Sailplane and Glider

The First Journal devoted to Soaring and Gliding

MARCH/APRIL 1955

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Editorial

WE welcome the return to life of our distinguished young contemporary *Vuelo Silencioso*, the Argentine gliding magazine. Six months of financial hardships have been overcome and the new issue carries several interesting articles. We are especially glad to be able to pass on to our readers the account of the test flights of the 'Horten-X' on aerotow. This should enormously increase the appeal of an admirably designed little sailplane in the 'lowest possible price' class. When funds permit one can be towed up in style ; with no money and no petrol, a run and a jump is enough . . .

Perhaps, too, it may help to solve another problem. At a recent meeting of the B.G.A., the Chairman, Philip Wills, reported that the tenure of airfields was so uncertain that quite soon the South of England might be reduced to one Gliding Club only, the London Club flying from Dunstable. With an increasing population and an increasing use of agricultural land for building, this is a problem that can only become intensified, not only here in England but in many other parts of the world. Gliding Clubs will find themselves pushed ever further away from the centres of population that they exist to serve. Even now the trouble and expense of getting to them prevent many young people from joining Clubs, especially when they may only get one actual flight at the cost of a whole day spent in travel. How much easier it would be if we could offer a ring of little clubs operating from any reasonably flat piece of pastureland, owned by a friendly farmer—no upkeep, no towing charges, no hangar space—just walk on to the field with your Flying Winglet, face the wind, run, and take off. Heavenly idea, though until now as impractical as some of Leonardo da Vinci's dreams. . . . Are we stepping backwards towards the real answer of how a man may fly as easily as a bird ?

V. P.

There have been several references to the North-West Arch in the pages of *Sailplane and Glider*. Readers may be interested in an extract from a charming book written in 1866 called *Station Life in New Zealand*. The author was then living in the South Island, inland from Christchurch at the head of the Selwyn River.

"One morning an arch-like appearance in the clouds over the furthest ranges was pointed out to me as the sure fore-runner of a violent gale from the North-West, and the prognostic was fulfilled. It was formed of clouds of the deepest and richest colours ; within its curve lay a bare expanse of a wonderful green tint, crossed by the snowy silhouette of the Southern Alps. A few hours afterwards the mountains were quite hidden by mist, and a furious gale of hot wind was shaking the house as if it must carry it off into the sky ; it blew so continuously that the trees and shrubs never seemed to rise for a moment against it."

This was written in April, the beginning of our winter over here. I have seen the same phenomenon in spring from Masterton in the North Island. Here the gale that followed was certainly not hot, though it came also from the North-West.

The next issue of *Sailplane and Glider* will be published on June 1st.

Sailplane and Glider

Founded in 1930

and ULTRA LIGHT AIRCRAFT

THE FIRST JOURNAL DEVOTED TO SOARING AND GLIDING

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Editor :
VERONICA PLATT

Asst. Editor :
RONALD BISHOP

Editorial and Advertisement Offices :
8, Lower Belgrave Street
London SW1
PHONE: SLO 7287

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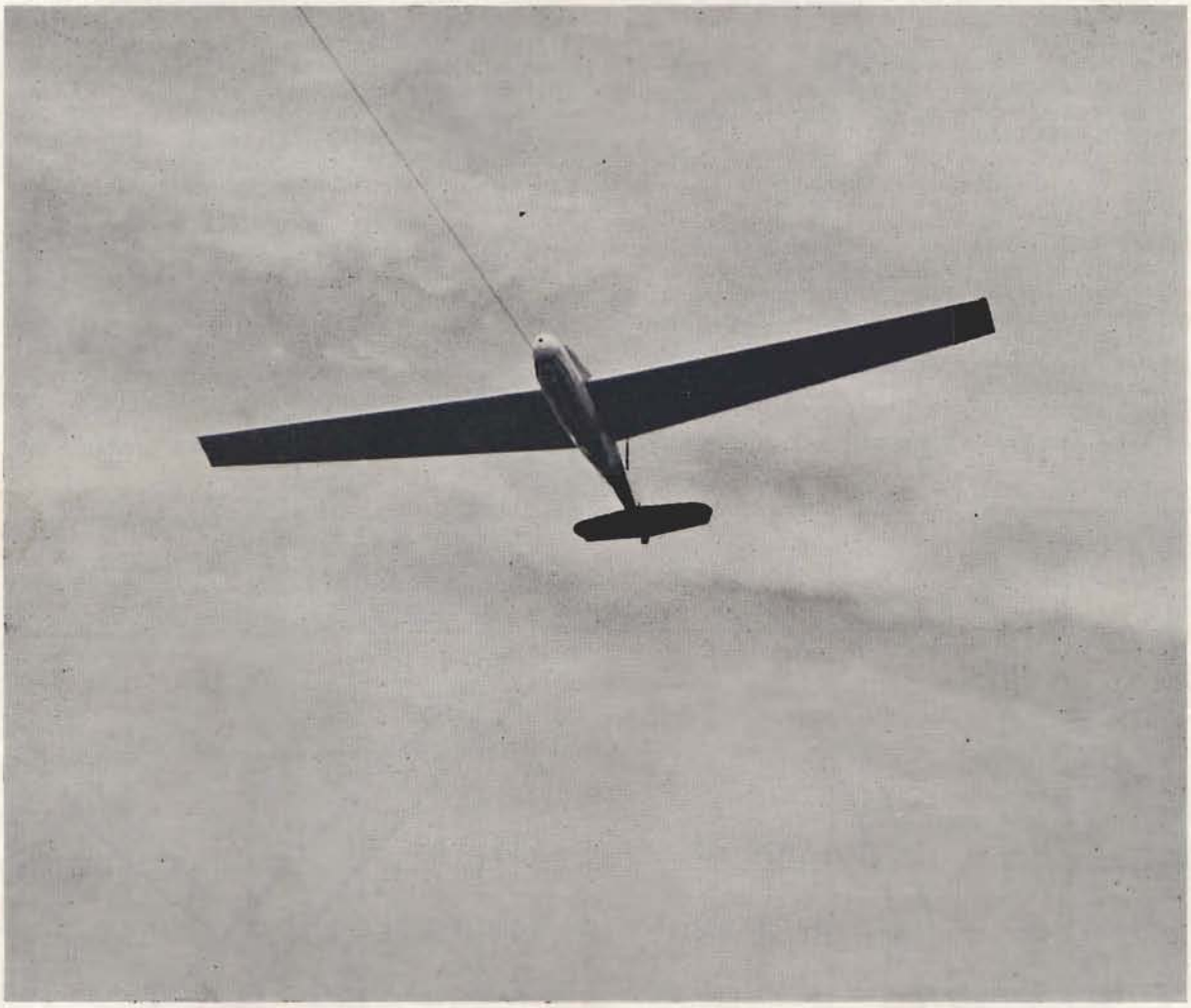
COVER PHOTO :
'Minimoa' from KNVVL (Royal Dutch Aero Club) soaring over Hilversum. (She is still in her teens, by now she is 17). Zeiss Netar 4.5 1/100 6.3. Ilford FP3

BUILD-IT-YOURSELF SAILPLANE
RECEIVES C.A.A. APPROVAL



The 'SGS 1-26' in flight

THE Civil Aeronautics Administration has granted an Approved Type Certificate (No. TC-1G10) to a new high-performance sailplane designed and built by Schweizer Aircraft Corporation, Elmira, New York. The metal sailplane, the 'SGS 1-26' was designed principally for kit construction, to meet the growing interest in home-built gliders and sailplanes. However, the sailplane also will be available complete and ready to fly for those who so prefer.

The kit sailplane provides a practical aircraft project that is within the price range of the average enthusiast or group. It has been demonstrated for years in Europe that gliding and soaring have great appeal for young people, and are much more practical than powered aircraft flying due to lower costs and greater potential safety.

Nearly 40 of the sailplane kits already have been ordered by soaring pilots and glider clubs throughout the country, and S.A.C. is rapidly gearing up its '1-26' production for delivery of these kits.

Schweizer Aircraft's main products at present are airplane component parts, the firm being one of the major sub-contractors in the East for leading aircraft manufacturers.

Its glider and sailplane manufacturing for the past 25 years has made the company internationally known. After World War II when hundreds of 'surplus' training gliders were made available by the Government, glider production decreased for a few years. However, Schweizer developed and produced in limited quantities '1-19' single-place utility gliders and '2-22' two-place training sailplanes.

These were followed up by the ' 1-21 ' and ' 1-23 ' high-performance all-metal sailplanes. The famous ' 1-23's ' have been produced and are being flown all over America and in foreign countries. The Indonesian Air Force is using three ' 1-23's ' and three ' 2-22's.'

Intensive testing, experimenting, and an exhaustive polling of gliding enthusiasts throughout the country have resulted in the final design and specifications of the ' 1-26.' The two units already built have proven themselves with well over 100 flying hours, flown by more than 100 different pilots with varying soaring experience and ability.

Kit Easy to Assemble

The ' 1-26 ' sailplane can be built from the kit easily by use of simple tools which almost every hobbyist has in his own workshop, plus a few inexpensive special tools. All the complicated alignments, welding and assemblies requiring specialized tools and equipment are already completed by the manufacturer before the kit is delivered. The purchaser has only to assemble the parts and make minor components.

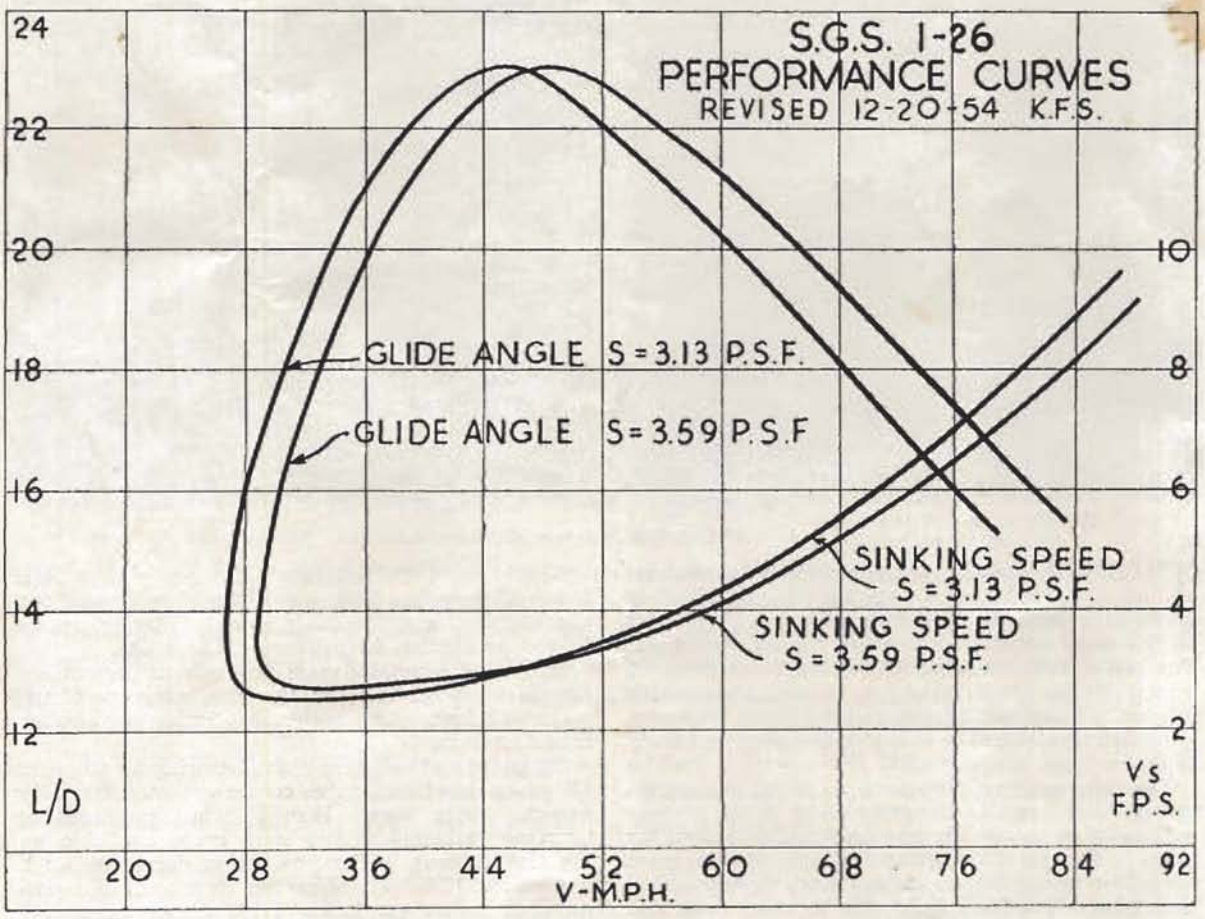
The kit includes a completely welded chrome-moly steel tubing fuselage in oiled, but unprimed condition. The wing carry-through member is attached and drilled ready for the wing assembly. All lugs are attached to the fuselage so that no further welding is required.

Control details are supplied as parts but require cleaning and priming before they are assembled. A pre-formed aluminium nose, front bulkhead, and moulded plexiglass canopy, as well as raw materials for making the fairing, instrument panel, floor and seat back, and the turtle-deck behind the cabin also are furnished. Each kit is accompanied by a comprehensive manual, and complete, easy-to-read blueprints, which are being submitted to C.A.A. for approval.

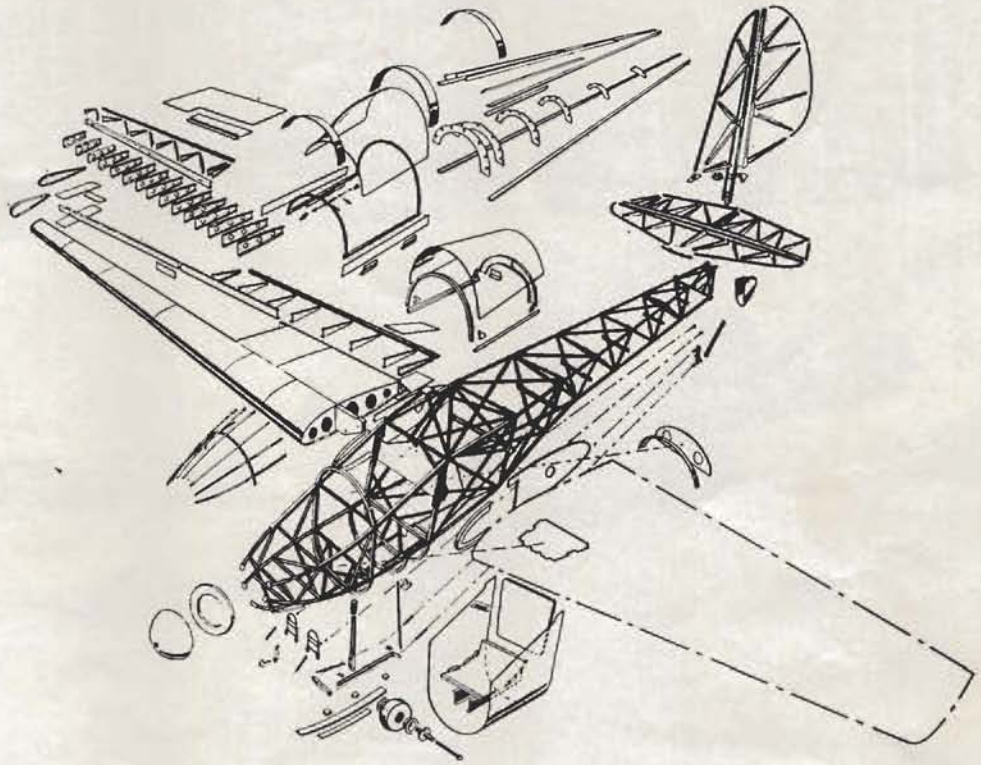
Note.—Complete specifications of the ' 1-26 ' are on the enclosed data sheets.

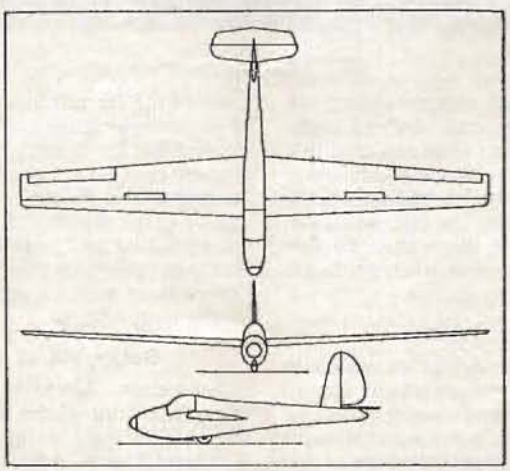
According to the manufacturer, the ' 1-26 ' can be completed in from 300 to 600 man-hours, depending on the experience and skill of the builder. This means that an individual can complete the sailplane in his spare time over a four to eight month period. Group effort naturally will accelerate considerably the rate of assembly.

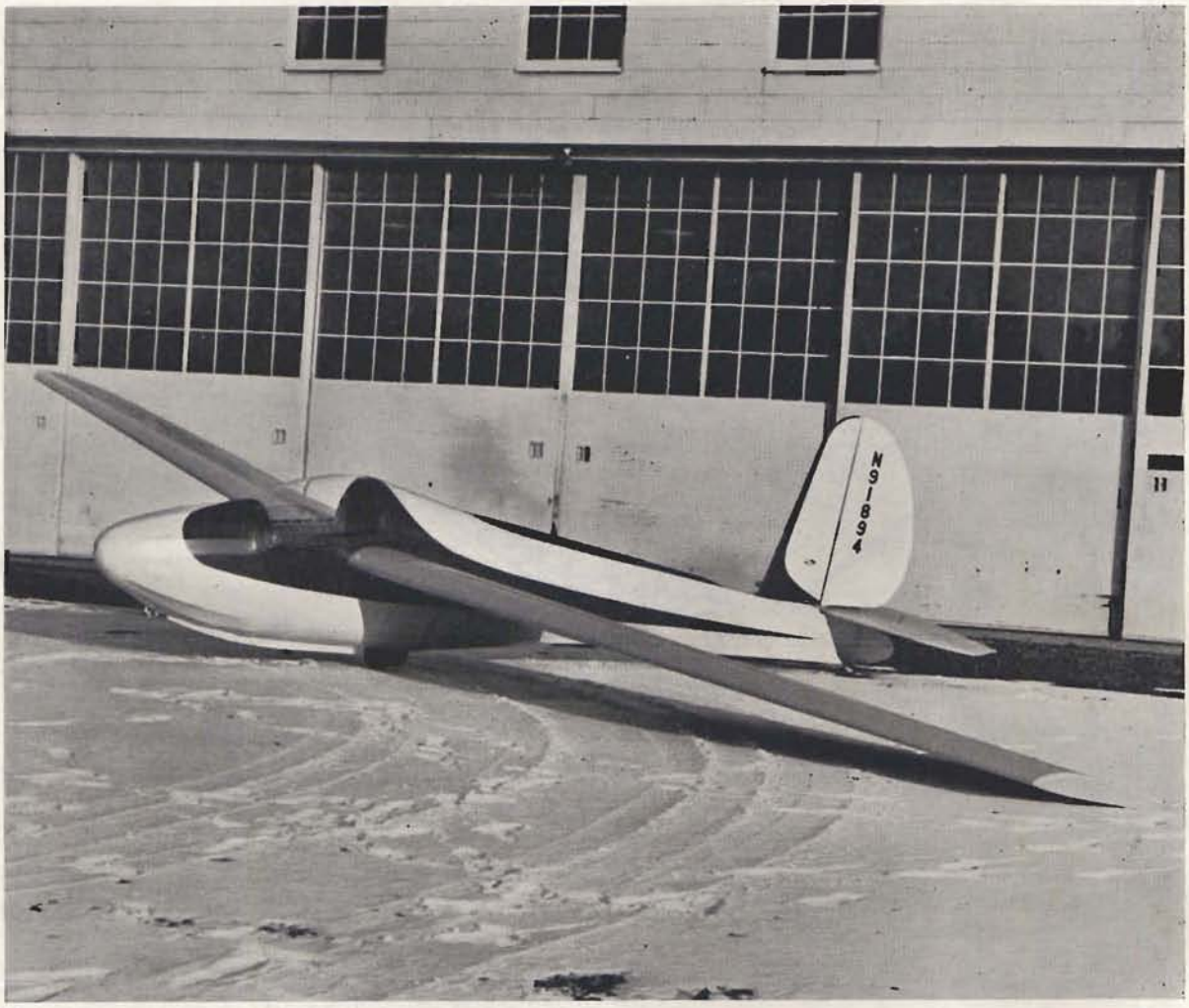
The all-metal structure of the ' 1-26 ' simplifies and



SCHWEIZER 1-26 SAILPLANE KIT







' SGS 1-26 ' on ground

expedites the home-builder's work in assembling the ship. All temperature, humidity, and kindred problems associated with wood working thus are avoided. With the exception of fabric covering on the fuselage and parts of the wings and tail, the ' 1-26 ' is entirely metal. Storage is simplified since the kit has been designed so that no component is more than 20 feet long, and therefore will fit into the average home workshop or garage.

Low Cost — High Performance

Designed for low original cost and for economy in storage and hauling, the minimum practical size of the ' 1-26 ' was determined by considerations of safety, performance, and ease of handling in the air and on the ground. The flying characteristics of the ' 1-26 ' definitely put it into the high-performance category, according to the manufacturer. The sailplane's sinking speed is under 2½ feet per second while the glide ratio is over 23 to 1. Already a flight of over 150 miles has been made in the prototype. Because of its minimum flying speed, the ' 1-26 ' is ideal for operating from smaller fields by auto tow, as well as for landing in cramped areas sometimes encountered on cross-country flights. Also considered an important flying characteristic is the very small radius turns which can be made because of its light wing loading and high-lift wing. As a result of these features, the pilot is able to make use of small thermals as well as getting the maximum climb out of the larger ones.

Outgrowth of Sustained Programme

Schweizer Aircraft Corporation's experience in manufacturing glider kits goes back to 1942 when two ' SGS 2-8 ' sailplane kits were made for the National Youth Administration (N.Y.A.).

Shortly after World War II, ' SGU 1-19 ' glider kits were manufactured for various high schools in the country. The vocational arts pupils completed the gliders and then flew them in combination glider construction and flight training programmes.

(Continued at foot of next page)

THE ' XLF-207 LAMINAR ' CZECHOSLOVAK SAILPLANE

By R. A. G. Stuart, M.A. (Cantab.)

CLAIMED to be the first successful laminar-flow sailplane in Europe and the second in the world (the American ' RJ-5 ' being the first), the ' XLF-207 Laminár ' first flew in August 1951. In the following year it took part in the Czechoslovak National Gliding Competition, in which it gave a very good account of itself. It was designed by a team headed by Ing. Vladimir Stros, with Ing. V. Frynt as aerodynamicist. The idea of using a laminar-flow wing first occurred to the design team soon after the existence of such profiles became known. Some preliminary experiments, in which ' Mustang ' fighters were used to test incomplete German calculations, confirmed the team's views about the unsuitability of existing low-drag, low-camber aerofoils for sailplanes, so all available information about laminar-flow wings was carefully studied. After completion of the preliminary design study, the design was finalised in the summer of 1949 and detail work was begun.

The designers aimed at constructing the new prototype as simply and cheaply as possible consistent with the highest degree of accuracy, solidity and robustness, verifying and making use of information gained in the flying trails of the ' LF-107 Lunák ' (' Kite '), designing the wing so that the safety factor would equal that of any existing sailplane, and showing that Czechoslovakia could build as good a sailplane as the Western countries. To aid the objective of cutting down costs, it was decided to use the prototype ' Lunák ' fuselage in spite of the fact that its weight had been increased by frequent repairs and the fact that the ' Lunák's ' fuselage was really too short and the horizontal tail surfaces were too small for the aircraft to have the best flying qualities with the new wing. It was considered that, as the ' XLF-207 ' was intended only for experimental purposes and training, the flying qualities would be good enough with the existing fuselage and tail unit. The new wing has a span of just over 15 metres, but is 1 kg./m². less in weight than the original ' Lunák ' wing. This saving of weight is accomplished by the use of a broad spar with a number of thin ribs and stressed plywood covering. It is interesting to note that the relative weight for the wing area is 45% greater in the case of the ' RJ-5 ' wing than it is for the ' XLF-207.'

The use of the new wing has resulted in the ' XLF-207 ' obtaining a 20% better gliding ratio than the original ' XLF-107 Lunák ' prototype, a particularly good result when one takes into account the fact that the fuselage of the new type is an unsuitable one. However, flight tests showed that stability could be improved. With the artificial stability caused by the towing cable, the new sailplane's minimum speed was 9.3% lower with flaps at 8° and 12.7% lower with flaps at 15° when on tow than when in free flight. This was due to the better directional stability, which also caused an improved coefficient of lift when on tow. With a more suitable fuselage it is reckoned that the improved flying qualities would result in an improvement of 1.5% in the coefficient of maximum lift with flaps at 15°, which would enable the ' Laminár ' to circle even in narrow funnels. The trials, which lasted two and a half years, also showed that the stressed plywood wing covering was proof against the weather and climatic changes. The design team considers that current types of lift flaps, though they are adequate for stabilisation of sailplanes while circling, still do not possess the required amount of efficiency for reducing the minimum rate of sink. They hope that new and more efficient types will be evolved, which will increase the coefficient of lift without unduly increasing the coefficient of drag when set at 5°-15°. In assessing dynamic stability, the designers were forced to take as their basis the D.V.L. report of 1941 owing to lack of documentation on this subject. This report showed most of the well known sailplanes of the time to be dynamically unstable or indifferent, and in some cases it was found impossible to measure dynamic stability with free elevator because of friction in the controls. The ' XLF-207's ' dynamic stability was difficult to measure for the same reason, the force amounting to ±0.3 kg. around the neutral position. However, in spite of some variation in the results obtained, it is calculated that at about 80 km./h. with free elevator the aircraft is slightly unstable. At higher speed, as also with flaps down, the longitudinal movement is slightly damped. Lateral movement, tested from banked flight, indicates negligible spiral instability. At first the aircraft was found to be directionally unstable to a slight extent at low angles of bank, but

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THE ' SGS 1-26 '—*continued from previous page*

Now the ' 1-26 ' is the result of these years of development, and because of its high performance, opens the possibility of one-design competition in soaring, similar to that which has become so popular in sailboating.

Schweizer has an expanding programme of kit manufacturing under way for shop students in schools throughout the land. Kits are provided for building utility cases, using aircraft metals, tools, and techniques. In this way, the young people build a useful end product while learning the basic fundamentals of aircraft production operations.

Further information can be obtained by writing :—

Schweizer Aircraft Corporation,
County Airport,
Elmira, New York.

General Data

Wing Area	160 sq. ft.
Wing Span	40 feet.
Dihedral	3½°
Aspect Ratio	10
Spoiler Area	1.39 sq. ft. each
Overall Length	21 ft. 3 ins.

Estimated Weights

Empty Weight	348 lbs.
Maximum Gross Weight	575 lbs.
Normal Wing Loading	3.13 lbs. per sq. ft.
Maximum Wing Loading	3.59 lbs. per sq. ft.

this was remedied by fitting a triangular-section corner under the fuselage.

At first it was thought that the increased weight of the new wings might be excessive, as the prototype ' Lunák,' of which the fuselage was used for the ' XLF-207,' had a safety factor of 9, compared with the 12.5 of the series version. However, this was not so in practice, the weight of the wings being only 128 kg. The first flights were fulfilled according to plan and without surprises, so performance measurement was started immediately, as were flights to assess the flying qualities. Over 40 hours were flown in three months. As a result of some aerobatics which were not in the testing programme, the aileron controls suffered from overstrain and the ' XLF-207 ' was returned to the Aero workshop for overhaul earlier than was anticipated. Nevertheless, tests had shown that design performance had been achieved. While at the factory the surface of the fuselage, which had suffered from use in the film ' Vitezna Kridla ' (Victorious Wings) before conversion to ' XLF-207,' was renovated and blind flying instruments were installed. The second phase of measuring could not start till the autumn of 1952, after the close of the national gliding competitions in which the ' XLF-207,' registered OK-8731, participated. It lasted till the spring of 1953, when bad weather put a stop to flying after 70 hours had been flown altogether. For these tests the aircraft was fitted with electrically operated instruments for recording, the barographs being duplicated. The total weight of these installations was about 10 kg. and they filled the space behind the pilot's head under the transparent canopy. Centred at 31.2% chord and at an all-up weight of 325 kg. the best gliding angle was found to be 1:31 at 80 km./h. and the minimum rate of sink 0.69 m./sec. (2.26 ft./sec.), while at 310 kg. and at the slightly lower speed of 78.5 km./h. the minimum rate of sink was 0.68 m./sec. (2.23 ft./sec.), but the best gliding angle was reduced to 1:30.2. Minimum speed is 65 km./h. (40.365 m.p.h.) but with flaps down 15° it can be further reduced to 63 km./h. (39.123 m.p.h.). With flaps at 8° the minimum rate of sink is 0.72 m./sec. (2.35 ft./sec.). It should perhaps be mentioned that the fuselage surface had been improved for the second set of measurings, i.e. those at 325 kg., while for those at 310 kg. it had not. Minimum rate of sink was improved when both ailerons and flaps were down, and even with flaps down laminar flow was obtained almost as far back as 50% chord. Laminar flow was also obtained while on tow with flaps at 8° until the cL reached 1.0.

The ' XLF-207 ' is trimmable throughout the current speed range. When flaps are lowered longitudinal moments in the correct nose-heavy sense occur, both with the lift flaps and with the braking flaps. The forces on the elevator are small, but on the ailerons they are larger than they should be for a sailplane of this class. Harmonisation of controls is not quite satisfactory and great concentration is needed for keeping straight and level. Behaviour at the stall is excellent and adequate warning is given by elevator judder, though with flaps down this warning is not very pronounced and it is difficult to stay in a stalled position with full flaps. So maximum flap setting was limited to 20°, which also reduced the high forces on the ailerons when landing with flaps down. Controllability in the spin is good; inclination of the fuselage is very steep and the whole aircraft vibrates, but application of the rudder brings it out of the spin without difficulty. The ' Laminár', levels out from a 30° bank in four seconds normally but it can also be brought out of a turn with 45° bank to the opposite side in about four seconds owing to its good lateral manoeuvrability. In the aileron controls, particularly at low speeds, certain negative turn moments occur and these must be corrected by applying the rudder in the sense of the turn. Taking into consideration the use of an unsuitable fuselage, it can be said that the ' Laminár's ' flying qualities are quite satisfactory.

The cantilever mid-wing has a single main spar and an auxiliary spar and the covering is of stressed plywood. The profile selected enables laminar flow to be maintained up to 50% chord. The braking flaps consist of single boards and they come out above and below the wings. The ailerons are of the divided type and act in conjunction with the lift flaps. Both ailerons and flaps are plywood covered. The wings are joined at the middle by a dural casting and there is a four-point attachment to the fuselage, the joint being faired with sheet metal. The fuselage is of oval section and consists of stringers and formers with stressed plywood covering. There is a removable nose section, on which is mounted the Pitot head which has dynamic compensation of the pressure lead. The sliding transparent canopy is of such a design that visibility in all directions is good, though rearwards visibility must have been poor during the measuring tests when the recording instruments were fitted behind the pilot's head. The canopy also serves for ventilation, as it can be locked in any position. The landing gear consists of an ash skid with rubber-block shock absorption and a low-pressure 290 × 110 mm. wheel just behind the CG. This wheel is not fitted with a brake, as this is considered unnecessary. As the fuselage was taken from the prototype ' Lunák ' it is not so roomy as on series machines of that type and is unsuitable for tall or stout pilots since they would find it difficult leaving the cockpit in an emergency. In this eventuality a handle on the starboard side of the windscreen is turned to jettison the canopy. The removable tailplane is fastened to the fuselage by a two-pin attachment. It is of single-spar type with short auxiliary spar and is entirely covered with a diagonal plywood skin. The elevator

is also of single-spar type but has a leading edge torsion box. It is fabric covered and is not statically balanced. The tailplane-fuselage joint is faired with sheet metal. The single-spar fin, which is plywood covered, is integral with the fuselage, while the rudder is similar in construction to the elevator.

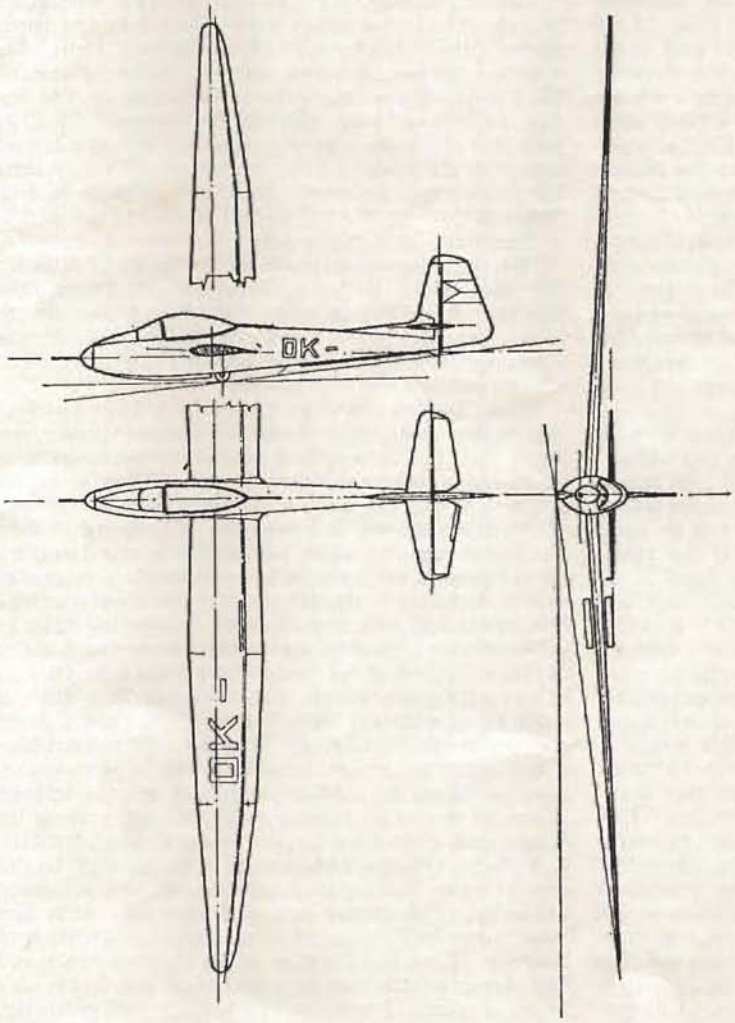
The rudder pedals are adjustable in flight and operate through cable transmission. The elevator controls are mixed, being rigid at each end and through wires in the middle. The aileron controls are of rigid type. The flaps are controlled by a handle on the port side of the cockpit and operate through a screw and chain transmission which is also connected to the aileron controls. This has the effect of lowering the ailerons in conjunction with the flaps, at first almost to the same extent and then progressively less. The lift flaps can be set at any position up to 20° but the mechanical indicator is only marked with full and half flap settings. A lever on the port side of the cockpit controls the braking flaps, and the elevator trimmer control is also on the port side of the cockpit. The instrument board contains a 30—150 km./h. A.S.I. driven from a Venturi tube, a variometer with range ±5 m./sec. and ±30 m./sec. readings, an electric turn indicator driven from pocket batteries, an artificial horizon combined with the turn indicator, and an adjustable compass.

The ' XLF-207 ' is cleared for normal use, but is classed as a special category aircraft and aerobatics are not permitted. The same restrictions on piloting it as apply to the ' Lunák ' apply also to the ' Laminar.' This means that pilots must have a minimum of 100 flying hours to their credit. Pilots weighing less than 70 kg. (11 stone) must carry ballast. The parachute must always be used.

Dimensions. Span, 15.6 m. (51 ft. 2 in.) ; Wing area, 15.2 m². (162.55 sq. ft.) ; Aspect ratio, 16.

Weights and loadings. Weight empty, 240 kg. (529 lb.) ; Useful load, 85 kg. (187 lb.) = pilot 75 kg. (165 lb.) and parachute 10 kg. (22 lb.) ; All-up weight, 325 kg. (716 lb.) ; Wing loading, 21.3 kg./m². (4.37 lb./sq. ft.).

Performance. Maximum permissable diving speed, 230 km./h. (142.83 m.p.h.) ; Maximum towing speed in turbulent atmosphere, 120 km./h. (74.52 m.p.h.), both with flaps up. With flaps fully down maximum towing speed in turbulent atmosphere, 100 km./h. (62.1 m.p.h.) ; Maximum towing speed in calm air, 140 km./h. (86.94 m.p.h.) ; Minimum rate of sink, 0.69 m./sec. (2.26 ft./sec.) ; Best gliding angle, 1:31 at 80 km./h. (49.68 m.p.h.) ; Minimum speed with flaps up, 65 km./h. (40.365 m.p.h.), with 15° flap, 63 km./h. (39.123 m.p.h.).



NEXT ISSUE

IT is regretted that several items have had to be held over until the next issue owing to a severe shortage of space, including ' Letters to the Editor,' and the ' Photographic Contest.'

The next issue of *Sailplane and Glider* May/June, will be published on June 1st. The contents will include :—

"The Sailplanes of the International Contest of Lezno, Poland,' by J. Noirtin (Captain of the French Team). This contest, held last year, is probably the most important International soaring event which has occurred since the end of the War, permitting the comparison of the different techniques of Central European countries.

' THE PLAIN MAN'S GUIDE TO GLIDING '

By Godfrey Lee. Copies of this instructive booklet are available from ' Sailplane ' Office, price 6d. per copy.

By WALT H. PRATT

FROM PARIS TO BIARRITZ

DURING the last week of May (22nd to 28th) the second French sailplane race in a straight line will be held. From the gliderport Chavenay, some 25 miles south-west from Paris, glider pilots from the different regions of France will try to race the 413 miles long distance separating Chavenay from the airfield of Parme, outside of Biarritz.

Contested by many, this race was the idea of Mr. Ch. Boissonade, the Head of the Information Section of the Sport and Light Aviation Service of the French Air Ministry. When he first set forth his programme he was told that it was impossible to fix a given date and have sailplanes try to cover big distances. The weather might be unfavourable, it would cost too much money, and the biggest obstacle which was put before him was the necessity of having to cross the region called ' Les Landes,' which had never been crossed by sailplane before. This region, between Bordeaux and Bayonne, is completely covered by fir-forests, villages are sparsely scattered and communications are very rare. In this region it is possible to walk ten to fifteen miles before coming to a village and then it was not sure if there existed a telephone. Not to speak of the uncertainty of finding a place big enough to land on. Open spaces can be found, but they are covered by a thick undergrowth and tree-stumps making it tough for the plane.

Mr. Boissonade overcame all obstacles finally and on June 26th, twelve pilots with their planes and their teams assembled at Chavenay. They were to become the guinea-pigs for this entirely new venture in soaring. Everything was against them—the opinion in the soaring world and . . . the weather. All they possessed was confidence in themselves and the spirit of adventure in their hearts.

A word about the rules. The race was to be done in three legs—Chavenay-Poitiers, 175 m. ; Poitiers-Bordeaux, 142 m. ; and Bordeaux-Biarritz, 96 miles. Two days were given each pilot to rally these intermediate airfields in flight. Should they not be able to do this they had to rally the field by the road. From three to five auxiliary fields were fixed from which the pilots could take off again should they not attain the intermediate airfield in one flight. But the pilot had to return to the nearest auxiliary field at his back. Thus it happened that some pilots who landed a couple of miles before the intermediate airfield had to go back for, sometimes, thirty miles in order to be able to take off again. This meant a very close co-operation between his team and a good organisation of communications. Take-off was done by air-tow to a maximum height of 2,300 feet. The pilots were rated by the flight hours needed to reach each intermediate airfield, 12 hours being deducted if the distance was not completed on the first day. Also taken in account was the accomplishment in flight of all three legs, or two, or only one.

As I said before, even the weather was against the competitors. In fact, the first day had to be cancelled as it was raining. The second day, though the sun was shining most of the time, a very strong south-west wind was blowing and the thermals were hashed and weak. This meant that the pilots had to fight against a headwind to accomplish the first leg. Only the Commander Fonteilles was able to reach Poitiers on the first day after a five-hour long exhausting flight. Two other pilots, the youngest French Diamond ' C ' holder Tahon and the multi-seat altitude record-holder (France) Combettes reached on this day the airfield of Chatellereault, 20 miles before Poitiers from where they were able to take off the next day to reach Poitiers. Thus only three pilots accomplished the first leg in flight, the other nine covering distances between 35 and 130 miles and doing the rest on the road. Some pilots took off three or four times after being taken back to auxiliary fields in record time.

The second leg was also won by Cdr. Fonteilles, but this time nine pilots were able to do the leg in flight, either on the first or the second time. The weather had not changed and was still unfavourable but the pilots used the experience gained on the first day and thus were able to do better. This leg provided also some funny incidents. One pilot landed almost in the mouth of Gironde river, while Combette telephoned to his team to pick him up in Bordeaux, Street N°, N° Y. He had in fact landed in the middle of Bordeaux on a rugby-field.

The third leg was reputed to be the most difficult. All pilots were, at heart, a bit afraid. During the briefing, special maps were distributed among the pilots on which were noted the clearings which the Fire-protection Service had made in the forests and which could be used for landings.

When the day was over, the myth of ' Les Landes ' was forever dead. Nine pilots had crossed them in one flight and the others had landed in them without breakage to plane or man. It was Tahon who was the first to put his skid on the runway of the airfield of Parme, closely followed by Combettes. Cdr. Fonteilles came in third but had won the 1st place in the general rating with a comfortable advance of over five hours. One pilot came back only on the last day as he had done so well in crossing that he got lost and landed a few miles before the frontier of Spain. (He had no doubt some preconceived idea of the attraction of the Spanish girls and did not want to miss them). Mr. Nessler, who took part in the race with the ' Flying Wing AV-36 ' related how a well-minded farmer had offered him a jerry-can of gasoline when he landed in a field near a village. When he saw the farmer coming running waving his hands and crying madly, he was already afraid he had made him mad because of the damage to his crop of corn. Instead he was embraced and welcomed excitedly. The farmer was so happy at seeing him land in *his* field he didn't even pay any attention to his crop. They had heard so much about the race and had discussed the disappointment of not being able to see a plane. From the point of view of publicity,

the weather had made it possible to make soaring very popular, which would not have been the case if the weather had been favourable and the pilots had done all the legs in one stretch.

That, in short, is the story of the first sailplane race on a determined date in France and probably in the world. Many had to swallow their words while it gave to the pilots a theme for discussion which lasted for a long time. It made it possible, actually they made it possible, that this race will be from now on a yearly event. It is hoped that already this year there will be some foreign pilots who will take part in it.

(*English sailplane pilots wishing to take part in this year's event should write to ' Sailplane ' now and we will help to make the necessary arrangements through Walt Pratt. A twenty-minute film of last year's race is also obtainable free of charge to those interested.*—Ed.).

Preliminaries to the World Soaring Championship

FRANCE having won the last World Soaring Championship in the single-seat class, it is her task to organise the next event. As is the case with every country which intends to send pilots and material to it, 1955 will be used to determine the pilots who will defend the colours of their nations. Thus it is also in France and from June 26th to July 10th, the French National Soaring Championship will serve to select the French Pilots for 1956.

But the organisers intend to make this the main event of the year and have therefore announced the Air Festival of Poitiers. During this festival, the following exhibitions will be held.

The French National Soaring Championship.
The French National Parachute Championship.
The World Model Championship.
An International Match in all three categories against nations as yet unknown.
An Exposition of new and second-hand light aircraft.

All these events will take place in the period covering June 27th to July 17th on the airfield of Poitiers, 175 miles south-west of Paris. Exposition stands, 3,000 beds in hotels, schools, boarding-houses, a camping-ground will be put at the disposition of the visitors who intend to make Poitiers their holiday-goal. Meals at reasonable prices will be served by a restaurant on the field. Excursions to the near-by famed Chateaux, dancing-parties, etc. will be organised to show the visitors the beauty of France and to while away the evenings.

Extracts from the rules governing the National Soaring Championship.

The Championship is open to single-seat sailplanes.

The following tests are foreseen :—

(a) Obligatory : Free-distance flight.
Speed-race on a straight line or fixed goal out-and-return set by the jury or speed-race to a goal fixed by the jury and return to the point of departure.

(b) Set task : Race on a triangular course.
Distance on a direction set by the jury.

The number of participants is fixed at 30.

The contest is open to French pilot holders of the Gold ' C,' and in some cases to holders of the Silver ' C ' and one Gold ' C ' leg.

The pilot has to furnish the car and the transport wagon as well as two assistants.

The necessary gasoline for the transport will be furnished by the organisers.

The pilots and his assistants will be housed and fed free of charge by the organisers.

Latest Soaring News from France

ON January 30th, 1955, in the amphitheatre of the Sorbonne, a big aeronautical exhibition was held. This exhibition was organised by the National Aeronautical Federation and presided over by Mr. André Moynet, State Secretary to the Cabinet of the Premier, Mr. Laurent Eynac, First French Air Minister and Honorary President of the National Aeronautical Federation, as well as other high personalities of French aviation.

During this exhibition, prizes and trophies were distributed among those who, during the year 1954, proved themselves the best in all categories of the French aeronautical sports.

Especially applauded were : GERARD PIERRE, who won the last World Soaring Championship ; SAM CHAZAK, who defended valiantly the French Team during the World Parachute Jumping Championships winning the third place after the Russians and Czechoslovakians ; BERLIN, who won the National Aerial Acrobatic Championship ; Miss DOMERGUE, who won the Air Tour of France before more than 30 competitors, the majority of whom were men ! while during a moving ceremony, amid a great silence, the mother of BERTRAND DAUVIN received the trophy which her son had gained with his two-seater World Record of Duration, from the hands of Mr. André Moynet.

Four new films were projected :—

The Sailplane race Paris—Biarritz.
The World Parachute Jumping Championship.
The National Aerobatic Championship.
The Air Tour of France 1954.

(*Please write to Sailplane office for details of the free loan to clubs and organisations*).

The next sailplane race Paris—Biarritz will be held during the last week of May, while the National Soaring Championship will take place at Poitiers from June 25th to July 17th, 1955. A very interesting programme, of which I will give details later, will be organized at that time.

At both contests, foreign competitors will be able to take part.

A French Soaring Mission in Africa

AS early as October 1952, the project of a Soaring Mission in Africa was submitted to the Director of the Service of Light and Sport Aviation. The interest which this prospection by sailplanes of the tropical atmosphere would present was retained and Mr. Abrial was charged with the realization of the project.

Mr. Abrial got in contact with the Director of the Civil Aeronautics Dept. of Brazzaville, Mr. Agesilas (who is now the Director of the Service of Light and Sport Aviation in Paris) as well as with the President of the local Aero-Club. Both were eager to facilitate the realization of the project but two difficulties came up. These difficulties concerned the transport of the material to the proposed site as well as the procurement of the travel expenses.

Not until February 1954, were all difficulties settled and on the 2nd of that month the mission was able to leave. It consisted of Mr. Abrial as the only person delegated from Paris and who would work with the personnel on the site. He was accompanied by one two-seat sailplane of the type ' C-800,' while the second plane, a single-seat sailplane of the type ' Emouchet SA-104,' had to follow a month later due to lack of space in the carrier plane.

The objects of this mission were as follows :—

(*a*) *Aerological and Technical Aspects.*

The flights effected in liaison with the meteorological services would bring about an interesting contribution to the knowledge of the tropical atmosphere ; the various types of aviation—military, transport, private, etc., would therefore benefit from this information.

Observations concerning the durability of light material (wood and cloth) submitted to excessive climates presenting great variations in temperature and humidity.

(*b*) *Practical Aspects.*

To offer a sporting and technical activity to the young French element living in the French African Territories and to guide them towards aeronautical vocations which are particularly precious where the plane is the only means of rapid liaison between the inhabited regions.

Training of the pilots of the Air Force and which are already holders of sailplane licences and teaching by them of the first local pupils, military or civil.

(*c*) *Psychological Aspects.*

Demonstrating to the French nationals overseas that they are not forgotten by the mother-country, which, on the contrary, desires to associate them with the most recent forms of aeronautical sport and education.

National prestige before the natives who would see in the flight of the sailplane another proof of the superiority of the civilized peoples.

Prestige also in the eyes of the nations administrating the neighbouring territories and which would thus show the initiative of the French people.

Due to the certain and effective collaboration which would be given by the Aero-Club of Brazzaville as well as the fact that the capitals of French Equatorial Africa (which groups 5,000 Europeans) is the seat of the administrative organisations, it was decided that the first experiences would be held there. In the meantime, a substantial study by MM. Lamoureux and Denis on " The Possibilities of Soaring Flight in the Tschad Region " was published and it was resolved that tests would also be made at Fort Lamy.

These tests would be all the more interesting as the desert climate, dry and torrid, of the Tschad Region is very different from the one reigning in the Congo, the latter being less hot, but more humid and the seat of abounding cloud formations.

It would have been interesting to be able to dispose of sailplanes particularly resistant and eventually equipped with oxygen and blind-flying instruments in order to prospect all the tropical and equatorial air currents. But no plane of such quality being available in France, the material which was taken along by the mission consisted of : (a) 1 two-seat sailplane ' C-800 ' (No. 224, revised after 680 flight hours and 2,750 tows) ; (b) 1 single-seat sailplane ' Emouchet SA-104 ' (No. 266, new).

To these sailplanes must be added the necessary accessories : barographs, ropes, hooks and rings, materials and products for slight reparations.

The tow-planes (piloted either by qualified pilots from the Aero-Clubs or by Mr. Abrial) were of the type ' Stampe ' and with which these clubs are equipped. Special tow hooks, brought along for this purpose, were installed on them.

The test-flights began in Brazzaville on Feb. 21st and ended on April 15th, 1954. The Aero-Club of Brazzaville is presided over by the Regional Director of Air France, Mr. Gagey, who is holder of the Silver ' C ' and is an authorized Gliding Instructor. About 50 members compose the club.

The Aero-Club is installed at the south-east end of the Maya-Maya airfield (4 km. from the centre of Brazzaville) in proximity of a grass runway measuring 1,200 × 100 m. and which is parallel to the beton-runway of the airfield on which the commercial and military traffic takes place. The club possesses two hangars 20 × 10 m. and a comfortable clubhouse.

Brazzaville, which has about 80,000 inhabitants of which 5,000 are Europeans, is situated on the west bank of the Stanley-Pool (widening of the Congo-river) at longitude 4° 20′ S. and latitude 15° E. in a flat green region bordered by small valleys. The equatorial forest lies about 450 km. north of the town.

The mission stayed at Brazzaville during the rainy season during which on most days the weather was found to be as follows. In the morning, low cloud base and the sky entirely covered by Ac and Sc and sometimes foggy. Around 10 a.m. or 11 a.m., the sky cleared and the cumulus began to form, forming ever widening clear stretches. The cumulus clouds became ever thinner to make place finally to a clear blue sky, but mostly they stayed and developed while one or more powerful cumulo-nimbus formations appeared, often from the south-east but also from other directions. The cumulo-nimbus are announcers of strong tornades or stormy showers, accompanied by

violent wind gusts. Outside of these tornades, the wind on the ground is always zero or very weak.

When on the contrary the sky is clear in the morning it happens often that it changes completely around 12 or 2 p.m. and that the flights are very mediocre. In any case, in the limits of the observations made during the stay of the mission, the practical cloud bases are only medium-high, and the maximum altitude reached, below cloud base, was only 1,650 m.

A zero or weak instability developed around 10-11 a.m. At that time, the low cloud base rose and cumulified : the updrafts seemed to be comparable to those in the Paris area. The variometer indicating 1 to 2 m./sec. in general, rarely 3 m./sec. and exceptionally 3.70 m./sec. The utilisable updrafts began mostly around noon and ceased to be utilisable between 4 to 5 p.m. This happened not only because of the approach of the evening, but often prematurely because of the tornades.

The cu-nimb develop slowly during the day to bursts into tornades between 4 and 5 p.m. They seem difficult to exploit for soaring flights, firstly because of the intensity of the currents which reign therein and also because of the mass of compact rain which connects it to the earth over great stretches and sometimes during several hours. However, a fortunate difficulty seems to hinder the accidental penetration into such a tornade : the initial instability ceases rapidly at the approach to make place to a calm zone without updrafts. The pilot has to land whether he wants to or not before the arrival of the tornade. It should be necessary to confirm this fact as it happened several times. It would in fact constitute a protection.

During the whole duration of the tests at Brazzaville, the intertropical front, meeting line of the Alizes which oscillates between the tropics in the seasonal cycle, was found distinctly to be north of Brazzaville, at 1,100 km. during February, 1,200 km. at the beginning of April. The mean temperature was from 30° to 32° Celsius (minimum 25.6° on Feb. 23rd, maximum 34° on March 28th). The relative humidity on the ground varied between 44% (Feb. 27th) and 77% (Feb. 23rd), i.e., a mean humidity of 55 to 60%.

Flights were made from Feb. 21st to April 20th : 53 days of which 43 were utilisable (83%). On 33 days (63%) the duration of the flights were over 30 minutes ; on 20 days (38%) over one hour ; on 8 days (15%) over 2 hours. Three flights over 5 hours (max. 5 hrs. 04 mins.) were made on three distinct days. These flights were all done in thermals over flat ground and always in clear sky (no cloud flight).

Twenty flights of over 1,000 m. altitude (max. 1,650 m.) were realized on 16 different days (30%).

The regularity of these flights show that the region of Brazzaville should be very suitable for the establishment of a training centre. 120 flight hours and 182 tows were effected with only one two-seat sailplane during 53 days and one single-seat sailplane during 36 days. The mean duration of these flights made at Brazzaville is 39 minutes and is comparable to the one of a good club in the Paris regions which possesses performance sailplanes.

On Feb. 27th, Mr. Abrial in the two-seat sailplane was able to cross the Stanley Pool and reach the banks of Leopoldville and return to Brazzaville, all between an altitude of 1,400 to 800 metres.

On March 20th, Mr. Balagna with the single-seat sailplane ' Emouchet ' beat the local duration record with 5 hrs. 04 mins., his mean altitude being 1,400 m.

The two-seat sailplane was sent on April 15th, by ' DC-4 ' to Fort Lamy, while the single-seat plane participated from April 17th to April 19th in the Rally of Mayumbe, organised by the Aero-club of Pointe Noire. The sailplane was transported by ' DC-3 ' to the airfield of Pointe Noire. On April 20th, the mission left for Fort Lamy in the Tschad Region to effect other tests.

The flights began on April 21st, to end on May 24th for the ' C-800,' and on June 12th for the ' Emouchet,' when these planes were respectively sent to Brazzaville where they are now stationed.

The Aero-club of Fort Lamy was founded in 1950 by MM. Lamoureux and Denis. In 1952 they received from the Service of Light and Sport Aviation an aeroplane of the type ' Stampe ' with which they train the local pilots.

In order to liberate the tests from the difficulties which would be occasioned by the proximity of the commercial traffic, Mr. Lamoureux who is the President of the club, had levelled two runways near Fort Lamy in the desert. These runways have a length of 1,500 m. and a width of 30 m. At their intersection, a cover from steel tubes and overlaid by straw mats was erected and in which were housed the two sailplanes and the ' Stampe ' which had been equipped for air-towing.

In fact, the tornade season being for more than a month in advance during 1954, it was not possible to utilise fully this cover as it protected the material more from the sun than from rain and storms. Most tests were made from the commercial airport where the planes were housed in the military hangar. The unique runway, beton-covered, obliged very often the tows to be made by rather strong cross-wind.

Fort Lamy (12° latitude N. and 15° longitude E.) is a town of 27,000 inhabitants of which 2,500 are Europeans. It is situated on the north bank of the River Chari where it joins with the River Logone. These rivers have very little depth and possess multiple sandbanks during the dry season. They change their aspect with the seasons and the floods. All the completely flat region, argilous and sandy, is entirely covered with thornbushes and thinly-scattered bushes which is characteristic of the brushy savanna ; it forms thus a transition between the equatorial forest, dense and humid with enormous trees, and the real desert of Saharian type ; the savanna of the Tschad is however nearer to the latter.

The heating of the sandy ground by the sub-tropical sun causes powerful convection-type atmospheric movements and the extreme dryness of the air in November and June in principle, gives almost always a cloudless sky which can be, from March on, sometimes sealed by a heat-fog, caused without doubt by the impalpable dust elevated from the ground. On the contrary, in the rainy season (from July to October) the sky is daily filled by powerful cloud formations with a great vertical development which reach 10,000 to 12,000 metres and which dissolve into violent tornades, generally of short duration.

Due to a six week's advance of the normal season,

the mission stayed at Fort Lamy on the limit between the dry and the rainy season and could thus not profit by the best conditions of the former.

The intertropical front was found to be already in the North on the arrival of the mission but it passed to the South from April 27th to May 4th. It went back to the North on May 6th, returned to the South on May 7th and 8th to finally fix itself definitely in the North from the 9th on. This evolution gave in the beginning the characteristics of the dry season, favourable but too late to be able to use the best conditions. The final passage to the North brought on the tornade season.

The mean temperature taken at 2 p.m. was 38.5° C. with differences ranging between 24.8° to 43.2°, the mean humidity was 23% with a minimum of 4% and a maximum of 70%.

The instability, utilisable for sailplanes, did not begin any earlier than at Brazzaville, i.e., between 10.30 and 11 a.m., but, on the contrary, it was possible to stay aloft more than half-an-hour after the sunset.

The mean strength of the updrafts was found to be 3 m./sec. and reaching 5. It was possible to release from 150 to 200 m. above ground and never more than 350 m.

During 31 days of flying, 30 (97%) permitted flights. 75 tows were made totaling 144 hrs. 06 mins. 20 flights and 50 hrs. 16 mins. with the ' C-800,' and 55 flights and 93 hrs. 50 mins. with the ' Emouchet.' The mean duration of each flight is thus 2 hrs. 30 mins. with the two-seater, and 1 hr. 42 mins. with the single-seater. All tows were made by aeroplane.

Though the days at Fort Lamy, as at Brazzaville, have a duration of about 12 hours, the longest flight made at the former was 7 hrs. 13 mins. (against 5 hrs. 04 mins. at Brazzaville) with Mr. Denis in command of the ' Emouchet.'

Other flights which were noted were the following :

6 flights from 6 to 7 hours.
4 flights from 5 to 6 hours.
3 flights from 4 to 5 hours.
3 flights from 3 to 4 hours.

The best height was reached by MM. Denis and Lahaye in the ' C-800 ' with 4,300 m. Other notable altitude-flights were the following :—

1 flight of 4,110 m. (Mr. Denis in ' Emouchet.')
3 flights from 3,000 to 4,000 m.
21 flights from 2,000 to 3,000 m.
10 flights from 1,500 to 2,000 m.

It has to be underlined that all these flights were made by clear sky, cloud flying being not possible as the planes were not equipped with the necessary instruments. At the end of the stay, however, some flights were made below cloud formations, generators of the tornades.

The whole of the flights realized at Fort Lamy represent :—

4 Gold ' C ' Altitude Legs.
10 Silver ' C ' Duration Legs.
29 Silver ' C ' Altitude Legs.

and practically 75 ' C ' Certificates, i.e., equal to the number of flights made.

Several interesting phenomena were observed during the stay at Fort Lamy. Many soaring birds abound in this region and at the beginning the pilots were troubled to see them arriving from great distances to fly around the sailplane at less than a metre's distance, fixing the head of the pilot. Certain of these birds measured from 3 to 4 metres in wingspan and weighed 20 to 30 kg. Finally these birds became used to the sailplanes and whenever they saw one beginning to spiral they accompanied it until 1,000 to 2000 metres, and even to 3,000 metres. Of course, they rose much quicker than the plane. But they were never fooled when, to mislead them, a pilot began to spiral in a downdraft.

It was also found that these birds flew distributed over great areas on a horizontal line, more or less straight. From one end to the other of the horizon, these birds alone or in groups, were strung out and it resembled a boulevard. It was noted that sailplanes could also utilise these updrafts. These updrafts seem to be similar to the cloud streets . . . but without clouds since the dryness of the air does not permit the condensation into visible vapour. This phenomena was observed several times during the tests, at altitudes lower than 1,000 metres.

Also remarked was that the updrafts weakened and became rare after one or two hours of flight in the morning, leading to a premature landing. In the afternoon it was possible to stay up again. Since not enough tests were made it was not possible to decide whether this was due to faulty piloting, isolated cases, or whether there exists really an aerological reason which reduces, during noon-time, the instability of the air-masses.

It was noted also that the height of the top of the updrafts seemed to vary. Thus during one or two hours, only 1,500 metres could be reached while later it was possible to reach 2,500 m., for instance. This could be explained by the existence of a stable inversion layer which are pierced, by inertia, by the inferior air masses which are unstable and which thus reach another superior layer, also unstable.

No distance flights were made at either place as the regions surrounding these sites are of a nature to render very difficult the retrieving of the sailplanes.

All the observations made at the different places should be confirmed by another mission equipped with one or two high-performance sailplanes.

Nevertheless, the interest which was shown by the native population as well as by the Europeans residing there, should make a continuation of the tests and the establishment of permanent training centres desirable and worthwhile.

WALT H. PRATT.

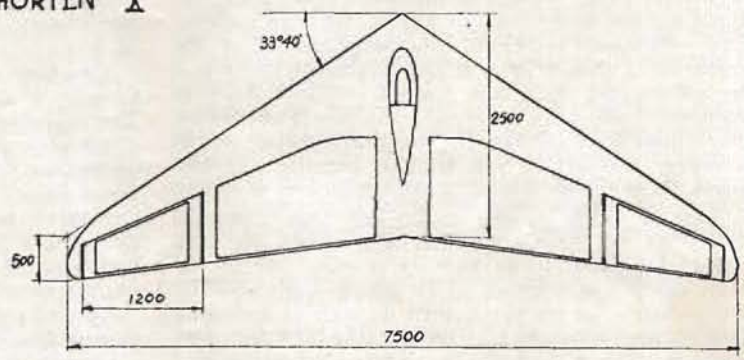
(These details were extracted from the report by Mr. Abrial on the ' First Experiences of Soaring Flight in French Equatorial Africa).

TEST FLIGHTS OF THE HORTEN-X by ROGELIO BARTOLIN

IN an earlier issue I told you about our first trials of the ' Flying Winglet '—now I propose to tell you something of our first aerotows.

On the 2nd May Tacchi, Figueroa, and I met at J. Celman and got everything ready. A few days earlier we had fitted a parachute, a Switlik, extra flat, back-type, with the harness fastened to the envelope by two clips. This envelope is attached horizontally to the fuselage by two rubber bands, just behind the longeron and below the plywood strip forming the join in the centre of the wing. To the parachute harness we have added two straps which join and terminate in a clip. When the pilot gets in he fixes this to a safety-clip on the chest-rest. To get out of the cabin the pilot only has to turn a catch and he is freed, but as the main part of the parachute remains fixed to the sailplane it is necessary each time he enters the cabin to attach the two clips of the harness to the rings of the parachute.

HORTEN X



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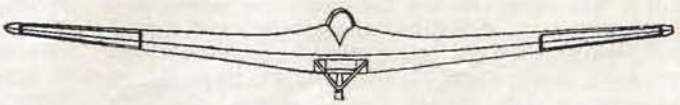

FROM BEHIND

As well as the air speed indicator we have now fitted a variometer, but both were directly connected to the cabin in a manner that we have since learned made them rather unreliable. We did it like this because Dr. Horten had explained to us that otherwise to get a good static pressure we should have to fit a tube that would project more than a metre from the front of the leading edge, owing to the large chord of the wing.

We also fitted a chin rest. This is important, because without one the neck muscles soon tire a few minutes after taking up a prone flying position.

Everything was ready and we went out on to the field. Eynard was ready to launch me, so after agreeing our take-off procedure, I settled myself into the cabin and signed that I was ready. The rope tightened, we began to slide over the ground, the speed crept up till the controls began to respond and immediately we took off. Speed increased until the ' Fleet ' also took off. From now till the moment of release there is little to report for the launch was perfectly normal, as indeed were each of the succeeding ones. By this I mean that there was nothing more noticeable than there would have been with a ' Grunau Baby.' Only two things were different—one, the prone position, and the other the speed of ascent, which was notably faster than that of a ' Grunau.'

The controls responded excellently and I could go wherever I liked with a slight movement of the stick. The speed of the launch was between 80 and 90 km./h.

The prone position is comfortable enough. Up to now we have only done flights of half an hour (from the time of releasing) so that it is not possible to report on this very fully. On the first flight the chin rest was a little loose and when I leant on it I could no longer see the towplane, which stayed below the horizon throughout the launch. To see it I had to hold my head up and this was tiring. In later flights we lifted the chin rest a little and all went well.

As I had no altimeter I had arranged with Eynard to give me a signal to release when we got to 800 metres, so when I saw his sign I released. I tried her in level flight at speeds from 50 to 100 km./h. and all went splendidly. The controls were easy and she responded at once. There was no tendency to turn or to bank to either side. Only when I flew around 100 km./h. did the stick tend to go forward.

I tried various turns. In this machine turns are very easy. All you have to do is move the stick towards the direction of the turn and immediately she banks and begins to turn herself. This synchronisation obtained by the Frise effect of the lifting aileron has proved so good that so far it has not been necessary to modify it at all. In a rapid change of direction she yaws a little to begin with but at once settles down.

Visibility is pretty good and has the advantage that one can see directly below through the celluloid aperture in the lower edge of the wing.

After a few more turns I had lost sufficient height to come in and land.

From then on our early aerotows were made in a completely calm air. I would first of all make a trial flight in a ' Grunau Baby ' to be sure, and this is necessary in trying out a prototype when one doesn't know how it will behave and especially so when—as in this case—the machine was never intended for aerotow anyway.

My second test flight was on the same day and

this time we tried somewhat tighter turns during the aerotow. The chin rest had been placed higher so that now I could see the tug plane without having to lift my head. At 800 metres I cut loose again and built up my speed to 120 km./h. without noticing any vibrations either of the sailplane or of the controls. I then tried out the minimum speed and by pulling the stick hard back I only got down to 50 km./h. which is not really the minimum speed. We will have to increase the possible elevation of the ailerons, for at 50 km./h. the controls respond perfectly and there is no indication whatever of a stall.

Then I tried a slow turn. For this I moved the stick till the inclination was about 30° and pulled her nose up as high as possible. With the stick centred she turned at 60 km./h. quite steadily through five or six turns with no sign of deviation and no need to correct. Each turn of 360° lasted 12 seconds. This time could be reduced by flying at a slower speed but before this we shall have to adjust the ailerons.

All was going well and I decided to try a loop. I dived to 110 km./h. and pulled the stick back gently but it was too gentle and the loop hung inelegantly. I got past the vertical but then stalled and turned rapidly round the transverse axis till the nose pointed vertically downwards. There the turn stopped and she began a dive. As the speed built up I lifted her nose slowly and at 120 km./h. pulled the stick back for another loop. This time one might almost call it a proper loop though she was still hanging a bit. We had tested the mainspar in the workshop and it had seemed strong enough but in these first loops I thought I had better go a little gently and not subject it to too great accelerations, so I did a few more turns and came in to land. On the way in I tried slight inclinations of the stick to right and left ; in a machine with co-ordinated controls like the ' Flying Winglet ' this has the effect of a sideslip such as we practise in sailplanes without brakes.

As the ' Winglet ' has simplified controls these cannot be crossed to sideslip, but if one tilts the stick alternately and definitely from side to side the machine oscillates around the longitudinal axis. If this is done relatively quickly the Frise effect is insufficient to start a turn, but while the general direction is maintained the turbulence set up by the sudden movements increases the speed of descent and is thus equivalent to a sideslip. This is not at all dangerous as I have proved that even when the inclination is over 30° the sailplane is so little crossed as not to be unstable. What one has to watch is the line of flight, because a stall at that angle and height could be unpleasant, just as it would be in a hanging sideslip. In a gusty wind, too, it would be well to come in straight from sufficient height since a gust could place the sailplane in a dangerous position.

A week later—that is to say, on the 9th May—we returned to J. Celman to make a series of comparative flights between our ' Flying Winglet ' and a ' Grunau Baby ' with enclosed cabin. An enclosed cabin can improve the angle of glide of a ' Baby ' from 1:17 to 1:19. Of course one should really be able to make more accurate measurements but ours was rather guesswork, based on some tests carried out in Finland with a ' Pyk-5,' a machine similar in characteristics to our ' Grunau.' In that they had improved the performance from 1:16.5 to 1:19 by streamlining the cabin, so I put the performance of our ' Grunau ' with enclosed cabin at an optimum of 1:18.

This time we took off in double tow, myself in the ' Flying Winglet ' and Eynard in the ' Grunau Baby.' The tug pilot was Rodriguez. We used towropes of different length, 80 metres for the ' Baby ' and 120 metres for the ' Wing,' so that throughout the tow I was behind and to one side. It was an interesting experience and I was more convinced than ever of the suitability of our machine for aerotow. I only had to move the stick very little to be able to keep my place well to one side of the aeroplane.

Eynard and I had previously agreed that he should release first and that we would do simple glides at set speeds, beginning with the ' Grunau's ' minimum, so at 650 metres he released and I followed. We flew south, 30 metres apart and at a speed of 50 km./h. At once I saw that the ' Baby ' had less sinking speed and was staying above. We increased speed at 10 km. a time but as the ' Baby ' was now above me it was impossible to tell whether the sinking speeds were relatively increasing or diminishing. We got to 80 km./h. and the difference still seemed to be in favour of the ' Baby.' As we had little height left we separated and I landed a little behind Eynard after he had done a few aerobatics on the way down.

Next I had another double tow, this time with Picchio, and we released at 1,100 metres. This time we did straight glides towards the north at speeds from 50 km./h. to 80 km./h. We flew 30 metres apart as before and again the ' Baby ' stayed higher at 50 km./h., but this time Picchio sideslipped off his extra height and we tried again at 60 km./h. and so on up to 80 km./h. where we had to break off and land.

The third launch was with Eynard again. We released at 900 metres and tested speeds from 80 km./h. to 100 km./h. At these speeds the advantage of the ' Baby ' had appreciably decreased. When we flew at 100 metres the ' Grunau ' was a bit higher and behind me so I could not see very well, but both Eynard and I thought the difference in height was not increasing.

The last flight of the day was with Rodriguez. We went up to 1,000 metres, started our glides at 100 km./h. and increased by tens to 140 km./h. At this speed my machine flew very sweetly and with no vibrations of any kind, but the tendency of the stick to pull forward had noticeably increased—so much so that I think if I had let go at that speed the glider would have gone into a vertical dive at once.

In this speed range the two machines were on a par, but before drawing any positive conclusions I must point out that these few tests can only give a very approximate idea of the qualities of the ' Flying Winglet ' and then only of the earliest stage of our prototype.

Although the air was calm—a very necessary condition for comparative flights like these—one should really do many more similar tests before drawing any conclusions. Also these should take place from greater heights so as to give more time

for comparison, for from 500 to 300 metres one can only continue if the machines are already well placed with respect to the landing strip, and from 300 metres down comparisons are impossible. Roughly we can give our results as follows : Up to 100 km./h. the angle of glide is better in a ' Grunau ' with enclosed cabin, though at higher speeds the advantage lies with the ' Winglet.' This is not really an advantage, though, for it is not worth flying the ' Baby ' at those higher speeds over a distance unless, for example, one is in a wide zone of up-currents such as a storm front. However, it did show that the performance curve of the ' Winglet ' is flatter than that of the ' Baby ' and this is interesting, for our prototype has a fixed skid and also an opening in front of 60 cm. × 80 cm. through which the pilot enters. These two factors obviously affect the speed of descent, since they produce appreciable turbulence. It is evident that one could much improve the performance by closing the opening with a light panel and by fitting some sort of retractable skid, when the ' Winglet ' should have the advantage at anything over 70 km./h.

As soon as our test flights have finished and we have been granted a Certificate of Airworthiness we will get busy on the improvements. As a result of our first flights we have decided on the following modifications :—

Enlarging the cabin by lifting the curved perspex so as to allow more movement on the part of the pilot. Because it was too small Dr. Horten's test pilot, Scheidhauer, could not get into the cabin.

The front part of the curve also should be lowered a few centimetres to improve the visibility, especially on tow.

The windscreen will be redesigned, making it longer towards the back. This will lessen the instability produced by a surface below the centre of gravity when there is a gust of wind from the side.

We must increase the upward capacity of the ailerons so as to be able to fly more slowly, especially in turns.

Dr. Horten tells us that to lessen the tendency to dive that is noticeable at speeds higher than 80 km./h. we must add to the ailerons aluminium flaps 30 cms. wide which will project 6 cm. from the trailing edge and have a downwards inclination of 20°.

Royal Patronage for British Gliding Association

H.R.H. THE DUKE OF EDINBURGH has graciously consented to become the Patron of the British Gliding Association. This was officially announced by Mr. Philip Wills, C.B.E., Chairman of the Association, when he arrived at Southampton (31-32 Old Docks) on the S.S. *Ruahine*, on Monday afternoon, 21st February, after a gliding and business trip to Australia and New Zealand.

An official of the Association said in London : ' The civil gliding clubs of Britain have struggled since the War without any subsidy, although the number of young men and women being trained as pilots every year is fast increasing. The Association is greatly honoured by this example of Royal encouragement, and it is hoped that it will result in more people becoming airborne.'

Mr. Wills, who lives at Henley-on-Thames, became the World Gliding Champion during the competitions in Spain in 1952, and was runner-up in the 1954 Championships.

It will be remembered that Mr. Wills recently broke the British height and gain of height gliding records whilst in New Zealand. He was forced to abandon further climb on reaching 30,400 feet, as the extreme cold broke his perspex cockpit cover. Mr. Wills came within 2,000 feet of the World record.

July 2nd-14th—22nd National Soaring Contest and 25th Anniversary of the First National Glider Meet—Harris Hill, Elmira, N.Y.

THE 22nd National Soaring Contest will be held July 2nd-14th at Harris Hill, Elmira, N.Y. Leading glider pilots from all parts of the U.S. will bring their sailplanes and ground crews to compete for the National Soaring Championship, and for other notable awards to be presented for proficiency in various phases of soaring.

Elmira, the cradle of gliding and soaring in the U.S. will celebrate the 25th anniversary of motorless flight during the Nationals this summer. The three-day weekend, July 2nd-4th, will be marked by special Silver Jubilee events, with opening ceremonies of the contest scheduled for July 4th, and contest competition starting July 5th.

The National Glider meets were suspended during World War II, which accounts for this being the 22nd contest as the second quarter-century of gliding and soaring opens.

Tremendous progress in motorless flight has been made in the 25 years since the first national glider meet was held here. Warren Eaton's flight to a bit over 2,400 feet set an altitude record in 1930, but now this is regularly exceeded on any normal Saturday afternoon of glider flying, while especially-equipped sailplanes now have soared to over 44,000 feet above sea level. A quarter-century ago 32 miles was considered a record cross-country flight for a glider, but now distance flights of more than 500 miles have been made by sailplane pilots.

To make it easier for outstanding soaring pilots to attend the national meet here this Summer, a travel fund is being established, to give an assist to the ten top pilots of the past three national contests, in their transportation to and from the contest site.

Sanctioned by the Soaring Society of America, the 22nd Nationals will be sponsored by the Elmira Area Soaring Corp., the local, non-profit organization which instigates and supervises soaring activities throughout the year at world-famed Harris Hill, site of most of the previous national glider meets.

The British Gliding Association

(Extracts from The Chairman's Reports given at the Annual General Meeting, held at Londonderry House, Park Lane, W.1, on March 12th, 1955).

1954 was a momentous year for British Gliding in that for the first time the World Championships were held in this country. Nineteen nations competed with forty-three gliders. Although the weather was extremely bad the minimum conditions for a Championship Meeting were completed. The opportunity to get to know our other competitors was greater than ever before and many firm friendships resulted.

At the same time the Fifth O.S.T.I.V. (Organisation Scientifique et Technique Internationale du Vol a Voile) Congress took place at Buxton.

MEMBERSHIP

Our Membership is now (1953 in brackets) :—

Full Member Clubs..	16 (16)
Associate Member Clubs	12 (12)
Private/Group Owner Members ..	29 (31)
Individual Assoc. Members ..	34 (32)

Private/Group Owner membership now exceeds 25 and these members accordingly nominated their representative, who was elected to the Council at the 1954 Annual General Meeting.

OPERATIONS

At the time of writing 24 Clubs have completed the Annual Questionnaire and report that from their club sites they have flown a total of 10,592 hours involving 60,203 launches. This shows an increase of 765 hours and 8,410 launches over 1953. The R.A.F.G.S.A. Clubs (759 hours and 9,493 launches) and R.N.G.S.A. (106 hours, 1,234 launches) are included in these totals. These returns cover all active U.K. Clubs except the Yorkshire Gliding Club who were included in the 1953 totals.

Over and above these figures the A.T.C. report 7,497 hours with 99,575 launches, against 7,346 hours and 96,649 launches in 1953. The 2nd Tactical Air Force Clubs in Germany report 1,027 hours and 15,037 launches.

In spite of the generally bad weather throughout the Summer, it has been an active year and the total number of certificates issued by the Association shows an increase of 241 compared with 1953.

Certificates were issued as follows (1953 figures in brackets) :—

'A' Certificates	1,712	(1,591)
'B' Certificates	1,726	(1,662)
'C' Certificates	328	(272)
Silver 'C'	34	(36)
Gold 'C'	1	(3)
Diamond Legs	—	(2)

These were made up as follows :—

	A.T.C.	*Civilian*	*Service*
'A'	1,350	207	155
'B'	1,366	200	160
'C'	97	168	63

FINANCE

While the administration expenses have shown very little increase over those of the previous year, the income derived from the issue of certificates and other normal services provided by the Association has been well maintained and have shown a small profit. This profit has, however, been greatly added to by the sale of articles of equipment to members, the increased sales of 'Gliding' and other profitable activities of the Association.

The increase in the issue of certificates during the year was 6.4%. 74.4% of the certificates issued went to the A.T.C., 15.03% to the civilian clubs, and 10% to service clubs. 110 Certificates of Airworthiness were issued or renewed and 28 Inspector Approvals were granted.

Great credit is due to the Secretariat for the efficient management of the financial affairs of the Association and for their constant attention to the need for economy. Without this care the satisfactory situation as revealed by the accounts would not have been possible.

I would like to take this opportunity of thanking our Hon. Treasurer, Mr. Basil Meads, for his continued and successful efforts to keep the finances of the Association on a sound foundation.

KEMSLEY FLYING TRUST

During the year 1954, five of the established Gliding Clubs received additional loans and two new clubs were approved for loans. Seven Private Owner Groups were also assisted in the purchase of sailplanes.

The need for the creation of new soaring sites is a matter in which the Trustees are particularly interested and negotiations at present in hand on behalf of two clubs give rise to hopes that 1955 will see the establishment of two more permanent sites equipped with the necessary hangars and buildings.

Such major items of expenditure have caused the Trustees to announce that in future they may not be able to approve loans for sailplanes and equipment as readily and on the same scale as they have done in the past. This does not mean, however, that they are in any way reluctant to give careful consideration to the circumstances in which applications are made.

I think it will be agreed that the need for permanent sites for the Gliding Clubs is very great, and we are most fortunate that through the generosity of our President, Lord Kemsley, assistance in this important matter is made possible. As will be seen later in this report, the present position as regards security of tenure in the clubs requires urgent attention.

FLYING COMMITTEE

The Flying Committee has continued to vet all claims to records and any unusual claims for certificates; on its recommendation eight records have been homologated during the year. It has also recommended the Annual Awards which will be presented at the Ball on the 11th March. The Kronfeld Barographs come under its jurisdiction and these are loaned for a small fee to pilots with certain qualifications. In general this Committee examines any practical gliding problem not dealt with by other committees.

INSTRUCTORS' PANEL

The Panel has not been very active as most Clubs now have categorised instructors and the time is almost approaching when instructional and examining centres might be set up in suitable clubs.

There is now an examiner stationed in Germany to deal with applications from the service units there.

The Annual Conference will be held on Saturday, 12th March, at Londonderry House, prior to the A.G.M., and will include a report of the Accident Analysis Committee for the year and a general discussion on instruction.

HIGH PERFORMANCE TWO-SEATER PROGRESS COMMITTEE

The prototype of the 'K-1' was completed in May 1954, and after some flying by the designer, handling trials were carried out by No. 1 Test Group at Lasham. It was found that the handling, particularly the spinning, was not acceptable although qualitatively the performance appeared excellent. The spin behaviour was of a nature which precluded it from the World Championships but could not reasonably have been foreseen at the design stage.

The future of the machine is at present under consideration by the B.G.A., the Kemsley Flying Trust, the Ministry of Supply and Messrs. Elliotts, and performance trials and investigations of the cause of the spin characteristics are being carried out.

SMALL ADVERTISEMENTS

If you have something to sell or there is something that you need why not advertise with a small advertisement in *Sailplane and Glider*? The cost is not high and full details will be sent on request.

'WINGS FOR PAULINE'

A 16 mm. sound copy of the film 'Wings for Pauline' is available for hire from 'Sailplane.' Price £1. 1. 0. Write for details.

'VUELO SILENCIOSO'

Argentine Gliding Magazine. Monthly. Address: Casilla de Correo 800, Buenos Aires. Price $3 Argentine per copy.

FOR SALE

MOTOR 'TUTOR' (ultra light) for sale. C. of A. until August. Would consider exchange for Sailplane. Enquiries: J. G. Wright, 33, Beacon Avenue, Cleethorpes, Lincs.

PHOTOGRAPHS are always required for the Front Cover of *Sailplane* and one guinea will be paid for each one published. Prints must have a vertical axis and should be sent with a stamped envelope for return. Address prints to 'Front Cover,' 'Sailplane and Glider,' 8, Lower Belgrave Street, London, S.W.1.

THE ALEX ORDE FUND FOR YOUNG SOARING PILOTS

THE object of the Fund is to help young and promising pilots to reach the standard necessary to take part in World Gliding Championships.

The cost of long distance soaring and retrieves is high, and many enthusiastic young pilots of ability are unable to attempt such flights because of financial considerations. Without help most of them will be prevented from attaining the very high standard of the World's best glider pilots and our future participation in World Championships will suffer. In the last two events this country won 1st and 2nd places respectively, and we want our future pilots to have every chance to maintain such placings.

Conditions and qualifications are as follows:—

1. The pilot should be under 25 years of age or and of British nationality.
2. He can be flying any glider—club or privately owned.

(*continued on page* 20)

Continued from page 19.

3. He must have a Silver ' C.'
4. Qualifying flights— (starting from U.K.) : *Maximum Award*
   (a) Any Gold or Diamond distance qualifying flight £15
   (b) Any flight over 200 miles in two-seaters where neither pilot has a Gold ' C ' £15
   (c) Any distance over 150 miles by non-Gold ' C ' pilot, or pilots in the case of two-seaters £10
   (d) Other awards may be granted as and when the fund permits.

The Fund is to be administered by the British Gliding Association, to whom all contributions should be sent.

GLIDING NEWS FROM BELGIUM

By A. van Ishoven

THESE are the results of the gliding activities in Belgium during 1954.

National Gliding Centre at Temploux.	1,292 *hours flown.*
V.A., Verviers	301
A.C.M., Namur	221
A.C.H., Mons	134
C.N.A., Brussels	118
A.Z.M., Antwerp	108
G.A.C., Ghent	28
R.M.U., Liège	12

Up till now there are 12 gliding records standing in Belgium. Of these that are standing today, one was established in 1951, three in 1952, and 8 during 1954. Four of them were flown in France, the others in Belgium. The machines that were used are :— ' Olympia Nord 2,000 ' (4 records), ' Mü 13-E ' (4), ' Sóhaj ' (2), ' Spal S-18 ' (1), ' C-311 ' (1).

The Zoute Aviation Club, established December 1953, at the famous Belgian seaside resort may take up gliding. During April the National Gliding Centre will send an itinerant section to teach gliding to some local pilots.

Anybody who wants to fly a single-seater glider at a Belgian public aerodrome must at least possess the ' B ' certificate. This makes it impossible to use the single-seater instruction method. However, this method has practically never been used in Belgium since the war.

Like previous years a gliding holiday for Belgian ' C ' pilots was organised in Southern France during January this year. This year it was organised at St. Auban. However, no outstanding flights were made and no records broken as there was no ' Mistral ' necessary for wave flights.

ROYAL NETHERLANDS AIR FORCE GLIDING ACTIVITIES

A CONTRACT between the Royal Netherlands Air Force and the Royal Netherlands Aero Club has been signed by General Baretta, Commander in Chief of the Royal Netherlands Air Force, and Mr. C. Kolff, President of the R.N.A.C.

Owing to the small number of airfields in the Netherlands, many civil gliding clubs were forced to operate from military air bases. Their activities stimulated interest in R.N.A.F. circles and several Air Force clubs have now been operating for some years. In 1953 the sport gained much in popularity, but a big increase in activity began in 1954 and at seven air bases R.N.A.F. clubs have joined forces with their civil counterparts operating at the same airfield.

The contract deals with the co-operation between air force and civil gliding clubs, now that gliding is recognised as an official service sport.

The Air Force supplies for the co-operating clubs at all air bases towing aircraft, 100 h.p. winches, cable retrieving cars and sailplane trailers.

The R.N.A.C. will train the Air Force instructors, will supply a certain number of two-seater and single-seater gliders for the joint military and civil clubs, in addition to its ' normal ' subsidies and assistance to these clubs.

For all members of both civil and Air Force gliding clubs the membership of the R.N.A.C. Gliding Section is compulsary.

The Air Force gliding is a pure sport both for flying personnel and ground crew, and there are no limits set to the training stage. Yet only a few members have gained their Silver ' C ' so far. The best distance has been 260 km. (162 miles) and a national record for an out- and return-flight was set up for 180 km. (2×90 km.). (112 miles$=2 \times 56$ m.). Both were flown by Sergt. S. J. M. van Noorden, who escaped from Holland during the war and served in the R.A.F.

The highest ranking officer in the Netherlands gliding movement is Col. C. W. A. Oyens, President of the Gliding section of the R.N.A.C., and a very active pilot as well as an instructor. He was the pushing power of the gliding movement in Indonesia during the two years he was a member of the Netherlands Military Mission at Djakarta. He gained the first and only Silver ' C ' in Indonesia.

The R.N.A.C. receives a large Government subsidy for its gliding activities, amounting to some £35,000 for 1954 and the formidable sum of about £150,000 is to be spent on capital investments such as gliders, winches, hangars and equipment in the course of the realisation of its ' ten year plan.' The decision to grant these large sums to the gliding movement is based on the excellent results of the boys with gliding experience during their training on powered aircraft. Many people regard the saving in money and instruction hours at least equal to the subsidy. Moreover, gliding is looked upon as the best medium to spread practical airmindedness among the younger generation. Since 1950 more than 550 boys gained their ' B ' license and quite a few more were trained up to cross-country flying standard. The aim for 1955 is to train all those, who have shown their abilities, to this same standard.

H. SCHWING.

News in a Few Lines . . .

Chile. The Gliding Club of Santiago has started on a series of five secondaries. The jigs are ready, the wood is in the workshop, and the project is financially supported by the Government and by an early Chilean glider pilot, William Gottlieb. The Chilean Air Force has also helped the gliding clubs by letting them have some primaries.

U.S.A. In the course of a visit to Bishop, California, Cdr. Goodheart went to 30,000 feet. Meanwhile, his brother in Australia pulled off a distance record of which we await details.

Argentina. The first locally made 'Fauvel AV-36' flew on the 28th November. This was built by the Pehuajo Club, and after test flights by Claudio Dori (one of the Argentine participants in the last World Championships) it was demonstrated before a large crowd at their new airfield, when visiting pilots from other clubs were invited to try it.

Great Britain. The Lilienthal Medal for the year 1954 has been awarded to Philip Wills. He has also been awarded the Paul Tissandier Trophy for his outstanding contribution to British Gliding.

Argentina. We congratulate the Gliding Club of Junin. In the first year of its existence it has achieved 17 fully trained pilots, three of whom have passed their aerobatics test and three completed their tug-pilot's course. Juan Sadoux gained 2,200 metres from an auto-tow and has also made a flight of 135 km. in 4 hrs. 20 mins.

Algeria. Activity has been divided between three clubs, at Oran, Constantine, and El Aouedj.

Egypt. The Egyptian Gliding Club which is based at Heliopolis was founded in October 1951, and, since the Government took an active interest, it has been transformed into the Egyptian Gliding Institute and activities have considerably increased. A well-furnished clubhouse has been provided as well as workshops which can handle complete overhauls.

On receiving a Government grant of £20,000 the Institute placed an order for three German gliders. It is worth noting that the Government subsidises the training of all boys between the ages of 16 and 21 until they obtain their 'A' and 'B' badges. 15 cadets enrol every fortnight and 16 'A,' 'B' and 'C' badges are awarded monthly. The institute makes a monthly average of 180-200 gliding hours.

The aim of the Institute is to give air sense to the maximum number of boys who might have the intention of joining the Air Force or Civil Aviation Department. A proposal to open a new branch in Alexandria has been studied.

Germany. The Deutsche Aero-Club comprises 800 clubs with some 36,000 members. The gliding groups own about 1,000 gliders which are winch-launched. When buying powered aircraft after the removal of the existing restrictions it is anticipated that the clubs will in some cases fall back on offers of second-hand aircraft from abroad.

Herr Falderbaum, the German stunt flying champion of 1938 who, incidentally, has been working as a Liquid Gas engineer at Shell's Ludwigshafen Branch Office since 1952, was invited to attend the International Aerobatics Competition for gliders at Zoute, Belgium, on the 15th August, 1954, in his own glider.

Falderbaum is popular in German glider circles and his stunt flights in a glider, also his aerobatics in a powered aircraft, are highly thought of. On the 26th September Herr Falderbaum was also to take part in the glider and powered aircraft events at the Air Display at Zurich (Spreitenbach).

Holland. After serious training and as a result of many selection flights, Messrs. De Boer and Koch were appointed to represent Holland at the International Gliding Contest at Camphill, England, in July 1954.

The first of a number of regional gliding centres was opened at Hilversum airfield under the supervision of the Gliding Section of the Royal Netherlands Aero Club.

India. Activity at the Poona headquarters of the Indian Gliding Association declined allegedly because of inefficient management, lack of funds and spasmodic official interest. However, the Poona headquarters has now been taken over by the Government of India and limited gliding continues. The site is in the Western Ghats where the seasonal winds provide convenient up-currents.

In Delhi there was considerable activity in 1953 particularly in the hot weather, and during that year the duration record in India was broken, but activity in 1954 has been somewhat limited. The country is flat but suitable thermals can generally be found in the hot season.

Italy. A new glider endurance record of 24 hours 6 minutes was set up by Major Mantelli with a high-performance two-seater Ambrosini glider named 'Canguro.' At the S.I.A.I. Marchetti plant at Sesto Calende a tail-less glider with a delta wing, designed by the French engineer Fauvel, was built.

Malaya. The four clubs—the Royal Singapore, Kuala Lumpur, Perak and Penang flying clubs—own between them 15-20 serviceable light aircraft but activity on the gliding side has been reduced through lack of interest and Government support. The Perak Flying Club procured a two-seater trainer glider during 1953.

Morocco. Activity was, as usual, centred on Fes, although some gliders were moved to Ifrane to glide from there during the summer.

Pakistan. The Government offered Kirby gliders to the clubs at Lahore and Dacca and two are already flying at Lahore.

CLUB NEWS

(Club Secretaries are invited to send notes and photographs for inclusion under this heading).

ULSTER GLIDING CLUB

FIFTY hours' soaring during 1954 does not seem an appreciable total for one year, but considering our dependence on weather, tide, cloud base and north wind, and the fact that we are 70 miles from the soaring site, we feel we have something to record.

The Ulster Gliding Club has been in continuous operation since 1930. During the recent war we gave our machines and provided instructors for two A.T.C. gliding schools in Northern Ireland, and one of our members became command gliding instructor. Some 600 cadets passed through these two schools. Now we own one club machine—a ' Tutor '—and a ' Gull ' is privately owned.

Preparing the ' Gull ' at Magilligan

We motor-tow from Magilligan Strand, Co. Londonderry and use the 4½ miles of cliffs which start at Downhill at 200 feet and run for a mile parallel to the shore and then turn inland and terminate with the 1,200 feet hill Binevenagh.

This is the most beautiful soaring site in the world and the patient club member ultimately is rewarded with a view and an experience which no other site can give. Usually the cloud base is around 2,500 feet, but 4,000 feet can be reached on a clear day using thermals coming from the sandy Magilligan Peninsular.

One of our members visited California during 1954 and soared at El Mirage as a guest of Gus Briegleb.

We extend a hearty invitation to members of the Dublin Club to bring some of their machines to Magilligan where we will give them towing facilities. With only one machine of our own, we cannot offer rides in our ' Tutor ' except to club members.

In April we are attacked by ravens up to 2,500 feet, but if you like a scrap the ravens can take as good as they give.

If you have a ' B ' Certificate, patience, enthusiasm and money (in that order) join the Ulster Gliding Club. When the good day comes it is worth it all.

WILLIAM LIDDELL.

R.A.F. TEAMS FOR GLIDING CHAMPIONSHIPS

MAKING its strongest bid for national gliding honours since 1951, the Royal Air Force Gliding and Soaring Association will enter at least three teams in the National Gliding Championships at Lasham, Hants., this summer.

They are from R.A.F. Little Rissington (Glos.), Boscombe Down (Wilts.), and Scampton (Lincs.). In addition, a team from the 2nd Tactical Air Force, Germany may be entered, and individual R.A.F. entries, are likely. The Association has already formed three ' schools ' to train specifically for the Championships, with Squadron Leader H. Neubroch in charge.

AIR COMMODORE G. J. C. PAUL, D.F.C. Chairman of the R.A.F. Gliding and Soaring Association, and Commandant of the R.A.F. Central Flying School, a leading R.A.F. gliding exponent for many years, will captain the Little Rissington team. The Scampton team will be captained by Sergeant W. D. Campion, who has been gliding since 1946 and has logged nearly 300 hours of unpowered flight, and Corporal A. Gough, another leading N.C.O. sailplane pilot, with nearly 1,000 hours, will head the Boscombe Down team.

Despite bad weather, R.A.F. gliding clubs in Britain and Germany recorded 24,530 launches in 1954. Of this number, 15,037—and 1,027 hours gliding—were achieved in Germany, where soaring conditions are better than in Britain.

The figure of 9,493 launches by the R.A.F. clubs in Britain was 2,000 higher than in 1953. In the lead was R.A.F. St. Athan (Glam.), with 2,308 launches, followed by R.A.F. Feltwell (Norfolk), which although formed only late last year, made 951 launches. Next came the ' Moonrakers ' club at R.A.F. Lyneham (Wilts.), with 883, Scampton, with 830, Middleton St. George (Durham), with 770, Little Rissington (also formed only late in the year), with 709 and Boscombe Down, with 242.

The R.A.F.S.G.A. now has its own tie, which has small reproductions of an Astral Crown, the Gold ' C ' gliding badge and the R.A.F. ' wings ' on a dark blue background.

At the recent annual meeting of the Association, attended by the President (Air Chief Marshal Sir Ronald Ivelaw-Chapman, K.C.B., K.B.E., D.F.C.,

A.F.C., Vice Chief of the Air Staff) and more than 100 members from all parts of the United Kingdom, it was said that membership has now reached 500. Despite rising costs the association is striving to build up the equipment of its clubs and hopes during the present year to recruit at least another 250 members and introduce them to the pleasures of silent powerless flight.

1954—A SUCCESSFUL GLIDING YEAR FOR AIR CADETS

SINCE 1942, when gliding was first made available to members of the Air Training Corps, each succeeding year has seen a steady increase in the number of air cadets taking part and in the number of flights made.

In 1954, the best year ever in spite of poor summer weather, air cadets made an aggregate of 99,575 launches, logging 7,497 hours in the air, and gaining 1,546 gliding proficiency certificates (each certificate calls for approximately 50 flights). These results represent a two-and-a-half per cent. increase over the 1953 figures.

To be eligible for gliding training in the A.T.C., a cadet must be at least 16 years of age, be medically fit and have the written consent of his parents. Nearly 16,000 boys are eligible to fly in gliders and the 45 week-end gliding schools throughout the United Kingdom are kept busy providing facilities for the air cadets.

BRUGGEN HAS BIGGEST GLIDING CLUB IN 2nd T.A.F.

THE gliding club at Royal Air Force Station, Bruggen, Germany, which last year won the 2nd Tactical Air Force gliding competition, is now the largest gliding club in the Command.

In a dual-control 'Kranich' glider recently allocated to it, the club will soon be training its members up to solo standard flying. The 'Kranich' brings the club's glider strength up to nine aircraft, which include three 'Grunau' gliders, the type members find the most successful for intermediary training, and one German 'Weihe' high-performance sailplane.

The Club is now preparing to start training for this year's championships as soon as the weather produces the necessary thermals. Meanwhile, its members are attending lectures on instrument flying, soaring, and cross-country techniques.

The club hopes to organise two gliding camps later this year at Venlo, Holland, where gliding conditions are good and continuous flying is possible.

'AVRO' GLIDING CLUB

SINCE we started operations in May 1953, we have done over 2,000 launches and taken 22 'A' and 'B' Certificates and 5 'C' Certificates. This has been achieved with one winch, a 'T-31-B' and a 'Tutor.'

The club operates from the Company's airfield at Woodford in Cheshire. This is a flat site about three miles west of the Derbyshire foothills and in certain east wind conditions we get quite a good wave. It hasn't worked this year so far but in December 1953, we contacted it at 500 feet and climbed rapidly to 3,400 feet and remained airborne for 1 hour. These figures still stand as club records. Cross-country flying has yet to be carried out.

1954 was a very difficult year. We were plagued with more than our share of gliding club frustrations in the form of an unwilling winch and retrieving vehicle (a motor-cycle combination) as well as the weather. In addition we lost the services of the club's first Chief Instructor, Mr. P. G. Sharman, who left to join the Royal Air Force as a pilot, and Mr. Peter Rivers who also put in a lot of hard work for the club in its early days.

However, thanks to the efforts of Mr. Verity we now have a second winch in operation, a Ferguson Tractor is being purchased for retrieving purposes, and with this new equipment we hope to put up a better show during 1955.

Royal Aero Club Certificates

(Issued under delegation by the B.G.A.) **JANUARY, 1955**

'A' CERTIFICATES (19247-19171)	**76**
'B' CERTIFICATES	**76**
'C' CERTIFICATES	**9**
SILVER 'C'	—
GOLD 'C'	—

'B' CERTIFICATES

No.	*Name.*	*A.T.C. School or Gliding Club.*	*Date taken*
19171	K. D. Allen	No. 168 G.S.	2. 1.55
19172	K. R. Bradly	No. 168 G.S.	2. 1.55
19173	P. J. A. Parker	No. 87 G.S.	14.11.54
19174	D. E. Evans	No. 42 G.S.	19.12.54
19175	B. K. Flowers	No. 168 G.S.	21.10.54
19176	D. G. Johnstone	No. 44 G.S.	19.12.54
19177	B. E. MacDonald	No. 49 G.S.	5.12.54
19178	B. L. Nickolls	No. 123 G.S.	14.11.54
19179	M. J. Warby	No. 22 G.S.	2. 1.55
19180	J. L. McDonald	No. 186 G.S.	25. 7.54
19181	A. J. Flowers	No. 22 G.S.	3.10.54
19182	G. A. Rogers	No. 141 G.S.	5.12.54
19184	C. S. Barnard	No. 104 G.S.	28. 3.54
19185	S. M. Fisher	No. 123 G.S.	23.10.54

'B' CERTIFICATES—*continued*

No.	*Name.*	*A.T.C. School or Gliding Club.*	*Date taken*
19186	B. Henson	No. 44 G.S.	19.12.54
19187	V. C. Hopkins	No. 104 G.S.	15. 8.54
19188	P. Moores	No. 183 G.S.	19.12.54
19189	T. R. G. Pratchett	No. 142 G.S.	2. 1.55
19190	A. G. Vernal	No. 68 G.S.	9. 1.55
19191	P. Routledge	No. 125 G.S.	19. 9.54
19192	I. I. Smith	No. 2 G.S.	1. 8.54
19193	C. Packman	No. 125 G.S.	9. 1.55
19195	A. J. Barsby	Fenland G.C.	19.12.54
19196	P. J. B. Tanner	Fenland G.C.	19.11.54
19197	C. Melville	No. 2 G.S.	10.10.54
19198	C. A. F. May	No. 143 G.S.	5.12.54
19199	J. R. Nicholsou	No. 31 G.S.	2. 1.55
19200	W. H. Pallender	No. 22 G.S.	19.12.54
19201	R. A. Sandford	No. 89 G.S.	16.10.54
19202	Bettie Wigmore	Oxford G.C.	8. 1.55
19203	R. Huggonson	No. 188 G.S.	2. 1.55
19204	R. Cole	No. 41 G.S.	10.10.54
19205	W. M. Davison	No. 31 G.S.	2. 1.55
19206	M. G. Salter	No. 106 G.S.	2. 1.55
19207	F. Hutchinson	R.A.F. Kabrit	19.12.54
19208	C. Urquhart	No. 31 G.S.	3.10.54
19209	B. Betts	No. 68 G.S.	2. 1.55
19210	G. B. Seedhouse	R.A.F. Scampton	27.10.54
19211	D. M. Withers	R.A.F. Brüggen	13. 3.54
19212	A. L. Bagnall	R.N. Portsmouth	20.11.54
19213	T. G. Osmaston	College of Aeronauties	31.10.54
19214	R. Bruce	No. 49 G.S.	5.12.54
19215	G. T. Halkett	No. 2 G.S.	29. 9.54
19216	R. A. Keyse	Midland G.C.	17.10.53
19217	W. A. Harrison	No. 49 G.S.	19.12.54
19218	P. Goodall	No. 188 G.S.	2. 1.55
19219	I. C. Gibbs	No. 92 G.S.	3.10.54
19220	B. G. Hughes	No. 42 G.S.	19.12.54
19221	R. W. Milligan	No. 188 G.S.	7.11.54
19222	O. Dearden	Bristol G.C.	23. 1.55
19223	R. Corbett	No. 186 G.S.	12. 9.54
19224	T. H. Stewart	No. 2 G.S.	15. 7.54
19225	M. J. Massy-Beresford	Army G.C.	7. 7.54
19226	B. T. Hicks	No. 141 G.S.	9. 1.55
19227	G. Morris	No. 41 G.S.	9. 1.55
19228	D. H. West	No. 142 G.S.	9. 1.55
19229	P. S. Boston	London G.C.	7. 9.54
19230	A. N. E. Cannon	No. 106 G.S.	2. 1.55
19231	M. R. Contes	No. 24 G.S.	19.12.54
19232	F. B. Holroyd	No. 44 G.S.	2. 1.55
19233	D. Hext	No. 142 G.S.	10.10.54
19234	D. J. P. Hadler	R. N. Dartmouth	1. 9.54
19235	M. R. MacKelden	Bristol G.C.	23. 1.55
19236	A. D. Maillie	No. 2 G.S.	5.12.54
19237	R. Chambers	No. 183 G.S.	23. 1.55
19238	D. G. Evans	No. 122 G.S.	9. 1.55
19239	C. J. Forster	No. 183 G.S.	23. 1.55
19240	P. H. Proctor	No. 2 G.S.	22. 8.54
19241	A. J. Pryde	No. 2 G.S.	3.10.54
19242	D. Winter	London G.C.	22. 6.54
19243	N. Shackles	No. 22 G.S.	26. 9.54
19244	D. Hunter	No. 22 G.S.	19.12.54
19245	J. V. Goodfellow	No. 168 G.S.	9. 1.55
19246	J. T. Graham	No. 141 G.S.	12. 8.54
11530	A. K. Beames	No. 161 G.S.	24. 8.52
16652	W. Anderson	Surrey G.C.	7. 6.54

'C' CERTIFICATES

19216	R. A. Keyse	Midland G.C.	28. 8.54
19229	P. S. Boston	London G.C.	11. 9.54
19242	D. Winter	London G.C.	26. 6.54
16583	D. B. R. Harris	No. 24 G.S.	28. 8.54
16465	A. R. I. Cruickshank	No. 2 G.S.	9. 1.55
7332	J. P. Fabesch	R.A.F. Brüggen	27. 3.54
17355	F. O. C. Hardy	H.C.G.I. Detling	29.10.54
17551	J. W. J. Brotherston	No. 2 G.S.	9. 1.55
18158	M. A. J. Brett	Southdown G.C.	26. 6.54

'A' Certificates issued in January, 1955.
(For details of the above see list of 'B' Certificates in January, as most of these pilots gained their 'A's' and 'B's' on the same day.)

'A' CERTIFICATES

No.	*Name.*	*A.T.C. School or Gliding Club.*	*Date taken*
19183	W. J. Pye	R.A.F. Kabrit	19.12.54
19187	V. C. Hopkins	No. 104 G.S.	14. 8.54
19190	A. G. Vernal	No. 68 G.S.	12.12.54
19194	N. Davis	R.A.F. Kabrit	18.12.54
19195	A. J. Barsby	Fenland G.C.	18.12.54
19196	P. J. B. Tanner	Fenland G.C.	22. 9.54
19200	W. H. Pallender	No. 22 G.S.	5.12.54
19207	F. Hutchinson	R.A.F. Kabrit	28.11.54
19209	B. Betts	No. 68 G.S.	19.12.54
19211	D. M. Withers	R.A.F. Brüggen	1. 3.54
19212	A. L. Bagnall	R.N. Portsmouth G.C.	14.11.54
19213	T. G. Osmaston	College of Aeronautics G.C.	9. 7.54
19216	R. A. Keyse	Midland G.C.	10.10.53
19233	D. Hext	No. 142 G.S.	3.10.54
19234	D. J. P. Hadler	R. N. Dartmouth	31. 8.54

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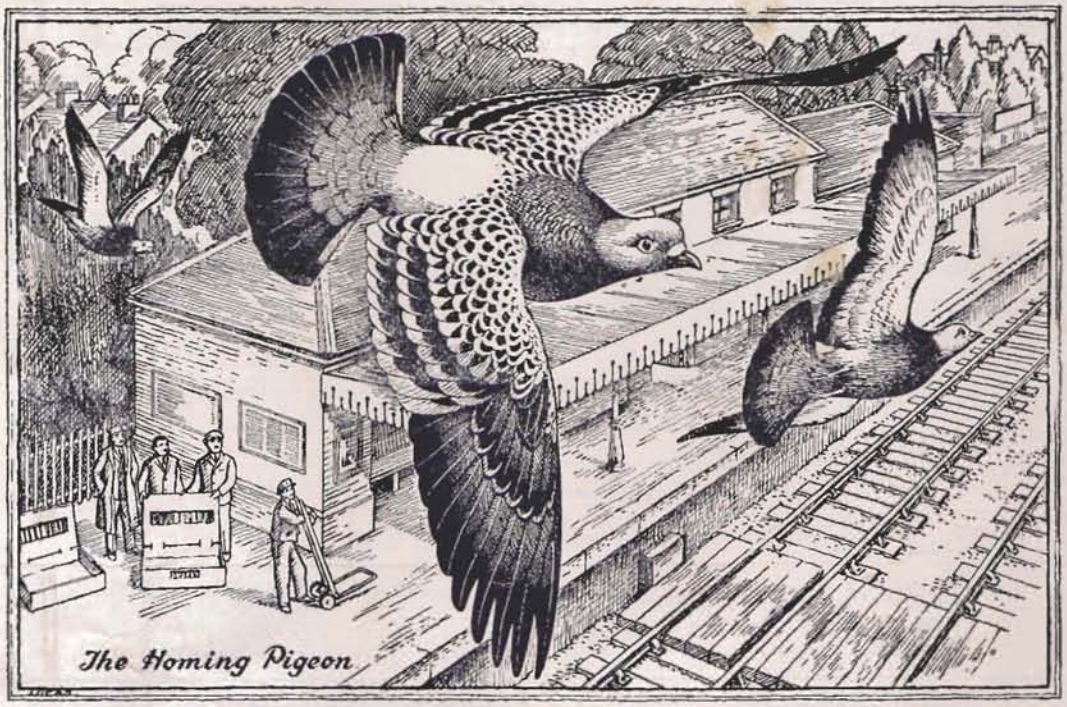
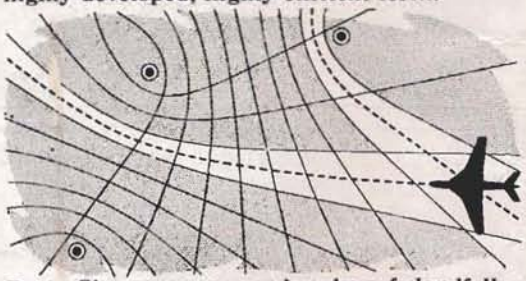


ON THE BEAM

By flying down a beam pilots can come into an airfield they cannot see and could not possibly find. With this invaluable technique man has rediscovered a gift he may once — long ago — have had : one that many creatures have in highly developed, highly efficient form.



Butterflies cross seas and make safe landfalls; the Chinook salmon swims oceans and returns, infallibly, to the very pool of the very river in which he was born; a pair of finches divide their year, season after season, in a particular bush in an English garden and another in a North African orchard. Most astonishing of all, the homing pigeon can be taken in any direction, for any distance, and after a turn or two in the air will fly unhesitatingly straight for home.

How does the pigeon do it? We do not know. We may never know. It is not sight, nor smell. If it is sense of direction, this must be developed to a degree of sensitive infallibility which puts it clear beyond human understanding. We can only say that — like hundreds of kinds of migratory creatures — the pigeon feels some mysterious, unmistakable pull towards home: that he senses some " radio beam " that gives him his direction.

Though we may never know the mechanics of the homing pigeon's " beam ", we imitate its effects. Landing under any but the best daylight conditions can be difficult indeed without this navigational aid we have copied from Nature.

Pilots who come in to land on a beam or off it, have come to value, at all Britain's major airfields, the excellent and helpful service of the Shell and BP Aviation Service.

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