J. Kushton

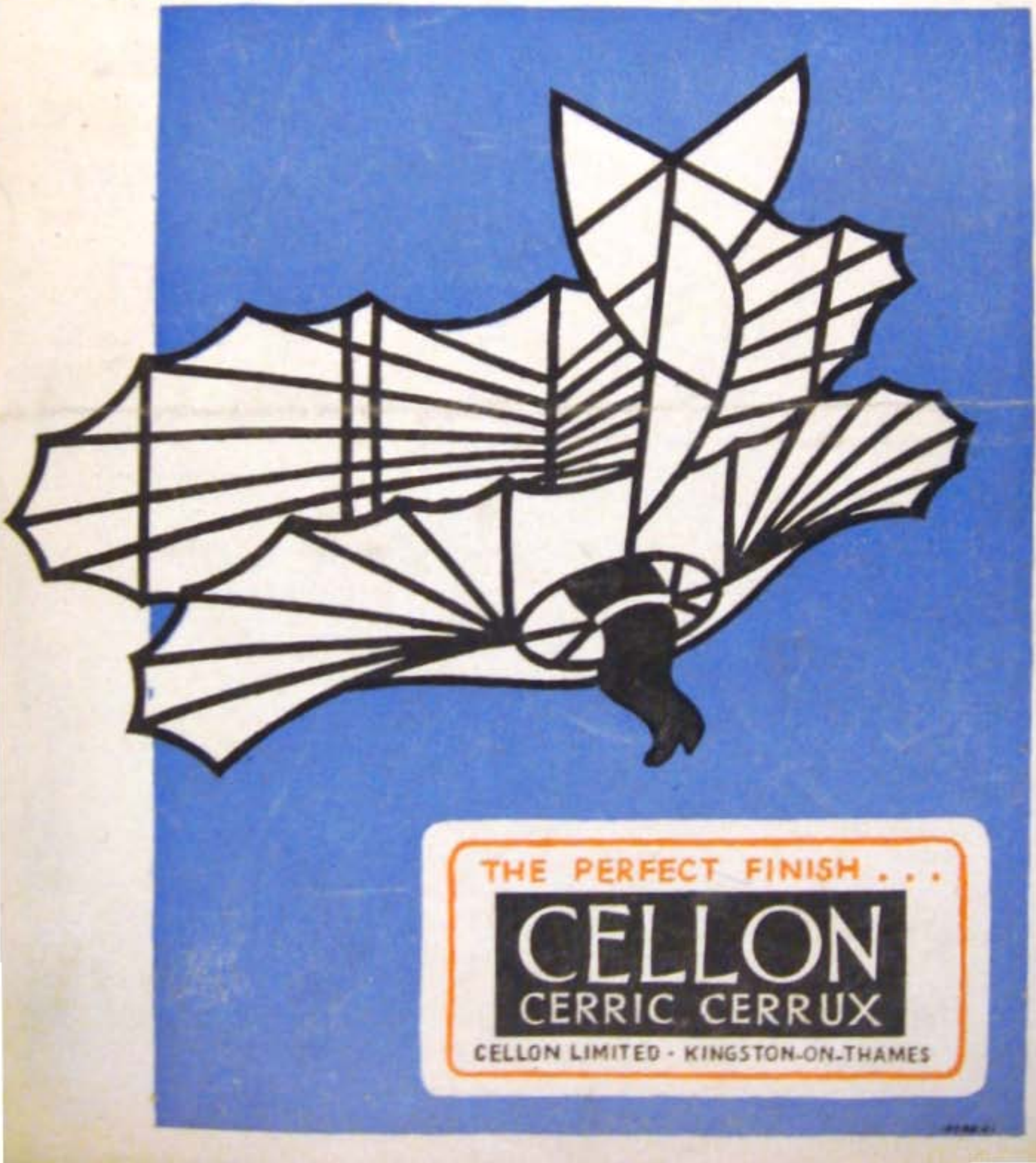
SAILPLANE AND GLIDER

JUNE
1944
Vol. XII. No. 5.

PRICE - - - 1/-

Editorial Offices:
Thanet House,
231, Strand, W.C.2.

The First Journal devoted to Soaring and Gliding



SLINGSBY SAILPLANES LTD.

Designers and Constructors of all Types of

GLIDER AIRCRAFT

Our range of Proprietory SPORTS TYPES include the following well-known machines :

PRIMARY GLIDER
KIRBY KITE SAILPLANE
GULL I SAILPLANE
KIRBY CADET TRAINER
FALCON III 2-SEATER
GULL II CABIN 2-SEATER
PETREL SAILPLANE

- *Our fully approved organisation is now entirely engaged in the War effort.*
- *When Peace is established we shall once again devote our services to the development of SPORTS GLIDING.*

Agents in CANADA, SOUTH AFRICA, AUSTRALIA and U.S.A.

Works & Registered Offices: KIRBYMOORSIDE, YORK

J. Rushton

SAILPLANE and GLIDER

The First Journal devoted to Soaring and Gliding

F.L. VERNON BLUNT, Editor
ALAN E. SLATER, Associate Editor

Editorial Offices:
THANET HOUSE, 231 STRAND, W.C.2
Phone: CEN. 7081

Vol. 12 No. 5 JUNE 1944 Price 1/-

AIR MARSHAL GOSSAGE ON THE NEED FOR AIR-MINDEDNESS

"In post-war days the A.T.C. would be one of the main sources for supplying personnel to the flying Services, a channel of entry into such jobs as civil aviation and the aircraft industry may have to offer, and part of an imperial school of air-mindedness."

THAT is what Air Marshal Sir Leslie Gossage told West Suffolk cadets at Bury St. Edmunds recently.

It was not, he said, a bad idea to be reminded of the reason why one was in the A.T.C. Just as a ship without a rudder could not follow a set course, so a cause without a purpose could not carry out a satisfactory programme. He would like to divide the aims of the A.T.C. into two—war aims, and those for the post-war years.

As far as war aims and the immediate post-war period were concerned the matter was fairly simple. The A.T.C. existed to supply the best the country could produce for the R.A.F. and F.A.A. The war was not nearly over yet. We still had a formidable job to do in finishing off Germany; and after that there was Japan.

A LONG WAY TO GO

Now Japan was a long way away; and a lot of people were inclined to think that that was the U.S.A.'s pigeon. Our Prime Minister has recently reminded us that we were in this war with our Allies to the end, wherever an enemy remained.

After Japan there would be a period of reconstruction and putting the world in order. During that time the air forces of the victorious Allies would play a very large part by reason of their quick movement and great range. The R.A.F. would still need crews and the men to service the aircraft. Therefore, he urged cadets to carry on with their hard work and intensive training, for this country would have need of the cadet effort for a long time to come.

POST WAR AIMS

The post-war aims of the A.T.C. were a little more difficult to define. The Government had stated that it was intended to continue the A.T.C. after the war, and he visualised the peace-time A.T.C. fulfilling three main functions:—

(i) As one of the main channels of entry in the flying services and the reserves behind them.

(ii) As a channel of entry into such jobs as civil aviation and the aircraft industry may have to offer.

(iii) As part of an imperial school of air-mindedness.

"We are now," he said, "on the threshold of the air age, if we have not already crossed it.

"In the past, as an island, we have had to rely upon our domination of the sea to receive food and raw materials. We shall have to continue to rely on our domination of the sea, but to dominate sea or land you have got to dominate the air above them both; this has stuck out a mile during the war.

"That we are succeeding in doing now, and we have got to do that for all times. In the future the air has got to be as much in our blood as the sea, and consciousness of how much we owe to the sea.

"In the future the Air Training Corps will be **PART OF AN IMPERIAL SCHOOL OF AIR-MINDEDNESS. UNLESS WE ACQUIRE AIR-MINDEDNESS IN THE FUTURE WE SHALL PERISH AS A NATION."**

EDITORIAL COMMENT

This much being recognised we trust that it will be realised that Gliding and Soaring offer the best as well as the cheapest method of making the Empire air-minded.

ONE OF THE FIRST WATER GLIDERS

By F/O. CROUCH

ANSWERING the phone—as I was the duty stooge and photographer in a newspaper office—a correspondent muttered a strange story about a Birdman who had just become airborne without an engine, and what's more, had taken off and alighted again on the Welsh Harp, Hendon.

A few moments later yet another phone message confirmed this report and that there was a motor-boat tugging this Birdman. I was even allowed to hear the exhaust from the boat. All this was very trying as it meant breaking a date and getting off with my camera to the Welsh Harp.

You can imagine my feelings. I rushed madly to Fleet Street to grab a taxi. It was a very doubting Tom that sat in the taxi, and a thousand times I reminded myself that it was all probably a myth and a story without a vestige of truth.

In about three-quarters of an hour I was bordering the North-west Londoners seaside. The chug of a motor-boat assailed my ears and then in the gathering dusk and mist a giant bird loomed up above the horizon and quickly sank back again with a heavy thud. It was the Acqua glider being tried out for the first time by Lowe Wyld, a pioneer of motorless flight. He had designed and made this plywood glider in his own factory (a disused brewery in Kent) waterproofing the hull with doped canvas.

Long into the night did we discuss the possibilities and probabilities of take off and landings from water, the questions of getting the craft airborne, and so on.

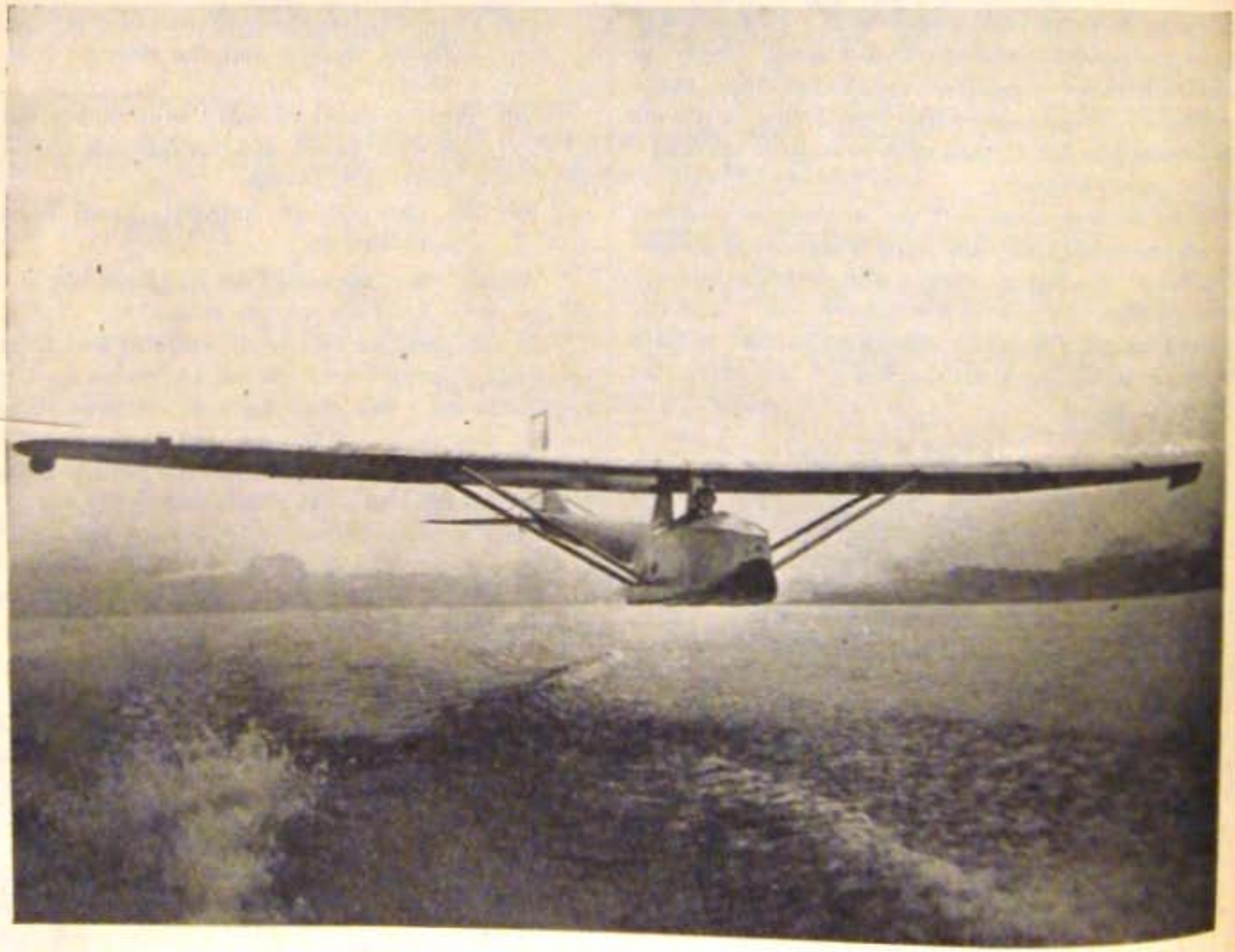
We agreed to meet at dawn out on the water, and I have a suspicion that he spent the night aboard—moored out yards from the land.

Dawn came, bringing with it no further promise of a fine day. Hours passed before the motor-boat attempted its first "pull off" of the day. But the run did not give any results. There were adjustments and another try out.

This went on until dusk—and then success. The glider was airborne—only just—because a few seconds after "casting off" from the boat Lowe Wylde put it down again, this time without a bump. It was during this flight that the accompanying picture was taken.

The day had passed into night and so nothing else could be done. Another night was spent aboard the moored craft. If nothing else, this mooring tested the waterproof qualities of the hull.

Next day after two test runs, I made a trip lasting about two minutes and then completely executed my newspaper assignment and shared the early thrills of Acqua gliding. I think, too, I was present at and helped in, the making of a bit of history.



THE PHOTO TAKEN ON THE OCCASION DESCRIBED.

BRIEFLY— THE FUTURE

The Ideas of an Instructor.

GLIDING in Britain is to-day in war-time more widespread than at any time in the past. Soaring flight is, however, subject to severe limitations which will eventually pass with the war.

That gliding should continue under peace-time conditions and that facilities should be maintained and extended to ensure that everyone who wishes to learn to glide shall be able to do so at a nearby site is the ideal of our future activities.

Using modern winch-launching equipment almost every aerodrome becomes a suitable gliding site—and there will certainly not be any restriction on gliding due to lack of aerodromes, as was the case when hill-soaring sites were absolutely essential. Of course, hill-soaring will be an additional facility for those who can reach one of the few convenient sites.

COMBINED CLUBS

When post-war contraction of Service flying renders the expanded facilities at many aerodromes partly superfluous, the local gliding clubs may well take advantage of the hangarage, skilled wood-and-metal workers and general services, maintaining them in first-class condition against the time when R.A.F. expansion may again be required. Should local gliding be related to "airports" generally and include eventual instruction on powered aircraft for suitably qualified personnel, the care and maintenance of aerodromes and equipment would at once be placed on a revenue-earning basis. The provision of capital for the establishment of local combined gliding and flying clubs is a pre-requisite which State finance must decide.

The return to the State would take the form of Gliding instruction to all A.T.C. aircrew cadets with scholarships to Soaring Clubs and for training on powered aircraft at the associated Flying Club; refresher courses for ex-R.A.F. pilots whose services might again be required; gliding and flying instruction to any interested persons on a "pay-as-you-learn" basis allied to a reasonable Membership Fee to maintain the Club spirit and voluntary discipline.

As to flying equipment, the gliding side might be well catered for by provision of Primaries of the well-tried Dagling type with the equally successful Kirby Kadet as a secondary trainer for use by Primary graduates. Two-seater dual instruction on the Kirby Falcon III would also be available for those requiring this kind of tuition. Incidentally, the writer is convinced that anyone over 30 and all temperamental pupils are best trained initially on two-seaters. To a great extent the foregoing is in line with present-day practice. For advanced pupils there will always be the need for soaring types of high-performance. Assuming the State aid which the movement deserves, it should be possible to design and build improved types for research and experiment. This was done in Germany before the war and some of the types evolved are serving us to-day.



AIR MARSHAL SIR E. LESLIE GOSSAGE, K.C.B., C.V.O., D.S.O., M.C., DIRECTOR A.T.C.

AERO-TOWING

On the powered-aircraft side, good use might be made of the Tiger-Moth and other trainers now available in vast numbers. Aircraft of the Taylorcraft and Taylor-Cub type will also be most useful for economical training with good weather-protection. More

(*Continued on page* 13)

JACHTMANN'S DURATION RECORD OF 53 HOURS 52 MINUTES

(Continued from last month's SAILPLANE)

EXHAUSTED

On the following morning I was more or less " all in." My face was burning and painful because I had frequently exposed myself to the rain and let it buffet me in the face when my mind threatened to wander. In situations such as these the wisest course appears to be to concentrate on each moment. As the weather improved I soon recovered. In the morning I closed the window and set about getting dry. I was soon able to greet the Press, the N.S. Flying Corps, the Broadcasting, Films, and Military correspondent, with a few aerobatics which soon brought me to my senses. As a result, my fitness for further effort had soon been accurately gauged below.

AEROBATIC WHOOPEE

Two " Kranichs " with inscriptions on them came sailing along. On the fuselage of one the previous record time of 45 hours 28 minutes has been painted and crossed out, followed by interrogation marks, giving me to understand that I had beaten the old record and they wanted to know how much longer I would stay up. The other was inscribed with the words " Congratulations " and " Well done, Jachtmann ! " I dropped a message that I would continue to fly until dusk. There followed a wild display of aerobatics until the wind subsided and put an end to our fooling.

The wind dropped more and more, and as the new cloud formation soon broke up altogether, no increase in the wind was to be expected. I had no inclination to expose myself to a miserable dawdling along the cliff, since in order to comply with the regulations regarding records, I had to land within 1,000 metres of the starting point. To relieve the tension I continued to soar in up-currents, which were now mostly free from gusts, to a high altitude, and found unspeakable relief in closing my eyes for a few seconds. Previously I had directed the aircraft accurately into wind, paying attention to banking and airspeed noise; I then counted up to five to get an idea of the time interval elapsed. I have frequently adopted this method with success in earlier endurance flights and on each occasion it has revived me considerably.

DREAMILY SOARING

I know for certain that I had counted up to eight and that I had made my sleep experiments at the highest part of the coast over the sea, close to the wind sleeve. After that, a complete part of the picture is blank in my memory. Suddenly I found myself above the roofs of an unknown village; it all seemed like a dream. The record flight seemed to date back to weeks past, and I did not know where I was or how I had got there. Looking back, I saw the coast, and judging by some mine shafts I concluded it might be Palmnicken. Being very low, automatically rather than consciously, I made for a strip of beach with the idea of landing. It was 3.30 p.m. I was indifferent to everything; I was only dimly conscious that somehow it was very pleasant to be floating dreamily through the air. The machine was already on a level with a flagstaff when I felt a slight rise and could hope to reach a strip of wood near the coast where an up-current should be found. Without losing height the machine hovered to the end of the strip of coast which makes a sharp bend to the south-east. It was too low to make a turn, so I flew along the coast with the hope of reaching the steep slope at Sorgenau, which ran in the same direction as my main slope.

UNCONSCIOUS

Owing to the unfavourable direction of the wind over my present slope, I continued to lose height until at the last moment I reached the steep coastal cliffs, where height was soon recovered. I now did some steep turns and circuits and was soon clear again, so I started on the return flight and was once more over the beach at Palmnicken. The 4-km. stretch to the turning point at Gross-Hubnicken was new to me. As the distance from Gross-Hubnicken to the point which I can still remember before I became unconscious is 5 kms., I flew 9 km. over a course which was unknown to me.

Fearing a repetition of this situation, I kept to the main slope and set myself new tasks all the time, such as flying close along the coast, or leaving the up-current so as to force myself to concentrate on the flying. Later on the last remaining aircraft over the slope was taken in. I sat back carelessly in my " Weihe," legs touching the pedals lightly.

THE LEE EDDY

Just as I was over the wooded coast, hoping to gain height, the machine suddenly made an erratic turn inland, being swung round by a sudden gust. My stiff right leg, injured in an accident in 1941, had slipped out of its specially lengthened heel-cap away from the rudder bar. I found myself caught in the leeward eddy. To return to the slope seemed a waste of effort, especially as it was not worth while jeopardising the record for the sake of these few minutes. I reached the landing-place just after hopping over an electric cable, and as I whisked past I noticed how, in spirit, one of the spectators took part in the jump by lifting one leg and ruffling his hair.

THE END

I am certainly justified in claiming that this flight of 53 hours, 52 minutes and 50 seconds was most eventful from start to finish. Without any fatigue I received the congratulations of my friends and of the inhabitants; I got out of the machine without assistance and gave interviews. I declined most emphatically the suggestion that I should go to bed after enjoying a milk porridge specially prepared for me; instead I took part in the rousing celebrations to which the Commandant had invited the guests until 1 a.m.





Accurate and Sensitive

AIR SPEED INDICATOR

(Weight 9 ozs.)

TURN & BANK INDICATOR

operated by 6 v. light-weight dry cell battery (Weight 1 lb. 9 ozs. complete).



K.D.G. INSTRUMENTS LIMITED

PURLEY WAY, CROYDON. Thornton Heath 3868

THE CHRISLEA AIRCRAFT COMPANY LIMITED

Travelling will be appreciated when Victory is won.
For those who value time, comfort and company, with speed and safety —

The Chrislea ACE

will offer a new conception of travel, together with the economy of a medium powered motor car.
The Chrislea ACE will also be suitable for operation as an air taxi or light freighter.

THE CHRISLEA AIRCRAFT CO. LTD.

77, FORTESS ROAD · LONDON · N·W·5 · TELEPHONE GULLIVER 1925.

A 4-SEATER SAILPLANE 108-16

Translated by M. Flint.
From "Flugsport" (With Acknowledgments to R.T.P.3.)

THE 108-16 (EW2) sailplane is a development of the EW1 designed by Ernst Weber, of the Heinkel Aircraft Factory, Rostock. To enable instruments and other safety devices for purposes of experiment and research to be carried in addition to the crew, the machine has been built as a four-seater, with 2 × 2 seats arranged side by side, with a total useful load of 320 kg. for a structural weight of 360 kg.

The cantilever wings are made with a slight "shoulder" kink and are attached with smooth transition outside the fuselage to the central fuselage section.

FLAPS

The wing profile camber can be varied by means of two flaps arranged one behind the other (*Fig.* 3). The inner flap is operated by cable and rod transmission by means of a hand wheel in the pilot's cockpit. The outer flap is controlled automatically by a rod system through a geared transmission. The wing profile can be adjusted arbitrarily by the pilot. In horizontal flight, both flaps are raised, the wing profile is flattened, the aircraft has less drag and becomes faster, the L/D ratio more favourable. When climbing the flaps are lowered and the lift increased. When landing, the after flap can be adjusted as a landing flap. The ailerons adjust themselves automatically with the variable camber flaps of the wing, so that the variation of the profile extends over the whole wing.

The brake flaps are first lifted by means of a cable and lever transmission, parallel to the upper and under side of the wing, to a distance of 80 mm. from the profile and then swing as a resistance in the airstream. Owing to the fact that the flaps only adjust themselves when they are lifted away from the profile, the flow over the wing profile is not disturbed in any way and no oscillations are set up in the brake flaps.

DURAL TUBE CONSTRUCTION

Except for the main girder parts, the fuselage is of dural tube construction. At the assembly points the tubes are connected by means of sheet metal fish plates with split flanges and friction-secured by threaded bolts, in the after end of the fuselage by hollow rivets. With these bolted connections it is possible at any time to interchange tubes or whole structural components. A steel tube frame-work to take the wings is likewise connected to the fuselage by means of sheet metal fish plates and screw connections. The steel tube frame-work, because of its large force absorption, is annealed after welding and then tempered to a strength of 90 kg. The cockpits are of ample dimensions, thus contributing to the comfort of the occupants on flights of long duration. There are two seats side by side forward and two aft of the main bulkhead. The seats are so designed that either seat or back pack parachutes can be used. Entrance to the two front seats is made by the roof of the windscreen. There are doors on each side of the fuselage in the side walls for entry to the two after seats.

DUAL CONTROL

Dual controls are fitted for the two forward seats. The control column and rudder bar can, however, be locked at any time by a bayonet joint. The instrument board is arranged so that it can be comfortably seen and the instrument equipment is similar to that of a powered machine.

The windscreen is so designed that it serves at the same time as the transition piece between fuselage and wings, and in spite of the good visibility afforded, presents little drag. The nose of the fuselage forward of the windscreen and the top of the fuselage corresponding

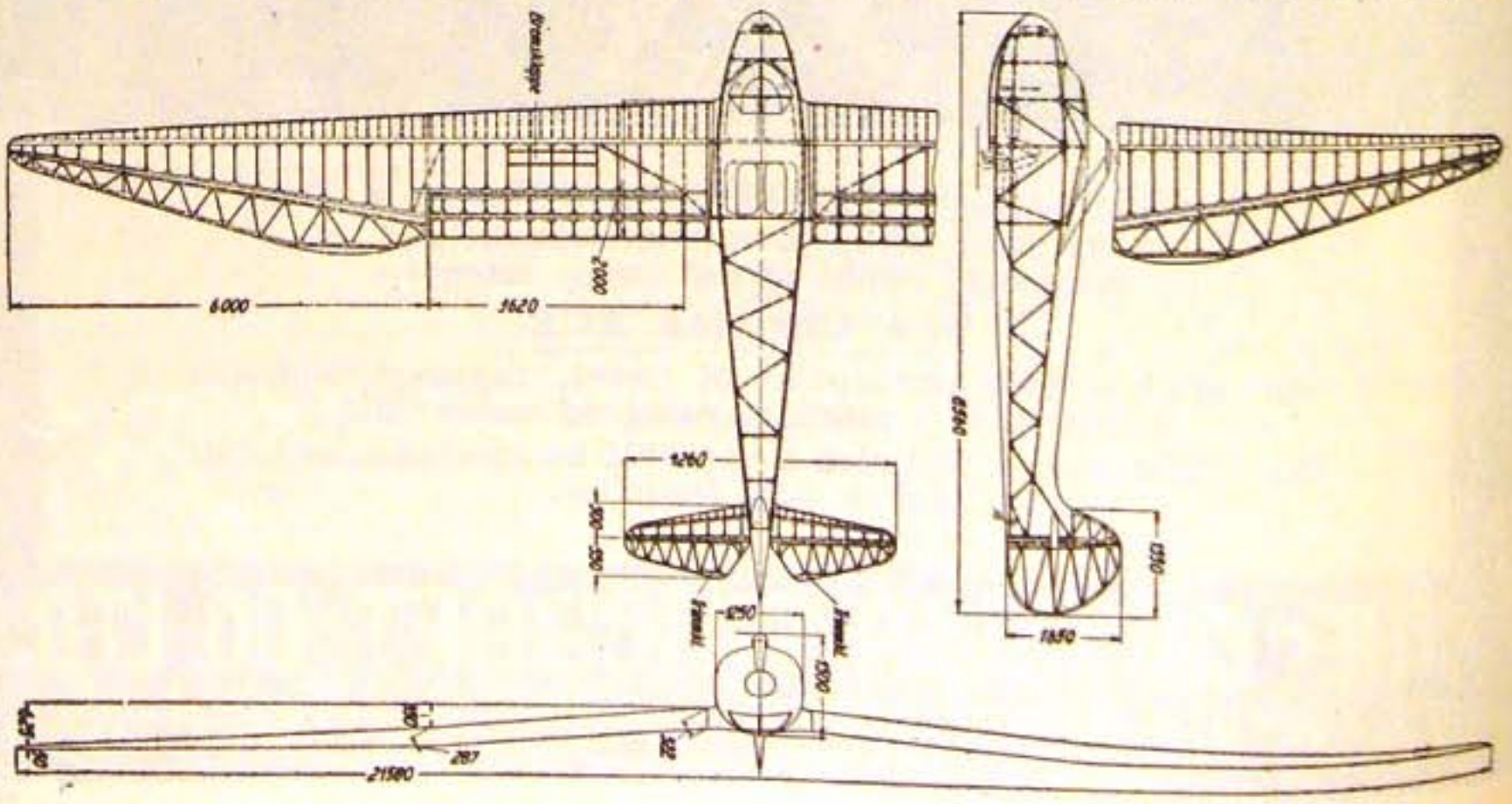




Fig. 1.—Four-seater 108-16 (EW2) Sailplane.

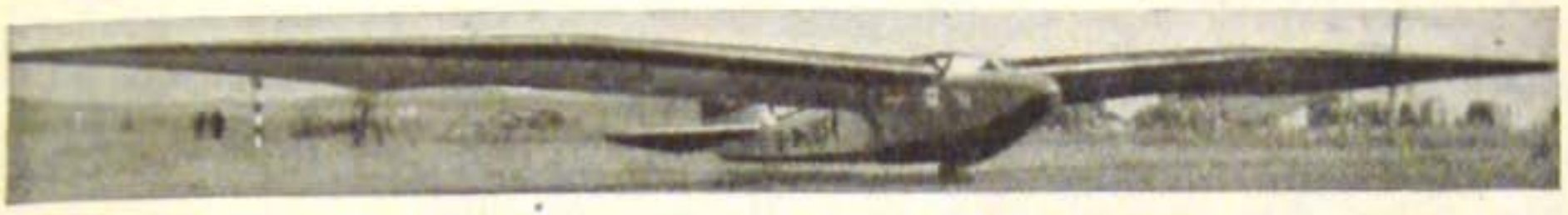


Fig. 2.—Four-seater 108-16 (EW2) Sailplane.
Bremsklappe = brake flap. Trimmkl = trimming flap.



Fig. 3.—Four-seater 108-16 (EW2) Sailplane.
Profile curvature by means of two flaps.

to the wing transition is covered with a light wooden framework giving the desired shape. Battens are fitted to the sides and bottom of the fuselage and the whole fuselage is covered with fabric.

RETRACTABLE UNDER-CARRIAGE

A single-leg undercarriage mounted on the main bulkhead can be retracted and lowered by the pilot by operating a hand lever. For landing on difficult ground, however, a light metal sprung skid of 2.5 mm. dural sheet, is fitted in front of the undercarriage wheel. All forces from the wing and undercarriage are taken up directly by the main bulkhead.

The wings are of wooden single-spar construction. The box spar has a width of 120 mm. and a height of 360 mm. at the root. The leading edge is covered diagonally with plywood of a thickness of 3.5 mm. at the wing root to 1 mm. at the wing tip. The spars for all control surfaces and flaps are constructed as plywood tubes. The ribs of the control flaps are attached as plywood fish plates to the plywood tubes. In view of their dimensions the flaps can be lightly constructed, and yet be torsionally rigid, since the torsional forces can be taken up directly by the plywood tubes.



Note Flaps in two Parts.

ROD TRANSMISSION

In order to maintain as nearly as possible an elliptical lift distribution, the wing chord in the outer halves is increased by spreading out the ailerons, whereby the aileron effect is considerably increased. In order to relieve the forces on the ailerons, balancing flaps are fitted at the positions of the largest chord of the ailerons. Inside the wings the aileron control transmission consists of cables, with rods for the passage through the wing.

The elevator is in two parts (*Fig.* 4), so that the right and left hand sides are interchangeable. The halves of the tail plane together with their half elevators are secured to the side of the fuselage by two bolts. The elevator itself closes up automatically when the tail plane is mounted.

On the short trial flight favourable results were obtained, giving promise of good performance.

The principal characteristics of the aircraft are :—

Span	..	21.58 m.
Length	..	8.56 m.
Height	..	1.40 m.
Wing area	..	34.6 square m.
Wing loading		15.6 kg.

—(*Flugsport*, Vol. XXXII, No. 4, Feb. 14th, 1940, pp. 51-55.)

GLIDING AND SOARING FLIGHT IN EGYPT

By GROUP CAPTAIN EDWARD L. MOLE, R.A.F.

(Concluded).

WHEN the display was over I was free to use the "Turul" at will for thermal explorations, and during the next two months had quite an orgy of delightful soaring. It must be admitted, however, that the desert thermals were disappointing. True, there was plenty of disturbance in the air, but this seemed to consist of an irregular series of sudden up and down currents rather than properly developed thermals. Probably the cause of this was that my station was entirely surrounded by desert, except for a negligible strip of cultivation along the fresh-water canal. This desert was roughly of the same colour and consistency, and consequently there was no uneven heating of the ground. The air was probably in a state of turbulence due to heat convection, resulting in an indiscriminate mixture of up and down currents. The resultant up-currents were narrow, usually not exceeding 2½ meters per second, ceasing to rise above three to four thousand feet. Unless exercising great care I found I was apt to fly out of these thermals into an even stronger down current, and all the height gained in a long period of arduous circling would be lost in a few seconds. At first these "downs" proved too much for me, and I would be forced to land. Later, however, I realized that by concentrating hard on the variometer, and turning away at the first sign of a down current, it was reasonably possible to stay up at will. It was hard work but excellent sport, and thoroughly enjoyable.

"HOT AIR"

The strongest thermal encountered occurred early in April, 1938. I entered it at the low height of 200 feet when approaching to land, curiously enough just over the R.A.F. headquarters' offices—which later gave rise to comments as to the source of the hot air! The "Turul" began to climb at 1 metre per second, increasing to 3½ metres per second at 1,000 feet, and continued to rise steadily at this rate to 5,000 feet, attaining the height in twelve minutes. This was actually the greatest altitude that I managed to reach by free soaring in Egypt, and is the gliding altitude record of that country.

There were occasions when flat-based cumulus clouds appeared usually at 3-4,000 feet and behaving similarly to those at home. Up-currents up to 2½ metres per second existed beneath them. Such clouds are formed by thermals when the rising air cools to saturation point. Normally, however, the Egyptian thermals, consisting of dry air, do not reveal themselves in such a helpful fashion.

"KHAMSEEN"

Only on one occasion was there a complete lack of soaring currents. It was a day when conditions seemed to promise exceptionally good thermal development. The weather in Egypt is remarkably consistent, with a steadily prevailing northerly wind, but in the spring an occasional change occurs. The wind swings round to south, and the influx of hot equatorial air causes the temperature to jump up suddenly. These conditions are known as "Khamseen." It was during such a period with the shade temperature well over 100° F., and the desert shimmering with heat, that conditions seemed ideal for a soaring experiment which promised to be interesting.

Some twelve miles away was Lake Timsah. Sailing on this lake is characterized by sudden violent squalls, and many are the boats capsized—I formed a theory that these squalls were caused through thermals rising suddenly in the desert around the lake—which was to be expected owing to the uneven heating between the water and the surrounding land.

SINKING AIR

On the particularly hot day in question I decided to carry out a thermal exploration around the lake, and was therefore towed to 5,000 feet above it. When released, I found to my surprise that the "Turul" was sinking fast; everywhere, over lake or desert, was nothing but sinking air. After a few minutes' fruitless searching for the missing thermals I made for home, but all the way back the "Turul" kept sinking at 2 to 2½ metres per second. I was almost down on the desert and losing heart, when luckily a weak patch of lift just enabled me to reach my airfield.

The probable reason for the failure of Khamseen weather to provide soaring conditions is that the air blown up from the south, being at a much higher temperature than normal for this latitude, is rapidly cooling. This makes it denser, and thus causes a general sinking of air over the whole region. The affair was particularly annoying, as I never had another opportunity to explore those lakeside thermals.

"LOOP" RECORDS

My last flight in the "Turul" was not without interest. Some twelve months before I had looped the loop continuously 67 times in the Gliding School's "Wolf" sailplane. This was believed to be the looping record, Kronfeld having held it previously with two loops less. Subsequently, however, it was discovered that an American pilot had done 85 loops, and that Wolf Hirth (the German pilot) actually held the record by making 125 loops, officially observed.

Keen to beat the record, I calculated that the "Turul" would need 15,000 feet in height to do it. The small Avro Tutor aircraft normally used for the aero-towing, being incapable of reaching such a height, a Hawker bomber was fitted up for the purpose. It was arranged also that this aircraft should carry an official observer to count the loops as, at that height, they could not be seen from the ground. My Commanding Officer also volunteered to observe the flight from another aircraft on behalf of the Royal Aero Club of Egypt.

HECTIC TOW

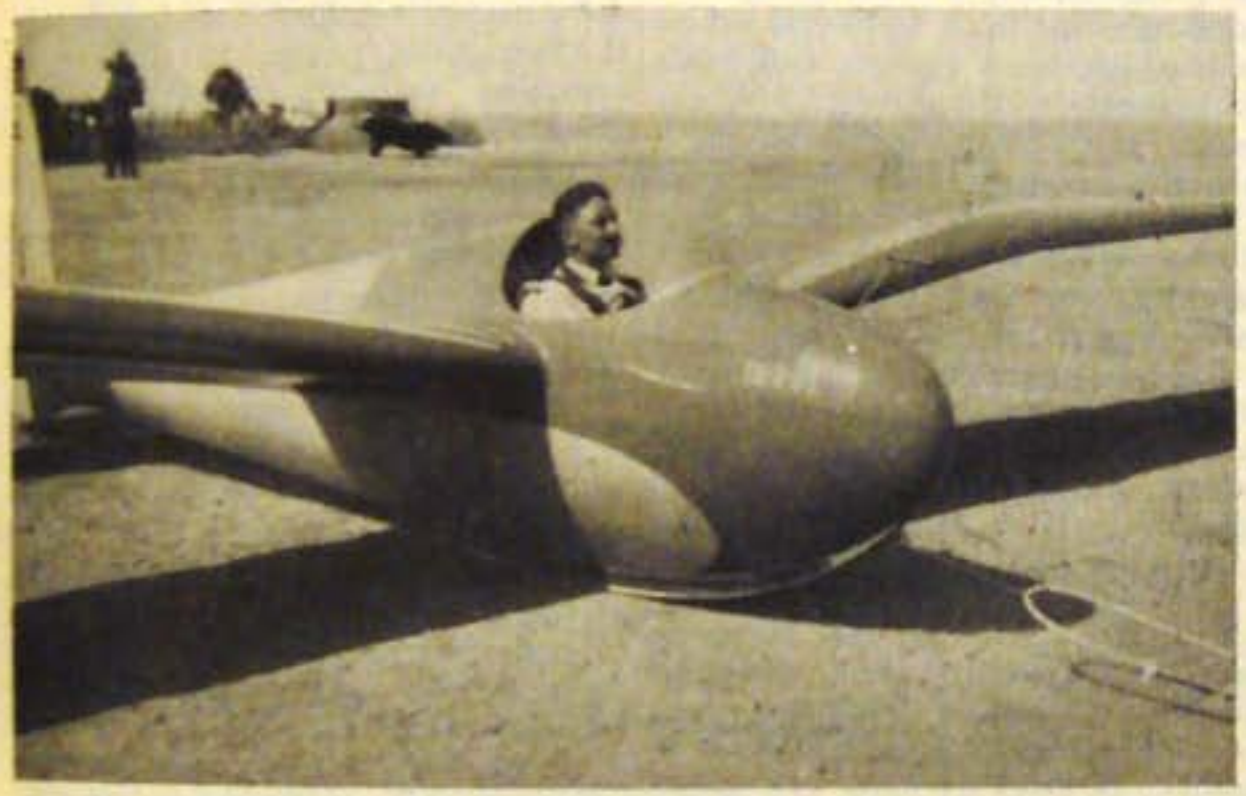
At twelve o'clock on the 12th April, 1938, everything being ready

and the official barograph installed in the "Turul," I gave the signal to my towing pilot and off we went. It was certainly a most hectic tow—the bomber could be flown as slowly as the Tutor. After a few tense minutes' wrestling with the "Turul's" controls as she was dragged violently through the bumps, we climbed to smoother air and settled down to the long tow upwards. In order to gain greater efficiency I had put on the "Turul's" totally-enclosed, transparent cockpit cover. The Egyptian sun, shining through this cover, made the "Turul" seem like a super hot-house. I had expected to feel cold at 15,000 feet, and had dressed accordingly. Rarely have I regretted an error so much.

search for the aerodrome. To my amazement, I now experienced a most perplexing giddiness. The world still seemed to be looping around me! This made it quite impossible to locate the airfield and more by good luck than judgment, I landed safely on a nice smooth piece of desert. With a certain nausea from this curious giddiness, I threw off the cockpit cover, climbed out of the hot-house prison—and promptly fell straight over backwards.

THE RECORD

Shortly afterwards, the official observer landed alongside and confirmed that 147 loops had been recorded. The flight had therefore been successful.



The Looping Record

After forty-five minutes' towing we reached a height of 15,400 feet. I released the towing cable and began to loop at once—loop after loop, taking some ten seconds over each. In a few minutes I became too dizzy to read the instruments, but curiously enough, wholly recovered later owing, possibly, to reaching a lower altitude. Loop after loop, each one running into the next—seeing now the desert, now the sky, and now again the desert—I appeared to remain stationary while the earth and sky rotated around me.

TWENTY-FIVE MINUTES!

After twenty-five minutes of continuous looping I was down to 1,000 feet and straightened out to

A few days later an accident occurred at the Gliding School in which a pupil was unfortunately killed. Pending the official enquiry by the civil air department all gliding was stopped and the "Turul" was grounded. Such was the position when I left the country three months later, and since then I have received no further news of gliding activities out there.

Poor "Turul"! During those last three months I hated to see her lying dusty and neglected in the corner of a hangar. Like any fair maid she felt the summer heat of Egypt. Wrinkles appeared that marred the smoothness of her skin, and her graceful curves began to lose their symmetry and shape. I had a real affection for her. We had spent so many stirring moments together but she never failed me. We had shared so many happy hours, soaring in silence under blue Egyptian skies. Hours of unforgettable delight! Such soaring flight confers the true freedom of the air—enjoyed by those alone who have achieved it.

EGYPT'S FUTURE

The future of gliding in Egypt is full of possibilities. On practically any day delightful thermal soaring may be indulged in, especially on the desert fringe of cultivation where thermals rise with gratifying regularity. These thermals, however, though far more abundant than at home, seem relatively weaker. An explanation of this surprising fact must necessarily be somewhat technical.

Thermals depend for their full development on an unstable atmosphere caused by a "high lapse rate"; *i.e.* with increase of height the air temperature falls more rapidly than normal. This condition occurs occasionally in England, especially after an influx of cold polar air, and the resultant thermals may prove very powerful. In Egypt, however, owing to great heat radiation from the desert sand at night, the ground becomes extremely cold. In the mornings, the lower air layers, cooled by contact with the ground, are colder than those above them. This is known as "temperature inversion," and has precisely the opposite effect to a high lapse rate giving rise to a stable atmosphere. Hence thermals are badly handicapped at the outset, and this probably explains their somewhat weak development. It must, of course, be admitted that my experiences of soaring in Egypt were confined to the months of February, March and April; and that possibly the extra heat of summer might counterbalance the inherent air stability.

LOST IN THE DESERT

Cross-country soaring flights in Egypt should be easily achieved. They are limited, however, by the necessity of following a road so that the glider may be retrieved. Indeed, should an unfortunate pilot land away from a road far out in the desert he might never be found at all! One particularly tempting cross-country flight would be from Cairo southwards along the Nile.

(*Continued on page* 13)

MY STORY

By A. H. KNOTT

(A Pioneer of Motorless Flight)



HERE is a true story of a lifetime of devotion and laborious endeavour (often in the face of outspoken ridicule), to achieve the art of motorless flight, the results of which this flying age owe so much. In the course of which, although I have had many adventures, there have been many calls on my courage.

From paper and stick models at school grew my first man-lifting machine. In those early days I built a pedal chain-driven propellor mounted on to a triangular open fuselage Monoplane Glider, and was auto-towed to the height of 30 feet and miraculously flew some 100 yards, crashed, and whetted the appetite for more. This was in 1921.

My experiments proved to me that to keep a machine on an even keel whilst pedalling furiously was impossible. This was confirmed when a Herr Krause in Germany pedalled cables to produce flapping wing flight several years later.

SELF-TAUGHT

The next machine I designed was without the pedalled propellor, a monoplane, "White Bat," similar to the present-day trainer (bucket seat), on gentle slopes (on which now stands a modern R.A.F. 'drome), having no-one to turn to for instructions in those early days. I taught myself to glide and entered as a competitor in the *Daily Mail* Gliding £1,000 Contest at Itford Hill, Sussex, 1922. With many other members crashing at this contest I returned much wiser, with more hopes but financially not so good, so sold two shops in London, went back to South Wales to the hills and valleys and built yet another machine, "Windsailer," the first tandem monoplane machine to be built in United Kingdom. Entered the *Daily Mail* Contest for the first Channel Crossing, and had the misfortune on landing to crash into a mountain wall, and before my machine could be made airworthy again the competition had taken place.

BUILT SEVEN MACHINES

In 1931 I founded the Swansea and District Gliding Club, designed and built their first machine, "Cloud Hawk" and trailer. I trained 28 boys at least (14 to 20 years), and all told for this Club, built seven machines, and during this period purchased two single-seat "Falcons," Mr. Hiscox's "Westpreussen" sailplane, built a two-seater, and wanting to be the first man to rise vertically under power, three-parts built a "Helicopter," but owing to full-time occupation with the Club I could not complete it.

In eight years I spent £1,000 on the Club, and finally took up an appointment as Instructor and Ground Engineer to the Surrey Gliding Club, Reigate, until we closed down owing to war restrictions.

Although the trainer "Cloud Hawk" is some ten years old (owned by my old Club, the Swansea and District Gliding Club), repaired of course so many times, she still trains the A.T.C. personnel of Swansea, and it gives me great pleasure knowing that to-day that the boys I trained are doing a good job of work in the R.A.F.

Although I am now Chief Inspector to an aircraft firm, I await the days of peace when once again I will found a Club devoted to the cause of motorless flight. Should any of the readers of the SAILPLANE share my views on the formation of a Club within 30 miles radius from London, I will be glad to hear from them.

THE FUTURE POLICY OF "SAILPLANE"

BEGINNING next month it is hoped, within the limits of the available paper, to devote a specified amount of space each issue to the following subjects:—

Soaring.
Sailflying (Duration).
Initial Training.
Meteorology.
Design.
Construction.
Club and General News.

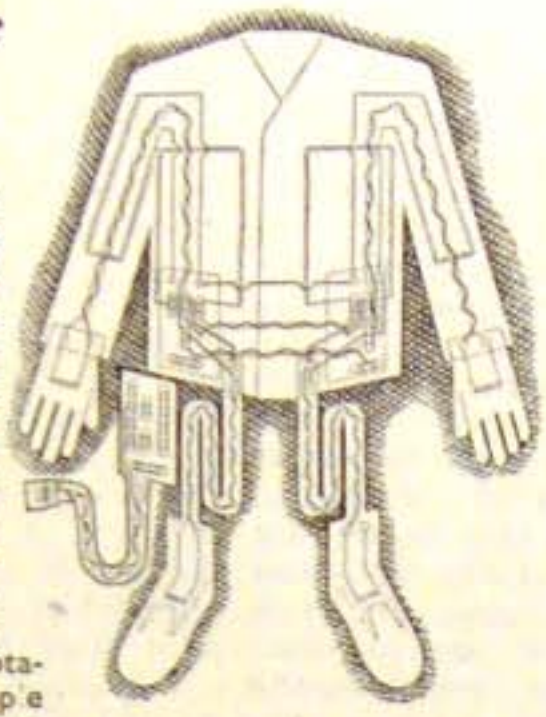
If you are an official of a Club and have any news of the present activities of your members, we should be glad to hear about them. If you have any views on the future organisation of British and Empire Soaring and Sailflying, they also will be welcome.

Since there are so many of our American friends among us we are also going to print articles of interest with an American angle. Among the articles scheduled are "Power Soaring" by the late Lewin Barringer, "Gliding and Soaring with a light Plane" by Harold Brown, "Soaring Flight in Nature" and "Some Notes on the Albatross" by D. R. Chisholm. In this connection the Editor will always welcome expert articles, or the results of observations, on bird flight. One or two articles describing flights in Russia are also on the list.

GLIDER REPAIRS
USK VALLEY AREA.
W. J. SWEET & SONS
USK · MON.
PHONE 48 SKILLED CRAFTSMANSHIP

THE WINDAK SUIT IN USE ..... No. 3

"Turn on the HEAT"



Electrical arteries circulate warmth to every part of the WINDAK flying suit (officially known as SUIT BUOYANT). Simple press studs connect the electric gloves and boots. A plug has only to be pushed into the plane's supply socket for the whole outfit to function at once. Other WINDAK features are comfort, freedom of movement, ventilation, quick release, flotability, ample pocket room.



WINDAK Suits incorporate features covered by Irvin Patent No. 407445 and others.

BAXTER, WOODHOUSE & TAYLOR, LTD.
Queen's Buildings, Stockport, Cheshire

"Sestrel"

Navigation Instruments and Equipment for Sea, Land and Air



HENRY BROWNE & SON, LTD.
— BARKING — ESSEX —
Phone: Rippleway 4954-8. 'Grams: Sestrel, Barking.
Service Depot: 71, Leadenhall St., London EC 3.
Catalogue post free upon application.

My, My, Mr. Matsudaira!



So you thought you would pull a fast one, Mr. Matsudaira? My, My, Mr. "M." You'll have to think up a better way of crippling our war industries than by infesting our rubber plantations with your little sons of Nippon.
F'r instance, you forgot to make any allowance for British ingenuity. And while you were busy making squeaky noises about eternal domination of the East, we at Hubbards were successfully experimenting with a rubber replacement. And the result of our work—Hubbard Mechofelt—is now being used so extensively in the Engineering and Aircraft Industries that you'll soon see the error of your ways.
But, in the meantime, Mr. Matsudaira, if you'd like to learn more about Hubbard Mechofelt, pop in and see us at Luton, and, subject to a few trifling formalities,★ we'll tell you all about our scientific treatment of felt which provides the next best thing to rubber for Marine, Aircraft and Engineering requirements.

★ *Naturally there are no formalities for British Manufacturers — just write to the Mechofelt Development Section, Regent Mill, Luton. Telephone: Luton 2076*

TO-DAY we are making rubber replacements in felt for such a diversity of industries and purposes that, quite frankly, we have no idea of the extent of our versatility. But, to give you some idea, here are some of the present Mechofelt range of accurately cut products: Aircraft Insulating: Packing: Bomb Sight Padding: Plane Weather-stripping: Cleats: Shock Absorbers: Draught Excluders: Sealing Blocks: Door Bumpers: Truck Tyres: Gear Covers: Tubings: Gaskets: Vibration Pads: Mounting Blocks: Porthole and Hatch Seals: Window Channels: Seating and Arm Rests covered with leather.

MECHOFELT
HUBBARD MECHANICAL FELT
S. HUBBARD LTD · MECHOFELT

S. HUBBARD LTD · LUTON · AYLESBURY · LONDON
GLASGOW · MANCHESTER · BRADFORD · NEWCASTLE
Pioneers in the Manufacture of Rubber Replacements
T.B.B.

GOAL FLIGHTS, BY REQUEST !

"AN ACCOUNT OF SOME WARTIME SOARING" By "Busy Bee"

THE SETTING — an R.A.F. aerodrome in the north of England, a Gipsy Moth (a veteran aerial tug) and a Petrel complete with ground handling crew (by kind permission of its maker), the whole lot organised for and on behalf of the Ack-Ack folks by one of their officers, previously a keen club member. The general idea was for the Petrel to be towed by the Moth to a city some 20 miles away, there to be released at about 10,000 feet, and find its way back to the aerodrome, the pilot making notes of position and height at intervals for subsequent checking with the said Ack-Ack people. It was my good fortune to be offered the pilot's job, and my further good fortune to be able to accept it. I had not been in a glider since the war broke out a year previously.

The first day was not very satisfactory. A very gusty wind was blowing, and it made the take-off over a small wood very unpleasant. I felt like a pea in a pod until we had gained about 300 feet and set course for the release point. Half-way there, a violent gust caused the cable to snatch, and the weak link at the tug end broke, leaving me with 300 feet of cable dangling from my quick-release, 2,000 feet on the altimeter and 10 miles to go across a wind blowing at 30—35 m.p.h. I got some lift almost immediately, but only made a hundred feet or so, after having first lost about two hundred feet. I had dropped the cable very soon after it had broken, but the ground crew were unable to find it.

VILLAGE THERMAL

Then followed a glide to a small village, where I arrived with about 1,100 feet in hand. The eagerly-sought thermal was there and enabled me to set course once more for the aerodrome. I forget now what height I had when I arrived there—about 400 to 500 feet, I think—but I remember finding quite a lot of lift around the 'drome, which got me up to about 1,800 feet, and I was able to amuse the locals and incidentally break all the circuit rules with a series of tight spirals (the Petrel will not spin properly) and loops down to about 300 feet, followed by a spot of soaring along the hangars before landing. That was all for that day, but the next time we tried, we used rope instead of cable, and there was all the difference in the world. I am really rather surprised that we did not use rope in preference to cable before the war.

Atmospheric conditions were practically the same, perhaps slightly less gusty, and the wind at 2,000 feet about 25—30 m.p.h., again dead across the course. Cu and St-Cu at 3—4,000 feet, and visibility about 20 miles. At 10.15 a.m. we took off and started clambering slowly towards the intended point of release. We climbed over the city through a gap in the clouds, but could not make more than 7,500 feet height, so I cast off and started a straight glide above cloud on an estimated course. I entered cloud at around 6,000 feet and broke base at around 3,500 feet with some 12 miles still to go. My turn and bank indicator was working the wrong way round, showing a left turn when I turned right, and *vice-versa*, very confusing, so when in cloud I found it easier not to circle at all, but just concentrate on keeping straight.

STABAT AD PROBOSCIS

The place where the cable had broken on the previous flight again produced a few nibbles of lift, and there seemed to be plenty of it scattered around the countryside, but I could rarely stay in it for more than three or four hundred feet as I wanted to keep as near to my official track as possible so as to eliminate a final upwind battle to the aerodrome. Ninety minutes after the take-off, I arrived back at the aerodrome at about 1,100 feet, and let go of the stick while I made a note of the time and height. Next moment the Petrel was standing on its nose and my head half through the cockpit cover—moral—never leave go of the stick if you have balanced pendulum elevators ! Recovering from this ungraceful attitude, I toured the aerodrome surroundings — these R.A.F. aerodromes with their vast areas of runway, perimeter paths and roadways through the camp are marvellous thermal initiators—post-war goal-flying should be a piece of cake ! I landed after one hour and forty minutes of thorough enjoyment. The tug dragged the tow-rope through a Whitley's aerial, which did no good to the aerial, but did not damage the rope.

The test was repeated after lunch, and this time while circling up over the city in a gap in the clouds the tug suddenly disappeared in cloud at 5,600 feet. I watched the tow-rope and kept it straight in front of me for a while, then thought better of it and pulled the plug, which was just as well, as the pilot later told me he just dived out of cloud and looked around to see if I was still there. Owing to the afore-mentioned reversal of the turn indicator, I found it a bit difficult to turn on to the desired course, and when I broke cloud and pin-pointed my position, I found I was going south-east instead of north-north-east—bad show ! So I eventually found myself with 20 miles to go, across and slightly up wind, from 3,800 feet.

CLOUD STREET

At the half-way mark, after circling in many small bits of lift, but never for long, I was down to about 1,300 feet, but five miles further on there was a perfectly wizard cloud street, stretching straight across my course for as far as the eye could see. I worked very hard and managed to reach it. For five years previously I had prayed that I might contact a cloud street while flying a glider, and now that my prayer was answered I dared not stay with it, but just got up to near the base, about 2,500 feet, and then continued my way northward. Woe is me ! That street must have extended for at least 30 miles. Still, it might happen again some day, under happier circumstances. After all, I *was* having lots of fun. I got a great kick out of arriving at the aerodrome each time without having to ring up for the trailer.

CURIOUS R.A.F.

After tea I was asked to do a straight glide without any circling for 15 miles due south, to land at another aerodrome, where the Moth would come and tow me back again. I released just below cloud

at 3,800 feet over the aerodrome and set course. There was little or no lift about now, so I did not miss much by having to go straight on. If anything, there seemed to be a slight but widespread downward trend in the air, and I arrived at the destination at 600 feet, having been rather anxious for the last two or three miles. One complete circuit, followed by three or four S turns and a landing just over the perimeter path, were at first sight unnoticed, but soon the R.A.F. started wandering over in twos and threes to see what strange uncamouflaged intruder had come so silently to their station. I hate making explanations, so was thankful when the Moth turned up. In a few moments we were away again. The flight back at 1,000 feet in smooth air was very pleasant and uneventful.

The Petrel was a delight to fly, and its performance was proved by its long cross-wind or slightly up-wind glides to be right in the first class. A later version had a fixed tailplane and plain hinged elevators, which would be an improvement, but about the only one possible. The vision through the cockpit lid was entirely satisfactory and much better than that from the tug pilot's Whitley, which he kindly allowed me to fly. I commented on the old scratched perspex or celluloid panel, and he replied that as he only flew at night and could not see anything anyway, it hardly mattered !



"THEY'LL NEVER BELIEVE ME IN THE 'SAILPLANE'

LETTER TO THE EDITOR.

"VEVARA,"
9, Shrewsbury Park,
Balmoral Ave.,
Belfast, N.I.
8th May, 1944.

DEAR SIR,

I must take this opportunity to say how much I look forward to the SAILPLANE each month; it is perhaps the only magazine which still retains the sporting and enthusiastic point of view.

When peace returns do you think the flying and gliding clubs will be allowed to function as they did in pre-war days, or will the very large amount of trained flying personnel which we have to-day put a restriction on the issue of further pilots' certificates ?

At present I am training as an A.T.C. Civilian Instructor. I attended a course for instructors in England early in the year and then returned to my own unit for further instruction, and I have now reached the circuit stage. Could you tell me how I stand as regard to obtaining the Royal Aero Club's Certificates necessary for peace-time flying ?

The prime factor at present is to get the A.T.C. boys airborne, but I am very enthusiastic about Club Gliding, and my greatest ambition is to soar when peace returns, and I feel I would have accomplished something towards this if I could obtain an A or B Certificate through what I have done so far. Here is wishing the SAILPLANE AND GLIDER "Clear Horizons and Happy Landings."

Yours truly,

BRIAN SMITH.

EDITORIAL COMMENT

Thank you very much for your appreciation. If anyone else feels like Brian Smith, would they kindly show their practical appreciation by trying to get new subscribers.

IMPORTANT NOTICE.

If you do not receive your next one or two subsequent numbers of Sailplane, it will in all probability be due to the present state of emergency. Should publication be delayed too long, it may be decided to re-date the issue as for the date of actual publication. In which case Subscribers will be credited with those months and their subscriptions extended.

GLIDING AND SOARING FLIGHT IN EGYPT

(*Continued from Page* 9)

Along the desert edges of the green Nile Valley should exist a whole string of thermals and, with the aid of the following prevailing wind, a flight of 400 miles or more is possible. Unluckily I had no opportunity to try this flight but some day, perhaps, it may be done. I can imagine no finer prospect for an exciting soaring adventure, with the possibility of obtaining the World Record for distance in a glider.

GEBEL IWEIBID

The Gliding School had selected a possible new site near a range of hills known as Gebel Iweibid, just off the Cairo-Suez road. These smooth rock hills rise steeply 1,000 feet above the flat surrounding desert, and extend some two miles in length. They face the prevailing wind and slope-soaring here should give ample height for thermal contacts to be made—thus dispensing with the need of a towing aircraft. Gebel Iweibid has possibilities for gliding unknown elsewhere. The regularity of the prevailing wind and the likelihood of thermal soaring on almost every day, provide unique facilities. Plans were in hand to develop the site as a gliding base and to build hangars and a club-house there. It is to be hoped that one day when this war is won these plans will bear fruit. Egypt may then become an important centre of gliding sport and the scene of future international competitions.

BRIEFLY—THE FUTURE

(*Continued from Page* 3)

advanced sporting-types may be in demand and might even be built by the Clubs themselves.

The total effect of these suggestions would be to provide "local air-universities" at which theory and practice would go hand-in-hand. Interest in personal gliding and flying would be raised to a high level—State interests fully maintained—and employment given to specialist aircraft workers who should not be allowed to leave the Industry.

And nobody, young or old, would be debarred from flying on ground of financial stringency. If we pay more than lip-service to the name Democracy let us be sure that it is maintained on the aerodromes of the future.

C.B.



FALCON III TWO-SEATER.



SOARING AT THE ULSTER CLUB.

ITEMS OF INTEREST

F./Lt. Sproule, holder of the British duration record, has been lucky enough to purchase the remains of Philip Will's crashed "Minimoa" from the M.A.P. What there is rests in Slingsby's hangar at Sutton Bank.

Between 100—120 "Minimoas" were built before the war and the machine, which is a smaller edition of the "Moazogotl," seemed to be the favourite machine of record hunters.

Australia Club News was not received this month. If received in time suitable quotations will be printed in the next issue of SAILPLANE.

A long letter was received from **New Zealand** giving some interesting sidelights on the pursuit of Soaring in that "Backward" country. We say "Backward," because our friends out there still seem to be getting moved on by farmers, who think that "they frighten the cattle." Still, cattle get used to it. Anyone who has seen the unruffled calm of a herd of Herefords in the next field to an aerodrome used by our Lancasters night bombers will confirm this. So also with sheep. They have occasionally been observed to be disturbed by the noise of low flying aircraft, but not for long. They hardly seem to notice the huge "Horsas" on Salisbury Plain. Much of this letter will be reproduced in the next issue.

"ALL AMERICAN" PICK UP GLIDER SYSTEM OF AIR TRANSPORT

See Photographs on Opposite Page

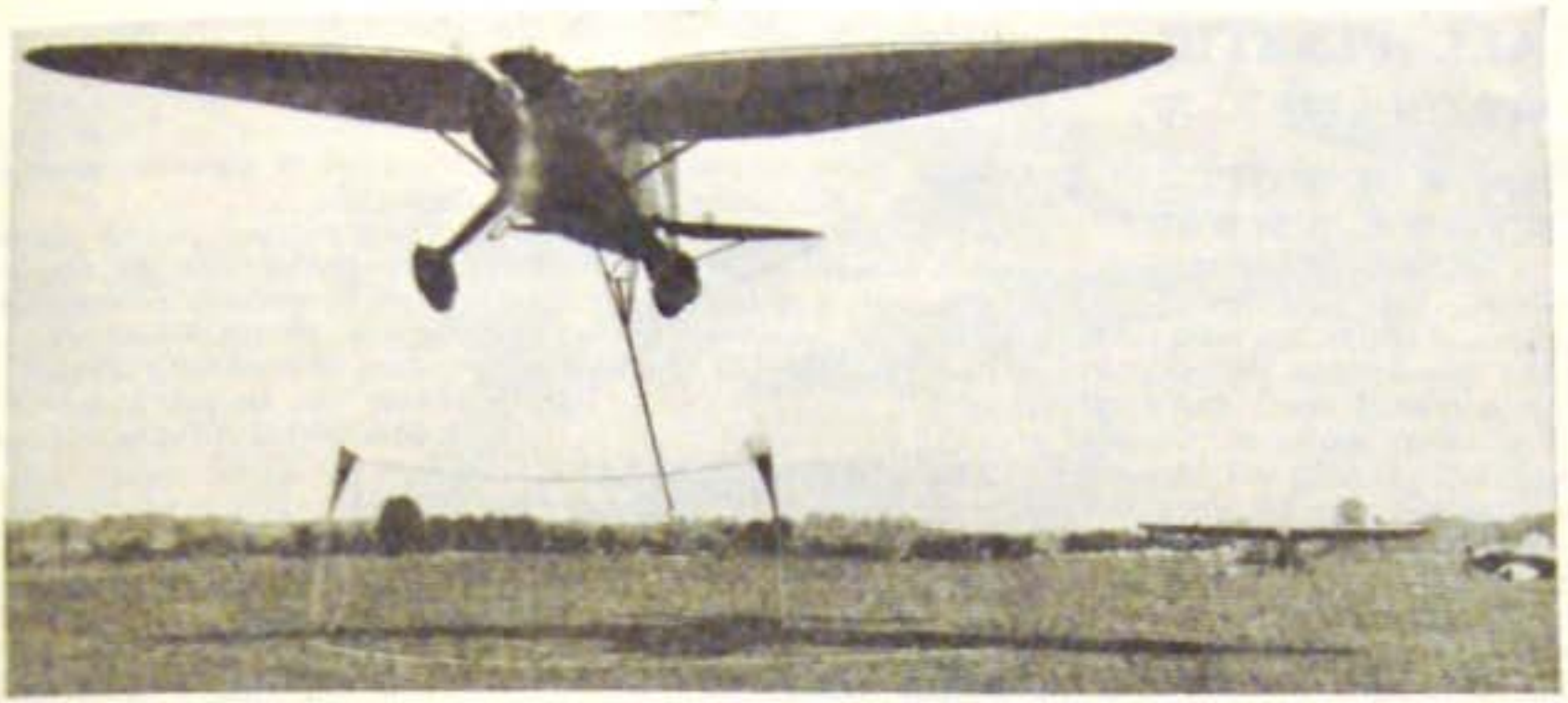
THE pictures opposite are reproduced from an American Magazine showing the method of picking up a loaded glider by an aircraft which has swooped low for the purpose.

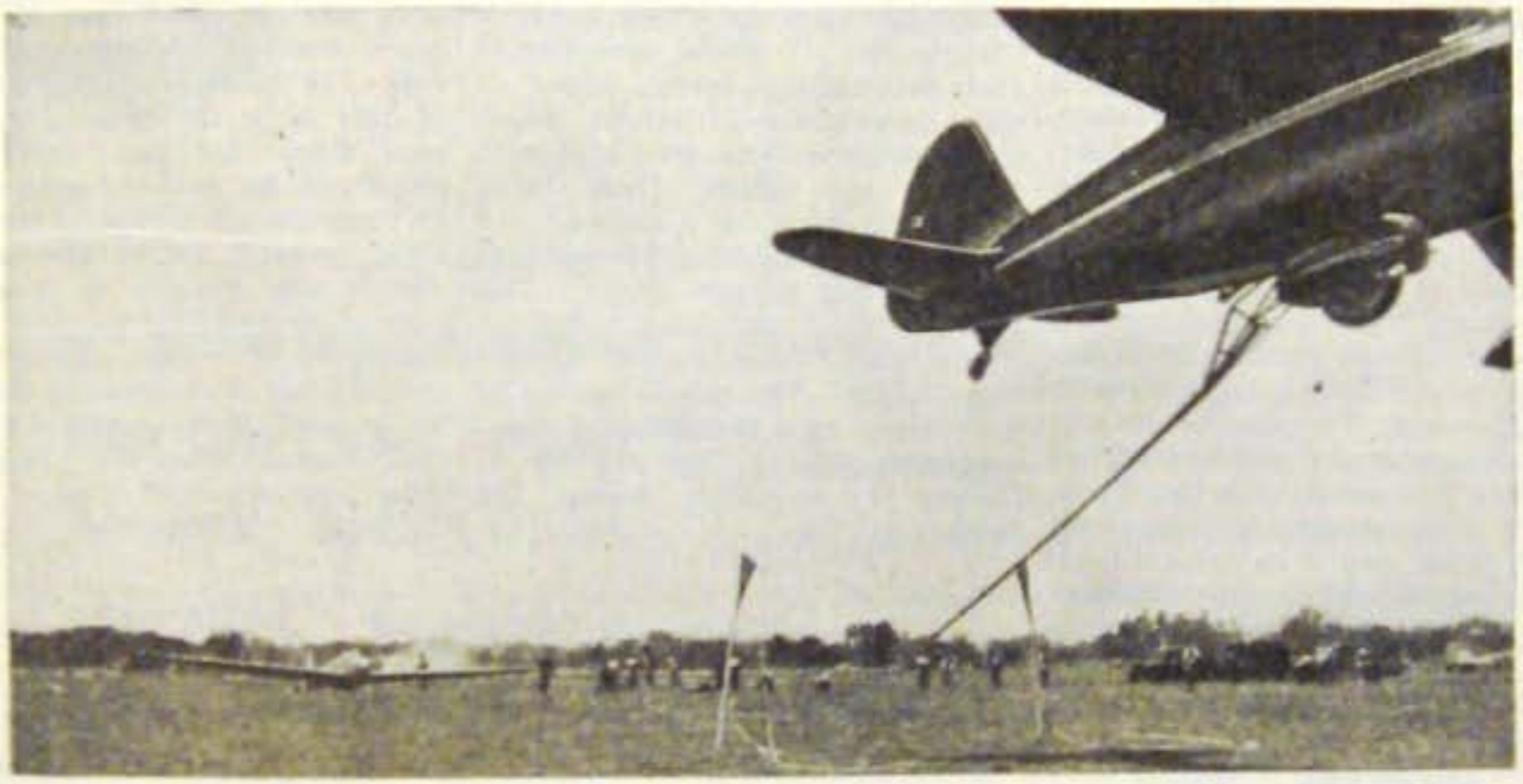
This is a development of the system by which a mail bag or other freight was picked up by an aircraft and which formed the basis of the Dupont system. These experiments show what can be done, and although it is not everyone who foresees a big future for this method of air transport, there are firm believers who see in this system the way to open up vast areas of otherwise inaccessible country without going to the expense of building big airfields and concrete runways. It appears that it would be an ideal method of beginning a feeder service to main airways. Coupled with the Russian use of several gliders to one tow plane, it offers the cheapest method of transport over distances up to 500 miles at an average speed of around 100 m.p.h. An article on this subject (culled from the magazine, "U.S. Air Service") showing three gliders towed by one four-engined aircraft, appeared in the February SAILPLANE, thus indicating that the Americans are alive to the possibilities of this method.

Top: All-American-Aviation pickup plane just prior to making contact with towline suspended between ground station poles in foreground.

Middle: Pickup plane at moment of contact with glider towline. Glider in background awaiting pickup.

Bottom: Glider just after pickup and in full towed flight. Ground station poles in foregrond indicate short take-off run necessary by this method.







ALL PLASTIC AIRCRAFT?—V.

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

DURING the past ten years, extensive search has been made into the possibilities of phenolic resin impregnated wood, and great use has been made of veneers impregnated phenolic resins, particularly in the case of propellers, where planks have been produced of varying density, so that the maximum strength is at the root, the whole being somewhat lighter towards the tip. This type of blade is produced by taking a pile of laminations running the full length and then inserting a further lamination in between every third lamination. This lamination only runs half the length of the blade and a further insert put in between, say, every second lamination running only a quarter of the length of the blade. When the whole is put in an hydraulic press and pressed to one thickness all the way along, the density of the end where the maximum laminations are is considerably greater than at the other end. Propeller blades and blocks of material thus prepared, are more or less wood with the whole of its fibre structure filled with cured resin, and it is naturally no longer hydroscopic. Spar runners have been made in the same manner with the maximum density of the material being towards the root end.

"IMPROVED" WOOD

Although with the large lengths that are required for such components, difficulty is experienced in obtaining large enough press capacity. There have been a number of sailplanes constructed, particularly on the Continent, using this impregnated wood often referred to as "improved" wood, for the purpose of blocks, to take the main wing root fittings. One very useful form in which this improved wood has been produced is that where one side has been left natural wood, the synthetic resin not penetrating to the outside. This veneer, as a rule, is considerably thicker than the others. Sheets thus prepared enable designers to take advantage of the very high value of this material for transmitting the load from the bolts to the spar and at the same time it enables such blocks to be glued to the outside surface of the spars or even spliced in, using casein, or cold setting synthetic glues. Improved impregnated wood is somewhat difficult to glue to, although I believe there have been several processes developed on these lines within the last year or so.

ALL-PLASTIC AIRCRAFT

There have been numerous articles in technical papers relating to the all-plastic aircraft. Such claims must not be misunderstood, as the aircraft would, without question, be made up of the various components which, strictly speaking, would not be entirely plastic, as in the case of an ordinary phenol moulding, such as a telephone or door knob. It would comprise of such materials as fabric, paper, or thin laminations of veneer which had previously been saturated with phenol, the whole then being pressed to shape in a mould, at a pressure varying from a half to one ton per square inch. This pressure under some circumstances, might vary considerably outside these limits. The mould has to be maintained at a temperature varying from 260 to 335 degrees F. During the moulding period, the phenol resin melts, flows into every fibre and sets. No further application of heat or pressure will enable this moulding to be reformed in the case of phenolic impregnated material.

Such components as pulleys and cable guides, can be moulded to shape in specially constructed steel moulds, or machined from sheets or bars of moulded material. These sheets can be purchased in many grades, either filled with fabric, the grade of fabric being varied for different sheets, or paper. As a point of interest, I may add here that although it is possible to machine pulleys from paper filled phenol sheeting, this particular grade is not suitable for such components, due to its brittleness. When selecting such material for small machined parts in connection with aircraft, it is best to use a grade that has been made up of very fine fabric and the strength of this type of material can be seen from the fact that it is employed for making gear wheels and has the advantage of requiring little or no lubrication. Such wheels can usually be found in magnetoes and in some cases in the timing wheels of cars, and in certain cases it has been claimed that the life of such items are in excess of that obtained when the components have been made of steel or brass.

GLIDING CERTIFICATES

		Gliding School	*Date taken*
"A" Certificates (17)			
1768	John Charles Mottram ..	N.E. 24 E.G.S., Netherthorpe	18. 9.43
1769	Arthur Harry Phillips.. ..	S.W. 92 E.G.S., Yate ..	2. 1.44
1770	Ernest William Sherry ..	M.45 E.G.S., Meir ..	25. 3.44
1771	Norman William James Rogers	L. 141 E.G.S., Kidbrooke	25. 3.44
1772	Albert Stanley Drake	Ditto	25. 3.44
1773	Lionel Sydney Brand	Ditto	27. 2.44
1774	Dennis Norman John Swains	C.121 E.G.S., Halton ..	5. 3.44
1775	Keith William Henniker ..	C.123 E.G.S., Bray ..	26. 2.44
1776	Ivan Sidney Edgar	Ditto	26. 3.44
1777	Peter Michael Joseph Lavelle	Ditto	2. 4.44
1778	John Arthur Grove	Ditto	2. 4.44
1779	Hugh Loveday	C.121 E.G.S., Halton ..	27. 6.43
1780	Donald Tomlinson	N.E.24 E.G.S., Netherthorpe	18. 9.43
1781	Albert Ford	Ditto	9. 1.44
1782	Gordon Sherwin	Ditto	11.12.43
1783	John Leslie Walton	M.45 E.G.S., Meir ..	26. 3.44
1784	Arthur Douglas Marsh ..	L.141 E.G.S., Kidbrooke—	5. 3.44
"B" Certificates (5)			
1769	Arthur Harry Phillips.. ..	S.W. 92 E.G.S., Yate ..	12. 3.44
1773	Lionel Sydney Brand	L.141 E.G.S., Kidbrooke..	5. 3.44
1738	Rex Meakin	No. 183 E.G.S., Woodford	10. 4.44
1737	John Reginald Noden ..	Ditto	9. 4.44
1784	Arthur Douglas Marsh ..	L.141 E.G.S., Kidbrooke..	29. 3.44

Consult the

G.E.C.

for all

ELECTRICAL EQUIPMENT

for

GLIDER AIRCRAFT

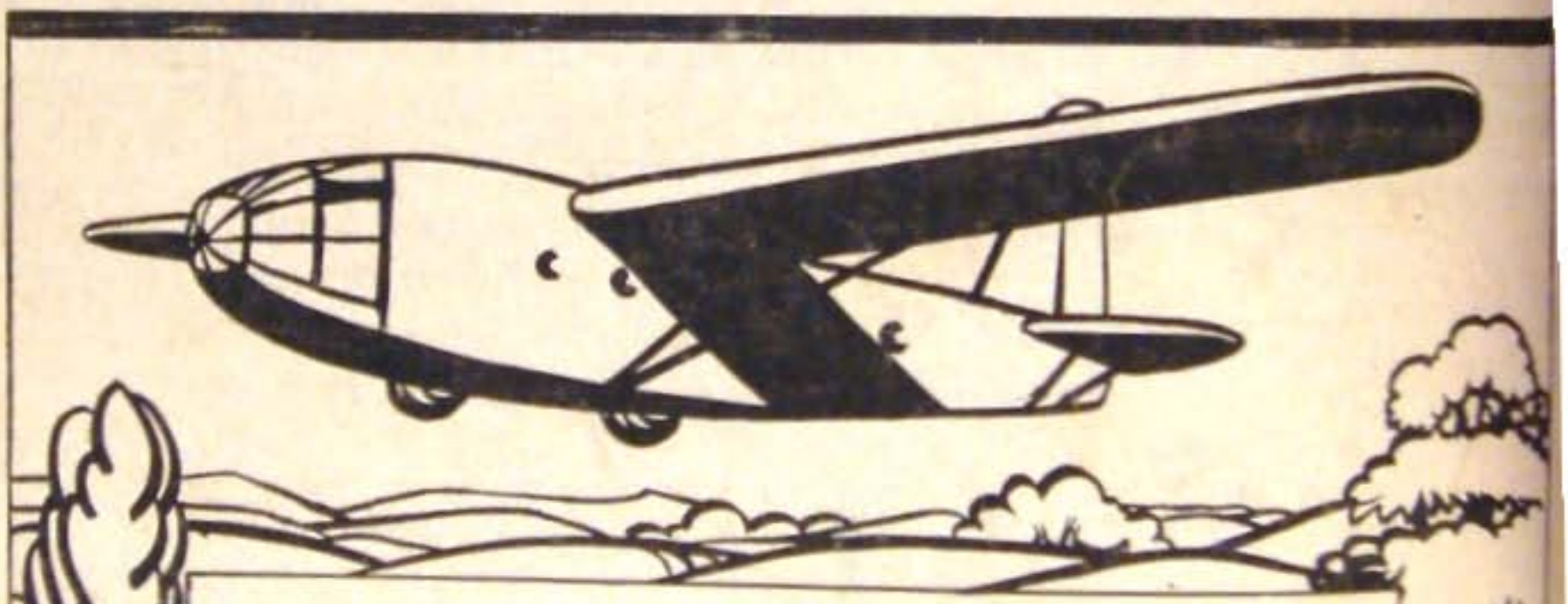
Wires and Cables

Landing and Signalling Lamps

Radio, etc., etc.

The G.E.C. is able to provide complete electrification schemes and equipment for Aircraft Factories, Aerodromes, Clubhouses, etc., etc,

Advt. of The General Electric Co. Ltd., Magnet House, Kingsway, London, W.C.2.



Lord Beaverbrook called for the Housewife's Aluminium Pots and Pans to build Spitfires.

The same Aluminium Alloys that have proved the backbone of Britain's fighting Aircraft, will solve many constructional problems of Sailplanes and the Glider Trains of the future.

BRITISH EMULSIFIERS LTD.

59/61 PORTLAND PLACE · LONDON · W·1 · *Telephone Langham 5303.*

PRINTED BY THE MENDIP PRESS, LTD., LONDON & BATH, AND PUBLISHED FOR THE PROPRIETORS, THE GLIDER PRESS LTD., BY THE ROLLS HOUSE PUBLISHING COMPANY, LTD., AT BREAM'S BUILDINGS, FETTER LANE, E.C.4.