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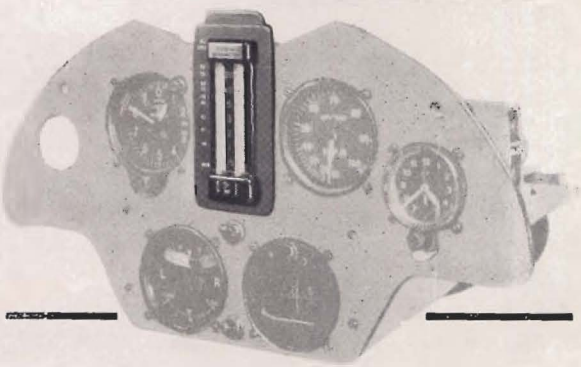
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THE FIRST JOURNAL DEVOTED TO SOARING AND GLIDING

APRIL 1950 ★ Vol XVIII No 4

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COVER PHOTO:
Looking South from Bishop. The lower cloud is a "roll cloud." The upper is the lenticular.

Editorial

WE apologise to our large number of Overseas readers for once again inflicting on them our local politics, but, especially to those countries where they are still in the throes of the creation of their own Gliding Associations, they have their interest and their lessons.

We could hardly believe our eyes when, as members of the Press we were admitted to the Annual General Meeting of the B.G.A. which took place on the afternoon of March 25th at Londonderry House. For the Agenda of the Extraordinary General Meeting which had been summoned to take place before the A.G.M., contained proposals to admit selected private members, associate members and the A.T.C. Bearing in mind our suggestions years ago that steps like this should be taken, we were not flattered, but rather depressed that the logic of events should have taken so long to impress itself on the exceedingly clever minds of the B.G.A.

In introducing the proposals, the Chairman, Philip Wills, C.B.E., mentioned that the reason was to open the way to a greater revenue, though he admitted that he was personally primarily interested in High Performance Soaring, and it was hoped that the admission of private owners might help in this way. He did not state how, however. Rex Young remarked that the Gliding Movement needed the influx of fresh people and indicated that they might benefit the Association by service as well as cash. The Motions were passed, but not before more than one speaker had asked for more enlightenment on what was behind these proposals. No figures were stated as the fees to be charged the new classes of members to be allowed, and Charles Wingfield remarked that they did not know "whether they were voting for a millstone or a gold mine." Eventually the Council were handed back the job of fixing the subscriptions. One thing that did emerge however was that the new members were to have a limited vote, which the perspicacious Cambridge University Member reminded the meeting offended the first principle of democracy that there shall be no taxation without representation. At a later stage the Combined Service representative introduced a motion, finally withdrawn, that Associate as well as full members have the right to vote at General Meetings, and that subscriptions for both types of membership should be according to means. This brought on a useful discussion, in which the theory of the block vote was explored, not very thoroughly, but in the end nothing was done.

The events of the afternoon however, gave rise to some reflections on future policy which we venture to state must be discussed throughout the Clubs and worked at until a satisfactory constitution and organisation is arrived at by the B.G.A.

We are prepared to agree that starting from scratch, since the war the B.G.A. might have done a great deal worse. But they might have done a great deal better. One thing is certain is that the too few people in the B.G.A. are doing too much.

These proposals were rushed. They had not obviously been thrashed out in the Clubs before the meeting although some clubs had discussed them in Committee.

The Clubs should have had definite proposals on all the motions before the Meeting some six months ago and they should have voted on them. They did not, so that the Movement will now bear the burden of the indigestion of half baked proposals too quickly adopted.

We have examined the clauses relating to the voting powers of members to be elected in the new classes. The Council reserve to themselves—properly so long as it is reasonably used—the power to elect or reject any applicant for private or associate membership. Presumably A.T.C. membership would be automatic, but it is not quite clear how the A.T.C. will join, by schools, of which there are about 60, or as a corporative body with X representatives. Private members may be co-opted, but fewer than 25 can have no right to an elected voice on the council.

We venture to suggest that the only fair organisation of the B.G.A. will rest on Area representation, in which the Clubs will play their part, and that these 12-20 representatives should form the Council meeting four times a year. From these will be chosen the Executive Committee of five or six, some of them co-opted, from Metropolitan members, say Private Members or representing the Services. The various sub-committees would have a Chairman also a member of the Executive, but their members could be co-opted as the Executive wished. With this set-up the amount of business that could be got through would be much greater than the present system, and those involved would have less to do. The office of Hon. Secretary of the B.G.A. would be abolished, as unnecessary, and all officers would be voted in General Meeting. At present the Hon. Sec. of the B.G.A. is really Hon. Sec. of the Council who make the appointment. The Movement has never been consulted. By the way, since Hugh Bergel has resigned his Deputy Chairmanship, ought there not to have been a Vice-Chairman elected at the A.G.M. ?

NEWS OF SOARING IN FRANCE

By GUY BORGÉ

THE 1949 soaring results have been very good in France, and ; I believe, the best in the world. With 1,432 sailplanes in service, 83,137 hours of soaring flight were registered for the extraordinary total of 445,906 launches. But the figure of the badges shows that the number of beginners is decreasing whilst the number of performance pilots becomes greater. Badges : 1,903 " B "—1,159 " C " —1,834 legs of Silver " C "—210 Silver " C "—149 legs of Golden " C "—29 Golden " C."

The best Club is always the Rhône Aéro-Club which records, on the Corbas airfield, the following figures : 2,038 hours, 8,780 launches, 26 " B "—17 " C "—18 altitude legs—13 durations—12 distances—12 Silver " C." *These results achieved without one breakage during the year.* Another noticeable figure is the number of long thermal flights : 35 exceed five hours, of which 3 of 8 hours and one of 9 hours. 24 cross country flights totalling 1,200 miles.

Just behind the Rhône Aéro-Club, the Arcachon Aéro-Club has also attained noticeable activity. This Club flies at Le Pilat (a sandhill near the Atlantic Ocean) and Cazaux. With 14 sailplanes (4 two-seaters, 4 training machines, 4 performance and 2 high performance planes), they have recorded 1,378 hours, 6,800 launches, 48 " B "—18 " C "—21 Silver " C " legs, and a nice distance leg of the Gold " C " by Sergeant Aubert in a " Weihe," from the Ocean to the Mediterranean coast.

Another good site is the Alpilles Centre, completely equipped for night flights, and where Guy Marchand broke the international duration record. In 1949 they logged 1,096 hours (of which were 38 at night), 1,081 launches (50 landings in the dark), 23 Silver " C " legs and 5 altitude legs of the Golden " C."

The Centre that registered the greatest number of distance flights is the Saint Cyr Inter-Clubs Centre which now soars at Beynes. In 1949 they totalled 33 flights over 124 miles, 21 over 186 miles, and five over 249 miles. The total mileage of the cross country flights greater than 31 miles, is 9,655 miles, a high figure. Other results are : 37 " B " badges—23 " C "—72 legs of Silver " C "—24 Silver " C "—16 distance legs and 5 altitude legs of the Golden " C "—7 Golden " C " badges. The Saint Cyr Inter-Clubs Centre organizes soaring courses opened to French and foreign pilots. For information write to the soaring centre, Beynes-Thiverval (Seine et Oise).

All these results were in 1949 but some new interesting performances were made during the Winter. At Issoire (a small town in the centre of France), Pierre Herbaud, the C.F.I. of the Issoire Aéro-Club flew 17 hours 7 minutes in a " Nord 2000 Olympia " on the 29 and 30 December, 1949. In February, M. Herbaud in the same machine reaches 17,000 feet in a West wind wave.

In January 1950 on the slope of Mont-Thou near Lyons, a " C.800 " two-seater flown by Messrs. Margerie and Durand (Villefrance Aéro-Club) remained airborne for 19 hours 26 minutes. The north wind blew for 4 successive days and they had a possibility of breaking the world record. But a breakdown in their radio forced them to land.

At Saint Auban sur Durance, the mistral wind remained rare in December, January and February but a very good wave lift however permitted some outstanding performances.

On the 18th December, 1949, Charles Girod gains 18,000 feet in a " Castel 310 " and in this flight got :

His distance leg of the Silver " C " and his complete Silver " C " ;

Altitude legs of the Golden and the Diamond badge.

Without oxygen, he reached 21,300 feet above the sea-level and made an unique distance flight. As the mistral blows at 62 miles/hour, he flew 56 miles from Saint Auban to Cuers (the airfield of Toulon) backwards like a crawfish. Always in front of the wind, he lost only 30 seconds from the first ascending wave to the second undulation, at 12 miles from Saint Auban. In spite of this " màrche a reculons," he accomplished his travel in 2 hours 10.

Meantime, Claude Fronteau, another pilot flying a " Weihe," became ill at 21,000 feet for lack of oxygen, and broke his machine by landing against a poplar.

On the 7th February, 1950, Jean Pierre Weiss, 19 years, Golden " C " pilot, 500 hours of soaring, got his Diamond leg by reaching 23,600 feet above the sea level and gaining 21,300 feet. At this altitude and at 62 miles A.S.I. he climbed with +3 feet/second but had to open his air brakes because his oxygen bottle became empty. His canopy, his instruments had frozen, and humidity of his breath has also frozen in the inhalator in a temperature of—2 degrees Fahrenheit. His lowest point was 660 feet on the Penitents slope. It is surprising to notice :

(a) The possibility of finding very low lift at Saint Auban.

(b) The strength of the lift at the high levels when the ground influence that creates it has become remote. A lift of 3 feet/second on the variometer at 23,600 feet (performances of the sailplane decrease with altitude) and with 62 miles/hour A.S.I. gives an actual lift of 15 feet/second.

Some other performances were accomplished at Saint Auban on the 10th February. The 16 present pupils got 12 Golden " C " altitudes and 7 Diamond " C " legs. Best flights were :

André Suisse (26,000 feet above the sea)—Issanchou (20,500) — Vuagneux (20,100) — Kruzinski (24,600)—Durand (23,000)—Godey (23,200) — Vanlaer (22,000) — Pignon (16,800) — Joanny (16,600) — Perret (16,800 feet) and so on.

A few days later, J. P. Weiss climbed to the greatest altitude ever reached in France by a sailplane pilot : 26,600 feet, again finding at this level plus 3 feet/second on his variometer. He might have broken the international altitude record but his oxygen provision was insufficient.

I believe that the best altitude gains in the world may be obtained at Saint Auban, but no present sailplane offers place enough to contain oxygen.

M. Raymond Jarlaud studies a special stratospheric sailplane with chemical heating : whilst waiting its tests, the Saint Auban instructors have designed a special " Kranich," very interesting and just ended several weeks ago. It is a one-seater, the previous back seat being occupied by numerous oxygen bottles and electrical batteries for radio, lights. The pilot wears special gloves and socks, electrically heated. All the openings have been closed for isolating the cockpit.

With this " Kranich," the Saint Auban instructors think it possible to beat all the international altitude records.

SWEDISH SOARING IN 1949

Summary

THE soaring statistics for Swedish soaring in 1949 just released show some interesting features. The main one is the relation between starts and flying-time. In 1948, 40,013 starts were made (24,270 with primary gliders and 15,743 with sailplanes). The corresponding figures for 1949 were 37,994 (15,541 resp. 22,403). In spite of the fewer starts in 1949 the total flying-time increased from 3,113 to 3,394 hours. 743 of these derive from the central school at Alleberg while the rest comes from the clubs. There is not a single privately owned sailplane in the whole of Sweden. The Alleberg School noted 1,940 primary glider starts and 2,032 with sailplanes. Among the clubs the Malmö club took the leading position with 1,338 primary glider starts, 1,256 sailplane starts and 336 flying hours. The flying-times perhaps seem rather modest in comparison with those of the best British centres, but the fact must be taken into consideration that nearly 100 per cent of the flying-time for flights more than mere circuits comes from thermal flights. Slope flying is not by far so widespread as in Britain and is almost entirely performed at the Alleberg school.

A comparatively large number of aero-tows were carried out. Thus, the Alleberg School noted 699 tows, the Malmö Club 444, Linköping 443, Västeras 337, Stockholm 314 etc. Winch-launching, car-tows and rubber rope starts shared the rest. At the end of 1949 there were 39 active clubs exclusive the Alleberg School. By the 30th of September 1949, the total number of diplomas issued by K.S.A.K. (The Royal Swedish Aero Club) amounted to the following figures : " A " diplomas, 5,204 ; " B " 3,012 ; " C " 1779 ; Silver " C " 222 and Gold " C " 15. Five pilots B. Olow, A. Hedman, T. Lof, P. A. Persson and P. O. Norrby, have one Diamonds to their Gold " C's ". Of these diplomas 428 " A " diplomas were taken in 1949 (1948 : 468). The corresponding figures for other diplomas were : " B " diplomas 273-252 ; " C " 198-232 ; Silver " C " 36-24 ; Gold " C " 9-3.

In September 1949, the following equipment was registered :

Primary gliders	116
Basic Training Sailplanes ..	89
High Performance Sailplanes ..	34
Winches	57
Tug-cars	63
Trailers	41
Barographs	85
Parachutes	123

The list perhaps requires some comments. As is to be seen from the high number of primary gliders, the solo control system is the dominating. " S.G.-38 " is the most common type, though some " Grunau 9's " are still used. Dual control schooling (In " Slingsby," " Schweizer SGU 2-22 " and " Kranich ") is practised at the Alleberg School, the Clubs at Karlstad, Varberg, Eskilstuna, Malmö and at the Ostra Sörmlands Flygklubb, Vängsö.



1. *P. O. Norrby (Gothenburg).*
2. *Tage Lof (Stockholm), two of Sweden's 5 Diamond Pilots.*
3. *Note clean lines of " Falken-Swedish Baby". P. Svedlund, pilot (Warmland Club).*

About 75 of the basic training sailplanes are of the old well-known type " Grunau Baby 11b." The rest is mainly " Baby-Falkens," a Swedish improved version of the " Baby " with steel-tube fuselage, closed cockpit and a twin rubber wheel. Furthermore the aileron control is much more sensitive than that of the " Baby." The high performance sailplanes include " Weihe," " Olympia," " Moswey III," "Mü-13," " Kranich " and " Fi-1," a Swedish construction especially designed for aerobatics.

There is a comparatively large number of parachutes because the Board of Aeronautics does not permit flying without any. You can of course start without a chute, but then you are not allowed to fly above 600 feet ! The regulations run like that. (Just wonder how that youngster looks, who releases in 600 feet with a Gold " C " cloud within reach from 1,200, only because he has not happened to get a chute with him !).

Dual control instructors were 14. Other soaring instructors 95. Primary gliding instructors 56. In the Golden Wing competition, which is held between the clubs every year, 19 clubs took part with 101 competitors. This competition takes place on the home-fields from April 1st to October 1st and should not be mixed up with the Swedish Championships held at Orebro. Here are some of the best performances during the period :

Distance Flights :

100-200 kms.	11
200-300 kms.	2
Over 300 kms.	7

Altitude Gains :

1,000-2,000 metres	187
2,000-3,000 metres	42
3,000-4,000 metres	12
4,000-5,000 metres	6
Over 5,000 metres	1

The flights above are only those reported in the Golden Wing Competition. Many good flights, especially by military pilots (who are not taking part in the Golden Wing) have not been noted in this list. Air Force pilots made one altitude gain of over 5,000 metres (P. A. Persson) and many distance flights over 300 kms. It should also be mentioned that all other details and figures given refer to civilian clubs. BENGT MICRANDER.

SOARING TO THE STRATOSPHERE

36,100 feet

By HARLAND C. ROSS

ON the morning of January 27th, I was pleased to see, far to the north of Bishop, large lenticular clouds building to great heights. I had been expecting them, since the Weather Bureau report of the previous evening, had forecast rain and snow in the northern Sierra mountains for the next day. To the west and south of Bishop the Sierra's were covered with stratus clouds which extended almost to the Owens Valley floor.

From inspection of the daily weather map, we were apparently ahead of a complex quasi-stationary front, which was slowly moving inland from the Pacific Ocean. The morning winds aloft at Bishop, Santa Maria and Oakland showed good velocities and the direction from 240 to 280 degrees was favourable for soaring in the wave. About eleven o'clock a definite clearing of the air took place along the Sierra's and almost at once the alto-cumulus stationary roll cloud began to develop.

George Deibert and I had spent long hours rebuilding and modifying our Schweizer " TG-3 " glider for altitude soaring. We had installed glass-wool insulation, demand type oxygen equipment and new plexiglas in the canopy, which would expand and contract between metal strips, which held it in place on the framework. Both canopies had been sealed with sponge rubber and a roll of masking tape was carried to seal all air leaks, which showed up after the take-off. An extra piece of plexiglas about eight inches square, was taped to the front canopy, with an air space between, just in front of the pilot's face. Both cockpits had a complete set of blind flying instruments, with an extra Horn Variometer and temperature gauge in the front panel. A special compartment had been built aft of the rear cockpit to carry extra equipment and barographs.

At twelve o'clock I gave George a call and we decided to try a short flight in order to test the oxygen equipment in the rear cockpit, which had not been used since its installation. The problem of getting ready for one of the altitude flights, is getting more complicated all the time. Both tanks in the glider must be filled to four hundred fifty pounds pressure from a portable tank of dry breathing oxygen. Two barographs must be smoked, wound, sealed and installed in towplane and glider. The pilot and passenger must be dressed in heavy clothing and fleece lined flying suits, boots and gloves. Heavy helmets with oxygen masks attached that fit your face snuggly and last of all a parachute with properly adjusted harness over the suit completes the picture.

At last three o'clock rolled around and we were ready to take off behind a " Vultee BT-13" towplane flown by Robert Symons. The temperature was eight degrees centigrade and the air very smooth as we circled up over the airport to nine thousand feet and started west toward the roll cloud. A few miles down wind from the roll cloud, we flew through the second wave, and I remarked to George that we would be lucky to reach 25,000 feet to-day. George was taking pictures of the large lenticulars to the north of us. By rolling back the canopy of the rear cockpit, pictures could be snapped without looking through the plexiglas.

We passed under the roll cloud at 11,000 feet where the turbulence was strong and I had trouble writing down the temperatures on a pad of paper. As we flew out from under the stationary cloud, the lift could be felt and at 11,500 feet above sea level, with the variometer reading 1,000 feet per minute up, we released. By flying directly into the wind the rate of climb increased to 1,500 feet per minute, which was the maximum for the flight. At 13,000 feet we put on our masks and checked the oxygen system to see if everything was working all right.

We soared up between the Sierra Mountains and the roll cloud, which had its base at 13,000 feet and its top at 18,000 feet above sea level. Upon reaching 22,000 feet the climb slowly dropped to zero and I then noticed we had drifted back over the stationary roll cloud, due to an increase in the wind velocity with altitude. By heading directly into the wind and increasing the speed to 60 miles per hour, we were able to make headway over the ground and regain the lift zone, where we soon climbed to 27,000 feet.

During the climb George was taking pictures in colour of several towering roll clouds with lenticular tops, about 75 miles to the north of us. Since the lift weakened at this point, I looked longingly at them, but abandoned the idea due to the late hour. About 25 miles to the south toward Mt. Whitney, the roll cloud looked good but there was not a lenticular in sight. Knowing that other pilots had reached their maximum altitude in this area, we made a run in that direction. We lost 2,000 feet in the twenty-five miles, but soon found the lift between the roll cloud and the mountains. Our climb was 200 to 400 feet per minute up to 28,000 where it slowed almost to zero again, due to drifting back over the roll cloud. By increasing the speed we slowly moved against the wind and regained our original position.

At each thousand feet I jotted down the outside air temperature and by removing my mask was able to check with George as to his physical condition, oxygen pressure, etc. The only thing I could get out of him was " Everything is fine, let her rip."

Since there was no official national or international absolute altitude record, I decided 28,000 feet would be good enough to apply for. But with the climb continuing at a good rate, it suddenly dawned upon me that we might exceed some of the old records.

We have an electric vibrator on the instrument panels, and I could hear George tapping on the altimeter to cut down the friction due to the cold. As we soared past the old record altitudes, I called them off to George.

First there was Fred Walter's National Record of 18,000 feet gain which we passed at 29,600 above sea level and George yelled out " Let her rip " at the same time slapping his mask back on. At 30,000 feet the lift started to increase and we reached 500 to 800 feet per minute up, so that we soon passed Guy Rousselet and Leon Faivre record of 22,244 feet gain, made in France. I could only



Airfoil Lenticular over White Mt. Peak (N.E. of Bishop) **14,242** *feet high.*



Looking South from Bishop Airport. The dot in front of the Lenticular is 32,000 feet. Robert Symons says "I soared that high in a four place "Bellanca" and quit because of lack of oxygen."

hear a muffled noise from the rear cockpit, since George was no longer removing his mask.

At 35,000 I ask him if he would like to take a picture and believe it or not, he opened the rear canopy with an outside air temperature of —53 degrees centigrade and took a shot of the three towering lenticular clouds which were still above our level. He said later, that he could not hear the shutter click and wondered if the cold had frozen the camera.

By now the canopy was frosted over, but never heavy enough that we could not see out. The double glass was clear as far as I could tell but when I rubbed my glove over it a thin layer of front was present. Our feet and hands began to get cold and with the sun almost down very little heat was absorbed through the canopy.

As we climbed higher the wind seemed to slacken and I flew at 42 miles per hour indicated, but we were still gaining into the wind. The trim tabs were frozen and only when it became necessary to move the rudder a considerable amount, that I realized it was partially frozen also. The air suddenly became very gusty and it was hard to tell just where the lift area was located. I seemed to pass through the wave since considerable sink was indicated, but upon turning back the wave seemed to have disappeared. By heading back into the wind I tried gust soaring each time they struck the ship and using this method was able to reach 36,100 indicated above sea level.

My feet started to pain and I told George we may get frost bitten toes and he agreed his feet were cold also. The thin air made it almost impossible to talk to the rear cockpit and next time I hope to have an inter-communication system installed. The effort required to hold the ship level, with controls very stiff from the cold, was almost more than I could do. So we called it a day as the temperature gauge was now reading —56 degrees centigrade (—69 degrees fahrenheit).

I put the airspeed to 90 miles per hour and dived toward Bishop airport 25 miles to the north. All the way down George kept saying "Gee, its a long way up here." We arrived over the field at 25,000 feet and spiraled down with the spoilers open, taking 25 minutes to reach the ground.

After landing one of the boys remarked "that was probably as close to heaven as George and I would ever get." But I have been thinking, if its that cold in heaven, I would rather go to hell.

FROM PARIS TO CAIRO BY AERO TOW

A FEW weeks ago in Cairo I heard of a marvellous flight. A sailplane had been brought out from France on tow, and on tracking the story down I found at the other end our old friend Hassan Kameel, Egypt's representative at the Samedan contests. Here is his account of what it felt like and what he learnt on the way, as he told it to me over a coffee in Gropies'.

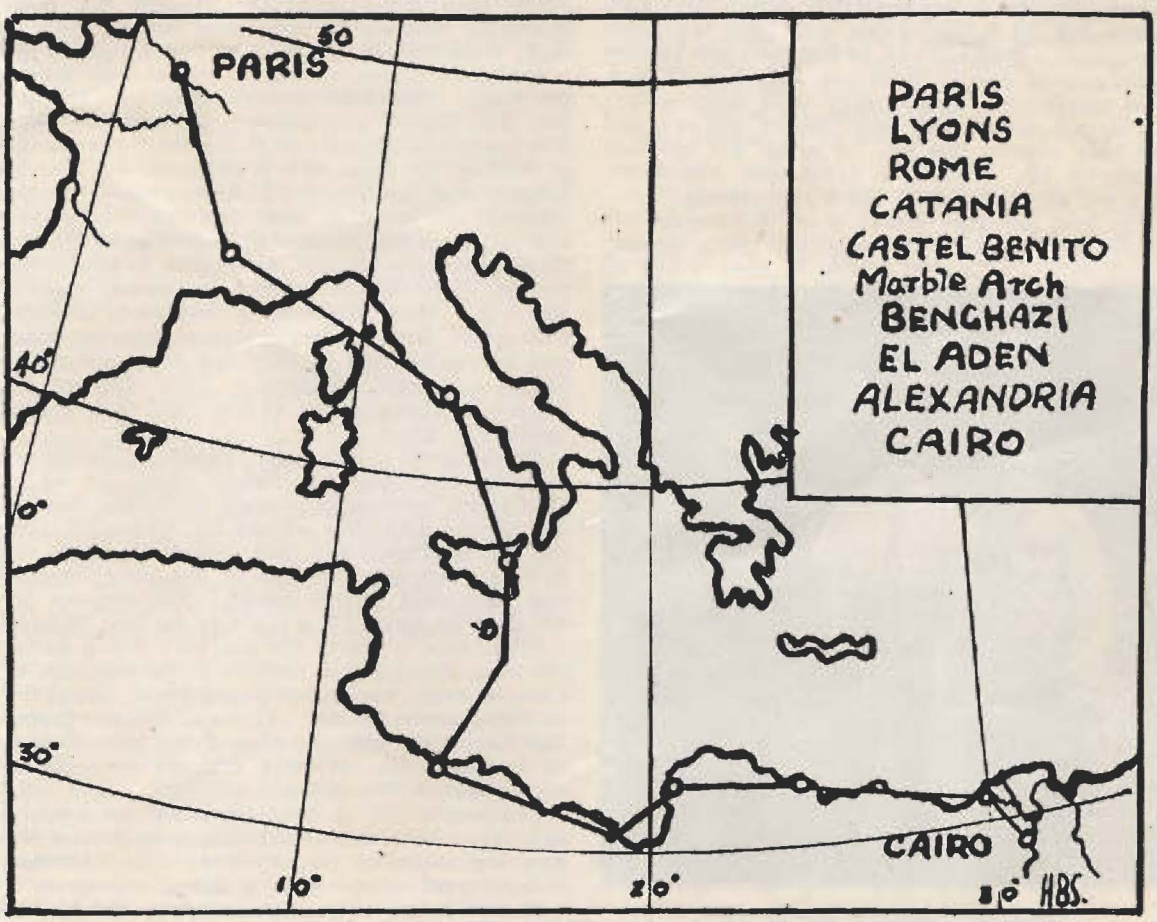
He was collecting a new "Air-100" and had decided to try and fly it down behind the "Gemini," Hostettler piloting. For extra security they started with a double towrope, one of nylon and a cable as well; but this proved thoroughly unworkable and nearly caused a disaster at the very first stop. So they continued with only the nylon and had perfect service from it all the way.

The take-off was at 8 a.m. on the 14th May, 1949, and from Paris to Lyon, the first stage, their average speed was 163 k.p. This patch took 2 hours and a half, the distance being 409 km. The next stage was quite uneventful, looking back on it; they ran into thunderstorms on both flights and thought they were bad enough, but that was nothing to what they yet had to face! Their speed was reduced on this stage, being only 145 k.p.h. They covered the 352 km. in two hours twenty-five minutes.

Then came the first sea crossing. Nearing Corsica the towplane went into a bank of cloud, and diving to get out, still on course, wheels and flaps down, met very rough weather. The cloud continued down to 1,000 feet, but they had to go as low as 300 feet to avoid the bumps. There was another cloud between Corsica and Elba, but from there on the going was good, and at dusk they landed in Rome, having covered 360 km. over sea. The average speed over this stage was 154 k.p.h. and the time taken 3 hrs. 10 min. By now it was already 8 p.m., so they spent their first night in Rome.

The next day they set out for Catania and had the most perfect weather with a few cumulus over Sicily. Of the total distance of 600 km., 392 km. were over sea. Time was 3 hrs. 25 min., and average speed 176 k.p.h. (which seemed rather fast for aero-tow but proved quite feasible over the rest of the journey.)

In Catania time was lost waiting for weather forecasts, but they eventually set off at 4 p.m. meaning to fly via Malta and land there if necessary



(nightfall being due in Tripoli, their next stop, only one hour hence). Soon after they left the coast the sailplane began to flutter wildly. Kameel decided to release in Malta, but they were displaced so far to the east by the strong wind that Malta was obviously out of reach. Here Hostettler allowing for the wind was now displaced too far to the west—the tail was still fluttering. Half way across they went lower to see if the wind would lessen, and found an area of entirely lenticular clouds where they met great turbulence still they dropped to 600 feet. Here it was relatively calm and the tail flutter stopped. (In the turbulent area the rope had been spinning wildly in no less than four places, the only time that such a reaction happened.)

Hostettler now tried to get a Q.D.M. from Castel Benito but he had no luck because of the night effect, and their landfall was made after dark. There were a few lights visible so they turned the wrong way towards them, but after a little while Tripoli suggested they turn back. Ten minutes later Tripoli said they could hear them, come on please, and half an hour later Hostettler saw the harbour beacon. Kameel meanwhile knew nothing of all this because his radio had packed up long before. All he could see was the exhaust fumes from the "Gemini" and later some rockets from the aerodrome. By now it was absolutely dark; but Castel Benito put out a line of cars with their headlights showing up a grass runway, and on their safe landing made a great fuss of them and looked after them most excellently. Theoretically their distance over this stretch should have been 536 km. but in actual fact they covered 664 km., of which 484 km. had been over the sea. Their flying time was 3 hrs. 45 mins. and their speed 176 k.p.h. average.

The next day they meant to go to Benghazi via Marble Arch, so as to keep an emergency landing field in view. It was cloudy over the bay so they climbed to 8,000 feet. Near Marble Arch it clouded over entirely below them—stratu—so they turned for Benghazi. After an hour they began to come down through the cloud layer, and went on down through a white mist till they finally saw the sea at 200 feet! From there they continued at only 100 feet to get visibility. The sea was rough and they had a tailwind of 50 m.p.h. It was very tranquil, but the fog lifted a little over the coast and the air became rough; so they kept low, turned north for Benghazi airport and had to land with a storm and a ninety-mile wind. The distance was 756 km. (476 km. over the sea), the time 4 hrs. 10 min., and the speed 179 k.p.h.



Kameel (extreme left) at Samedan 1948.

From here they intended to go direct to Mersa Matruh but there was a cross wind so they changed their destination to El Adem. There was a sandstorm on the south of the Cyrenaica Mountains which obliged them to go north and keep along the coast. This was a relatively pleasant flight. They picked up the road and flew along it for fun. Having to climb to El Adem airport they met another sandstorm rolling towards them. They could neither climb nor descend and it was terribly rough. They had no real warning because there were no clouds—just rather poor visibility; but it proved to be worse than flying a fighter through the Fohn. Hostettler bumped the roof twice, Kameel got very badly tossed about—so much so that a tube of pills protected by cotton wool in his pocket were entirely powdered. Hostettler reduced speed to 100 k.p.h. and flew like a grasshopper, all over the place. The nylon rope behaved magnificently. Ten minutes of holding the stick with both hands felt like ten hours, but at last they saw El Adem airport. Kameel released and tried to soar, but only found very narrow thermals of 6 metres per second and was immediately driven out to sea, so came in to land. This proved very difficult except for blessed peace at 100 feet. Hostettler had an extremely awkward time as all three windsocks showed different winds, and he finally came in with tail down and a four metres a second upcurrent! Their distance was 416 km., their time 2 hr. 20 min., and their average speed 178 k.p.h.

Immediately after they landed the sandstorm came up, they slept in Tobruk. Next day no less than seven fronts came through, so the day was lost. But on the 18th they set out for Alexandria along the coast. They could have glided the whole way as it was one long cloud street, low along the coast and castellated farther inland. The distance was 600 km., the speed 171 k.p.h. and the time 3½ hours.

From Alex to Cairo, 184 km. they did in exactly one hour, flying at half throttle all the way. It was a day of terrific thermals with still five metre currents as they came in to land. The total distance covered had been 4,461 km. and their flying time 25 hours 15 minutes. The effective distance over the sea was about 1,000 miles.

Conclusions. It is most important on a trip of this nature that one should have a machine with a very big range for the aero-tow. The "Gemini" is very good; the engine is strong enough to fly with one motor only. The machine should have

(*Continued on page* 95)

TECHNICAL TOPICS FOR BEGINNERS

By "Gliding and the Power Pilot"

Take-off by Winch

AS he is drawn upwards on the end of the winch cable he will be so amazed at this peculiar sensation of being hauled kit-like fashion into the air on what is little more than a "flying seat" and also the rapidity with which he is climbing that he will release the towing cable hastily at what he imagines to be about 800 ft., as the earth appears to be a long way beneath him. In reality, it is more than likely that he released at 100 ft. or so; nevertheless this is an excusable mistake to make, because judging heights from these open-type trainers with no altimeter as a guide is extremely deceptive.

Not until the pilot has turned towards the leeward side of the aerodrome will he realise that he has made an error and it is at this stage that it will seem an impossibility to turn into wind and execute a landing inside the aerodrome. Nevertheless, although the sinking speed of this type is not particularly low, he will find that the glide will stretch far enough and his flight will be completed without any untoward incident. However, during this short flight he will notice one characteristic about the glide in particular and that is the lapse of time which passes before his control movements take effect.

From the power pilot's point of view this is not a good thing, as it will have a tendency to make him "ham-handed" when he is piloting power aircraft, whereas the reverse is the case when a novice is at the controls of these primary gliders and although it is seldom recognised as such it is a very good thing, because should he use the controls coarsely he is less likely to put the glider in an unorthodox attitude, which would be the immediate result if the controls were sensitive.

Sensitivity of Controls

To a power pilot the value of flights in these types is not at first apparent, but the real benefit derived from them is that the characteristic of them strengthens his morale to a very large extent and several more of such flights will prove of immense value. As he progresses to the more efficient types of gliders and sailplanes possessed of a very low sinking speed he will notice that the controls increase in sensitivity; in addition to this, balance and rhythm will play a far more important part. In fact, these latter qualities are more pronounced in gliding and soaring than in actual power flights.

Secondary Gliders

Between the primary glider and the sailplane there is what is known as the secondary glider, in which the cockpit is enclosed like the normal light aeroplane, although it would not necessarily be a cabin type. The performance of these gliders is considerably more efficient than the primary type and so it is possible to remain aloft for quite an appreciable time should the pilot be fortunate enough to enter a thermal. However, during the first few flights in these gliders, the pilot is unable to look for such rising currents of air, as his time is fully occupied in getting used to the glider. He should concentrate on being able to put it down at a given point on the aerodrome whenever a landing is made, instead of being content to land anywhere so long as it is within the limits of the landing area.

Forced Landings

When this art of making "spot landings" has been mastered it will prove of the utmost value to the pilot when he is confronted with a forced landing in a power aircraft, when this must be executed in a very small field. Few gliding fields are as large as a normal aerodrome and so it is obvious that a glider pilot who can not only land inside this comparatively small space but who can touch down at any given spot (not forgetting that he is without the help of an engine) should be able to execute forced landings in ridiculously small fields whilst flying a power aircraft.

Naturally this is a very useful capability to possess, because one is not always fortunate enough to be flying over country made up of large fields when such emergency landings have to be carried out. Experience has shown that glider pilots can make a forced landing, in a power aircraft, in the smallest of fields with perfect safety, whereas most power pilots confronted with such adverse conditions find it almost an impossibility to execute them without causing slight damage to the structure.

Thermals

A thorough knowledge of meteorology is of the utmost importance to all pilots no matter whether they fly privately or commercially and they would do well to take up gliding in order to study it precisely, as it would help them to avoid adverse weather conditions by being able to predict them. A simple example presents itself in that one of the first things a glider pilot learns is where to expect rising currents of air or thermals as they are more commonly termed. To the power pilot these are merely known as "bumps"; but if he had taken a course in gliding he would be able to anticipate them and not only would the aeroplane be easier to handle during flight, but the passage would be much more comfortable for his passengers.

This is well worth considering when flying commercial aeroplanes, because passengers may be making their maiden flights and if the passage is a rough one they may change their minds about travelling by air in future and so the company would lose what might be valuable customers.

This may appear to be rather exaggerated, but first impressions of anything are the deciding ones as a rule. Although these bumps have seldom harmed anybody, there are cases on record where their presence has resulted in some discomfort; the power pilot might fly into them without any knowledge of their existence and possibly be thrown about inside the cockpit or, what is equally possible, out of it, but the glider pilot is able to circle round them in safety, as he knows where to expect them.

Preliminary Work

Up till now, mention has been made only of the more evident advantages of gliding as a means of increasing the power pilot's skill, but there are numerous others and these can best be illustrated by explaining each stage of this motorless flight that is the nearest that man has got to natural or bird flight. Most qualified power pilots who take a course in gliding are allowed to make their first flight in a secondary type of glider or possibly a sailplane, but on the other hand one or two flights in the elementary trainer or primary glider would serve a useful purpose.

Elementary Work

Such primary gliders are not a very inviting sight at first as they closely resemble the aeroplanes in which the early pioneers made history and the power pilot will not feel any too confident as he sits on the bucket type seat in front of the wing with nothing in front of him except the rudder bar. Being exposed in such a manner to the full force of the airstream will intimidate him, but the reaction of the pilot's mind after he has overcome this fear will prove of considerable satisfaction and benefit to him during any subsequent flights that he might make, whether they are carried out in motorless or power aircraft.

(*To be continued*).

VHF RADIO FOR SAILPLANES

By K. E. Machin, M.A.

Co-ordinator of Radio, B.G.A. Research Committee.

THIS report describes tests of the H.19 light-weight VHF transmitter-receiver, carried out on Feb. 28, 1950 on behalf of the B.G.A. Research Committee, with the co-operation of the Cambridge University Gliding Club and Marconi's W.T. Co.

Description of Equipment

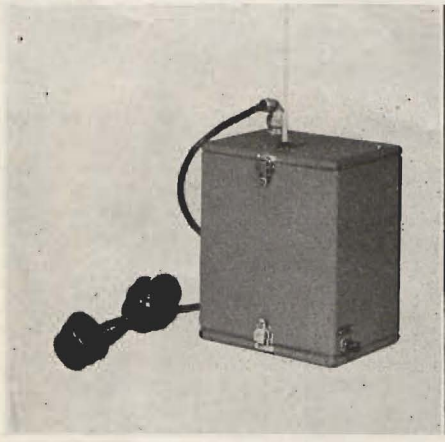
The Marconi H.19 Walkie-Talkie (Fig. 1) which was used as the airborne set, was primarily developed for ground-to-ground use by airfield personnel, newspaper reporters, etc. Since it was, as far as the author is aware, the first VHF transmitter-receiver which would work on the glider frequency of 131.9 Mc/s and was light enough to be installed in sailplanes, it was suggested that tests should be made to determine its suitability for this purpose.

The dimensions of the set are as follows : height, 9¾ ins. ; width, 8⅜ ins. ; depth, 5⅜ ins. ; weight, 14¾ lb. It can be supplied with a single earphone and hand microphone, single earphone and throat microphone, or standard telephone handset. The latter was used in the tests, although for sailplane use a single earphone would be preferable, as the pilot could listen out without having one hand occupied. The transmitter and receiver are both crystal controlled, the only controls available to the pilot being the on-off switch and the press-to-transmit switch. The transmitter power is about 150 milliwatts. As supplied, a whip aerial about 20 ins. long is fitted to the set, but it will usually be necessary to substitute a plug connector, from which a cable can lead to an aerial mounted within the fuselage.

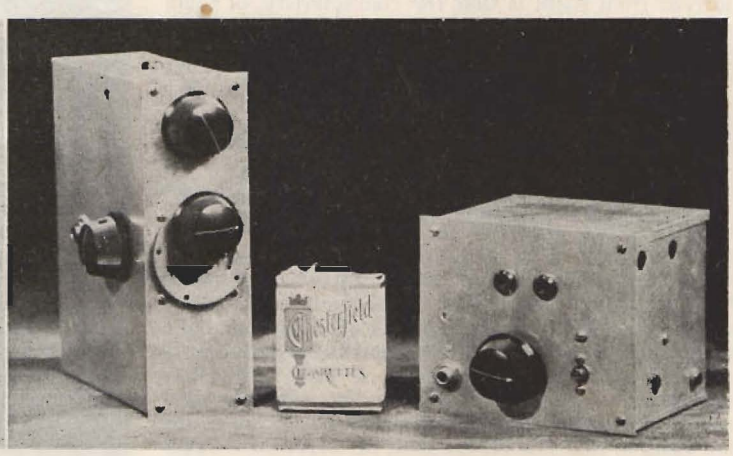
The equipment is powered by a 2-volt re-chargeable accumulator, which is of the jelly acid type. This, together with the waterproof case in which the whole set is mounted, ensures that there is no danger of acid leakage. The battery is capable of operating the set for about 6 hours, with a normal ratio of transmission to reception.

The set was mounted in the C.U. Gliding Club's "Kranich," and fitted snugly in the centre section of the canopy, between the two pilots. A hole was drilled in the perspex to allow the aerial to project.

The ground station comprised an H.16 transmitter-receiver, of the type used by police cars and taxis, fitted in a car. The transmitter power was about



H.19 131.9 Mc/s (British).



Hollis Button's Set 10 Mc/s (U.S.A.).

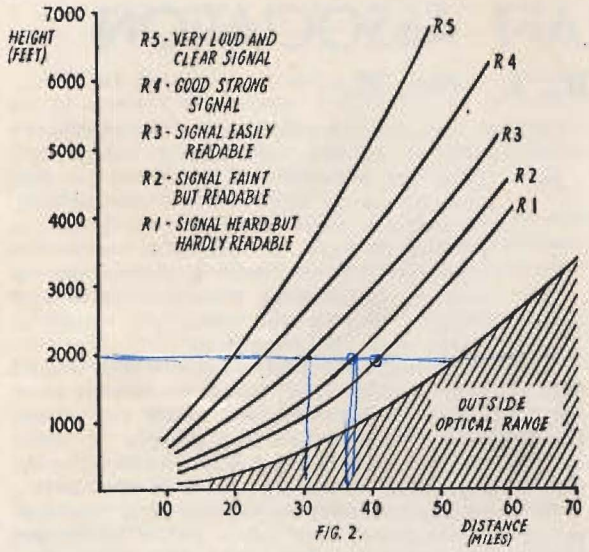


FIG. 2.

10 watts, and a short whip aerial was fitted on the car roof. A loudspeaker and hand microphone were used.

Flight Plan

The " Kranich," with T. G. Phillips of the C.U.G.C. as pilot and J. H. Gill of Marconi's to operate the radio, was towed behind a " Tiger " Moth aircraft from Marshall's Aerodrome, Cambridge. After take-off, a course was set for Norwich, 56 miles away to the East, gaining height all the way, until over Norwich the aircraft were at 6,800 feet above the point of take-off. They then lost height to 2,000 feet, and flew back at this height to Cambridge.

Results of the Tests

The signal strengths were assessed on an arbitrary scale of 1 to 5, R1 representing a signal which could be heard but which was barely readable, and R5 representing a very loud and clear signal.

After take-off, the signals were well above R5 in both directions. By the time that the aircraft had gone 45 miles, it was reported that the airborne set could just detect the interference from the unscreened and unsuppressed ignition system of the " Tiger " Moth. However, at no time did this interference cause difficulty in reading the signals. When the aircraft had reached Norwich, 56 miles and 6,800 feet, the signal strength had dropped to R4, but was still a good strong signal. As the aircraft lost height, the signal weakened, and became just unreadable at 3,700 feet and 56 miles.

On the return trip, readable signals returned at 41 miles and 2,000 feet, and increased steadily in strength until an R5 signal was obtained at 24 miles and 2,000 feet.

Throughout the trip a watch was kept for any vibration of the external aerial, and although after release the aircraft was flown at 100 m.p.h., no vibration was observed, although the aerial flexed back slightly.

From the results of the tests, it has been possible to plot a very approximate graph of the signal strength to be expected at a given range and height over flat country. This is shown in Fig. 2, which also indicated the region where communication is not practicable, due to the curvature of the earth. It should be remembered that the transmission of VHF radio waves requires a clear optical path between the stations, and that high ground which obscures the transmission path is likely to cause a loss of signal.

It is worthy of note that the ground-to-air and air-to-ground links were well balanced, i.e. the signals in the two directions faded out at practically the same time.

The Value of VHF Radio for Club Use

It is possible now to make a very tentative assessment of the value of radio to Gliding Clubs.

(1) *Ground-to-Ground.*

The H.19 would be very suitable for communication from launching point to winch, or (a thing which has been hitherto impossible) to an auto-towing truck. It is probable, however, that such a use of the sets would be considered extravagant by Clubs.

(2) *Ground-to-air.*

The size and weight of the H.19 make its installation in most sailplanes quite feasible. It could be quite easily operated by the pilot, and the endurance of 6 hours means that it could be left on for the whole of a normal flight, and listening watch maintained.

It is considered that the use of radio could considerably speed up cross-country retrieves, particularly under competition conditions. If the retrieving truck set out immediately the pilot decided to go away, it is probable that communication could be maintained right up to the time when the landing field had been chosen. The truck might then be within an hour's driving time of the landing place, even after a five or six hour flight.

It should be remembered that if communication cannot at any time be obtained, trying again from the top of the next hill is likely to give a considerably improved signal strength. This is particularly so after the aircraft has landed, as the ground-to-ground range is likely to vary from one to ten miles according to the lie of the land between the stations.

It has been suggested that with quite a simple aerial system on the truck, direction finding facilities could be arranged. It is possible that this might be useful, particularly on the last few miles of a retrieve, where time is often wasted locating the exact position of the aircraft. The utility of this idea can only be tested by operational use.

The Cambridge Club hopes to fit at least one of its sailplanes with radio, and to gain experience during the next soaring season with what may well prove to be a very valuable aid to gliding and soaring.

It is hoped in the near future to arrange a demonstration at Cambridge of the " H.19 " in use for ground-to-sailplane communication, to which anyone interested will be invited. An announcement will be made in the aeronautical press, and notices will be sent to all Clubs.

ULTRA LIGHT AIRCRAFT ASSOCIATION

BULLETIN. VOL. 3. No. 10.

A Distinguished Member

We have great pleasure in welcoming Air Vice Marshal D. C. T. Bennett, C.B., C.B.E., D.S.O., F.R.Ae.S., as an Individual Member of the Association. Air Vice Marshal Bennett has had a long and remarkably successful career in aviation, and is well-known for his pioneer long-range flights before the war. More recently, he commanded the Pathfinder Force of Bomber Command from its inception until the successful conclusion of the Battle of Germany.

DESIGN SUPPLEMENT

Contributed by Group Captain E. L. Mole, Chairman, Design Sub-Committee.

In the *Bulletin* of February 1948, the Design Sub-Committee laid down the design requirements for U.L.A. engines which were drawn up as the result of an exhaustive investigation among those interested in the Ultra Light movement. These requirements were approved by the Air Registration Board for use with aircraft of the ultra light C. of A. category. Although, in broad outline, the requirements still stand, certain minor alterations have become necessary as the result of experience and, consequently, we are giving below a revised version which has been brought fully up-to-date.

Design Principles

(1) Primary design requirements for engines for ultra light aircraft are :

(a) Reliability.
(b) Cheapness.
(c) Simplicity and ease of maintenance.
(d) Ease of starting.
(e) Smoothness and quietness.

Performance, weight and frontal area, though important, must be regarded as secondary consideration.

(2) Fuel consumption is not of prime importance, and a standard comparable with motor-cycle engine practice is acceptable.

Specification Requirements

(3) The demand for engines for ultra light aircraft falls into two classes as follows :—

1st Priority

50 B.H.P. air cooled engine, preferably with four cylinders, horizontally opposed, or inverted in-line. The merits, however, of an inverted 90 degree Vee Four deserve consideration. The engine is required both for two-seater aircraft and high-performance single seaters.

2nd Priority

35 B.H.P. air cooled engine, either with twin or four cylinders, preferably horizontally opposed, or inverted in-line. The engine is required for light single seaters and motor gliders.

(4) Both engines must satisfy A.R.B. airworthiness requirements for the ultra light aircraft category.

Note : Type test requirements laid down for this category consist briefly of 55 hours running, of which 5 hours is at take-off power, a total of 29 hours at maximum continuous power and the remainder at various powers covering the cruising range and periods of idling. During the tests, 50 successful starts must be completed.

(5) It is eventually required to operate with normal high-grade automobile spirit (about 80 octane) when this again becomes available. Meanwhile, the engines should be rated for operation with straight 73 octane aviation fuel, but must be capable of withstanding the lead concentration of the high-grade motor spirit.

(6) Both engines must be capable of a type test rating for maximum continuous power at 80 per cent of their take-off power.

(7) Their maximum dry weight should not exceed 3½ lb. B.H.P.

(8) Controls and accessories should be kept to the minimum, but the following are requirements :—

(a) Tachometer drive.
(b) Duplicated ignition system, although a single magneto with duplex electrical circuits may be used.
(c) Duplicated fuel pumps—unless an emergency gravity fuel tank is provided in the aircraft, when a single fuel pump with a suitable by-pass system is acceptable. Care must be taken in design to avoid the possibility of vapour locking.
(d) Carburettor de-icing, when a conventional venturi type of carburettor is used. This may be met by means of simple induction pre-heating provided that a temperature rise of 50 degrees Centrigrade at 75 per cent power is obtained.

The system, however, should be capable of control to allow cold air induction for maximum power and economical cruising.

(e) With the larger engine, altitude (weak mixture) control, which must be interconnected with the throttle control to ensure it is returned to the rich mixture position when the engine is throttled back.

(9) All components requiring routine inspection or servicing must be readily accessible.

General Design Recommendations

(10) Four-stroke engines with push-rod operated overhead valves are recommended, though the merits of side valves as regards simplicity and reliability should be considered. The need for robustness and reliability in the design of valves and valve gear is stressed.

(11) Cylinder construction by accepted aero-engine practice is likely to be prohibitively expensive. Consideration of cast light alloy cylinders with hardened steel liners is recommended.

(12) Cast light alloy is recommended for cylinder heads, but the effect of leaded fuel must be borne in mind.

(13) The possibility of using well-proved standard car or motor-cycle engine components is definitely encouraged, and it is for this purpose that the upper limit for dry weight has been placed as high as 3½ lb. B.H.P. The approval of A.R.B. must, of course, be obtained in each case.

(14) The cost of both engines and spares would be reduced if the smaller engine could be designed to use as many parts as possible of the larger one, e.g., identical cylinder components, etc.

(15) A direct propellor drive is recommended to save cost, but in this case the engine should deliver its take-off power at not more than 3,000 R.P.M. to avoid excessive loss of propellor efficiency. If a reduction gear is found to be necessary, the possibility of utilising duplex chains or multiple Vee belts for the drive is suggested for consideration.

(16) If starting is to be by swinging the propellor, it should be swung in a clockwise direction viewed from the front.

(17) With the larger engine consideration should be given to the possibility of fitting a generator and/or starter to special order.

(18) The engines should be suitable for both tractor and pusher installations without extensive modification.

(19) The possibility of supplying the engines complete with cowling and cooling baffles should be investigated.

(20) The possibility of the future adoption of a standardised engine mounting for all ultra light aircraft designs should be borne in mind. Rubber engine mountings are favoured to give a smooth operation.

(21) Consideration should be given to a possible future screening requirement for radio installation.

" Ultra Light Airship "

Members will be interested to hear of a project rather outside our usual sphere of activity, namely, the " ultra light " airship. This has been sponsored by Lord Ventry, the well known airship enthusiast, and as he is President of the South Hants Ultra Light Air Club (one of the most enterprising Groups affiliated to U.L.A.A.) it may well be imagined that the Club have a considerable interest in the development of the airship.

The airship envelope is to be 97 ft. long and 35,000 cubic ft. in capacity. The car is a tubular steel structure (already under construction at Messrs. Marwyn (Bournemouth) Ltd.) 15 ft. long by 4 ft. wide and 6 ft. high. A 78 h.p. British Salmson radial engine is to be mounted at the nose of the car, and will drive a four-bladed propellor.

It is proposed to incorporate a new form of control surface using a lifting plane of symmetrical aerofoil section. The controls are being simplified to enable the airship to be flown by one person if desired, although the normal complement would be three or four. Provision for all types of research and development has been incorporated in the design, and experiments will be undertaken to evaluate the merits of the airship for crop dusting or spraying, advertising, and radio and radar experimental work. Instructional flying will also be made available to all members of the South Hants U.L.A. Club and of the U.L.A.A.

We are sure the whole Association will join us in wishing Lord Ventry and the members of the South Hants U.L.A. Club every success with this most enterprising project, and we shall look forward to its completion and flight trials with the utmost interest.

Review of Ultra Light Aircraft and Engine Design Projects in Hand

The advent of Spring makes a good opportunity to take stock of the position as regards the design and development of new aircraft and engine, on which the whole future of our movement depends. Accordingly we have prepared the following review of the projects which have been going ahead during the past year. This review should be of value in putting new members in touch with the position and, we hope, in encouraging those older members who have remained loyal to the cause despite the wearisome delays we have suffered in getting our movement airborne.

In addition to the projects described in this review, there are also a number of others which have been described in various *Bulletins* but have lapsed into abeyance pending the growth of our movement and the development of a market for ultra light aircraft. The growth of our movement primarily depends upon the production of a suitable engine, and thereafter, of suitable aircraft. We have been doing all we can to sponsor these requirements and, as our readers will see from the following review, there are bright prospects ahead once the basic engine problem has been overcome.

Aircraft Designs

Slingsby " Motor Tutor." This is an interesting conversion of the " Tutor " glider, which has been well tried and proved in the A.T.C., to a powered aircraft by the installation of a 36 h.p. "Aeronca" JAP engine. Although having only a moderate cruising speed, the machine has remarkably short take-off, and landing runs, and a steep angle of climb. It is extremely easy and pleasant to fly, and is of special value in that it offers glider pilots the means of converting to power flying without the expense of dual instruction. Several hundreds of hours of test and demonstration flying have already been successfully carried out on the aircraft and, as soon as its type C. of A. has been granted it is to be offered for sale at about £580, and a small number will be made available to our Groups by the Kemsley Flying Trust " pay as you fly " plan. Mr. Slingsby is also prepared to supply the aircraft in kits of parts for home construction at a price of about £285.

" Chilton." (High performance type). The pre-war " Chilton " single-seater low wing monoplane was one of the most attractive machines ever built ; it was remarkably fast, delightful to fly and fully aerobatic. A new and improved version is being designed by the College of Aeronautical Engineering at Redhill Aerodrome as an exercise for its pupils,

and a prototype powered by one of our 36 h.p. " Aeronca " JAP engine is to be built for flight tests. When the type C. of A. has finally been obtained, drawings and (we hope) kits of parts will be made available to members for home construction.

Dart " Kitten." (General purpose type). This is a neat and robust single seater low wing monoplane which flew successfully before the war with the 36 h.p. " Aeronca " JAP engine. Dart Aircraft Ltd. are in the process of obtaining a type C. of A. for the aircraft, and will then be prepared to offer drawings and kits of parts to members for home construction, subject to certain safeguards.

Fairey " Junior." (General purpose type). This attractive single-seater low wing monoplane is a post-war addition to the successful line of " Tipsy " aircraft. It was designed by Mr. Tips in Belgium specially, with a view to ease of construction by amateurs with limited facilities. Two prototypes were built, one with a 36 h.p. " Aeronca " JAP engine supplied by us, and the other with a 62 h.p. Walter Mikron engine. Both hold Belgian C's of A. Fairey's took over the project on arrival of the aircraft in England, but refused to release the design for construction by amateurs. They are likely, however, to put it in production once a suitable engine of 50 h.p. is available.

" Herald." (General purpose type). This is a single seater low wing monoplane of metal construction, and with a tricycle undercarriage. It has been designed and built by Hants. & Sussex Aviation Ltd. at Portsmouth Airport, and the prototype (powered by a 36 h.p. " Aeronca " JAP engine) is nearly ready to begin its flight trials. A two-seater version is planned, using as many of the same components as possible, and to be powered by our projected 50 h.p. engine.

Short and Harlands. The Firm's indentured apprentices and their A.T.C. Squadron propose to design and build a prototype two-seater trainer to our specification, which was published in the October 1949 *Bulletin*. This project is being controlled by Mr. F. C. KirkPatrick, their Apprentice Supervisor. We have agreed to lend one of our spare 52 h.p. " Zundapp " engines for the prototype, and when cleared for its type C. of A. the drawings and (if possible) kits of parts will be made available to our members for home construction.

Britten-Norman " BN-1F." (Elementary type). This is a simple single-seater parasol monoplane to be powered by a 36 h.p. " Aeronca " JAP engine, and it has been specially designed for ease of amateur construction. Mr. Britten has managed to organise a co-operative effort within the Association to help him with the detail drawings, stressing and component construction. Work on the prototype has already started and when it has completed its flight trials and obtained its type C. of A. he proposes to make drawings and kits of parts available to our members for home construction.

" Ulap." (Elementary primary trainer). This is Mr. A. R. Weyl's scheme to provide a simple and robust elementary type suitable for amateur construction and to provide safe flying practice for our less experienced pilots. The aircraft (with a modified wing leading edge to make it unspinnable) is also to be used to investigate the practicability of solo-training. Mr. Weyl is searching for support to design and build two prototypes for flight trials to be powered by 36 h.p. " Aeronca " JAP engine. After the design is cleared, he has offered to present it to the Association for home construction by members, subject to certain safeguards.

" Hoppicopter." A simple single-seater helicopter with twin rotors, of American design, and powered by a 50 h.p. engine. Production and development rights in this country are held by Messrs. Marwyn (Bournemouth) Ltd. They have carried out a neat installation of a modified Triumph " Tiger " motor-cycle engine, and ground running trials have recently been carried out. Further developments with the larger Triumph " Thunderbolt " is planned.

Other U.L.A. Designs known to be in hand by Groups and individual members are as follows :

Bristol Aerotec " Sportsman "
Don Bedson's " Resurgam."
P. Simpson's " March Hare."
Lord Ventry's ultra light airship.

Also designs by the Reading Technical College, Mr. Embleton, Mr. Rendle, and a pusher two-seater by Eric Bell and L. E. E. Martin.

Engine Designs

Coventry Victor " Neptune " conversion. Major W. A. Weaver, Managing Director of the Coventry Victor Motor Co., Ltd., has started work on the conversion of his 1½ litre " Neptune " flat four cylinder engine for U.L.A. purposes. This engine has been well tried and proved in service, and has the advantage (from our point of view) of being already in quantity production. He expects to obtain 50 h.p. at 3,200 r.p.m.

" Zundapp." This 52 h.p. inverted 4 cylinder in-line engine was developed in Germany in 1938. It is reliable and smooth, and is simple and robust in construction. In our opinion, it is the ideal engine for the ultra light movement. Messrs. Morrisons Engineering Ltd. of Rochester Airport have one of our two spare " Zundapp " engines stripped down for examination, and they are negotiating with the German firm over its development and production in this country.

" Marwyn." Mr. B. E. Martin of Messrs. Marwyn (Bournemouth) Ltd. has successfully modified a Triumph " Tiger " motor cycle engine for use in the " Hoppicopter." This at present develops 40 h.p. at 5,000 r.p.m. The larger " Thunderbolt " engine is to be tried out shortly, but unfortunately both these engines develop their power at too high a rotational speed for use with a directly driven propellor—and the provision of a reduction gear would be an expensive complication.

Mr. Martin is, however, planning to develop for us a flat twin engine of about 30 h.p. at 3,000 r.p.m. using as many standard motor cycle parts as possible. This engine will be a valuable replacement for the " Aeronca " JAP's, when our stock of the latter runs out.

" ULA." A 45 h.p. 1700 c.c. flat twin of extremely simple and robust design, the development of which has been undertaken as a private venture by the

head of a well known motor cycle firm. Progress has, unfortunately, been delayed owing to his absence abroad for long periods on business.

Mayes. Captain H. R. Mayes, late Chief Designer of Monaco's is seeking support to develop a 50 h.p. flat four engine he is designing.

Vincent H.R.D. This 1 litre Vee twin motor cycle engine has been studied by Fairey's with a view to conversion for their " Junior." It is a first class design, which could probably be rated at about 45 h.p. at 3,000 r.p.m. and lends itself with little modification to a neat inverted installation. No further action, unfortunately, is in hand at the moment.

Carr's " Bull Pup." Mr. R. G. Carr, who will be remembered by our older members as the designer and constructor of the interesting " Wren " aircraft and engine, has recently submitted drawings and a description of a 30 h.p. engine design based on utilising various Ford light car engine parts, but with a specially manufactured air-cooled cylinder block to save the weight of a water cooling system. This engine contains a number of intriguing design features, and Mr. Carr estimates that it could be produced for an initial outlay as low as £1,000, and that the engines could be supplied at not more than £100 each. The scheme is at present under the active study of the Design Sub-Committee.

DESIGN SUB-COMMITTEE

Temporary Change of Chairman

The writer, having contributed Design Supplements to this *Bulletin* every month for the past three years, regrets that he has now to go abroad for a few months. His duties as Chairman of the Design Sub-Committee will, however, be ably carried out during his absence by Mr. A. R. Weyl, A.F.R.Ae.S., and members can be assured that the design projects reviewed in this Supplement will be energetically followed up. The writer is keenly looking forward to his return next April, when he expects to find some substantial progress has been made with certain of the projects described.

CONSTRUCTION SUPPLEMENT

Contributed by Mr. H. L. Pitt, Chairman, Construction Sub-Committee.

While some groups may have been able to arrange good hangar accommodation at a reasonable rental, there are undoubtedly others (and as the Association grows there will be many more) to whom the problem of a flying ground and shelter for their aircraft, let alone facilities for repair and maintenance, is of major importance.

This subject has been receiving the attention of the Sub-Committee, and two tentative suggestions are offered for the consideration of members.

No doubt many groups would like to rent a field for their own exclusive use, but because of insecurity of tenure, or the possibility of ultimate unsuitability, they hesitate to do so because the expenditure of capital on a permanent building would be considered an unwise investment unless they owned the ground.

A portable or moveable type of structure on the other hand would not be classed as a permanent building and would therefore always remain the property of the tenant.

Some of the elder members may remember the Bessoneau hangar used during the first war. Whilst this had many disadvantages compared with a fixed hangar, it was probably the best of its type, and thinking along similar lines, the Committee came to the conclusion that any shelter for the Association Members would preferably need the following fundamentals :

(1) Portability, i.e. it should be transportable on one small lorry.

(2) Structural simplicity. It should be easily assembled, and dismantled with a very few unskilled hands, requiring no tackle other than a step ladder.

(3) Reasonable durability. It must be wind and storm proof.

(4) Extremely low cost.

Should such a structure satisfy a sufficient number of members, it might be possible to arrange for it to be supplied on hire purchase terms at a weekly charge no more, and perhaps less, than that paid for aerodrome accommodation, with the advantage that such expenditure would be a capital gain, subject only to depreciation and maintenance.

As these factors must dominate the design, a canvas covering is the first thing indicated, and this inevitably leads to a compromise between a supported tent, and a strong hangar-like structure with a canvas covering.

Mr. A. R. Weyl, A.F.R.Ae.S., Chairman of the Research Sub-Committee, has submitted a design which we describe hereafter, as well as we can without accompanying sketches.

Mr. Weyl has approached the matter in such a practical manner that, having regard to the extreme necessity for low cost, and simplicity, together with the maximum number of virtues obtainable, his solution may well prove to be the ultimate best.

However, in order to provide members with an alternative for discussion, and perhaps later, choice of purchase, we briefly outline a second proposal based on a more orthodox hangar type of structure with its attendant advantages and shortcomings.

Design Proposal for Ulair Shed

Conventional aircraft sheds suffer from the disadvantage of large doors or openings, and from the resulting free spans of the girders needed to support the roof. The cost of such a wide structure will increase considerably with every increase in span from purely structural reasons.

Mr. Weyl's arrangement proposes to tailor the shed to the aircraft, by covering it with a structure of cruciform plan-form divided into four parts.

The principal part would be that covering the nose, propellor, engine and cockpit, and would house say two working benches, a stove, lighting, tools, spares, etc. This would have three sides and roof, canvas covered, but could if necessary be improved at small cost by being wooden-walled, or at least double lined for warmth.

It could also have a concrete foundation, and/or cement floor. It might also if necessary have

drainage and water laid on. It would represent the most permanent part of the structure, and being of relatively small dimensions (say 8 ft. 10 ins. high by 10 ft. wide and 20 ft. long) it could be insulated from the other portions and therefore heated at reasonable cost.

The aircraft would be wheeled into this compartment nose first, the two extreme rear corner pillars being removed temporarily to permit the entry of the wing roots, the semi-cantilever roof being supported by the two front posts each side, and removable corner posts being replaced behind the wings after fitting the other section.

With the aircraft thus " nosed in " as it were, the remaining sections consisting of one for each wing, and one for the tail, would be wheeled over their respective parts and anchored down.

Each structural section might be built of steel tubing fixed together with socket clamps, similar to the scaffolding often erected on building sites. Having regard to the small span and shortness of the span girders required, and the fact that height can be kept down on the outer sections, it may even be possible—although not very likely—to use the standard material of such scaffolding i.e. gas piping of small diameter.

If so, this would of course greatly reduce the cost. In any case, the structure, by reason of the reduced size of its parts alone, would be considerably less expensive and much simpler in design, than a full span hangar structure.

The wing and tail sections would be of standard size, and it should be possible to mount them either on plain iron flat tyred wheels or on rubber tyred castors, and they could run on concrete strips. They must, of course, be moveable by no more than say two persons.

Corner posts would be fitted at each of the leading and trailing edge wing roots, where the four sections would meet, and to these posts would be attached covering weather-flaps, which would strap to the main canvas covering. By this means the actual size of the structure, both in height and floor area, would be reduced to a minimum and it might be possible, whilst making the wing and tail sections of standard dimensions, to increase the span or length by the addition of one more " bay " to either unit.

Furthermore, if accommodation for more than one aircraft were required it should be possible to put the nose and fuselage section for each machine either side by side, or nose to nose, and removing the intervening partition, make one larger main repair working centre ; at the same time, the wing and tail sections for the second aircraft would fit respectively into their own centre section.

It is, of course, difficult to describe this structure clearly without sketches. It was hoped to include some with this *Bulletin*, but there was insufficient time. We shall, however, endeavour to do so next month. It is not easy to conceive a method of providing a storm proof covering with at least some practical working space which would be either simpler or less expensive, and the latter criterion has been dominant in our minds. However, there will be many members who will consider this bare minimum inadequate. It will, no doubt, be pointed out, that such a relatively crude covering is anything but elegant, and that moreover, it does not provide a satisfying working space for the building of an aircraft i.e. the actual manufacture of parts and units as distinct from final assembly, and that even for the latter, space might be somewhat cramped.

These points being appreciated, we decided to draw up an alternative. This consists of a more orthodox portable hangar, size 50 ft. span by 40 ft. deep which should be capable of housing two light aircraft. This structure would be canvas covered, but built similarly of tubing with standard clamp sockets. However, when one begins to consider the span of the roof girders, and the strength needed to make the hangar stormproof, one begins to wonder whether such an imitation of the Bessoneau hangar can be produced out of tubing at all. But it is unlikely that it could be done with standard gas piping, since the weight per foot of this material would be prohibitive.

However, a sketch of the requirements has been sent to the company which specialise in this class of work, as has Mr. Weyl's scheme, and we await with interest their comments and suggestions—particularly regarding costs.

It should be borne in mind that Mr. Weyl's scheme would provide for a similar span of 50 ft. but to house two aircraft under this scheme might almost double the cost of a single hangar of the same type. We regret that we have been unable to present a more complete picture in this *Bulletin*, but nevertheless we trust that members will find this brief description sufficiently interesting to induce them to send in their criticisms and suggestions, whether for publication or private digestion.

An Alternative Design

There is, however, yet another possible method to consider. In the March 1949 issue of the American Magazine *Flying* there is an article by de Forest Walton entitled " Build your own Hangar," which describes how a low cost T plan shed can be built for approximately 150 dollars ! Although if this were followed to the letter the resultant structure would be a permanent building, there is no reason why the type of structure might not be to some extent imitated, and at the same time so constructed, that it can be built in sections, and assembled and dismantled with little real difficulty, thus making it a temporary building.

Briefly, the idea would be to construct a wooden frame, which would be covered with some type of weatherproof building board, such as used for partitions and roofing—asbestos fibre board or similar material. No doubt the roofing would need to be covered further with waterproof roofing felt of some type.

The structure described has vertical posts of substantial diameter buried in the ground—or cemented in. In side elevation the front span of the T i.e. the entrance and major span, will have the highest posts, and the roof will slope from front to rear, having a height at the tail end of about 6 ft. and at the entrance of about 8 ft.—10 ft., the front span being about 40 ft. in width. These vertical

(*Continued on page 95*)

NEWS FROM THE CLUBS

THE BRITISH GLIDING ASSOCIATION

Extracts from Chairman's Report

In January the Vice-Chairman, Mr. Hugh Bergel, fell seriously ill, and accordingly resigned this post, and the Chairmanship of the Flying Committee. We all feel grateful for the tremendous amount of useful work Mr. Bergel has done for the Gliding movement over the past fifteen years, and send him our heartfelt wishes for a speedy recovery.

Membership

Our paid-up membership in 1949 was ten Full Members and nineteen Associate Members. A new Associate Member during the year was Perak, but we are sorry to report the dropping out of Aerotech, Hamburg, Lubeck, Soaring Club of Great Britain, Wahn, Yorkshire and 615 Squadron.

Council and Committees

An Airworthiness Committee became necessary when the Association recovered general responsibility for Airworthiness from the M.C.A., and decided to put into effect once again a system for the issue and renewal of C's of A.

The Accident Analysis Panel arose from a decision of the Instructors Conference held in January 1949.

The Practices Committee arose out of a letter received from the Deputy Director of Operations and Safety, M.C.A., regarding operational safety, and its function was to produce the Operational Regulations and the Syllabus for the Oral Examination for the "C" Certificate, and to collate into a comprehensive document the various approved practices and standards for Civil gliding clubs.

Operations

During the past year member clubs have flown a total of 7,134 hours, involving 53,101 launches. Adding the flying done at the National Contests, and the flying done by the Yorkshire Club which is no longer a member, the total hours are probably about the same as the previous year, the total launches about 7,000 more.

The Association issued during the year (previous year's figures in brackets) 1,764 "A" Certificates (1,854); 493 "B" Certificates (640); 331 "C" Certificates (424); 67 Silver "C" (56); and 3 Gold "C" (1).

There has therefore, been a reduction in the more elementary Certificates and a small increase in the higher qualifications, a net reduction of over 11 per cent. With the up-grading of the A.T.C. training standards we may hope for a relative increase in the number of "B" Certificates and above in the future.

Finance

As reasonable stability has been reached in the Finances of the Association, it is intended further to reduce as soon as possible the loan from the Royal Aero Club, at present standing at £300.

Since the inception of the Kemsley Flying Trust it has made available to Ten gliding clubs a total of £10,969 by long-term loans which have been spent on gliders, motor vehicles, winches, site improvement and other things incidental to the development of the Clubs and the extension of the movement.

The Trustees have expressed their appreciation of the manner in which the clubs have met their obligations in respect of the loans, which has given them the greatest confidence in the gliding movement.

In addition, donations by the Trust to National and International Competitions expenses, prizes and so on have amounted to £400. A very useful service granted by the Trust is the guaranteeing of the expenses incidental to the National Gliding Competitions.

Work of the Council during the Year

The biggest and most complex job done by the Association this year was in negotiation with the M.C.A. over the question of Certificates of Airworthiness and Registration of Gliders.

There is space only to record here the outcome, which was entirely successful. The requirement for the Registration of Sporting Gliders was withdrawn. The requirement for an A.R.B. annual renewal of C's of A. was withdrawn, although if required an A.R.B. renewal can still be obtained. New gliders manufactured commercially must have an initial A.R.B., C. of A.

In return for these concessions, the Association accepted responsibility that all gliders be kept in an airworthy condition, and that all gliders are covered by Third Party Insurance.

The Association thereupon called a special meeting in September representative of all Gliding interests, at which it was decided to re-create machinery for the issue and renewal of C's of A. This machinery is now starting to operate, and we rely on all Clubs and owners to co-operate in its smooth and successful working.

The two main Aviation Insurance interests have written pointing out that their third party cover generally stipulates a current C. of A., and is invalidated in its absence. Provision is made in the B.G.A. scheme to prevent this requirement from hindering the design and operation of experimental aircraft.

The cost of Silver and Gold "C" badges has been increased

Anyone interested? Room for one or two sailplane enthusiasts to participate in 14 day summer course at French Gliding Centre. Share all expenses. Driving ability advantage. Leave U.K. p.m. July 27th, return August 12/13th. Write Bean, 92 Clockhouse Lane, Romford. Phone 2487.

The Midland Gliding Club is holding Camps for holders of 'C' certificates and qualified aeroplane pilots at the Long Mynd, Shropshire. Camps will be for nine days each commencing on the following dates: 1st July, 5th August and 9th September.

Further particulars from the Camp Secretary, R. N. Thwaite, 39, Silhill Hall Road, Solihull, Birmingham.

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to £1 each. The financial success of the National Contests produced a generous gift of £50 by the Derbyshire and Lancashire Gliding Club. It seems fair to hope that if future competitions are financially successful, this may prove a recurrent source of income.

EXTRACTED FROM THE REPORT OF THE CHAIRMAN OF THE LONDON GLIDING CLUB, AT THE ANNUAL GENERAL MEETING.

Not only is ours the oldest Gliding Club in the Country but we can proudly claim to have re-established ourselves as the largest and best equipped.

We have 279 full flying members, and 39 associate and honorary members. In addition during the year we admitted 27 visitors to temporary flying membership, and gave courses of instruction to another 102.

We gave 10,270 launches and recorded 2,415 hours 35 minutes flying time. Compared with the previous year this is a 50 per cent increase in launches and 20 per cent increase in hours flown.

The flying hours are slightly over a third of the grand total done by the ten full members and nineteen associate members of the British Gliding Association to which we are affiliated. The launches represent nearly 20 per cent.

Certificates gained at the site numbered 194, exactly the same total as the previous year. Of these, 61 were " C " certificates approximately 19 per cent of the total of 331 issued to the combined Navy, Army, Airforce, A.T.C. and all civilian Clubs. Eleven Silver " C's " to our Club out of a grand total of 67 is not bad either. In the course of the year members made 48 cross country flights totalling 1,661 miles. Thus we can justly claim to have delivered the goods.

By the acquisition during the year of the " Prefect " from Slingsby Sailplanes and a " Primary " from Hawkridge Aircraft our fleet was increased to twelve. In addition we have a second 2-seater on free loan from Mr. E. J. Furlong in return for, housing, maintaining and insuring it. Thus we have a glider for every 20 flying members.

Awards

Dent Cup for the most meritorious Flight from the Club—G. H. Stephenson.

Derry Trophy for the most consistent hard work—Dan Smith.

Desoutter Cup for the best constructional effort—Victor James Ginn.

Cellon Trophy for the best performance from Ab Initio—D. S. Bridson.

Silver " C " Group Prize—No. 1 Group—F. E. Allen, A. E. Ash, D. S. Bridson, J. R. House, F. E. W. Phelps, J. D. Ruffle.

BRISTOL GLIDING CLUB

Our chief item of news this month concerns the progress of the Winter maintenance programme. Having, literally, polished off the " Olympia " the next to be tackled was the " Tutor," and as this aircraft is much in demand, an intensive effort was made to complete the overhaul as quickly as possible. To that end working parties were out at Lulsgate each evening under the supervision of the Chief, or an Assistant, Ground Engineer. After being out of commission for only two week-ends, one of them duff, the aircraft was once again busy circuiting. Including the fitting of a c.g. hook the overhaul took 250 man hours.

The two-seater followed the " Tutor," and as it is in even greater demand, a running overhaul was done, the tail and one wing being completed one week and the other wing and fuselage the next. The machine was rigged for a week-end's flying in between. However it was only by dint of a night shift worked by J. H. Parry Jones and others that it was in one piece again for the second week-end.

Flying has continued at Lulsgate whenever conditions were suitable, and sometimes when they were not. Our monthly total of launches this winter has been about 250, a figure much greater than that recorded for previous years. One pupil went solo in eight weeks, not bad for mid-winter. At the end of February thermals started making their welcomed return and were greeted by the emergence from liberation of our privately owned " Olympias." Our tame Autocrat " C.N. " was also in evidence giving aerotows to the more optimistic.

No further soaring has been done at Roundway though the " Tutor " has been taken over and a few familiarisation circuits made. We are holding a camp there over the Easter holiday and are being joined by a party from the Surrey Club.

Preparations are being made for the summer training courses for non members. Lasting a week, and giving instruction up to " B " Certificate stage, these courses look like being even more popular this year than last.

THE VICTORIAN MOTORLESS FLIGHT GROUP

February, 1950

Gliding Angle humbly apologises for the long delay since its last appearance. For a while, it seemed as though these newsletters might cease to plague you, but Nance Iggulden and Gordon MacDonald having kindly volunteered to take over printing and distributing, the besetting problem of time has been solved and we now hope to resume normal monthly issue. Without further preamble—on to the

Flying Diary

Saturday, December 10th. Wind west 5 m.p.h., cloud—light, decaying cu. 5/8th. " Coogee " 18 flights. Ron Roberts had two quarter hour flights, Grace Roberts 34½ minutes, 700 feet to 3,000 feet.

Sunday, 11th December. Wind west 10/12 m.p.h., cloud—7/8th st. cu. " Coogee " 20 flights. John Day 13 minutes, Viv Drough 16 minutes, and several 10 minute flights. Our Swiss Silver " C," Oskar Hegetschweiler, and our English ditto, Derek Reid, flew " Coogee " for the first time.

Then came the Christmas Meet, productive of 460 flights in " Coogee," " Kestrel," " Rhon " and " Heron," with 20 pilots flying at various times. The weather, although excellent for just plain holiday, did not give us much good thermal activity. No cross-country flights were attempted,

due to problems of retrieving (shortage of both spare cars and petrol). An unelected and unapproved new member was Sammy, a large copperhead snake, who we believed to have taken up abode in the hangar. Surprised sunning himself on the concrete bricks, he shot inside with all the speed of one who hears the dread cry of " Lifting " and was not seen to emerge again. Another inspection was therefore added to the Daily Flight Check—the machine had to be pronounced free of Sammy and/or mates. An engrossing subject of conversation for a while was—" What I would do if, at X thou. feet I looked down and there was Sammy sitting by the rudder pedals . . . " Then, of course, someone was dragged over another snake while running with " Coogee's " wingtip so after that people running on wingtips, off the mown runways leaped wearily up and down while the car driver chanted happily, " Mind you don't walk on Sammy."

First minor thermal activity came on the 28th, with 7 flights of over 10 minutes, best being Mike Bruce, 25½ minutes, 600 feet to 1,750 feet. On the 31st, more teasers, with John Day getting 20 minutes, 900 feet to 2,200 feet. On the 1st January Viv Drough had 18 minutes, 680 feet to 1,850 feet and Grace Roberts, 15½ minutes, 700 feet to 1,500 feet. Mike Bruce had 17 minutes on the 2nd, struggling from 400 feet to 1,850 feet. No one could say we weren't trying ! On the 4th, there was a pronounced inversion at 2,000 feet; cloudless sky, almost calm, ground temp. around 90 degrees. Bill Iggulden, in " Kestrel," 800 feet to 2,100 feet while between 900 feet and 1,500 feet Grace Roberts rushed from one puny area of lift to another for 27 minutes. After lunch, the same pilot managed to rub a hole in the inversion and whip " Coogee " from 800 feet to 5,350 feet for 52 minutes, no one being more surprised than said pilot. In " Kestrel," Jack Iggulden had 15 minutes, Bill Iggulden Senr. 20 minutes, and later, in " Coogee," Keith Meggs had 27½ minutes, 850 feet to 1,650 feet. Then nothing more until the 7th January, when we had one of those photogenic skies with ci. cu. backdrop and cu. sailing along at 5,000 feet underneath it. Wind west, about 10 m.p.h. John Day in " Coogee," 45 minutes, 550 feet to 3,500 feet; Bill Iggulden in " Kestrel," 64½ minutes, 900 feet to 4,900 feet and, to complete the pretty picture, the " Beaufort " people took the two-seater " Phoenix " up at the same time. (We forgot to mention that, a few days earlier, the Beaufort Club had collected Ron Roberts from us and we saw him only now and then when he returned for a meal and a sleep. We sighted him out on the runways, of course, being trundled back to take-off point, slumbering gently in the back cockpit, occasionally tipping his ski-cap back from his nose and opening one eye to see where he was.) As soon as John brought " Coogee " in, Derek Reid took off for 1 hour 45 minutes, 900 feet to 5,300 feet. On the 10th, flaccid-looking cu. drifted over in a light south-westerly; Grace Roberts and " Coogee," 51 minutes, 800 feet to 4,400 feet, in incredibly smooth 10 f.p.s.; Jack Iggulden in " Kestrel," 25½ minutes, 800 feet to 2,200 feet. Nance Iggulden graduated to " Coogee " with a very nice circuit, becoming our youngest and smallest sailplane pilot. The 11th was another hot day with pronounced inversion below 2,000 feet; it wasn't really worth it, but we had a few 20 minute flights up to 1,600 feet. The 12th, another hot day of clear blue sky; always hopeful we tried it to the extent of 12 circuits but nothing doing so we packed up and went swimming. The 13th brought a roaring, hot, dusty northerly. After lunch, most interesting cu. developed so Ron, Nance, John and Grace foolishly trundled " Coogee " out and had a go. We nearly expired with the heat, Grace found 10 f.p.s. red all over; John and Ron found lift but one circle took them way back, flying was like swimming in hot lemonade, the back wheel fell off the winch, so we said the hell with it and went to the inn and drank copious quantities of (believe it or not) ice-cold lemon squash. The 14th—12 flights in " Kestrel," 15 in " Coogee "; Jack Iggulden 13 minutes, John Day and Bill Iggulden 14 minutes each, a few 10 minutes. A strong southerly on the 15th, patches of lift occasionally but not very usable, 21 flights in " Coogee " and " Kestrel." Even the stragglers had to pack up and go home then so that was the end of the Christmas Meet. Nothing outstanding but we did enjoy it.

Saturday, January 21st. Wind west, 5 m.p.h., 4/8th alt. st. and ci. 21 flights, " Coogee " and " Kestrel." Grace Roberts, 17 minutes, 450 feet to 1,550 feet; Derek Reid, 21½ minutes, 900 feet to 1,600 feet; Mike Bruce 17½ minutes, 750 feet to 1,800 feet; Nance Iggulden 8 minutes, 700 feet to 800 feet—this was Nan's first thermal flight and would have been prolonged but for a prowling " Tiger Moth." Jack Iggulden in " Kestrel," 650 feet to 1,700 feet for 17½ minutes. A VMFG team (Ron Roberts and his father-in-law Bill Iggulden Senr.) took the Beaufort Club's two-seater to 2,500 feet for 45 minutes. By the way, who mixed what into the water-bag ? Your correspondent, telephoning the winch to report on a delay remarked to that impeccable B.B.C. voice at the other end—" Delek, the deray is because we're adjustivating the elevator cables."

Sunday, 22nd January. " Coogee," 19. New member, Wally Burgess (English " C ") had his first circuit with us and gained 600 feet, 13 minutes. Mike Bruce had 19 minutes, 1,000 feet to 2,200 feet.

A.N.A. Week-end, Jan. 28th, 29th, 30th. Fred Hoinville of the Sydney Soaring Club and our first Gold " C," flew over in his Tiger Moth " Brolga," accompanied by Nancy Ellis. We are always delighted to see Fred and we were doubly pleased this time to be able to congratulate him on that Gold " C," shaking his hand ardently in the hope that it was infectious. We were very pleased to meet Nancy, too, who is a most proficient power pilot, holding a Commercial Licence, 1st Class Radio Ops. Licence and the only woman in Australia holding an Instructor's Licence. Nancy has just joined the Hinkler Soaring Group and, while at Berwick, had her first sailplane flights. On Saturday, we had 25 flights in " Rhon," " Coogee," and " Kestrel "—Jack Iggulden gained a couple of hundred

feet for 21 minutes. On Sunday, with a boisterous northerly, swinging later to north-west, Fred turned on aero-tows for " Coogee " while " Kestrel," which has no aero-tow release, had 7 winch launches and " Heron " had 8 low hops with the boys from Loch and Bena on the job. Fred towed Ron over to the Dandenongs, towards the lair of the standing wave which operates in that direction, although it was not working on that day. Releasing at 7,500 feet, some 12 or 14 miles from home, Ron had no difficulty in getting back, flying at 45 m.p.h. with a slight cross wind. He found that, although the sink at 30 m.p.h. was 5/10 f.p.s., it didn't increase appreciably when the airspeed was built up to 45 m.p.h. Useful information for future reference. On Monday, there were 5 flights in " Kestrel," 18 in " Coogee," 5 in " Rhon," 4 in " Heron." Conditions looked good for a while, but the wind freshened to south and it petered out. Bill Iggulden, 25 minutes in " Kestrel," 700 feet to 1,700 feet; Jack 39 minutes, to 2,300 feet; Mike Bruce, 17 minutes, 800 feet to 1,550 feet; John Day 16½ minutes, to 1,500 feet. Nancy Ellis towed Fred off for a flight in the " Coogee "—her second aero-tow, the first being with Grace Roberts in the " Coogee." A very useful girl to have around is Nancy! At about 4 p.m. Fred and Nancy took off for Albury. We'd had a wonderful week-end with them and, as usual, didn't like saying good-bye.



1. *Grace Roberts in " Coogee " with Nancy Ellis before the first Australian two women aero-tow.*
2. *V.M.F.G. Instructors. Grace Roberts, Les Williams, G. Richardson.*



1. *Fred Hoinville (First Aussie Gold 'C') and Nancy Ellis at Berwick.*
2. *" Coogee " and " Kestrel ".*
3. *Ron Roberts and Hon. R. G. Casey and Doug. Lyon.*
4. *Phew it's hot.*

New Members: It's a little late in the day to be welcoming Derek, Wally and Elek, as they are now so much a part of the VMFG that they're not new members any more. We are most happy to have them with us—Derek Reid, from the Surrey Gliding Club, holding a Silver "C"; Elek Csasar from Hungary, also with a Silver "C" and Wally Burgess from England, holding a "C," but with two legs of his Silver "C." We hope there are many long and happy hours of soaring in store for them here.

THE SOUTHDOWN GLIDING CLUB

Contrary to what many of you must be thinking, the old Club is still very much alive. Let me give you all the gen up to the present.

First our A.G.M. and Dinner. This was held at Langford's Hotel, Hove, on February 4th. Attendance was well above expectations and amongst those present were Mr. Vernon Blunt, Doc. Slater, Mr. and Mrs. Raffell of the London Gliding Club, Messrs. Helson and Trotter from Surrey Gliding Club, Ken Fripp and party from Portsmouth.

Our President, Marshal of the R.A.F. Sir John Maitland Salmond attended the A.G.M., but owing to health reasons could not stay for the dinner. His place was taken by our vice-president Mr. A. Yorke-Bramble. We were also glad to see George Rubick and E. A. Edmunds, both founder members, and Sqdn./Ldr. E. J. Furlong, our latest life member.

Langford's laid on an excellent dinner, and a bar was organised in a corner of the room, thus giving nobody the excuse to creep out for a crafty one in the hotel bar upstairs.

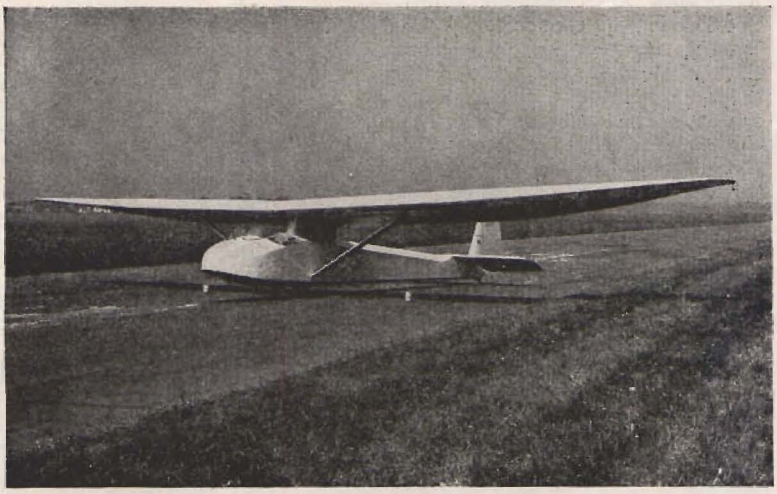
After some short but interesting speeches cups were presented to Johnny Billeness and Chris Hughes. Johnny got his for attaining the greatest height in the "T21B" (3,700 feet), and Chris for the greatest height in a "Tutor" (2,700 feet), Johnny also collected another one for his out-and-return trip to Firle last March.

Then followed an evening of fun and games. Doc Slater was led to the piano and had to stay there regardless. Helson and Trotter, with a small Southdown male choir in the background sung a rather ribald ditty on the Surrey Club to the tune of a well-known hymn. Then for a contrast Doc Slater really went to town with some of the classics. Finally, for the sake of the residents, and the close proximity of Sunday the die-hards were persuaded to depart silently.

This brings me to the activities of the Club. Flying has been suspended since last December so that C. of A's. could be carried out on all machines. Under our C.F.I. and Ground Engineer, Ray Brigden, each week-end has seen the hangar a hive of industry and cluttered up with wings and things; dope, fabric and tools. The walls festooned with control cables all nicely coated with yellow preservative.

The "T21B" was finished ready for the Sunday following the A.G.M., in spite of the gremlins that tried to stop us, especially the one that bunged up our spray-painting hose. We beat him however by somebody's brainwave of pushing an old "Dagling" bracing wire down the pipe followed by compressed

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Slingsby Sailplanes Ltd., Kirbymoorside, Yorks.

air. This cleared the stoppage—all over my feet !

Sunday however was not the best of days for flying. Ray and Johnny both did about 30 minutes over the cliff, but the wind was increasing. I was the last to try and had to dive at 60 knots to reach the cliff edge. Having got there and found the lift we started flying tail first. This had no future in it and so we landed—just as the first of the rain came with the squalls. We then wisely packed up and with all hands hanging on tight we walked the kite back to the hangar. A few minutes later it was gusting up to 60 m.p.h.

It was then decided to scrub flying until all the overhauls were finished, and, at the moment of writing another machine is ready—a " Tutor." This will soon be followed by the second " Tutor " and then the " Cadet."

All this time Johnny has been working on the mobile section of the Club and has made a fine job of our Trailer. The aim is to get away from our site and try some of the hills to the north. It is hoped that we may find this will solve our problem of cross-country flying, and open up the field for Silver " C's." Our prevailing S.W. sea breezes can supply us with the means of doing the 5 hour duration flight ; and the rare N.E. winds, although giving us some remarkable flying locally, have not produced the type of lift that will give the daring the chance to push off for Portsmouth or elsewhere.

As your humble has been appointed scribe to the Club I hope to report as often as possible on our progress this year. I firmly believe that much can happen in this neck of the woods—as it did last year, but we look to our mobile column to establish the records for the Club. May I be fortunate enough to be included sometime with our band of pioneers.

For the benefit of our many friends please note that our Hon. Secretary is now Mr. Eric Jarvis, Sussex Chambers, 45, Havelock Road, Hastings. Don Snodgrass, after a year of exceptionally hard work has helped the Club in many ways and has now been appointed O.C. Works and Buildings, exchanging the pen for the pick and shovel ! More power to his elbow.

Happy landings folks.

SQUEEGE.

ARMY FLYING CLUB NOTES

Since Bob Swinn's prompt arrival on January 1st, some semblance of order has become noticeable in our Club, and the prospects for the future are reasonably bright.

At Odiham there has been the usual primary training on the " S.G.38," for the benefit of the more stout-hearted—we have had one or two arctic week-ends, whilst the " Grunau " has been in regular use, and has just been given its new C. of A. by way of thanks for services rendered.

Several cautious visits were made to various projected hill-sites, and finally, on Sunday, 26th February, Bob Swinn's " Scud " was bungied off Inkpen hill, to make the first hill-soaring flight of the Club, 1 hour 5 minutes. An audience immediately appeared from nowhere in particular, and assisted in the mysterious rites upon the bungie. Two more flights were made, of half an hour each.

We have great hopes of setting up permanently at Inkpen, and will then welcome any visitors. In any case, we intend to be there over Easter complete with winch, and will welcome any additions to the four aircraft we hope to have in operation. In particular, our affiliated Clubs—Southdown, Gloucester, and Bristol, are promised a welcome. Charles Dorman and Dick Perkins are anxious to repay the hospitality shewn them at Lulsgate last year.

We hope that in due course there will be some regular " traffic " between Roundway and Inkpen, via Hnish.

R.L.P.

SCOTTISH GLIDING UNION

At approximately the same time that a member of the Derby and Lancs. Club was obtaining the very meritorious height of 13,000 feet in a " Viking " (according to the *Scotsman*), we were busy ensuring the deferment of our more ambitious plans in that direction. Three months ago, we lost an " Eon " baby in a straight forward, if completely unnecessary, flying accident. On March 11th, the " Tutor," which was at that moment our most suitable club soaring machine, was heavily damaged in a ground accident. Three people were bringing the machine from the hangar to the launching point. One was driving the tow truck, one holding the wing tip, and one was sitting in the cockpit holding the controls central and forward. The wind was reputed to be about 20 m.p.h. with occasional gusts, and it was one of these which caught the tail of the machine as it was swung from the uneven ground surrounding the runway, down on to the runway and down wind. Before any preventive measures could be taken the tail reared high, overturned and crashed over the tow truck, snapping the starboard wing cleanly over the truck bonnet. The occupant of the cockpit clung on grimly until he was lowered safely on to the tarmac.

We trust that we can repair this machine ourselves, and thereby preserve our insurance rates at a merely ruinous level : even so the " Tutor " will be out of commission for some time.

These two blows following so rapidly upon each other, are particularly unfortunate at a time when the club was developing technically in a very satisfactory way. In particular, members were, in many more cases than in March last year, using the standing wave effect that comes spasmodically from the Ochils, and one member, beefy Ian Sproule, located and held the wave for seventeen minutes, only landing in order to give some one else a chance before the light failed. On a day when there were no thermals, and from a site as flat as Balado, this was a creditable performance.

To meet the doleful situation created by the loss of the " Tutor," there is a suggestion to widen the syndicate " Olympia," so that, at any rate, twelve members will get a chance of first class flying until the " T21B " is delivered.

Auto towing has proved to be extremely successful, and even in launching the " Olympia " off its skid, there has been no cable trouble, and in almost every case launches have attained a considerably greater height than the corresponding winch launch ; 1,500 feet

is the record-breaker and 1,000 feet plus launches are most customary. As everyone who is interested in auto towing appreciates, savings in every direction bar one are made. There is far less wear and tear on machines. Also, at a pinch, only three people are needed to make a team—pilot, driver, and wing-tip holder. And, apart from the greater height, there are far less cable breaks per launch. Indeed, since we started to use a parachute on the glider end of the cable, we have had no cable breaks. The only drawback is the high petrol consumption of our Chevrolet truck.

The dates of the summer camps are as follows :—

March 25th—April 1st ;
June 17th—24th ;
July 1st—8th ;
July 15th—22nd ;
July 29th—August 5th ;
August 5th—12th ;
August 12th—19th ;
September 2nd—9th ;

May we say again that all are welcome.

Letters to the Editor

DEAR SIR,

In his letter about winter cross country flights for Lord Kemsley's prize, Doc. Slater seems to have overlooked an important factor.

Last year the competition was open until Sunday, 20th March. I did my winning flight, Elstree—Lee-on-Solent, on Saturday, 19th March. The runner up did his flight also in March, and the winning flight of 102 miles from Long Mynd was done in the same month.

This year, Tuesday, 28th February, was the closing date ; that very day March-like conditions prevailed, and that is when the winning flights from aero-towed launches were made.

Twelve days later, Sunday, 12th March, before the anniversary of last year's closing date, I was able to fly from Dunstable to Shoreham-by-Sea with very little bother.

All the more credit therefore to Geoffrey Stephenson for his Dunstable—Southend flight in December this year, and his 70 mile flight from Dunstable in February the previous year.

Flights made in March weather are not comparable.

Yours faithfully,
DUDLEY HISCOX.

MONTGOMERYSHIRE ULTRA LIGHT FLYING CLUB

22, High Street,
Newtown.
Mont.

March 6th, 1950.

DEAR SIR,

May I give you some details of the Montgomeryshire Flying Club which is being founded to serve the interests of flying enthusiasts in Mid Wales and the Border Counties.

The club will commence operations in a few weeks' time from an airfield at Heldre Hill, a few miles East of Welshpool in North Montgomeryshire with a " Magister," a " Piper Cub," and possibly another aircraft. Negotiations for the field are now being completed and further particulars will be circulated when final arrangements are made. The club is the first to be formed in Mid-Wales.

You may be assured that any of your representatives will be welcomed when we get going. There are no landing fees. At the present time we are looking for a suitable hangar and this will be erected when we take over the field.

Yours faithfully,
W. THOMAS,
Club Hon. Secretary.

U.L.A.A. (*Continued from page* 88).

posts are joined by horizontals to form a rigid structure, and in the case of a portable type, would need to be cross braced. These sides would then be covered by the sheets of suitable boarding material. The major span of 40 ft. would need to be supported by a double girder made of wood, and this in turn supported by a cantilever truss which would rise external to the roof, and be braced from front to rear, by joining the mid or rear posts.

We think it would be possible so to design such a wooden and millboard or asbestos board structure that it could be made in sections, and assembled to such vertical posts, the only difference being that the post might be sunk in prepared holes in a concrete block, and detachable from such holes. In this case it would no doubt, be necessary to have some form of anchorage to hold the structure down. This might be done by external cables (which everyone falls over in the dark) or perhaps by having one or more permanent posts cemented in alongside the removable post, to which the latter could be secured. If we can manage to provide sketches in next *Bulletin* we will add plans of this shed to the other hangars suggested, which will give a better idea of the possibilities. The final question will then be one of costs and ready availability of materials—plus ease of assembly and transportation.

We do hope we have given sufficient information—and, no doubt, left enough out—to provoke criticism and suggestions, which will be heartily welcomed.

FROM PARIS TO CAIRO—(*Continued from page* 80)

a radio compass and the glider must also have VHF so that the glider pilot can both hear the tug pilot speaking to ground stations, and also be able to reach the ground himself if necessary. A radio that works is more important than water ! One must have a very experienced tow pilot, one with at least 2,000 hours flying, and a good navigator to boot. The crew of the tug plane is more important than the sailplane pilot. So says Kameel—

VERONICA PLATT.

P.S. Latest News. I now hear that Kameel is to be aero towed from Cairo to Orebro with Marmol as tug pilot.

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