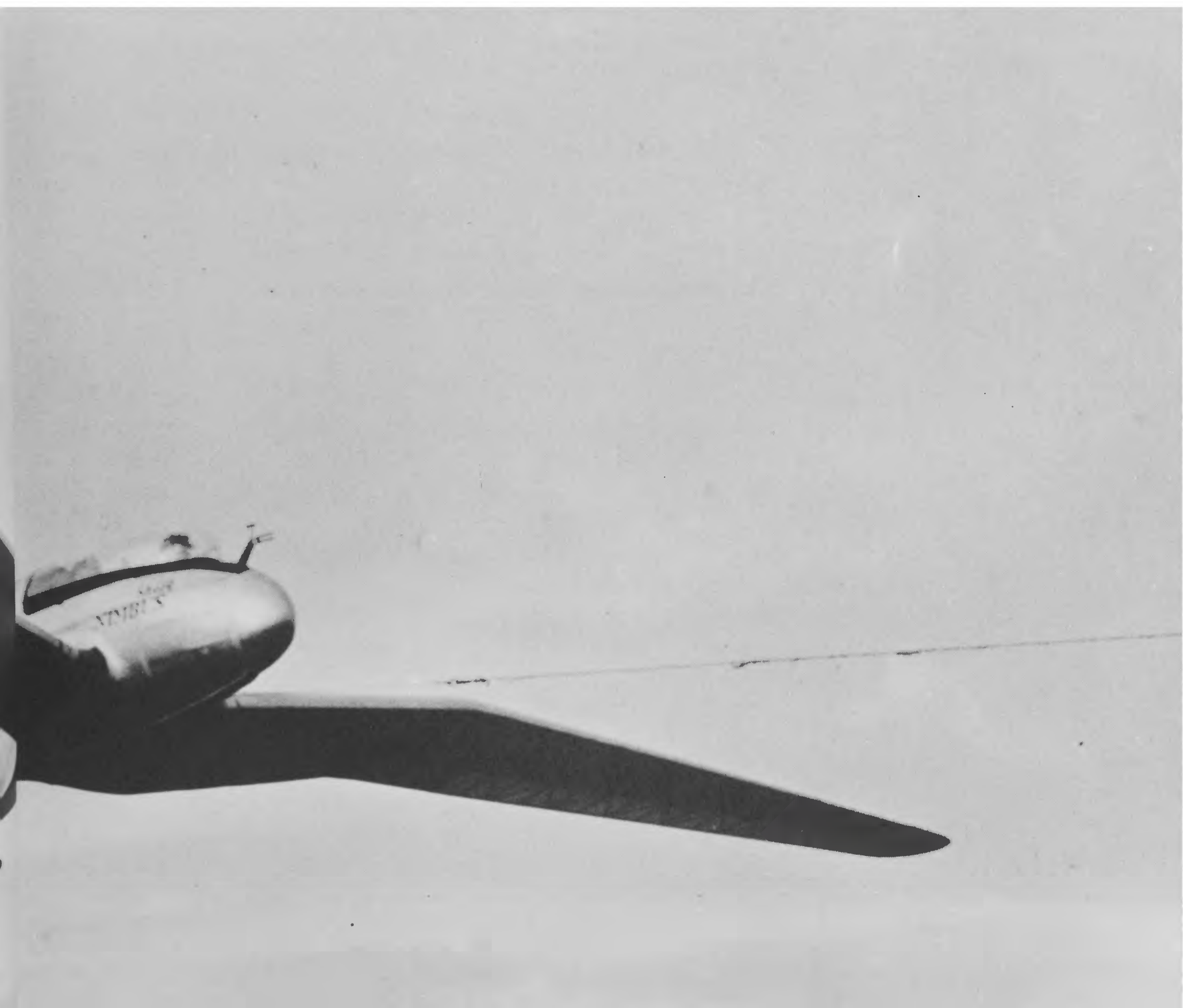
The Short Nimbus Sailplane



AND SAILPLANES

Norman Ellison

ADAM & CHARLES BLACK . LONDON



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Preface

This book attempts to catalogue all the non-powered aircraft known as either gliders or sailplanes produced in this country since 1922. At the same time brief histories of the various companies and people who have designed and built the whole range of these silent aircraft have been included. Many gliding books have been written over the years since the sport of gliding and soaring originated in Germany after the First World War, telling either the history of the development of gliding throughout the world or, usually, stories of particular events and personal achievements. There are also many books on the actual technicalities of gliding and its associated subjects of meteorology and the study of clouds, but this book concentrates on the actual gliders used and some of the stories behind their production.

1922 has been chosen as the date to begin this book as it was in that year that soaring as a sport was introduced into this country. This was at Itford Hill, near Lewes, and a competition was held there in October organised by the "Daily Mail". The terms "gliders" and "sailplanes" nowadays are somewhat synonymous. When these terms were first introduced a sailplane was defined as "a glider having a sinking speed of less than 0.8 metres (2.625 feet) per second". Today, nearly all motorless aircraft are sailplanes and capable of soaring flight, i.e., flying without loss of height or gaining height. Before the last war a glider was the term used to describe the type of craft used for learning to glide, and these were generally not capable of soaring flight. There are very few of these gliders in existence today, but, to the general public at large, anything that flies without an engine is generally referred to as a glider.

The sport and pastime of gliding and soaring first became popular in this country in 1929, and it is hoped that this book recaptures and unfolds the achievements, frustrations and efforts, that a relatively few people have put into designing and constructing sailplanes and gliders so that they could, with many others, enjoy the sport of soaring. Also included are details of some light aircraft and other projects designed and built by the glider manufacturers in order to give a complete history of each company. Wartime gliders have also been included, and various research gliders built by the aircraft industry but

these have mostly been scale models of large and unusual types of aircraft. Manpowered aircraft, kites and gyrogliders have not been included, the latter type being a form of rotating-wing kite.

This book is of necessity a compilation of the facts, figures and writings of others, and it is hoped that acknowledgment has been quoted where due. I would like to express my gratitude to Mr. N. Beckett; Mr. P. H. Butler; Mr. A. Coulson; Mr. S. R. Dodd; Mr. F. G. Irving; Mr. A. J. Jackson; Mr. R. O. Macdemitria; Mr. A. P. Millar; Mr. P. J. Mitchelmore; Mr. L. Moulster; Mr. D. Piggott; Mr. C. W. Prower; Mr. J. K. Rushton; Mr. N. H. Sharpe; Mr. H. A. Taylor; Mr. L. Welch; and Mr. K. G. Wilkinson for their help with material for this book. Also Mr. J. Baird, Publicity Officer of Westland Helicopters Ltd.; Mr. K. W. Blake, Director of Sailplane & Engineering Services Ltd.; Mr. G. E. Burton, Managing Director of Slingsby Sailplanes Ltd.; Mr. J. E. Cramp, formerly Chief Inspector of Elliotts of Newbury Ltd.; Mr. A. J. Dodds, Secretary of the Newcastle & Teesside Gliding Club; Commodore H. C. N. Goodhart, R.N., of Operation Sigma Ltd.; Mrs. Rika Harwood, Associate Editor of "Sailplane & Gliding"; Mr. R. Jones, of Southern Sailplanes; Mr. J. Kenny, Secretary of the Cornish Gliding & Flying Club; Mr. A. W. L. Nayler, Librarian of the Royal Aeronautical Society; Mr. J. C. Riddell, Managing Director of Torva Sailplanes Ltd.; Doc. A. E. Slater, Editor of "Sailplane & Gliding"; Mr. R. C. Stafford Allen, Chief Technical Officer of the British Gliding Association; Mr. G. Thorpe, formerly Chief Inspector of Slingsby Sailplanes Ltd.; Mr. J. White, Assistant Publicity Officer of Short Brothers & Harland Ltd.; Mr. A. A. Wylie, Managing Director of the R.F.D. Group Ltd. and my publisher A. & C. Black Ltd.

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In conclusion, it should be noted that any opinions expressed by the author in this book should not be construed as being the Company Policies of either my present or my past employers.

Norman H. Ellison, A.R.Ae.S.

Kirkbymoorside, Yorkshire.
September, 1970

BRITISH GLIDING HISTORY

CHAPTER 1

From Cayley to Itford

What's the use of gliding? As in any other type of sport, gliding is a form of recreation. Fred Slingsby, the designer whose products have been the mainstay of the British gliding movement for over thirty-five years, was asked this same question just before the last war, and he gave the answer "Have you ever stood on the edge of a cliff and felt the urge to spread out your arms and soar gracefully over the country below?" Receiving an affirmative from his questioner he continued "Well, gliding allows you to do it more than once . . .". Gliding as a sport originated just before the First World War at the Wasserkuppe hills in Germany. Before that gliding had purely been an integral part of the efforts of man to take to the air and fly.

The history of motorless flight in Britain can be divided into four periods. The first period up to 1908 started way back in 1849 when Sir George Cayley persuaded a boy to fly in one of his small gliders. Later, in 1853, Sir George's coachman was launched across a small valley at Brompton, near Scarborough. This experiment terminated abruptly when the craft reached the other side of the valley, and the frightened coachman stepped from the wreckage and addressed his employer with the now famous words "Sir George, I wish to hand in my notice". Further would-be aviators carried out many other experiments over the years that followed, including Percy Pilcher's many glides at various places up and down the country until his death in 1899. The first period came to an end when S. F. Cody successfully flew a powered aircraft of his own design at Farnborough, Hampshire. This was five years after Wilbur and Orville Wright had achieved the world's first powered flight at Kitty Hawk, America, in 1903.

The next period, up to 1920, takes the story through the First World War when, of course, no gliding was done at all. The world was too busy flying other types of machines, but before the war many gliders were built in Britain by various people whose object was to get into the air by any means whatso-

ever. Altogether, nearly sixty different types of gliders were built up to 1914, and details of most of these can be found in a recent book "British Aircraft 1809-1914" by Peter Lewis. However, E. C. Gordon England in 1909, flying a glider designed by Jose Weiss, did manage to climb to a height of nearly forty feet on one occasion in an attempt to soar. This was the first time anyone in Britain had been able to record a gain of height, and nothing like it was to happen again for another thirteen years.

After the war the sport of gliding began again in Germany, with annual meetings at the Wasserkuppe in 1920, 1921 and 1922. Once the technique of hill soaring had been discovered flights of three hours duration were achieved and distances of over six miles were obtained. Reports of these flights began to appear in the British press and aroused great interest in this country. As a result, the "Daily Mail" newspaper, who had previously built up quite a tradition of supporting aviation activities with large cash prizes, offered a prize of £1000 in August 1922 for the longest glide over thirty minutes duration. A competition was arranged at Itford Hill near Lewes in Sussex for the week of 16th-21st October. This gave the competitors six weeks to design, build and transport their gliders to Sussex. In view of the short time available it was somewhat surprising that thirty-five entries were received by the organisers. These gliders were of all shapes and sizes including biplanes, monoplanes and tandem wing monoplanes, plus helicopters, ornithopters, a biplane glider fitted with a full set of sails, and two bicycles fitted with wings.

On the day the contest began it became evident that about only half of the entries would arrive, and that some of those that did arrive would not have a chance of winning the contest, even if they were capable of flight at all. The weather throughout the week was rather stormy and the wind blew consistently from the East instead of from the South-West as had been hoped. As a result, and due to the haste in which nearly all the gliders had been built, only thirteen gliders actually flew in the contest, eight British, two French, one of German origin but flown by an Englishman, and two Dutch gliders both flown by Antony Fokker. Most of these gliders did not survive the week's gliding in the gusty winds but, in spite of all these difficulties, some remarkable times were achieved. F. P. Raynham established a British endurance record of 1 hour 53 minutes flying in the Handasyde glider. Squadron Leader Grey flew for over an hour and a half in the Brokker, a glider that had been assembled out of spare parts for a total cost of 18/6 thus establishing a record for cost effectiveness, but the contest was won by a Frenchman Alexio Maneyrol flying the tandem-winged Peyret glider. He established a new world record

for endurance of 3 hours 21 minutes on the last day of the contest and thus won the £1000 prize in a machine that had been considered beforehand by the experts to have had little chance of success. The contest, therefore, finished on a note of triumph and fully justified the efforts of the sponsors and organisers, and it was hoped that the sport of gliding would continue in Britain after this initial success.

After the competition a private gliding club was started at the R.A.F. Staff College, Andover, and the members started to repair Mr. Gordon England's glider. Mr. Warran Merriam converted his glider into a two-seater and for a fee of £25 he offered courses of instruction at the Whiteley Bank School of Gliding in the Isle of Wight. The course lasted as long as the pupil desired. Mr. Raynham and his glider took part in a film on the cliffs of Torquay, and the "Flight" aviation magazine organised a glider design competition and offered £25 as a first prize. Two designs were eventually declared as joint winners, one being a biplane glider, the other was an entry by two American designers. A further prize of one thousand guineas was offered by Mr. Gordon Selfridge for a flight of over fifty miles by a glider in Britain during 1923 but when that year arrived the aviation world began to think of other things, and so Britain lost interest in gliding for the next eight years.

At the end of 1922 gliding as such was not appreciated or understood in Britain. There did not appear much future in soaring for hours on end over one spot, and if one wanted to travel any distance by air one used an aeroplane. In 1922 this form of travelling was expensive and so people began to develop small aircraft to do this sort of flying as cheaply as possible. On the Continent competitions had already been held for small low-powered light aircraft, and so in Britain the "Daily Mail" organised a competition in 1923. This was known as the Motor Glider competition, and ever since this date glider designers and manufacturers have had to endure approaches from people asking one inevitable question "Why don't you put a little engine in it?" So ended the third period of gliding in Britain.

CHAPTER 2

1929 to the present day

Over the next six years hardly any gliding took place in Britain but the light aircraft movement proceeded from strength to strength culminating in the development of the famous de Havilland Moth. Even in Germany gliding had become hill-bound and frustration had set in. However at the 1928 Wasserkuppe meeting Robert Kronfeld managed to contact a thermal under a Cumulus cloud and leave the gliding site using the newly discovered technique of flying round in circles. Thus thermal soaring was discovered and the sport of gliding received a new impetus. After this many cross-country flights were attempted and rapid progress was then made in both altitude and distance flying. Even better flights were made in 1929 after Lippisch had invented the Variometer (Vertical Speed Indicator) when it became possible to identify thermals.

These new distance flights were fully reported in the British magazine "The Aeroplane", and the fourth period of British gliding began when Mr. D. C. Culver organised a "gliding lunch" at a restaurant in London in December 1929 for anyone interested in taking up gliding. He expected thirty people to attend but nearly double that number arrived. A committee was formed at the meeting, which eventually led to the formation of the British Gliding Association. Interest in gliding suddenly became enormous and was further increased by the gliding demonstrations organised by the B.G.A. and "The Daily Express" when Robert Kronfeld and Carli Magersuppe showed how easy it was to do slope-soaring. Kronfeld also flew a fifty-mile cross country flight from Itford Hill to Portsmouth.

Over one hundred gliding clubs sprang up like mushrooms all over Britain. Primary gliders were either built by the club members or purchased from a number of manufacturers who had similarly appeared overnight. Every hill appeared to have a gliding club on it with lots of people messing about with one glider that resembled a garden chair fitted with wings and held together

with a forest of wires. Most of the clubs were formed by people with no previous flying experience, and, to attract as many people as possible, subscriptions were kept as low as possible. There was a general shortage of money at the time as the country was in the middle of a financial depression. There was also an acute shortage of suitable gliding sites due to general indifference to gliding by landowners and other people who were more concerned in preserving their precious grouse – well, at least until the 12th of August annually! The nett result therefore was that most clubs only managed to glide their primary gliders to the bottom of their hill, usually breaking something or someone in the process, and gliding soon became known as aerial tobogganing. There appeared to be no way out of this situation and, when a club had broken its one glider, frustration generally set in and people began to drift away from the gliding movement. The only people who remained were the few whose prime interest was in carpentry. Most of the clubs therefore disappeared over the next two years, and with them went the early glider manufacturers.

A few gliding clubs remained however, those that had been able to find the right combination of finances, gliding site, more than one glider, and instructors who had had previous flying experience. The main one was the London Gliding Club at Dunstable, and, later, those clubs at Sutton Bank, Yorkshire, the Lond Mynd, Shropshire, Camphill in Derbyshire, Barrow-in-Furness, Newcastle, Ulster, and the Southdown and Dorset clubs in the South of England. These all gradually gained in experience, grew in size, and successfully achieved true soaring flight. A British team was entered in the first truly International contest at the Wasserkuppe in 1937. Later achievements included distance flights of over two hundred miles and a British altitude record of over fourteen thousand feet in 1939. The clubs were supported by a glider manufacturing industry that grew with them out of the remnants of one of the early gliding clubs, namely Slingsby out of Scarborough, and other smaller manufacturers were mainly centred around the London Gliding Club at Dunstable.

Soaring for pleasure stopped in September 1939 upon the outbreak of the Second World War, although some local flying was carried out until mid-1940. The gliders that were built in the next five years were for a very different use than pleasure flying and they were huge machines carrying up to sixty troops or seven-ton tanks. Most of the pre-war gliders were stored away although a few of them were used for radar research when they were towed out into the middle of the English Channel, released, and tried to return to England unseen by both human and electronic eyes. Towards the end of the

war some of the pre-war gliders were used by the newly-formed Air Training Corps. This “junior branch of the R.A.F.” was created during the war to increase air-mindedness in boys, and as aircraft could not be spared they were taught to glide. Additional gliders were therefore required and so, before the war had ended, gliders for pleasure gliding were again being built in Britain. When the war ended in 1945 British gliding was therefore able to make a good recovery, using basic gliders already in production, but also using new two-seat training gliders introduced by Slingsby’s just after the war, and new high-performance gliders, the Eon Olympia, a large batch of these being put into production by a furniture firm that had just stopped making the large war-time transport gliders. British gliding therefore had a reasonable start after the war and there was no shortage of trained pilots to become instructors to train others. Dual instruction became standard practice, and very soon the old pre-war primary training gliders were discarded. The end of the war also brought a surplus of instruments and parachutes on to the market and, later, old war-time airfields became available for use as gliding sites, although this was not until the fifties. Up to then there was rather a shortage of suitable sites. The widespread use and understanding of thermal soaring just about coincided with the availability of these airfields and so the clubs no longer had to rely on gliding sites situated at the top or close to a hill. Winch launching from these long runways gave a good launch height, and aerodromes, of course, eased the introduction of aero-tow launching. The war effort also gave the manufacturers the benefit of synthetic waterproof glues.

In the mid-fifties the gliders began to change in character. Competitions that had previously been of a goal or distance-flying type now changed to shorter races around a triangular course, for a variety of reasons that need not be gone into in this book but were mainly of an international nature. Speed became the all-important factor, and with the availability of newer wing sections the manufacturers were able to meet this challenge and produced gliders that instead of just staying up would fly fast between thermals. However, the new wing sections necessitated the making of accurate profile shapes to the wings. The traditional method of making wings, from spruce ribs, birch ply covered leading edges, and then covering the remainder of the wing with fabric, was a reasonably cheap and light way of making wings but it did not give a very accurate or smooth profile shape. The first methods used to make a smoother wing involved the use of either more wing ribs, the method adopted by Elliotts of Newbury Ltd., or in the use by Slingsby’s of thicker wing skins using Gaboon ply. Fuselages too came in for considerable improve-

ment to reduce drag, and Gaboon ply was also used for fuselage construction. On the Continent this same problem of surface finish was solved by the use of sandwich construction. In this type of construction two skins are separated by a lightweight filling. Various materials were used for the skins, including plywood, light metal alloys, or glass-fibre reinforced plastics (G.R.P.), whilst for the core balsa wood, metal honeycomb, or plastic foams were used. This led directly to the exclusive use of glass-fibre for the whole airframe, with G.R.P. construction for the wings, and the first sailplane built out of this material appeared at the 1963 World Championships which, that year, were held in Argentina.

In Britain gliders continued to be made in wood, although G.R.P. was used for certain double-curvature parts, but with the introduction of the latest laminar flow wing sections it became obvious that these could not profitably be made using the traditional methods of construction. There was by this time only one glider manufacturer in Britain and the choice of new materials was either G.R.P. or Light Alloy. For reasons given later in the book Britain chose to change over to all-metal construction. However, things did not quite work out as planned and, following the disastrous fire in November 1968, Britain's only glider manufacturing company was later declared bankrupt. This meant that, for the first time since the sport of gliding re-commenced in Britain in 1929, the gliding fraternity in this country did not have a home-based manufacturer to supply gliders to the gliding movement.

In order to rectify this state of affairs a new manufacturing company, Torva Sailplanes Ltd., was established in August 1969 and decided at once that the future lay in the manufacture of sailplanes made in G.R.P. materials. Gliders of Continental manufacture made in glass-fibre had begun to appear in this country in 1968 and continued to be imported in greater numbers over the next two years. Torva's summing up of the situation was confirmed in November 1969 when it was announced that Slingsby Sailplanes Ltd. had been reformed and that it too was planning to produce G.R.P. sailplanes. Britain now has at least two glider manufacturing companies and so the gliding movement in this country is assured of continuing support in the form of home products.

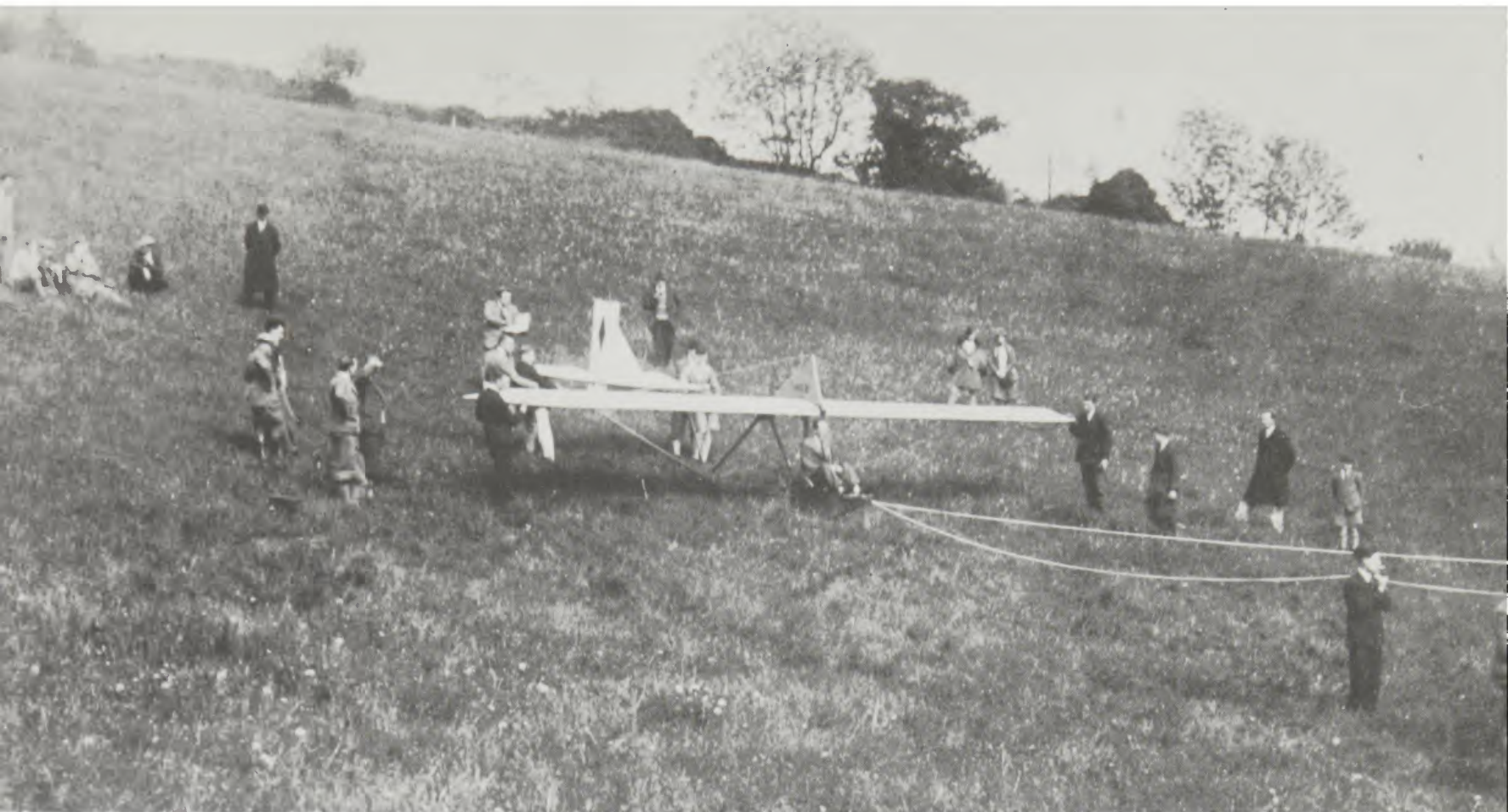
The British gliding movement today is in a very healthy state. There is a large active membership spread over fifty-eight clubs all over the country, plus nineteen service clubs who also have four overseas clubs in their organisations. According to the 1970 Annual Report of the British Gliding Association 731 gliders are operated as well as 57 tug aircraft. In addition to the above

the Air Training Corps has 165 gliders spread over two centres and twenty-eight schools.

Perhaps the greatest danger to the sport of gliding today is the lack of air-space in which to fly. The spread of controlled air-space over Britain since the war has brought severe limitations on the flying of gliders in certain parts of the country, particularly in the South-Eastern quarter. Cross-Channel flying from England to France, which was successfully attempted by Geoffrey Stephenson in 1939, became after the war the goal of many flights but only eleven pilots managed to complete the crossing before controlled air-space restrictions put an end to such flights in the late fifties. In 1969 the London Gliding Club on Dunstable Downs was threatened with near extinction by the spread of a Control Zone from Luton Airport. This threat was eventually averted, largely through the efforts of the B.G.A. Air-Space Committee and the gliding movement itself, but the future still holds doubts as much depends on the site chosen for the Third London Airport.

Civil aviation is not the only threat to glider flying. There are also large areas of air-space used by the R.A.F. and the other services for flying training and low flying. As I write these words the Northern National Gliding Championships are taking place at Sutton Bank and at the same time there are R.A.F. jet aircraft roaring around the sky at all altitudes from just above the ground to contrail level. On visiting the club one of the competitors told me that it is quite a shattering experience to have a Phantom suddenly blast its way past you whilst one is quietly sitting in the sky going about one's lawful occupation of competing. The Contest Director admitted to me that it was "quite a problem", and, in spite of informing the relevant authorities, he regretted that it would be necessary to report an "air-miss" that occurred during the contest.

One other probable danger to gliding lies within the gliding movement itself, and this is the danger from those that desire to fit gliders with little engines. Now that reliable, efficient and quite small engines have at last been developed "gliders" with engines fitted to them are beginning to appear in large numbers. I know that not everyone, particularly the principal advocates, will agree with me but I think that these machines are a potential threat to the sport of gliding, and if rules are not properly framed the gliding movement could, without realising it, find that it had become just another light aircraft organisation. However, before launching into the arguments for and against, a survey of machines already produced introduces the next chapter.



Gliding in the early thirties – a Dagling at a gliding club

R.F.D. Group Ltd.



E. D. Abbot Ltd. works in 1932

The Aldershot News



Slingsby Sailplanes Ltd. works just after the war

J. C. Reussner

CHAPTER 3

Self Launching Sailplanes, and others

Gliders and sailplanes have from time to time been fitted with small engines for a variety of reasons, and in this chapter it is hoped to sort them into their proper categories.

In Britain the first glider to which it was planned to fit an engine was a version of Pilcher's Hawk in 1899. Next in date order came the Planette in 1932. This was a B.A.C. VII glider modified by Mr. C. H. Lowe-Wylde to a single-seater with an engine fitted on top of the wing. The Dunstable Dart by A. R. Weyl in 1935 originated from an idea to make a powered version of the Slingsby Falcon 3. Also in 1935 L. E. Baynes built the Carden-Baynes Auxilliary, but the next glider to have engines fitted to it was the General Aircraft Hamilcar in 1945. This was introduced for military requirements and, being a special purpose aircraft, does not really fit into this chapter so it will promptly be ignored. After the war Wing Commander K. H. Wallis fitted a small engine on top of a Petrel sailplane in 1947, and in the same year the Slingsby Motor Tutor made its first flight. The next motorised sailplane to appear was the Slingsby Powered Capstan in 1968, but in 1969 there was a powered conversion made at Cranfield, Bedfordshire, of a Slingsby Kirby Tutor when two Villiers engines were fitted to the lift-struts with two small propellers positioned just behind the pilot's head. These then are the motorised "gliders" so far produced in Britain. It now remains to put them into their correct categories.

The types produced by Lowe-Wylde, Weyl, Wallis, and the Slingsby Motor Tutors were aimed at the "low-powered flight" market. However, they became known as "motor-gliders", a regrettable title, one most likely left over from the 1923 Motor Glider Competitions. This title was totally incorrect as they were in fact just low-powered Ultra-light Aircraft with high aspect ratio wings. Gliding and soaring was never intended to be carried out with these aircraft.

Pilcher's idea was to install a small engine to enable him to climb to a suitable height to enable him to soar. As no suitable engine was available at that time he designed his own 4 h.p. oil engine, and it was planned to fit a four foot diameter pusher propeller behind the pilot. However, he died on the 2nd October 1899 from injuries sustained when he crashed in the Hawk glider two days previous at Stanford Hall, near Lutterworth, Leicestershire. His launching method on that day was by a tow from a team of horses but, being an engineer, he probably preferred mechanical horse-power and so planned the first self launching glider.

It is interesting to recollect that in 1959 the B.B.C. Television reconstructed the scene of Pilcher's last flight and instituted a search for his engine as a part of a general series of programmes entitled "Lost without trace". A replica of the Hawk was built and flown at Stanford Hall on the 18th July but this flight also ended in a mishap when the replica was caught by a gust of wind during "taxi" trials. The craft became airborne but on landing the undercarriage was pushed through the port wing and the replica was wrecked.

Pilcher's ideas were revived in 1935 by Sir John Carden, and L. E. Baynes with the Carden Baynes Auxilliary took these a stage further by making the engine retractable to make an efficient sailplane. The engine was only 250 cc. producing 9 h.p. and this was probably the smallest "powered aircraft" ever to have flown. Both the Pilcher and the Baynes types can therefore be listed as Self-launching Sailplanes.

In the nineteen-sixties single-seat low-powered ultra-light aircraft began to be built in great numbers, especially in France, but two seat sailplanes also began to appear complete with an engine either on top of the fuselage on a pylon or as original designs with an engine in the nose. The latter types were used on the Continent as training gliders for sailplane pilots, the idea being to increase the length of instruction periods by being able to prolong the flight, and to do this regardless of the weather. The clubs found that they were obtaining greater utilisation than hitherto, and the pupil was able to book a period of instruction at any specific time. These two seat sailplanes are therefore known as Powered Trainers.

The first British powered trainer to aim at this market was the Slingsby Powered Capstan of 1968 but this was destroyed in the fire at the factory before a Certificate of Airworthiness could be issued and production commence. A powered version of the T.53 was later planned but was still in the project stage when the Aircraft Co. became bankrupt in 1969. Slingsby Sailplanes Ltd. now build the Scheibe Falke powered trainer under licence.

Now that instruction in gliding techniques using a powered trainer has been successfully introduced into this country it now remains to be seen whether the cost of instruction can be kept down to a minimum over the next few years. The author sees no threat to the gliding movement's future as long as the powered trainer is only used for training and "circuit bashing". The danger lies in the widespread use of single-seat self launching sailplanes, especially for local soaring from small airstrips and aerodromes. If everyone went off on their own, and flew from their own airstrip, this would leave the actual gliding clubs as being nothing more than groups of people learning to fly, and it is here that a possible danger threatens the whole gliding movement.

It is a fact nowadays that the average soaring pilot wants the best performance he can obtain from a sailplane, but only at a price that he, or a group, can afford. He is not therefore likely to make any compromises on items that detract from the sailplane's soaring ability, or spend extra money on items that spoil the performance. He is therefore much more likely to purchase the best sailplane that he can afford rather than one with a poorer performance that is likely to cost just as much as the one without an engine.

It may be very convenient to be able to switch on an engine when one is unfortunate enough to run out of lift but, surely, it is the challenge presented to the glider pilot, to stay up in the air knowing that he has no other source of power than his own ability to recognise and locate lift, that makes the sport of gliding so attractive to the individual, and one of the main reasons for its very existence.



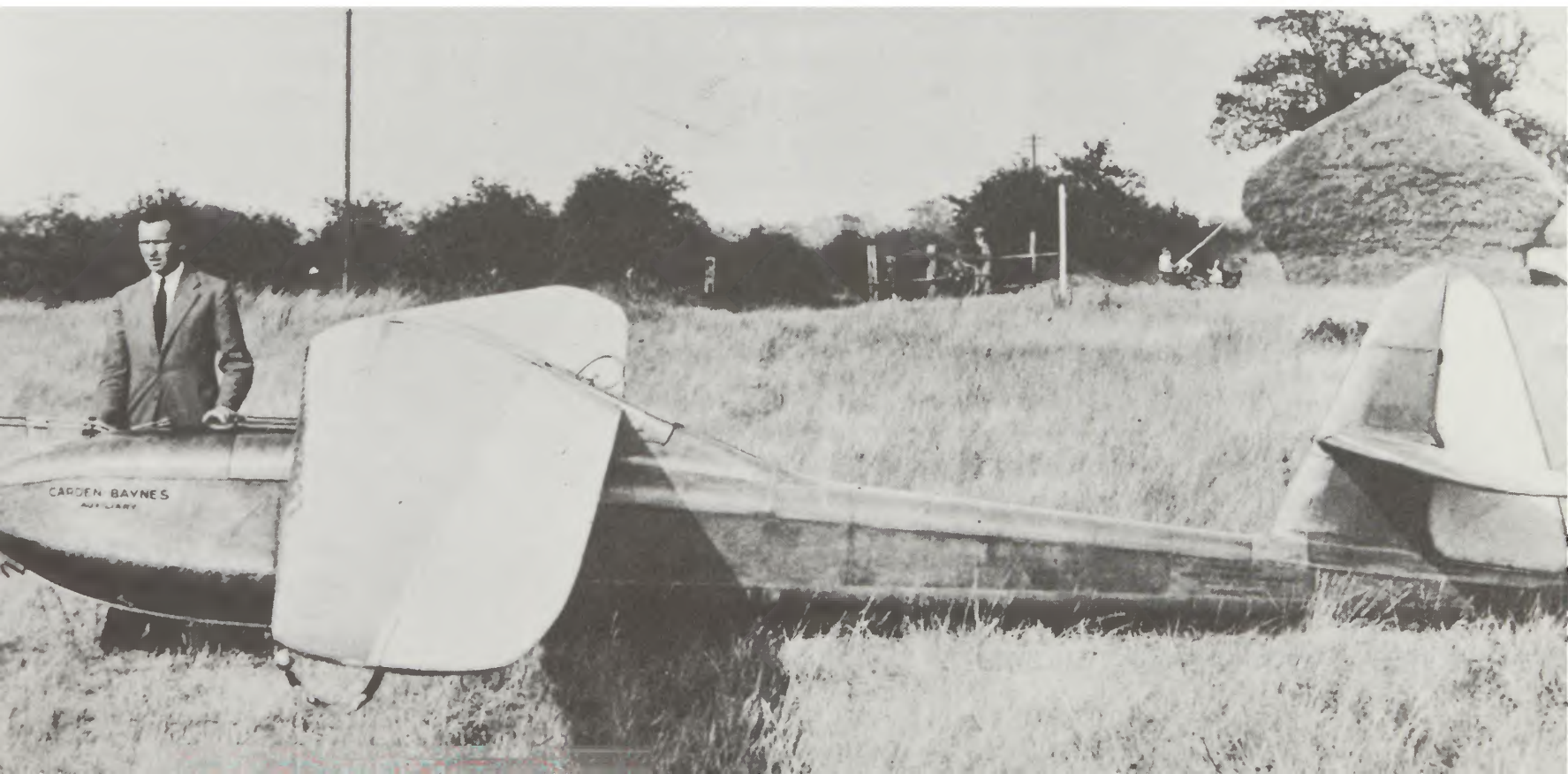
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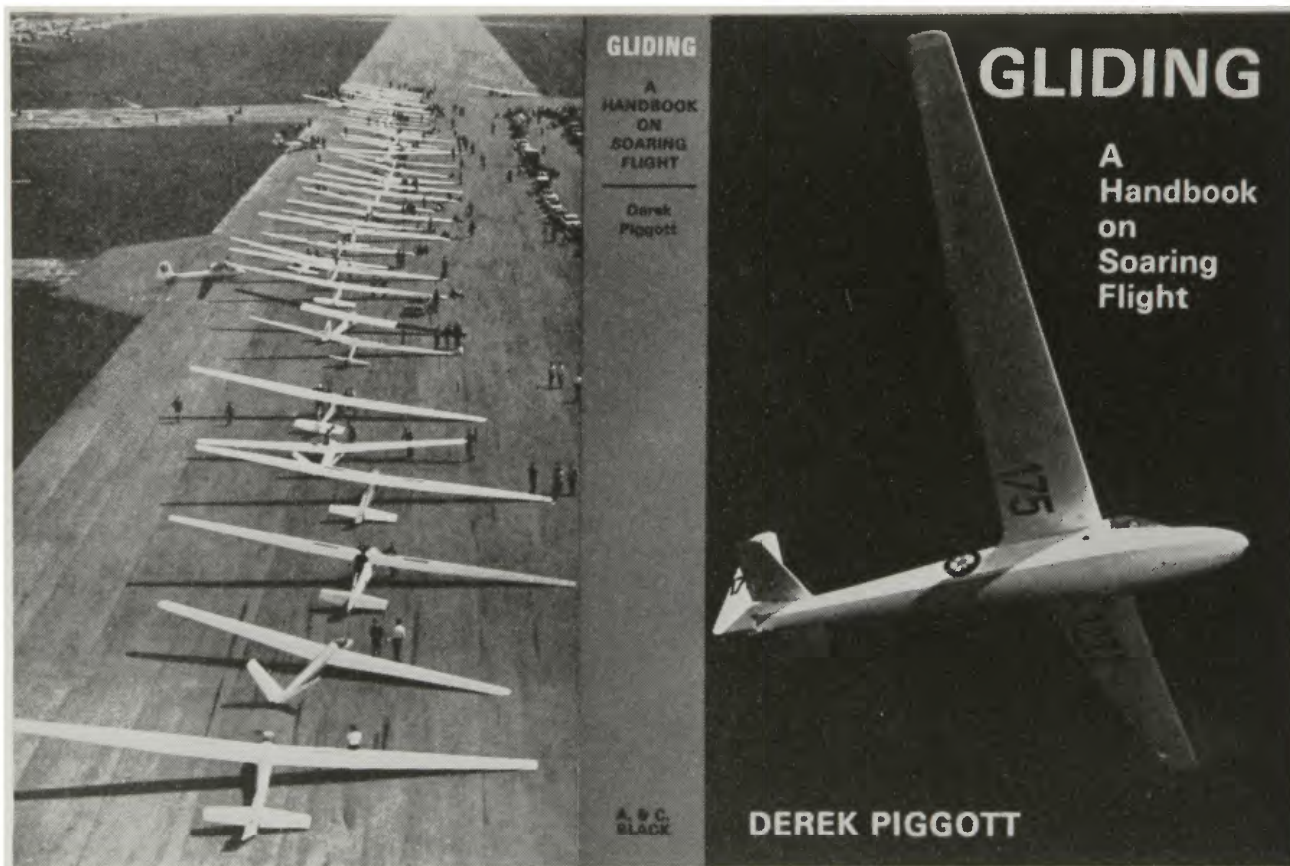
The Carden-Baynes Auxiliary

(above) with engine raised

(below) with engine retracted

The Aeroplane





GLIDING

A Handbook on Soaring Flight

by Derek Piggott

Gliding has been adopted all over the world as the standard reference book on learning to glide. It covers all the important aspects of gliding, from the very first flight to advanced cross country techniques.

All the most up-to-date training methods are described and the latest instruments explained. A special section gives the results of research into thermal bubbles and their structure, and material is also included on the motor glider and glass fibre construction. The book is profusely illustrated with drawings and photographs.

Derek Piggott is without doubt one of the finest gliding instructors in the world. His book is therefore an important event, and covers the ground he has set himself completely and with professional perfection. It includes everything that a glider pilot should know from the day he joins his club to the day he enters the elite. SAILPLANE AND GLIDING (*from a review of the first edition*)

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