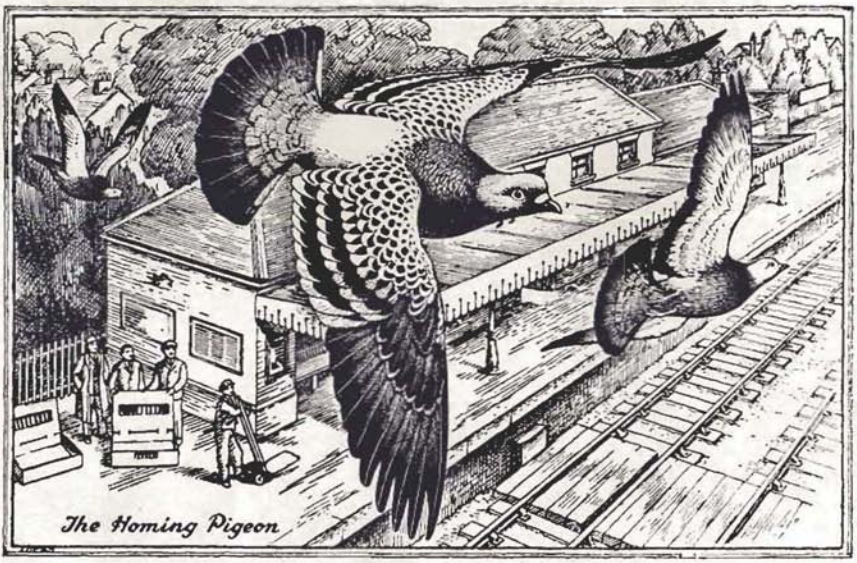
Sailplane and GLIDING

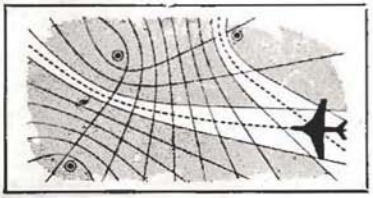
2/6

DECEMBER 1955

Problems of flight



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.

SHELL and BP AVIATION SERVICE

Shell-Mex and B.P. Ltd., Shell-Mex House, Strand, London, W.C.2
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SAILPLANE AND GLIDING

OFFICIAL ORGAN OF THE BRITISH GLIDING ASSOCIATION

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CONTENTS

COVER PHOTOGRAPH

Taken by Philip Wills 30,000 feet over Mount Cook, New Zealand, with nearly 70 degrees of frost; if the cockpit cover should disintegrate now the pilot would freeze to death

Printed for Alan Betts Limited by Young Myers & Co., Ltd. and F. A. Clements (Chatham) Ltd. of Harrow and Chatham

How do we do?

No doubt our readers are wondering as breathlessly as we are—what has been the general reaction to our new combined paper? Where have we got to, and where do we expect to be going? What are our future plans?

The more hawk-eyed reader may even before reading this article have spotted one earth-shattering improvement—this number is eight pages larger than the last, and now for the same money he has acquired 56 pages where before only 48 grew. In this inflationary age to get more of anything for the same amount of money is sensational indeed. We have of course been able to do it by virtue of the larger circulation achieved by adding together the circulation lists of the SAILPLANE and of GLIDING.

People of 48 different countries now pay good money to buy our paper. It is read amidst the sighing palms of Borneo, amidst the oriental bustles of Hong-Kong and Japan, conned by Slavonic eyes in Soviet Russia. An article of ours may form one of the few subjects which can be discussed amicably between an Israeli and an Egyptian. We like to think of Irving and Ince being read in Iceland and India and Italy and Indonesia, Goodhart in the Gold Coast, Deane-Drummond in Denmark, Piggott in Pakistan and Poland.

Our major problem is therefore not the one you might think it would be—for we are indeed solvent. The big question is, can we continue to produce a 56-page magazine of this quality six times a year, very largely on the spare-time work of unpaid enthusiasts? The answer to this is obviously "no", until you go to any of our gliding clubs and see what gliding enthusiasts can do in their spare time.

But we have had to spread the burden as much as possible, and amongst other things Godfrey Harwood has taken on the "Club News" section to ease the load on Doc Slater. Godfrey in his early wild years was on the Editorial staff of one of the Temple Press publications.

What can *you* do, dear reader, to help us on our mad victorious onward rush? The obvious thing of course is to get lots of other subscribers roped in, but there is another equally important way. When you buy anything from one of our advertisers, *tell him you read his ad. in S. & G.* About one third of each copy you read has been kindly provided for you by our advertisers, but, splendid body of men though they are, you cannot expect them to go on doing this unless they get evidence that their ads. produce results. Which, as a matter of fact, they undoubtedly do.

We were talking to a rather legendary type in Adelaide last year, one Wotherspoon who emigrated to South Australia after the war with little else except a wife and an Eon Olympia (and quite enough too, for any man's Paradise. There can be little doubt that an Olympia marks a considerable step forward on a loaf of bread and a glass of wine, but no one has yet produced any acceptable substitute for Thou). He now owns a large factory, and all the petrol companies were recently wooing him for the right to instal a petrol pump in it. He said he had no preference at all between one petrol or any other, so he gave it to Shell, because they advertised in the SAILPLANE.

What else? Our size—shall we go large and thin or remain short and stout? Reader Bryce H. Smith is one of those who implore us to go on being pocketable, so he can take quick peeks at us in leisure moments. Probably if we laid our pocket-sized fans end to end they would reach half way round the equator and couple up with our large-sized enthusiasts who would stretch on to complete the circle. It will probably ultimately boil down to what our advertisers perfer; if they have larger sized blocks for their ads. than will fit our present page-size, who are we to resist their brandished cheques? But it can't happen for a considerable time yet, anyway.

So there we are. We are solvent; our size is up, our frequency is up, our circulation is up, our quality is up, our thumbs are up. It looks like being uncommonly hard work but we have no shadow of doubt it's worth it.

WILLY-WILLIES IN AUSTRALIA

(Dust Devils anywhere else)

by Lieutenant Commander G. A. J. Goodhart

WHY willy-willies? Tradition has it that the name originates in the heart-cry of a pioneer settler's wife in the outback of this country, when she saw her young son, William, being carried aloft in his baby carriage by a particularly devilish devil.

My personal experience of these phenomena in Australia is confined to two summers in New South Wales, but has been sufficient to convince me of the folly of flying into one when within a few hundred feet of the ground. On the one occasion when I unwittingly did this very thing my sailplane was suddenly tipped into a 60-degree bank when only 100 feet up on my final approach into a close-cropped paddock. I was sufficiently ignorant to fail to realise what had hit me and spent an exceedingly lively few minutes trying to circle in what I assumed to be a particularly good thermal; it was far too narrow and violent, but it was not until it crossed the local dirt road and picked up a large part of the said dirt that I realised that I was dicing with the very phenomenon my much more experienced Australian sailplane pilot friends had warned me to steer well clear of. It appears that an appreciable number of accidents to light aircraft have occurred in outback areas of Australia through flying into willy-willies on the final approach to land.

When passing over dry, dusty country, such as freshly ploughed wheat paddocks, these rapidly revolving miniature storm cells are easily visible from the huge quantity of solid matter carried upwards for several thousand feet; on the other hand, over a surface from which little can easily be lifted, such as pastureland, they are practically invisible. An interesting point is that they are more easily visible through polaroid glasses.

From the air during a sailplane flight on January 6th, 1955, I saw no less than six willy-willies at the same time, all within an area of a few square miles and clearly visible up to an estimated height of 5,000 feet. As I was flying between 6,000 and 8,000 feet it was possible to fly above several of them; at this height, although there was good lift I encountered no solids, though I imagined I could detect a smell of earthiness. The meteorological conditions on this occasion were anti-cyclonic with a strong inversion at 9,500 feet. The relative humidity was so low that no convection cloud formed at all—the normal state of affairs in the area under discussion; the outstanding impression left

on my mind was one of terrific power in a closely-confined writhing column of dust which, where it met the ground, could be seen to be revolving rapidly in a clockwise direction.

My experience has shown that ideal conditions for the formation of willy-willies are those of extreme insolation over dry terrain coupled with a surface wind of less than 10 knots. It would thus appear that the air within a few feet of the surface becomes heated without disturbance to an abnormal degree above the ambient temperature, so that, when it does break away, it does so with such violence that the inrushing air to take its place inadvertently starts a rotative motion.

I can only consciously remember having noticed clockwise motion, but it seems likely

with so relatively small a circulation that, as with bath-water, local inequalities in terrain may affect the direction of rotation.

Having once started, it appears that a willy-willy gathers momentum rapidly and will maintain its circulation while moving several miles with the prevailing wind, before dissipating. This dissipation starts with a lifting from the ground so that, once having left the ground, the circulation, if it were visible, quickly ceases to be so.

At close quarters on the ground even a small willy is alarming. On January 7th, in the same cloudless anti-cyclonic conditions, a column of dust about 2,000 feet high was observed slowly moving across a wheat paddock. It crossed the road a few hundred yards in front of me on the outskirts of a small township and appeared to get held up in a vegetable garden being industriously worked by a venerable Chinaman with large sunhat. The devil stayed in the garden for several minutes while I watched from a few yards away on the road. It quickly lifted loose grass, paper and the Chinaman's hat and then, with increased energy, took most of his lighter vegetables, such as corn and peas before it moved on in leisurely fashion. leaving behind an enraged, bewildered and bareheaded Chinaman. While this drama was being enacted there was a local wind towards the devil of an estimated 20 knots, whereas the normal surface wind was a mere five knots.

In conclusion, it is apparent that dust devils are little more than unusually intense thermal upcurrents which develop under suitable conditions of insolation and relative calm. The violent motion close to the ground gradually weakens as height is gained and the thermal spreads, until at, say, 5,000 feet it has devolved into nothing more than a good thermal (from the point of view of the sailplane pilot) or severe turbulence (from the point of view of the power-assisted aviator).

THE 1955 UNITED STATES SOARING CHAMPIONSHIPS

by Commander Nicholas Goodhart

The Site

The selected site for the Twenty-Second U.S. National Soaring Championships was Harris Hill, Elmira, New York. It was chosen for two very good reasons: first, the 1954 Championships had been held on the West Coast; and second, it was the twenty-fifth anniversary of soaring contests at Harris Hill.

The Programme

The meet was arranged to start on July 5 and run for some nine days. This left the three-day July 4 (Independence Day) week-end for competitors to arrive and get organised, and this week-end was conveniently occupied with the celebrations of the twenty-fifth anniversary of contests.

The nine days were all contest days since the rules made no provision for rest days. On the tenth day, a Thursday, the final banquet and awards ceremony was held, again leaving three days for those who had long distances to go before the inevitable Monday morning back at work.

The Rules

The nine successive contest days were alternately task and open days. On task days, the Contest Committee could select a race to a goal, a goal and return, or round a triangle. They could also select a number of goals, the pilots being allowed to choose any one of the selected goals, in which case speed did not count and only the 20 per cent goal bonus applied. On the open days, pilots could choose a goal or a goal and return, there being 20 per cent bonus for a completed goal and 40 per cent bonus for a completed goal and return. They could also choose just straight distance, but there was little point in this since incompleted goals scored straight distance anyway.

In the case of speed tasks the formula for speed marks, which was a percentage bonus equal to the achieved speed, gave little emphasis to high-speed flying and made completion of the race the only significant factor. Another interesting point in the rules was that no minimum distance was specified. Thus an enthusiastic competitor who had failed to get away when one other competitor had completed the 25 miles necessary to make the day a contest day, *should* make a glide down into the valley covering perhaps 6 or 8 miles thus gaining a maybe significant 6 or 8 points.

Kemp Trager the 1955 U.S. National Champion with his sailplane.

By far the most important part of the rules, and a major contribution to the success of the meet, was that they were clearly stated well beforehand and then adhered to rigorously.

Final standings were determined by adding up the points for four task days and three open days.

Competing Sailplanes

Twenty-eight sailplanes took part in the contest. These included:

6 Schweizer 1-23 (long wing)
3 Schweizer 1-23 (standard)
6 Laister-Kaufman (standard)
3 Laister-Kaufman (special)

4 Schweizer 1-26
1 each of Schweizer 2-25; Schweizer 1-21; Schweizer 1-24; Schweizer 1-19; Prue 2-15; and, last but not least, a Slingsby Skylark II.

From this list it can be seen that there are not many sources of sailplanes in the U.S.A. The old war surplus L-K's still provide a good source, but in general U.S. soaring is dependent. on the Schweizer Company.

The special L-K that Kemp Trager was flying was so special that it bore no family resemblance to the type. Kemp had built a completely new single-seat fuselage with a V-tail and had largely modified the wings by the addition of extended tips and piano hinges for the ailerons. As U.S. champion for 1955 he must be pretty pleased with the results of these modifications.

The Pilots

Stan Smith and Paul Schweizer, both of whom had competed in the Internationals last year, were there; Clarence See, who was a contender for the U.S. team, was flying the 2-25; Bill Coverdale, with his new Skylark II, would have placed higher but for having his trailer side-swiped in the contest, thus losing a day; Bill Ivans, who came 3,000 miles from San Diego to compete; Alberto Araoz, crew chief for the Argentine team in last year's Internationals, was flying a 1-26; Kemp Trager and Bob Smith, who ended up at the top of the list (though at the beginning I doubt very much if they were carrying the heavy money); and myself, flying Bill Ivans' Standard 1-23 which he had trailed all the way from San Diego especially for me to use—he was flying the 1-23E which he had just bought.

I have only picked out the names which are possibly known in U.K., but there were of course another 20 or so pilots, most of whom were familiar to me from the 1953 U.S. competitions.

The Weather

The weather was decidedly good. Soaring was possible on all nine days, and moderate-to-good on eight out of the nine. On at least three days there was no cloud whatever and in the latter half of the meet there was an inversion at 5,000-6,000 feet, though early in the meet good cumulus build-ups occurred and Clarence See reported getting to 19,000 feet in the 2-25. Maximum daily ground temperatures were in the 90°s the whole time and actually reached 100° on one day, making this very strenuous contest even a little tougher.

Nick Goodhart talks to Steve Bennis beside a Schweizer 1-23 D

Stan Smith, de-rigs his 1-21, in front of the All American Engineering Co. plant at Wilmington, Delaware.

The Contest

Day No. 1, a task day, was expected to be very good and a 245-mile task was set. In the end nobody got there and the best flight of the day was Stan Smith with a distance of 208 miles.

Day No. 2, was the one bad day of the contest with overcast conditions until about 4.30. Fortunately, a neighbouring restaurant some 18 miles away had offered free steak dinners to pilots (and their crews) who landed in a particular field. It was a most remarkable thing but six pilots just managed to make 18 miles and no more—the filet mignon was delicious! Bill Ivans made the best flight of the day with 36 miles.

Day No. 3, the task was a race, 177 miles to Wilmington, Delaware. Six pilots made it and several more were quite near. I got the best speed, which gained me a $200 prize from the All American Engineering Company who own the airfield. The day was made no easier for my crew by my taking off with the car keys in my pocket. We got back at 4.00 the next morning with me sleeping on the air mattress in the back of my station wagon the whole way back. Already it was becoming apparent that one of the major factors in this contest was going to be crew and pilot endurance.

Day No. 4, saw me gain the lead with a goal flight to Troy, New York, of 169 miles. But the lead was by no means sufficient to relax, and

Day No. 5, saw me lose nearly all the lead I had. The task was a race to Norwich, only 76 miles away. I got away too early and spent a fiddling 3 hours covering 65 miles. Later take-offs went sailing by in much shorter times, and six pilots completed the goal flight. Now the wolf pack was really at my heels, and with a free day for

Day No. 6, I had to do something reasonably good. The weather was curious in the extreme, in that a band of good conditions behind a cold front was only some 20 to 30 miles wide. In attempting to work towards my goal, I got outside this band and achieved only 69 miles. However, everybody else had the same trouble and made even shorter distances, except for Paul Schweizer who I saw go into a field about 20 miles from the start but who got off again at 4.30 and made a 102-mile flight.

Day No. 7. We were all tired. In fact, *very* tired. This continuity of contest days with such good conditions is extremely wearing. But, for me, there could be no let-up if I was to keep my precarious lead.

The task for the day was choice of four goals selected by the Contest Committee. I selected the farthest (218 miles) and then was let down after 135 miles by trying to hurry too much; this was the 10th best flight of the day. Conditions were definitely good but it was all blue thermals. Best flights of the day were made by Kemp Trager, Clarence See, Steve Bennis, all of whom did 173 miles to one of the goals though only Trager had selected it.

Day No. 8. After carefully assessing the wind direction, Bill Ivans and I both decided to go west instead of south, as we reckoned the majority of the competitors would do. It turned out to be the wrong decision. We got 164 and 161 miles respectively, but the south-goers got such figures as 202 miles—Coverdale in the Skylark; 193 by Kemp Trager; Paul Schweizer and Wally Wiberg 173-mile goals.

Day No. 9, the Final Day. It was a relief to know that, come what may, this was to be the last flight of the contest. The selected task was Utica and return, a total distance of 208 miles, thus giving a chance for a considerable upheaval in the still close scoring. However, there was a fairly strong wind against the return journey, and while many reached Utica few made much mileage on the return journey, and the final results were as shown in the table.

Conclusion

The good weather made the Twenty-Second U.S. Nationals a very successful competition, but at the same time made it much too strenuous. Nine successive days with an average cross-country distance of 120 miles each day is tough going, particularly in the high temperatures we had. My crew must have had an even tougher time since, in addition to preparing the ship every morning and getting me started, they drove a distance of 3,500 miles. Thank you, Del Pierce and Jerry Astl.

At the risk of being accused of being an old fogey, I vote for provision for at least one rest day during such a contest. However it is really not for me to comment since, as a foreigner, I was only competing as a guest, and it was, therefore, a very pleasant surprise to be presented with a lovely silver bowl by the Soaring Society of America in recognition of my having scored the most points.

FINAL RESULTS

NAME	TYPE	POINTS
1. GOODHART	1-23	1081
2. TRAGER	L-K Mod.	1038
3. BOB SMITH	L-K Flattop	1036
4. IVANS	1-23E	1016
5. SCHWEIZER	1-23D	975
6. BENNIS	1-23D	887
STAN SMITH	1-21	887
7. SEE	2-25	818
8. COVERDALE	Skylark II	799
9. CARRIS	1-26	773
10. WIBERG	1-23	648
11. GEHRLEIN, Sr.	1-23D	632
12. ARAOZ	1-26	622
13. McNAY	L-K Flattop	555
14. ZAUNER	1-26	468
15. BOVENKERK	1-23D	465
16. JACKSON	L-K	403
17. KOHLS	1-26	367
18. CHRISTMAN	L-K	361
19. PFEIFFER	L-K	342
20. MILLER	1-23	273
21. BURR	1-24	199
22. STICKNEY	L-K	176
23. OPITZ	Prue 215	154
24. KERR	L-K	121
25. DARLING	L-K	67
26. BROOKS	1-23B	54
27. GEHRLEIN, Jr.	1-19	35

Contest total mileage—15,468.

German Contests at Oerlinghausen

by A. E. Slater

Two entrants at this year's German National Contests came from abroad. Gérard Pierre, present World Champion, had won the previous German contest in 1953, but this year had been beaten on his home ground by Dr. Ernst Frowein, from Germany; he brought his Breguet 901. Irve Silesmo, present Swedish Champion, brought the Weihe with which two other Swedish pilots, P. A. Persson in 1948 and Billy Nilsson in 1950, had won World Championships.

Non-competing visitors included Betsy Woodward and Dr. Klemperer, from U.S.A. Christopher Wills and the writer from England, Helli Lasch from South Africa and Guy Marchand from France. An additional party from France, including Max Gasnier and Louis Trubert, arrived on the last day, only to see their fellow-countryman, who had been leading throughout the contest, drop to second place. Also on the last day came a party from Holland, including Mr. H. V. M. Schwing, bringing with them a German pilot, Bruno Falk, who had flown from Hamburg to Holland the previous day.

The absence of several pilots of Falk's calibre from the contest showed that the best of Germany's sailplane pilots were not as fully represented as they would have been in pre-war days; nor did the number of entries, 16 single-seaters and 10 two-seaters, approach by a long way those in the last pre-war contest, in which there were 41 single-seaters and 18 two-seaters (all of Kranich type) as well as 12 more in a special class for young pilots. However, financial support is not as lavish as in those days, and German gliding has had to rebuild itself almost from scratch in the last four years, though it has made astonishing progress.

Although I could not get there until the tenth day of the meeting, there had only been two official contest days up till then. The first day of any use was August 3rd, when Ernst-Günther Haase became the only pilot to complete a triangular course, so it was not a contest day. The prototype HKS-1, with which he competed at Camphill last year, was being flown this time by August Wiethüchter, and the second model, which is only slightly different, by Dr. Frowein. Haase had a third model, the HKS 3, a smaller version with metal spars and metal ribs in the camber changing portion of the wings.

August 6th managed to be a contest day for the single-seaters, but not for the two-seaters, which failed to get round a 36-mile triangle with corners at Halle, 14 miles N.W. along the ridge, and Gütersloh, out in the plain. Among the single-seaters, Pierre got round once plus two sides of a second circuit; Haase made a circuit and one side, and a single circuit was achieved by Hanna Reitsch in a Zugvogel and by Hans Sieg and Irve Silesmo in Weihes.

At the briefing. From left to right in front row:—Gerard Pierre, Hanna Reitsch and Ernst-Günther Haase. Partly hidden by Haase is August Wiethüchter, and next to him is Jakob Laur.

On the next good day, August 9th, a rather smaller triangle of 24½ miles was set, and two pilots, Wiethüchter and Pierre, got round it five times. Frowein and Hanna Reitsch managed four circuits plus one side, and Silesmo four circuits. The two best two-seater pilots, Horst Remm of Berlin and Heinz Huth of Hamburg, each with a Kranich III, made two circuits plus two sides. Everyone scored except two single-seaters.

It was customary with all triangular tasks to allow each pilot four hours, timed from the launch, in which to get round as many times as possible. This helped to equalize everyone's chances, irrespective of their order of launch.

At the first briefing I attended on August

11th, Seff Kunz, head of the contest organisation, drew attention to the rules for avoidance of collision in thermals, as there had been a "slight" one the day before, though no worse consequences than one damaged elevator. Evidently, from his sketch on the blackboard, two thermals had overlapped, and in each one there were sailplanes making left-hand circles, which was correct according to local rules. But this inevitably brought two gliders face to face, and Kunz's advice was that each should have altered course to right, instead of trying to continue his left-hand circle.

The day's task was provisionally a triangle again, but the wind freshened and it was changed to a race to Dortmund, 55 miles to

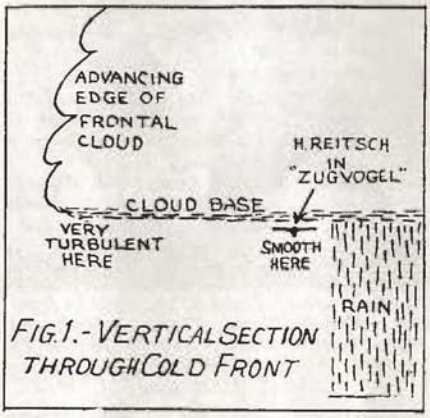

FIG.1.- VERTICAL SECTION THROUGH COLD FRONT

Diagram showing the structure of cold front on August 12th; after a sketch by Hanna Reitsch, who used the front on her 63½ m.p.h. flight to Dortmund.

the S.W., on the edge of the industrial Ruhr.

For once the experts were left behind, the only two to reach Dortmund being Jakob Laur, in a Weihe at 29 m.p.h., thereby raising himself from ninth to second place, and Gerhard Reiher, in a Mü-13E at 25 m.p.h., who jumped from 13th to fifth place. Pierre and Hanna Reitsch had many tries, the last being just before closing time at 6 p.m., when Pierre got his Breguet re-rigged in four minutes and went half way.

Hanna was unsuccessful and dropped from second to fourth place, but retrieved her position brilliantly next day, August 12th, when the task was again a race to Dortmund. Seven single-seaters and three two-seaters got there, among the earlier arrivals being Pierre at just under 40 m.p.h. the second-best speed.

Again Hanna Reitsch seemed to be having no luck, in spite of active-looking cumulus; but in the afternoon a dark storm was seen brewing to the south-east, and she had a launch at 14.44, just before it arrived. By 15.36 she was down at Dortmund, having covered the 55 miles in 52 minutes at 63½ m.p.h. average, by flying along the edge of the cold front, as the storm proved itself to be. No cloud-flying was allowed in the contest, so she flew along barely under the cloud base, some way in from the advancing edge of the line of cumulus, just outside a wall of rain. Here the lift was absolutely smooth, and so strong that she had to fly with brakes out, although going at 75 m.p.h. airspeed, which was 12 m.p.h. below the Zugvogel's limit for rough air.

Saturday, August 13th, brought an overcast sky with intermittent rain, so on Sunday the two-seaters, who had not yet had enough contest days to make a contest for their class, were given priority, as they so often were at Camphill last year. The task was again the Halle-Gütersloh triangle, and five of them made maximum points. The result was that in this class Heinz Huth became the winner with 2,594 points for the four contest days (maximum was 800 per day).

Among the single-seaters, the contest on this last day, August 14th, was more exciting, for Pierre, who had been leading with 2,436 points, was, nevertheless, fewer than 800 ahead of Hanna Reitsch with 1 835. As it happened, he did not succeed in getting round the triangle, in spite of several launches into uncertain conditions complicated by repeated spreading-out of high cover from surrounding cu-nim masses. Hanna, on the contrary, completed the course, as did also Haase, Walter Hummel in a Lo-150, and Hans Nölke, of Celle, in a Weihe.

So Hanna Reitsch became the winner with her Zugvogel, a laminar-flow type of 52 ft. 6 ins. span and 463 lbs. empty weight. It is worthy of note that she kept this machine encased in a complete cloth covering, which was not allowed to be removed from the wings until she was in the cockpit ready to start.

(Part of the above account is taken with permission from "The Aeroplane").

Final Results

Single-Seater contest

	Pilot	*Aircraft*	*Points*
1	H. Reitsch	Zugvogel	2635
2	G. Pierre	Breguet	2436
3	J. Laur	Weihe	2261
4	A. Wiethuchter	HKS1	2235
5	I. Silesmo	Weihe	2181
6	E. G. Haase	HKS3	1907
7	W. Hummel	Lo-150	1799
8	H. Sieg	Weihe	1638
9	G. Reiher	ML-13E	1562
10	H. Nölke	Weihe	1104
11	C. Dittmar	Geier	984
12	Dr. E. Frowein	HKS2	862
13	R. Kaselowski	Weihe	855
14	B. Stähle	Condor IV	624
15	H. Scheuerlein	Lo-150	198

Two-Seater contest

1	H. Huth	Kranich III	2594
2	H. Remm	Kranich III	2316
3	K. F. Hahn	Kranich III	2280
4	H. G. Heinzel	Ka II	1538
5	P. Kürten	Kranich III	1477
6	H. Seissler	Mu 13E	1433
7	P. v.Kunowski	Kranich III	1360
8	J. Kassner	Bergfalke II	1316
9	K. Hujer	Kosava	452
10	W. Merk	Kranich III	283

British Gliding Association News

National Championships

Clubs have been invited by the British Gliding Association to send in offers to organize the 1956 National Gliding Championships, stating the dates they would propose for the meeting, the approximate number of entries they anticipate being able to accept, what messing and accommodation facilities would be provided and any problems they would be faced with in organizing the meeting.

World Championships 1956

The World Championships Selection Committee has seeded the pilots, whose names were submitted to the Association, in the following order:—P. A. Wills, C.B.E., G. H. Stephenson, Commander H. C. N. Goodhart, R.N., Lt.-Col. A. J. Deane-Drummond, M.C., F. Foster, P. L. Bisgood, D. H. G. Ince, L. Welch, D. A. Smith, F/O K. C. Fitzroy, Cpl. A. Gough, J. C. Cotton, Flt.-Lt. R. C. Jones. The first four or five will be in the team, according to the number of entries allowed, and the 5th or 6th will be first reserve pilot.

California in England Trophy

A very fine silver Trophy has been presented to the Association by the California in England Lakeside Pleasure Resort at Wokingham, for annual competition among women pilots. The Council has agreed that the wording for this award shall be:—"To be awarded to a woman pilot of British Nationality for the longest flight commencing in the United Kingdom."

Records Homologated

BRITISH NATIONAL AND U.K. TWO-SEATER DISTANCE: L. Welch and F. G. Irving on 14.5.55, from Lasham to Louvain, Belgium, 254 miles in T-42 "Eagle".

BRITISH NATIONAL AND U.K. LOCAL TWO-SEATER 100-KM. TRIANGLE: L. Welch and F. G. Irving, 1.8.55, Lasham-Romsey-Fosbury Camp, 19.7 m.p.h. in T-42.

U.K. LOCAL 100-KM. SINGLE-SEATER TRIANGLE: G. H. Stephenson, 1.8.55 as above, 27.2 m.p.h.. in Sky.

U.K. LOCAL 200 AND 300 KM. SINGLE-SEATER SPEED: Bernard Thomas (Gold C and Diamond Flight), 7.8.55, Camphill to Ferryfield, 42.18 m.p.h. in Sky.

BRITISH NATIONAL AND U.K. LOCAL WOMENS' DISTANCE: Anne Burns, Lasham to Ternhill, Salop, 5.6.55, 134 miles in Olympia.

Fauvel AV-36

The Association announces that on the recommendation of the Technical Committee they are still unable to consider the issue of a B.G.A. Certificate of Airworthiness to the Fauvel AV-36, since although certain modifications have been made to the aircraft the landing characteristics remain virtually the same. Two Members appointed by the Technical Committee recently test-flew the machine in France, and although they found the flying characteristics were orthodox, at take-off and landing the aircraft still exhibited a marked tendency to bounce uncontrollably, if the ground was not perfectly smooth.

TRAILER DESIGN COMPETITION

ENTRIES for this competition, which was announced in the last issue and is open to British subjects, should be sent to the Editor c/o The British Gliding Association, Londonderry House, 19, Park Lane, London, W.1., to reach that address not later than February 1st, 1956. Drawings should conform to the specification given below, which has been drawn up by Mr. M. Neale, of Imperial College Gliding Club. Prize money to the amount of 10 guineas has been made available by the Council of the Association from the Research Fund, and the Editor's decision as to its allocation is final.

Specification

In order to give the greatest possible opportunity for original thought, the design specification has been left as open as possible and only those items considered to be vital have been included.

It is not possible to request the detail design of internal glider-carrying fittings, without supplying a set of glider drawings. Credit will however be given for the inclusion of sketches of simple, functional and reliable fittings, with some explanation to show their purpose and approximate position.

Design Specification

The design must give sufficient information to enable the trailer to be manufactured.

The trailer shall be designed to carry an Olympia, Skylark II or Skylark III.

It shall be of the minimum size consistent with the safe loading, unloading and carrying of the components of these machines.

Its desirable unladen weight is 6 cwt. but it shall in no circumstances exceed 8 cwt.

It shall be sprung, and mounted on 13-in. to 14-in. wheels fitted with 5.00 to 5.50 tyres. The wheels must be protected to catch mud thrown up by their rotation and a spare must be carried on the trailer.

It shall be fitted with a 2-in. Leeson ball hitch and mechanically operated overrun brakes fitted with a central compensator. There must be a reversing lock and a hand lever with ratchet for parking purposes.

It must be covered in durable and weatherproof material and must be lockable. It must be possible to fix any doors in the open position and they must all be operated by the same key. When open they must not increase the overall width of the trailer on the starboard side.

It must be possible to hold the loading side or end firmly in contact with the ground by a simple, robust, and accessible jacking arrangement.

The force required to lift the front end by the towing hitch handle with the trailer horizontal must be between 20 and 50 lbs. when loaded or unloaded.

It must be fitted with rear, stop and number plate lights together with reflectors of which the position, size, and brightness must comply with the road traffic act.

If the overall width exceeds 6 ft., sidelights of the streamlined type with sloping fronts to deflect hedges etc., must be fitted.

It must be possible to switch on interior illumination in the trailer from any entrance etc., when electrically connected to the towing vehicle.

The electrical connection shall be a 3-pin 5-amp round pin rubber plug with the lead position and length arranged so that the trailer cannot be rested on it.

The tow bar must permit a relative angle to the average car of 80°.

A list of parts with total lengths of various scantlings and areas of sheet material must be provided.

An estimate of the total material cost must be made and this must in no circumstances exceed £100.

KENDALL TWO-SEATER

Messrs. Elliotts of Newbury announce that they have now taken over the K-1 sailplane, in which they hope to make many modifications with the idea of evolving another prototype from this machine. The K-1 was being flight-tested prior to last year's World Gliding Championships, but tests and modifications could not be completed in time for it to take part.

THE WINGS OF ORVILLE

Reproduced from *Quo Vadimus?* or *The Case of the Bicycle*, by E. B. White, by permission of Harper & Brothers, New York.

ALL through the courtship, the building of the nest, and even the incubation of the eggs, Orville had acted in what to the hen sparrow seemed a normal manner. He had been fairly attentive, too, as cock birds go. The first indication Orville's wife had of any quirk in his nature came one morning when he turned up before breakfast carrying a ginger-ale bottle-cap in his beak.

"I won't be home for lunch," he said. His mate looked at the bottle-cap.

"What's that for?"

Orville tried to act preoccupied, but it wasn't a success. He knew he'd better make a direct answer. "Well," he said, "I'm going to fly to Hastings-upon-Hudson and back, carrying this bottle-cap."

The hen looked at him. "What's the idea of carrying a bottle-cap up the river and back?"

"It's a flight," replied Orville, importantly.

"What do you mean, it's a FLIGHT? How else would you get there if you didn't fly?"

"Well, this is different," said Orville. "I want to prove the practicability of a round-trip flight between Madison Square and Hastings-upon-Hudson carrying the bottle-cap."

There wasn't anything she could say to that. Orville stayed around for a few minutes, then, after what seemed to his wife a great deal of unnecessary fluttering on the edge of the nest, he gripped the bottle-cap firmly in his bill and departed. She noticed that he was flying faster than his usual gait, and was keeping an unusually straight course. Dutifully she watched him out of sight. "He'll be all tuckered out when he gets back," she thought to herself.

Orville, as the hen sparrow had expected, was tired that evening; but he seemed pleased with the results of the day.

"How did it go?" asked his wife, after he had deposited the bottle-cap at the base of the statue of Admiral Farragut.

"Fine," said Orville. "I ran into a little rain the other side of Yonkers, but kept right on into fair weather again. It was only bad once, when ice began to form on my wings."

His wife looked at him intently. "I don't believe for a minute," she said, "that any ice started to form on your wings."

"Yes, it did," replied Orville.

He mooched about the nest for a while, and went into a few details for the benefit of his three children.

The nest occupied by Orville's family was in a tree in Madison Square near the Farragut statue. It was no neater than most sparrows' nests, and had been constructed eagerly of a wide variety of materials, including a kite-string that hung down. One morning, a few days after the Hastings affair, Orville came to his wife with a question. "Are you through with that string?" he asked, nodding toward the trailing strand.

"Are you crazy?" she replied, sadly.

"I need it for something."

His wife gazed at him. "You're going to wreck the nest if you go pulling important strings out."

I can get it out without hurting anything," said Orville. "I want it for a towline."

"A what?"

"Listen," said Orville, "I'm going to fly to 110th Street tomorrow, towing a wren."

The hen sparrow looked at him in disgust. "Where are you going to get a wren?"

"I can get a wren," he said wisely. "It's all arranged. I'm going to tow it till we get up about three thousand feet and then I'm going to cut the wren loose and it will glide down to a landing. I think I can prove the feasibility of towing a wren behind a sparrow."

Orville's wife did not say anything more. Grudgingly she helped him pull the kite-string from the nest. Pretty strange doings, it seemed to her.

That evening Orville experimented alone with his string, tying it to one foot and then the other. Next morning he was up at the crack of dawn and had the string all lashed to his right leg before breakfast. Putting in the half hitches had occasioned an immense lot of kicking around and had been fairly uncomfortable for the youngsters.

"For goodness' sake, Orville," said the hen sparrow, "can't you take it down to the ground and tie it on there?"

"Do me a favour," said Orville. "Put

your finger on this knot while I draw it tight."

When the towline was arranged to his complete satisfaction, he flew down to the Square. There he immediately became the centre of attention. His wife, noticing how other birds gathered around, was a bit piqued to see all this fuss made over Orville. Sparrows, she told herself, will gape at anything queer. She didn't believe that Orville had actually located a wren, and was genuinely surprised when one showed up—a tiny brown bird, with sharp eyes and a long, excitable tail. Orville greeted the wren cordially, hopping briskly round and round dragging the line. When about fifty sparrows and pigeons had congregated, he took the wren to one side. "I don't want to take off," he said, "till we get a weather report."

The news that the flight was to be delayed pending a report on weather conditions increased the interest of the other birds, and one of them volunteered to fly up to Central Park and back to find out how things were. He was back in ten minutes; and said the weather was clear. Orville, without any hesitation, motioned to the wren, who seized the towline in its beak, spread its wings rigidly, and waited. Then, at a signal from Orville, they both ran as fast as they could along the grass and jumped wildly into the air, Orville beating his wings hard. One foot, two feet, three feet off the ground they soared. Orville was working like a horse. He put everything he had into it, but soon it became clear that they hadn't enough altitude to clear a park bench that loomed up directly ahead—and the crash came. Orville landed with the string tangled in one wing, and the wren fell to the ground, stunned.

No further attempt to tow a wren was made that day. Orville felt sick, and so did the wren. The incident, however, was the talk of the Square, and the other birds were still discussing it when night fell. When Orville's wife settled herself on the roosting branch beside her mate for the twittering vespers, she turned to him and said: "I believe you could have made it, Orville, if that darn bench hadn't been there."

"Sure we could have."

"Are you going to try again tomorrow?" There was a note of expectation in her voice.

"Yes."

The hen sparrow settled herself comfortably beside him. He, if any sparrow could, would prove the feasibility of towing a wren. For a minute she roosted there, happily. Then, when Orville had dropped off to sleep, she stole quietly down to the kitchen and busied herself making two tiny sandwiches, which she tied up in wax paper.

"I'll give him these tomorrow," she murmured, "just before he takes off."

TRICKS WITH THE TEPHIGRAM: III

by C. E. Wallington

With this article Mr. Wallington, who was in charge of the meteorological service at the last National Gliding Championships and at the World Championships the previous year, completes his series on the use of the Tephigram in sailplane meteorology. The first articles appeared in GLIDING *for Winter 1954-5 and Spring, 1955. Tephigram forms (No. 2810) can be obtained from H.M. Stationery Office.*

READERS of the previous articles in this series may wonder how useful a knowledge of the tephigram will be. Pilots do not normally have access to current meteorological upper air data, and even if they had, it would still be wiser to consult an experienced forecaster before using them. So why bother to understand the criss-cross of isobars, isotherms, adiabatics and such which we call a tephigram?

That's a fair question—but easily answered. First of all, any knowledge which increases a pilot's appreciation of forecasting methods helps him to receive better and more detailed forecasts. It enables the pilot to talk to the meteorologist in his own language; it encourages the meteorologist to give that extra personal attention to his customer's problems.

The second, and I think the most important, reason for acquiring a familiarity with the tephigram is that it paves the

way for a better understanding of many of the atmospheric processes constantly taking place around us. Perhaps an analogy will illustrate this point. For the pilot planning a cross-country flight, a verbal description of the countryside and landmarks around him are inadequate; he needs a map on which can be measured distances and angles according to certain rules of navigation. The meteorologist, also finding mere words inadequate, uses a sort of map on which to plan his concepts of certain atmospheric processes, but his map is called a tephigram and the lines on it are drawn in accordance with rules of thermo-dynamics. Familiarity with these rules is one of the most valuable aids a pilot can have when he delves into the meteorology of gliding. It also gives the enthusiast a better chance of testing the validity of any tentative theories he may have formed as a result of his experience in the air.

Even the few enthusiasts without pet theories of their own can still use a knowledge of the tephigram to supplement the forecasts they often make after tapping the barometer and noting the wind direction. If it is inconvenient to contact the nearest Meteorological Office the lack of detailed upper air data can partly be overcome by remembering the general shape of T-ϕ curves usually associated with particular types of weather.

Guessing the T-ϕ curve.

It is not unusual for the keen club member setting out for his flying field on a cold, cloudless morning to notice a shallow early-morning haze apparently undisturbed by what little breeze there is. In such conditions he can fairly safely conclude that, at low levels, the T-ϕ curve is shaped something like the curve TPQ_1Q_2. The section TP of this curve, indicating that the temperature increases with height, is called an inversion.

Since it is a cloudless morning the sun's rays soon warm up the ground and turn the bottom part of the T-ϕ curve into a dry adiabatic. If sufficient heat is available this process may continue until cumulus is formed. But before attempting to predict such cloud it is necessary to know the moisture content of the air and the shape of the T-ϕ curve above the inversion. It is not too difficult to make a guess at the moisture content by asking such questions as, "Is the ground dry?" "Has the haze that brownish hue typical of a smoke haze rather than a mist of minute water drops?" If so, the air is probably fairly dry and cumulus will have a high base when and if it forms. If, on the other hand, there is early morning fog instead of dry smoke haze, it could be deduced that, although some of the sun's heat would be wasted in dispersing the fog, the higher moisture content would favour

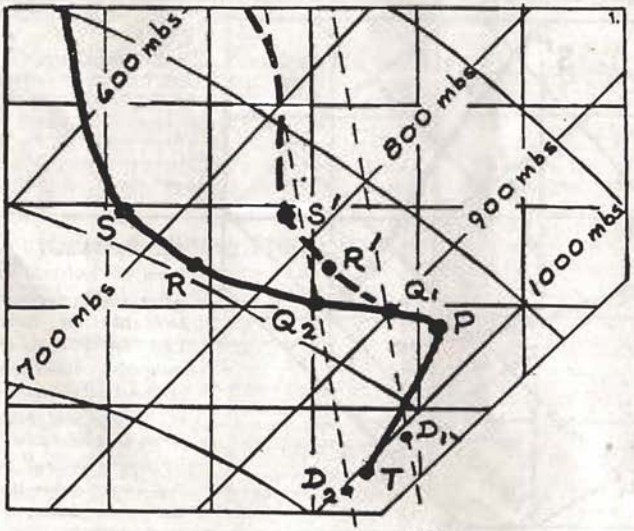

Fig. 1.—A low level inversion, indicated by TP, is usually formed during cold, cloudless nights, whenever the wind is very light. If shallow, early morning fog disperses when the sun's heat raises the ground temperature from T to D1, then D1Q1 can be taken as the water vapour content line of the air at ground level.

the formation of cumulus with a comparatively low base during the day. These deductions can be tested by taking the water vapour content lines D_1Q_1 and D_2Q_2 in Fig. 1 to represent moist and dry air and applying the technique described in the previous article.

Of course, if there has been no change in the type of weather during the past 24 hours, then the previous day's events will no doubt provide the best clue to the probable moisture content of the air. It may also provide the best indication of the shape of the T-ϕ curve above the inversion. For example, if cumulus had formed on the previous day the upper part of the T-ϕ curve would probably have resembled the curve Q_1Q_2RS in Fig. 1. The degree of instability could be assessed by noting how much cumulus had formed and how vigorous it had been.

Suppose our keen club member decides that the T-ϕ curve TPQ_1Q_2RS in Fig .1 is applicable to his locality during the early morning. How can he assess the upper level modifications likely to take place during the day?

He should now recall some of his textbook meteorology. Is the pressure rising? Did the last B.B.C. forecast suggest the approach of an anticyclone? If so, the chances are that the subsidence often associated with high pressure will gradually warm the upper air and change the T-ϕ curve into a shape something like that indicated by PQ,R'S' in Fig. 1. Obviously any cumulus which forms will tend to be damped out.

Suppose, on the other hand, barometer falls and other weather signs indicate the approach of a warm front. The warm air will eventually change the T-ϕ curve to one such as P'R'S' in Fig. 2. The change will spread from the top downwards, so that at some intermediate stage the curve will have a shape like that of $PQ_1Q_2R'S'$ in Fig. 2. In this case, not only will the gradually lowering section Q_2R tend to damp out any cumulus, but the medium cloud likely to precede the warm front will cut off the supply of sun's heat so necessary for low level convection.

The subsequent passage of a cold front could restore the T-ϕ curve to its original unstable shape, but the transition from warm to cold air is not simply the reverse of the warm frontal changes. Occasionally cold fronts in this country do exhibit the textbook structure, but this is the exception rather than the rule. These fronts are usually complex and all we can say here is that the changes they bring are often sudden, and of course the air behind them is often unstable.

Unfortunately our keen club member will often encounter rather more difficult situations than those already used as examples. Nevertheless, it is surprising

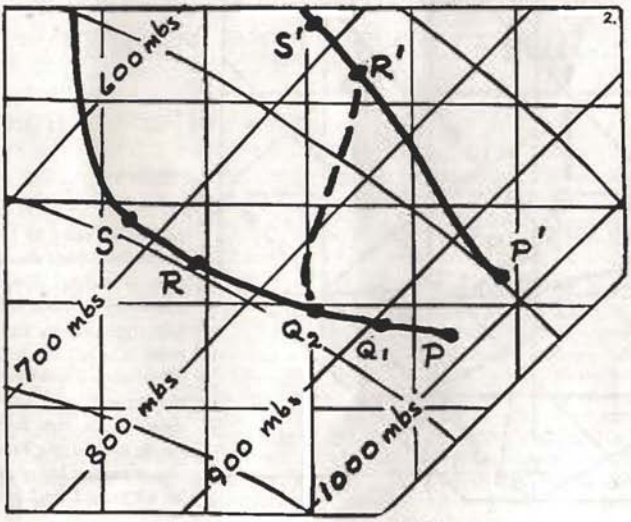

Fig. 2. T-ϕ curves for warm air and cold air often (but not always look like the curves PRS and P'R'S' respectively. Actual temperatures are not marked in the tephigrams shown, for we are concerned with the general shape of the T-ϕ curves rather than the precise details.

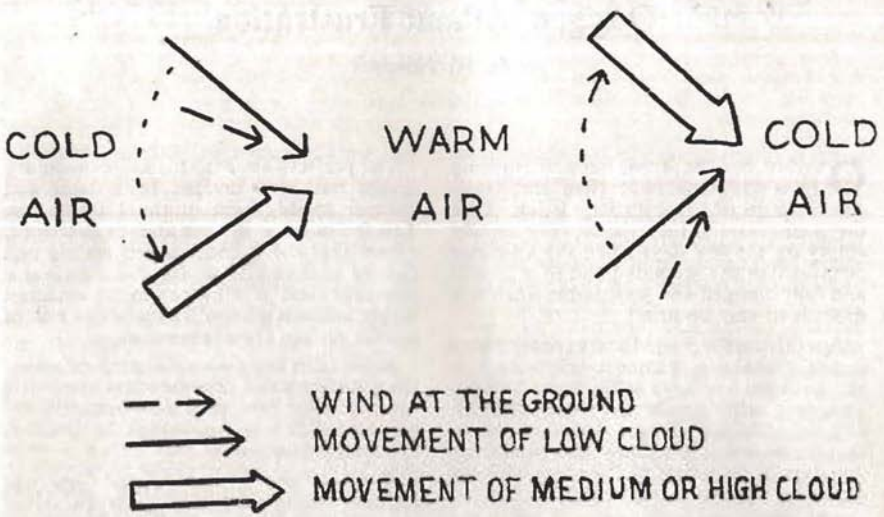

Fig. 3. Typical winds between masses of warm and cold air illustrate the significance of a wind veering or backing with height. The rule mentioned in the text can be applied whatever the general wind direction, but if the wind at the ground is used allowance must be made for the effect of low level friction or eddying.

how much information can be deduced from alert observations and logical reasoning, and such deduction can be facilitated by using (or even merely remembering) the tephigram as a thermodynamic map or memo-pad.

Upper Winds.

Some clues to the temperature trend may come readily to mind, but there is a less obvious tip which can be useful when cloud movement or high level flights reveal the wind direction aloft. As illustrated in Fig. 3, it is simply that, "If the wind above about 1,500 ft. veers (swings clockwise) with height, warm air is approaching, but if the wind backs (swings anti-clockwise) with height, then cold air is coming our way." Proof of this rule is not difficult and is left as an exercise for our dogged, keen club member.

MUNITALP COMPETITION

Winners of the competition for a meteorological essay on "Upcurrents", promoted by the Munitalp Foundation in the United States and announced in GLIDING for Winter, 1954-5, are as follows:

First Prize:—$200 to R. Swinn, Yorkshire Gliding Club, England, for essay on "Dust-Devils in Egypt".

Second Prize:—$100 to Jack H. Lambie, Elsinore, California: "Some Observations of Shear Lines Near Elsinore, California".

Third Prize:—$50 to Fred Hoinville, Melbourne, Victoria, Australia: "Wave-motions from Onshore Winds".

Fourth Prize:—$50 to Eckard Bruns, Münster, Westfalen, Germany: "The Chess Board Method".

Oxygen without Frustration

by O. W. Neumark

OXYGEN can be even more frustrating to a sailplane pilot than the heavy accumulators of the artificial horizon. Like the accumulators, the cylinders are usually empty on the few days when the altimeter behaves like the seconds hand of a watch, and fully charged and serviceable when it is difficult to stay up at all.

Apart from the weight and expense, there is the recharging problem when such a service is not available at the home airfield. This is quickly performed at any British Oxygen Company Depot but does mean that the pilot will be without his cylinder for two days or so, unless he has invested in an expensive reserve cylinder.

All these adverse factors have been revolutionised by new portable oxygen breathing equipment developed by The Walter Kidde Company mainly for the use of passengers and crew in civil aircraft. The equipment was on view at the S.B.A.C. Exhibition and is, of course, A.R.B. approved.

Although an Olympia was seen at the National Competitions equipped with a Walter Kidde 3 cylinder *fixed* installation under the pilot's feet (thus reducing the usual nose ballast), it is the company's *portable* equipment which arouses the greater interest among sailplane pilots.

This consists of a slim cylinder with a miniature pressure-contents gauge, reducing valve, main shut-off valve, 2-flow-setting control knob, and recharging connector attached to the head of the cylinder. A thin tube leads to the simple plastic face mask with a balloon. A neat cylinder-carrying bag and mask container are provided. The total weight is only 3½ lb., the diameter 2¾ inches and the height 17 inches.

Rates of flow of 3.5 or 10 litres per minute can be selected, thus providing up to 34 minutes endurance. Other rates of flow can be ordered to suit individual requirements. This standard 120-litre set is also available in clusters of 2, 3, and 4 cylinders giving a total of 240, 360 and 480 litres respectively at 1,800lb. sq. in.

The perfect answer to the sailplane pilot's dream has been created by a later and cheaper modification of the 120-litre set. This is similar to the one already described, except that the cylinder is self-sealing and can be removed from the reducing valve assembly and a fresh cylinder attached within seconds without running any risk of anoxia during the change-over.

A pilot can buy two self-sealing cylinders, the reducing valve assembly and mask at a total cost of less than the price of the standard 120-litre set which in itself is reasonably inexpensive.

Thus, if the pilot only uses up one cylinder during a flight, his reserve cylinder is available for use on the next flight while the empty one may be sent to the nearest British Oxygen Depot for recharging. The single cylinder endurance of 34 minutes should suffice on most occasions in this country but, thanks to the slim dimensions, the 2¾ lb. weight and the insignificant cost of the cylinders, there is nothing to prevent a pilot from taking his reserve cylinders into the air. A standard R.A.F. economiser would also greatly increase endurance.

To sum up the advantages of the 120-litre self-sealing portable set over any fixed installation:—

a. There is a greater probability of having at least one charged cylinder available at any time with the smallest capital outlay.

b. On days when high altitudes are impossible, the set can be left in the club without unscrewing anything.

c. No expense, labour or design modification for a permanent installation. Cylinders are attached to the pilot and not the sailplane and may be worn along the thighs or behind one's shoulders.

d. Club use: if initially there is only one set, it would not be tied to a single sailplane. This is important because the best sailplane is usually unserviceable during the best weather.

NOTES ON THE STRUCTURE OF THERMAL BUBBLES

by J. Findlater

In recent years a great deal of time has been devoted to the study of convection, and our understanding of the processes involved in warming the lower layers of the atmosphere has been greatly increased by the work of Scorer and Ludlam[1], the members of the Meteorological Office Research Flight[2], and others, including the many glider pilots who constantly explore the atmosphere. The bubble theory of Scorer and Ludlam suggests that bubbles of warm air break off, or are displaced, from the surface and mix with the environment air while rising. As they erode, the warmed air in their wakes provides paths through which other bubbles may pass with less erosion, and in time the path is prepared upwards so that some bubbles may pass the condensation level and form cloud. This theory can be linked with the results of other investigations to provide a fairly comprehensive picture of the lower layers of air on a day of normal convection, Fig. 1.

The zone between the surface and cloud base can be divided into three layers which have some notable characteristics. These are considered below.

(a) The Ground Layer.—A rather turbulent region where bubbles of varied size rise from the favourable thermal sources, the smaller ones being overtaken and absorbed by the larger. The lapse rate of temperature is often superadiabatic, and the temperature excess of the bubbles may be of the order of 1°F to 1.5°F. The top of the ground layer varies in both time and space but it can often be found about 1,000 feet above ground level.

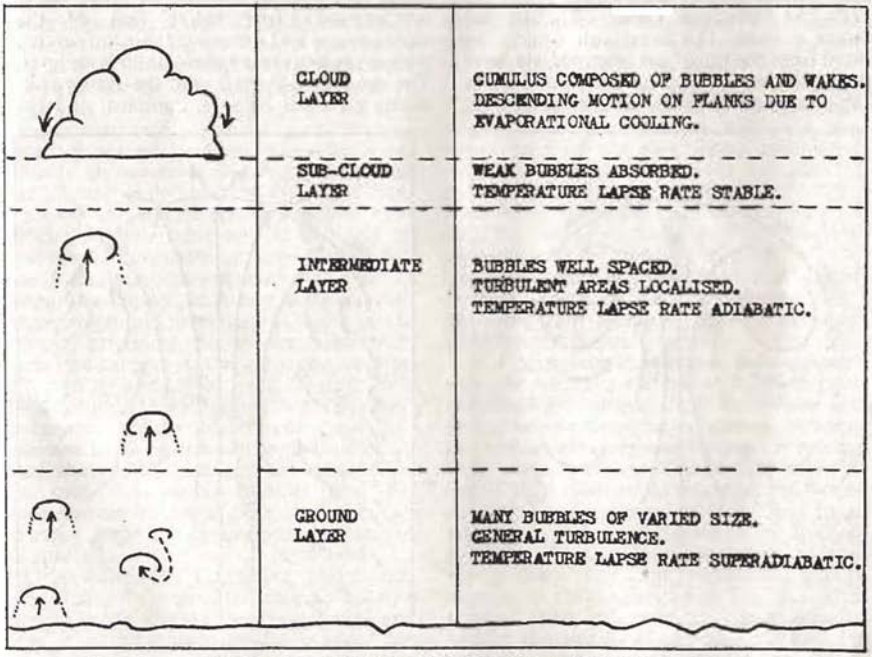

FIG. 1. SIMPLIFIED STRUCTURE OF THE LOWER CONVECTIVE LAYERS.

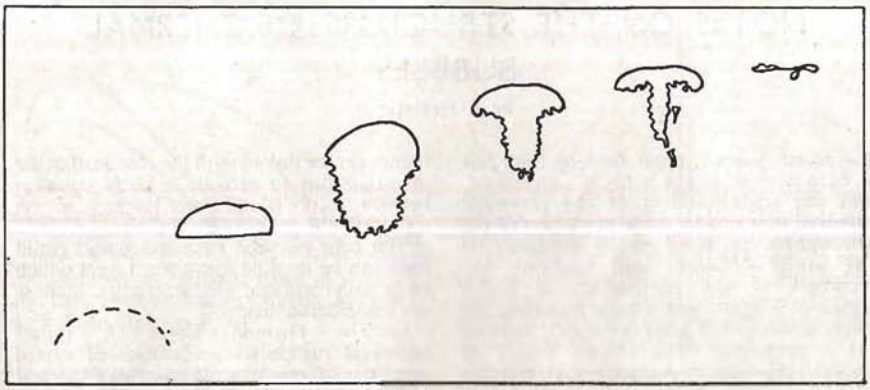

Fig. 2. The erosion of an active bubble in a dry enviroment.

(b) The Intermediate Layer.—A zone extending from the top of the ground layer to 200 feet to 400 feet below cloud base. Here the bubbles are less numerous and perhaps of a more regular size, with a temperature excess of about 0.3°F. The lapse rate is mainly adiabatic.

(c) The Sub-cloud Layer.—Though not always evident, this layer can usually be found from the top of the intermediate layer to cloud base, and is characterised by a stable lapse rate, usually in the form of an inversion or isothermal through which moisture content decreases markedly with height. It is thought that this layer forms at approximately the same time as cumulus first appears, and gradually deepens as convection proceeds. The sides of cumulus cloud are cooled by evaporation to a temperature often below that of the environment and downward motion results, perhaps penetrating below cloud-base level. The mixing of this air with the slowly subsiding air from between cumulus, and the

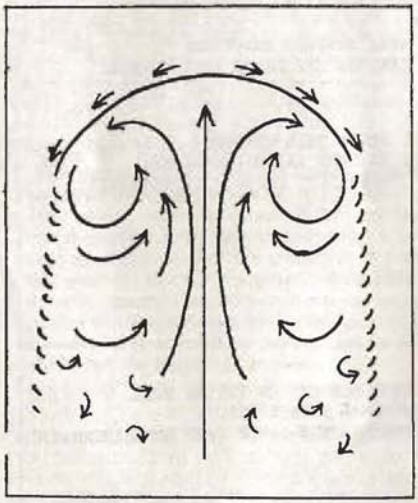

Fig. 3A. Motion within a bubble rising through a non-shearing airstream.

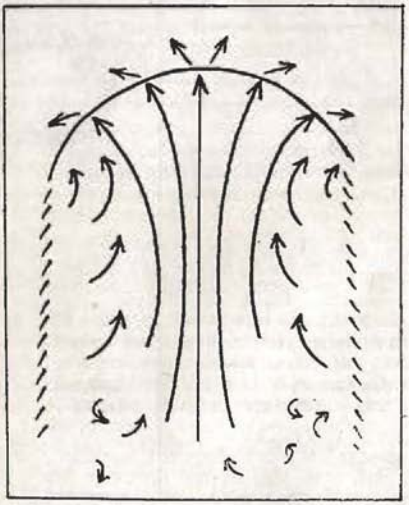

Fig. 3B. Motion relative to enviroment in a non-shearing airstream.

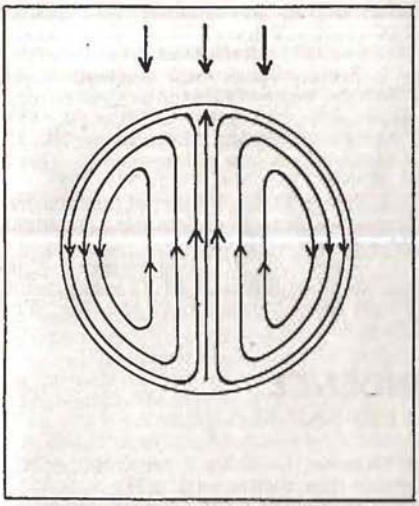

Fig. 4A. Motion within a moving fluid sphere.

Fig. 4B. Motion within a bubble rising through a shearing airstream.

warmer moist air from the surface, may well be an important factor in the formation of the sub-cloud layer, and might play some part in determining whether the cloud base will be flat or distorted. This is conjecture at present.

Since each small cumulus is often composed of several bubbles and wakes, it is difficult to observe the motion in and around any individual bubble. In consequence the internal structure has been difficult to determine and it is likely to remain so until a thorough investigation has been carried out—penetrations by a properly equipped sailplane coupled with extensive ground observations might go far towards providing the answer. However, some indication of the structure can be obtained by a study of small single-bubble cumulus under suitable conditions, the most favourable being when convection is expected to be vigorous, there is little or no wind shear, and fairly dry air exists aloft. On such days many bubbles pass the condensation level with little distortion due to shear, and their consequent erosion can be studied.

Observations by the writer, under such conditions, showed that cloudy bubbles tend to erode first on the lower flanks and base, with the erosion gradually spreading under the cap but often leaving the core intact for some time. Cap and core would then evaporate almost together. One typical case of the erosion of a cloudy bubble was sketched and is reproduced in Fig. 2.

From a study of the motion of the cloud filaments as they disperse, a loose vortex ring structure can often be discerned, the lower part of the ring being attenuated downwards, perhaps due to cooling by mixing or evaporation. A model of the motions observed and deduced within many such bubbles is shown in Fig. 3a. Vectors representing the upward velocity of the thermal air can be applied to give an idea of the motion relative to the environment, Fig. 3b,—this latter model agrees well with one proposed by Yates[3].

It is interesting to compare the suggested motions within a bubble with those in a moving fluid sphere, Fig. 4a, where the sphere is considered to be moving through its surroundings without mixing. If mixing took place, however, the leading edge or cap of the sphere could retain its characteristics due to the arrival of fresh fluid from the centre, while the sides would be exposed to mixing, thus causing distortion of the lower edge of the vortex ring, perhaps in a similar manner to that suggested in Fig. 3a. This type of structure could be applied equally well to the single-bubble cloud formed by volcanic eruptions and atomic explosions

as to the small-scale phenomena of thermal bubbles and mammatus globules.

The presence of shear in the environment would lead to further distortion of the vortex ring structure, but it seems possible that the core would be displaced up-shear with the ring breaking to form a collar on the down-shear side, the area of turbulent mixing suggested by Scorer and Ludlam. Such a formation can be obtained, Fig. 4b, by applying a vector representing shear to Fig. 3a.

While the bubble models proposed may be applicable only to the rather unusual conditions under which they were observed, it is thought that a similar structure, but to lesser degree, may exist on most days of convective activity.

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2. James, D. G. A Paper of the Meteorological Research Committee (London). *M.R.P.* No. 875, 1954.

3. Yates, A. H. "Atmospheric Convection. The Structure of Thermals below Cloud Base". *Quart. J. R. Met. Soc.*, Vol. 79, p. 420, 1953.

CORRESPONDENCE

THE FAUVEL TAILLESS SAILPLANE

Dear Sir,

I read in Vol. 6, No. 2, Summer 1955, of GLIDING, to which I am a subscriber, news of the sailplane Fauvel AV-36 in a news article from Switzerland p.77.

It is very regrettable that your correspondent has only received distorted echoes and that he did not have the opportunity to make enquiries from the only Swiss pilot, M. Neher, who has made numerous flights from the winch and on tow in an AV-36 put at his disposal during the summer of 1954. You will find enclosed a copy of the report which M. Neher prepared for the Swiss Aero Club after his experiences with this machine, which was still equipped with the old skid and had not the advantage of the shape and flexibility of the present one.

As regards the "trimming" with heavy pilots, this only makes itself felt in the AV-36 trimmed well forward and with pilots weighing much more than 75 kg. (165 lbs.). With the more backward trim now adopted by the Flight Testing Centre, it is possible for pilots from 55 to 90 kg. (121-198 lbs.) to fly without trimming ballast and without the machine showing instability with light pilots without a cushion at their back, or nose-heaviness with heavy pilots. Many classic machines, such as the Grunau IIb and the Weihe, have regulations concerning ballast for small differences in the pilot's weight; now, the AV-36 only weighs 120 kg. empty (265 lbs.), whereas the Weihe weighs more than twice as much.

It is still more regrettable that your correspondent did not have the opportunity to make enquiries on the spot in Germany, where he would have learned that the V-shaped launching bridle has never shown the least defect in functioning and that it was not a spin but a steep bank started by the pilot after an absolutely normal release which caused the accident, concerning which the enquiry did not find any other cause for the accident than the pilot's artificial leg; this had come away from the pedal, as had happened many times (but not previously near the ground) on other sailplanes because this pilot unfortunately used neither a hoop nor a strap to hold his foot on the pedal. The sliding V-shaped bridle is the same as that already used on the prototype. It is because the attachments function very well that he thought it possible to simplify with a non-sliding bridle which had been employed many times without any trouble. A return has been made to the sliding V-bridle of the prototype on the principle that it gives absolute security, and because it is more agreeable when being towed in rough weather. Moreover, this sliding V-bridle makes releases to one side during double or multiple tow extremely easy.

Finally, it is quite incorrect that there is a rule strictly enforced in France that a pilot has first to make 30 landings in another single-seater sailplane. The decision is left to the judgement of the instructors and it was only a question of considering in principle an order of magnitude of five hours. This is much less than for the Meise-Nord 2000-Olympia, since the Service de l'Aviation Légère et Sportive forbids the flying of this type of machine by pilots who have not yet completed their Silver C, whereas pilots in the Aero Clubs fly

the AV-36 without having done any of the Silver C tests, and the AV-36 allows them to perform the three tests much more easily than on any of the other machines in service which they have at their disposal, precisely because it has a superior performance, especially in thermals, to that of the Meise-Nord 2000-Olympia.

Hoping that you will be so good as to bring this letter to the notice of readers of SAILPLANE & GLIDING, I beg you, etc.

72 Boulevard Carnot, Cannes (A.—M.). CH. FAUVEL.

M. Neher's Report

1.—ARE LAUNCHING AND LANDING MORE DIFFICULT THAN WITH NORMAL AIRCRAFT? In the case of some 50 flights at Spreitenbach in the AV-36, No. 84, nearly all landings (even in strong winds) were quite exemplary (*geradezu vorbildlich*). Sometimes the aircraft was put down quite "*durchgezogen*" (literally "pulled through"). One landing carried out by me on very bad terrain (an emergency landing) was quite successful. The machine bounced two or three times, but showed not the slightest tendency to capsize (*zur Capotage*). I think I may assert that a machine with a tail would have been broken.

The launch proceeded faultlessly if the brakes were somewhat protruded in accordance with instructions. (A jettisonable undercarriage would be desirable for very small fields and with low-powered tugs.)

2.—IS THE MACHINE SOMEWHAT UNSTABLE? I flew the Monobloc (AV-36) in a turbulent cloud-upcurrent with the controls held rigid. (One circle in about 15 seconds). During the trial, which lasted about 3 minutes, the speed varied between 75 and 85 km./h. (47-53 m.p.h.). In straight flight its characteristics were similar. I believe that the very lively reactions of this light machine could have been interpreted as instability, as most of the pilots in the Testing Commission are accustomed to very heavy, large-span machines.

K. NEHER.

Zürich, August 15th, 1954.

[An announcement by The British Gliding Association referring to this machine will be found on another page.—ED.]

TRAINING OF LEFT-HANDED PUPILS

Dear Sir,

While I entirely agree with Flt. Lieut. Piggott's proposition that all pupils, right or left handed, should be trained to fly with the right hand, and that therefore the proper place for them is in the right-hand seat of the T-21, this arrangement may involve the instructor in a difficulty. Instructors, like everybody else, should normally fly right-handed, and of course when landing single-seaters they will be bound to do so; equally, of course, they must be able to take over the control of the two-seater at any stage of a training flight, and to fly and land it perfectly.

Now there are some right-handed instructors who can learn to fly nearly, if not quite, as well with the left hand as with the right; but there are others who are unlikely ever to reach the polished standard of flying with the left hand that is required for demonstrating landings in the T-21, in spite of much practice. Of those who are handicapped in this way, some are tall enough to reach the spoiler lever of the T-21 with the left hand by reaching over—or, if very long-legged, under—their knees while continuing to fly with the right hand, which normally works well enough but which could lead to trouble.

But what of the poor little instructor who can neither fly accurately nor reach the T-21 spoilers with his left hand? Must he fly with lots of cushions at his back, which puts his legs in the wrong place for the non-adjustable rudder pedals; or with his straps loose so that he can lean forward and get his left hand over; or with the pupil working the spoilers?—all clearly undesirable expedients, the use of any of which would get him drummed out of the Movement if the B.G.A. got to hear of it.

The only other thing that I can think of is that we should all modify our T-21's so that there is a duplicate spoiler control on the left of the left-hand seat, though I am told that this may be easier said than done.

What would your readers suggest?

PHILIP GASKELL.

Instrumentation in Club Sailplanes

by O. W. Neumark

THE complete standardisation of instrument panels in existing heterogeneous club fleets is difficult and a waste of time and money. Of far greater importance is the standardisation of rate-of-turn indications and ensuring that the chosen standard is the most suitable for sailplane use.

For reasons which will be discussed later, it is preferable to choose 24-volt Horn (ex-Luftwaffe) or 24-volt Pullin (ex-M.o.S. contract) rate-of-turn indicators designed for powered aircraft rather than those specifically produced for sailplanes.

The indications of the former are designed to enable a pilot to notice the slightest deviation from a straight course much sooner than he could from the indication of his azimuth gyro, to show clearly the difference between rates of turn of the order of 90, 180 and 360 degrees per minute and spins and spiral dives.

A soaring pilot, however, wants to circle in cloud at a rate of 360° in 40 seconds to about 360° in 20 seconds (that is 540 to 1080 degrees per minute) and to distinguish these states from spins and spiral dives. Very accurate course-keeping is of trivial importance in comparison.

In the past, when adjusting a Horn for sailplane use, one shortened the spring which tries to keep the turn needle in the central position. This is a rather tricky operation and can take hours, and it is easy to finish up with a needle not quite in line with the central lubber.

Mr. Peck (London Gliding Club) developed a more elegant technique wherein he increased the spring tension by increasing the diameter of the stud around which one of the spring ends was hung. He made little metal annular collars which were slipped over the stud, and by trial and error found the thickness which gave the desired indications. Once found, a small batch were produced which greatly facilitated the adjustment of all the Horn R.o.T.'s which are exclusively used in the London Club fleet.

In most marks of this instrument there is only one broad lubber and a broad needle. After the collar has been inserted, the indication given when the left edge of the needle is in line with the right side of the central lubber represents a turn to the right at about 540° per minute (40-second circle), and when the needle is displaced another full needle-width to the right, a turn of about 1080° per minute (20-second circle). There is thus a marked difference between these small movements and the stop where the needle rests during spins.

For good measure, full damping is applied, and it is remarkable how much easier it is to circle with such an instrument than with the hysterical jitter-bugging needle of an untreated rate-of-turn.

Now for the reasons why 24-volt instruments designed for powered aircraft are preferable to 9-12 volt ones specifically manufactured for sailplanes.

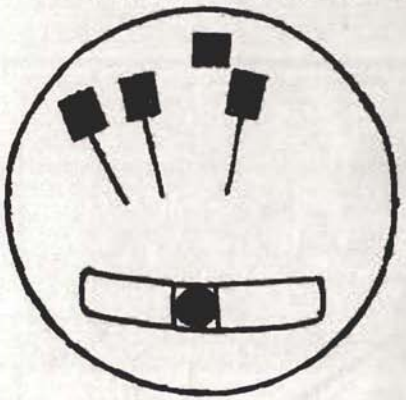
1.—With the former, cost was no object. Maximum quality, robustness, reliability and overhaul life were far more important. They were manufactured in thousands. Only insignificantly small numbers of the latter could have been produced for the sailplane market and the manufacturer's most important aim must have been to keep the cost down.

2.—The power consumption of the 24-volt instruments is about 0.075 ampéres, that of the 9 and 12-volt "glider" instruments about 0.3 ampéres. Although the batteries of the former are twice as heavy as those of the latter, this is offset by the difference in endurance. One set of batteries (Ever Ready 126, 4½ v.) for a 24-volt R.o.T. have been known to survive three summers, while the 9-12 volt instruments use up batteries so quickly that one really must install a reserve set, and hence the weight becomes the same as that of the 24-volt R.o.T. While the latter might still be preferred in privately-owned aircraft where the pilot can remember how much use he has made of each set on previous occasions, it is rather irresponsible to do this in club sailplanes because one never knows what the previous pilot has been up to, and the sudden failure of main and reserve sets in the middle of a cumulo-nimbus cloud is an ever-present possibility.

3.—There is the further consideration that the 24-volt instruments can be obtained more cheaply than the "glider" R.o.T's (the 24-volt Pullins, quite unused and in perfect condition, are available at less than 15s.

each), and it is thus possible for a club to standardise on one type, one voltage supply, standard plugs between instrument, switch and batteries, and thus to achieve full interchangeability with a reserve of spares.

Having had some experience in the design of new aircraft instrument presentation systems, I do nevertheless feel that the desire for the absolute standardisation of panels within a club fleet is based on faulty reasoning, and that the matter described above is of much greater importance. The success of the R.A.F. standard blind-flying panel used during the war in tens of thousands of aircraft is acknowledged, but



Rate-of-turn indications of an adjusted instrument, from left to right:—

1. *Spin to the left (the ball would not be central).*
2. *Turn to the left corresponding to a circle in 20 seconds.*
3. *Turn to the right corresponding to a circle in 40 seconds.*

the same advantages cannot be expected or obtained from standardisation in ten aircraft of one single club's fleet. It is, in fact, most undesirable, because it discourages the adoption of new instruments such as the wonderful new Cook compass, which would not "fit in" with a previously standardised panel. Of course, there is room for common sense, such as not placing the most frequently used instrument, the variometer, right at the bottom of the panel, etc., but this is no excuse for submitting to the strait-jacket of absolute standardisation.

Also more important are the installation of nose-pitots instead of de-icers (these really cost a fortune in battery replacements), the provision of two variometers in all high-performance sailplanes (even the best vario must give trouble some day—one may invoke the analogy of the safety aspects of twin versus single-engined aircraft), the wider adoption of artificial horizons with really reliable and light power supplies, and the use of the $3\frac{1}{8}$-inch dial for airspeed indicators, etc.

In conclusion, I would like to emphasise that the problem of keeping the instruments of ten sailplanes in a satisfactory condition differs in character from the task of looking after one privately-owned sailplane.

The World's Largest Gliding School

by Philip Wills

Reproduced by permission from "The Aeroplane"

YUGOSLAVIA is perhaps one of the least-favoured bits of the surface of the globe, and a constant reminder of the stupidity of man. For more than a thousand years it has been the scene of endless wars, and when the actual inhabitants of the land have not been fighting each other, the people of the adjacent countries have been marching to and fro fighting across it.

On our recent visit there to fly in their 1955 National Gliding Championships, we were recommended to go and see a small city in the south-west which had been destroyed fifty-three times in recorded history—surely now it could be preserved intact for future generations, as a permanent monument to *Homo sapiens*.

As a result of this horrible game of historical Snakes & Ladders, I suppose we should have anticipated the terrible poverty of the country, which nevertheless came to us as something of a shock. It might come

Inside the main restaurant, showing its elegant simplicity.

as even more of a shock to some of those who talk bitterly about a Fair Wage, were they to see what standard of life a man can actually earn for himself, if he is born in a country without an unearned inheritance of roads, bridges, railways, power lines, drainage and water grids, and all those things which here in England we take for granted as a man's Natural Rights.

But neither their poverty nor their history appears to have broken the fierce spirits of the five separate races who go to make up the Yugoslav people. The very place-names give an indication of their explosive natures. Before asking the way to Krk, an Englishman has to pause an appreciable time in order to get up the necessary steam. And how much better-tempered does the blandly vowelled town of Trieste sound than in its Yugoslav version of Trst!

Since gliding folk the world over will soon find themselves often talking of, and sometimes going to Vršac, I had better start by giving its pronunciation. Ready? Steady—go!—VUR-R-R-SHATZ.

* * * *

The 1955 Yugoslav National Gliding Championships took the extremely interesting form of a series of goal races from one end of the country to the other, starting at Maribor near the Austrian border and finishing at Skoplje, not far from Greece. The total length of the various legs was just over 1,000 kms. The British Gliding Association was not only invited to send a pilot, but when I was elected I was offered a Yugoslav Weihe sailplane to fly and such a generous and fascinating offer was irresistible. Of the various flights I will write little. Yugoslav weather did to us in 1955 what British weather did to the World Championships in 1954, and produced conditions worse than in any previous summer in living memory. Of the seven separate legs, no pilot completed three, one pilot completed one, and in the remaining three about

half the field of 20 starters arrived at the finishing points. Nevertheless, when I say that the first few places were won by Komatz, Rain, Stepanovitch and Arbajter, it will be seen that even in very bad conditions the expected best pilots still show their true relative skill.

Meteorological and control staff and equipment followed on after each flying day in a JU-52, with other camp-followers in a large bus, and the extremely tricky problem of administering a peripatetic contest of this kind was triumphantly overcome.

Retrieving gliders in a country where many roads are, by Western standards, unbelievably bad was a daily major logistic operation. If one landed in a large enough field, one of the towing aircraft, 1929 Russian PO2 biplanes with 140 h.p. 5-cylinder radials, would land beside one, produce a short tow-cable 100 ft. long, hook up, and away one was whisked. But sailplanes and their pilots in smaller fields would have to await the arrival of a trailer, and often this meant spending the night in the cockpit, or in the cottage of the local commissar, then a break-of-day bumpy road journey to the nearest aerodrome or large field from which a PO2 would take up the burden. Yugoslav glider trailers are of an unsurpassed ruggedness, and survived roads which no trailer I have ever owned would have negotiated in one piece; as it was there were occasions when I could hardly believe my eyes on seeing an undamaged Weihe brought out of the trailer after a journey which I should have thought would have disintegrated a tank.

Through all of this the Yugoslav retrieving teams, and everyone else, worked with the enthusiasm and the unbroken good humour which is the mark of gliding folk the world over. Although so much around us was strange to us, with our companions and friends we felt completely at home, for the world of motorless flight is a truly International one.

Our route was Maribor-Zagreb-Prijedor-Borovo-Vršac-Kruševac-Skoplje. It was when we reached Vršac that I had one of the major surprises of my gliding life, for although the gliding movement is now pretty well world-wide, it is not so large but that one thinks one knows all the biggest and most important centres. Yet here, in a remote corner of the Balkans, we found

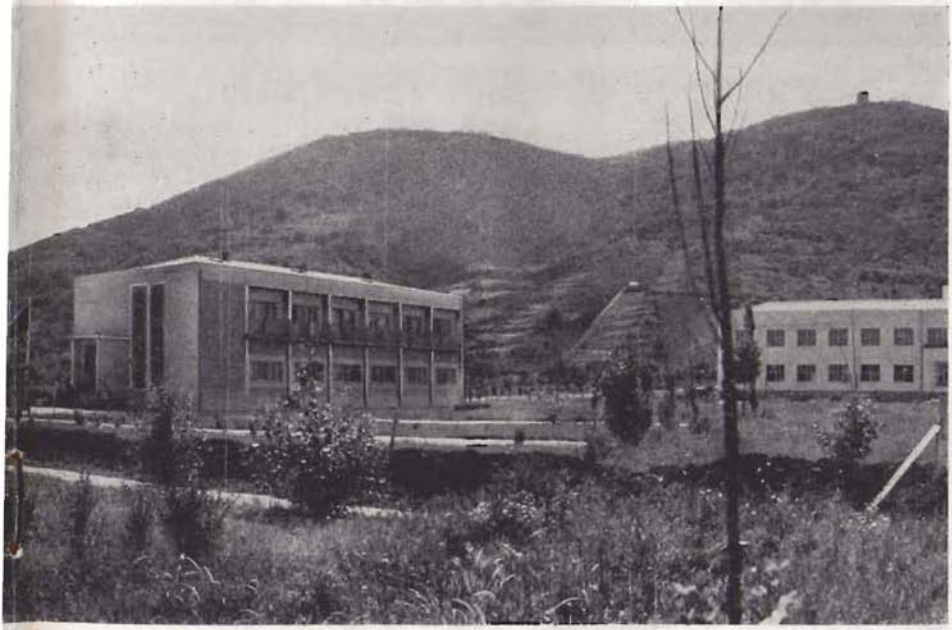
Two of the internationally-known pillars of Yugoslav gliding: Boris Cijan (seated), designer of several successful sailplanes and small aeroplanes; and Paul Crnjanski, chief of the Vrsac centre

ourselves the first English team ever to visit what is certainly the largest and best-equipped gliding school outside the Iron Curtain, or inside it for all I know.

* * * *

Vršac is about 50 miles N.E. of Belgrade, at the extreme eastermost edge of the Danube basin. The aerodrome is on the northern edge of the town. Westwards lies flat country golden with corn or green with maize and jute to the horizon. A mile or so to the east a 1,500 ft. slope, running N. and S., marks the extreme westerly point of the Caucasian mountains, and 10 kms. in this direction is the Rumanian border, whilst the Hungarian border lies hardly further away to the north. Thus the sector available for flying is confined to the west and south, where distances are not limited by politicians and indeed one flight of over 500 kms. has already been made into Greece.

Vršac has been built up as the main centre of Yugoslav sporting aviation, and I myself should like a little dual instruction in the methods by which the government support required in its development was achieved. For not only is the centre all we have



Another view of the main restaurant: the fate of the eagle on the wall is described in the accompanying article.

dreamed of for many years, but the results being achieved give the impression that it is not an extravagance, but a worth-while conception, producing results of great value to the participants and the country.

Vršac offers training facilities not only in gliders but also in light aeroplanes, parachuting and model aircraft flying, but gliding appears to be the most important and valuable sector, as any gliding enthusiast would have expected.

I have never been able to understand the fascination of parachuting before, but whilst at Vršac we had one interesting object-lesson. One of our tasks whilst there was to fly a 100-km. triangular race, finishing up back at the aerodrome, and the weather report came so late that it was only possible for the two outside turning points to be decided ten minutes before the race began. Nothing daunted, two parachutists were flown in the front seats of two PO2's to the turning points and flung over the sides, in their pockets sealed envelopes containing the various ground-signals to be displayed during each hour of the day—and their railway fares home! The railways in those parts are not very good, but I expect they are back home about now.

* * * *

The photograph shows a group of four of the main buildings of the centre. Starting from the left, Nos. 1 and 3 are two blocks of bedrooms, each of a standard of comfort unsurpassed by other gliding schools. Our room has a sun-balcony, comfortable beds, rugs on the floor, excellent furniture, and running water. Building No. 2 is the restaurant block, and photos No. 2 and 3 show the inside of the main dining room. The eagle on the wall in photo No. 3 was a bird which failed to attend its navigation class, and whilst flying on instruments on the slope collided head-on with a sailplane. It now broods over the dining pupils as a perpetual reminder to them of the necessity

of Looking Out whilst in the air. In front of the restaurant is a paved terrace, with coloured electric lighting, on which dances and other entertainments are held, in which the whole town enthusiastically participates.

The right-hand building in the large photograph is the school block, and contains a large number of class rooms, fully equipped for classes in navigation, instruments, meteorology, aerodynamics, and even English (the international language of flying), whilst on the extreme right is a large and beautifully appointed cinema hall for about 250 people. The external end-wall of this hall is to be a large map on which will be marked the various flights made during a contest and so on. This school block was due to be completed in October.

In front of it will be a swimming pool; behind it are the two large workshop blocks. The airfield and hangars are to the left of the large photograph.

Vršac is already showing its worth, and is fast becoming the Mecca of gliding pilots of other nations. Whilst we were there we met a party of six Burmese instructors who were on a twelve-months' course, having been sent there by their government preparatory to starting a gliding movement in Burma. Similar steps have been taken by several other countries, and doubtless there will be more to come, for nowhere else in the world can such excellent and all-embracing facilities be found. And this is a splendid thing, because above all else the Yugoslavs want to have more and more communication with other nations. They realise that the modern world is too small, and too close-knit to make a viable nation out of a country containing five separate races, three languages, three main religions and even two different alphabets, unless they join in the world-wide movement for closer integration between nations. And everywhere in the country—and a glider pilot, landing unexpectedly in out-of-the-way villages where no Englishman had ever been seen before, when he says everywhere, means exactly that—I found instantaneous friendship for an Engleski.

The two separate alphabets make a visitor feel indeed strange—when you cannot even read the words on a signpost you feel oddly helpless. And it took some time even to recognise myself in print when I was pointed out to myself as :—

Филип Вилс.

THE FIRST BRITISH PRIMARY

by R. H. Haddock

In this article, the first of a series on the histories of British Gliding Clubs, Mrs. Haddock, who was then Miss Sinclair, describes how the Kent Gliding Club became the first to get into the air when the earliest gliding clubs were formed at the beginning of 1930. This account was written for THE SAILPLANE & GLIDER to celebrate the tenth anniversary of this first flight. The club was not resuscitated after the war.

DESIGNED, built, and flown in five weeks—such was the beginning of "B.G. 101," the first Primary to fly in England. The late C. H. Lowe-Wylde was determined to prove that it was not essential for a machine to be brought from Germany to inaugurate the revival of gliding in this country, and shortly after forming the Kent Gliding Club on January 4th, 1930, he and five other stalwarts set to work on the Zögling-type machine which he designed.

They worked every evening and well into the small hours in a big room at the back of the Nag's Head Inn in Maidstone, and finally "Columbus" was declared ready for its test flights. (Those who knew "Jimmy" Wylde will remember his collossal drive and energy, and will appreciate the amount of work which was put into those few weeks.) The machine was exhibited partly-rigged in the show window of Messrs. Haynes Bros., and a notice was put up to say that an attempt would be made to fly on Sunday, February 23rd, at Detling. The day arrived, and Columbus and its escort approached the aerodrome to find the roads crammed with motorists, cyclists, and pedestrians—to say nothing of the Press—a positive Derby Day traffic jam, all hoping, apparently, to see the "intrepid" Columbus

soaring some 5,000 ft. or so above their heads.

No one was quite sure as to how Columbus was to be persuaded to take the air, and eventually a crew was lined up "in line ahead" with a single bungy. The first few launches resulted in slides and hops, but finally a flight (maximum length 30 yards, maximum height about 10 ft.) was made, and the first British club-built Primary had flown. The enthusiasts (among whom were members of the newly-formed London Gliding Club, including Capt. Latimer-Needham and Mr. Ashwell-Cooke) were duly satisfied, but unfortunately the crowd was not, and a riot nearly developed; so much had been expected (though not promised) that the disappointment was very great, and gliding in Kent received a set-back that took a long while to live down.

The subsequent history of Columbus included visits to Itford, Guildford, Ivinghoe, Portsmouth, Ditchling, Folkestone, Wingham, and Eastchurch, two outstanding flights (for a Primary in 1930) being those made from Itford Beacon (a 600 ft. drop) and Caesar's Camp at Folkestone. At Itford Beacon an R.A.F. pilot flew Columbus straight down the hill almost "following the contours" in what must have been the nearest approach to a T.V. dive a Primary ever got away with. The speed was estimated at 70 m.p.h.

Columbus was later joined in the Kent Club's hangar by Lowe-Wylde's first B.A.C. machine (B.A.C. I) and a B.A.C. IV and VI. Shortly before war was declared the club acquired a Kadet and had one of the Chryslers converted into a winch. Columbus was still in use for training flights up to the outbreak of war. It had had many minor modifications in its long life, but except for the conversion to strut-bracing and the replacement of the rudder by one of an improved type in 1931, this doughty veteran still had its original main components when hostilities prevented its completion of ten years of flying.

BOOK REVIEW

Song of the Sky: by GUY MURCHIE. Published by Secker & Warburg, London, 1955. Price 21s.

THIS author has had the ambitious idea of putting everything to do with the air—birds, clouds, aircraft of all kinds, and so on—into a single book. It is, of course, a poet's job—especially with a title like that. Unfortunately, your typical poet, who stands on a hilltop facing the wind and crying "O for a pair of wings!" would be horrified at the idea of joining a gliding club, so the ideal book never gets written.

Still, Mr. Murchie does his best. Referring to clouds, he says: "In the sky's wardrobe there is a dress for every occasion." Cumulus is "the head end of a wind that blows straight up", and "Cumulus nurslings emerge from their hot-air eggs over warm fields and towns . . ." But although gliding and soaring are mentioned many times, the author has obviously never done any himself—a serious omission for anyone aspiring to write this kind of book; his own flying experience has been mostly as navigator, but it has provided him with a lot of good material, and he knows his meteorology pretty well.

A vast amount of science is packed into the book, but, as in most of such books not written for scientists, there are aggravating omissions when it comes to details. Writing of insects, the author says: "some have been found twelve miles above the earth", and "a few species are actually more active when a mile high than when close to the ground." What species, and under what temperature conditions and active in what way? As to the twelve miles, it was reached (if at all) not by insects in the plural but by a spider, as we are told in another part of the book; but although the height is there given as 60,000 ft., it was only 20,000 ft. according to the book's paper cover, so what are we to believe?

Nevertheless, the book is good value, and quite fascinating. There are some striking drawings by the author, who must be the first meteorological artist to draw sections of warm and cold fronts with the earth's surface shown as curved, which obviously it ought to be in a drawing covering hundreds of horizontal miles.

A.E.S.

Gliding Certificates

COMPLETE DIAMOND BADGE

No.	*Name*	*Diamond Performance*	*Date*
1	(British) H. C. N. Goodhart	Goal Flight: 315 km. (195.7 miles)	11.5.51
42	(International)	Distance: 512.3 km. (318.3 miles)	19.8.55
		Height: 5,562.6 m. (18,250 ft.)	9.1.55

DIAMOND FOR DISTANCE

No.	*Name*	*Association*	Date
100	H. C. N. Goodhart	Royal Naval G. & S. Association	19.8.55

DIAMOND FOR GOAL FLIGHT

No.	*Name*	*Club*	*Date*
209	G. A. Hookings	Cambridge University G.C.	1.7.55
210	B. Thomas	Derbyshire & Lancashire G.C.	7.8.55
211	F. Foster	London Gliding Club	12.8.55

GOLD C

No.	*Name*	*Club*	*Date of completion*
17	G. A. Hookings	Cambridge University G.C.	1.7.55
18	B. Thomas	Derbyshire & Lancashire G.C.	7.8.55
19	F. Foster	London Gliding Club	12.8.55

SILVER C

No.	*Name*	*Club*	*Date of completion*
527	C. P. Gray	Surrey Gliding Club	15.8.55
528	D. S. Bridson	London Gliding Club	15.8.55
529	B. M. Nicholson	Surrey Gliding Club	5.8.55
530	R. S. Mettam	Surrey Gliding Club	8.8.55
531	M. P. Garrod	London Gliding Club	8.8.55
532	E. J. Martin	Derbyshire & Lancashire G.C.	14.8.55
533	R. L. Porteous	Scottish Gliding Union	1.8.55
534	J. C. Everitt	London Gliding Club	8.8.55
535	Rika Harwood	Surrey Gliding Club	10.9.55
536	T. R. H. Parkes	Bristol Gliding Club	27.8.55
537	H. W. N. Gregg	Coventry Gliding Club	31.8.55
538	A. H. Baynes	Derbyshire & Lancashire G.C.	17.9.55
539	K. O. King	Cambridge University G.C.	14.7.55
540	S. Woolston	Cambridge University G.C.	26.9.55
541	C. G. Richardson	London Gliding Club	7.5.55
542	V. F. G. Tull	Southdown Gliding Club	30.6.55
543	E. T. Ware	Fenland RAF Gliding Club	26.9.55
544	A. F. Becker	Fenland RAF Gliding Club	27.9.55

C CERTIFICATES

June

No.	*Name*	*Club or School*
19784	R. C. Jones	H.C.G.I.S. Detling
19799	P. Goldney	Army G.C.
19811	A. Eldridge	Wessex G.C.
19859	M. Lemon	Coll. of Aeron.
19887	F. J. Hartnell-Beavis	Midland G.C.
19912	D. Howarth	RAF Wunstorf
19921	D. E. Brett	RAF Brüggen
19922	P. J. Teagle	Avro G.C.
19938	E. D. Creswick	Fenland G.C.
19942	E. A. Moore	Army G.C.
19948	E. J. E. Smith	RAF Cranwell
19953	P. B. E. Thompson	London G.C.
19969	R. Ashworth	Coventry G.C.
19971	M. Randle	Midland G.C.
19998	A. C. Kilburn	Wessex G.C.
1475	L. G. Kiloh	Newcastle G.C.
2330	R. Banham	RAF Moonrakers
7617	B. Wood	Fenland G.C.
9265	J. W. Downing	No. 146 G.S.
11680	W. J. Sutherland	Derby & Lancs.
12167	J. Abraham	No. 68 G.S.
12295	J. M. Jaeger	Cambridge Univ.

13251	A. J. Bunting	Surrey G.C.
14303	D. C. E. England	RAF Cranwell
14482	M. C. Ginn	RAF Cranwell
15423	P. T. Deegan	Fenland G.C.
16634	P. T. Etheridge	Bristol G.C.
16840	P. M. Crook	Fenland G.C.
17108	J. D. Angles	Scottish G.U.
17412	K. B. Smith	No. 49 G.S.
17888	C. D. Thompson	No. 49 G.S.
17909	B. Tempest	No. 102 G.S.
18091	G. E. Moore	No. 188 G.S.
18409	W. E. Emslie	No. 42 G.S.
18577	W. B. Heginbotham	Derby & Lancs.
18621	B. E. Thorn	Fenland G.C.
18768	D. W. H. Roberts	Oxford G.C.
18777	A. R. Potts	No. 23 G.S.
19279	K. C. Gledhill	No. 43 G.S.
19574	K. R. Sanders	No. 43 G.S.
19745	W. M. Mackie	No. 24 G.S.
July		
20012	C. Scorer	Wessex G.C.
20036	A. T. Morgan	RAF Oldenburg
20100	C. M. Bruce	Empire Test Pilots
20101	S. W. Bainbridge	Empire Test Pilots
20102	A. Cope	Midland G.C.
20108	L. Milne	Derby & Lancs.
20109	C. B. W. Downes	Middleton St. George
20126	I. Lancaster	No. 105 G.S.
20142	J. Kozubek	Surrey G.C.
20143	M. W. Peters	Fulmar G.C.
20157	G. Woodward	Derby & Lancs.
20169	Christina Mercer	Derby & Lancs.
20174	J. P. Gunner	Wasserkuppe
6978	W. E. Warcup	No. 24 G.S.
12330	J. C. Strugnell	No. 105 G.S.
12788	A. Robins	Handley Page
13159	P. A. S. Langston	Imperial Coll.
14620	W. T. J. Farmer	RAF Oldenburg
15483	R. H. Jago	Fenland G.C.
15810	T. G. Dickson	No. 1 G.S.
16571	E. C. Clegg	No. 168 G.S.
16815	A. R. Pohlman	No. 106 G.S.
16919	G. G. Jones	RAF Cranwell
17465	B. Harrison	No. 42 G.S.
17964	G. Smith	No. 80 G.S.
17972	P. W. Fry	No. 80 G.S.
18150	R. F. Hunt	Army G.C.
18400	J. J. Ireland	No. 186 G.S.
18458	W. J. C. Green	No. 23 G.S.
18589	F. D. Ward	Derby & Lancs.
18896	Susan E. Burges	Surrey G.C.
18974	R. C. Chapman	Kettering Synd.
19212	A. L. Bagnall	Portsmouth G.C.
19264	J. H. Quick	Coventry G.C.
19446	D. H. Stubbings	RAF Moonrakers
19576	K. W. Darby	Coventry G.C.
19584	A. Durston	No. 87 G.S.
19765	B. B. Sinclair	Surrey G.C.
August		
20215	J. A. Wilson	Derby & Lancs.
20230	K. Chappell	RAF Brüggen
20245	R. Wilks	Derby & Lancs.
20248	D. J. Cunningham	Coventry G.C.
20276	Bertha S. Fountain	Midland G.C.
20299	D. W. Smith	London G.C.
20300	R. M. Ford	Derby & Lancs.
20374	A. J. Kay	Derby & Lancs.
20387	H. Scarlett	Derby & Lancs.
20399	N. E. Jefferys	No. 143 G.S.
12165	W. G. Younger	RAF Brüggen
13431	C. D. Philip	RAF Fassberg
14200	J. B. Hall	Derby & Lancs.
15057	A. C. S. Jempson	No. 104 G.S.
15862	T. N. Huntley	No. 166 G.S.
16666	K. Neretnieks	Midland G.C.
16742	R. Bee	No. 22 G.S.
16836	J. F. Roden	RAF Brüggen
17114	P. C. Davies	Midland G.C.
18254	M. Sonerton-Rayner	Midland G.C.
18545	R. J. Hawke	No. 80 G.S.
18612	T. E. Cody	RAF Moonrakers
18778	D. R. Redman	No. 105 G.S.
18783	C. C. Ross	Scottish G.U.
18905	P. W. Marlow	Surrey G.C.
18977	C. K. Haswell	Midland G.C.
19078	D. K. Daniels	Avro G.C.
19079	C. E. Passmore	No. 146 G.S.
19347	B. Townsend	No. 80 G.S.
19550	A. V. Blanchard	Avro G.C.
19750	R. Rogers	Midland G.C.
19781	J. H. Stanley	Midland G.C.
19800	P. W. Hunt	No. 80 G.S.
19939	E. H. Fairney	Midland G.C.
20125	R. R. Sharratt	Derby & Lancs.
20284	J. D. Paterson	Scottish G.U.
20298	P. Y. Balmforth	RAF Brüggen
September		
20482	T. Robson	RAF Geilenkirchen
20494	D. F. Booth	Derby & Lancs.
20496	R. N. Brock	Derby & Lancs.
20523	F. W. Allen	RAF Wessex
20539	R. S. Dunn	No. 92 G.S.
20561	R. B. Lezemore	RAF Wessex
20568	T. M. O'Brien	Fenland G.C.
10569	C. D. W. Pleasance	Cambridge Univ.

20580	B. I. Stevens	No. 122 G.S.
20589	J. Wooller	RAF Moonrakers
20627	M. Caws	RAF Wessex
20653	E. C. Hunt	No. 48 G.S.
20661	J. Delafield	Surrey G.C.
20685	P. Jackson	Derby & Lancs.
5002	D. W. Green	No. 130 G.S.
6149	G. C. J. MacPherson	RAF Detling
10082	K. S. Whiteley	No. 48 G.S.
11341	D. G. Cooper	RAF Geilenkirchen
15125	W. Monteith	Coll. of Aeron.
15149	P. W. Corner	RAFMoonrakers
15273	J. Burgess	Scottish G.U.
16663	D. A. Marks	Dert y & Lancs.
16682	D. J. Priest	No. 166 G.S.
17155	J. K. Davies	No. 186 G.S.
17353	J. F. Randall	Fenland G.C.
17626	T. A. Nunn	No. 105 G.S.
17797	A. A. B. Davies	No. 22 G.S.
17856	J. N. H. Cox	No. 23 G.S.
18025	R. Fowler	No. 186 G.S.
18055	C. P. Haworth	No. 45 G.S.
18249	A. O. Wood	London G.C.
18255	J. N. Stevenson	Army G.C.
18535	Laurie S. Lycett	Southdown G.C.
19138	C. Meleson	No. 89 G.S.
19156	W. D. MacGillivray	No. 92 G.S.
19213	T. G. Osmaston	Coll. of Aeron.
19278	R. D. Hardwick	No. 92 G.S.
19351	T. L. Adcock	No. 80 G.S.
19483	J. MacLean	Scottish G.U.
19540	J. Allan	Scottish G.U.
19691	M. J. Cuttell	No. 80 G.S.
19692	R. A. J. T. Oram	No. 80 G.S.
19930	A. J. Dill	RAF Windrushers
19962	P. B. Cotton	Midland G.C.
19988	R. C. Lawson	London G.C.
20007	B. I. F. Canton	No. 92 G.S.
20037	J. D. Stephens	Handley Page
20274	C. A. Sweeney	London G.C.
20363	S. J. Minshall	Midland G.C.
20373	L. A. G. Glover	Coventry G.C.
October		
20701	J. B. Goldsbrough	Yorkshire G.C.
20704	L. Kurylcwicz	No. 23 G.S.
20709	F. M. Newboult	Derby & Lancs.
20722	Daphne G. Wales	Derby & Lancs.
20726	Diana C. Westbrook	Fulmar G.C.
20733	R. I. Tarver	Coventry G.C.
20765	Irene Sweet	London G.C.
20769	D. Hill	Yorkshire G.C.
20787	C. Hall	Longkesh G.C.
20797	Sally Bowditch	RAF Wessex
20822	H. H. Smith	No. 41 G.S.
20833	J. E. Smith	Newcastle G.C.
10587	R. D. Williams	RAF Wessex
12095	J. D. Spottiswood	East Midlands
17832	D. H. J. Daines	No. 80 G.S.
18529	R. C. Wilson	Surrey G.C.
18987	P. R. Shearburn	RAF Oldenburg
19403	Sheila N. Fisher	East Midlands
19404	J. R. Fisher	East Midlands
19831	N. C. Soper	Coll. of Aeron.
20060	R. J. Bye	No. 92 G.S.
20365	B. J. Palfreeman	Bristol G.C.
20472	D. P. Lansiaux	Surrey G.C.

B CERTIFICATES

Many of these pilots gained A Certificates on the same day; remaining A Certificates are listed separately.

September
Serial Nos. 20466-20605

October
Serial Nos. 20691-20848 and 9333, 10587, 11080

Name	*Gliding Club or A.T.C. School*
J. D. Sheean	No. 126 G.S.
C. T. Alexander	No. 7 G.S.
E. R. Andrews	No. 68 G.S.
D. J. L. Bissell	No. 186 G.S.
E. R. Bowen	No. 68 G.S.
F. Boyle	No. 2 G.S.
N. Brenchley	No. 166 G.S.
O. C. Brun	London G.C.
P. Campbell	No. 24 G.S.
J. L. Champion	Seahawk G.C.
K. D. Collins	RAF Moonrakers
A. M. Cox	No. 142 G.S.
P. A. Crooks	London G.C.
E. J. Dargavel	No. 7 G.S.
D. C. Darvill	No. 123 G.S.
M. C. Dashwood	No. 106 G.S.
P. Done	No. 122 G.S.
R. G. Dunbar	No. 24 G.S.
C. W. Ferrebee	No. 43 G.S.
P. S. Garnett	Bristol G. C.
M. A. Green	No. 68 G.S.
L. Grover	H.C.G.I.S. Detling
N. D. Haig	No. 166 G.S.
M. J. Hanks	No. 143 G.S.
C. Hyland	No. 42 G.S.
E. G. D. Kydd	No. 5 G.S.
D. P. Lansiaux	Surrey G.C.
R. Lincoln	No. 166 G.S.
J. MacDermot	No. 143 G.S.
F. P. Macken	RAF Wahn
T. D. Maitland	No. 42 G.S.
R. S. Morrisroe	No. 106 G.S.
P. W. Murgatroyd	No. 68 G.S.
T. A. J. Nicholson	No. 42 G.S.
L. D. Powell	No. 143 G.S.
B. A. Ridgers	No. 125 G.S.
T. Robson	RAF Geilenkirchen
J. R. Sims	No. 185 G.S.
G. J. Smith	RAF St Athan
W. E. Spratt	No. 146 G.S.
W. G. Thomson	No. 7 G.S.
J. A. Tillbrooke	No. 22 G.S.
D. J. Trethowan	No. 123 G.S.
B. R. A. Whiting	No. 106 G.S.
P. J. Whiting	RAF Detling
J. R. K. Walker	No. 166 G.S.
I. R. Allen	R.N. Dartmouth
R. McK. Arbuckle	No. 2 G.S.
D. F. Booth	Derby & Lancs.
B. P. Brawn	No. 24 G.S.

R. N. Brock	Derby & Lancs.
K. Carter	No. 183 G.S.
M. K. Chadwick	No. 183 G.S.
G. H. Cooper	No. 122 G.S.
M. M. Crosse	No. 166 G.S.
P. J. Houston	No. 102 G.S.
P. J. Stroudley	No. 105 G.S.
R. D. Giles	No. 143 G.S.
P. J. Hurrell	No. 123 G.S.
H. Jay	No. 166 G.S.
W. P. Jennings	No. 166 G.S.
D. W. Lovatt	No. 122 G.S.
P. T. Morgan	H.Q.G.C. Detling
H. W. Osborne	No. 31 G.S.
K. J. Osman	No. 89 G.S.
A. M. Roberts	No. 68 G.S.
P. Saltmarsh	No. 143 G.S.
J. D. H. Stokes	No. 130 G.S.
Virginia L. Sweet	Surrey G.C.
D. Tenney	No. 123 G.S.
A. J. Thomson	No. 2 G.S.
B. S. Thorne	No. 166 G.S.
R. S. Towler	No. 106 G.S.
R. A. Whitear	RAF Brüggen
J. N. Williams	No. 68 G.S.
C. Wood	No. 43 G.S.
D. H. Allen	R.N. Dartmouth
F. W. Allen	RAF Wessex
R. G. Appleby	No. 104 G.S.
D. R. Bartlett	No. 166 G.S.
J. Batchelor	R.N. Bramcote
B..J. Bawtree	R.N. Dartmouth
T. F. S. Booth	No. 166 G.S.
R. P. Brown	No. 31 G.S.
L. M. Cantor	No. 89 G.S.
D. J. Cartwright	No. 45 G.S.
I. B. Cartwright	No. 186 G.S.
A. W. Chaffe	No. 146 G.S.
R. M. Clark	No. 183 G.S.
D. J. Clarke	No. 87 G.S.
D. J. Clarke	No. 87 G.S.
L. Collins	London G.C.
P. J. Coxon	No. 45 G.S.
J. R. Crompton	Avro G.C.
R. S. Dunn	No. 92 G.S.
D. S. J. Emmett	No. 122 G.S.
J. S. B. Fair	No. 2 G.S.
A. Fennell	Bristol G.C.
F. P. Garratt	No. 68 G.S.
J. P. Griffiths	B.A.O.R. G.C.
J. Herriot	No. 2 G.S.
B. Hesp	No. 22 G.S.
A. K. Hill	No. 84 G.S.
J. M. Hobday	No. 166 G.S.
G. Hopkins	No. 45 G.S.
A. D. Horne	No. 126 G.S.
W. F. Horseman	No. 31 G.S.
B. M. Howlett	No. 104 G.S.
E. H. Jenkins	No. 123 G.S.
K. E. Jones	No. 68 G.S.
J. Kenworthy	Blackpool & Fylde
N. J. Kitchen	No. 166 G.S.
A. J. Knight	No. 89 G.S.
M. L. Langley	No. 104 G.S.
H. J. Latham	No. 45 G.S.
D. I. Lewis	No. 68 G.S.
R. B. Lezemore	RAF Wessex
L. M. P. MacDonald	Fenland G.C.
P. A. Martin	Coventry G.C.
J. McGovern	No. 5 G.S.
I. A. McHardy	No. 143 G.S.
D. R. Mickleburgh	No. 104 G.S.
J. P. R. Mitchell	No. 105 G.S.
T. M. O'Brien	Fenland G.C.
C. D. W. Pleasance	Cambirdge Univ.
M. L. Powell	No. 186 G.S.
W. S. Rae	No. 2 G.S.
G. W. S. Rothwell	No. 45 G.S.
S. Ruddock	No. 1 G.S.
J. G. Salter	No. 89 G.S.
P. W. Sanford	No. 104 G.S.
R. Shackleton	Avro G.C.
M. J. B. Smither	No. 166 G.S.
I. Sproates	No. 45 G.S.
P. J. Stanton	No. 24 G.S.
B. I. Stevens	No. 122 G.S.
G. Taylor	No. 31 G.S.
J. R. Thompson	Avro G.C.
F. F. Till	No. 45 G.S.
M. R. Trump	Bristol G.C.
D. K. Wakefield	RAF Moonrakers
D. C. Whitlock	No. 89 G.S.
D. A. Whitton	No. 92 G.S.
J. R. Winning	No. 104 G.S.
J. Wooller	RAF Moonrakers
J. A. Dodds	No. 45 G.S.
D. C. Drury	No. 141 G.S.
A. V. Elcock	No. 146 G.S.
D. S. Ferguson	No. 45 G.S.
R. F. Foreman	No. 31 G.S.
J. R. Foster	H.M.S. Gamecock
B. D. Frary	No. 146 G.S.
J. Fulks	No. 122 G.S.
R. J. Gale	No. 89 G.S.
J. D. Gibson	No. 188 G.S.
M. Goodman	R.N. Dartmouth
A. C. Grafham	No. 7 G.C.
R. F. Grainger	Bristol G.C.
H. A. Hickling	No. 166 G.S.
T. J. Jackson	No. 89 G.S.
R. Joel	No. 7 G.C.
A. G. Jones	No. 166 G.S.
P. Keeble	No. 102 G.S.
P. S. Mackie	Fulmar G.C.
A. E. Martin	No. 48 G.S.
C. I. Massey	No. 186 G.S.
T. Pinkerton	No. 31 G.S.
R. A. Rutter	No. 31 G.S.
A. F. Seviour	Avro G.C.
M. J. Summers	No. 123 G.S.
A. R. White	No. 89 G.S.
G. H. Whitty	No. 89 G.S.
E. Lemburg	Bristol G.C.
R. C. W. Marston	No. 42 G.S.
W. B. Smethurst	No. 43 G.S.
J. M. Swindall	No. 2 G.S.
G. C. Urwin	No. 31 G.S.
L. C. Watling	No. 87 G.S.
K. J. Wilkinson	No. 84 G.S.
M. R. Beautement	No. 166 G.S.
B. Caws	RAF Wessex
A. J. M. Stevenson	Scottish G.U.
A. D. M. Dobbie	Scottish G.U.
J. F. Duthie	Scottish G.U.
I. S. Gibson	Scottish G.U.
C. N. H. D'Arcy	Scottish G.U.
J. H. Clark	Scottish G.U.
D. F. Mackenzie	Scottish G.U.
J. F. Baldock	No. 143 G.S.
R. J. Barlow	No. 105 G.S.
K. E. Brown	R.N. Dartmouth
J. A. C. Campbell	No. 2 G.S.
J. Carlton	No. 31 G.S.
J. M. Chalmers	No. 2 G.S.
I. M. Christie	RAF Moonrakers
M. L. Cooke	No. 68 G.S.
J. Dobson	No. 26 G.S.
A. P. Comber	No. 104 G.S.
A. A. Diver	Fenland G.C.
I. G. Gibbins	No. 24 G.S.
A. Horne	No. 2 G.S.
M. B. Jeffries	No. 166 G.S.
G. C. Kirk	Oxford G.C.
A. E. Marshall	No. 123 G.S.
C. K. Hickson	No. 168 G.S.
E. C. Hunt	No. 48 G.S.
D. Mitchell	No. 49 G.S.
D. Roberts	No. 105 G.S.
W. A. Speck	No. 23 G.S.
D. Stewart	No. 2 G.S.
R. M. Cook	No. 89 G.S.
D. Cowan	No. 186 G.S.
G. W. Dawson	No. 146 G.S.
J. Delafield	Surrey G.C.
D. R. Easson	No. 104 G.S.
A. W. Faulkner	No. 186 G.S.
R. J. Newington	R.N. Dartmouth
C. S. Soley	No. 146 G.S.
A. Sell	No. 89 G.S.
J. A. Wright	No. 130 G.S.
C. J. Mansell	No. 146 G.S.
L. W. Jones	RAF Hawkinge
B. A. Brenchley	No. 146 G.S.
A. K. Saunders	No. 42 G.S.
W. E. B. Wales	No. 41 G.S.
R. E. Dawson	RAF Hawkinge
B. N. Uden	RAF Hawkinge
E. R. Jewell	No. 48 G.S.
J. C. F. von Fraunhofer	No. 146 G.S.
D. D. McIntyre	No. 130 G.S.
R. C. Moore	No. 143 G.S.
K. I. Tatt	Condor G.C.
R. S. Webber	No. 89 G.S.
G. J. Wilson	No. 143 G.S.
A. Hodgson	RAF Wessex
J. A. West	RAF Moonrakers
P. Jackson	Derby & Lancs.
A. Middleton	No. 5 G.S.
B. G. O'Neill	No. 123 G.S.
A. W. Swales	No. 23 G.S.
D. S. Wake	RAF Hawkinge
D. Cardwell	Blackpool & Fylde
J. J. Clarke	London G.C.
D. G. Cooper	RAF Geilenkirchen

OCTOBER

J. W. Barry	No. 123 G.S.
J. Bate	No. 186 G.S.
J. I. B. Bennett	No. 186 G.S.
K. F. Bloodsworth	No. 44 G.S.
R. V. Bradbrook	No. 23 G.S.
C. J. Bustin	No. 123 G.S.
K. H. Coles	No. 68 G.S.
C. De Peyer	No. 166 G.S.
M. A. Fraser	No. 2 G.S.
G. C. Gasson	No. 142 G.S.
J. B. Goldsbrough	Yorkshire
W. Henderson	No. 5 G.S.

V. M. Hill	No. 123 G.S.
L. Kurylowicz	No. 23 G.S.
R. J. Langston	RAF Hawkinge
M. H. Lewin	RAF Moonrakers
J. A. Lilley	No. 89 G.S.
F. M. Newboult	Derby & Lancs. G.C.
D. A. Olive	No. 44 G.S.
J. F. Page	No. 2 G.S.
C. Reynolds	No. 123 G.S.
D. A. Rockall	No. 22 G.S.
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Serial Nos. 20448-20684

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Serial Nos. 20706-20848

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A Limited Class for the World Championships

by Philip Wills

THERE can be no doubt at all that the bi-annual World Gliding Championships have, since the war, played a great part in the growth and the development of gliding. Each succeeding meeting has been larger than the previous one, and more countries have sent entries, until the problem facing the holding country has achieved the most formidable proportions. But so has the problem facing the entrant countries, because the increasing refinement and complexity of the necessary equipment has naturally been accompanied by a parallel increase in the cost of equipping and sending each team.

It is not hard to see here a beginning of the process which turned the Schneider Trophy from a relatively friendly, inexpensive and semi-amateur speed trial into an international contest between racing prototypes of such cost and of so specialised a kind that only government-financed professional or service entries were possible. The final event, when Britain won it for the third time running in 1935, against only a single contesting country, and so kept the Trophy for good, was really quite a relief, and no one has since come forward with any idea of repeating the series.

Now clearly, if we do nothing about it, the time will arrive when the competitor arriving at the World Gliding Champs. with a normal relatively inexpensive general-purpose sailplane, perhaps souped up as much as possible within the limits of a semi-private purse, will have little chance against a government-financed world-beater with all-titanium fittings, 30-metre-span wings of plastic foam stabilised paté-de-fois-gras sandwich construction, and a pilot who has been brought up from birth in a centrifuge to accustom him to spinning in cu-nim. Obviously the World Championships should continue to act as a stimulus to advanced technical progress, but in addition it would seem that it is now just as important—even more important—for them to be so shaped as to encourage the production of what one might call (without wishing in any way to derogate from the others) *sensible* aircraft, machines, which will enable more and more people in more and more countries to get into the air themselves.

The idea, therefore, is to envisage in the future a new class in each World Championship, restricted to aircraft conforming to some formula designed to achieve the required end; and that end is, I suggest, an aircraft which is inexpensive to buy *and to operate*. The C.V.S.M. (Commission for Motorless Flight) has as a first step asked O.S.T.I.V. to prepare a general specification for such a machine, and a committee of O.S.T.I.V. with Boris Cijan (Yugoslavia) as Chairman has been set up accordingly. It will be a task of the greatest importance, the greatest interest—and the greatest difficulty. Try and get out your own ideas on such a specification—then start discussing them with the next fellow. If you get away with only one black eye you will be lucky.

Here are mine, based on the idea that all, or nearly all, the requirements must be easily measurable by the organisers of the meeting. This knocks out things like Polar Curves, which can be dreamt up by rosy-cheeked young designers in back-rooms but are almost impossible to nail down.

1. The maximum empty weight shall not exceed, say, *175 kgs.*
2. The aircraft will go into a trailer not more than 7½ m. long.
3. The aircraft will be riggable and de-riggable by not more than four people in not more than 15 minutes.
4. Certain instrumental limitations shall be laid down (e.g. no radio).
5. The aircraft will be capable of quantity production in not more than 1,750 man hours.

Now to criticise my own suggestions.

No. 1 I do stick to;—and remember, the lighter a glider the smaller the tow car, so aircraft weight has a great bearing on *cheapness of operation.*

No. 2—same idea, but what about a machine like the Fauvel AV-36, which doesn't go into a trailer at all, but tows along a road lengthwise, and should certainly qualify for the proposed new class?

No. 3. People instantly say one can specially train four crew-members to rig the most appalling machine in fifteen minutes, but I don't think this is quite the point—and if it was, one could lay down that the rigging was to be done by one

member of the team and three other normally competent glider bods to be supplied on the spot by the organisers, who didn't know the machine at all. Surely, however, the point is that the manufacturer of the winning machine in this restricted class is going to hope to sell lots of his aircraft the world over, and manufacturing rights to other countries to boot. And if the actual winner has been seen to have qualified by evading the real intent of the requirements, it will win the pot, but the trade will go to the really practical machine which came in second.

No. 4. How certain I felt that everyone would agree that radio was an expensive luxury which could unarguably be abandoned in the restricted class! Yet the very first chap I met said forcibly that within ten years, with transistor valves and printed circuits, it was almost certain that radio could be the cheapest instrument in the cockpit.

No. 5 fails to meet my own requirement of checkability on the spot. But I can't see how to avoid it;—a price limit is even worse, since the selling price in *e.g.* capitalist as against communist countries is based on different considerations, and production costs vary in an incalculable manner between one country and the next, depending amongst other things on artificial rates of exchange between different currencies.

One can only repeat what I have said above, that the real prize in this class will be the subsequent spread of the winning type, and if someone produces a machine which an overseas would-be manufacturer sees he could not possibly make in the specified number of hours, that machine will not hit the target.

Now for what I have left out. Minimum strength requirements, or a flight envelope? Well, we have never attempted to lay these down for the existing classes, and I can't see why we should do so now. If someone produces a machine which is well below, say, our U.K. airworthiness requirements, then he will reduce his propsects of large overseas sales. If it meets his own country's requirements, why should the F.A.I. complain, when they don't do so in the present classes? In principle I find myself against any international body laying down airworthiness regulations for what is in essence a sport. If we must have a requirement aimed at preventing dangerous entries, I would prefer myself a much more drastic one, to stop prototypes being entered in this new class at all: such as a requirement that at least, say, 20 machines of any type entered must have been produced and gone into service. This would have the additional advantage of making an actual figure for quantity-production man-hours available.

Minimum performance requirements? An easy Aunt Sally. If anyone is mug enough to go to the expense of entering something with the performance of a Primary trainer, why try to stop him? He will do no one any harm, and may learn more sense. It seems to me that the *only* purpose of every requirement in the specification must be to produce a machine which is *cheap to buy and to operate*.

But I don't feel any primary certitude about any of this, and am fully aware I may be shot down in flames when the argument really gets going. The only thing I do feel certain about is what I started with: this problem of a restricted class for future World Championships is most important, most interesting and most difficult to lick into shape.

Soaring in New Zealand

by F. M. Dunn

FROM December 26th, 1954, to January 9th, 1955, the Canterbury Gliding Club, New Zealand, held its third training and advanced flying camp at Simons Hill Sheep Station in the McKenzie Country, South Canterbury.

Situated 160 miles south-west of the Club's home at Christchurch, the site is excellent and offers amazing flying conditions in all except south winds. Luckily these winds are usually rare in this area.

The site consists of a home paddock, East Field and North-west Field. The first is a small field containing sleeping quarters for the bachelor members and protection for the sailplanes during the night and during rough weather. This field is suitable for aero-towing in thermal conditions, which in this area occur during periods of great heat and no steady wind. The thermals are "dry" and no clouds form. The East Field is approximately ¾ mile long and 300 yards wide, and is used for winching and aero-towing onto the east face of Simons Hill during the east wind. The North-west Field is rather small, but aero-towing and winching are both possible in the frequent winds which blow on the face of the hill, which is 1,700 feet above the three fields and 3,200 feet above sea level. The McKenzie Basin is a huge area of glacial moraine deposits, surrounded by mountains and containing several independent hills and three large glacial lakes and their rivers (see map).

Thirty-two members attended the camp and all agreed it was the most successful yet held; 244 flights were made by three sailplanes for a total of 118 flying hours, 76 winch launches being made, the balance being aero-tows by a very hard-worked Tiger Moth from the Canterbury Aero Club.

The Club's T-31B two-seater ZK GAC, built from a kit set in 1951-1952, made 116 flights for 35 hours; the EON Baby, ZK GAK 98 flights for 42 hours; and Mr. S. H. Georgeson's Weihe 30 flights for 41 hours. This Weihe, which now bears the letters ZK GAE, formerly belonged to Mr. Philip Wills and has made many notable flights for its present owner and his wife, Helen, who is the first New Zealand trained woman sailplane pilot, and first Silver C holder. It was in his old but trustworthy sailplane that Philip Wills broke the British Empire gain of height record during his stay in New Zealand over the camp period, but some more of this anon.

The camp opened to a good easterly and the T-31B was in constant use on the first two days on the east face of the hill. At this stage it is wise to mention that this wind only blows from about 2 p.m. until 8.30 p.m., by which time it is becoming too dark to fly with safety. The north-west wind may, however, blow all day or only for a few hours. Philip Wills had a "preliminary canter" on December 27th in the Weihe, in dry thermals; when nobody else could stay up more than 25 minutes, he set off towards Mt. Cook, New Zealand's highest peak (12,349 feet), and some three hours later returned to tell us he had been up to the snow line of Mt. Cook, 7,000 feet above sea level. He had come home to the field because he had run out of film in his camera and could take no more photographs of the beautiful mountain scenery about him. This flight was a round distance of 74 miles.

December 29th dawned a day of promise of north-west winds, and hence possible waves, so all machines were flown into the North-west Field. During the early afternoon Dick Georgeson in the Weihe contacted a wave and went to 11,000 feet, returning to the field because he had not taken his barograph with him. Philip Wills was then launched by winch, and an extremely poor launch it was, to 400 odd feet. He turned back hastily to the hill, gained height rapidly on the hill lift, contacted a thermal off the hill and circled to some 6,000 feet (all following heights above field, except where stated). Setting off up field he contacted the secondary wave over Lake Pukaki and gaining height on this made for the east face of Mt. Cook and promptly soared to 28,200 feet above his point of release. This gain of height was achieved on the primary wave formed behind Mt. Cook. He returned to the field that evening very cold but extremely pleased with the flight. The Weihe was so cold that great pieces of paintwork had flaked off the fuselage due to unequal contraction.

The next day Dick flew the Weihe all over the McKenzie Basin in dry thermals for

4½ hours. The EON Baby, in the hands of Keith Wakeman, and the T-31B, piloted by Alf. Dick and Miss Jean Adams, were both aloft in the same conditions for over an hour each. The last day of the year began with a north-west wave flight in the early morning to 10,500 feet by Trevor Jefferey in the EON. A south-west change occurred and thermals began to form at 8,000 feet above the field and over the whole basin. Above these thermals the north-west waves were still evident and I set off in the EON to attempt the last leg of my Silver C certificate.

With the height and duration legs of my Silver C completed, I decided this was an admirable opportunity to attempt the distance leg. I was aero-towed to 3,200 feet in an attempt to contact the wave, but turbulence was so severe I released and turned back towards the field. When down to 1,600 feet I began circling in good lift and rose to 7,500 feet and set off down field across the Basin. Great excitement ensued

on the field as Helen Georgeson, also with only her 32 miles to complete for the Silver C, prepared to follow in the Weihe. I crossed the barren flats of the Basin and in weak thermal arrived at 4,000 feet with some 10 miles behind me. The next leg, however, produced only 20 down on the variometer, and with only 350 feet over a suitable landing area at Sawdon Station, I contacted a very good thermal and climbed to 4,000 feet, but was faced down wind with a 6,000-foot mountain which produced no lift of any kind, and after struggling for 1½ hours I was forced to return to the field previously picked out and land. A distance of 15 miles.

Meanwhile Helen had been aero-towed to 1,000 feet slightly upwind of the field, contacted good thermal, and circled to 8,500 feet and set off across the Basin after the EON Baby. Even in the Weihe with its superior penetration she encountered large areas of 20 ft.-sec. sink and arrived over my landing field at 3,500 feet, turned down through Burkes Pass and struggled out into the Fairlie Basin where good dry thermals existed. She continued on across this Basin between 4,000-6,000 feet to land at Clayton Station, a distance of 37 miles from her point of release, thus gaining the first New Zealand Silver C Certificate.

During the first few days of the New Year good conditions did not exist, but much flying was done by the T-31 and the EON Baby on the Hill slopes. One or two members were able to make a Silver C gain of height, but always without the barograph ticking in its box. On the Tuesday a very turbulent north-west wind forced flying to stop during the early afternoon, but Philip Wills attempted to contact a wave over Lake Pukaki, and instead received the worst flight in his 22 years of sailplane flying. The air was extremely turbulent, in fact violently so, and as he came in to land the wing tips of the Weihe were flexing alarmingly and he was pleased to be on terra firma once again.

In the EON, during the last few days of the camp, notable flights were made by Ralph Fenton, Alf Dick, Sandy Wigram and John Evans. Bill Small finished the camp on a good note by taking the Baby to 14,500 feet in a wave, and on being caught in the lenticular cloud suffered extreme cold and severe icing on the leading edge of the wings. John Evans had towed him to approximately 5,000 feet and returned to the field to continue instructing on the T-31. When Bill returned and told us of his excellent flight, he in turn aero-towed John Evans to the same release point, but the wave was no longer there. John made several valiant attempts to fly from Simons Hill up wind to try and contact the elusive wave, but after 1¼ hours was forced to return and land.

Meanwhile, in the Weihe, Dick

Georgeson had contacted the wave and reached 17,000 feet. He also was caught in the lenticular and forced to descend 6,000 feet on instruments and in severe icing before flying into clear air again. Two days previously Dick had been lucky enough to reach 14,600 feet on no visible means of support. A dry thermal to some 7,000 feet placed him in wave lift which took him to the height mentioned. The sky was clear blue and appeared from the ground to be very dead, but the wave was there and with no visible cloud above it.

Everyone attending the camp benefited greatly from the presence of Philip Wills, whose visit to New Zealand has gone a long way to bring gliding in this country into the news and hence to the knowledge of the public. It is hoped that Philip will be able to return to New Zealand with his own sailplane to catch some more north-west waves. The other catch Philip would like to make is "Wilberforce", the 8-lb. (approx.) brown trout that somehow (?) got away from his rod and line during one of the periods he spent fishing—his other pastime when not flying.

The Club's new winch, powered by a Mercury V8 truck engine with four-speed gear-box driving direct onto a single drum, was used at the camp. This is a trailer winch built and designed by Alf Dick in just over a month (spare time only) and incorporates an extremely simple but efficient laying-on device. Mr. Wills was greatly impressed by this gear and took many photographs and notes to take home to England on his return. It is intended at a later date to add a second drum side-by-side to that at present in use. Ample power is available and launches to 1,200 feet with only 2,500 feet of cable laid out have been made in a moderate wind. It is hoped that a lighter cable will make this performance better, but at present we are unable to purchase such cable at a reasonable price in this country.

The Club wishes to obtain an Olympia or its equivalent before next Christmas and then follow up with a T-42 two-seater high performance sailplane which can be used for advanced training and investigations into the phenomena of the north-west waves found in Canterbury. The T-31 was aero-towed home to Christchurch on January 9th and the other two machines returned by road the following day, thus ending a very successful camp which gave on the average 2½ hours flying per member.

Roll on December 26th, 1955, when our fourth camp is scheduled to commence!

THIS GLIDING

Cry from the Heart

"My husband and I have been married just over a year and are living in Service married quarters abroad. During the week I don't see much of my husband, but every weekend he goes out gliding all day and doesn't arrive home until 10 p.m. I have protested, but he says it is his only pleasure. He doesn't realize that I don't have any, being so busy in the house; also my baby is due soon. I try to be a good wife and make the best of myself, so where am I failing him?"—From *Woman's Own*, which answers its correspondent as follows:—

"Are you so anxious to be a good housewife that you have become too wrapped up in household duties? It shouldn't be necessary to spend *all* day on keeping house and a little advice from a more experienced housewife might mean that you have time for some recreation. You will need this, in any case, when your baby arrives. Your husband should undoubtedly give you more of his time, but nagging and reproaches will only make him resentful; it will be far happier in every way if he decides to do it because he *wants* to."

* * * *

Progress

"A new type glider, capable of regulating its speed at will in air pockets and during take off and landing, has been developed in Czecho-Slovakia."—*Star*.

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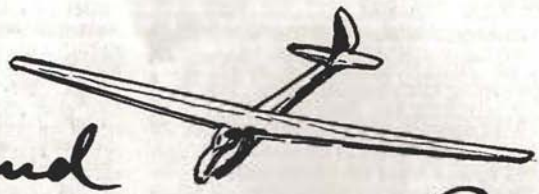
Club and Association News



It is indeed a privilege to be invited to assist the Editor in collating this section of the magazine. The growth of the sport of Gliding is reflected in the increasing number of pages devoted to news of fellow enthusiasts in clubs throughout the world; and it is hoped that overseas clubs will contribute regularly their quota of information, even though of necessity it must be published some long time after the event. Contributors can greatly assist the Editor if they will, whenever possible, send in Club news typed double-spaced on foolscap paper with a duplicate carbon copy. A hearty welcome and good wishes for future success are extended to the newly-formed Perkins Gliding Club.

GODFREY HARWOOD,
Club & Association News Editor.

The Kronfeld Club

FOLLOWING on the announcement in the last SAILPLANE & GLIDING, the Club is now running and is open on Mondays to Fridays inclusive between 6 p.m. and 11 p.m.

The Committee have decided that there will be an Entrance Fee of 5s. and an annual subscription of 10s., and they hope that by keeping it as low as this it will encourage as many people as possible to make use of the Club. Membership forms are available from the Hon. Secretary.

A series of talks and film shows have been arranged for Wednesday evenings, and a list of these appears below. These talks will start at 7.30 p.m.

The Club has installed an Expresso Coffee machine (in addition to the Bar) and various of the gliding and other flying periodicals can be found in the lounge.

Although the Club has raised some money by persuading a number of people to become Founder Members by donating £5, there is still a shortage of suitable furniture, and if anyone feels that they have anything useful, would they get in touch with The Hon. Secretary: Hugo Trotter, D.F.C., 56 Victoria Street, Westminster, S.W.1. (Telephone VICtoria 6056).

List of Talks

Nov. 23rd—"Air Touring around Europe", by John Furlong.
Nov. 30th—"Aerial Photography", by Charles Brown.
Dec. 7th— "Gliding in the States", by Nick Goodhart.
Dec. 14th—"Meteorology for Glider and Light Aircraft Pilots", by C. E. Wallington.
Dec. 21st— Christmas Party.
Jan. 4th— B.G.A. Films: "1954 World Gliding Championships" and "Gliding Till Now".
Jan. 11th— Talk by F. N. Slingsby.
Jan. 18th— "The Future of Gliding", by P. A. Wills.
Jan. 25th— Shell Film: "Station 307". B.A.O.C. Films: "Happy Landings, Jamaica", and "Letter from Capetown".

New Clubs Proposed

Workers at the Atomic Weapons Research Establishment at Aldermaston, Berks., are hoping to form a gliding club. They are at present trying to raise funds to subsidize subscriptions, and, if successful, hope to operate at Lasham.

Steps are being taken by members of the Kent County Constabulary to start a gliding club, which would operate within the Police Sports Club. Many of those interested are ex R.A.F. aircrew and engineers, and one, Mr. L. C. Ingleton, has had experience on Horsa, Waco and Hadrian troop-carrying gliders, plus some peace-time gliding and winching with the A.T.C. school at Hawkinge.

BRISTOL

No doubt like most other clubs in England we over this side have no complaints to make about the freak weather dealt out this year—thermals have been almost plentiful at Lulsgate, training has been accelerated and a bumper summer course completed.

The weekly courses which have run without a pause for eighteen weeks have catered for nearly 150 keen types of all ages and both sexes; the weekly visitors gaining a fair measure of control over the T-31, while most of those who came for a fortnight left with their 'A' and 'B's. Mike Royce ably instructed and organised the social side and he was assisted in running the courses by Jack Houghton, our full time Ground Engineer.

The Club was pleased with the show put up by the Hahn, Jones, Stowe team at the Nationals this year. They completed every task set and maintained a consistently good average; particularly considering their relatively small experience of such advanced competition tasks as races and out-and-return flights.

It seems that most Club records, large and small, have been broken this year. As reported earlier, Mike Garnett flew 138 miles and broke the 99 mile Club record of 3 years standing; less than a month later Alwyn Sutcliffe flew to Ruabon in N. Wales 112 miles away, while two weeks later Derek Stowe took the Club Olympia 106 miles to within four frustrating miles of Dunstable. Since then Derek has taken the same aircraft to Huntington near Cambridge, 128 miles from Lulsgate, taking 4 hours over the first 120 miles and 1 hour over the last 8.

Tom Parkes, who earlier this summer gained Silver height and distance legs on his first cross-country of 72 miles, has now completed his Silver 'C' with a 5 hr. 20 mins. thermal flight over Lulsgate. As far as memories go, this has been done only twice before in the Club; the pilot on both occasions was Rex Young.

Many other cross-countries have been carried out from the site and innumerable hours of local soaring put in. The Garnett, Jones, Hodgson rebuilt Olympia frequently disappeared on flights of up to 3 hours, reaching heights of 6,000 ft. and completing triangles such as Bath, Wells, Lulsgate.

So far this year the Club has covered 1,070 miles cross-country (more than double its previous best), and gained ten 'C' certificates, three Silver 'C' legs and one complete Silver 'C'. Two of the 'C' certificates were earned by two keen young Canadian ab initios, Wally Weir, who flew through his A, B and C on successive flights, and Bernie Palfreeman, who gained his A and B one weekend and his C on the next. Good going for a flat site such as ours.

The good conditions at Lulsgate have rather taken our attention off Nympsfield for a while (except for the Committee of course); but at last parties have started work there and the Olympia is now being used to investigate the site thoroughly from the flying point of view. The grass planted earlier this year has not had a good start due to the dry weather, but is now catching up. Negotiations for a hangar are under way.

After many years of sterling service as the Club Secretary, John Burleigh was recently forced to resign due to pressure of work.

The vacancy has been filled by an enthusiastic Tom Parkes, who can be reached at:—
10, Kenmore Grove,
Filton Park, Bristol, 7.
A. B-P.

CAMBRIDGE

HERE in Cambridge our flying year ends with the Academic year in September, so I can list here a few of our vital statistics for the year: We flew on 214 days of which 109 were soarable. By Aerotow, Bungee or the dear old Brute we hoisted our planes into the air 3,400 times where they remained for 760 hours. We had nine camps on 'Sites-Various' and on 43 cross countries ranging from 5 to 100 miles flew 1,684 miles. Club members gained 11 C certificates, nine complete Silver C's, six duration legs, two Silver C height legs and one Gold C height. From all the foregoing screed you will gather that we've had quite a few parties!

Since the last notes were written, a small camp with the Olympia was held in North Wales. Bill Crease had two excellent flights: a 70 mile goal to Camphill and a 77 mile triangle from Moel Wnion.

The last two weeks in September we spent at the Long Mynd with Bluebell, Prefect, Olympia and Skylark—not to mention the 'Fairies'. In this time we had three cracking west wind days and our total flying time was 134 hours, a club record for any camp at the Mynd. Four five hour flights were made and Stan Woolston finished his Silver C (another party) while John Thompson and Mike Jackson both got their Silver C height. The only incident on the trek back here was when a trailer light failed and a night watchman's lamp was substituted (with his permission of course!).

At the start of term we had our usual open meeting, which was well attended and Ken King showed us his delightful Kodachrome films, mostly taken at our Long Mynd camps this year. They included shots of one handed signalling or 'How to be an idle Batter' by one of our more experienced members. Another feature of the meeting was a polished performance by Siegfried Neumann on the Machin cup, including an I.F. take off and 1½ pints of blind flying.

We are hoping to get several new members for ab initio training but in the meantime the rest of us will recall the time that C descended 250 feet vertically on to a fence, M battled out five hours at 50 feet and D flew the Prefect so slowly that Ted didn't dare Look! However, here's hoping for an even more successful year in 1955-56.
D.M.S.

COVENTRY

As our third year of activity draws to a close the daily round of flying settles down to the comparative humdrum of training circuits and circuits for pleasure with little chance of any real soaring at Baginton aerodrome until next year. We hope, however that this winter will see some successful excursions to Edge Hill where a good north west wind allows some quite reasonable slope soaring.

At the time when our last account went to press we were in the throes of organising our fortnight's Summer Course at Edge Hill. This was our first attempt at arranging a serious course for Club and outside members and as such was rather in the nature of an experiment. It certainly proved that the aerodrome on Edge Hill is as good as any flat site in the country, although on this occasion the wind stubbornly refused to blow from the right direction to permit slope soaring. The weather however was very favourable and there were many soaring flights in thermals (the flying sheets record 28 flights to over 3,000 ft.), Two Club members, Ian Croft and Ken Darby, made their silver "C" altitudes in the Viking another member, Lewis Glover, earned his "C" badge in the Tutor. Of the outside course members taken on, five in the first week and four in the second, all soloed except one. To the Club members, used to the somewhat restricted flying activities at Baginton aerodrome, where two aeroclubs and a Control Zone cramp the style more

than somewhat, the freedom of the sky over Edge Hill was an exhilarating change.

We only have two more cross countries to add to the list since our last account: one an attempt on Gold "C" distance by G Thompson, in the Viking, which took him from Edge Hill to Exeter, a distance of 120 miles; the other, a successful Silver "C" leg flown by John Graham in the Olympia from Baginton to Deenethorpe near Oundle, a distance of 39 miles. This brought our total number of Silver "C" legs this year to 19. Dr. Gregg, our Chairman, recently earned his Silver "C" with a distance and duration flight from the Mynd where he is also a member; this however, cannot be added to the flying statistics of the Coventry Club. Two "C" badges earned recently by Ivor Tarver and Peter Berthelsen brought the total number of "C's" up to 20 this year.

At the time of writing (15th of October) the number of launches this year totals 4,700 corresponding to a flying time of 725 hours. It is worth while noting that we are still using the single drum winch we started with three years ago and it has now given around 9,000 launches without having any major overhaul. Fortunately however a relief is now at hand, the new two drum winch having passed from the pipe stage to reality, although it still has to undergo a long period of development.

Thanks to the erection of a Nissen hut type workshop, the members will have no more excuse for not turning up on rainy days, and repair work on the aircraft has been greatly facilitated. The next important requirement is a club house larger than our present hut which can be equipped for week-end accommodation purposes as well as other necessities. This project will however only take shape when we have finally decided what our future prospects are concerning a site of our own, and it is difficult to see how the Club can expand any further without having a home entirely its own. The freedom of activity both in the air and on the ground at Edge Hill have caused us to look to this place as a possible Land of Promise, and wholesale emigration is being seriously considered—Air Ministry permitting.

M.S.H.

CROWN AGENTS

GROUPS of members from the Crown Agents and the Colonial Office have been down to the Gliding site at Lasham Aerodrome throughout the year, mostly at weekends or on 'Crown Agents days' and much progress has been made. Several members assisted at the National Gliding Championships which were held at Lasham in July and August and managed to get some flying during this time also. A visit was paid to the Championships by the Senior Crown Agent, Sir George Seel, K.C.M.G., and Lady Seel.

During this year a few Serving Officers from Nigeria, Malaya, Kenya and Fiji, have

joined the Club and have learnt to fly whilst on leave.

Membership is open to the staffs of the Crown Agents, the Colonial Office and the Commonwealth Relations Office, and new members are welcome.

LONDON

CONSIDERING the fact that there were practically no west winds, August was quite an eventful month for the Club. As was reported in our last issue, Frank Foster achieved the first Gold C distance flight from Dunstable, when he flew 192 miles to Tideford, beyond Plymouth, starting from a winch launch. Five other cross countries were carried out—two completed Silver C's for John Everitt and Doug. Bridson in flights from Dunstable to Southend, and from Dunstable to Stapleford-Tawney, on the 8th and 15th respectively. John Jeffries and H. Kuntze also flew away in the Club Olympia on the 16th and 26th, but had to land at distances of 21 and 24 miles from the Club.

The August course was particularly successful, and resulted in A. & B. certificates for seven members—Air Commodore Probyn, J. Mellings, P. Crooks, A. Barker, O. Brun, N. Boosey, and W. Donaldson.

The total number of launches for August was 1,040 and the total number of hours, 124.

At last the almost forgotten westerly winds returned in September, and the number of hours flown was more than doubled. These totalled 382, for a total of 1,251 launches. Unfortunately, there was only one cross-country, but this was a very good effort on the part of Phil Ramsden when he took his Olympia to Acle in Norfolk, a distance of 102 miles. His retrieve showed signs of beocming complicated when John Everitt's Rover suffered a violent form of 'Airframe' failure en route. However, Godfrey Lee dashed gallantly to the rescue.

As many as six Silver C Duration flights were carried out during the month. Nigel Gregory did 5½ hours in the Olympia on the 14th; Vic Bailey, Miss Fox-Strangeways, and Arthur Becker did their Durations in the Prefect (Miss Fox-Strangeways stayed up six hours to make sure!); S./Ldr. Ware in the G.B., and R. Pembleton lasted the five hours in the Tutor. Both S./Ldr. Ware and F/O. Becker are also members of the Fenland R.A.F. Club.

Another successful course was held in September; and various Club members who have been waiting patiently for the west winds qualified for their C certificates. These included Sacre and Lawson on the 4th, Sweeney on the 6th, Bentson on the 10th, and Crooks and Wood on the 17th. Clarke qualified for his B certificate on the 16th; and both Jerzychi and Dick Ruffett flew solo for the first time, on the 18th and 25th respectively.

Great activity has been noticed during the past months on the part of the Works and Bricks Committee, and the Transport Committee, and extremely ambitious schemes are planned for the Winter months, when the weather is unsuitable for gliding. The House Committee has also been very busy preparing a full programme of social events for Saturday evenings at the Club.

DERBYSHIRE & LANCASHIRE

SOME indication of how much better the weather has treated us this year than last, is given by the fact that by the end of August there had been more club flying than during the whole of 1954. (Part of the difference is due to the fact that the 'internationals' took up three weeks last year, to the exclusion of much club flying, but the weather is the chief factor.) One very fortunate result of the fine weather was that none of the eight 'Gliding holiday' weeks was spoilt by a run of non-flying conditions. The club has officially expressed its appreciation of the efficiency with which Phil Leech, as the sole instructor in charge, conducted these courses.

On August 26th, Harry Midwood, on a visit from the N.A.E. Gliding Club, Bedford, took the club's Olympia round a sixty-kilometre triangle, Camphill-Matlock-Hartington-Camphill, in a 10 knot E. wind. (This was the smallest of three triangles chosen as possible tasks in the internationals.) The next day Bryan Jefferson, in a Skylark II, had a hard struggle in rather poor conditions—average rate of climb 2 f.p.s.—hoping to reach the Long Mynd, a feat not yet performed from Camphill. He finally landed about nine miles short of his goal, having covered 65 miles.

September 11th started with a S.W. wind and a firm Camphill clamp; at noon the wind went round to N.W., about 25 m.p.h., the clamp suddenly split apart, revealing high lenticular clouds, and bungy launching sent a number of machines off on some excellent wave flying. No great heights were reached, most pilots gaining 4,000-6,000 ft., but the waves stretched as far south as Buxon, ten miles away, an unusual occurrence.

On the weekend of September 16th-18th, the Skylark II group paid a visit to the N.A.E. Gliding Club at Twinwoods Farm aerodrome, near Bedford, for a party, and possibly some aero-tows (something we cannot get 'at home') but as it happened the latter did not materialise. Saturday, Sept. 17th, started with blue sky up to ten o'clock, and then suddenly boiled up to produce streets of cumulus stretching downwind to the easterly horizon, Alec Baynes, the only one of the group without Silver C distance, was despatched with orders to remedy this deficiency, and reached Finningham, N.E. of Bury St. Edmunds, about 63 miles away, to complete his Silver C. The retrieve returned to Twinwoods in time for an excellent party, at which members of several other clubs were present. Meanwhile at Camphill conditions had not been really good. (There may be a moral in this.)

Sunday, Sept. 25th, proved good at Camphill, with cloudstreets running East. Bill Elrington and Mick Kaye, both flying private Olympias, declared Ingoldmells, 87 miles away on the coast, as goal, and both got there, the former making rather the better time. On the next day, Harry Ratcliffe in the Eon Baby and Angus Thompson in a Tutor did their five hours, as also did Ralph Maltby in the N.A.E. Club Grünau, which was at Camphill paying a return visit. The day after, Joe Caiger, in the N.A.E. Grunau, did five hours, starting in hill lift and finishing with wave, in which he reached over 5,000 ft. to get Silver C height. Further five hour flights were made by Peter Armstrong in the Eon Baby on October 1st, and Erhardt in a Tutor on October 16th. This latter was a hardy effort, as it was a very cold day, and the second half of the flight was made largely in heavy rain, in which a Tutor is not the most comfortable of machines.

With the end of summer, social activities begin to take a larger part in club life. There was a strenuous Barn Dance on October 8th; there is to be the usual Bonfire party on November 5th. Later on a Dinner Dance, film shows, a talk by Philip Wills, and other interesting events are being arranged.

A.H.B.

IMPERIAL COLLEGE

At the beginning of the new Academic Year the Club is in a very healthy position. Most of our old members are now flying Olympias at the Lasham Gliding Centre and have their C's. At the same time a large number of 'Freshers' have joined, some already having had some gliding experience. This augurs well for the future. In addition to Daisy, our T-21B, the club now owns a Skylark II, 'Phoenix'; resplendent in flame-orange, and sporting the College Shield of Arms. This machine was flown in the Nationals by Bill Tonkyn and Dave Scallon. During August, a party of nine led by Frank Irving, took the Skylark to Yugoslavia, via France, Switzerland, Italy and Austria. A good time was had by all, thanks to the hospitality of our Yugoslav friends, whose wines were as potent as their roads were bad! The Unofficial British National and European height record for trailers was broken on the Grosaglockner pass—over 8,600 feet. A flying kilometre was covered at 62.7 m.p.h. and 250 miles at 47.5 m.p.h.! Mechanical casualties were: five big-ends, two front wheel bearings and a sump on Mike Neales Morris Minor, a spring on Ian Duff's Morris 8, and a puncture on the trailer.

M.E.B.

KETTERING & DISTRICT

Last month we formed our Syndicate into a Club with the idea of increasing the membership, as a Syndicate we only had fifteen to twenty members and now our aim is to get a membership of forty or over.

We have now got the tenancy of a Building on Sywell Aerodrome as a Clubhouse and Workshop. Some of the members have been busy on Sundays altering and decorating this and we hope to get the Lounge ready in a few weeks time.

We started an Ab-initio course last month, three of the members of which did their test for the 'A' Certificate last Sunday, October 8th, 1955.

Some members have been busy in the Hangar on Sundays fitting a 'Belly Hook' to

one of our Kirby Cadets, this machine was flown for the first time last Sunday and our new C.F.I. says it flies very well.

Our C.F.I., Mr. T. C. Phillips, has now been made President of the Club and Mr. F. Poserskis takes his place as C.F.I. and Mr. H. Britten is the Assistant C.F.I.

D.V.P. (*Hon. Sec.*)

MIDLAND

SINCE our last report the increased sleeping accommodation has been well used and we are now working on an airing room in the main hangar to store all the bedding during the winter months—damp is a real problem on a mountain top.

The Club is now the proud owner of a Land Rover for retrieving and transport and also more recently a Ferguson tractor. The latter vehicle is extremely useful—except that it is a little slow for long winch runs. An important development on the transport side has been the engagement of Allan Tule as a part time mechanic and as a result the winches, etc., are getting attention during the week and tend to be more reliable.

We are leaving no stone unturned to discover the whereabouts of a good winch—preferably with 150 BHPs and two drums.

The club fleet is to be further expanded to cope with an increasing membership. We hope to have three Olympia's in service by the spring. The newly arrived Skylark II has come up well to expectations and Club members will now know the joy experienced for the past months by syndicate owners.

We will be holding our annual Rally at Easter. National Championship rules will be used, but no decision has yet been made about handicapping.

Club gliding courses for 1956 have been arranged and details are to be found elsewhere in this issue.

Flying since the end of May has been extensive and our total hours now exceed 2,100. The number of Silver 'C's' gained this year surpasses all previous years. Latest include Col. Benson who flew his Skylark II on June 27th to Honiley Airfield, 54 miles and spent the night there waiting for his retrieve which did not arrive until next day, and John Knotts who landed inside the Birmingham City boundary at Harborne Golf Course with his Skylark II. Also Michael Wilson took the Club Olympia just far enough, to near Worcester and Dr. Youngham who landed ten miles short of Lasham (116 miles) in his Skylark II, both on July 4th. This day was quite eventful at Myrd because Wilber Wright did his 5 hours, at last.

George Thompson the Coventry Club's C.F.I. landed the Viking on the South end of the Myrd on July 10th—he was about 1½ miles short of the club house, a case of so near, yet so far.

July 13th produced a magnificent Cu. nb. and Coldwell of College of Aeronautics reached 17,500 a.s.l. in a G.B. 11 b and John Cotton 14,000 a.s.l. in his Skylark II, both pilots gained their Gold C height.

The T-216 was flown in the National Championships and although the team finished 4th out of six entries, a really good time was enjoyed by all—even two pilots who spent 5½ hours covering 50 miles in the last day's out and return task.

Dr. Cotton flew his Skylark II down to Newport 67 miles on August 3rd, and Betsy Woodward flew Col. Benson's Skylark—her first flight in this aircraft type and also her first visit to Lag Myrd. Dr. Gregg completed his Silver C by flying to Newcastle-under-Lyme 42 miles in his Olympia.

October 8th was a really good day. Waves were used throughout the day and Prestwick covered 80 miles which literally encompassed the whole of Shropshire, his best height was only 6,500 ft. a.s.l. Nearer the site a wave in the lee of the Myrd was found to be quite turbulent—a new phenomenon.

NEWCASTLE

SINCE the last news from Newcastle, life, like ol' man river, has just kept rolling along, with the usual circuits, enlivened by thermal flights and two and a half hours hill soaring. The "hill" (quotation marks are intentional by the way) is about half a mile from the airfield and rises to 180 feet at its highest point. The wind (W-20-25 knots) gave strong but very patchy lift, but in spite of the difficulties, Doc Kiloh and Ian Paul in the Silver Kite I did 32 mins. and 1 hr. 15 mins. respectively, and Allan Pratt did 35 minutes in the blue Kite. They all had to land at the foot of the hill but not too far away for the retrieving crews to bring the planes back in one piece over a couple of fields, four fences and a road.

The other flights which qualify as outstanding were put up by Harry Oxman in the Tutor with a 30 minute flight to 3,600

feet, which was just 600 feet short of Silver C height, and two in the T-21, by Allan Pratt and Dr. C. C. Ungley who reached cloud base at 4,300 feet after flying for 48 minutes and Doug Collinson with Miss C. Sidebottom who set up the Usworth two-seater record with a 50 minute flight to 3,000 feet.

The Newcastle Club's Kite I being retrieved after slope soaring over Boldon Hill.

In spite of the cessation of Wednesday evening flying, the launching rate and flying time has remained high (308 launches for 33 hrs. 5 mins. flying) and work is in hand on our recently acquired winch which should increase them still further when it is ready for use.

Further details have come to hand about the "gypsy" meetings it is proposed to hold, to provide soaring facilities. This scheme involves the acquisition of a self-propelled winch, a sailplane and estate car for use as a towing vehicle and general transporter. The winch and a lorry to mount it on have been purchased and enquiries are out for the sailplane.

It is intended to hold four gypsy meetings lasting about nine days each on selected sites until Hutton Moor is established. There will also be special "short notice" week-end trips which will not be included in the annual programme which is being drawn up by the Soaring Site Committee, assisted by Mr. Bernard Plummer.

The Flight Committee has been asked to prepare a scheme whereby facilities for advanced flying could be made available to those club pilots who wish to go beyond the "C" certificate stage. The basis of this scheme is the formation of a "club within a club", by which the high performance aircraft would be available to the pilots who paid an extra subscription which is to be assessed from the annual costs of a Kemsley Trust loan for the purchase of the aircraft and the minimum number of members required to operate it economically.

The social side of club activities also comes to the fore with the approach of the club's celebration of its Silver Jubilee. The inaugural meeting was held in November, 1930 and the celebration is to take the form of a supper to be held on November 25th at which it is proposed to show some films of the early days. Arrangements have not been completed yet, but no doubt a good time will be had by all.

In conclusion, congratulations to Doug Collinson, who completed the duration leg of his "Silver C" at Sutton Bank recently.

PERKINS

THREE gliders have now been acquired by the newly-formed Perkins Gliding Club, formed by employees of a Peterborough diesel engine company. It is hoping to start club flights early next year.

The club has two single-seat Kirby Cadets stored at Polebrook Aerodrome and has arranged to buy a Kirby Tutor, also a single-seat sailplane. It is looking out for a twin-seater glider for training purposes.

Already 110 members have been enrolled —all members of the staff of F. Perkins Ltd. except chief flying instructor L. Holton, former commanding officer of an R.A.F. gliding school.

The club is negotiating for the use of the local Westwood Aerodrome.

The club's chairman is Mr. Tony Leonard, an ex-R.A.F. flying instructor. About eighteen members have had gliding experience. P.H.

SOUTHDOWN

Up to the present 1955 has been quite a good year. Total time flown up to October 16th, was 304 hours, for 1,830 launches, including expeditions. It should be possible to reach 2,000 launches and 350 hours by the year's end. We have obtained 13 certificates, including one Silver "C", that of Vic Tull. He did 46 miles during the Mynd Camp, and gained 3,300 feet. This is the first all Southdown Silver "C". Ten cross countries have been flown this year, with a total mileage of nearly 300 miles.

Denise Brown soloed very successfully on August 6th, followed this up with a "C" on August 11th, and celebrated by being nearly struck by lightning during a really terrific thunderstorm just after she landed. Morn Glassborow soloed very efficiently on August 14th, and Ron Bushell did likewise on September 17th.

During the second week in August we held a very successful camp for members. On several days a steady N.E. wind gave hours of soaring, and both N.E. and W. winds obliged with occasional thermals. On August 8th, Chris Hughes took the two-seater to over 3,000 feet, and repeated it on the 10th.

Most weekends in August brought some soaring, and on September 10th in a thermal off a S.W. wind, Chris and Gerry Bridger in the T-21B rode up to nearly 4,000 feet. This proved one of our best days at Firle. We achieved 50 launches.

Chris has very nobly offered to work on Cs. of A., during his Christmas leave. Provided he gets plenty of help, we should be able to continue flying throughout the winter, and take full advantage of the winter Northerlies.

On December 26th, the club will be holding its usual Boxing Day Party. Flying during the day (Weather permitting). Fun and games in the evening. Members of all clubs very welcome. This year we are at "Bo Peep" Farm, Firle. Not (Repeat NOT) Friston.

F.J.G.

SURREY, ARMY & IMPERIAL COLLEGE

At last something is being done at Lasham about the—dare we mention it —sanitation. A Sub-Committee has been set up and if all goes well we may well have our first flush by the New Year. There is even a rumour that the first week is already completely sold out! Joking apart, a number of other imporvements are also under consideration to help make life more pleasant during the winter and to encourage members to come down.

We are, for the first time, going to run winter courses this year. There will be a minimum number of launches guaranteed and if this figure is not reached, then part of the Course fee will be refunded, depending on the deficit in launches. Flying will also be possible for Club members all through the winter.

To return to this summer, the weather has continued to be more than reasonable. On September 17th, Wally and Bruce Sinclair went to West Malling in the Eagle at an average speed of 40 m.p.h., so beating the 100 km. two-seater record. They arrived in the middle of the Battle of Britain display and are reported to have sent a Canberra round again. The same day the Treasurer, Godfrey Harwood, landed just past Biggin Hill, thus getting his Silver "C" distance; however, his wife Rika has beaten him to the Silver "C" as she completed hers with five hours on thermals on September 10th, landing eventually at Thorney Island.

We have bought a further serviceable Tiger Moth, but this will not come into service until the present one goes in for its C. of A. We have also successfully tendered for an ex-R.A.F. one, but this will be coccooned as a reserve. The new American Ford tow car has arrived and is now in service. With totally enclosed cab and automatic transmission, it is a joy to drive compared with the old ones. A list of approved drivers for it will be rigidly adhered to, to prolong its life.

On October 8th, we had a most interesting talk on parachuting by F./Lt. Haigh and this was followed the next weekend by a practical demonstration; the jump being made from about 3,000 ft. from the Tiger. F./Lt. Haigh landed on the grass just by the hangar.

The Imperial College Skylark and trailer were taken to South Ken at the beginning of October for "Freshers Day" and a number of the new I.C. students have been turning up to sample gliding.

H.T.

WESSEX R.A.F.

The Wessex

OUR move from Boscombe Down naturally caused a certain amount of turbulence, of an undesirable kind, but we have now settled down at Andover—perhaps one should just say "settled", for the word down should be used sparingly amongst soaring types—and have been greatly encouraged by the welcome and co-operation extended to us here. There is no doubt that a small grass airfield, too, is more comfortable than the bleak, black wastes of the modern powered flying station, and the hazards caused by itinerant mushroom gatherers and the odd cheeky Chipmunk are less disturbing than those apt to be experienced when one has to share the circuit with something supersonic.

The Andover area seems to be a better breeding ground for thermals, and several trainees have found themselves late for tea in consequence. During one training afternoon our T-31 did three soaring flights, to 3,000, 4,000, and 5,000 feet, and Flight Lieutenant Allen made a gain of height of 4,000 feet in the Cadet Mark II on the day following his first soaring flight. Every soaring site has its own thermal pattern, and as we learn this one there is an increasing urge amongst the new generation of "C" certificate pilots to be allowed to go away with one of the Grünaus or the Olympia. This latter is the one with the perspex nose canopy which Andy Gough flew into 10th place in the Championships, and we are fortunate to have been allotted it for keeps.

During exercise "Beware," operations at Lasham were restricted, and we were very pleased to welcome parties from the Surrey Club on two successive weekends, once with the record breaking Eagle, and the next week with a Skylark. I may say that as a direct consequence our Falcon has developed bright red markings and members are showing less restraint in their choice of flying clothing, much to the distress of distant winchmen who have to distinguish between bats and bodies. There is more to this than one might suppose, for we are often able to use a very long launch and in fact last week winched one chap to 1,800 feet and another to almost 2,000, without using any special technique.

We are hoping to keep going through the winter, the intention being to go after Silver "C" duration legs on the slopes at Inkpen and Huish. This promises to be stern work, but will be well worthwhile for the experience it will give to those who aim to go places next summer.

YORKSHIRE

WHAT a lovely summer—for sunbathing and circuits! Gone with the north-east winds were our hopes of a good soaring season, and so there was no holding us down when September brought roaring westerlies.

However, in spite of the unfavourable conditions, we held seven successful gliding holiday weeks from May to August, and, as we were unable to offer the visitors as much gliding as we wished, we were very grateful to the C.C.P.R. representatives for their help in arranging alternative activities for the campers. From the number of enquiries received, it seems we could have held several more holiday weeks if we had wanted to do so.

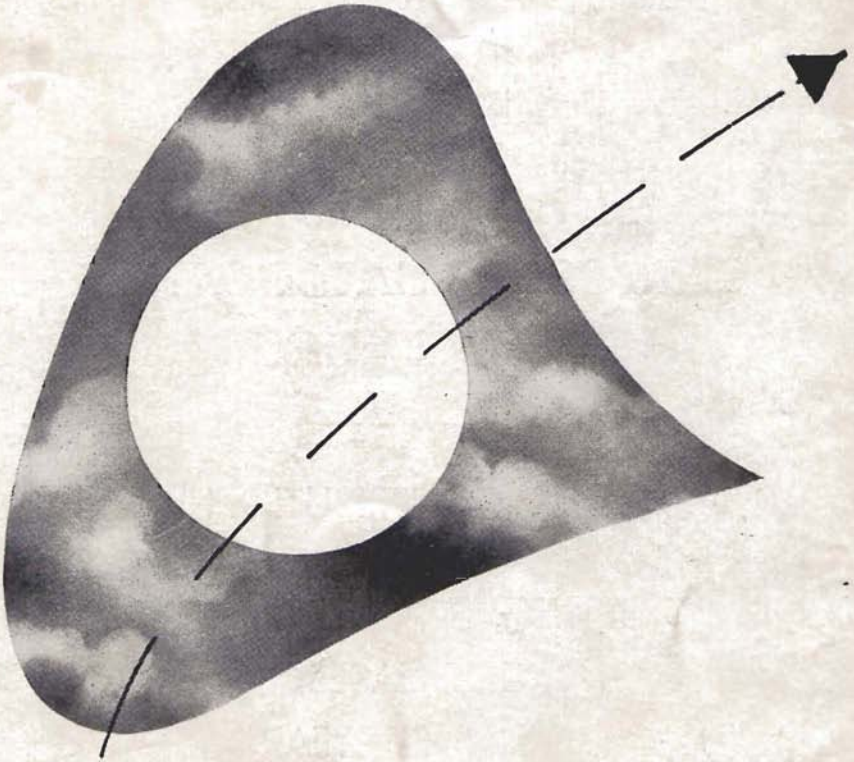
Our training programme too has been held up, but Barry Goldsborough and David Hill have obtained their 'C' certificates. We still have a long list of members under training or awaiting training.

New members are always very welcome, and one of the newest is Chris Riddell, whose Skylark has been seen nipping about our skies on several week-ends recently.

On the only soarable week-end in July, Geoff Wood made his five hours' duration flight, and in September, which was a very busy month, Bob Wilkin, Alex St. Pierre and Frank Dawson also made flights of over five hours, all in Tutors; Stan Skelton (in the Slingsby Group Kite I) and Henry Doktor (in the Club Kite II) obtained their Silver 'C' height qualifications. Stan also attempted the Silver 'C' distance flight, but unfortunately had to land about two miles from Pickering.

The new winch has been operating very successfully for over three months, and we are now planning to build a trailer to carry any Club machine, in readiness for next season. With the aid of this trailer and greater use of the Kite II—and, of course, by kind permission of the weather—we hope next year to be paying regular visits to Cayton Bay and district!

M.H.I.



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