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# Sailplane and Glider

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TO SOARING AND GLIDING

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## CONTENTS

	Page
Editorial . . . . .	2
Gliding in Finland . . . . .	3
Carp to St. John's—135 miles . . . . .	6
The C.V.V. 6 'Canguro' . . . . .	7
The French National Contests . . . . .	8
German National Contest Pictures . . . . .	9
Gliding in India (Photos) . . . . .	10
Slots and Flaps . . . . .	11-13
Scenes from the American National Contests . . . . .	14 & 15
Gliding in Belgium . . . . .	16
The 'Gheppio R.1' . . . . .	17
Flying as a Sport in Yugoslavia . . . . .	18
The LETOV L-107 'Lunak' . . . . .	19
A Soldered Trailer . . . . .	20
Delhi Gliding Club . . . . .	21
Royal Aero Club Certificates, Clubs' Announcements, etc. . . . .	22, 23, 24

Cover Photo:

Gliding at Kitzbuhel, Austria. By Jan Boon, 'THERMIK'.

## Editorial

A VERY large number of recruits to the gliding movement in this country are being lost each month owing to the alarmingly small number of clubs which are operating today.

When one considers the distance between our principal clubs in London—Dunstable, Derbyshire and Lancashire—Camphill, Newcastle, Yorkshire, Bristol, Southdown and Surrey, it is not difficult to see why gliding is not enjoyed by greater numbers.

How many of us have got the time or indeed can afford the expense of travelling what often amounts to a hundred miles or more, there and back, each week-end to a club to take part in the sport of gliding. There are of course the Service clubs and a few private clubs, but membership to these is restricted.

So Gliding has become a confined sport. Confined to those who live within easy reach of a club and those fortunate few with their own machines, their cars and their trailers to whom distance is no object and all the time in the world is their own.

If we are to attract more people we must have more clubs within reach of all, more equipment and more instructors. So much is clear. How is this to be done? How much is it going to cost? Where is the money coming from? And who is going to do it, anyway?

At this point it is interesting to look closely at what has been achieved in Germany since the ban on private flying was lifted only a little more than two years ago. Over five hundred clubs have been formed or re-opened since that time and the German sailplane industry is in mass production of new types. Two-seaters at £750! Details of several have appeared in past issues of *Sailplane*. The German clubs are of great importance to the German people. It is understood that the local authorities allocate funds from the town rates, or have some such similar method. It is not difficult to see why. It is the nucleus of the new German *Luftwaffe* and everyone knows and are proud to hand over the funds.

Last year in Spain, Great Britain won the World Gliding Championships. This was done because we had superior pilots and superior machines, plus, of course, the usual luck that goes with any competition flying. We will do well to retain our title next year at Camphill. But what of the future? When there are no more Wills', Stephenson's, Forbes', Bedford's to name but a few. What then? To lose new blood today because of our failing to provide adequately for the newcomers is to strike a blow to British Gliding, from which it might well not recover. We must have more clubs and more facilities and not have people saying: 'I'd like to take up gliding but the nearest club is fifty miles away.' If the number of enquiries received by *Sailplane* for information about gliding is any yardstick by which to measure present-day interest, then gliding is on the upgrade.

British Gliding needs a thorough overhaul—starting at the top. What is needed is a new policy and a plan from those who control our affairs. Gliding must be put on the map for all. The need is urgent; it is imperative if gliding in this country is not to fall by the wayside in the years to come.—R.G.B.

To celebrate the fact that the World Championships are to be held here in England next year, *Sailplane* has great plans in store. Inspired and encouraged by Mrs. Ian Henderson, designer of the B.G.A.'s gliding stamps, we have booked the Tea Centre at Piccadilly, Circus for the week of the Contests. It is proposed to hold there a grand Exhibition of Gliding to tell the passer-by—at the exact psychological moment—just what gliding is, how it has spread all over the world, and where one can go to learn something of the joys of silent flight.

We are offering a prize for a poster design—there are 72 poster sites on the Underground Railway and 12 more outside the Centre itself. These latter we would like to be as international as possible, and to that end we invite gliding clubs all over the world to send us something as vividly coloured, pictorially, as typical as it can be of the country it comes from.

Besides this, we plan to put on a 'magic lantern' show of coloured stills, and—if enough films come in—perhaps a 16 mm. movie show. Models of aircraft, winches and hangars will be used to make a miniature gliding field, and we hope also to be able to hang a full size sailplane in the rounded arch of the ceiling. Readers' ideas will be eagerly welcomed.

The Tea Centre is an excellent place for an exhibition of this kind. It is a very pleasant contemporary building of interesting design, less than 100 yards from Piccadilly Circus. In the very heart of the West End. There is a small buffet and a charming restaurant for afternoon tea, and discriminating people consider its regular fortnightly exhibitions to be one of the sights of present-day London. What better venue could we have? Perhaps we can entice the heedless public in and send them away full of excitement and panting to join the nearest gliding club. It is a great pity they will have to go so many miles to find one, that half of them will doubtless fall by the wayside. Can it really be true that in a year which has seen the renaissance of German gliding to the tune of 550 new clubs, we here at home care so little for our soaring that two of our few clubs have vanished entirely for lack of support? Where are we going wrong? It is not that gliding is expensive—using a Club machine it comes cheaper than a game of golf. It is not dangerous—the pedal cycle or the motor-cycle are much less safe. And with that in its favour it contrives to be the most exciting, the most delightful, the most exhilarating, the most fascinating, the most glorious of all sports. Perhaps all it needs is publicity. . . .

The publishers of *Sailplane and Glider* wish to offer their apologies to readers both at home and abroad for the delay in publishing the November/December issue.



# GLIDING IN FINLAND

By Jussi Soini

THE following account of gliding in

Finland has been written for us by Jussi Soini, Air Traffic Control Officer Helsinki Airport. Jussi, who lost a foot during the recent war, claims to be the only 'wood foot' sailplane pilot in Finland. With twenty-nine hours in sailplanes to his credit he has the altitude and distance legs for his Silver 'C' but he still has the five hours' duration to complete. He is the secretary of the Helsinki Flying Association. He says that there is no Government aid for gliding in Finland but the people of Helsinki give a small sum each year to the Association which helps to pay for the rent and electric light of the clubs.



Jussi Soini



*Jämin Ilmailukoulu*

THE gliding centre of Finland is Jämin Ilmailukoulu (Jämi Flying School) beside the Jämi-järvi lake. There is a very wide airfield and a short slope of about forty to fifty metres high.

At Jämi there are two 'Wiehes,' one 'Kranich,' two 'Olympias,' two 'Rhon Bussards,' three or four 'PIK-5's,' and several 'Harakkas.'

Every summer there are about 120 pupils on courses for 'A,' 'B,' and 'C' certificates, there are also many pilots endeavouring for Silver and Gold 'C' badges.

Training for 'A' certificates is given with the Finnish school glider 'Harakka,' launching by means of elastic ropes. For the 'B' certificate the 'Harakka' is also used but launching is by winch. 'C' certificates are obtained with the 'Harakka' and the 'PIK-5.' The 'PIK-5' is also used for Silver 'C' often with an aero-tow.

At Jämi there are three towing aircraft and four winches, one of which is fitted with a Ford motor and can launch two gliders simultaneously. There are extensive workshops for constructing new machines and carrying out repairs.

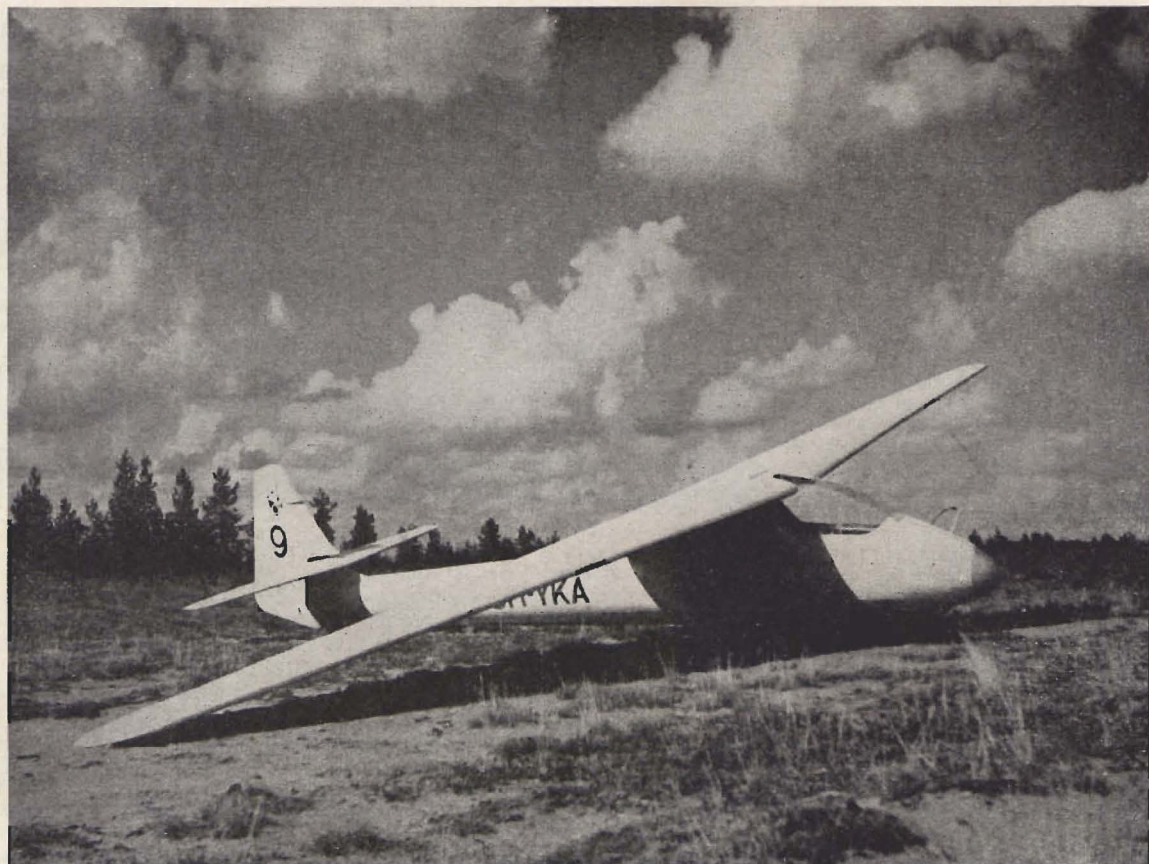
The thermals are very good because the school is situated on the edge of a gravel ridge. About two or three years ago Mr. Martti Kahva, who was fifth in the two-seater class at the International Contests in Spain last year, flew eleven hours thirty-two minutes. Probably one of the best thermal flights in the world.

In the north of Finland it is possible to fly in thermals all through the night because of the sun which does not set. But this part of the country is mostly desert with large areas where no houses or roads can be found.

There are in Finland approximately twenty gliding clubs with a total membership of about two thousand. Of this number about seventy have Silver 'C's'. There is only one Gold 'C' with one Diamond (a 300 km. goal flight). The members of the Finnish clubs build their own sailplanes and gliders in their clubs.

In Helsinki there are seven gliding clubs. They





'Pik-3'

fly at Malmi Airport, 11 kms. from the capital, or Hyvinkää airfield, 60 kms. away. At Malmi the thermal conditions are not so strong because it is near the sea, but at Hyvinkää the thermals are very good and there is an excellent ridge enabling flights of ten hours or more to be made on good days. Four boys from Helsinki once flew over seventeen-and-a-half hours between them. Two were in 'Grunau Babys' and one piloted a 'Komar.' The other one operated the winch.

By far the largest club in Helsinki, the PIK (Polyteknikkosen IlmailuKerho), (Flying club of

technical students in Finnish Technical High Schools) flew over seven hundred hours in 1952. They have two 'Harakkas,' one 'Salamandra,' one 'PIK-5' and one 'PIK-3.'

The members of this club have designed the 'Harakka,' 'PIK-3,' 'PIK-6' (which was never constructed), 'PIK-5,' 'PIK-12,' 'PIK-13' and the 'PIK-11.' The 'Harakka' is a training machine very easy to fly. The 'PIK-3' is a sailplane with a gliding ratio of 1:25 and with higher speeds—equal to a 'Weihe.' There is now a better variation of this type under construction at the Helsinki club known

## CORRECTION

Last month's report on the German National Championships:

Tasks I and II were with distance marking only.

Tasks III, IV, and V were with distance and speed marking, the variable ratio between which was described in the next paragraph.



Right: 'Pik-5'



as the 'PIK-3b.' The pioneer of this variation is Diplom. Engineer, Anselmi Koskinen.

The 'PIK-5' is a training monoplane with boom trunk. It has a gliding ratio of 1:22 and it is easy to build as well as fly. It was designed and constructed by Diplom. Engineer, Kalle Temmes, the only Gold 'C' and Diamond pilot in Finland.

'PIK-6' is a high performance machine with a gliding angle of 1:33 and the 'PIK-12' is a two-seater with the same flying qualities as the 'PIK-5.' Its gliding ratio is 1:22 but it is yet to be constructed.

The 'PIK-13' which is now being built by PIK members is expected to be ready to compete in the World Contests, at Camphill, Derbyshire, next year. Its estimated gliding angle is 1:33 or 1:34. It has



*Two views, left and above, of a Finnish Primary*

been designed by Diplom. Engineer, A. Koskinen.

The Helsingin Purjelentokerho, is the second largest club in Helsinki. Their machines consist of one 'Harakka,' two 'Grunau Babys' and one 'Komar'—a Polish machine. The 'Harakka' was built in 1946, the 'Babys' in 1936 and the 'Komar' in 1937. There is also a 'PIK-3,' partly built, which the club hope to have in use by next summer. The club has a jeep and one winch powered by a 85 h.p. Ford Motor. The club completed about 700 hours' flying last year. Not very satisfactory as the weather

was not kind, particularly during the club's summer flying camp.

There are about one hundred members of which about twenty have their Silver 'C's' and about twelve are qualified as instructors.

In Finland there are a number of small clubs flying about one to two hundred hours each year. These clubs recruit their members from the rapidly expanding aeromodelling clubs in the country, the members of which are very interested in learning to glide.

## Twenty Nations to Compete in World Championships

**T**WENTY countries have provisionally agreed to send teams to the 1954 World Gliding Championships, which are to take place at Great Hucklow from July 20 to August 3.

The countries are:—Argentina, Austria, Belgium, Brazil, Denmark, Egypt, Finland, France, Germany, Great Britain, Iceland, Israel, the Netherlands, New Zealand, South Africa, Spain, Sweden, Switzerland, U.S.A., and Yugoslavia.

Organisation is well under way. John Furlong is chairman of the B.G.A.'s master committee concerned with the contests, while detailed work is being carried out by several specialist sub-committees,

and by a local organising committee of the Derby and Lancashire Gliding Club. Mr. Basil Meands, club chairman, is chairman of the committee, whose secretary is Mr. Eric Taylor.

### NOTES

**France.** The 2nd August was a perfect gliding day for from the seven gliding clubs around Paris, eleven flights were made of over 300 kilometres.

**Yugoslavia.** The 1953 gliding champion is Bozo Komac. He and his partner, Zvonimir Rajn, came third in the German Contests.



# Cross-Country Flight from Carp, Ontario, to St. John's, Quebec

— 135 Miles —

**S**ATURDAY, 15th of August was to be the last lap of aerotowing the 'Olympia' (from the Kitchener Meet) to Pendleton. The weather looked good enough for a cross-country flight, nice cumulus forming and a 25 knot wind at 340° reported for 3,000 ft., so we decided to fly the 'Olympia.'

The second tow proved successful at 12.30 hrs., and although by now the sky above was blue, height was maintained in a dry thermal above Carp village. The nearest clouds were upwind but after struggling to them no lift could be found and while deciding to land and aero-tow after all, Shorty Boudreault was seen to take off in the 'Tiger' for Pendleton. The 'Olympia' was now stranded at Carp, the trailer and 'Tiger' being en route for Pendleton, so those clouds were really worked until some lift was finally located.

---

By PETER SHAW

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We at last reached the 5,000 ft. mark and at 13.30 hours left Carp airfield behind and made a zigzag course (due to the strong cross wind) in order to reach Pendleton—46 miles east of Carp.

At 15.00 hours Pendleton could be seen but it was too far upwind to reach from an altitude of 3,000 ft., and it was decided to go with the wind. The end cloud in a cloud street gave strong lift of 15 f.p.s., and altitude was increased from 2,000 ft. to 6,000 ft., and by flying down the streets the St. Lawrence was crossed at Valley Field at 16.15 hrs.

The main problem now was to stay over Canada so the nose was pointed to a northerly course, and the next cloud street was reached at an altitude of 2,000 ft. Flying down the street, we increased height to 3,500 ft., and some circling produced another 2,500 ft. The drift was still to the South and as there was a good airfield at St. John's an upwind course was taken, and the airfield appeared with 2,500 ft. still on the altimeter.

The wind was still strong at 17.05 hours and since there were no convenient potato patches an uneventful landing was made on the runway.

The 'Olympia' was nestled under a Canso wing, well weighted with hay bales, for the night, and a small celebration was held in St. John's with the crew of the 'Tiger Moth.' A very rough return flight to Pendleton was made on Sunday, the 90-mile journey taking 2½ hours.

The flight of 135 miles was done in 3½ hours and if the airfield hadn't been chosen for a landing another 10 miles could have been added. Needless to say there was no barograph in the 'Olympia' since it flies better this way!!!—*Free Flight*.

*From Hamburg.*

The Committee of the German Aero Club has exchanged experiences of standing waves with club

friends in Italy and Switzerland. When the proposed glider school in the Alps is opened soon at Reit im Winkel (a place situated between Munich and Berchtesgaden) the Committee hopes to be able to furnish contributions on standing waves.

The organisation of the German Aero Club comprises some 850 clubs having over 35,000 members. To date it has been possible to develop a training scheme with some 500 gliders and winch launching apparatus. Another 500 gliders are said to be under construction. There is also lively activity among groups of model aircraft builders. Existing balloon groups have carried out several flights and have helped to popularize flying as a sport among the general public.

A glider competition took place on the glider site at Oerlinghausen near Bielefeld between 26th July and 9th August, 1953, in which 28 teams, including 2 from Yugoslavia and one from France, took part. During the period 15th to 23rd August, 1953, the Hessen section of the German Aero Club organised a glider competition for long-distance flights with a certain objective, the starting point being in South Hessen and the goal near Kassel. This had to be reached by 22.8.53, after having touched down at some 20 intermediate landing places.

On 22nd/23rd August, 1953, the traditional 'Fliebertreffen' took place on the Wasserkuppe. On that occasion new gliders were demonstrated.

*From The Hague.*

All Gliding activities are performed under the supervision of the gliding-section of the Royal Dutch Aero Club. The Gliding Centre of this club at Terlet airfield is the main instruction point where yearly a large number of schoolboys receive their basic instruction. Other airfields where gliding is being done, are Gilze Rijen, Hilversum, Teuge and some military air-bases, where gliding is practised by airforce personnel. At Terlet a 'Tiger Moth' is used for towing the gliders.—*Free Flight*.

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## NOTES

**Great Britain.** On the 20th September the London Gliding Club had a visit from Prince Nicholas of Yugoslavia, who climbed to 1,000 feet in the two-seater.

**Poland.** A new feminine goal-flight record for two-seaters has been credited to Marta Sitarska who covered a distance of 353 km.

**Argentina.** The 'Albatros' gliding club of Buenos Aires, senior gliding club in the country, celebrated its 23rd birthday on the 27th August last.

**Japan.** At Kirigamine, the famous Japanese gliding site, there are at present 300 pupils in training.

**Spain.** Señor Ordovas (son of Colonel Ordovas who will be remembered by all who were at the Contests in Madrid), has obtained his Silver 'C' at the Madrid Gliding School of Cerro del Telégrafo.

**Germany.** The three latest Silver 'C's' Kurt Suv, Wilhelm Hagen and Gerard Schwegler, bring the total number of Silver 'C's', in Germany to two thousand and thirty-seven.



# THE C.V.V. 6 'CANGURO'

By EDGARDO CIANI

THIS sailplane is the only two-seater that has been effectively manufactured in a reasonable number in Italy.

Drawings were made by the Centro Volo a Vela Politecnico di Milano, and the prototype was built by the Aeronautica Lombarda back in 1941-42. In the year 1943 the Air Force of Mussolini's republic placed an order for 6 of these for training. They obtained but one 'Canguro,' and after the war the half-made sailplanes went to the Società Aeronautica Italiana, which is today building this type. The price is nearly £2,600.

A better edition is being produced today by the Sezione Sperimentale Volo a Vela of the Associazione Volovelistica Milanese—it will be ready in time for the next International Contest.

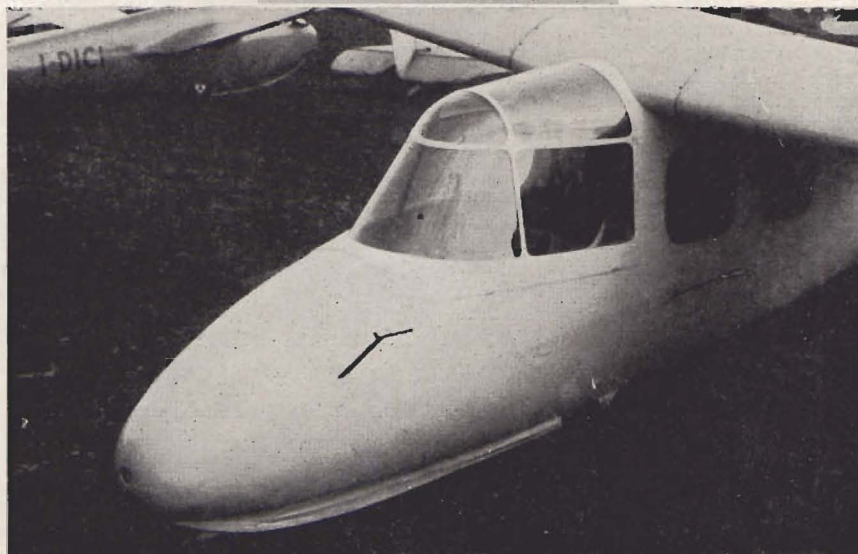
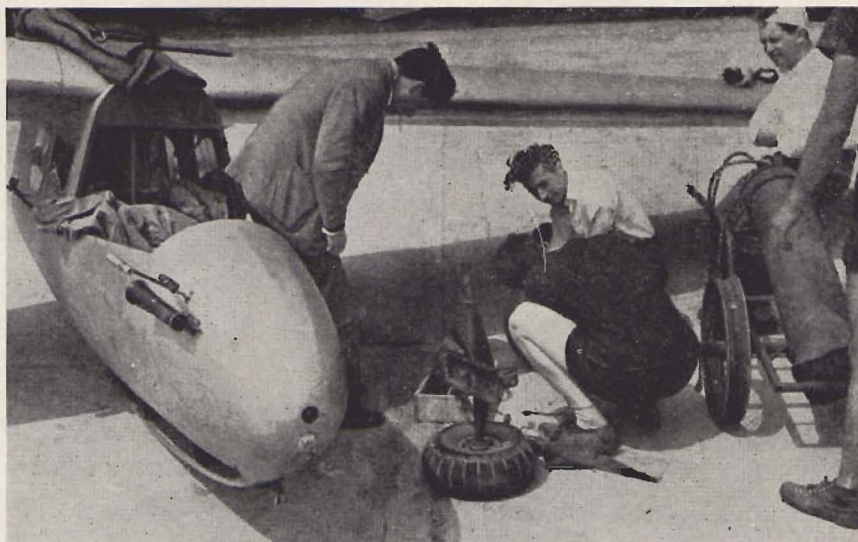
From the structural point of view, the 'Canguro' is normal: all wood, monocoque plywood covered fuselage, monospar wing, plywood covered. Root fittings are similar to those of the 'Meise,' and are today a little obsolete. For rigging the wings, a crew of 5 is needed, because a wing weighs nearly 200 lbs.

Controls are by cable for rudder and elevator: by dural tubes for ailerons, and by steel tubes for air brakes. All controls are very easy and effective: a beginner is able to fly without great trouble after about 5 flights. Landing also is very easy. Often it is thought that the landing was made by the 'Canguro' alone, because both pilots were thinking that the other was at the controls.

The only faults are that it is a little difficult to remain perfectly right on aero tow, due to the great inertia: fair work with rudder is unavoidable. Also the air brakes are perhaps too little: however, the writer and others have been able to land in fields no more than 60-70 yards, with trees 4 yards high on the entry side.

The 'Canguro' is a very strong machine in the air, also in landings. The Mussolini one, that did some hundreds of training flights, was damaged during a very fast landing, made with some undoubtedly puzzled 'Thunderbolts' roaring a little too near. This 'Canguro'—the CICL—is still flying here, and today has well over 500 flights to its credit.

**Landing gear:** The prototype had a dropping landing gear and the usual skid: the Mussolini one had a fixed wheel that, of course, was too little. Later 'Canguro' have again the dropping gear. The skid also proved to be much better for country landings. On the other hand, dropping gear is not so easy to use as the fixed wheel, and with every 100-200 flights, some damage occurs to the fuselage by the rebound of the dropped gear.



Top: 'Canguro C.V.V. 6.' The dropping landing gear in tube. On the nose below aero-tow hook, can be seen the interphone back to control tower. Centre: 'Canguro' in flight. Bottom: Another view of the 'Canguro'



# THE FRENCH NATIONAL CONTESTS

By MIGUEL TAULER

FRANCE organised its first post-war Contest with extreme care. From among the hundred Gold 'C's' the thirty best were selected, and pilots were invited from abroad; however, the only foreigners taking part were Philip Wills (England) and Schar (Switzerland). The oldest of the 32 competitors was Wills (48) and the youngest Legal (18) and there were four women.

The site chosen was Pont St. Vincent both by reason of its thermic possibilities and for its situation for distance flights. But the weather was not so propitious as it might have been.

On the first two days there were only practice flights but very good heights were obtained. Kirschroth gained a Diamond with a height of 5,400 metres, finding thermals of up to 15 metres per second. Weiss found only 8 metres per second but succeeded in reaching 5,200 metres in 12 minutes. The meteorologists calculated that with proper equipment pilots could have reached 11,000 metres.

*First task.* Speed to fixed goal and return. (Pont-Verdun-Pont), a total of 166 km. This was won by Gerard Pierre who came home in 3 h. 32 m. 9 s. (49.27 km./h.), followed by Lambert with 4 h. 35 m. 6 s. (36.25 km./h.). Wills came fifth with 34.77 km./h. Only seven competitors completed the task.

*Second task.* Speed to fixed goal. (Pont-Strasbourg), 124 km. Again Pierre won the 1,000 points with a time of 1 h. 53 m. 20 s. (65.64 km./h.). Second was Wills only 1 m. 35 s. behind, and third Trubert, 2 h. 18 m. 25 s.

*Third task.* Free distance. This was nothing like so successful as had been hoped. A west wind of 25 km./h., hindered flights to the South and there were local drizzles. The pilots, however, went off in all directions, the results being as follows: N. 55 km., W. 120, S.W. 179, S.S.W. 224, S. 164, S.E. 133, E. 125, and N.E. 160. It is worth noting that on a day like this none of the school pilots would have even tried for Silver 'C' distance, though in actual fact most of the competitors did better than 100 km.

For the third time in succession the victor was Pierre with 224 km. A few moments before he set out the French champion said to his father and the two cousins who formed his retrieving team; 'you can go as far as Beaume. I will call you by telephone.' A few hours later Pierre was 20 km. from Beaume. On a day such as this that was no mean feat. Second was Trubert (197 km.), and third Kirschroth (179 km.). Wills was fifth with 160 km.

*Fourth task.* Speed over a triangular course of 107 kilometres. (Pontvoid-Neufchateau-Pont). The weather was a lot better, more unstable with well-formed cumulus, but with a west wind of about 20 km./h. This enabled Pierre to show once again his exceptional qualities as a Contest pilot and his real superiority; when he returned from his first shot after flying 2 h. 14 m., he was third to Weiss (2 h. 9 m.) and Lambert (2 h. 10 m.). As the rules allowed three tries Pierre sallied forth again and came back with 2 h. 4 m. 9 s., which proved unbeatable.

*Fifth task.* Speed. It had been intended to make this day's task 'pilot's choice goal flight' but in view of the met. report and the S.W. wind of 30 km./h., this idea was abandoned since the routes to the North were impractical owing to the nearness of Pont St. Vincent to the frontier. The jury decided instead to have a speed test from Pont to Sarreguemines (95 km.). Only two pilots failed to reach the distance.

This last test of the Championship was won by Lambert who completed the course in 1 h. 27 m. 31 s. Pierre turned in 10 m. 2 s. more, coming sixth. Wills came third with 1 h. 31 m. 13 s.

The final classification gave Pierre as the indisputable victor, followed by Lambert, the veteran who once again has proved his worth. After that came Trubert, Weiss and Rousselet, three new names who have proved themselves firm candidates for the next World Contest. Gasnier, captain of the French team in the last World Contest, demonstrated his long experience, coming in with great regularity. Wills showed himself a great rival to Pierre despite his age, for in unknown country he came fifth. The young Jacqueline Leroy was seventh and did very well.

As for the material, although there were no surprises the 'Air-102' showed its magnificent qualities as a contest sailplane.

So we end this chronicle of the 1953 French National Championships by thanking M. Aubert for all his help and by congratulating everybody; organizers and winners, and especially our friend Pierre, without forgetting M. Maximo Lamort, chief of the gliding centre of Pont St. Vincent and all his instructors.

## NOTES

**Switzerland.** In the Aero Club 'Knockout' contest held at Granges from the 18th to 26th July, the winner was Bernhard Müller flying a 'Weihe.' Niggi Durs came second and Mme. Irene Muller-Borer was sixth. In the National Contest the lead was being disputed at the end of August by Kohn (32,530 points) and Nietlispach (30,986 points). Best flights of the month were: *Height*—Nietlispach, 7,485 metres. *Distance*—Kuhn, 349 km., and Müller, 337 km. *Goalflight*—Baumgartner, 322 km. *Out-and-return*—Müller, 186 km. We regret to report the death of Edi Lauber who was killed at Samedan while flying the new German 'Spatz.' He was President of the Zurich Gliding Club and Vice-President of the Swiss Aero Club.

**Switzerland.** During August there were three new Gold 'C's' They were Kurt Baumgartner, Yolanda Tschudi, and Niklaus Dubs.

**Germany.** A new type of variometer has been designed by Eckard Bruns based on the V-tube principle but with one arm of the V almost horizontal. The scale extends from 0.15 m.p.s. up or down, and is most sensitive around 2 m.p.s.





## PHOTOS OF GERMAN SOARING CONTESTS, 1953

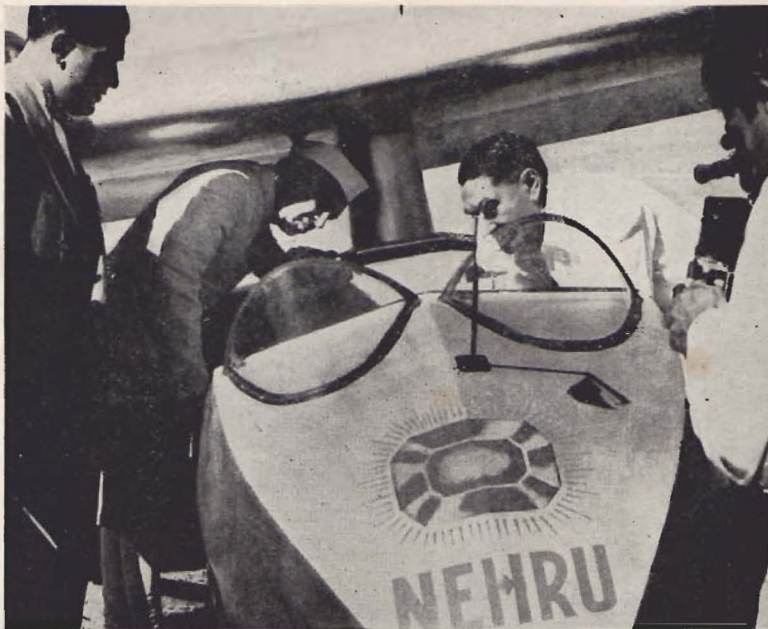
*Top: Gerard Pierre, second from the right, and his team at the German Soaring Contests, 1953, at Oerlinghausen.*

*Left: 'Air-102,' flown by Gerard Pierre, France, during the Contests.*



*(Photos: H. Deutsch, 'Thermik')*





## GLIDING IN INDIA

—in pictures

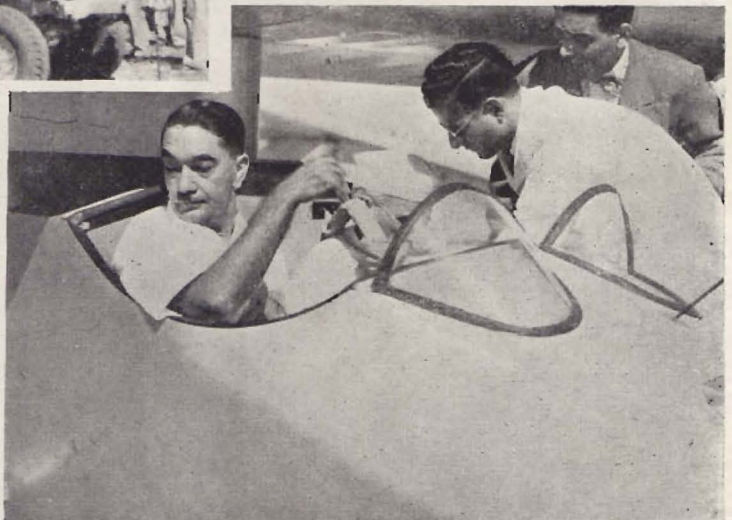
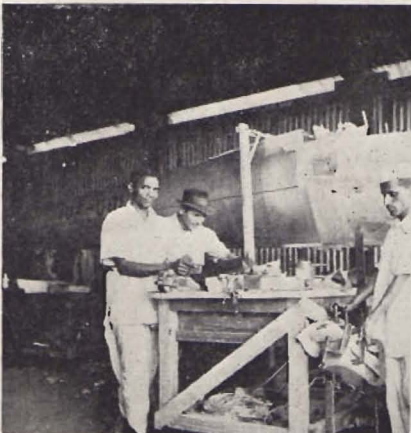
*Top, left : Pandit Nehru examines the two-seater. Captain Irani is demonstrating the controls and Mr. Mascarenhas is standing on the left.*

*Top, Right : A 'Grunau Baby' owned by the Indian Gliding Association.*

*Centre : A winch used by the Association at Poona.*

*\* Bottom, left : A view of the Association workshops at Fursinji gliding site, near Poona.*

*Bottom, Right : The Pilot Instructor of the Indian Gliding Association, Captain Irani, sitting in the two-seater accompanied by Pandit Nehru.*







# Slots and Flaps

By JOHN BARLEE

AN examination of a bird's wing will show the presence of two kinds of slots. The 'wrist-slot' is found about half way along the wing and is formed by a small tuft of 3-4 feathers, strongly curved to fit the leading edge so that when not in use it has no ill-effect on the streamlining. This tuft of feathers, the 'bastard-plume,' as it is called, is formed by the 'thumb' of the bird's hand. This small auxiliary aerofoil is provided with muscles, but it is thought likely that the opening of the slot is effected by suction exactly as in automatic slots of aircraft wings. The slot is short compared with the length of the wing; the slot-length/wing-length ratio varies from species to species. Some typical examples of this are shown in the table.

The short length of the wrist slot in comparison with the length of the leading edge raises doubts as to its efficiency as an anti-stalling device and it may be that it is not used for smoothing out the air-flow over the top surface of the wing, but as a 'fence' to prevent the area of stall from extending along the wing.

Anyone who has watched soaring birds must have been impressed by the widely spread primary feathers, which form a series of deep slots between them. Wing-tip slots are formed by the cutting away or the emargination of the web of the primary wing feathers. The trailing edge is more cut away, though the leading edge is emarginated also. When the wing is partially flexed, as when the bird is doing a high-speed dive, the swinging-back of the wing tips

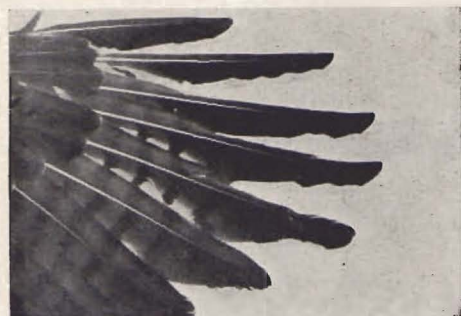
closes the slots and greatly reduces the drag. Wing-tip slots have been most developed in two widely different types of bird, soarers and game-birds, and much confusion has been created by people lumping them together and trying to show that the action is the same in both types. A soaring bird must have a large wing area with low weight, therefore large heavy muscles for flapping cannot be carried and in gliding and soaring birds the wing muscles are conspicuously small. The wings are fitted with all possible anti-stalling devices so that they can work efficiently at high angles of incidence.

High-speed gliding birds such as the albatross and the fulmar make use of the differences of speed in the layers of air close to the water to get energy to sustain themselves. These birds have a high aspect-ratio, a high wing loading and no slots. They seldom approach stalling-speed and must cut down drag to a minimum, so slots would be of no benefit to them. By using the inequalities of wind speed to obtain energy the bird can cut its energy output to a minimum, and therefore needs less food. For long range with low fuel consumption the albatross is supreme.

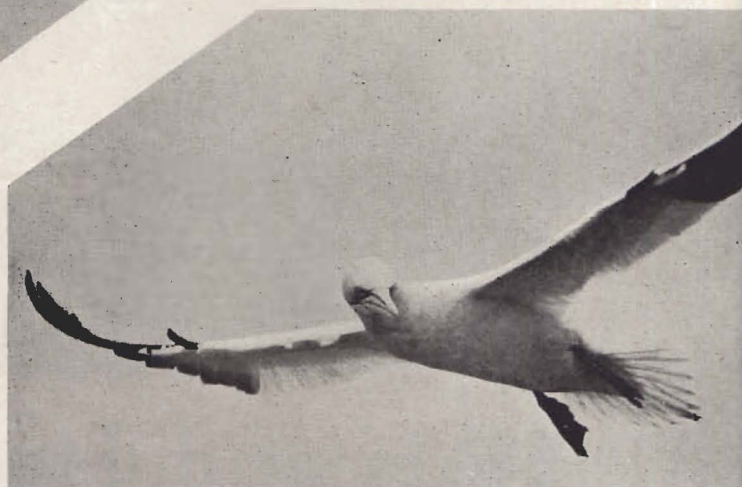
Game birds have the greatest possible development of slots, not for soaring but so that they can accelerate rapidly, climb steeply and manoeuvre as sharply as possible. The acceleration and the rate of climb depend on the power which the bird can produce by flapping its wings. By having short very broad wings  
(See illustrations over page) (Continued on page 16)



# KITTIWAKE



# RAVENS



# GANNET



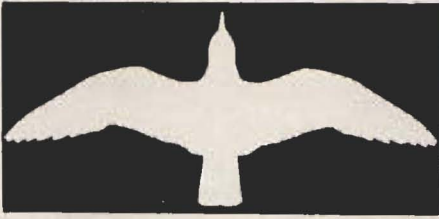
In the first of the three photographs, left, the outer part of a buzzard's wing has been spread out and weighted to show the slots; the wrist-slot is emphasised by a piece of paper placed under the bastard plume. The impressive array of wing-tip slots is well shown. The lower photographs show how the buzzard's slots can be closed for fast flying by swinging back the wing-tip. Emarginated and non-emarginated primary feathers of the buzzard are shown, right. The deep cut-away of the trailing edge shows that the wing-tip slots are no accident, but have been evolved for a special purpose. The gannet's wings, above, are partially stalled as shown by the lifting of the feathers under the leading edge. No doubt feathers on the upper surface are being raised in the same way. The right wing is more stalled than the left and the wrist-slot looks more like a fence than a slot.

BIRD	Slot-length ins.	Wing-length ins.	Wing-length Slot-length Ratio
Fulmar .. ..	1	20	20
Kittiwake .. ..	1.75	16	9
Jay .. ..	1.5	9	6
Buzzard .. ..	4.5	22	5

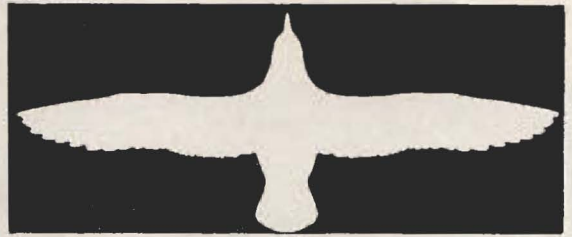
By courtesy of 'Shell Aviation News'



KITTIWAKE



FULMAR



The photographs of the Kittiwake and Fulmar show the birds gliding. Kittiwake has wrist-slots open and bastard plume brought forward, presumably by muscular action. The Kittiwake has very poorly developed wing-tip slots; photograph of the Fulmar shows complete absence of slots.



CORMORANT



BUZZARD



FULMAR

BIRD	Weight lb.	Span ft.	Wing-area sq. ft.	Wing-loading lb./sq. ft.	Aspect ratio
Buzzard .. ..	2.5	4.25	2.5	1	7
Fulmar .. ..	1.8	3.8	1.2	1.6	12.5
Herring Gull ..	2	4.2	1.7	1.2	10
Gannet .. ..	7.5	6	2.8	2.7	13
Puffin .. ..	0.875	1.8	0.32	2.7	10.5
Jay .. ..	0.35	1.5	0.5	0.7	4.5
Kittiwake .. ..	0.9	3.3	0.9	1	10
Albatross .. ..	c.18	11	c.6	c.3	20.25



PUFFIN

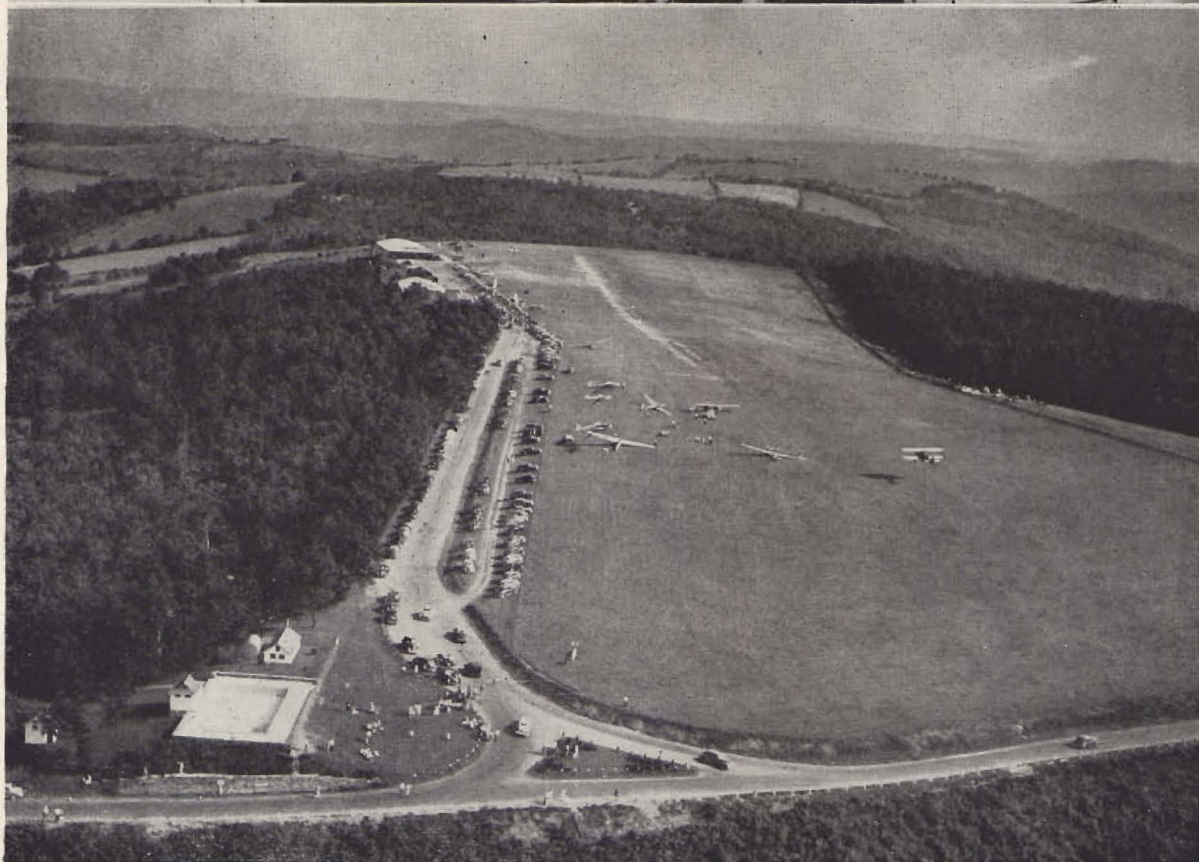
The Silhouettes of the birds on this page are all to the same scale and have been obtained by photographing actual specimens. They show the variations of ornithological "high lift" devices and dimensions are given in the accompanying table.



GANNET



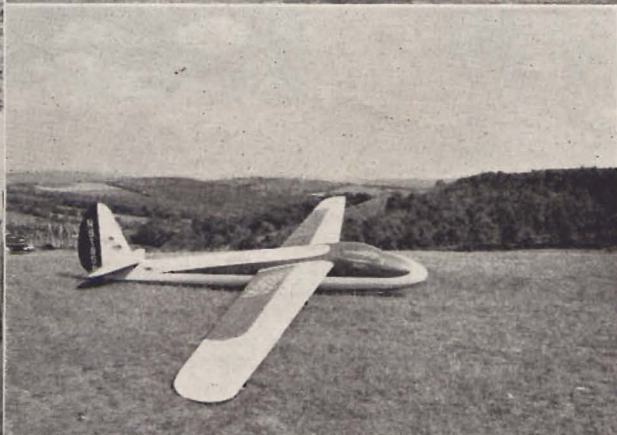
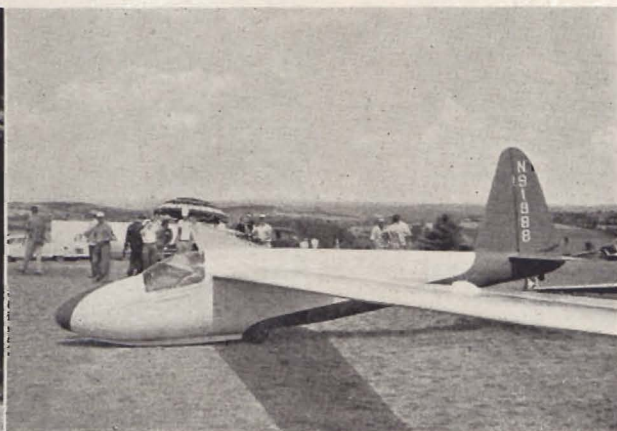
# SCENES FROM THE AMERICAN





# NATIONAL CONTESTS

ELMIRA,  
July 7th—16th



Top, left: Father and Son—Larry Gehrlein, Sr. and Jr., two of the contesting pilots. (Photo: 'Elmira Star Gazette'.)

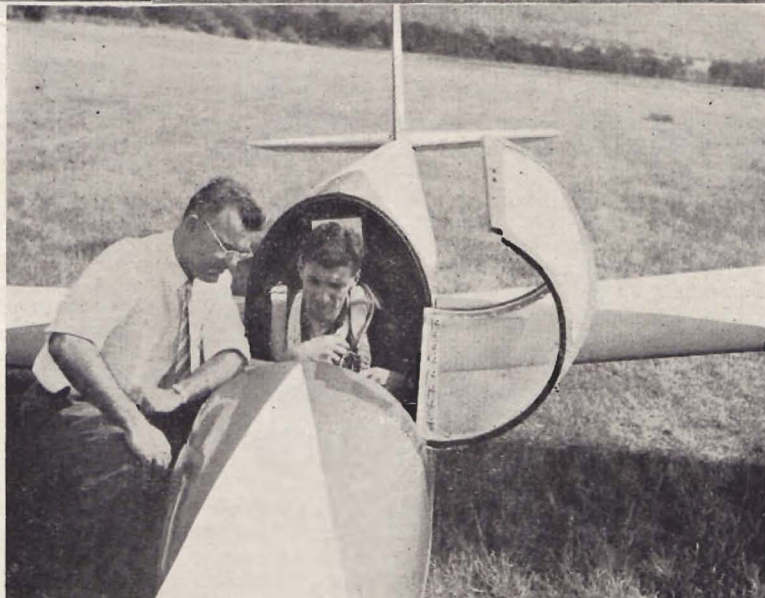
Right, top: Howard Burr's 'Schweizer 1-24'.

Centre: Stan Smith's '1-21' on Harris Hill. (Photo: 'Soaring'.)

Bottom: Paul Schweizer and Jock Forbes '1-23D Schweizer'. (Photo: 'Soaring'.)

Left hand page, top: Four winners of the Contests, left to right: Paul Schweizer, 3rd; Paul MacCready, Jr., 1st; Betsy Woodward, Women's Champion; and Stan Smith, 2nd.

Below: Bird's-eye view of Harris Hill. (Photo: T. Loomis, Elmira, N.Y.)





# GLIDING IN BELGIUM

By A. VAN ISHOVEN  
(Our Special Correspondent)

## 'Fauvel' Flying Wings Being Built in Belgium



W. Witter in a 'Sohaj,' both of A.Z.M. (Antwerp Gliding Club) and both likely to participate in next year's World Contests at Camphill.

(Photo: A. van Ishoven)

A 'Fauvel' flying wing glider is being built by A.Z.M. (Antwerp Gliding Club). Up till now the wing ribs have been completed. It is expected to fly around May, 1954. This is the first one to be built in Belgium and one of the first in the world. The only noticeable modification with regard to the original prototype will probably be the replacement of the original rather crude cockpit hood by a perspex bubble canopy.

A second 'Fauvel' will probably be built by the National Belgian Gliding Center at Temploux. The wing spar however will also be built by A.Z.M.

### BELGIAN PARTICIPATION AT THE INTERNATIONAL CHAMPIONSHIPS NEXT YEAR.

So far it is only probable and not yet certain that four Belgian pilots may participate in the Championships next year.

A.Z.M. (Antwerp Gliding Club) has formed a committee to raise the funds necessary for participation of two of its pilots. The first pilot will be W. Witter who up till now is leading pilot of the 'Concours Permanent,' a yearly classification of the best Belgian glider pilots as to their performances of the current year. The other pilot has not yet been chosen, it may be one of A.Z.M.'s members that are instructors at the National Gliding Center at Temploux, viz., H. Van Treeck and J. Vermeiren.

The two participating pilots will fly the club's 'Sohaj' and 'Fauvel.'

Ghent Gliding Club is likely to send its Dr. Gildemeyn, the only Gold 'C' pilot in Belgium who will fly the same 'Sohaj' as he did at the championships in Spain. He holds the Belgian height record.

Verviers Aviation Club may send M. Cartigny, also flying a 'Sohaj,' who holds the Belgian distance record.

### SLOTS AND FLAPS—Continued from page 11.

which have to be flapped very fast, the bird is more or less permanently in low gear, so that its rates of acceleration and climb are high, but its endurance is low. Grouse have been known to fall exhausted into the water while trying to cross a few miles of sea.

To produce a forward force on the bird the wing must twist so as to drive air back. It would be difficult to get enough twist in a short broad wing, but the same effect could be produced if the widely-separated individual feathers were to twist individually. This is what happens in the deeply-slotted wing of the game-bird. Each feather is almost on its own and is unsupported by the others. The shaft of each is much nearer the leading edge than the trailing edge. The result is that in the down-stroke (the power stroke) the force of the air on the web of the feathers causes each to twist and drive air backwards and downwards like a miniature airscrew. The other feathers of the wing which do not have to twist have their shafts centrally placed.

Thus wing-tip slots have a dual function, acting as an anti-stalling device at low speeds and providing thrust at high rates of wing-flap. In the game-bird's wing the emphasis is heavily on the side of power-production, while in the buzzard's wing the emphasis is heavily on the side of high lift at low speeds. Many birds fall between these two extremes and get some of the benefits of each effect.



## ALL-INDIA ENDURANCE GLIDING RECORD BROKEN

**F**LT./LT. V. M. BHATNAGAR, Chief Instructor of the Delhi Gliding Club, broke the all-India gliding endurance record this afternoon (19.9.53) by staying in the air for 6 hrs. 11 mins. The previous all-India record was 5½ hours.

Flt./Lt. Bhatnagar performed another feat to-day by doing a cross-country run of 50 miles and returning to the starting point—the Gliding Club airfield at Safdarjung.

He had set up an all-India altitude record last April by taking a glider up to a height of 14,000 ft.

After the flight, Flt./Lt. Bhatnagar said: 'It was most exciting.'

His 'Olympia' single-seater sailplane was released from tow at 12.30 p.m. over Safdarjung and went up to 3,000 ft. At that time, said Flt./Lt. Bhatnagar, he had no intention of being in the air for long. However, he found the weather favourable and thought he might make his first attempt at a cross-country run. The next airport being at Bahadurgarh, he zigzagged his way up there, hopping from cloud to cloud, and came down to 700 ft. As he was thinking of landing at Bahadurgarh he ran into another thermal current and it struck him that he might try to return to the starting point, although this would be something unusual. He then regained height and flew towards Najafgarh. Over Najafgarh he was flying at 5,000 ft. From Najafgarh he returned via Palam and New Delhi, landing at the airfield at 7.41 p.m., having been airborne for 6 hrs. 11 mins.

Flt./Lt. Bhatnagar started gliding in 1950. His ambition is to popularize gliding among college students.—PTI.—*The Sunday Statesman*.

## NOTES

**T**HE Gliding Sub-Committee of South Africa has tentatively suggested that Bloemfontein Military Aerodrome, at Bloemfontein, venue of the last Championships, be used again for the 1953 Championships if available, during the period Monday, 30th November, to Saturday, 12th December.

A Rand glider pilot visiting the Cape recently was surprised to see a 'Tiger Moth' apparently towing another aeroplane. On closer inspection it turned out to be a 'Hilson Prager' with its engine removed. The story reached the Rand at about the same time as the Civil Air Council started asking questions as the result of their own observations and investigations. Apparently it is the enterprising work of the members of a new Cape Gliding Club. The conversion of a light plane for use as a two-seater glider has often been discussed but never before attempted in this country, and though the 'Hilson Prager' has been temporarily grounded by the C.A.C., we can only hope that the modification is approved in due course and that the initiative shown by these enthusiasts is followed elsewhere in a similar, if more orthodox manner.

Helli Lasch is still recuperating in Europe as the result of a broken leg in a skiing accident. Helli had a similar accident last year, with a similar result.

The Gliding Sub-Committee is organising a fund-raising appeal. The appeal is aimed at raising £5,000 for the South African Gliding movement, and will be in the form of letters to large business houses throughout the Union. The primary object of the fund is to supply clubs with two-seater training gliders, and secondly to send a South African team to the next International Championships.

## THE 'GHEPPIO R.I.'

**T**HIS is an Italian single-seater sailplane intended especially for Alpine flights. It is entirely constructed in wood with the wing in one piece. There are good wing-brakes to enable landings to be made in very small fields.

Principal dimensions:—

Wingspan, 10 metres.

Overall length, 5.5 metres.

Width of fuselage, 0.46 metres.

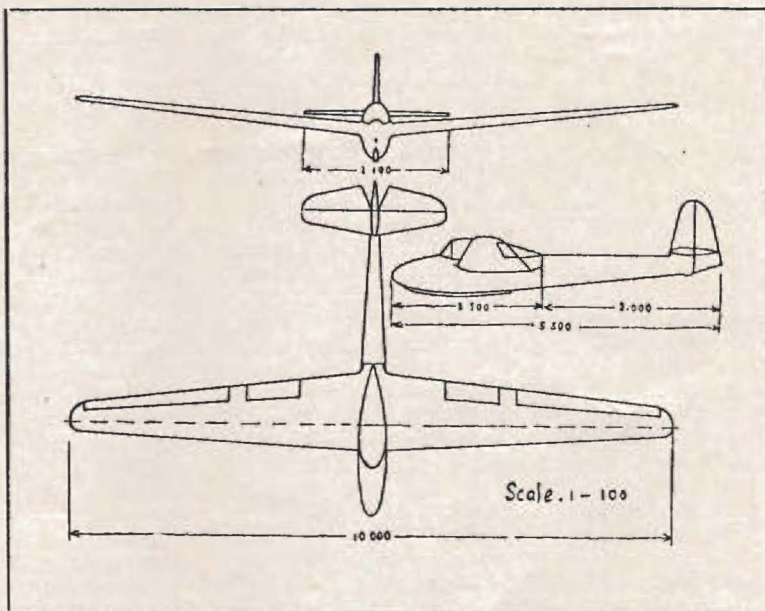
Height of fuselage, 0.90 metres.

Weight empty, 70 kg.

Wing loading, 18.75 kg./m<sup>2</sup>.

Maximum efficiency, 24.70 at 75 km./h.

Sinking Speed, 0.85 m./sec.





# FLYING AS A SPORT IN JUGOSLAVIA

VLADISLAV MATOVIC

**P**RACTICALLY nothing of the organisation of the pre-war Yugoslav Aero-club survived the Second World War. As in so many other fields of public life everything had to be re-created and it was necessary to start again right from the beginning to awaken air-mindedness among Yugoslav youth.

This renaissance was only made possible as a result of the generous support of the authorities and the tireless work of many enthusiastic young airmen. At first they had to be content with the simplest expression of air-mindedness—the building of models. However, in 1946 the Yugoslav Air Force took the initiative by encouraging gliding and forming a gliding-school at Waershezz, near the Roumanian border. At a later date this school was handed over to the Central Committee of Recreational Flying, which was the forerunner of the present Air-Union of Yugoslavia.

The need for gliding and soaring machines was great and pressing. It could only be satisfied by our producing machines of our own. So a series of Yugoslav machines soon appeared. Ing. Shoshtarich alone produced the primaries 'Vrabats' and 'Chavska,' the secondary 'Yastrab' and the high-performance sailplane 'Soko.' The German two-seater 'Kranich' was also built.

The next step was to create an enthusiasm for gliding, particularly among young people. This was done through large-scale free training in 33 gliding-schools and the organisation of annual national competitions on a broad basis. The result of this work was an increased interest in flying in general and in gliding in particular, and further, the formation of a number of Groups and Designing Offices, which have done excellent work in the design and construction of new machines: the 15-metre high-performance sailplane, the Koser/Hrovat 'Triglav'; the 'Olympia' sailplane, the Zener-Slanovec 'Udarnik'; the intermediary sailplane, the Cijan 'Caleb'; the first Yugoslav hydro-sailplane, the Koser/Hrovat 'Yadran' (Aero-type No. 20/53); the record-breaking sailplane, the 'Orao' (Aero-type No. 14/53) by Cijan-Coad with a 19-metre wing-span and a gliding ratio of 32; and finally the 'Slanovec KB-9,' the single-seater.

At the beginning of the year the first Yugoslav two-seater, the Kisovec/Ilic 'Kosava' and the two-seater primary, the Cijan 'Kobac' were completed and flown.

At the moment, Yugoslavia has over 10,000 glider pilots, who fly machines of our own design and construction. The German 'Weihe' and 'Kranich' are an exception. 105 glider pilots have the Silver 'C,' 10 have the Golden 'C,' and 3 have the Diamond 'C.'

The present Yugoslav records are as follows:—

*Single-seaters:*

Distance: 426.5 km. (Women: 146.5 km.)

Endurance: 22 hrs. 5 mins. (Women: 10 hrs. 25 mins.)

Goalfight: 426.5 km. (Women: 146.5 km.)

Goalfight with return to the start: 234 km.

Speed over a 100 km. distance: 74.35 km./h.

Absolute height: 8,624 m.

Height gain: 6,740 m. (Women: 2,125 m.)

*Two-seaters:*

Distance: 262 km. (Women: 71 km.)

Endurance: 23 hrs. 2 mins. (Women: 8 hrs. 50 mins.)

Goalfight: 207 km. (Women: 71 km.)

Goalfight with return to the start: 234 km.

Height gain: — (Women: 1,480 m.)

At the first gliding championships in Orebro in 1950, the Yugoslav pilots Milan Borishek with an 'Orao' and Max Arbayer with a 'Weihe' took the third and fourth places in a field of 29, although it was the first time that they had taken part in such an event.

As early as 1951, Yugoslav glider pilots were investigating waves in Bosnia. They are ready to go on to far greater tasks in the new machines which are now being developed and built, such as the hydro-sailplane 'Split,' the two-seater training machine 'Kobats' by Cijan, the performance two-seater 'Koshava' by Kirsovic/Lich (gliding ratio of 28), the sandwich-laminated laminar-wing single-seater 'Lasta' by Shoshtarich, and finally the 'Orao-III' by Cijan and Obad of all-metal construction. These new machines, together with a number of training gliders on the pattern of Shoshtarich's 'Roda' will raise the numbers and efficiency of Yugoslav gliding to the level where it will form a powerful reserve to the Air Force.

As a result of the earlier popularity of flying in all parts of the country, it soon became possible to start training on powered aircraft in several schools in our republic. The Federal Flying School was founded in Ruma, near Belgrade; the Aero-Club schools followed later, and finally the aerodromes in the main country towns of the Peoples' Republic took up the work. While the English 'Tiger Moth' served their purpose up to 1948, our flying movement soon had the opportunity of using the 'Trojka' with a 65 h.p. motor by Cijan Petrovitch, which had been designed and built abroad. This neat little training machine with side-by-side seating, fully aerobatic, and with modern lines has up to now created a good reputation for itself, both as an 'ab initio' trainer, and at competitions and meetings all the year round. At the moment (as with the 'Rondone' and the 'Minicab') there is a more powerful version of the 'Trojka' under construction, with a 105 h.p. motor (HM-504). Further machines which have been built for the clubs are, the '1st of May' by Zotowich, Bojorevich and Dimitrevich with a 65 h.p. motor, the 'Modly M-8' single-seater and the 'Mignet-Flying Flea' (45 h.p.), the 'Aero-2' two-seater by Cijan Petrovitch, the ultra-light 'CH-10' with a 26 h.p. motor, and the most successful KB-6 'Matajur' two-seater.

Since the Second World War, there have been three competitions for powered aircraft and four for gliders in Yugoslavia.

One of the most popular branches of our flying

(Continued on page 21)



# LETOV L-107 'LUNAK'

THIS is a Czech single-seater sailplane designed in the year 1948, especially suitable both by reason of its performance and of its robust construction for the practice of all kinds of aerobatics. Its coefficient of resistance (12.5) and the permissible speed without brakes in a dive of 350 km. per hour gives an idea of its practicability as an aerobatic machine, especially as its performance figures are good (1:24).

Its mid-level cantilever wing consists of a main spar in box form and an auxiliary spar, totally enclosed in plywood. It is provided with both airbrakes and flaps; the flap controls are coupled with the aileron controls so that these also are used as flaps but differentially. Each half of the wing can be pivoted round axes situated in the sides of the fuselage thus enabling them to be put on and taken off quite easily by only three people. The fittings are so simple that no special tools are necessary.

The fuselage is oval in section and of monocoque construction, entirely covered in wood. The pilot's cabin is very roomy and the hood—of one single sheet of plexiglass opening back—is similar to that of a modern jet aeroplane. The manufacturing firm equips these sailplanes with a wonderful set of instruments comprising a compass, an airspeed indicator reading to 400 km./h., a pneumatic turn and bank indicator, an altimeter, a variometer reading to 5 m./s. and another scaled to 30 m/s. At the customer's wish this equipment can be completed by the addition of an airspeed indicator reading to 160 km./h., an electric turn and bank indicator, an electric artificial horizon, a clock, an indicator to show when the launching cable is released, traffic lights, dashboard light, battery, and oxygen equipment.

The landing gear consists of a main skid, a low-pressure wheel behind the centre of gravity, and an auxiliary small tailskid.

All the solid part of the structure is covered in plywood and the movable sections in cloth. The elevator is balanced and can be trimmed by the pilot.

The controls are conventional, the rudder pedals being adaptable to the height of the pilot; they can be regulated in flight, thus greatly easing fatigue over long distances. The controls are on ball-bearings. A handle at the pilot's left hand controls the combined flaps and ailerons, and a small lever on the same axis controls the tail-trim. Another lever on the left side of the cabin controls the airbrakes.

The manufacturers claim that the sailplane can be dived at a speed of 350 km./h. without vibrations or warping, that the ease of control permits all classes of aerobatics to be safely performed, that it can be aero-towed at a speed of 250 km./h., and that with flaps it can be landed at less than 55 km./h.

Span .. ..	14.00 m.
Overall length .. ..	6.65 m.
Height .. ..	1.50 m.
Wing area .. ..	13.00 sq.m.
Empty weight .. ..	195 kgm.
Weight in flight .. ..	295 kgm.
Wing loading .. ..	22.7 kg./sq.m.
Best glide .. ..	1:24
Corresponding speed .. ..	80.0 km./h.
Min. sink .. ..	0.85 m/s.
Corresponding speed .. ..	72.0 km./h.
Sink at 110 km/h. .. ..	1.53 m/s.
Max. speed allowed with brake out	250 km./h.
Max. speed allowed with flaps out	120 km./h.

## A NEW BRITISH TWO-SEATER

THE first two-seater glider designed and built in this country by private effort since 1939, was successfully tested out at Portsmouth Airport, Sunday, 25th October.

Christened the 'Condor,' this sailplane has been designed and constructed throughout by two gliding enthusiasts over a period of 3 years 8 months, at an approximate cost of £150.

Mr. Frank Costin, now Chief of Aero Flight Test of De Havillands Aircraft at Chester, and Mr. Peter Davis, Draughtsman at Follands Aircraft at Hamble, conceived the idea when they were together at Follands. Their objectives being, among others, of studying and furthering Aero Dynamic research, and for personal flying. They considered that a two-seater was essential to assist in the research as well as to provide the family enjoyment.

Many new and novel ideas of structural design have been incorporated in the construction of the plane, especially in the distribution of stress loads. These

features lending themselves also to mass production methods.

The plane has a wing-span of 44 ft. 10 ins., and its overall length is just under 25 ft. A unique feature is the pilot and passenger positions being in tandem, both seats being totally enclosed.

During the construction many modifications in ideas and design were essential before finality was reached, and the whole project was a spare time effort.

Unfortunately the trials were somewhat marred with lack of wind, only a slight intermittent breeze being present. Despite this handicap the performance of the machine amazed its designers and far surpassed their most optimistic hopes. Towed by a Standard Vanguard, the maiden flight was 1 min. 45 secs. after release from about 200 ft.

It would appear that the 'Condor' will make a name for itself in the future.

GEO. T. CROUCH.



# A Soldered Trailer

By Nestor A. Montechiarini

TWO seasons ago we discovered, on undertaking the maintenance of our trailers, that one of the two wooden ones needed so much work even to patch it up that it was hardly worth undertaking, since the wood had lost all its resistance owing to damp.

In a council of war to solve the problem it was decided that since so much work would be necessary it was useless to try repairing or rebuilding but that we might be able to use the chassis and try instead a simple metal system which might be both rapid and cheap.

The idea of this construction was based simply on the use of a metal tube for the main spar and support, and we would rely on electric welding as the means of uniting the separate metal parts of the structure.

The prototype—christened 'Big Bertha' by the Club because of its resemblance to the German cannon of that name—has been in use at various contests and made a good many retrieves, showing qualities which make it in many ways superior to its wooden predecessor.

The tube used was originally destined for a column. On it at regular distances were soldered others, U-tubes with a profile of 8, whose ends were joined by angle irons also soldered, thus making a base or chassis on which was bolted a strong wooden floor to facilitate the loading and unloading of the sailplane. This tube could quite easily be replaced by a couple of girders or two U-tubes soldered together.

Ford suspension was chosen with one transversal spring whose width (aided by the wide gauge—1.8 metres from wheel to wheel) gave a very satisfactory suspension even on bad roads. This type of spring was adopted both because of its simplicity and because it suited our 'Big Bertha' so well, being able to be bolted on to supports welded to the tube. A U-tube with a profile of 10 was used for the shaft and welded to the main tube.

Two towers, joined at both ends of the chassis by four little bolts and built of angle irons and small plates welded together, enable wings of all sizes and shapes to be carried, since tarpaulin 'sleeves' half a metre wide and long enough to take any wing can be hung from the top of the towers. To protect the wings the angles of the towers are padded and slings were made of canvas with buckles. Immediately beneath the front tower there is a groove in the floor to take the skid, and the fuselage can be quickly attached to the top of the tower. The elevator lies on the floor of the trailer under the fuselage. Since the towers can easily be taken off, it is possible to use the base of the trailer for the transport of weighty or bulky objects that would not normally fit into the ordinary trailer.

The surprising thing about 'Big Bertha,' noted as a result of many journeys of all kinds, is her stability. She is very easy to tow and this we put down to her low centre of gravity, her wide gauge, and the fact that she is not solid. We have found in contests that she is much quicker to load and unload. There

# PERAK SULTAN GOES GLIDING

First Attempt by a Ruler

THE Sultan of Perak, Raja Sir Yusuf Izzudin Shah ibni Almarhum Sultan Abdul Jalil, became the first Malayan ruler to fly in a glider when he went for a fifteen minute flight in the Perak Flying Club's new two-seater, recently.

The \$12,000 glider, which the Sultan had earlier named after himself, is a gift to the club from the State Government.

The pilot plane was flown by Mr. Derek Clarke, captain of the club, while Mr. J. S. Wolstencroft, of Taiping, piloted the glider.

The Sultan had earlier watched the Deputy to the Mentri Besar, Inche Osman bin Talib, the Chief Police Officer, Mr. J. N. D. Harrison, and Mr. A. G. Argent, State Financial Officer, taken for flights.

After the flight the Sultan congratulated the pilot. He said:—'It was a wonderful experience and I enjoyed it immensely. I would urge everyone to become more air-minded and do all to further the interests of flying in the State.'

Other community leaders and officials were taken on flights during the afternoon, when demonstrations of gliding were given by members of the squadron.

On arrival the Sultan was met by the club president, Mr. E. C. G. Barrett, acting British Advisor, Perak, Mr. D. A. Somerville, District Officer, Kinta, and Mr. R. L. Akers, Commanding Officer, Malayan Air Training Corps (Number Three) Perak Squadron.

The Sultan then inspected a guard of honour of members of the squadron, after which Mr. Barrett thanked the Government for the gift.

It replaces the single-seater glider which was destroyed in a recent crash. The new glider, Mr. Barrett said, was much better than the previous one. He was sure that it would give yeoman service in promoting air-mindedness among the youth of Perak.

The Sultan then cut a ribbon which released the Perak flag covering the name 'Sultan Yusuf' inscribed on the nose of the glider.

He said he hoped that it would help to increase the air-mindedness of the youth of Perak.

*(Continued from previous column)*

are advantages of upkeep too, since apart from the spring and the wheels, the rest can be kept in good order with a lick of paint every five years or so.

There is, however, one disadvantage, and that is in the protection of the sailplane when retrieves have to be made in bad weather. To cancel this we have planned removable arcs on which could be stretched a roof of tarpaulin, and also mudguards for the wheels. That these have not yet been added to the prototype is due to 'technical hitches.' These technical hitches are probably due to the fact that we so seldom have any bad weather. . . .

*(An illustration will be included in the next issue).*



movement is undoubtedly parachute-jumping, which, like model-building, is done in all Yugoslav clubs. After a theoretical course and a course of training in the club, the pupils make their first jump from one of the transport machines of the Aero-Union. As a rule, in mountainous country, the Russian two-seater 'Po-2' and the old 'Ju-52' are used.

A whole series of records have fallen in the post-war years, namely the records for jumping from a great height, for jumping with a delayed opening and for the number of jumps to be done by one person in a day. In all these fields the successes have mainly been achieved by women. The present records are, a fall of 6,000 m., a delayed drop with a free fall of 51.8 seconds, and a massed jump of a team of seven men and one woman from 5,000 m.

At the 2nd Federal Flying Competitions in Ruma in 1949, a new type of record was introduced; the record for the highest number of jumps to be undertaken within 24 hours. Up until then the greatest number of jumps to be registered was 10. In the early part of 1950 this number rose, although gradually, to 25, 45, 75, until now the unofficial world record of 132 jumps in a day has been reached. This record was set up in May, 1950, by Janko Lutovac in Neusatz on the Donau, who made his jumps from a 'Po-2' from a height of 200 m. Miss Zagorka Spichanovich, also from Neusatz, made 25 jumps in one day. Her record was later beaten by an Argentine woman, who made 40 jumps on a summer day in 1950.

The development of parachute jumping and the experience gained in 3 Federal and several Provincial parachute-jumping competitions were sufficiently valued by the FAI for them to entrust the Yugoslav Aero-Union with the organisation of the 1st World Championship Parachute Jumping Contest in 1951 at Bled. This contest included jumping for a goal, delayed-opening jumps and jumps into water. The 19 participants came from Great Britain, France, Holland, Italy and Switzerland. The winners then were the Frenchman Pierre Lard, followed by the Yugoslav Voio Vukchevitch and the Swiss Welti. The female world champion was the Frenchwoman Monique Larroche. At foreign competitions Yugoslav jumpers gained first places at international events at Bologna, Milan and Gardone-Riveria.

Our model-builders, who have been very active in several international competitions, have twice (in 1950 and 1952) won the World Championship for model gliders.

At the end of last year the Yugoslav Aero-Union was in the following position:—

Membership : 60,000 in 174 Aero-Clubs.

Equipment : 124 powered aircraft, 217 sailplanes, 308 parachutes.

Flying Hours : with powered aircraft over 12,000 with gliders 5,033.

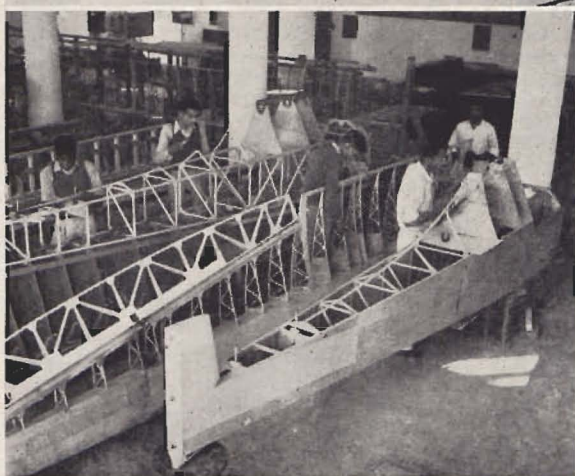
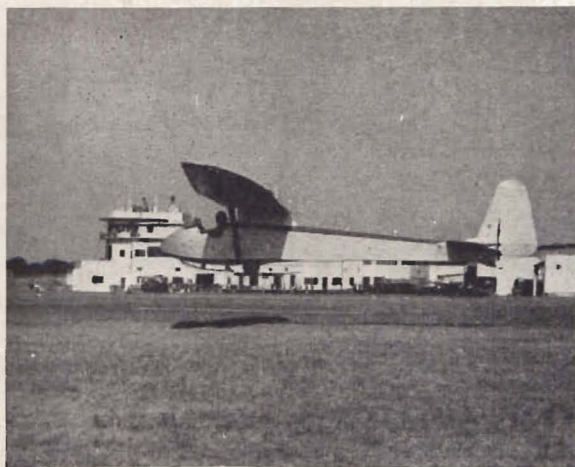
Airfields turned over to recreational flying : 35.

Parachute Jumps : 5,000.

Builders of Model Aircraft : over 10,000.

The 4th Federal Competition for sailplanes was in Borovo, for powered aircraft in Ruma, for flying models in Neusatz, and for parachute jumpers in Belgrade.

## DELHI GLIDING CLUB



Top : Practice. Centre : Gr./Capt. H. M. Chatterjee, Station Commander, S.A.F. Station, Palan, and Vice-President of the Delhi Gliding Club, being congratulated by the former record holder F/L V. M. Bhatnagar at Jafdarjang Airport on September 27th. Bottom : Delhi Club's Workshops.



## FOR SALE

**'TUTOR' wings** (almost new)—£95.  
Struts modified for 'T-31'—£5, also other parts of 'Tutor.'—Swinn, Yorkshire Gliding Club, Sutton Bank, Thirsk. Telephone: Sutton 237.

## WANTED

**'TUTOR CADET'** or similar Single-seat Glider in first-class condition. Reply to A. H. M. Pocock, Box 2041, Kampala, Uganda, by Airmail preferably.

**RESIDENT** two-seater instructor or C.F.I. required by U.K. Gliding Club. Ability as a ground engineer an advantage. Salary will depend on qualifications. Write Box 502, 'Sailplane and Glider,' 8, Lower Belgrave Street, London, S.W.1.

## '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.

## NOTES

**Germany.** Claus Dittmar, 20-year-old son of Edgar Dittmar, gained the final leg of his Silver 'C' on the 14th September, with a flight of 130 km.—a Bavarian record.

Another father-and-son Silver 'C' combination is the Swiss pair, Hermann and Nygi Dubs.

**Switzerland.** On the 23rd August, Bernard Müller made a flight of 337 km. in 5 hours 47 minutes, thus gaining the first leg of his Gold 'C.'

**India.** Pandit Nehru flew for 1 hour 45 minutes in a two-seater with F/L Bhatnagar at Delhi.

**Argentina.** The Albatross Club has begun the construction of a 'Fauvel' under licence from its designer, Charles Fauvel.

**South Africa.** A special technical commission of the Gliding Association has been sitting to study the prevention of accidents and the problems of retrieving in the National Contests.

**Argentina.** For the forthcoming gliding season a series of provincial contests have been arranged by the Albatross Club and by the Clubs of Tandil, Pehuajo, Trenque, Lauquen and Otto Ballod.

**EARLY** in 1954 our editor, Veronica Platt, will be travelling again. Between January 20th and April 20th she will visit New York, Trinidad, Jamaica, Puerto Rico, Havana, San Francisco, Manila, Singapore, Jakarta, Canberra, Sydney, Melbourne, Wellington, Auckland, Vancouver, Toronto. She would be very happy to meet old and new gliding friends anywhere *en route*. Exact dates can be obtained from the local Shell office, or from 'Sailplane.'

## ROYAL AERO CLUB CERTIFICATES

(Issued under delegation by the B.G.A.)

SEPTEMBER, 1953

CERTIFICATES 'A'	230 (16838-17067)
'B'	234
'C'	39
Silver 'C'	5
Gold 'C'	Nil.

## 'B' CERTIFICATES

No.	Name.	A.T.C. School or Gliding Club.	Date taken.
16838	J. K. Arbutnot	R.N.A.S., Eglinton	23. 8.53
16839	T. McN. Kennedy	No. 2 G.S.	27. 7.53
16840	P. M. Crook	No. 106 G.S.	27. 8.53
16841	B. E. Hawkins	No. 106 G.S.	28. 8.53
16842	A. B. Hidden	No. 106 G.S.	30. 8.53
16843	I. C. Knight	No. 106 G.S.	26. 8.53
16844	J. E. Fernandes	No. 31 G.S.	5. 6.53
16845	N. J. A. Monson	No. 166 G.S.	27. 8.53
16846	R. S. Tuxworth	Bristol G.C.	28. 8.53
16847	E. Durham	No. 24 G.S.	29. 6.52
16848	M. Gabriel	No. 7 G.S.	28. 6.53
16849	A. L. Harlett	No. 166 G.S.	27. 8.53
16850	M. T. Johnston	No. 106 G.S.	27. 8.53
16851	R. E. White	No. 106 G.S.	28. 8.53
16852	P. A. W. Carpenter	No. 106 G.S.	28. 8.53
16853	J. H. Blackmore	Bristol G.C.	28. 8.53
16854	R. Burnett	No. 123 G.S.	30. 8.53
16855	K. W. Haynes	Bristol G.C.	28. 8.53
16856	A. Molland	No. 166 G.S.	27. 8.53
16857	J. K. Scoltock	No. 42 G.S.	19. 7.53
16858	G. S. Stiles	No. 102 G.S.	16. 8.53
16860	F. B. Hazzard	No. 106 G.S.	28. 8.53
16861	A. Bialkowski	Bristol G.C.	8. 8.53
16862	P. Jackson	No. 166 G.S.	14. 8.53
16863	L. S. K. LeFleming	No. 166 G.S.	27. 8.53
16864	T. J. E. Kent	No. 141 G.S.	16. 8.53
16865	P. J. Mann	No. 166 G.S.	28. 8.53
16866	A. J. Cain	R.A.F., Halton	1. 9.53
16867	R. C. Price	R.A.F., Middleton	3. 5.53
16868	G. T. Adams	R.A.F., Detling	1. 9.53
16869	I. Bentley	No. 166 G.S.	14. 8.53
16870	A. W. Nelmes	No. 92 A.T.C.	14. 8.53
16871	F. E. Ogden	No. 24 G.S.	7. 6.53
16872	P. F. Pentreath	Army G.C.	24. 5.53
16873	C. C. Brown	Bristol G.C.	14. 8.53
16874	J. J. Burke	No. 168 G.S.	31. 7.52
16875	A. E. Chipper	No. 166 G.S.	31. 8.53
16876	M. G. H. Wells	No. 106 G.S.	27. 8.53
16877	W. M. Benn	No. 92 A.T.C.	14. 8.53
16878	P. C. S. Laurie	No. 166 G.S.	28. 8.53
16879	F. C. Naish	Bristol G.C.	26. 8.53
16880	J. Blakesley	No. 68 G.U.	5. 8.53
16881	B. C. Middleton	No. 166 G.S.	1. 8.53
16882	J. J. Tucker	No. 43 G.S.	9. 8.53
16883	P. A. Williams	R.A.F., Boscombe	11. 6.53
16884	C. F. Moss	No. 168 G.S.	26. 7.53
16885	D. J. Hall	No. 141 G.S.	16. 8.53
16886	S. T. Robertson	No. 31 G.S.	6. 6.53
16887	A. I. E. Booker	No. 125 G.S.	2. 8.53
16888	A. W. Donaldson	No. 2 (C) G.S.	27. 7.53
16889	B. A. Foster	No. 168 G.S.	2. 8.53
16890	R. J. D. McCrann	No. 166 G.S.	28. 8.53
16891	A. Muirhead	Dumfries (No. 1)	16. 8.53
16892	F. C. Thompson	R.A.F., Usworth	30. 8.53
16893	P. S. Coyle	No. 168 G.S.	3. 9.53
16894	N. A. Fox	No. 104 G.S.	6. 9.53
16895	G. R. Hammond	No. 168 G.S.	3. 9.53
16896	K. L. Hart	No. 146 G.S.	6. 9.53
16897	R. P. S. Housclander	No. 168 G.S.	6. 9.53
16898	P. Jerram	Moonrakers R.A.F.	4. 9.53
16899	B. Mumford	Bristol G.C.	6. 9.53
16900	T. K. Patterson	No. 31 G.S.	6. 9.53
16901	C. J. Pickard	No. 125 G.S.	30. 8.53
16902	D. Rees	No. 146 G.S.	25. 6.53
16903	R. M. West	No. 168 G.S.	3. 9.53
16904	R. J. Paice	No. 125 G.S.	16. 8.53
16905	D. J. J. Read	No. 143 R.A.F.	5. 9.53
16906	J. R. W. Stevenson	Midland G.C.	5. 9.53
16907	C. D. Walker	No. 92 A.T.C.	14. 8.53
16908	C. A. Fairbairn	Dartmouth G.C.	4. 9.53
16909	W. Alexander	Dartmouth G.C.	4. 9.53
16910	T. J. G. Francis	Dartmouth G.C.	4. 9.53
16911	W. M. Howard	Dartmouth G.C.	4. 9.53
16912	C. H. Lane	No. 166 G.S.	3. 8.53
16913	E. W. E. Byron	No. 126 G.S.	7. 9.53
16914	M. J. McVey	No. 126 G.S.	5. 9.53
16915	A. E. Bedwell	No. 168 G.S.	3. 9.53
16916	S. J. Cutts	No. 123 G.S.	6. 9.53
16917	J. T. Francis	No. 92 A.T.C.	14. 8.53
16918	J. E. Newman	No. 92 A.T.C.	6. 9.53
16919	G. G. Jones	No. 166 G.S.	11. 9.53
16920	I. D. Lawrie	No. 168 G.S.	4. 9.53
16921	K. A. Pocock	No. 168 G.S.	5. 9.53
16922	D. H. Wilson	Scottish G.U.	11. 8.53
16923	M. G. Griffin	R.N.A.S., Bramcote	4. 9.53
16924	A. R. Kay	No. 143 G.S.	6. 9.53
16925	N. J. Eeley	No. 168 G.S.	1. 9.53
16926	D. Bradley	No. 23 G.S.	5. 9.53



# SOARING

## Your Emblem

Have you earned a gliding or soaring certificate? Then you have something which very few people in the country, and even in the world, possess.



## SOARING BADGES

The A, B, C, Silver C and Golden C badge you received is different from the usual emblem you see people wearing. In most cases the buttons in people's lapels signify that their subscriptions are paid up. In your case it means more than payment of dues. It means you've done something. It means that, without a motor, you are striving to outdo the flight of birds. Wear your badge—and wear it proudly!

## 'B' CERTIFICATES—continued

No.	Name.	A.T.C. School or Gliding Club.	Date taken
16927	M. R. Jeffrey	Army G.C.	5. 9.53
16928	M. J. Moynihan	No. 122 G.S.	6. 8.53
16929	J. L. Hunter	Bristol G.C.	28. 8.53
16930	J. W. Nobbs	No. 166 G.S.	27. 8.53
16931	R. W. Archer	R.A.F., Halton	5. 9.53
16932	R. R. Epps	No. 142 G.S.	28. 8.53
16933	E. J. Banstead	No. 146 G.S.	5. 9.53
16934	W. Cassidy	No. 31 G.S.	6. 9.53
16935	D. St. J. Homer	No. 42 G.S., R.A.F.	5. 9.53
16936	H. M. Jones	No. 166 G.S.	28. 8.53
16937	D. A. W. King	No. 166 G.S.	26. 8.53
16938	J. S. Knight	No. 141 Detling	16. 8.53
16939	A. W. Sample	No. 26 G.S.	30. 8.53
16940	E. J. Mason	No. 126 G.S.	6. 9.53
16941	T. J. Packer	No. 1 G.S.	9. 8.53
16942	J. D. M. Preshous	No. 42 G.S.	8. 9.53
16943	W. Parker	Avro G.C.	6. 6.53
16945	B. W. Adams	Army G.C.	7. 4.53
16946	D. Crawshaw	No. 23 G.S.	6. 9.53
16947	A. G. Gordon	No. 2 (C) G.S.	3. 7.53
16948	W. I. S. Brown	No. 7 G.S.	1. 8.53
16949	R. Cooper	No. 122 G.S.	16. 8.53
16950	J. P. Sinclair	No. 2 (C) G.S.	2. 7.53
16951	M. E. W. Collet	R.N.A.S., Bramcote	4. 9.53
16952	J. D. Gray	Derby & Lincs.	5. 9.53
16953	D. N. Bedford	No. 166 G.S.	12. 8.53
16954	A. A. Martin	No. 146 G.S.	12. 9.53
16955	F. W. Webster	R.A.F., Usworth	16. 8.53
16956	G. P. Wilson	No. 42 G.S.	8. 9.53
16957	G. A. Cox	Imperial G.C.	9. 7.53
16958	D. M. Tierney	R.E.G.C., Chatham	12. 9.53
16959	K. M. Beardon	No. 142 G.S.	28. 8.53
16960	F. W. White	No. 5 G.S., R.A.F.	13. 9.53
16961	E. J. Williams	No. 68 G.U.	6. 9.53
16962	J. L. Hartfield	No. 161 G.S.	13. 9.53
16963	R. Emerson	No. 143 G.S.	12. 9.53
16964	S. A. Burns	No. 203 G.S.	2. 5.53
16965	R. A. Ham	No. 68 G.U.	13. 8.53
16966	M. W. Buckley	No. 168 G.S.	1. 9.53
16967	W. J. Jallands	Derby & Lincs.	11. 9.53
16968	H. M. C. Allen	R.N. G. & S.A., Bramcote	12. 9.53
16969	A. H. Isaacs	R.N., Bramcote	13. 9.53
16971	D. N. Frapple	Southdown G.C.	2. 8.53
16972	A. M. Spooner	No. 84 G.S.	30. 8.53
16973	S. B. Wills	Midland G.C.	1. 9.53
16974	D. C. Bruck	No. 2 (C) G.S.	10. 7.53
16975	D. J. Griffiths	No. 126 G.S.	13. 9.53
16976	M. O. Alexander	No. 168 G.S.	5. 9.53
16977	J. C. Bellamy	No. 102 G.S.	5. 9.53
16978	J. A. Hook	No. 92 A.T.C., Colerne	6. 9.53
16979	P. H. Redhead	No. 92 A.T.C., Colerne	5. 9.53
16980	N. M. Tristram	R.N.A.S., Bramcote	13. 9.53
16981	A. A. Anderson	No. 26 G.S.	2. 8.53
16982	J. D. Cornford	R.N.A.S., Bramcote	14. 9.53
16983	R. B. Davies	Dartmouth G.C.	25. 8.53
16984	J. P. Payne	Dartmouth G.C.	4. 9.53
16985	E. A. Oram	No. 125 G.S.	2. 8.53
16986	M. T. Coggan	R.A.F., Halton	5. 9.53
16988	J. E. Siggers	No. 106 G.S.	6. 9.53
16989	F. Bramwell	Avro G.C.	20. 8.53
16990	K. J. Estall	No. 166 G.S.	14. 8.53
16991	F. O. S. Wynne	Scottish G.U.	9. 8.53
16992	R. H. Carr	R.N.A.S., Bramcote	14. 9.53
16993	J. Manley	R.N.A.S., Bramcote	10. 9.53
16994	P. J. Holman	R.A.F., Halton	28. 8.53
16995	D. G. Kerr	No. 2 (C) G.S.	2. 8.53
16996	B. C. Smith	No. 106 G.S.	28. 8.53
16997	H. J. MacKenzie	No. 2 (C) G.S.	3. 7.53
16998	M. Rainer	Bristol G.C.	11. 9.53
16999	A. J. Rainer	Midland G.C.	11. 9.53
17000	R. H. Wheatley	No. 26 G.S.	30. 8.53
17001	J. G. L. McIntosh	No. 168 G.S.	23. 8.53
17002	B. R. Stephenson	No. 26 G.S.	3. 9.53
17003	W. P. Cooke	No. 2 (C) G.S.	19. 7.53
17004	D. J. Gemmell	No. 166 G.S.	28. 8.53
17005	D. L. Key	Bristol G.C.	11. 9.53
17006	W. T. McIntyre	No. 126 G.S.	13. 9.53
17007	P. J. Woods	No. 183 G.S.	30. 8.53
17008	M. J. Stahl	Bristol G.C.	11. 9.53
17009	C. W. H. Knight	Oxford G.C.	19. 9.53
17010	Anita Schmidt	No. 168 G.S.	8. 8.53
17011	B. S. Carter	Bristol G.C.	26. 6.53
17012	A. P. Athawes	No. 166 G.S.	20. 9.53
17013	J. L. Duckworth	Lincs. & Derby	16. 8.53
17014	E. N. Baig	No. 166 G.S.	1. 8.53
17015	A. Hickling	No. 122 G.S.	5. 7.53
17016	A. C. Smith	No. 42 G.S., R.A.F.	11. 9.53
17017	R. W. A. Davies	No. 166 G.S.	27. 8.53
17018	D. B. Porter	No. 102 G.S.	20. 9.53
17019	R. J. Allison	Oxford G.C.	12. 9.53
17020	W. D. Barrett	No. 104 G.S.	6. 8.53
17021	H. S. Chapman	Bristol G.C.	11. 9.53
17022	F. C. Mousley	No. 84 G.S.	20. 8.53
17023	D. J. Dulborough	No. 89 G.S.	16. 8.53
17024	D. G. Edwards	No. 141 G.S.	20. 9.53
17025	R. F. Cooper		



'B' CERTIFICATES—continued			
No.	Name.	A.T.C. School or Gliding Club.	Date taken
17026	C. J. Horsley ..	No. 84 G.S.	19. 7.53
17027	M. M. Wayne ..	No. 92 G.S.	5. 8.53
17028	A. Greenhalgh ..	H.M.S. Fulmar G.C.	26. 7.53
17029	J. L. Bolton ..	No. 122 G.S.	20. 9.53
17030	C. Hogarth ..	No. 2 G.S.	1. 8.53
17031	P. A. Alston ..	No. 42 G.S.	6. 9.53
17032	W. H. Reynolds ..	No. 130 G.S.	24. 5.53
17033	B. J. Stephens ..	No. 89 G.S.	20. 8.53
17034	Joan Usher ..	Army G.C.	7. 5.53
17035	G. Hutt ..	R.A.P., Wahn G.C.	27.10.51
17036	J. Barnett ..	No. 5 G.S.	7. 7.53
17037	B. Dart ..	No. 84 G.S.	20. 9.53
17038	M. J. Hollywell ..	No. 89 G.S.	17. 8.53
17039	D. A. Linford ..	No. 123 G.S.	30. 8.53
17040	D. W. Short ..	No. 89 G.S.	24. 8.53
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17051	E. J. Lewis ..	No. 161 G.S.	27. 9.53
17052	J. C. Burgess ..	R.N. G. & S.A.	26. 9.53
17053	B. J. Gyatt ..	No. 143 G.S.	26. 9.53
17054	R. G. Mitchinson ..	No. 130 G.S.	5. 7.53
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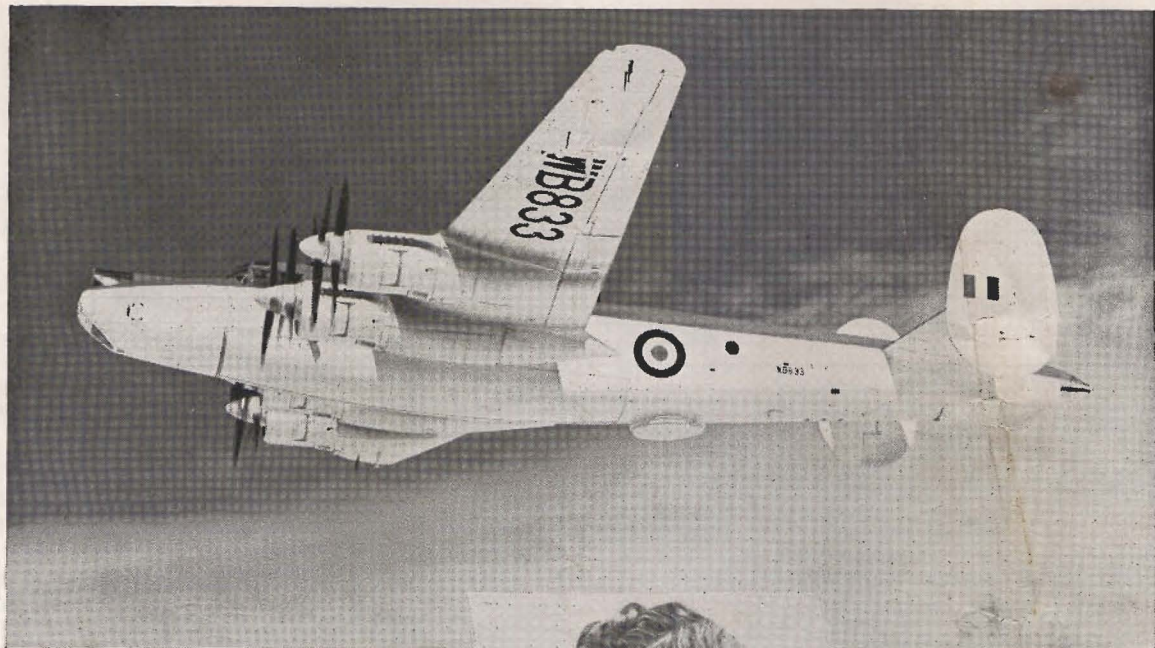
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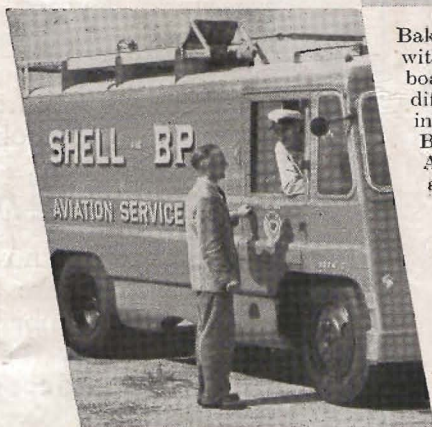
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