SAILPLANE AND GLIDER

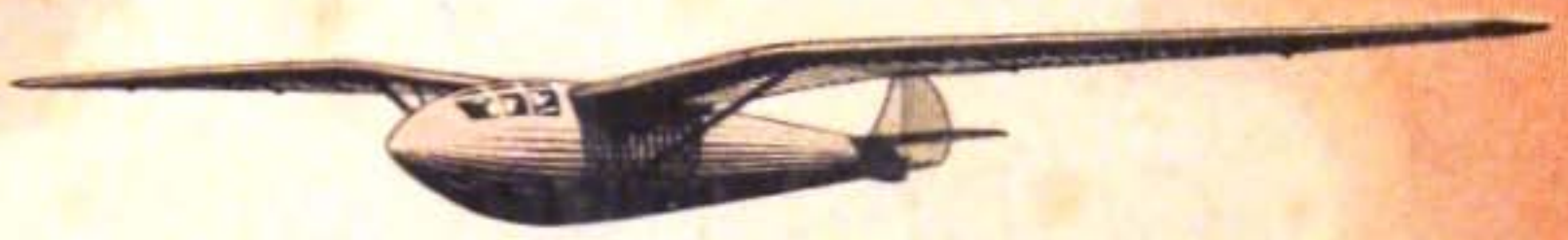
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The Organ of the British Gliding Association



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PEGASUS RESURGIT

With the opening of 1944, and the brightening of the dark cumulo-nimbus of war, we return to publication. The war, which at first seemed to have put an end to our aims and endeavours, now seems to have made them far more possible than we had ever dreamed, even in our most sanguine moments. The British Gliding Movement struggled for ten years before the war, and there were never more than a few hundred enthusiasts at any one time. Now over 70,000 boys have been trained to glide as part of the A.T.C. Flying Training, and much larger numbers are envisaged and even, it is said, many thousands of girls. In this vast reservoir of human spirit and talent, it cannot be doubted that there will be found a much greater tide of aspiration than ever moved Pegasus. We are glad to feel that in the time to come the ranks of our movement will be spread over tens of thousands of young men and women, who having tasted the joys of flying, with or without power, are determined again to brave the gusty winds, the unknown air, even the dark clouds, in search of adventure and Mastery of the Air. We have here a great opportunity of placing our Empire in the first rank of achievement in all types of aeronautical activity. Before the war we were hampered for many years by official neglect, until the fear of war compelled some recognition of the usefulness of our activities. Can anyone doubt that if official help is needed after the war, officialdom will be unable to ignore the dynamic of say 200,000 young men and women in Great Britain alone who wish to take up Gliding, even though it be as a first step to power flying? The war will have been won by the youth of this country, and not least by those who have taken to the air. For many years afterwards the necessity of retaining a great Air Force will remain, and it will be some years before the impetus due to the war dies out of flying, if it ever does. For not the least of the changes brought about in the New World for which we, our relations and friends, have fought, suffered and endured, is more freedom, freedom from the constricting bonds of stupid regulations, a world in which Aero-carriage has come to stay, cost what it may, and which has in a few years made our world now so small that there is no part of it which cannot be reached in a day.

Before 1939, Soaring and Gliding made friends of the most diverse nationalities and races. There is a language of the air which is like the language of the sea. It transcends all barriers of race, nationality, colour and language. It is the language of perils, dangers, joys and the thrills of endeavour and achievement, all shared in common by those who seek knowledge of the mysteries of flight in the great silences of the high air. True there may be rivalry here, but it is seldom aught but the rivalry of good sportsmanship. There is only room for humility in the hearts of those who wrestle with Nature among the clouds. Only to these does Nature vouchsafe her secret knowledge. Between such there can be no bitterness, for they are Nature's children, whom her soothing hand soon restores to health and comradeship. In silent flight in the High Heavens there is Peace.

So with a truly air-minded world, in which physical barriers both of distance and of language are overcome by the aeroplane, we may surely look, as indeed we must work, for a breaking down of extreme National consciousness, and a greater readiness to take the broader view of the family nature of mankind. We are all of us creatures of our environment, and the deepest thing in life is Friendship. At the beginning of this Air Age we may well be at the turning point of Man's history. For never before has intercommunication been so easy as it has now become, if only Governments will let it, and not prevent the natural friendliness of mankind from flowing in its proper channels.

There are signs of this in the great friendliness which has developed, for example, between the people of this country and Russia, U.S.A., Holland, Belgium, Norway. The memory of dangers shared, of mutual help freely given in the face of a common threat to existence will surely be a great stepping stone to that greater friendliness, which is essential, if Mankind is to take the miraculous chance which the courage of youth and its often unrecognised endeavours in the years before the war, has made possible to offer.

Since this journal last appeared sterner tasks have occupied our time and energies than chasing the evanescent thermal or riding the wind along the grassy slope in the summer sun. Most soaring and gliding enthusiasts have joined the Forces, or served the country in some capacity or another. Some, alas, have given their lives, and these we commemorate and will remember. To us their spirit, their energy, their brave endeavour, still lives on, recalled by the flight of the birds they strove to emulate. They say birds leave no trace in the wide air. But their gay courage has writ their monument in achievement, and their memorial for ever in our hearts, and remains both our solace and our inspiration.

GLIDER PILOTS POSTWAR JOBS, FREIGHTCARS OF THE SKYWAYS

By **FLIGHT OFFICER RODERICK PARKINSON**



Figure (1)

Much has been written on the subject of glider trains and their probable role in postwar air transport, but in general these have been highly imaginative conceptions concerned with a vague and indeterminate future. It is therefore the purpose of this article to set forth in definite and plausible terms the capabilities of motorless towed aircraft for commercial cargo transport purposes in the light of what has been well substantiated by current technique in military operations.

Several branches of the Service, notably the Army Air Forces, have trained glider pilots in large numbers and provided them with a highly specialized skill and aeronautical experience not possessed by the ablest power pilots. For the postwar civilian, the cost of such training would be virtually prohibitive in view of the expense involved in operating multi-engined towplanes purely for training purposes. It should also be obvious that no amount of ground training can be substituted for actual experience gained in towed flight.

The question is, then—will the operators of America's air transport lines be prepared to exploit this reservoir of specialized talent—or will they wait until the war is over and then speculate upon the feasibility of the "glidertrain" while the aforementioned pilots seek another livelihood?

In the hope of obtaining an informative reply from the potential users of this medium of transport so that we glider pilots may have a reasonable basis upon which to evaluate our prospects in the postwar picture, this article poses some specific problems and envisions for them a realistic picture of what Air Transport can expect of the air trailer[1] and the men who pilot them.

A Summary of the Justification

As has been pointed out by such authorities as Major Barringer and Richard du Pont, the virtue of adding a towed aircraft to a cargo plane is not solely to increase the payload of the latter to an extent that more than compensates for the reduction in speed, but to introduce the even more important element of flexibility. Obviously there is no economic justification for operating a transport that is able to cruise between two and three hundred miles an hour when this efficiency is cancelled by frequent stops involving large landing patterns, traffic delays and time lost in loading between landing and takeoff.

Interchangeable air trailers, however, provide a solution to this problem with the additional advantage of being able to operate from smaller landing fields or flight strips than powered transports of equivalent capacity. Exactly how such aerial caravans can employ multiple tows and pickups using techniques and equipment available to-day, is described below.

Before describing these methods, however, it seems advisable to mention two considerations requiring further development in the interest of safety in commercial practice.

The first of these is operation under instrument flight conditions. Until the results of all experimentation in this line are made known it can only be pointed out that glider pilots have demonstrated ability successfully to fly the tow without being able to see the towplane due to clouds and weather conditions; that is, by visual reference to the near portion of the towrope. Flight instruments are unsteady in towed flight, but usable. It is the opinion of the writer that a special adaption of Radar can be successfully employed to indicate the relative position of two or three trailers in multiple tow. As to the feasibility of night flying, some military glider pilots say they prefer it.

The second consideration is that of emergency landings. With proper maintenance and inspection of towrope and towing gear, and with careful allowance for wind, there is little excuse for short or forced landings in commercial operations. But should an extra margin of safety be deemed necessary, the liquid fuel rocket motor in its present stage of development offers a practical solution but for one drawback, that of maintaining the oxygen component in the liquid state. A manually operated compression pump might be devised for this purpose, and the problem should not be too much for Allied engineering genius.

Commercial Technique Explained

Before describing air trailer operation on the projected route diagrammed on the map, Figure (1), the reader's attention is directed to the chart, Figure (2), illustrating the requirements for an efficient commercial type air trailer, which is the one described in the text. Our example is based on the following two assumptions:—

1. That the facilities employed have been established on a previous experimental route, using, let us say, a postwar version of the Army's CG-4A for the purpose. These facilities have been created and are maintained by the Airline Operator at the firm's expense and with Government authorization.

[1] The term, "air trailer," suggested by the late Maj. Lewin B. Barringer, is offered in place of "glider," since this type of motorless aircraft is properly designed with a view to its performance in towed flight, and has in common with its more aerodynamically efficient counterpart, little more than the fact that both types land without means of an internal power source.

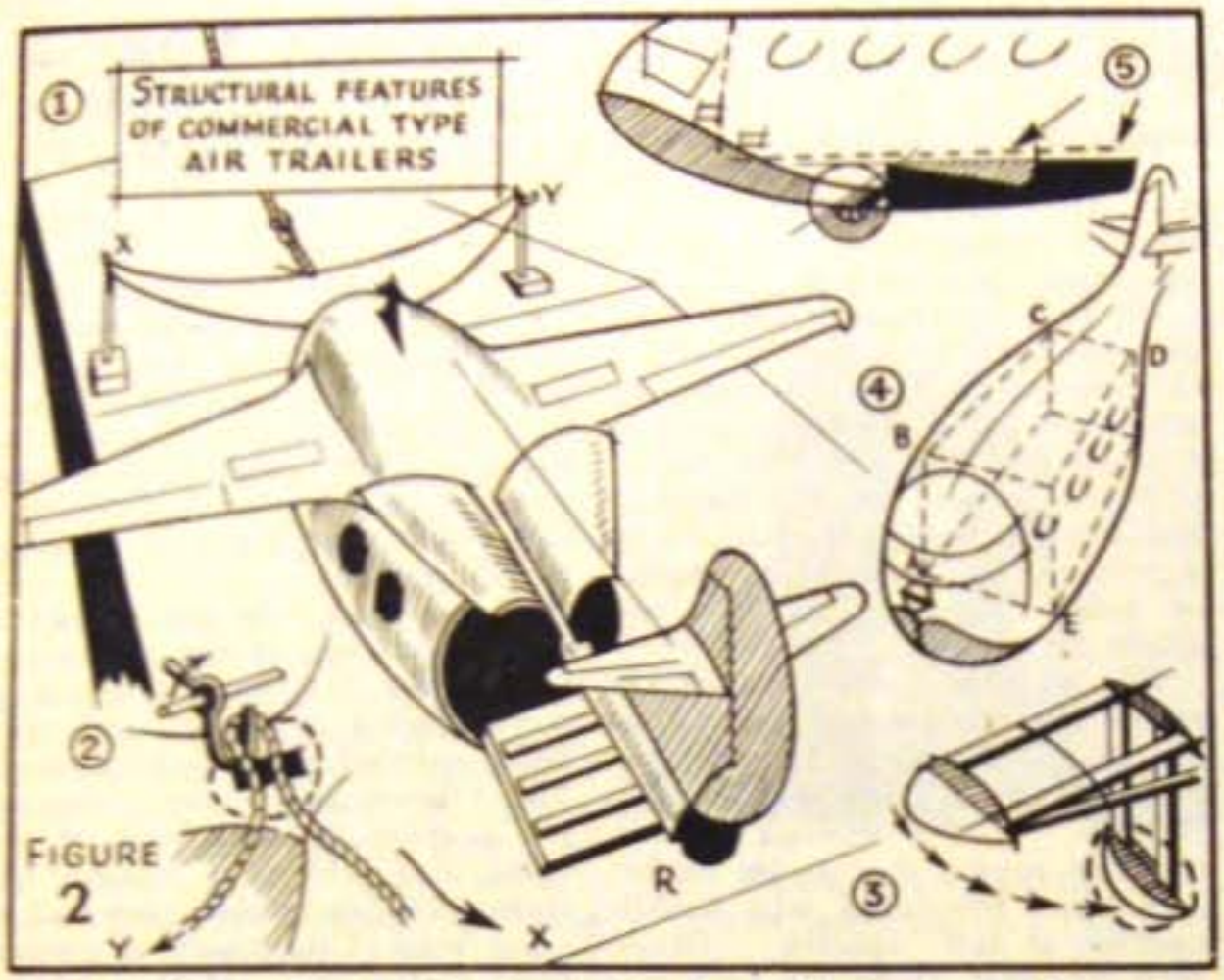


FIGURE 2

(1) Air Trailer Shown in Position for Loading on Platform Atop Inclined Ramp. Pick-up Rig is Shown with Towrope Hook Engaged. Portion of Liquid Fuel Emergency Rocket Motor Protrudes from Tail Section. When Doors Close, Stressed Skin Carries Tail Loads. (2) Simplified Diagram of Pick-up Mechanism Housed in Nose Section—Rope Being Doubled to Form Pick-up Loop. (3) Flush-Fitting Wing Tips Retract to Form Floats (Inflatable Rubber Bladders) for Amphibious Operation. (4) Bulky Hull Required to Accommodate Variety of Shapes Carried as Cargo. (5) Simple Fixed Loading Gear Takes up no Cargo Space and Produces Negligible Drag. Four Wheels Distribute Load Stresses and Provide Extra Braking Surfaces. Step Hull is Streamlined by Inflatable Rubber Bottom.

2. That the Civil Aeronautics Administration has judiciously assigned airways for cargo aircraft at appropriately low altitudes, higher elevations being allotted to the faster, long-range passenger carrying aircraft.

Referring to the map, Figure (1), and to Figure 3A, we see our four-engined transport serving as towplane as it prepares to leave the air freight terminal outside Cincinnati. Towing three air trailers, designated from left to right, 1, 2, and 3, the towplane will fly nonstop to Buffalo making several pickups and releases.

The towplane alone may land at the municipal terminals when desired, but all pick-up operations are made from specially equipped flight strips or airports outside the general traffic pattern in metropolitan areas. Such landing facilities will include special ramps (see Figure 3B) to provide easier takeoffs for multiple tows and pickups.

Thus assembled for the initial takeoff, and using radio signals, trailers 1, 2, and 3 release their brakes and roll forward a second or two in advance of the towplanes. This relieves the towplane of virtually all the friction of the wheels, and as the trailers will be airborne first, only the drag of the towed craft must be overcome by the time the wheels of the towplane leave the ground.

The trailers rise in close succession but not simultaneously, as the towrope is rigged in varying lengths to minimise the possibilities of collision in rough air. The trailers dive slightly to release the tension sufficiently to permit the towplane to assume the correct climbing attitude, and by the same means, the aerial caravan can climb over the obstructions that would be highly dangerous to a powered transport of equivalent capacity.

Cruising at the lowest altitude commensurate with safety as provided by regulations, the four aircraft cruise along the regular route until Smithtown is reached where Number 2 drops off slightly upwind, executing a conventional "peel off" and 180-degree landing approach. Like many similar small communities, Smithtown vitally needs air freight service in connection with its small but thriving single industry. That there is no pickup schedule in this instance is no economic loss, as the rest of the cargo will reach its destination sonner, since a higher cruising speed is possible.

At Columbus, trailer Number 1 releases and upon landing a few minutes later clears the runway[1] before the towplane with trailer Number 3 completes its pattern for the pickup run.

In this instance we have the towplane with two towropes dangling free. Small sleeves, such as those used on trailing radio antennae, placed near the end of the rope serve to hold the nylon strand fairly straight and prevent tangling in flight. This is one instance in which the towplane must make two passes at the runway, one for each trailer picked

FIGURE 3-A
TAKEOFF METHOD USING RAMPS

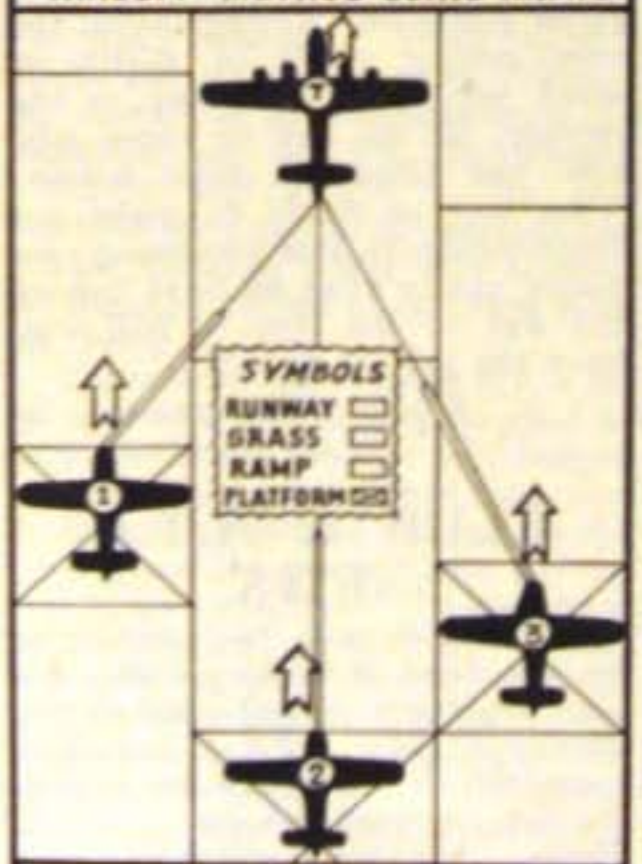
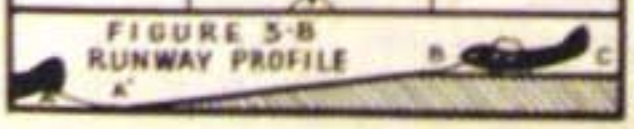


FIGURE 3-B
RUNWAY PROFILE



[1] A postwar use for the Army "jeep" is provided by the need for a towing vehicle to assist in both landing and take-off operations, though let it be known that the qualified glider pilot can usually park his aircraft in any designated spot by the skilful application of brakes.

BIRDS IN THE UPPER AIR

By HARALD PENROSE

"INCREDIBLE," shouted my observer as he stared at the mass of lapwings to which I was pointing. A thousand of them, twinkling in the December sunlight, were flying in an irregular wedge formation, eastward along the Dorset coast. They were about half a mile from my aeroplane. I glanced at the altimeter.

"Five thousand four hundred feet," I called.

"Incredible," repeated the observer.

"Have you ever seen them flapping as slowly as that?" I yelled, as we shot ahead, leaving them a dark, pulsing mass against the blue of the sky.

"Do you think they're tired?"

I banked the aeroplane in a wide circle, sighting the birds again as I came round towards their tail.

"They're still holding the same height," I said. "You'd think that if they flapped with such little wing beats as that they'd be bound to drop."

"Amazing," I could just hear my companion shout.

* * *

And it certainly was. A lapwing normally flaps about four beats a second: these were making only one, with an effortlessly smooth stroke. As I glanced at the rippled sea beyond them I saw that they must be flying in a huge, up-rising billow of air, produced by the difference in temperature between the water and the land that had been hoarding the warmth all day.

Sometimes drawing near enough to see the gloss on their feathers, sometimes seeing them only as a cloud in the sky, I circled the birds for the next 10 minutes. In that time they made good about 10 miles, travelling in a following cross wind which possibly doubled their speed. But the interesting thing to me was that although once or twice my throttled-back aeroplane headed the birds off their course—when they would stop flapping and wheel away in a massed glide—I found that each time they would return to within a degree or so of their original direction.

That was many years ago, but since then, on many flights, I have watched the upper air for birds. As aeroplanes have become faster it has become increasingly difficult to spot birds, but, nevertheless, there have been some hundreds of occasions when this has been possible. In particular, when using aircraft, such as gliders and autogiros, which have speeds similar to those of birds, I have made some interesting observations.

* * *

Many different species have been encountered above 1,000 ft.—such as swifts, swallows, starlings, rooks, buzzards, kestrels, peregrines, gulls, teal, mallard and swans. These have usually been met singly, except lapwing, gulls, duck and starlings. None of the very small birds has ever been seen, but this may be due only to the difficulty of spotting a body a few inches big, against a patterned landscape which stretches endlessly until it is lost in the hazy distance.

Very soon after commencing these air observations, I became aware of an interesting and indicative factor, common to the majority of birds seen: the wings were nearly always held out steadily in the gliding attitude. At first I thought this might be due to fright at the noise and sight of the aeroplane flashing by; but eventually, using a slow light aeroplane, I was able to follow at a safe distance the course of gulls for many miles, and found that, except for an occasional lazy flap, they would hold this soaring attitude all the time.

Later, using a small sailplane, I found that I could fly so close to some birds, such as the rooks, gulls and a kestrel, that I could see their eyes. The bird would watch me quite unfrightened, and I, flying at the same speed of about 30 m.p.h., would watch the bird. And both of us would be soaring supported by the warm thermal currents and winds deflected from fields and hill edges far below us. In this way I once watched a kestrel for some five minutes, sailing across country at 2,000 ft., but this little red mouse-hawk has also been encountered when I have been flying a slow military machine at 5,000 ft. A swift has been watched soaring even higher—at 7,500 ft.

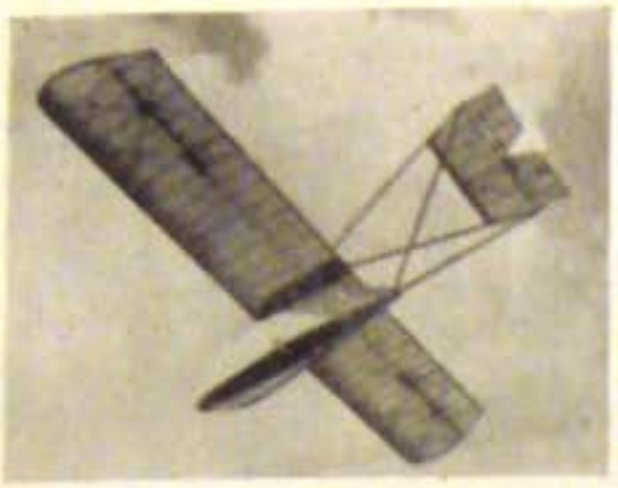
When these single birds have been observed, soaring at great heights, it is possible that others may have been flying, unseen, in the vicinity. The fact that several birds have been encountered at successive intervals in one flight gives a measure of endorsement. This leads one to speculate whether the long migratory journeys of birds are, more often than not, made largely by soaring flight. Indeed, the many false starts of gatherings of birds such as swallows might easily be in the nature of explorations to see if the weather conditions were such that suitable upcurrents were being formed.

* * *

One calm and lovely August evening I had been watching the sun dyeing the western sky with crimson and gold, as I crouched in the small cockpit of my sailplane. A huge bubble of air must have been rising from the country, beyond the Yorkshire moors 2,000 ft. below, and it held me buoyantly in the sky. I could skim and turn wherever I wished, gazing at the loveliness of the countryside the while. Presently the sun had dropped below the horizon's rim, and the moors grew misty purple in the eveing light. Reluctantly I prepared to glide down to where the trailer awaited, but even as I turned I saw a lone swift. On outstretched wings it soared southward, riding the same thermal as I. For a few minutes I held the same course as the bird, not more than 50 yds. away. South and south it went, rising slowly, a hundred feet and another hundred feet, until it vanished above me, still heading southward in the gloaming.

That night I lay in my tent watching the stars twinkle through the open flap. Where was the swift, I wondered; was he still soaring southward and southward, screaming his wild cry of "Swi, swi" through the starry space of night?

(With acknowledgements to the Author and "Country Life.")



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ANNE DOUGLAS' BOOK

CLOUD READING FOR PILOTS.

By A. C. DOUGLAS.

With a Foreword by Professor D. Brunt, Sc.D., F.R.S. London: John Murray, 1943. Price 10s.

THIS is a unique work; nothing like it has ever got into book form before. In its pages the clouds come alive; they are shown to have personal habits, to be acutely sensitive to environmental changes, and to pass through a characteristic life-history from birth to decay. Though written for the power pilot, it necessarily includes a wealth of information of value for soaring flight, for the simple reason that nobody but a sailplane pilot would have conceived such a book, let alone been able to write it. And the photographs, which total 263 separate exposures, far outnumber those of any known cloud book, not excepting the four-guinea International Atlas.

After some simple meteorology, Ann Douglas plunges us into a chapter about cumulus which occupies more than a third of the book. Every sailplane pilot will have to read it because he won't find such a collection of information anywhere else.

For example, why do some clouds dissolve from the bottom up, while others start dissolving at the top? (A particularly lucky camera shot, Fig 31, includes one of each sort.) And what is likely to happen to a cumulus on entering a patch of air into which a previous one has evaporated? Nobody thought of that before.

The author also deals with that rather neglected subject, the break-up of anti-cyclones, during which convection improves and cumulus grows taller before the cyclonic winds arrive—a matter of importance in view of future developments in out-and-return soaring and cross-wind goal flights.

By courtesy of the publishers, two series of photographs from the book are reproduced here. The first, a series of four, is a good example of the snags of cloud-photo interpretation. The author says the cloud is directly overhead and north is at the bottom, and claims that it is rotating. Does the reader agree? Here is my interpretation:—The apparent rotation may be due to turning the camera, which is difficult to align when pointed overhead. Still, the right-hand end of the cloud is obviously approaching another bit half out of the picture. *But* this effect would be caused by perspective as the clouds move away from the zenith. Furthermore, the lower edge of the cloud and the left edge of the surrounding pre-cloud haze both appear to be rotating equally fast, which is unlikely. But the aforesaid perspective would then reduce the apparent angle between them, which it does not, so the real angle is increasing and the cloud must be rotating with respect to the haze. Conclusion: there *is* rotation of the cloud, but not as much as the camera suggests, unless the haze is slowly rotating too.

The other series of five pictures is presented by the author to show that the growing parts of the cloud have fluffy edges, while the melting







parts have a hard, ragged outline. So here is another exercise for the reader: which parts are growing and which dissolving—or, in other words, where would you look for lift?

"Convection cloud streets" receive their first published classification: (1) a row of clouds derived from the same thermal source; (2) widespread streets, parallel to a strong wind which has set up a semi-regular pattern in the convection currents; and (3) cross-wind streets. Mrs. Douglas confines this last class to clouds formed by single or repeated thermals from an extended source, such as a sun-facing ridge, lying across the wind direction. She gives three examples, including a very striking row of nine (Fig. 59), whose regularity and closeness, however, suggest wave motion to me, rather than thermals.

Another large chapter includes the high and medium clouds; but only the lenticular and castellated varieties provide lift for sailplanes, while the rest are useful for forecasting. Fig. 134 shows an exceptionally fine skyful of lenticulars at the Newcastle Gliding Club's "helm wind" site.

The book sets one thinking of a day in the autumn of 1932 when four or five members of the London Gliding Club were induced to watch a puff of cumulus shoot up all the way from condensation level to the alto-cumulus above. I remember a feeling that the British gliding movement, after nearly three years of stagnation, had on that day begun its advance into cloudland. Now we have this imposing collection of cloud lore to mark a stage on the road, but the journey is not ended, as the author would be first to agree. In the present state of knowledge some of her interpretation of cloud changes must be classed as guesswork, and I would like more evidence before accepting them. But the book, as is stated in its preface, has been written for





those who "would find out more for themselves," showing them "what to look for and how to look for it." So it is a work which will bear much fruit, and the process is going to be of absorbing interest for those who take part.

A. E. S.





ARE WE APPROACHING THE ERA OF THE ALL PLASTIC AIRCRAFT?

By **W. R. SCOTT, A.M.Inst.B.E., A.M.R.Ae.S.**

THE subject of plastics has, in recent years, become one of considerable interest in many fields of industry. The aircraft designer has in no way been the last to seek its possibilities with a view to using various materials that to-day come under the heading of plastics.

Unfortunately, however, plastics are a subject which has not been written up in much detail, and in many cases technical data appertaining to the various moulding compounds that are available is difficult to obtain, and are issued by the various manufacturers as strictly confidential.

I have listened with interest to many a discussion, the subject of which has been the possibility of moulding complete sections of aircraft from plastic. It was hearing of the various ideas that friends and acquaintances had got of the possibility of the all-plastic aircraft, that prompted these few short articles. It is not my intention to lay down any particular theory as to the possibilities of aircraft ever being completely made as a plastic moulding, but to give some idea of the various plastics that are available, the source from which they are derived, how they are worked, and the practical difficulties which arise in various cases.

The title, "Plastics," is in itself somewhat misleading, as the layman would assume that this covers such materials as clay, putty and like materials which can easily be pressed into shape and moulded from time to time. Plastics referred to as industrial moulding plastics, only become soft and mouldable under certain conditions or treatment and are divided into two distinct classes, namely, the thermo setting and thermo plastic materials. Thermo plastics are the group of materials which become soft and mouldable under heat, and which can from time to time be re-moulded if so desired, the material in many cases losing little, if any, of its original characteristics. Thermo setting, however, refers to the various moulding compounds which under heat and pressure become soft and even liquid, and which endure a complete chemical



change in the process, the whole becoming a different material from the original moulding substance. Such moulding will not soften with the application of heat again, and cannot, therefore, be salvaged in any way.

The best known thermo setting material is Bakelite—the trade name. To people familiar with aircraft, flexible windscreens, transparent gun turret housings and such like are made from thermo plastic materials, known under the name of Rhodoid, or in some cases from Perspex, Perspex being I.C.I.'s trade name for this particular grade of thermo plastic material. As a point of interest, Perspex is one of the most optically clear materials obtainable, being clearer than the best optical glass. It is therefore extensively used in the manufacture of such things as windscreen panels in cockpit housings, bomb aimers' windows and similar places where clear vision is of primary importance.

Both thermo setting and thermo plastic parts are used in the modern bomber and fighter for making many of the small fittings and attachments that were formerly fabricated from aluminium, dural, brass, etc. Such things as pulleys, pulley guards, cable shields, air-ducts, flair tubes, fairings and fillets between fuselage and tail-plane and fuselage and wing, cabin heating tubes, flexible shielding for cables, map cases, inspection panels, dinghy containers, First Aid boxes, and in some cases the complete detachable tip of the wing, which incorporates the navigation lights, and even units as large as complete pilot seats, which as will be appreciated, have to withstand considerable strain under present-day service conditions. All these items, as well as many others, are not made from the same kind or grade of plastic. Before going on to discuss, in detail, which of the plastics have been chosen for the various articles and why, I am going to give a rough idea of the characteristics and composition of some of the best known commercial plastics of to-day.

Plastics are by no means a recent discovery, as mouldable compositions have been produced from shellac since time immemorial and can be traced back many generations to ancient India, China and Ceylon, where many articles were fashioned from compositions using shellac base plastics. Bitumen and pitch being a by-product of the coal tar industry, have been used for many years, mixed with various filling compounds, such as cotton flock, slate powder, asbestos, etc., thus producing a very cheap material which has been found most useful in the manufacture of accumulator cases and other fittings which come in contact with acids, but naturally does not lend itself at all to the aricraft industry. The range of plastics I am going into detail of are roughly as follows:—Casein plastics, cellulose plastics, nitro-cellulose, cellulose acetate, polymethyl methacrylate, known as perspex, styrene and vinyl resins. These aforementioned articles come under the heading of thermo plastics. The following which come under thermo setting are:—Phenole formaldehyde and urea formaldehyde.

(*To be continued.*)

LONDON GLIDING CLUB.

Since we last published any news, the temporary clubhouse at Totternhoe has continued to function as an outward and visible sign of the club's refusal to be suppressed. Tea is served every Sunday by Mrs. Walker, and the tightening of restrictions on petrol, though it has caused a slow decline in the number of members turning up, has by no means reduced them to vanishing point. A tendency to counteract this reduction by other means has already resulted in two engagements, but we still call it a club and not a matrimonial bureau.

The announcement, early in 1942, of the inception of the Glider Pilot's Regiment caused us no surprise, for many of our members who helped to lay its foundations were to be seen here at week-ends in the days of more ample petrol supply, and those who couldn't come over by road would shoot us up from the air. More recently, some of them took part in the glider invasion of Sicily.

It will be remembered how, before we stopped flying in May, 1940, the local thermals were improved by the effect of the Government's ploughing subsidy. They should be better than ever when we fly again, for now a large part of the hill-top has been ploughed up too, including the launching site.

The King Kite with the altered nose, formerly flown by the late P. M. Watt, has been bought by V. Williams, who is busy making an instrument board for it and has it stored at Dagnall, near here. Apart from this, the Dagnall barn which formerly stored the club's machines is now almost empty, its contents having found their way to various A.T.C. units.

J. S. Fox, who once held the distance record and was club chairman for a time, was last reported in Dublin, writing a book and lecturing to crowded audiences, no doubt on the Pyramid prophecies, to which he transferred his interest from soaring in 1939. Another long-absent member, Challier, returned from Tahiti two years ago to fly for the Free French.

Some time ago C. Nicholson deserted Meteorology to fly in the Fleet Air Arm, and J. P. Dewsbery deserted Psychiatry to become Surgeon-Lieutenant on an aircraft carrier.

Among members assisting in A.T.C. gliding schools, D. G. Hiscox is assisting to run one near Wendover, in company with G. B. Baker, and E. J. Furlong has one near Woolwich; thermals are often in evidence at both sites.

F. J. R. Heath, when last heard of in Egypt, had his own Grunau there; he wrote that it was in excellent condition, but he wasn't allowed to fly it.

H. E. Hervey, the club's former Chief Instructor, after taking a notable part in the inception of military gliding, is now back at a ground-level job in London. Our Assistant Instructor, R. M. Dixon, is in charge of a glider training establishment somewhere in England, and recently had F. T. Gardiner in charge of the flying there. O. H. Furlong and D. F. Grieg have both left military gliding, the former having transefrred to Air-Sea Rescue.

Several members have, we regret to say, lost their lives in war service, and we expect to give full particulars next month.

Meanwhile any further news of club members will be welcome, including changes of rank, which are always of interest but are difficult for our information service to keep pace with.

Finally, remember the clubhouse is still at your service every Sunday.

SUBSCRIPTIONS

The circulation of *Sailplane and Glider* is limited by its paper quota. This is the reason for the reduction in size, and the thinner and therefore lighter paper. The publishers can dispose of far more copies than can be printed. To be sure of your copy therefore, it is necessary to take out an Annual Subscription of 13/- post free for twelve numbers. Publication date is the 25th of the month dated the succeeding month. Cheques, Money Orders, etc., payable to *Sailplane and Glider*, and crossed.

GLIDING AND SOARING IN CZECHOSLOVAKIA

(*Continued from page 5*)

license the fee was £2, for "B" £4, and for "C" £5. 6s. This payment included lodging, but not board, in the school for 2 or 3 weeks. All prices mentioned are those charged during 1938.

It is important and necessary to say that suitable ground and atmospheric conditions are most essential for successful gliding and soaring, and from this point of view Czechoslovakia fulfilled every desire. Weather conditions in all seasons of the year were excellent, the country's geographical lay-out with its slopes, hills and mountains and prevailing wind so suitable in every way that all its enthusiasts had every inducement to devote their spare time to their hobby.

From the beginning of April to the end of October is the best time for gliding and soaring. The sky of Czechoslovakia is nearly every day clear and blue and only occasionally studded with billowy white cumulus which are rarely followed by heavy black rain-bearing nimbus.

The winter months December, January and February are also good months for gliding and soaring for, where the enthusiastic followers of these sports are concerned frozen feet and hands are of little consequence.

The Czech countryside affords a lovely picture. Crisp, deep snow covers every visible thing, and over its shining surface the frost's glacial fingers draws another icy coat. The bizarre shapes of partially snow-covered bushes and trees are thrown into scintillating relief by brilliant sunshine. It is no wonder that Czechoslovakian youth was so enthusiastic about this sport and that until 1938 the numbers of its followers every year were increasing by thousands.

(*To be continued.*)

AIRBORNE FORCES ITEMS.

These will be welcomed, but must first be submitted through the usual channels. If the Editors are warned that items have been submitted and when, they will contact the appropriate officials and be of any assistance they can.

THE GLIDER PILOT REGIMENT

EARLY in 1942 it became known that Great Britain had its own glider pilot regiment under the command of G. J. S. Chatterton (now Col. G. J. S. Chatterton, D.S.O.) At first it seemed as if the new regiment wasn't a glider pilot regiment at all ; it almost seemed as if that was only a name designed to mislead the enemy, as the preliminary training was mostly on the barrack square and of a super-Guards standard.

It was known that the scale of rejection was extremely high. Of all the applications a comparatively small percentage passed the R.A.F. medical boards, and of those that remained only three-quarters finally made the grade.

After a little time, however, the cloud of misconception began to disperse and the reason for this terrific discipline and training became apparent. For the new conception of a " Flying Soldier " made the greatest demands upon those who went to make up its members. Basically a glider pilot has to fly as coolly as he can through " flak " and other defences, land in enemy territory, possibly in the barrels of the enemy's guns, and then fight. It takes guts enough in all conscience to fly in the face of the enemy, but to go beyond that and fight on the ground was something which had never been demanded of men before. It was considered that the extra morale required to do this could only be obtained from the high standards of discipline and turn out, and the birth-place of discipline is on the barrack square.

To their great annoyance, therefore, but to their eternal gain, the early members of the Glider Pilot Regiments found that long before they saw a glider at close quarters, they had to undergo a training programme which was something like this ; the attainment of a super standard of turn out and discipline, of saluting and movement and physical fitness, the latter was achieved by a severe and testing physical training. Added to this was a complete weapon training in all infantry weapons from the rifle to the mortar, a School Certificate standard of mathematics and finally aircraft recognition.

The result of this was miraculous. Members of the Regiment had been selected from almost all branches of the Army, and although they seemed profoundly shocked by the extreme persistence of " spit and polish " they soon became accustomed to it and never looked back. They realised that they were being fitted to become Total Soldiers, which was something that had never been realised before.

It is reported that Major Chatterton made an opening address to them on the following lines :—

" You are to be trained as the most modern type of soldier—that is the Total Soldier, but the system is to be that of the past—probably 500 years old : Francis Drake insisted upon discipline and *esprit de corps*, and by so doing he defeated the Spanish Armada and also sailed round the world. Oliver Cromwell saw the drift of civil war, and insisted upon iron discipline in the new Model Army, which finished that war within a year. The Army and Navy practiced it, and in so doing became glorious from Blenheim to Trafalgar and Waterloo. In 1914 a small army 150,000 strong, brim full of pride, discipline and *esprit de corps*—marched to France and in three months fought to a standstill over one million Germans, an achievement unsurpassed in history. Those men were your fathers.

Recently pride and *esprit de corps* have been neglected. You have volunteered not only to fly BUT to descend and fight hand-to-hand battles. Therefore, in making this experiment you must not deny the experiences of your forefathers, you must practice all they did and more, so as to prepare yourself to become the most difficult type of soldier yet attempted, that is the Total Soldier."



This was the spirit in which the Glider Pilot Regiment was founded, but it is not too much to say that when it came to flying training the Royal Air Force played a great part in inspiring the Regiment to great achievements. It was the Royal Air Force who pointed out that one effect of the extra standard of barrack square training was to knock some of the initiative out of the trainees, who carried the habit of obedience to orders into the cockpit, with the result that they were rather apt to act only on the receipt of orders and then somewhat in the manner of an automaton. Their movements were harsh and stiff.

The solution to this problem was sought on psychological lines, as it was felt that some of these defects arose from causes outside anything which had occurred during their training with the Glider Pilot Regiment.

Every effort was made to help trainees to think for themselves, so that in addition to courage and morale they were to be individuals as well as first-class soldiers. To an outsider the effect of this is extremely noticeable in the combination of extreme friendliness between all ranks of the Regiment and the high discipline and morale. This was achieved by attention to the mental side by providing a series of interesting lectures by the best lecturers obtainable on such subjects as the British Empire and its history as well, of course, as on military history. Debates were arranged so that trainees were encouraged to express themselves, the drill was so organised that the trainees themselves had an opportunity to instruct, and the R.A.F. were asked to supply instructors so that the R.A.F. atmosphere could permeate the camp.

The complete glider pilot at the end of his training could

Pilot an aircraft,
Use all Infantry weapons,
Drive any type of vehicle,
Fight in a platoon,
Use wireless both sending and receiving,
Construct light bridges,
Use demolitions,
Delouse mines,

and yet possess a parade standard of the highest order.

The flying training undertaken by the R.A.F. was the usual E.F.T.S. training in Tiger Moths and Magisters, dual and solo, followed by dual instruction in the Hotspur glider for towed flight, by day and by night.

Since the early days there have been several modifications of the training of the Glider Pilot Regiment, notably in regard to its flying, but the veil of Security is drawn over these.

Our glider-borne forces and our Glider Pilot Regiment first went into action in Sicily, where they acquitted themselves, as far as local circumstances permitted them, admirably. There were several mishaps for which they could not be held responsible, but they performed with great dash and were duly praised by the Allied Commanders.

For his part in these operations, Lieut.-Col. Chatterton was awarded the D.S.O. and subsequently promoted full colonel.



COL. G. J. CHATTERTON, D.S.O. *Photo : Lenare*

GLIDING CERTIFICATES

Issued by ROYAL AERO CLUB, LONDON, W.1.

"A" Certificates		*School*	*Date*
1715	Roy Douglas Rawlings	Bray	15. 8.43
1716	Brian Sydney Freeman	Knowle	24.10.43
1717	Norman Biddle	Ditto	24.10.43
1718	Albert William Macbeth	Ditto	24.10.43
1719	William Watson	Denham	30. 6.43
1720	Ernest Arthur Lingard	Lincoln	19. 9.43
1721	Peter Howell	Knowle	24.10.43
1722	Wilfrid Anthony Parrish	Ditto	24.10.43
1723	Roy Charles Henry Townsend ..	Ditto	24.10.43
1724	Arthur George Thomas Mason ..	Bray	16.10.43
1725	Peter James Bryan	Rearsby	24.10.43
1726	George Leonard Whitehead ..	Derbyshire & Lancs. ..	5.12.43
1727	Peter Donald Farquharson ..	Ditto	21.11.43
"B" Certificates			
1718	Albert William Macbeth	Knowle	24.10.43
1719	William Watson	Denham	25. 7.43
1720	Ernest Arthur Lingard	Lincoln	20. 9.43
"C" Certificates			
1729	Ernest Arthur Lingard	Lincoln	24. 9.43
823	John Cecil Rice	Rearsby	20. 9.43

It will be noticed that the names of Macbeth and Watson appear in lists "A" and "B" and that of Lingard in "A" "B" and "C." Congratulations to all three, and especially to Lingard, who apparently took all three in a period of five days.

PLANNING A RECORD FLIGHT

By SENIOR COMMANDER P. A. WILLS, A.T.A.

(Reprinted from Sailplane and Glider, July, 1938)

[On April 30th, 1938, Mr. P. A. Wills raised the British Distance Record for soaring to 209 miles. Since then he has raised the British Altitude Record to 10,080 feet, and has thus become one of the first pilots in the world to qualify for the new international "Golden C" certificate, for which soaring flights of 300 km. distance and 3,000 metres climb are required.]

PART I

THE newspapers always call it Buchan's third cold spell, though I don't know what Professor Brunt would say about that. Be that as it may, I have personally noticed that in each of the past four years we have had, between March 20th and April 30th, a spell of highly unstable north-east winds. In past years I have made desperate plans to get a launch from the South Downs during the period, which have always come to nothing, but this year the advent of aero-towing at Heston, specially organised to be ready in time, made it easy; and to celebrate the event, Buchan's third this year turned out at least twins. In fact, unstable north-easterlies blew steadily for practically the whole period, to the great confusion of farmers but the great profit of sailplane pilots.

Going to the office on Friday, the 29th, I looked wistfully up from the crowded city streets at the activity of a different sort going on overhead. It seemed too much to expect yet another such day to follow, but that evening the Weather Bureau said: "Same again." That meant north-east wind, cloud streets starting as early as 9 a.m. with a tendency (in London, anyway) for the sky to cloud over completely later in the day. I asked, however, whether this was not due to the influence of the North Sea, and if so, as one went cross-wind to the west, one would shortly get out of the danger area, *i.e.* the area down-wind of the North Sea. They agreed that this was likely, and that I would probably be safe from Salisbury onwards. It looked, therefore, as if



Photo *Vandyck*

SENIOR COMMANDER WILLS

part of the problem would be to get to Salisbury (65 miles) before, say, noon. This meant early breakfast at Berkhampstead, to be rigged and away from Heston if possible by 10.30 a.m.

We spent a busy evening getting everything teed up for an early start. I ruled out the necessary line of flight on the map, and studied the course as closely as possible. The conditions looked as if they might be very similar to those of my flight, earlier in the month, from Huish to Plympton, so I hoped I might find the same sea-breeze effect which I had then found so useful from Lyme Regis onwards. The course I mapped out, therefore, took me to Lyme Regis, thence out to sea and along the coast to Exmouth, then on towards Plymouth. As a matter of fact on the actual flight I was seldom five miles off this course at any point.

On Saturday morning, however, it did not look very hopeful. The instability was there all right, but the wind was strong and far too northerly. We left consequently rather later than to plan, and without luggage or even money, except for the housekeeping money, it being luckily pay day at home. We said we would be back to tea.

Arrived at Heston the sky looked marvellous. Tremendous streets ran up and down wind as far as the eye could see, and although the surface wind was almost due north, the upper wind, judged from the line of the cloud streets, was north-east. The actual direction, from 1,000 ft. upwards, was officially confirmed as 50°, whereas my course, to get me round Sidmouth Bay, had to be 70° (or rather, 250°). Across a 20 m.p.h. wind this was better than I had feared, but quite bad enough. However, I hoped, in my favour, first, for the favourable sea-breeze effect already mentioned, and, second, that the wind might drop with the combination of oncoming evening and conflicting sea-breezes that might be found from Bridport—if I got as far—to Plymouth, which I formally declared as my goal. Now, as it happened, both these preconceived possibilities came true. Let us therefore be optimists always.

A last point was that, with the big veer in the wind, it was clear if I got into difficulties anywhere, as I got lower these would be increased by the northerly surface wind taking me ever more seriously off my course.

I make no apology for this long preliminary argument, because I am sure that the previous planning of a long flight is of the utmost importance, particularly in England where every really long flight must of necessity be in the nature of a goal flight.

(Continued on page 23)

GLIDER REPAIRS

USK VALLEY AREA

W. J. SWEET & SONS

USK · MON.

PHONE 48 SKILLED CRAFTSMANSHIP

GLIDERS GO TO WAR.

FEW of those who so gaily went through the painfully bumping process of learning to fly the Primary on the slopes of England before the war imagined that they were seeing the birth of a new weapon of war. Yet this war has seen the development of Gliders into one of the most potent weapons of our time, possibly the weapon, which like the Tank in the last war, will prove to be the decisive weapon.

Coupled with Paratroops their use in the attack on the Belgian Fortresses at Eben-Emael in 1940 proved to be the key to Belgium, the collapse of the Belgian Armies and the cause of the German break-through and the subsequent tragedy of Dunkirk. True, they were only the means of executing a stragetic idea, but they were the necessary means.

It is not yet clear whether the Germans or the Russians were the first to employ gliders in military operations—purely as Transport Aircraft, but when the Russians came to go to war it was by no means certain that they were in any way behind the Germans. Unfortunately, almost all the news we have of Russian efforts in this direction comes from German sources, it is not likely to be less reliable for that, but some has been received from returned members of the Polish and Czech forces who were first in Russia before coming West.

We do know, however, to what use they were put in Crete, and later on Cos and Leros, whilst a modern wonder is the Me 323, or powered Glider, which, whilst offering so much carrion to our fighter aircraft, was also the means of transporting so many tens of thousands of German troops and supplies to Tunisia in the early days of that campaign.

But what of our own Airborne Forces? This is not the time and place to go into the full history of our Airborne Forces, including the formation of the Glider Pilot Regiments. These columns, however, will be open in future to whatever news we can print about our gliders and their pilots. But at least this much must be said, that in her Glider Pilots this country possesses a body of men who are and will remain a model to the world and future generations. They are soldiers first and pilots afterwards, and by their training are fitted to be called the world's first "Total Soldiers," for in addition to a most comprehensive understanding of both our own and the enemy's weapons, guns, tanks signals, explosives, tactics and leadership, they are able to fly both powered and glider aircraft.

So far we have heard little that is authentic about their use even in Sicily, no doubt for good Security reasons, but we await with confidence the news of their operations in the forthcoming invasion of Europe.

COMPULSORY SOARING

SWEDISH AIR FORCE ADOPT THE CLASSICAL METHOD

TRAVELLERS from Sweden report that Soaring has now become an integral part of the routine of all Swedish Aircrews. On every Swedish Military airfield there are several Sailplanes of the latest German war-time design, and every pilot has to soar for a minimum number of hours each month. Observers and Air Gunners are also similarly trained so that they will be familiar with flying conditions should they be called on to pilot the machine in an emergency.

Another explanation may well be that owing to a shortage of aviation spirit, this method has been adopted to save its use in training. Whatever the reason, since it is hours in the air which count, there is little doubt that the Swedish pilots will be the better pilots for it. They will certainly be better meteorologists. So far our Air Ministry has decreed that British Gliders shall simply be used to teach Cadets to fly down from a couple of hundred of feet. Perhaps with the example of Sweden before their eyes, they may re-consider this decision. Various foreign journals print reports that the Luftwaffe is still training pilots to soar, and a few weeks ago a new height record was claimed by the German Press for a Luftwaffe pilot.

RICHARD DUPONT KILLED

WE regret to record that Richard C. du Pont, special assistant to Gen. Henry H. Arnold, Chief of the Army Air Forces, and one of the U.S. glider experts, was one of the four men killed in a glider crash at March Field, Calif., on September 13.

The other victims were Col. P. Ernest Gabel, deputy director of the American Air Forces glider programme; Howard L. Morrison, test pilot from San Fernando, Calif., and C. C. Chandler, of Tarzana, Calif.

The glider was a commercial type being tested by the Army. It had been cast off from the towing plane and was attempting to land when it suddenly wavered. Two of the crew parachuted to safety. Mr. du Pont baled out, but his parachute failed to open. The bodies of the other three were found in the wreckage.

Richard du Pont long had been recognized as one of the, outstanding experts on gliders. He was the son of A. Felix du Pont, of Wilmington, Dela. He is survived also by his wife, Mrs. Allard C. du Pont, of Wilmington.

He was working directly with the Army Air Forces glider programme. In 1934 he was soaring champion of America, when he established a world record for long distance soaring. In 1937 he sent his glider into two thunderheads at Elmira, N.Y., riding them successfully for the first time in the history of such contests.

His adventures were many, and they extended to the powered plane field, where he was a pioneer in pick-up mail and freight service. He headed All-American Aviation, which began operations for the Post Office Department in May, 1939, in the transport of air mail and express to 115 cities and towns in six Eastern States. The planes of this company now swoop in, drop their cargo and snatch new cargo suspended from single uprights without alighting. Early in 1943 the company had completed 2½ million miles of flying by the pick-up system.



TAYLORCRAFT MODEL H GLIDER

THE Taylorcraft Model H Glider is an experimental P.V. venture primarily designed to meet the needs of power-tugged glider pilot training.

Basically, the machine is the well-known and war-proved Taylorcraft Auster. In the example illustrated, the machine was taken direct from the Auster production line a few stages before its completion as an Auster. The engine bearers were then removed and replaced by a welded tubular structure, Taylorcraft fashion, specially designed, complete with an additional set of controls to accommodate the forward occupant. The structure was then bolted to the engine-mounting connection by what should have been the engine bearer bolts. Thus, the forward structure becomes interchangeable with the power unit of any Auster. A light superstructure, again welded, provided the foundation for the faired off nose, the increased side area of which was balanced out by increasing the fin area. A standard Auster undercarriage was cut down to provide a suitable landing gear which was supplemented by a rubbing strake along the bottom and at the fore end of the streamlined nose. A Sperry panel was fitted for cloud flying, and there was the Taylorcraft Model H Glider It flew successfully with good trim at first time of asking, proving that here was a source of glider pilot training craft which could be tapped if need be at very short notice, and to considerable effect in the saving of time and cost.

The machine may be flown from all three seats and the flap control operated from pilot rear or pilot forward position.

In the example shown it is in three-seater form, but under special circumstances it could be arranged to seat five to six.

There will no doubt be many uses for such a craft in postwar air activity, for many places normally inaccessible to high-powered aircraft could be served in this fashion by passenger or goods carriage. In certain circumstances, although an "on the spot" landing could be effected within a few minutes from the "cast off," it might take days, or even weeks, for the "returned empties" to reach a take-off base, or perhaps the nearest shipping point by overland animal haulage, and to save a situation, it may be that the craft would have to be abandoned altogether, the cost of which would prove a good investment set against the saving of valuable lives.

General Description—

Wings: Externally strut braced structure attached to upper longerons at the roots and to lower longerons of steel tube "V" struts. Main spars in wood with ribs of aluminium alloy and the wheel fabric covered.

Fuselage: Welded steel tubular structure throughout, fabric covered.

Tail Unit: Steel built, fabric covered.

Dimensions: Span, 36 ft.
Length, 24 ft.
Wing Area, 185 ft.
Weight empty, 600 lbs.
Weight loaded (3 seat), 1080 lbs.
Wing Loading, 5.82 lbs.

REGISTER OF SAILPLANES AND GLIDERS.

IT is known that the Air Ministry have requisitioned most of the Gliders and Sailplanes in the country, including the famous "Minimoa" which was duly crashed and is being repaired. It is also known that there yet remain a few glider aircraft in private ownership. It is desired to keep accurate records of these machines, going a little further than the records kept by the Royal Aero Club before the war.

Will those owners who care to co-operate please send a card to *Sailplane and Glider* stating:—

1. Type of glider.
2. When built, by whom and where.
3. Date of last C of A.
4. Hours flown-total and since last C of A.
5. Present condition.
6. Where stored.

As a number of enquiries have been received for second-hand machines, owners who wish to sell might please give this information and price asked in their reply.

ROYAL AERO CLUB OF EGYPT GLIDING SCHOOL

By CAPT. A. M. BONHAM-CARTER

THE training at the Club was by Winch, as there are no suitable slopes near Cairo, but there is a very nice open space about half-an-hour's drive from the centre of the town. Provided you looked out for pupils under instruction in power planes from the nearby Aerodrome, the power cable, an encroaching Military Camp, and the usual picnickers, it was an ideal place, being also good hard sand without any likelihood of the retrieving car sticking.

The " A " test was the same as in England, but the " B " was a little harder, consisting of five legs; a right and left turn landing near the Winch, a right hand circuit, a left hand circuit, a half circuit followed by a figure eight, followed by a spot landing to be within twenty paces of the spot.

" C " certificate had to be taken on thermals alone off a winch launch by pupils who had never done any " hill slope " soaring, but thermals were excellent.

The reason why thermals were so good was that the training ground was sandy desert, but not more than two or three miles South of the Delta Cultivation. The prevailing wind was Northerly or North North-West, and arrived cool off the Delta on to the sand. By 11 a.m. in the summer (and somewhat later in the winter) the sand was pretty hot and thermals sizzled into being in the most satisfactory way.

They were usually " Dry," so one could not expect to pick one up every launch, but there were lots of them. On an active day, one would find the sinking speed of the Grunan Baby nearer to 4 ft. per second than 3, owing to the descending air, and then one would fly into an area where the air seemed to be " Bubbling " like soda-water, and the ailerons and wing tips would start " twitching." This was warning that one was approaching a thermal, and shortly after up would go the green ball to 5, 10 or more feet per second; into a circuit went the Grunan, the centre of the thermal would be selected by edging away from the side with least climb and up one went.

Sometimes at about 3,000 ft., it was felt that one was getting more than 5 kilometres from the landing ground—the maximum allowed by the bureaucratic Department of Civil Aviation, but one could quit a thermal with confidence, well knowing that another would be found before 1,000 ft. of height had been lost, and this continued until 5 or 6 o'clock in the afternoon. On one occasion a flight of over five hours was made off a winch launch in this way, and the only reason why such flights were not more frequent were (*a*) that five hours is longer than most people would fly for pleasure, and (*b*) that others were usually waiting on the ground to fly. An hour was usually considered a reasonable time if there were others waiting, and as a rule most people were sufficiently thirsty after an hour to want to come down and have a drink. The first pupil who took his " C " off a winch launch, stayed up for forty minutes and then came down, because he was frightened by the turbulent conditions.

The sight of two and occasionally three sailplanes in the air at once, operating off a single winch over an area entirely without hill lift, was satisfying to all concerned.

One day we nearly lost Instructor Celio and the Grunan Baby in a nasty accident. It had been a flat afternoon with no flying, when suddenly a massive " front " was seen to be approaching from the West. On this occasion the wind at ground level was nearly due East. Hastily the winch car was put out in position, and Celio made ready to be launched in the Baby. As so often happens on these occasions there was not quite enough time, and the leading edge of the " front " was already overhead as Celio took off. The launch appeared to be quite normal until towards the end, when to our horror, the Baby was seen to do a sharp climbing turn to the right, followed by a dive to the left while still on the cable. After some further very erratic flying the machine glided down across wind and made a landing in three running bumps, instead of one of the perfect landings for which Celio is noted. All spectators hurried over to the machine and found it undamaged, but with a length of cable still fixed to the launching quick-release, and the pilot semi-conscious, murmuring " L'électricité." We lifted him out of the machine and he soon recovered sufficiently to tell us what had happened. It appears that quite early on in the launch, he felt mild electric shocks, but did not think them important. Later on, at about 300 ft. of altitude, sparks started to leap from the " quick release " mechanism to his legs, and on trying to operate the quick release, the sparks from the operating knob to his hand were so severe that he was unable to take hold of it. About this time it must have been that we had witnessed such erratic flying. Fortunately, being a man of indomitable will-power, Celio had been able to retain consciousness until the cable was cut and then make a safe landing. The winch driver was next asked why he had not cut the cable immediately the pilot was seen to be in difficulties. His reply was, that he had tried to do so, but on approaching the cutting mechanism (built into the car), nine inch sparks had come out of it, and he had been unable to take hold of it. Only by throwing his body at the operating lever had he been able to cut the cable. As it turned out no permanent damage has been done to either pilot or machine, but this experience suggests that care and forethought is needed before launching sailplanes by winch near a thunder cloud.

Cross-country flying was rather limited by the difficulties of retrieving. It would have been a pity to have broken the world's cross-country record, and then to have died of thirst in the desert. Landing in the Delta Cultivation was not recommended owing to the height of the crops and the quantity of irrigation Canals. However, one could have done quite long stretches down the two main desert roads to Alexandria and Suez, but by the time people were trained to this standard a ban had been placed on private

(*Continued on page* 18)



Chas. E. Brown

Photographed From A Glider, 1938. London Gliding Club, Dunstable.

A PAGE OF PRE-WAR GLIDERS

1



1.—A "Gull" at Dunstable, 1938.

2.—A "Gull" Sailplane.

3.—Murray and Sproule breaking British and world's record at Dunstable, 1938.

2



4.—Rhonbussard.

5.—Falcon III.

6.—Rhonbussard.

3



4



5



6



Photos, Chas. E. Brown.

PHILIP WILLS' RECORD FLIGHT

(*Continued from page* 14).

PART II

With the various delays and uncertainties it was 11.05 by the time we actually took the air. I had asked to be towed up-wind towards a cloud street over Harrow, but we had barely crossed the aerodrome boundary, only 600 feet up just east of the gasometer, when the aeroplane ahead jumped as if it had been shot. Instinctively I released, then cursed myself for being so hasty.

However, there undoubtedly was lift somewhere near by, and after a little searching she took it fairly in the seat of the pants. The variometer jumped from six to nine, and a bit later to 12 feet per second climb. We circled up, back over one corner of the aerodrome, into the base of a cloud at 3,600 feet near the Staines reservoir. I turned her nose north-west, put it well down, and struck off at 65 m.p.h. The battle was on.

North of Staines was another cumulus. I found the up-current beneath at 2,500 feet showing 3 feet per second, but this was not enough. I now declared as a rule of the day that when over 3,000 feet I would not be content with 3 feet per second. If after a search round I could not bring it up to at least 5 feet per second I would go on. But I would never just circle in bovine content unless I got up to 9 feet per second. Until that I watched every circle and manoeuvred restlessly about searching for the meatiest bits. Time was the essence of the flight, and to save it meant constant hard work. Lesser lift I used by flying as slowly as possible through it, putting the nose down again when it was past.

I worked this second thermal up to 6 feet per second, and set off again. But this time further lift was hard to find. Virginia Water and Fort Belvedere slid beneath, and I was getting dangerously low. I abandoned the cross-wind struggle and went straight down-wind towards a large common short of Farnborough (Chobham Ridge). I was miserably reflecting that there was not a safe landing-spot in sight, what a lot of luck there was in putting a sailplane down in one piece, and what a lot of work had been wasted on this effort, when we struck lift, 700 feet above the start, perhaps 500 above the common below. A last-minute save.

My pride over rates of climb quite gone, we struggled round and round and round . . . A while later we were up again at 3,900 feet just north of Farnborough, well off the course, and rather depressed.

However, this was the last shock for a long way. We got back to our course at Basingstoke, flew along south of the road to Whitchurch, where we worked a thermal up to over 15 feet per second climb, along to Andover, with Southampton Water and the Isle of Wight in sight to the south, then Salisbury. The rolling country of Salisbury Plain was, as expected, stiff with thermals.

Over Salisbury we had some fun. We found ourselves climbing at 6 feet per second up *beside* a large and dense-looking cumulus. The best lift seemed in a circle of which the nearest point was perhaps 25 yards south of the wall of cloud. At 5,100 feet the lift declined, so I decided to go inside and try for more. We charged at the solid wall of cloud, hit it—and burst out on the other side, as if through a pane of frosted glass. It could not have been more than 25 yards thick, then we were in clear air again—in the most violent down-current of the day, over 15 feet per second.

" You nibble a bit off this side," said Alice, " and you grow taller; off the other side, and you grow shorter. Curioser and curioser." I went back and nibbled some more on the other side.

I had been carefully checking my average speed, and found we had made 32 miles for each of the first two hours. This would get us to the proposed junction with the coast at Lyme Regis about 3 o'clock, and after that I expected to be able to increase speed. I reckoned on being safe to at least 3.30, so it might be a near thing to catch Brer Fox, which would take place, if at all, at Exmouth.

But I was wrong in my calculations; the big speed-up of the day was now at hand. After Salisbury we flew along the line of hills used at Easter by the Cambridge Club, past White Sheet Hill to Shaftesbury, and in this third hour covered 44 miles.

Now came Blackmore Vale, which I had previously found, on the flight to Plympton, rather cold to strangers. It was again. Again near Yeovil I gave up and turned north to make for the aerodrome. Again I spotted the same little sloping wood; again it came to my aid. The conditions were extraordinarily the same from now on to Exmouth.

We climbed thankfully to 3,800 feet, then made no bones about it but fairly bolted down-wind for the sea. Between Bridport and Lyme Regis was the same belt of coastal lift, formed from one to three miles out to sea by a south-easterly sea-breeze undercutting the north-easter. In this we flew fast along the coast, over the blue sea, past Seaton, Babbacombe, Sidmouth, to Exmouth. Here the same strong thermal took us up to 5,500 feet, and after my last experience at this spot a new caution informed me. Our ground speed had increased greatly since reaching the coast, as I had expected, but the struggle at Yeovil had brought the fourth hour's kill down to 32 miles again. We put our first bird, Exmouth, in the bag, and concentrated on the second, Plymouth. The wind was now dropping, the clouds dissolving.

From Exmouth we flew to a cloud beyond Newton Abbott, where I found an unexpected aerodrome, circle and all, beneath. Weak lift from a seedy-looking cumulus took us hesitatingly to 4,000 feet again—and then a long glide found us heading down a river ending in an estuary and a cardboard conical island planted in its mouth, Bigbury. The fifth hour again saw 32 miles go by.

The prospect of getting enough height to cross the high land north of me and make Plymouth aerodrome seemed remote, though as we crossed one or two of the brown rocky spurs of Dartmoor with perhaps 500 feet to spare I found weak lift over each. With a prevailing dearth of landing grounds I was thinking of making a bid for the beach at Bigbury, so recently furrowed by the skid of the SPERBER, when we came to the end of Dartmoor.

Just to the north I saw the text-

book spot for a wind-shadow thermal. Dartmoor billowed down from about 1,600 feet in a series of rounded slopes, facing the westering sun. The bulk of the moor to the north-east provided obvious protection against the north-east wind, so the quiet air over the slopes should have had every opportunity to warm up. I gave up my safety-first plan of Bigbury sands and reached the hopeful spot at 1,900 feet. Immediately I found lift; in no time Plymouth aerodrome was in the bag; a bit later I began to be torn between completing a 178-mile goal flight, or going on while the going was good, and trying for 200 miles, a nice round figure. Then I remembered the "Golden C" requirement—300 kms. or 186 miles. By this time I was at cloud base, 6,000 feet over Plymouth. Inside the cloud lift was strong but patchy, and at 6,900 feet I gave up the mental struggle and went on west. I came out of the side of the cloud and saw the irregular coastline of Cornwall ahead, the numerous inlets and rivers silver against the declining sun, the colours of the landscape darkening by silhouette

I flew along the coast, finding dying lift here and there. The land and sea breezes both seemed to have gone; smoke below was rising gently and vertically. Six hours, yet again 32 miles clocked on.

Over the river running down to Fowey was gentle lift; farther on I could see St. Austell, a surprisingly large town, the hills behind it dotted with huge white pyramids of china clay. I reached St. Austell at about 1,500 feet, saw a sloping field behind a garage on a by-pass, and circled down to a landing at 5.15 p.m.

I had caught a heavy cold and felt extremely ill. In addition I had had nothing to eat since 8 a.m. But the task of keeping at bay the ravening hordes of small children until the MINIMOA was safely packed away took another two hours, before I could get any food.

The official distance (by Great Circle course) was eventually given as 209 miles. The distance covered by my wife with the trailer, retrieving me in the two days, was 581 miles. Who won the greater virtue? No prize is offered for the answer.

AUSTRALIAN GLIDING ASSOCIATION.

WESTERN AUSTRALIA. — News Item. 2/8/43. "Vandals break gliders." "A glider, recently completely overhauled, extensively wrecked on one side; the fuselage of a sailplane torn open and wings stripped of most of the fabric. This is what hon. secretary A. E. Cole, of the West Australian Flying Club, found when he paid one of his regular visits to the club's premises on Saturday. It was the worst of many acts of vandalism during the last few months, committed between regular week-end visits by club members to the hangar at West Subiaco aerodrome. Club's equipment is valued at about £140. Vandals gained entrance to the hangar by tearing corrugated iron from the walls."

NEW SOUTH WALES.—Mr. F. Whitlock, hon. secretary of Sydney Soaring Club, in a letter dated 23/8/43, advises: "The club's last flying day, last Easter Monday, flying "Kite II," at Box Hill—conditions good. Harry Ryan coming to the front again with a flight of 4,500 ft., duration 45 minutes—leaving the winch at 800 ft. Sel Owens, R.A.A.F., finished the day off with an excellent display of aerobatics. Sel is now in Canada on his advanced training. Members of the Beaufort Club present appeared to appreciate the day's flying." In a further letter, dated 7th October, Mr. Whitlock states: "A meeting was held at Matraville on the 5th September. Conditions were bad with cloud and light rain following later in the day. Flying was carried on during the morning, all members having a flight when the local 'A.A. Battery' personnel requested us to stop flying — we had not obtained permission from the correct authorities."

VICTORIA.—The Gliding Club of Victoria. Fatal Training Accident. At about 10 a.m. on 24/10/43 at the Mordialloc flying ground, Raymond Edgar Smith, electrical apprentice (19 years 10 months), of 3, Edyvean Street, Surrey Hills, Vic., a Club trainee, was making his 5th solo flight (winch launched to 700 ft.) in the "Hawk" primary, after 28 flights (dual) in the two-seater "Merlin," when he stalled on the turn into wind at about 100 ft. altitude, on the north side of the field and went into a spin without enough height to recover. The machine struck the ground on the leading edge of one wing and the nose (necessitating almost complete rebuild). The pilot suffered fractures of legs, spine and skull, from which he died in the casualty ward of the Alfred Hospital (shortly after admission) about 1½ hours later.

Mr. N. Hyde, recorder of flights, has furnished the following figures for flying from 1/1/43 to 30/10/43. Flying has been carried out on 25 days for a total number of launchings 371, of which 359 were timed for a total of 35 hours 30½ minutes in the air; 12 launchings not timed were ground skids and hops in the "Hawk" primary. Total flying time for club pilots was 47 hours 5¼ minutes. Details of the flying for each machine:—

"Grunau," 19 flights for 18 hours 27 minutes.

"Hawk," 55 flights for 1 hour 32½ minutes.

"Merlin," 284 flights for 13 hours 21¼ minutes.

"H.17," 13 flights for 2 hours 9¼ minutes.

At Beveridge on 23/10/43 C. Lambeth slope-soared the "Grunau" for 2 hours 11 minutes, and on 24/10/43 he slope-soared for 37 minutes and thermal-soared to 2,000 ft. from a winch launch for 52 minutes. H. Bartram and K. Davies also made thermal flights of 18 minutes and 16 minutes respectively from winch launchings.

The original "Dodge" towing car has been wrecked to build a third winch, and another "Dodge" has been purchased to replace the old one. The Mordialloc hangar has been fitted with a one-piece elevating door with balance weights, similar to that of the Pinjar Soaring Club's hangar at Lake Pinjar, W.A.

BEAUFORT GLIDING CLUB'—This Club's two-seater under construction was viewed on 17/10/43. Wing ribs have been completed—fuselage bulkheads and longerons have been set up. The first mainspar is in jig and second one is being prepared.

SCENES AT AN A.T.C. GLIDING SCHOOL C.126

1.—Adjusting harness.

2.—Corporal Hay, " Keep the stick forward for groundslide."

3.—" Two reds—ready."

4.—End of first slide. Instructor's comment

5.—Retrieving the Primary.

6.—The old story again.

7.—Rigging the quick release on the Kirby Cadet.

8.—Flt.-Lt. Bunn, Chief Instructor (in Cadet) gives some final instructions before " low-hopping."

9.—" All Out."

1



2



3



4



5



6



7



8



9



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To **Those who have friends in the Airborne Forces**

To **All who are interested in our Airborne Forces**

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