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THE SAILPLANE AND GLIDER

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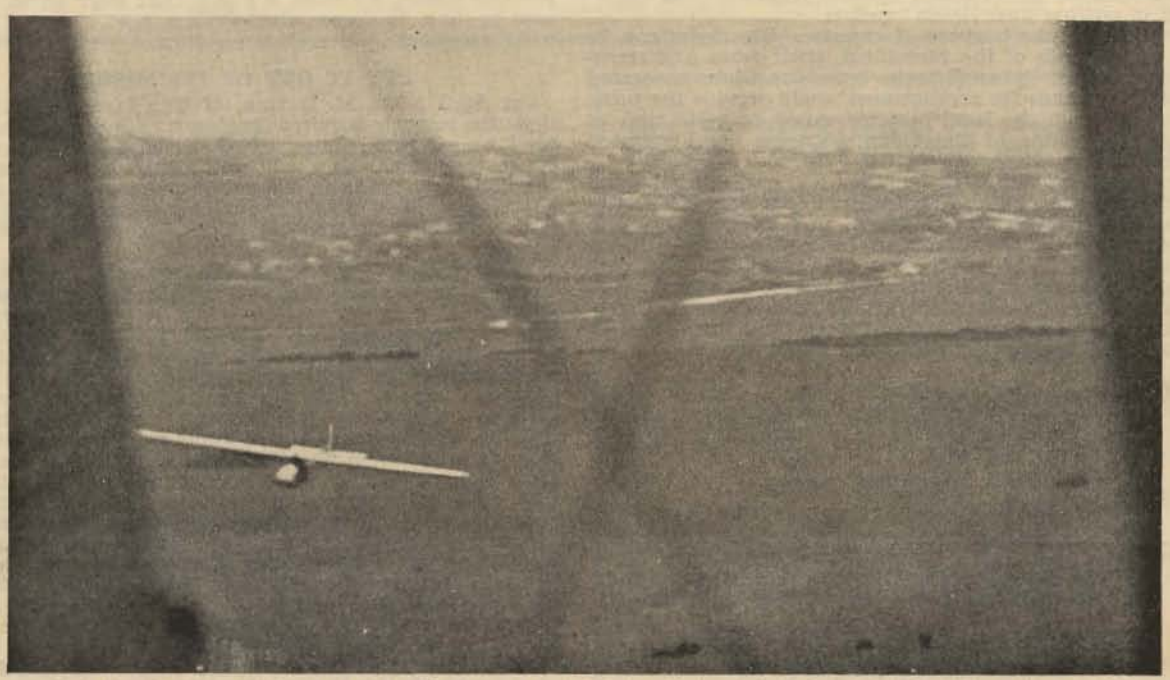
SOARING AT BALSDEAN.



Herr Wolf Hirth soaring at Balsdean in a B.A.C. VI and photographed from Mr. Lowe-Wylde's Moth.
—(L.N.A. photograph.)

NORTH v. SOUTH.

The poet who said of East and West that never the twain shall meet might have been considered inspired if he had written of North and South instead,—at least as far as the Gliding Movement is concerned. At this juncture and without reading further, various people will be tempted to rush for their fountain pens in order to explain at great length how they or others have already been South or vice versa. We know they have.

We know too that one of the most successful gliding meetings yet staged was that between Lancashire and London. We know that Mr. Moore of Manchester has toured the South visiting Clubs and we know that the Evangelist of British Gliding, Mr. Lowe-Wylde has flown his machines all over England. All this is excellent as are the visits of Mr. Waplington up and down the breadth of the land. But at the most such comings and goings are leaven working in the dough.

Let us have something arranged quickly: we are tired of all this talk and rumour about competitions, international or press-supported. We have J. Lyons and Co. Ltd. running

demonstrations for us and these will achieve among other equally important objects closer co-operation between local Clubs, but what we want is a really exciting contest on the lines of the International Rugger Matches.

Let us have a team representative of the Northern Clubs, including Scotland, North of a line drawn between Chester and the Wash, fly against a team representative of the Clubs south of that line, the site to be settled by arrangement. If Scarborough *are* to have a big competition during the Summer perhaps the site had better be in the South.

Now Whitsuntide is a national holiday and we suggest that one of the Southern Clubs starts to get things going for that date. Call a meeting. Select the site. Make arrangements for a representative team and send an invitation to the Northern Clubs. As they are roughly grouped together under The Northern Gliding Association perhaps the invitation could go there, though this would leave out the Scottish Clubs as well as Barrow, Sunderland and Newcastle.

The British Gliding Association has its hands full and probably cannot cope with the situation though the next council meeting would afford representatives a good opportunity of putting their heads together.

Do not raise the bugbear of expense. The team can be put up by friends of the Movement, their fares and transport can be met by small levies from the Clubs concerned and some entrance fee arrangement would provide the prize. A tankard from the local hostelry would do quite well as long as the name of the victorious team was engraved thereon.

We must have standards but they are goals to be aimed for, they must not be regarded as minimum conditions without which no action can be taken.

One has to have clothes and if the bank account will not run to Savile Row, we do not walk about in our skin but go to Burtons or some tailor that we can afford. The Movement knows precisely what it wants in the way of competitions, but if newspapers can forego their much-boomed schemes and if other funds do not materialise, let us get along without.

The Movement has enormous vitality, it has developed without subsidy and its enthusiasm has overcome a host of troubles, and those of organising a competition such as outlined here can be taken in its stride.

THE LONGEST YET.

On April 1 Herr Wolf Hirth in a B.A.C. VI soared for 2 hrs. 13 min. at Balsdean in an easterly wind. This is the longest flight ever made in a British designed and built sailplane. The B.A.C. VI was the standard machine used for auto-towing demonstrations, though the Goodyear Airwheels were removed before Herr Hirth's flight as even their diminutive presence adversely affects the gliding angle.

On the South Downs. Herr Hirth soaring the B.A.C. VI.
—(*L.N.A. photograph.*)

The famous pilot was forced down by an attack of cramp due to piloting in a confined cockpit. Herr Hirth has an artificial leg as the result of a motor-cycling accident and he is accustomed to sitting on an air cushion when flying for long periods, and on this occasion such a luxury was not available. We go into these rather intimate details in order to make it quite clear that such a duration flight is nothing to a pilot of Herr Hirth's ability.

It has been said that the Movement would benefit most by a record flight made in a British machine. This appears sound, but as a British record has to be made by a British pilot, any record made at Balsdean would not have counted officially. To our mind, what was wanted was a demonstration that distance sailing flights are easily available in England as Herr Kronfeld showed last year. The public's memory is very short, however, and it would have been a good thing to have again drawn attention to the possibilities of really getting from place to place in a sailplane. For this reason we think it a pity that Herr Hirth was not able to fly a Professor, the performance of which has yet to be exceeded by a British machine.

PUT IT OUT OF ITS MISERY.

On April 5 Mr. M. Buxton, of The London Flying Club, flew the recently-acquired Professor sailplane of that Club for 2 hrs. 20 min., thus making the longest flight yet made by an Englishman in a sailplane. But why not longer? As the flight was made as a duration flight and not a distance effort we suggest that it would have been better to have put the British Record (*vide* Daily Press *passim*) out of its misery.

The proper way to do this is to take a Hols der Teufel, modified Zogling, or the very excellent Dagling with the addition of a nacelle, and in it put any of our very excellent "C" pilots, together with thermos, warm clothing and air cushion, shoot them off when wind is favourable over one of our several sites and threaten the pilot with instant expulsion from his Club if he comes down before the 17 hrs.

This, provided the wind remains constant, which is not unlikely, is quite possible and would demonstrate that duration is a question of physical endurance plus adequate wing area or light loading. Whereas distance flying requires the high efficiency sailplane, a type which has yet to make its appearance as a manufactured product in this country.

Anyway, congratulations to Mr. Buxton, and to the London Club, for demonstrating that soaring is so regularly possible, although the total soaring time on the Balsdean site must now be mounting up.

EASTER AT BALSDEAN.

After lunch on Easter Saturday there was a light North wind for which this site is not outstandingly suited. Captain Stratton in the R.F.D. sailplane made two soaring flights of eight and six minutes respectively over a beat of a quarter of a mile. They were touch and go all the time.

The B.A.C. crew rapidly assembled the B.A.C. VI without its Goodyear Airwheels and took-off with the Bentley. Mr. Lowe-Wylde dived on the Dagnall party, zoomed and made as if to land. There is talk of wind under a wing-tip but our correspondent says that he thinks the pilot was going to do one of his famous wing-down turns and that the lowered wing hit an earthy excrescence.

The spin round was so terrific that centrifugal force flung the pilot through the side of the cockpit though without injury to himself. Extremely rapid repairs soon put the machine into action again, but no soaring was possible as the wind was now fickle and very light, backing to S.W., whence at nightfall and onwards came much wetness.

After this the interest centred in Mr. Liffant Beardmore and his Professor, which he bought from *The Daily Express*. After various contretemps this machine had been repaired and modified by the British Aircraft Company Ltd. for auto-towing and has been used by them to give Mr. Beardmore tuition by those means.

Mr. Beardmore arrived at Balsdean on Saturday with an antique Buick and two boys. In spite of the universal incredulity Mr. Beardmore took-off with his own auto-tow arrangement, did a 360 deg. turn and landed. Although everyone had now packed up, Mr. Beardmore took-off again in the freshening S.W. wind and worked his way nearly down to Rottingdean, but he tried to come back on another ridge which was not good enough and he was forced to land after a flight of 2 min. 56 sec.

Nothing except the swopping of yarns was possible on Sunday or Monday.

AN OVERSEAS AFFILIATION.

One of the latest affiliations to be received by *The British Gliding Association* is that of the New South Wales Gliding Club, of which Sir Benjamin Game, C.B.E., D.S.O., the Governor, is President, and Air Commodore Kingsford Smith, Honorary Consultant.

THE MAINTENANCE OF MOTORLESS AIRCRAFT.—II.

By V. S. Gaunt, A.M.I.Ae.E.

(*Continued from page* 225, *Vol. I, No.* 28.)

Inspection After a Stalled Landing.

Apart from examining the foregoing points special attention should be paid to the tail unit and the rear fuselage.

Inspection After Landing With Side Drift.

In this case, assuming the wing itself has not hit the ground violently (see final case), the additional points to examine are the centre-section as the struts will most probably be bowed or fractured. The skid itself will no doubt be damaged and the lower longerons should be carefully inspected for signs of failure. The cracking of paint, varnish or glue at joints will usually indicate the slightest movement. In primary type gliders any centre-section struts which it may become necessary to replace should be made of sound, clean, English ash, which will stand up to shock loads better than the more usual spruce or pine.

Inspection After Wing Tip Landing.

In the case of a wing tip landing one includes those landings which combine any of those previously described with a subsequent heel over on one wing tip with sufficient momentum to damage same. The most important members which may fail are the spars, and of the two, the rear is usually weaker because the front spar is considerably strengthened by the ply-covered nose. The impact forces on the wing tip will probably break up the end ribs and the aileron tip and the damage thereto can be easily seen. The loads may have caused hidden failures at:—

the compression ribs or struts, which should be checked for bowing;

the point of contra-flexure of the spars between the lift strut or wire attachment and the root; and

the lift and landing wire or strut attachment points, where the loads are concentrated. Look and feel for movement of fittings—slackening of bolts.

Where wire bracing is used the slackening of wires will be the best guide as to the members which have been strained. Ribs may be found to have bowed either in plan view or in the biggest bay (Warren Girder type) in end elevation of the wing. Such ribs can be repaired as described in the handbook Gliding, which also gives information on spar repairs, etc.

The root attachment fittings should be carefully examined and in the primary type of machine where King-Post bracing is adopted the central member of the King-Post may have split due to the bending load. If such is the case the shock will probably have been severe enough to transmit through to the opposite (apparently sound) wing, the landing and flying wires of which will indicate if such has occurred.

The wing tip impact load will probably put severe torsional strains on the fuselage about the centre-section, and a careful examination should be made for elongation of holes in timber and metal, for compression shakes which may show up as a thin wavy line on the varnished strut or spar, for weakened joints, indicated by an opening up where glued, and so on.

In the case of a severe crash the alignment of components after repair should proceed as hereafter explained:—

Aligning Main and Tail Planes.

Main and tail planes should be set up on level trestles and a taut line used along leading and trailing edges and spar centre-lines. The wires should then be adjusted from the root outwards. Diagonal trammel measurements can be taken bay by bay and with a parallel spar type of wing such dimensions should, of course, be equal. Where the spars converge the wires should be tensioned to "just taut" with spars straight and end rib and compression ribs true.

The straightness of the spars is the most important point and the permissible smooth bow should not exceed, say, 5/16 in. in a 15 ft. length, and *pro rata*. The waviness of the leading and trailing edges is of much less importance, as, although the efficiency is affected thereby, the structure is not appreciably weakened by such irregularity.

In a large span wing there will be a natural bow or sag due to the weight of the wing alone, and trestles should be used to support at, say, 15 ft. intervals. The aforementioned limit refers to warped spars in plan view.

Aligning Fuselage or Nacelle.

Fuselages and nacelles should be set up on trestles so that the datum line (see maker's rigging diagram) is horizontal and levelled athwartships. If wire-braced the trueing-up should proceed from the centre-section forward and aft, trammelling for plan view checking, plus alignment by plumb lines from main struts and stern-post to a fore-and-aft centre groundline.

Monocoque construction cannot be trued-up, and if slightly twisted, but otherwise sound, the only adjustment which may be needed is to so rig the main planes that they are true with the tail-plane. It may be necessary with a cantilever winged sailplane to alter the tail-fixing slightly to achieve this.

The Method of Erection.

When erecting the repaired machine, plan-view diagonal measurements from wing tips to stem and stern-post should be within limits of plus and minus 1/2 in. per 20 ft. measurement. If the designer calls for a dihedral angle, this should be set up on the front spars, the rear struts or wires can then be adjusted to give equal incidence on each wing. Remember that for stability it is preferable that there should be a "wash-out" (i.e. decrease) of incidence towards the tips. Some makers specify this.

If a "sweep back" is called for, this should be checked from a taut line reaching from one wing to the other and checked for squareness by diagonal measurements to stern-post. Assuming the line intersects the leading-edge on the centre-line of the machine, the distance back of either wing tip, measured at the point indicated on maker's diagram, or at the last outboard strong rib, should be within plus or minus 1/2 in. of the specified figure.

Points Which Are Often Missed. General Maintenance.

Finally see that all nuts are locked by split-pins, safety-pins, spring-washers, centre-popping or rivetting over the end of the bolt. Strainers should be locked with wire after making sure that threads are covered.

Routine Maintenance.

Entirely apart from the foregoing suggestions of what to expect after a crash, there is the equally important need for periodic routine inspection to see that the cumulative effect of indifferent handling and landing, plus the effect of weather, has not impaired the airworthiness of the aircraft.

With a timber structure warping is likely to take place. Wooden members will shrink, and it is natural that fittings bolted thereto will need periodic tightening. If fittings are crushing into the timber they should be removed and a piece of hard wood (say 3-ply) glued to the crushed part. This may necessitate longer bolts; if so, be sure the new bolts are at least equal in quality to the old. A groove round the bolt head indicates (in British practice) High Tensile Steel. For approved materials see table in Gliding.

Daily Inspection Before Flight.

As a general guide the routine which follows is suggested:

1. Check attachment of planes to centre-section, tail-units to fuselage and to each other, ailerons to main planes, struts and bracing wires to planes, tail units and fuselage, seeing that all bolts and strainers are locked.

2. Check controls, first for correctness of movement, then working from control column right through every "wire-run" to the control lever attachment on ailerons, rudder and elevators. See that splices are sound and the serving twine intact. Also see that wires are on pulleys and that strainers and pins are all locked. Check that with rudder-bar and control-column neutral, the rudder is lineable with fin, and that the elevators and ailerons are in line with tail and main plane respectively.

3. Sight to see that tail and main planes are lineable and that the fin is perpendicular.

4. Oil all working parts.

After Five Flying Hours.

The ensuing routine should be followed after every five flying hours or, alternatively, every three months, whichever is the shorter period.

1. Open up inspection patches (inspection rings of wire sewn into a fabric patch or of celluloid, doped on, will enable a 4 in. diameter hole to be used for inspection, after which a patch is merely doped over and peeled off for subsequent inspection) on main and tail planes. Check tension of internal bracing wires. Inspect internal structure so far as visible for general condition.

2. Set up at flying level. Check rigging and general truth of all components.

3. Examine bolts for tightness of nuts and re-lock after tightening.

4. Check seat and safety-belt fixings.

5. Thoroughly examine skid for wear and renew shoe if necessary.

6. Check alignment of control-column and rudder-bar. See that pulley brackets, levers, links and their brackets are soundly anchored. If too much backlash is found in any system investigate until the fault is found and cured. Wood shrinkage may have allowed a control bracket to work loose.

7. Replace any control cables which have strands broken. (The British splice has four complete tucks.)

8. Inspect fabric and make good any temporary patches.

9. Inspect fuselage and patch up securely where temporary repairs have been effected.

10. Check air speed indicator pipe lines where fitted and renew rubber joints.
11. Grease, oil and paint where necessary.

AT THE END OF THE SEASON.

At the end of season, i.e., after, say, nine months' service, the notes made of the last three-monthly inspection will guide the ground engineer as to how far to "open up" components. If the machine hase been stored in a damp shed or allowed to remain out in the rain for several hours it will be advisable to strip off a panel of fabric near the root and near the bracing attachment, to examine the spars and ribs for signs of rot. The glued joints will probably have grown "whiskers"—fungoid growth—but this in itself need not alarm the inspector if the timber itself is not badly stained. A wire brush will be found useful for removing mildew, and if this condition is general the component should have the whole of the fabric lifted on one side so that all parts can be cleaned and revarnished. If the fabric is "soggy" it will be advisable to strip and recover. When recovering occasional stringing to ribs instead of relying on glue will be useful, as this serves to stabilise the ribs themselves. Examine all control surfaces for signs of loosening of king-post levers and hinge eyebolts. Bush holes in spars if elongated.

Examine wing tip skid attachments for signs of splitting of spars and remember when considering any strengthening of skids and attachments that *they should be kept weaker than the spar*, so that the latter is protected from fracture. It is better for the skid or its sockets to "carry away" than for the spar to be split.

A solid spar which shows signs of splitting may be repaired by flitch plates—preferably of same material as spar and applied in two thicknesses each at least half the actual spar thickness and glued and screwed on either side, the patches extending for about 12 in. to 18 in. beyond the crack and being cut away at the ends with a hollow Vee to give gradual blending of stress.

BOOKS EVERY CLUB MUST HAVE.

Reference has been made to the Air Ministry Handbook A.P. 1208. The full description of this is "Air Worthiness Handbook for Civil Aircraft," and it can be obtained from H.M. Stationery Office. The cost is about 3s. 6d., but leaflets are continually being added and amendments made, and Clubs should therefore place a standing order for all leaflets to be supplied to them, as and when issued. The charge for the additional leaflets varies from 1d. to 6d., according to the amount of printing involved.

Club Ground Engineers may only desire to purchase the particular leaflets of this handbook which are of interest from the point of view of the maintenance of the structure as distinct from the engine and other special requirements for power-driven aircraft, the following is a list of the leaflets which they should obtain:—

A.P. 1208, Part I, Aeroplane design leaflets B.1 to B.7 inclusive, also B.9 and E.3.

A.P. 1208, Part I, Inspection leaflets 1, 5, 17, 21, with appendix, 40, 41, 56, 106, 116 and 132.

A further handbook which will be found of considerable interest is "The Care and Maintenance of Aircraft," published by Airways Publications Ltd.; the price is 3s. 6d. net.

Finally, any readers who have not already purchased a copy should certainly obtain the Year Book published by the Dorset Gliding Club under the title GLIDING, price 2s. 6d. net from Club Secretaries, or 2s. 9d. post free from GLIDING, 10, Victoria Street, Weymouth, Dorset, as interesting information is given therein on maintenance and materials.

[*All these publications may be obtained from* THE AEROPLANE *Book Department, Cannon House, Pilgrim Street, London, E.C.4, who will despatch books to any address on receipt of order.*]

CONCLUSION.

In conclusion, it is hoped that readers will bear in mind that the above outline is an attempt to indicate the lines on which glider inspection and maintenance should develop, and it may be that slight variations in routine are necessary with particular types of construction.

If the general basic principle which I have attempted to indicate is followed, the ground engineer in charge of a particular machine will soon learn how far to depart from the standard practice in his own particular case.

It will be found by some clubs that, due to the exclusive use of advanced machines by skilled pilots always operating from a satisfactory terrain, the machine will need much less maintenance than if operated by less-skilled pilots from less suitable sites. Similarly, the question of the storage of the machines is bound to have an important effect on their condition at the end of the season, and it cannot be impressed too strongly upon Clubs that a satisfactory hangar is essential in order that their machines are kept in good condition, as there is nothing worse than the effect of damp on the condition of timber and ply-covered parts.

WHO WANTS A TRAILER?

The giant B.A.C. trailer has become a familiar sight up and down Great Britain. Nearly every Club has seen it and those who have not, have seen its picture in THE SAILPLANE. The growth of the B.A.C. and the increasing size of its equipment have necessitated the building of even bigger transport. The original trailer is, therefore, for sale. Any offer over £50 will be considered.

The trailer has been designed to afford complete protection from dirt and the weather. It is a ply-covered structure, strut-braced, 22 ft. long, 6 ft. wide, and stands 8 ft. high. From floor to roof members the headroom is 5 ft. 6 in. The two 28 in. by 4.95 in. balloon wheels run in roller bearings and the brakes are arranged to work from the towing car. As well as the rear lamp there are two interior lights which can be run off the car system.

Two complete machines with spares can be carried, and if required six fold-up bunks can be built-in so that the crew can use the trailer as a caravan. Two wells, size 3 ft. 6 in. by 2 ft. 6 in., for the reception of equipment, spares and tools, as provided in the floor on either side of the axle to which access is provided either by traps in the floor or through doors in the side of the trailer so that tools and the like can be got at from inside or outside the trailer.

The trailer has been designed to travel at high road speeds with safety and cruises comfortably at 45-50 m.p.h.

SOARING ABOVE NEW YORK?

On Feb. 12 the well-known American glider pilot, Jack O'Meara, in a Bowlus sailplane, managed to gain height in up-currents while gliding above New York. He was towed off North Beach, Queens, Long Island, behind a power machine which cast him off at 3,800 ft. At least the towing machine was at that height and the sailplane was at the end of a 500 ft. rope.

The sailplane circled above Manhattan and after losing more than 800 ft. of altitude turned on its way back to the airport. While over the East River an up-current carried the machine above 4,000 ft. The machine finally reached the airport at a height of more than 1,500 ft. after a flight of 20 minutes.

Official permission for the flight, which was planned for experimental research, had been obtained and others are to be made soon, according to the American publication, *Aero Digest*.

CORRESPONDENCE.

The Sailplane Club Obliges.

Sir,—In this week's issue of The Sailplane I read under "News From the Clubs" that the North Kent Gliding Club tried out a new ground training device.

From the description given, this is precisely the same idea that the Sailplane Club of T.M.A.C. have been using since last August and what incidentally is mentioned in their report that follows the North Kent's as "the Sailplane Club's own system of wind balancing." The idea is constructionally different as instead of a ball and socket we use a hardwood pyramid which is loosely bolted to a hardwood plate spiked to the ground with the apex forming the fulcrum giving movement in any direction, while the base is channelled for the socket of the glider to drop into. With a R.F.D. primary, the ailerons, elevator and rudder are all effective in winds of above 15 m.p.h.

In the same report the North Kent Club inquire of a satisfactory method of attaching hemp rope to the elastic launching rope. For *ab initio* first glides we have been using a 60-ft length of our original launching rope (which broke in several places last year) with a knot (36-ft.) of No. 8 sash cord fastened to each end of the elastic rope. This is done by fixing a galvanised thimble to the elastic rope and looping the hemp rope through this. The elastic rope is passed round the thimble, which is put into a vice, the two pieces of elastic rope are pulled, and while in tension, are closely bound with strong twine. This method, which has proved satisfactory in practice, prevents the elastic from slipping when stretched during launching, and the thimble prevents the hemp rope cutting the elastic.

Yours faithfully,
(Signed) F. Wilkinson
(Chairman, Sailplane Club, T.M.A.C.).

HERR HIRTH GIVES A LECTURE.

On April 2, Herr Wolf Hirth gave a lecture to a number of people at the Junior Institute of Engineers. The meeting had been hastily organised and in view of the fact that it was on the eve of the holiday *The British Gliding Association* are to be congratulated on the attendance which they secured. A regrettable feature was the fact that no attempt had been made to inform members of the Aeronautical Society about the lecture.

Herr Hirth opened his lecture by recounting the more recent developments in the United States of Motorless Flight where he himself arrived some eight months ago as the nrst enthusiasm was dying out. He remarked that autotowing was first seen by himself at the Wasserkuppe in 1922, when Antony Fokker, the famous designer, used it as a method of launching his gliders.

In 1928 Laubenthal, the famous German designer of the *Lore* and other Darmstadt types, went to the United States with Peter Hesselbach, and at Cape Cod, Mass., where the sand dunes along the coast duplicate Rossitten, Hesselbach soared first for 2 and later 4 hours.

Because of the cheapness of motor-cars and the difficulty of finding adequate terrain, auto-towing was used in conjunction with primary type gliders—which was bad. Further, German methods of training are not suited to the American temperament. Some 6 or 7 people were killed trying to stunt and fool about with these primary machines.

In Wolf Hirth's opinion the gliding movement in the United States was saved by Bowlus, Franklin and the Baker-Macmillan people, who designed and put on the market types of "Utility" machines specially designed for autotowing. These machines are strut-braced and compare with the B.A.C.VI, though generally they have rounded wingtips. and welded steel tube is used for the fuselage and tail unit. When he first saw them, Herr Hirth did not think that they would soar, but at Elmira they proved themselves to be eminently suitable for duration flights though not for distance.

Elmira is some 200 miles from New York, and the ridges there overlook a plain; a snag is the fact that every wind has its own suitable site, and they are all 1½ hrs. apart by car. When Herr Hirth arrived in the evening he astonished everybody by making a soaring flight in the thermal upcurrents coming off the wooded sides of the ridge. There was no wind, and the wind-sock was quite limp. These evening thermals are given out by woods and wet soil, especially pinewoods which have stored the heat all day and after the ground has cooled these woods begin to give off their stored-up heat.

He recounted the salient events of the Elmira Meeting which was reported in The Sailplane last Autumn. An encouraging feature were the fine flights made by Warren Eaton, who soared for 5 and 7 hours. Mr. Eaton is about 45, so that middle-aged people can rest assured that gliding is a sport for them.

Wolf Hirth's own distance flight of 33 miles was made in 2½ hours. It was really a cloud flight, in that the pilot took advantage of convection currents, although the air was too dry for the formation of clouds. Twice he climbed to 3,000 ft. in thermals and once to 2,600. He regretted that he had not got any maps, as once in the air he realised that flights from 200 to 300 miles in length can be made from Elmira.

One of the prizes for the Elmira Competitions was for the best essay on conditions relating to the contest. Herr Hirth's contribution was a map of the air currents. He charted these by flying over a large number of selected points on the map. When over these points he took the reading of his statoscope, variometer, or rate-of-climb-indicator, and by subtracting from this the known sinking speed of his machine he was able to get a figure for the strength of the currents. As they are changing all the time it would be preferable to make such a map with three pilots all on the job.

Herr Hirth then concluded the first part of his lecture by explaining how the Bowlus-Hirth Institute are using autotowing for preliminary instruction, after which pupils are taken to the soaring site for advanced training.

Auto-towing is a useful way of gaining height above the soaring ridge. Machines can be towed off on the level ground at the foot and then cast off when high enough above the rising ground.

Speaking of thermals again the lecturer said that a pilot was being auto-towed across an aerodrome in the United States and cast off. To his surprise he was taken up to 2,000 ft. in a strong current and was in the air for 22 minutes. He then told us some more about his New York flight which was described in The Sailplane of last week.

After this an extremely clear film of the training school at Rossitten was shown. Among the pupils was Mr. Derham of the Channel Club. The machines used for soaring at Rossitten are lightly-loaded Zoglings with increased control areas, and fairings built up from behind the pupil to the rudder. A club which has a site with steady low-strength winds could probably make up quite a good duration machine on these lines.

The next film was an equally good one of the Wasserkuppe competitions. The pictures of half a dozen sailplanes in the air at once were better than anything I have yet seen.

The film of the Elmira competition was more of an amateur effort and lacked the smooth flow of continuity of the previous ones. The site at Elmira reminded me of the North Downs. The ridge was not particularly high above the plain, and the sides were cupped with dense woods along the slopes and in the cups.

It would seem worth while for people to find some take-off places along the North Downs, not for training either primary or advanced, but for cruising practice when pilots have learnt to return to their start-point. I remember 18 months ago, when a crowd of us were searching the North Downs for a Club site that I thought then that one day those downs were going to make good soaring country.

Another film showed soaring from a site only 40 miles from New York, but in this case Hirth had to take off beneath telephone wires and close to a road.

The last film showed the New York flight and the difficulties of taking off and alighting in a confined space. This last flight should prove a really valuable piece of propaganda in proving that to a skilled pilot there are no lack of opportunities for soaring.

After this the lecturer was inundated with questions, one of which elucidated the fact that there are three kinds of thermals: those below cumulus clouds; those over woods; and the surprise kind.—T. J.

NEWS FROM THE CLUBS.

WHERE GLIDING CAN BE SEEN.

Beds.—The Bedford Gliding and Flying Club. Week-ends at Woolley Hill, on the Huntingdon-Thrapston road, between Spaldwick and Ellington.

—The London Gliding Club. Meeting place, Turveys Farm, near Totternhoe, on Saturdays and Sundays.

Dorset.—See under Somerset.

Edinburgh.—The Edinburgh Gliding Club. Sundays, at West Craigs Farm, between Corstorphine and Turnhouse Aerodrome.

Essex.—South Essex Aero Club. Week-ends, Wheaton's Farm, Laindon (L.M.S. Southend branch).

Glam.—Merthyr and District Gliding Club. Sundays, 10 a.m. to sunset. ¼-mile left Dynevor Arms, Merthyr Tydfil—Swansea Road.

Hants.—The Southampton Gliding Club. Every week-end at Red Lodge Farm, Bassett.

—Surrey Gliding Club. Sundays from 10 a.m., weather permitting, at Stocks Farm, Meonstoke (Old Winchester Hill).

Hereford.—The South Shropshire and North Herefordshire Gliding Club at Dinmore, ¼-mile from main Hereford-Ludlow Rd. Every Sunday, and Thursday from 2 p.m.

Herts.—Herts. and Essex Gliding Club. Sunday afternoons, Eastern Roadways Garage, one mile north of Stortford.

Kent.—North Kent Gliding Club. Saturdays 1 p.m., Sundays 10 a.m. Joyce Green Aaerodrome, near Dartford.

—Kent Gliding Club. Week-ends above Lenham, on the Maidstone—Ashford road.

—The Isle of Thanet Gliding Club. Saturdays and Sundays from 2 p.m. Manston Aerodrome, Thanet.

Lanark.—The Glasgow Gliding Club. Barrance Farm, Easter Whitecraigs, near Glasgow. Every Sunday from 11.15 a.m.

Lancs.—The Furness Gliding Club, at Raikes Moor Farm, Hawcoat, Barrow-in-Furness. Saturday, 2.20 p.m.; Sunday, 10.30 a.m., weather permitting.

—The Stockport Gliding Club. Every Sunday afternoon at Woodford Aerodrome, Manchester.

—The Preston and District Glider Club. Week-ends at Butler's Farm, Beacon Fell, 2 miles from Inglewhite and 7 miles from Preston.

Notts.—The Nottingham Gliding Club, Mr. Ellis's Farm, Kneeton Road, East Bridgford, Notts. Every Sunday, weather permitting.

Somerset.—The Dorset Gliding Club, Westland Aerodrome, Yeovil.

Staffs.—The North Staffs. Gliding Club. Week-ends at The Downs Banks, Barlaston Downs, near Stone, Staffs.

Sussex.—Southern Soarers Club. Newmarket and Balsdean, between Lewes and Rottingdean, near Brighton. Week-ends by arrangement, for Soaring. ('Phone: Hove 5116.)

Warwick.—Rugby District Gliding Club. Cote Hill Aerodrome, Husbands Bosworth, Rugby.

Wilts.—The Wiltshire Light Aeroplane and Glider Club at Easton Hill, Alton Priors Range, Bishops Cannings, near Devizes.

Worcs.—North Cotswold Gliding Club. Every Sunday at Fish Hill, above Broadway Village, from 10 a.m. to sunset. Saturdays and Wednesdays from 2 p.m.

Yorks.—The Bradford Gliding Club, at The Pastures, Apperley Bridge. Saturday 1.30 p.m., Sunday 9 a.m.

—The Huddersfield Gliding Club. All day Sunday near the Flouch Inn, 11 miles from Huddersfield, beyond Newmill, on main Sheffield Road.

—The Leeds Gliding Club. Week-ends at Warfedale with the Harrogate Club.

—The Scarborough Gliding Club. Every week-end at Flixton.

[Clubs are invited to send in full details as to where and when they can be seen at work. This feature should help Clubs considerably as readers who are not members can go to look at the nearest local Clubs and see which they like.— Ed.]

THE CHANNEL GLIDING CLUB.

In common no doubt with many other Clubs the C.G.C. experienced disappointing weather conditions over the Easter holidays. A full programme had been arranged for each day and much had been hoped for. On Friday we visited the site on Etching Hill. Mr. Mason, a member of both the Channel and the Dover Clubs, had brought over the latter's B.A.C. II. The direction of the wind prevented anything of a serious nature being attempted. A few of the more advanced members made prolonged flips, the others making safe ground hops from a point well down the hill.

Mr. C. M. Turner, an instructor of the C.G.C., took delivery a few days ago of a B.A.C. IV. This he had tested out at Brighton in a soaring flight of several minutes' duration. Mr. Turner qualified for his "A," "B," and "C" Certificates at the Wasserkuppe school in October last. On Saturday he flew the machine in auto-towed flight on the Hawkinge aerodrome. Several flights were made, the pilot reaching an altitude of about 150 feet before slipping the cable. He demonstrated fully his mastery of the controls, turning, banking and landing in a perfect manner. Mr. Turner expressed himself very pleased with the performance of the machine.

On Sunday and Monday misfortune was our lot. Heavy rain put an end to our activities early in the morning session, only a couple of flights being made. The B.A.C. II was again in use. In the last flight the machine behaved in an unexpected manner. The pilot ("A" Certificate) had just left the ground when the right wing dropped alarmingly, the glider turning to the right. In spite of full left rudder and aileron it continued its spin and landed heavily, right wing down. Fortunately no damage was done. By the following day a careful examination had been carried out and adjustments to the balance springs of the ailerons made. After one or two minor flights Mr. Turner took over the machine. Exactly the same thing occurred.

Down went the right wing and again the glider refused to answer to the controls. A heavy crash resulted, the wings collapsing onto the pilot. Fortunately he sustained not the slightest injury, but the machine was badly damaged. The main spar and several ribs of the right wing were broken and the fuselage was written off completely.

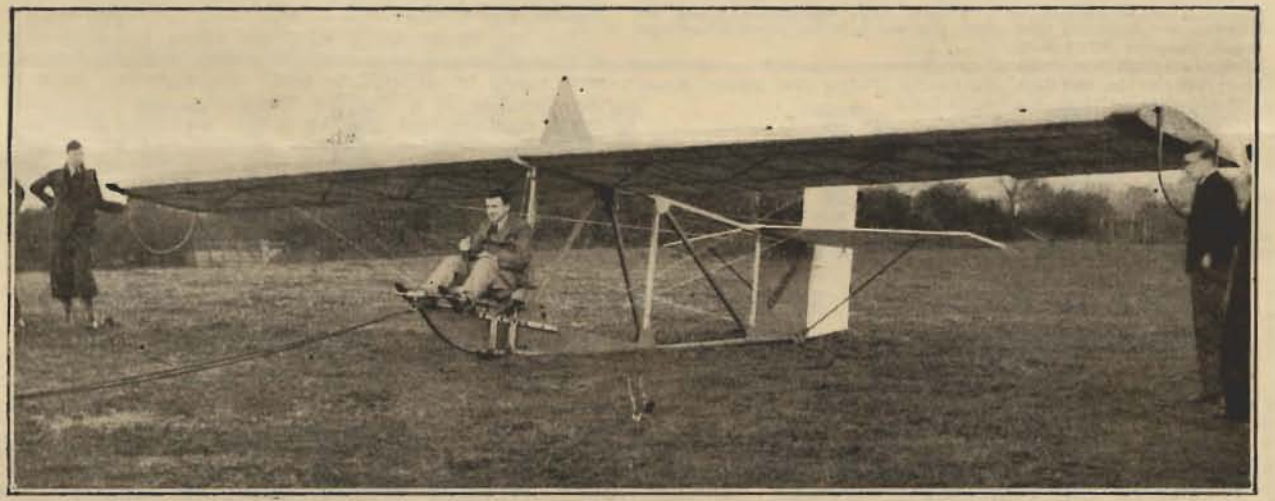
The conclusion arrived at in view of the fact that lack of skill could have played no part in either case, is that this particular machine lacks aileron control, especially in a fast flight. It has been decided to fit a balance cable during reconstruction as the springs at present fitted appear totally inadequate. Mr. Mason stated that the machine has always shown a tendency to drop the right wing.

In view of the Editor's footnote to my article of last week, in which he said, "The application of a little more common sense would have suggested the use of a motor-car and pulley. The device which every intelligent Club is now using, etc., etc." I should like to point out that we had five excellent reasons why we did not use such a device.

They were as follows:—1. A low but fairly thick hedge through which a man could scramble but a car could not possibly have been driven. 2. An even thicker hedge, for description see above. 3. A barbed wire fence without a gate. 4. A gradient of one in two in places. 5. A blank refusal on the part of the owner of the site to allow a car to be driven on same.

In case the suggestion should be made that the site is obviously unsuitable, I would beg to state in advance that it has been decided not to use the site again, at least for primary work. I think that the Editor will agree with me [He does.—Ed.] that it would have taken more than the application of a little common sense to have overcome these difficulties. It was not worth while going to the trouble of making elaborate preparations as the site was just being "tried out."—L. H. H.

[What are the B.A.C. going to do about the "inadequate springs"? — Ed.]



DIXON EQUIPMENT.—The Cloudcraft Primary used by the Southampton Gliding Club.

THE FURNESS GLIDING CLUB.

The winning tickets in the Club Draw were:—1711, 1288, 102, 340. Prizes have been sent direct to the holders of these tickets. Sincere thanks to all who contributed to the success of this effort.

THE KENT GLIDING CLUB.

The Kent Gliding Club, in conjunction with B.A.C. Ltd., have organised a series of demonstrations of Auto-Towed Gliding in Kent.

The first will be held at Star Aerodrome at Gillingham on Sunday, April 12, and the second at Sutton Road, Maidstone, on Sunday, April 19.

The demonstrations will commence at 11.30 a.m. and a charge of 6d. will be made for admission.

Further demonstrations will be arranged later.

THE LONDON GLIDING CLUB.

In spite of unfavourable weather conditions the Easter Gliding Camp of The London Gliding Club was a great success. Twenty-one members attended and there was considerable activity every day. Mr. Dixon, whom the Club has recently taken on as a resident ground engineer, has got all the Club aircraft in excellent condition.

Friday was mainly devoted to training flights and Mr. Kennerley qualified for his "A" Certificate. In spite of a rainy start Saturday brought more favourable conditions and the new Professor which the Club has acquired through the generous co-operation of a small group of enthusiastic members was erected for the first time.

Mr. G. M. Buxton made the first flight on the machine and soared well for eight minutes. Major Petre followed and made his second (45 second) qualifying flight for his "B" Certificate with an excellent flight of 34½ minutes. His first qualifying (45 second) flight was on the Prufling when he soared for eleven minutes! Captain Needham and Mr. Marcus Manton also made good soaring flights on the Professor.

During this time the Prufling was hard at work and on it Mr. Donovan qualified for a "C" with a flight of 14¼ minutes. Other duration flights were made on this machine by Messrs. Humby, Williams (15 mins.), Smith and Kennerley.

On Sunday conditions continued fair, but with a much lighter wind, and the Prufling was only able to soar with much difficulty, but Mr. Symons, who had made two previous attempts, one of 4½ and the other 4 mins. 50 secs., managed to qualify for his "C" Certificate with a flight of 6½ mins.

Mr. Kennerley also qualified for his "B" and Mr. Bolton completed his first 45 second qualifying flight. A number of other good flights were also made on the Prufling, and the two training machines were kept hard at work.

The Professor was brought out again in the afternoon in what was almost a complete calm. Mr. Buxton flew it for 16 minutes, after which Captain Needham took it off and landed voluntarily after a fine flight of 25 minutes. Mr. Buxton then took-off once more and soared magnificently along the ridge until dusk, a flight of 2 hrs. 21 mins., which is believed to be the longest soaring flight ever made by an Englishman.

During the afternoon Colonel The Master of Sempill landed on the ground in his Puss Moth. He brought the welcome news that Herr Wolf Hirth would visit the Club the following day. Flying ceased at 7 p.m.

The total soaring time for the two days was 6 hrs. 30 mins.

Monday saw the return of more unfavourable conditions with an East wind, and only the training machines were used, but Messrs. Richardson, Scott Hall and Rutherford all succeeded in qualifying for "A" Certificates, while the senior group occupied themselves with the assembly of the Poppenhausen two-seater, which has been in store for five months due to an outbreak of foot-and-mouth disease.

Herr Wolf Hirth landed in a Moth at about 11 a.m. and was very disappointed to find such adverse conditions. He expressed himself as being very favourably impressed with the ground, which he says is excellent. He also gave the Club valuable advice about cross-country flying and Club organisation. Owing to bad visibility around London he decided to return to Hanworth about 3.30 p.m. Flying ceased at 6.30 p.m. as the majority of members had to leave that evening, but on Tuesday a small group assisted Captain Needham with the assembly and subsequent test flights of the *Albatross*, which has just been overhauled.

Once again the Camp has justified the opinion of the Club that continuity of instruction is invaluable to many people whose instruction has hitherto been slow and we hope to organise another similar Camp at Whitsuntide.

There are still some vacancies for members and those interested should write to the Secretary, The London Gliding Club, Empire House, 8, St. Martins-le-Grand, London, E.C.4.

MANCHESTER R.Ae.S. GLIDING SECTION.

For Easter, activities were transferred from Woodford Aerodrome to the hills near Castleton, Derbyshire.

Excellent sport was obtained, but the wind was too strong for all but the more advanced pilots.

A wing-tip was ultimately damaged during a later flight, but not seriously. Sympathy is expressed with Bolton G.C. and Preston G.C. as they suffered more severe damages in their crashes. From the experience gained at Blackpool it is thought Auto-Towing is the only way to prepare pupils for gliding on the hills to achieve real results.—G. M.

Two up at Southampton on the Dixon Primary.

THE PRESTON GLIDING CLUB.

According to *The Manchester Guardian*, a mishap occurred during the Preston Gliding Club's first organised meeting yesterday at Beacon Fell, about nine miles from Preston. While the secretary-instructor, Flt. Lt. L. E. Falla, R.A.F.O., was making his third flight he was caught in a down-current of wind and forced on to the hillside. The glider overturned and one of the wings was damaged.

Mr. Falla, who released himself without difficulty, escaped with a slight shaking. It is hoped to effect repairs to the glider this week. There was rather a high wind yesterday.

There are 35 members of the Club, including seven women. Arrangements have been made for a big meeting on May 16 and 17, when two German pilots will give demonstrations and half a dozen other Lancashire Clubs will compete in inter-club events.

AUTO-TOWING SCHOOL FOR MANCHESTER.

As a result of the recent demonstrations of Auto-Towed Gliding at Blackpool, where it was demonstrated that a glider could be towed by motor up to a height of 500 to 600 feet and when released by a trigger from the towing rope the glider could fly round Blackpool and return, after performing various evolutions in the air, to its starting point, several motoring and aero enthusiasts in the South Manchester district propose to form an "Auto-Towing Glider School."

The founder members and instructors of the school will be fully trained by the pioneer firm of B.A.C. Ltd., of Maidstone, Kent, who gave the demonstration at Blackpool.

Pupils wishing to take instruction, or advanced glider pilots desirous of obtaining additional practice, or persons interested in obtaining shares in the management, can obtain particulars from G. Moore, 10, Crofton Street, Rusholme, Manchester.

Members of the South Manchester Aircraft Club (in formation) will be given tuition at special low rates.

AUTO-TOWING WITH A DIFFERENCE.

The Pinecastle Boat Company, of Pinecastle, Florida, have worked out a new method of auto-towing. They use a Waco primary glider on floats towed by a hydroplane with a 35 h.p. four-cylinder Elto outboard engine.

Although they have been using this equipment for stunting purposes, such as having an acrobat performing on a trapeze hung beneath the glider, there are obviously possibilities for training by such a method. In the Summer Gliding Clubs along our own coasts might find the method far cooler and less fatiguing in use than shock-cord launching on a sweltering hill.

The two floats would adversely affect the gliding angle of the glider and so a machine which was equipped in this way would be difficult to soar. The Germans have made the fuselage of a Prufling watertight and put stabilising floats on the wing bracing struts with successful results. It seems to us that a slightly modified Prufling with a step just aft of the C.G. would offer excellent sport for towing behind a motor-boat. If enough height could be gained the machine could probably be soared in the belt of rising air which according to Captain Entwistle is to be found around our coasts in Summer.

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