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Cover Photograph.—The World Championships Trophy, against a background showing a Sky sailplane soaring over Dunstable Downs. *Background photo by Pictorial Press.*

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Victory in Spain

EVERYONE who congratulates the British team on its victory in this year's International Gliding Championships, held at Madrid in July, adds to the congratulations a theory. The purpose of the theory is to explain not only why the winner won, but why the team as a whole did so well.

No two theories are exactly alike. Some are based on pure speculation, others on experience of past international contests, or on comparisons with the performance of other competitors who did, or did not, use similar equipment, fly the same sailplane type, put in as much preliminary practice, and so on. What no-one will do is to take the result for granted, because no British team has done anything like it before.

Reasons for the victory are put forward by contributors to this issue of GLIDING who are entitled to speak with authority. They are many-sided and will be read with interest. To assist this study, we have contributed diagrams, on page 99, which show how the position of the various pilots changed day by day.

However, the victory is a fact. British soaring skill has been built up almost in isolation, in a country not well suited for high performances, and with little outside help apart from a small government subsidy before the war and the Kemsley Flying Trust after it, over a period of 22 years. And now, with some first-class equipment generously loaned and given, it has come out on top in competition with soaring pilots from four continents.

In this, the last section of GLIDING to go to press, we have just time to record an occasion which fittingly rounds off the events connected with the Championship meeting. This was a reception given by the Rt. Hon. Alan Lennox-Boyd, Minister of Transport and Civil Aviation, and Lady Patricia Lennox-Boyd, when many people prominent in civil aviation were invited to meet the British party who had been to Spain. Among the guests were no less than four former Ministers of Civil Aviation. During the evening Mr. Lennox-Boyd read out the following letter he had received from the Prime Minister:—

"Pray congratulate on my behalf the British team who did so well in the International Gliding Championships, especially Mr. Philip Wills who is now World Champion, and also the Slingsby Sailplane Company on the success of their gliders.

Winston S. Churchill".

B.G.A. News

Operational Regulations.

As a result of the statistical work of the Accident Analysis Panel, the Council of the British Gliding Association now has sufficient facts to feel that it is essential to adopt the following additional Operational Regulation:—

"No pupil shall be permitted to fly a solo circuit, or to proceed to more advanced solo exercises, until he has received instructions in stalls and incipient spins, and proved his competence in this respect to his Club C.F.I. or to an Instructor nominated by him. The instruction in stalls and incipient spins can be given on powered aircraft if no other method is available".

The Regulation will come into force as soon as the usual arrangements can be made to provide facilities for Instructors' Courses to be made available.

WORLD CHAMPIONSHIPS APPEAL FINAL LIST

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New British Record.

A gain of height of 12,750 feet was achieved by Roger Austin and A. W. Bedford in a Kranich two-seater on 16th August. This has been homologated by the B.G.A. Council as a Multi-seater British National record, and also a U.K. Local record, for gain of height. The previous record was 10,080 feet, set up at Cambridge.

Reviews

The ABC of Gliding: by Fox Green. Published by George Allen & Unwin, Ltd., London, 1952. Price 12s. 6d.

This book is intended, not as a complete text-book, but as a supplement to the usual instruction on the flying field. Primary instruction is assumed to be done by the solo method, and the routine is that employed for some years by the B.A.F.O. clubs in Germany. Nevertheless, the greater part of the advice given would apply also to pupils trained by dual on two-seaters, and is on the whole very sound. The pupil is taken up to the stage of catching thermals and slope-soaring, and there is a chapter on winch-driving and one on instruments.

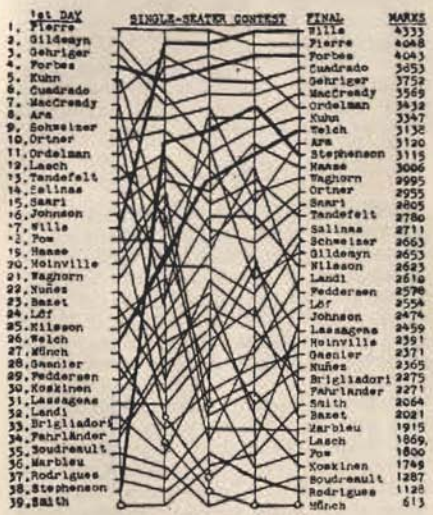
Many diagrams in the book are too clumsily drawn, especially as it is got up like a library book rather than a pocket companion.—A.E.S.

Regulations for Records in Gliding and for the Award of Gliding Badges, and Regulations for World Championships in Gliding. Obtainable from British Gliding Association, price 2s.

In the last issue, we criticised this invaluable little booklet on the score of bad translation into English from the French master text. We now find that the criticism was based on an early draft, and the actual booklet for sale is a perfectly straightforward translation. We apologise to the F.A.I. and our readers for this mistake. The booklet remains a "must".—C.

World Championships

Diagrams show changes in order of total markings on each competition day, with final scores. A circle signifies sailplane out of action.

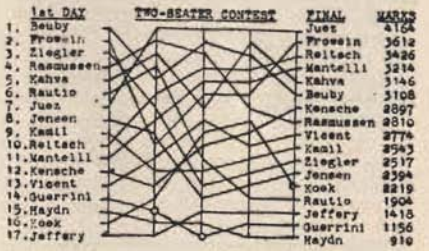


Two-Seater Entries

Country	*Pilot*	*Sailplane*
Brazil	Rodriguez	Kranich
Canada	Jeffery	Kranich
Denmark	Rasmussen	Kranich
,,	Jensen	Kranich
Egypt	Kamil	Condor IV
Finland	Kahva	Kranich
,,	Rautio	Kranich
Germany	Reitsch	Kranich III
,,	Kensche	Condor IV
,,	Frowein	Kranich III
,,	Ziegler	Mu 13 E
Holland	Koek	Kranich
Italy	Mantelli	Canguro
,,	Guerrini	Canguro
Norway	Haydn	Kranich
Spain	Juez	Kranich
,,	Vicent	Kranich
U.S.A.	Beuby	Kranich

Single-seater Entries

Country	*Pilot*	*Sailplane*
Argentina	Bazet	Horten XV
,,	—	Horten XV
,,	Ortner	Sky
,,	Cuadrado	Sky
Australia	Waghorn	Weihe
,,	Hoinville	Kranich
Belgium	Gildemyn	Sohaj
Brazil	Munch	Weihe
Canada	Boudreault	Weihe
,,	Pow	Weihe
Denmark	Feddersen	Weihe
Egypt	Kamil	Condor
Finland	Koskinen	Pik-3
,,	Tandefelt	Weihe
,,	Saari	Weihe
France	Marbleu	Air 100
,,	Pierre	C.-M. 8-15
,,	Landi	Breguet 900
,,	De Lassageas	Air 100
,,	Gasnier	Arsenal 4-111
Germany	Haase	Condor IV
Gt. Britain	Forbes	Sky
,,	Stephenson	Sky
,,	Welch	Sky
,,	Wills	Sky
,,	Foster	Sky
Holland	Ordelman	Sky
Italy	Brigliadori	Pinocchio
S. Africa	Lasch	Weihe
Spain	Nunez	Weihe
,,	Salinas	Weihe
,,	Ara	Weihe
Sweden	Nilsson	Weihe
,,	Löf	Weihe
Switzerland	Fahrländer	Moswey III
,,	Gehriger	Weihe
,,	Kuhn	Moswey III
,,	Schachenmann	Air 100
U.S.A.	Johnson	RJ-5
,,	Smith	Schweizer 1-21
,,	MacCready	Schweizer 1-23
,,	Schweizer	Schweizer 1-23



Contest Days at Madrid

HERE we give a summary of the contest flying during the International Championships, to give readers a general view before reading the articles that follow.

First we will summarize the flying during the preliminary practice period, which was made possible by the generous action of Jack Rice in bringing his Miles Messenger and giving our pilots aero-tows.

Saturday, 21st June.—Wills and Forbes found thermals exceptionally good, even for Spain. Nearly as good on Sunday.

Monday, 23rd.—Forbes and Wills, starting at 3.30 and 4 p.m. respectively, flew 100 kms. N.E. and 100 kms. back. Wills reached 17,000 ft. a.s.l. (aerodrome 2,000 ft.).

Tuesday, 24th.—Wills attempted British out-and-return record, but damaged his Sky landing on a football field. Forbes 200 kms. to goal and part way back.

Wednesday, 25th.—Rest of team arrived yesterday. Stephenson 30 kms out; returned under overcast when all others grounded. Repairs to sailplanes of Wills and Welch (damaged on journey).

Thursday, 26th.—British set themselves a task: to Navalmoral, 103 miles upwind, and return. Difficult area 20-30 kms. to S.W.; none got more than half way.

Friday, 27th.—British set task of goal flight to Huesca, 200 miles. All four (Wills still grounded) were reported by the Spanish to have got there; actually they went about 150 miles. Foster climbed 17,000 ft. above release.

Wills airborne again on 28th; Stephenson went 140 miles N.E. on 29th.

Monday, 30th June.—Official opening ceremony in late afternoon, performed by General Gaellarza, Spanish Minister for Air. This was followed by two days' discussion on procedure, during which more practice flying was done. David Ince (reserve pilot) flew Foster's Sky on 30th.

3rd July: Free Distance

Wills won the draw for the first launch and had it at 12.08; the 58th and last launch was at 1.13 p.m., which is a tribute to the organizers. It should be mentioned that actual time by the sun was 1 hr. 20 mins. earlier than Spanish clock time; of this, 1 hour is due to Summer Time, 15 minutes to geographical and 5 mins. to astronomical adjustments.

Pierre was the day's winner with 186 miles (300 kms) to the Ebro valley. Next were Gildemyn (185 miles), Gehriger (183), Forbes (161), Kuhn (158) and Cuadrado (153). Wills went 126 miles, and Welch 116. Most of the pilots went in a north-easterly direction, but Stephenson chose S.W. to avoid a forecast cold front, met increasing contrary winds, and made the shortest single-seater distance of 60 miles.

The cold front took the form of an extremely shallow gale spreading out from a line of cumulo-nimbus clouds to the north, caught several pilots unprepared, and led to damaged sailplanes. One of these, Frank Foster, was flung against a telegraph pole when about to land after going 137 miles, and was put out of action for the rest of the meeting. His marks would have put him in 12th place. Lasch and Schachenmann also suffered write-offs.

In the two-seater contest Beuby (U.S.A.) did best with 166 miles.

5th July: Goal Flight

Pilots could choose their goals from a list of 32, but in the favourite direction to the N.E. there was no intermediate choice between 76.4 miles to Torresaviñan and 170.3 miles to Zaragoza. Pilots failing to

reach their goal were marked in proportion to the square of their distance. Bonus for reaching it was 30 per cent.

Pierre again made the longest distance, reaching his goal at Leon, 180 miles in the less popular N.W. direction. Next were Stephenson and Wills, reaching their goal at Zaragoza, as did also Juez who thereby put Spain in the lead in the two-seater class. Fourth and fifth in the single-seater class were Cuadrado and Ordelman, with goal flights of 140 miles southwards to Albacete, and next Forbes and Ortner, who both gave Zaragoza but fell short by 9 and 12 miles respectively.

Hoinville and Waghorn, with 10 other single-seater and 7 two-seater pilots, all reached their goal at Torresaviñan.

Welch tried for Vitoria and got 124 miles of the 182, while MacCready and Schweizer found Badajos, 194 miles to the S.W., far out of reach.

7th July: Race to Goal

The goal was Torresaviñan. Pilots were timed from release from aero-tow over Cuatro Vientos and on crossing the finishing line. Marking was in proportion to the square of the speed, modified in such a way that the fewer pilots reached the goal, the fewer marks would be given for speed and the more for distance.

Wills came out on top this day, being launched into a powerful thermal and finishing the course in 1 hr. 24 mins. 25 secs. at 54.21 m.p.h. (87.41 km.p.h.). Since Pierre did only 41.64 m.p.h., Wills nearly caught him up in the total markings for the first three days, reaching 2,616 to Pierre's 2,624. Next came MacCready with 53.52 m.p.h. and Forbes, who beat Ordelman by 2 seconds, with 51.08. Welch came 6th with 49.64, and Stephenson 14th with 41.88 m.p.h.; Waghorn was 20th with 37.69.

Among the single-seaters 31 out of 33 reached the goal, and of two-seaters 11 out of 16. Frowein was best of the two-seaters with 42.94 m.p.h., then Beuby, 42.18, and Juez, 40.28. Juez kept his lead in total points.

9th July: Free Distance

This distance competition was postponed from the day before, when the organizers changed their minds after four pilots had already been launched.

It was a good day for two-seaters, for Kahva (Finland) made the longest distance, 152 miles, in a Kranich, and Hanna Reitsch was close behind with 146 miles. Juez made only 88 miles but, nevertheless, maintained his lead among the two-seaters.

Best single-seater performance was 151.6 miles by Feddersen (Denmark), followed by Gehriger (148), Wills (146), Löf (142), Forbes, Stephenson and Cuadrado (each 140). Johnson made 117 miles, Welch 116 and Pierre 108. Wills consequently leaped into first place in total markings, with 3,579 to Pierre's 3,337, while Forbes totalled 3,318. The contest had become more exciting than ever.

11th July: Race to Goal

Contestants were asked to decide between Goal Flights and a Race. Voting was equal, and the organizers gave their casting vote for a race, fixing Torresaviñan again as the goal. But though the route was the same as before, the weather was very different, for instead of flying from thermal to thermal, competitors had to negotiate a thunderstorm which crossed their path.

Wills and Forbes both climbed high in the thunderstorm, so as to turn height into speed. Welch circumvented it and Stephenson took nibbles at it but was sunk by an extensive downcurrent, short of the goal, as were several others.

Fastest speed for the day was sensational —66.8 m.p.h. (107.51 km.p.h.) by Johnson in RJ-5; the storm gave him an almost continuous upcurrent. MacCready was next best with 55.55 m.p.h.

Inside the storm cloud Wills reached 24,000 ft. Unfortunately his barograph failed to register the top of the climb, or he would have regained the British height record, but it registered enough to give him another diamond to his Gold C. He made the third best speed with 52.43 m.p.h., which was more than Pierre's 49.4, so retained his top place in the final position.

Landi (France) made 51.4 m.p.h. and Forbes 50.5. If only Johnson had not gone so fast and reduced the speed marks of everybody else, Forbes would have been far enough ahead of Pierre to reach second place in the final list, but he missed it by 5 points and came third.

Vincent (Spain), with 49.2 m.p.h., was fastest among the two-seaters, and Juez second, keeping his top place in the totals.

A magnificent prizegiving party on the night of the 13th concluded the meeting.

The 1952 World Championships

by Philip Wills

THE most important thing about our success in Madrid was that it was a success of the whole British team. It is probably possible for a single brilliant pilot with adequate backing to produce an isolated triumph, which, in itself, proves nothing about the soundness or otherwise of his home Gliding movement. But when a whole team of four pilots (which, I have no doubt, would have been five but for Frank Foster's stroke of ill-fortune which put him out of the running on the first day) finishes 1st, 3rd, 9th and 11th in a field of 39 single-seaters, and when pilots of other nations flying the same British aircraft finish 4th, 7th and 14th, such a result can spring only from a home movement thoroughly virile and sound in every way. The best flowers only grow in the right soil.

How, in the name of Fortune, did we do it?

Looking back through the series of rather sad analytical reports after each of the first three International Competitions, in 1937 at the Wasserkuppe, 1948 Samaden, and 1950 Oerebro, I think one can say that our victory in 1952 roots back to our previous defeats; for after each of these we analysed our defects and patiently set about remedying them.

To see what I mean, refer to my report in GLIDING No. 4, Winter 1950/51. Seldom do one's efforts at analysis read so well after a lapse of two years! Only two points went wrong.

First, I pressed for National Championships to run for a fortnight instead of a week. This proved impossible, but Nature let us off by providing weather so startlingly good for the 1951 Nationals that we got as much flying in a week as we would normally expect to get in a fortnight.

Secondly, I said "I do not mean . . . that we had anyone in our team who, with a little more practice, would have outflown Nilsson . . ." Well! . . . this time all four of us outflew Nilsson.

Three of the four of us were completely outclassed by him in 1950. Is Nilsson in 1952 a *fundamentally* worse pilot than he was in 1950? Are Forbes, Welch and I *fundamentally* better pilots? I cannot believe it. This question of pilotage remains, for me, the most baffling problem of all. I will come back to it later.

In what follows, I will copy the general layout of my 1950 report referred to above.

Team Selection.—Profiting from experience, our selection methods this time were probably as near perfect as they can be. This was mainly because the revised form of the 1951 Nationals gave a rational basis for selection, which not only was fair, but could be seen to be fair by everyone. Thus for the first time there was general approval for the team selected, and a background of popular approval gives big psychological encouragement to all those going out to compete for their country in an international event. But the selection committee, under the wise leadership of John Furlong, would probably agree with me that we have several other pilots coming along who run close for international standards, and this is indeed a healthy sign.

Team organisation:—The success of our whole effort was of course based on the preliminary organisation, and no-one who has not done it can imagine the size of this task. It is probably the biggest single task ever undertaken by the British Gliding Association and was triumphantly concluded by our Secretariat, with the assistance of John Furlong and his committees. In retrospect, this job was like planning on paper and then building a complicated machine, and in the outcome every single piece fitted in and pulled its weight in the order of things.

Equipment.—It is not too much to say that, on this occasion, we outclassed every other nation in every major detail of equipment. First, the Sky. It is simply stressing the obvious to say that the Sky proved itself to be a superlative high-performance sailplane. But before the Championships this was not so obvious, so that the requirements of a Championships world-beater are clearly not so self-evident as one might think. Let us analyse.

Performance? The Sky's polar curve is sound enough, but plot that of the RJ-5 on the same bit of paper, and then say

Philip and Kitty Wills, photographed by Dr. Scorer in Spain.

which is going to win. Why didn't it work out that way?

During the practice period I had a rousing accident, landing in a football field at the redoubtable Calatayud (where something like ten aircraft were damaged on the first day's Championship flying). I was within six feet of writing off the Sky. What I did to it would have written off my Weihe. It was repaired in two days; if it had been necessary, it could have been repaired in one. The RJ-5 had a comparatively slight accident the first Championship day. The repair took so long that it missed two further flying days. And the story of Argentine's Hortens seemed to be exactly the same. I should also suspect that, in a cu nim, the Sky is a much more comfortable steed than either of these two shapes of things to come.

So the Sky is a good performer, but it is also a strong, sensible aircraft. The cockpit is superb. It is the only cockpit in which I have been really comfortable. There is room for me to sit on a decent cushion. At full stretch, the rudder pedals allow my legs full stretch too, and I can alter my seating position from time to time by moving the pedals in and out.

It is perfectly sealed: at 24,000 ft., in light clothing, I remained warm and comfortable. The instrument panel is detachable in less than a minute. What worlds that means to one's ground team, with the constant fiddling with instruments that arises from the special instrumentation inseparable from Championship flying.

As regards instrumentation, the most important advance made in recent years is in the refinement of the variometer. The simple variometer is now, in my opinion, as outdated as Stephenson's Rocket. The Total-Energy Variometer allied to some form of cruise-speed chart gives one an advantage of possibly 5 per cent, or even more, in cross-country performance, and such an improvement from one instrument must rank as a major advance.

I was using the nose-blisters first put forward by Hugh Kendall (GLIDING, Vol. III, No. 1), which on the whole I prefer to the mathematically brilliant solution of Frank Irving. This development of the variometer costs practically no more than the simple instrument itself, but it does call for a lot more precision and calibration, which is only to be expected as the technique of flying advances. One needs (a) a polar curve for the sailplane, (b) the Position Error curve, (c) an accurately calibrated variometer, and (d) accurately calculated cruise-speed charts in one form

or another. How often each different kind of variometer needs re-calibrating, and how accurate a calibration is for all altitudes, are matters which might usefully be gone into further. But with this refined instrument, firstly, you never pull a circle in "stick-lift," and secondly, you are at all times flying on a rational curve. I hope we can pull out of the bag as potent a secret weapon in 1954.

I have called this "the most important advance in recent years" because our other new instrument, of even greater importance, was not so much an advance as, for us, a radical innovation. Others have had radio in the past, but nothing as good as the Pye PTC. 120 has so far been seen, and it caused a veritable sensation at Cuatro Vientos. Its size and weight were far less than any other set yet seen; its range as good or better; its reliability, after teething troubles during the practice period, was practically 100 per cent. No member of the British team had to wait more than 20 minutes for his trailer to arrive, and frequently one's trailer was there marking out the landing field as one came in. In the road and telephonic conditions of Spain this was one of our greatest assets.

But an unexpected result of a first-class radio set was the tremendous additional demands made on the retrieving car, and we should have lost all this advantage had not the Standard Vanguard estate cars answered superlatively to the test. When radio makes it possible for the trailer to keep up with its glider, then it becomes vital that it should be able to do so. On first glance, with a radio range of up to 120 kms., it would not seem to be too serious if the car got left behind; but since V.H.F. is essentially restricted to visual range, and since Spain is criss-crossed with lines of Sierras through which the roads twist in tortuous and narrow defiles out of radio touch, whilst the glider sails serenely over in a straight line, the outcome was that the Vanguards spent much of their time weaving along in tropical heat, up gorges, over plains and through mountains, at speeds of up to and over 60 m.p.h. with trailer rocking behind. One and all they took it, and on the road home at night there was room in the commodious back for the pilot to doze on a mattress whilst his crew drove back against the stream of trailers outward-bound from Madrid searching for their aircraft.

Pilotage.—The mystery subject. Look at these names, pulled from the hat at random:—

Year	1937	1948	1950	1952
Entries	28	28	29	39 (*single-seat*)
Forbes	—	17th	15th	3rd
Gehriger	—	—	8th	5th
MacCready	—	—	2nd	6th
Nilsson	—	—	1st	20th
Welch	—	14th	24th	9th
Wills	14th	10th	27th	1st

Where does this get you? Practice? Of course, as I said in 1950, an essential thing, and this year one of our most important assets. But Pirat Gehriger, improving his place from 8th in 1950 to 5th in 1952, told me he had only flown about five hours in the last two years, and he damaged his machine on the journey to Madrid, so got in practically no practice before the Championships started.

Exhaustion? Obviously something there. Owing to our radio/car set-up, the unflagging devotion of my team, and the rest-day which followed every flying day this time, this is the first and only contest in which I have started every day's flying absolutely fresh. And in my particular case, this must help a pilot of my age relatively more than a younger man.

Morale? Obviously something in this. If one has good organisation behind one, and starts off well, one must obviously fly better.

Experience? Something in this, too. The collective experience of a team obviously gives it an advantage over a country competing for the first time. And experience counts for a great deal in the vital preliminary organisation. But there were many other nations who had competed before.

But, with all this in mind, and with the advantages we had in equipment thrown in, I still do not believe that in two years the fundamental competence of any of us had altered up or down in the startling way which this table appears to indicate. It will be an unpopular thing to say, but I personally believe that in all these Championships, limited as they have been to seven, six or five days' flying, there must enter an element of—luck.

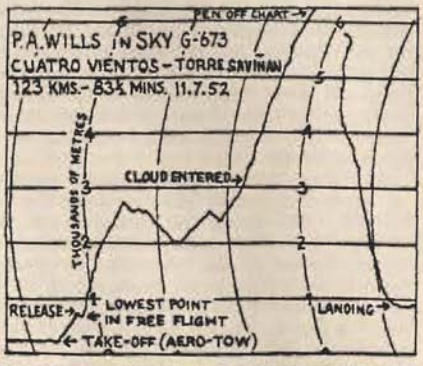
You have got to be good, your equipment and team have got to be good, your organisation must be good—and you must have luck. Otherwise someone else will

have it, and beat you. But, important note: this applies mainly to an *individual pilot*; it is much less likely that luck can affect the fortunes of a whole team. This is why, as I said above, our collective success is more significant than an individual triumph.

Marking system, organisation and results.—The Rules, in general, were again excellent. Of the making of Marking Systems there is no end, but in my view the F.A.I. daily factor system is quite excellent, and easily the best solution so far advanced of this biggest general problem of any marking system.

Within this daily factor system, the simple distance system used was identical to that used by us in our 1951 Nationals, and perfectly satisfactory. The pilot-selected goal marking system used was logical, if perhaps unnecessarily complicated; and again I feel that the penalties for not landing at the goal were unduly severe, particularly in Spain, where the number of permitted goals was very small. The goal-race marking system was again logical, but complicated. No-one could start to calculate the marks until everyone had reported back, because everything depended on the proportion of pilots who had reached the goal to that which had not.

But I continue to regret the dropping of altitude marks. As it happened, this did not matter much, because the only important altitude day, the last, was a goal-race day. But if this day had coincided with a distance day, I believe height marks would have contributed immensely to what would have been the most notable, dramatic and important Championship day's flying the world had ever seen.



Barogram of Mr. Wills's winning flight, to be described in our next issue.

On this point of results, one must confess that the actual performances achieved during the 1952 Championships were disappointing. Day after day we set off in conditions such as we never dream of over here; 10 ft./sec. thermals everywhere. But the average distance flight was around 200 kms.—distances which we can beat on medium days from Camphill. It seems that midsummer weather in Spain puts an invisible circle of contrary winds or stable air all round the centre of the peninsula, which no-one managed to penetrate. The last day alone gave a chance of big distances, and bigger heights, and on that day we were racing to Torresaviñan. And here I must again express alarm at the trend in successive World Championships towards a reducing number of actual flying days.

We flew seven Contests days at Samaden, six at Oerebro, and only five at Cuatro Vientos. The various national teams participating had come an unimaginable number of thousands of miles in order to compete, and by this word I mean, mainly, to fly. Many thousands of pounds were spent to this end. The cost to each team calculated per flying day over only five such days must have been enormous, and in only five such days the influence of luck on an individual pilot's fortunes must necessarily be altogether too large.

At Cuatro Vientos the weather was not the limiting factor: neither was it so at Oerebro. I think in fact that the small number of flying days at both contests was primarily due to failure of the organisers to realise that the main purpose of World Gliding Championships is to *fly*; and also to realise that pilots of World Championship class can put up good performances in a very wide range of weather conditions.

I pointed out after Oerebro that in ideal weather conditions, 8 flying days in an 11-day Contest period is a theoretical maximum. This is achieved by flying a short task (e.g. a race), followed by a long task, then a rest day, for eleven days. We could easily have done this at Cuatro Vientos. We should then have done 4 races, and 2 each distance and goal flights; or better still, 2 races, 2 out-and-return or triangular flights, and 2 each distance and goal flights. Eight flying days should be our aim if we offer to hold the next World Champion-

ships in England, and this should be obtainable with the margin provided in the normal 14-day contest period.

This having been said, I am speaking for all of us in recording that our Spanish hosts put up a simply magnificent example of generosity and sportsmanship. The way in which they launched 59 sailplanes on aerotow in just over an hour was quite extraordinary. Although I think one must conclude (as one rather expected) that nearly 60 sailplanes is too large a number for one meeting, they handled this formidable concourse better that I would have thought possible, and earned the gratitude and respect of all of us.

The future.—The purpose of any analysis is to attempt to chart the future. As I have said before, the longest and most intangible battle we have had to wage to reach our present position was the attempt to modify the whole basic atmosphere of our movement.

Looking back over the formative pre-war decade, I think now that our collective attitude (not any one individual person's attitude, but our *collective* one) of a kind of determined mediocrity was due possibly to a kind of mass inferiority complex induced by the tremendous lead that the Germans had over us and all the rest of the world. This induced, I suggest, the classic reaction of "Oh well, we don't really want to be good, we only want to Have Fun." Now we have climbed out of it, *and it is up to us to ensure that what we have reached is not a peak, but a plateau.*

1954 World Championships.—The prestige of the World Championships, and the interest taken in them internationally, is growing apace, and already two nations, the Argentine and the U.S.A., have made strong preliminary bids for 1954. The selection will be made by the Gliding Commission of the F.A.I. next year. Are we going to offer? I hope so.

Forecasting for the 1952 Championships

by R. S. Scorer

THE greatest problem facing the forecaster at Madrid was undoubtedly the winds. In Britain we are accustomed to regard the winds as about the easiest thing to forecast for gliders, but the mountains are so much bigger and the sunshine more intense in Spain that the diurnal variations in wind swamp all other variations. When a slope is heated the air flows up it and so the cumulus tends to develop first over the mountains. There is a compensating sinking of the air over valleys during the day; and similarly when the katabatic wind starts at night the air in the valleys is lifted and cloud is formed—sometimes as a layer and sometimes as large cumulus, according to how stable the air is.

It was evident during practice that even a mean wind of 5 m.p.h. would be an assistance which should be fully exploited, and so at first all the meteorologists examined the pilot balloon reports most carefully, but we soon learned from the pilots' experience that the winds developed in the mountains played havoc with any simple picture of the airflow for the day that we may have worked out, and it was necessary continually to check one's ideas by watching the motion of clouds at different levels. The direction of shear was usually well displayed by the leaning over of the cumulus, and although pilots sometimes found adverse winds for short distances, I don't think anyone in the British team would have chosen a different route had he had foreknowledge instead of a forecast of the winds.

On many days the winds near the ground at Madrid began by blowing from the E. or S.E., this being the direction of the isobars at that level; but when convection stirred the air up, the lower-level air tended to drift with the upper winds, which were predominantly from the W.S.W. While this stirring process was taking place, the surface wind changed rapidly and fluctuated and eventually settled down to a S.W'ly. The cumulus clouds in the meantime were being

Senor Castans, the official Spanish forecaster, in the meteorological office. He did briefings in three languages.

torn to pieces by vortices on their upper surfaces.

When the cumulus over the mountains produced rain, the rain produced downdraughts of cold air which descended the mountain slopes and spread out over the plains like very shallow cold fronts. These shallow winds were responsible for almost all the accidents. Foster encountered one which was only 150 ft. deep although it had been blowing for about half an hour. Ortner saw his airspeed rise suddenly from 150 to 220 km. per hour when "beating up" the finishing line on the last day of the competitions, and it is a credit to his "Sky" that he came to no harm.

The temperature fell suddenly and the wind became N'ly with gale force at Madrid in the afternoon on the first and last competition days. On both of these days thunderstorms had developed over the Sierras to the N. of Madrid, and the cold air of the downdraughts had fanned out southwards: on the first occasion this "cold front" set off more thunderstorms over the plains to the S. of Madrid and these storms drifted N'wards again with the winds in middle levels which were S'ly; but on the last competition day the storms moved away from the mountains S'wards across the plains—across the route of the race—and most pilots were forced to negotiate very extensive areas of downdraught often as much as 15 miles wide with 10 metres per sec. down all the way. The fanning out of these downdraughts on the ground blew up the sand from the ground so that some pilots could see what was happening, and after the experience of the first day it was not a complete surprise. The details of the enormous downdraughts and the direction in which the storms would travel were impossible to forecast. Favourite tracks for storms are known but these are not rigidly followed. It is difficult to predict their motion from the general wind drift when they have circulations of their own which make representative wind observations impossible.

The general principle that convection would not be good over valleys surrounded by hills—the Ebro valley and the plains round Valladolid for instance—worked well. Many pilots (no British) who declared Valladolid as goal when convection had been reported as good in that region very early in the day failed to get far from the mountains, and the Cu over those plains had a ghostly appearance in the afternoon and was not much use. Those who reached Saragossa in the Ebro valley did so by gliding down from sufficient height gained over the mountains (though Beuby did a little slope-soaring near Saragossa).

The spreading out of anvils so as to cut off the sunshine was a serious problem. It was sometimes impossible to know the direction of the wind at anvil level until the anvils formed—which was too late. If this spreading out had been correctly forecast on the first competition day, Stephenson would not have taken the northernmost of the two roads to Badajoz. When faced with the cutting-off of his thermals, he either had to descend close to the road on which his trailer was proceeding or press southwards across uncharted country and hope to get further on the other road. The trailer would have had to go hundreds of miles round, and to land between the roads might have meant a retrieve by mule and perhaps damage on landing. The forecast was thus significant not only in relation to soaring

but also to retrieving, and this first day was most costly to Stephenson.

The meteorologist's confidence in upper-air contours had been shaken on the previous day when they indicated a S.W'ly wind at an anvil level, for an anvil from a solitary towering Cu to the N.W. of Madrid spread out S'wards (in a N. wind) at about 30 kts. The network of radio-sonde stations was not fine enough to indicate the wind system at 30,000 ft.

Cirrus formation was a worry on 8th July when the great increase in amount of cirrus for no very obvious reason caused the competitions to be abandoned just after launching had begun. This caused much complaint from frustrated pilots who were more interested in the gliders who could remain airborne than in the prospect of a further increase in cirrus and a farce of a competition and many futile launches. On the next day cirrus also looked threatening but not so thick, and in fact it all disappeared early in the afternoon.

Three days previously the cirrus had a maximum amount in the afternoon and so the variation was not simply some diurnal influence. The winds as indicated by the cirrus movement were so light that the cloud could not have been of wave-origin.

When thermals occurred they were always good enough for soaring. The contours of the ground, the movement of storms, and cirrus shadows were much more important factors than day maximum temperatures and lapse rates. The tephigram was, however, useful for indicating whether the cumulus would be large or small and whether anvils would be extensive or not. Since there were, on any day, regions where convection was feeble and regions where it was good, it was evident that the lapse rate indicated by the Madrid tephigram could only help to a limited extent. It was not even much help to know the time at which an inversion would be punctured, because thermals were good before and after this happened. It was not possible to say whether the storms would move away from the mountains on the last day, and though the tephigram had been useful in forecasting the occurrence of storms one must not expect too much from it, for the afternoon ascent is sometimes the same and sometimes very different from the morning one. There was no competition on 6th July; but had there been, every pilot would have been very disappointed in the afternoon, for there was enormous subsidence which dissipated all the cloud and Cu did not even develop over the mountains.

Prof. Walter Georgii thanking the President of the Real Aero Club for entertaining the OSTIV delegates to dinner.

The shallow winds were not all due to downdraughts from raining Cu, for they were found in the region of Calatayud on cloudless days, and I have heard no acceptable explanation yet. I think they were undoubtedly due to the up and down slope winds on heated and shaded hillsides but in rather a complicated way. One could not help having a picture of the air over Spain heaving to and fro among the mountains ascending in one place with good thermals, subsiding in another where no lift was to be found, the general drift of the wind being cut up by these heavings even at heights well above the mountain tops. Another fortnight's gliding would have given us enough information to answer some of the problems; as it was, we were still groping at the end of the contests.

The object of having a meteorologist attached to the team was not to produce a more correct forecast than the official one,

but to ensure that the forecast was not misunderstood. It was also an advantage for pilots to be able to put their questions to someone with whom they were used to discussing them, and for someone to co-ordinate what they found on early flights so as to exploit it in giving advice later.

On the last day Señor Castans, the Spanish forecaster, said to me: "Mr. Scorer, you have learned nothing in Spain". This seemed pretty rich to me, as I thought I had learned a great deal and perhaps even taught him a thing or two in the process; but he was not referring to the weather (I think all the meteorologists were agreed that one inevitably learns a lot at a gliding meeting),—he merely meant that I had not learned to take my siesta and enjoy the dancing and the wine for many hours after midnight with no cares for the problems that were to face us soon after the sun next rose.

Discussion on the Championships

LONDON Gliding Club invited the pilots who took part in the International Championships to take part in a Discussion held in the club lounge on Saturday, 2nd August. Alan H. Yates, who had been present in Madrid as one of the British representatives on OSTIV, took the chair, and among other visitors invited to speak were Fred Slingsby, designer and manufacturer of the Sky sailplane which the British team flew; Dr. R. S. Scorer, also on the OSTIV, who advised our team on the weather; and Paul MacCready, who performed best in the American team and reached 6th place, and was on a visit to England.

The audience included many people from other clubs, and also Jon Carsey, President of the Soaring Society of America, and Mrs. Carsey. Members of the British team to speak were Philip Wills, "Jock" Forbes, Lorne Welch and Geoffrey Stephenson; unfortunately neither Frank Foster nor Ann Douglas, the team manager, were able to come.

This account is compiled from notes taken during the discussion; the contributions of Mr. Wills and Dr. Scorer are shortened as they have written separate articles for this issue of GLIDING.

P. A. Wills attributed the British success entirely to the fact that our organisation was "buttoned up", we having learned much from past mistakes; also to the British Gliding Association having, for the first time, a Secretary and staff capable of coping with the work involved.

Dr. Paul MacCready described the flying in Spain as like that in Texas, where one can average 45 m.p.h. relative to the air mass in which one flies. As in Sweden, soaring conditions were interfered with by the spreading out of thunderstorms.

On the first contest day (distance) he got to 18,000 ft. and later to 17,000 ft. twice; but 30 miles out he had to turn back from a dead-looking area. On the goal flight day his appreciation of the met. situation led him to choose the most distant goal, but it meant flying into a contrary wind blowing at 30 m.p.h. and increasing. He had gone about 80 miles when the upcurrents gave out three hours earlier than he expected—in other words, he landed.

The other distance day was the one day on which his radio worked; but even when not working, it gave him increased speed between thermals, as it weighs 30 lbs.

On the second speed dash (the last contest day), when several large thunderstorms slowly moved across the path, he skirted them to the south. After his last descent, he crossed the goal line at such speed that he was able to zoom up again high enough to catch thermals, then climb to 8,000 ft. where he could watch the others land. He could tell when the gale arrived, from the way people held on to their gliders; a German pilot had spun in owing to the last-minute wind-shift. He thinks there was no way of predicting the area of down-current which prevented so many competitors from reaching the goal; he encountered it after crossing the goal line, and its strength was a good 2,000 ft. per minute down.

L to R: R. C. Forbes & Tony Goodhart, G. H. & Beryl Stephenson, F. Foster & L. Welch.

Flt.Lt. R. C. Forbes said that, as in all such events, there were quite a few "ifs and buts". One of the "ifs" he has committed in two international contests. This time it was on the goal flight day, when he was making for Zaragoza. His advice to others is : after you see your goal, don't try any funny tricks. When within 50 kilometres of Zaragoza, he had 10,000 feet of height. The weather had been good as far as Calatayud, 210 kms. from Madrid, but in the Ebro valley the winds blow differently. From 10,000 ft. Zaragoza looked easy, and he flew fast to the next thermal—which wasn't there. He was finally obstructed by a little 1,500-ft. hill which he couldn't cross. He had done the same sort of thing in Switzerland in 1948.

On the last day, Forbes reckoned that he would need to beat Gérard Pierre by one minute in order to overtake him in the final totals, if the points had the same value as on the previous race day. He got 12,000 ft. in the first thermal and pressed off towards a cumulo-nimbus in the direction of the Guaderramas, getting 2 metres per sec. upcurrent at once. and soon afterwards the variometer went off the clock. He wanted a bit more height to be on the safe side, so went into the cloud, although he had left his oxygen equipment behind. From 18,000 feet upwards he thinks he must have suffered from lack of oxygen, but Ann Douglas worked out his rate of ascent from his radio messages and made it 1,000 ft. per minute. Trying to level up, he hit several ups and downs; the air speed built up although the turn-and-bank showed straight and level flight. He pulled the brakes out and the stick back, and spun out of the cloud; then, on levelling up, he found himself over the main road flying towards Madrid, so turned about. He did not get the extensive downcurrent which others encountered, and must have been west of it.

G. H. Stephenson began by describing what soaring was like in Spain. He said that you may get the impression that soaring conditions are superb, and sometimes they are. There are three kinds of weather: (1) blue thermals; (2) puffs of cumulus, which are seldom worth going near, as the lift peters out; (3) big cumulus, when you go "like a bat out of hell" and follow the road. Once these terrific conditions have set in, you have got to be cautious, because later on the cirrus spreads out overhead from the top of the cloud. Flights seldom started before 1 p.m.; he thinks they could have successfully started much earlier. Towards the end of a flight the wind was liable to become a headwind.

Some of his "ifs and buts" were then mentioned. On the first day he was very worried to know which direction to go. The wind seemed likely to blow from the south; he was familiar with the route to the east; then a relayed radio message from another pilot decided him to go west. At first he made quite good speed, and a slight contrary wind didn't seem to matter; but soon the wind increased, and he was also surprised to see no other sailplanes around. (He landed after 60 miles).

On the goal flight day he chose at first a nearer goal only 120 kms. away, but Jock Forbes thought this unwise, so Stephenson made a new decision in writing and threw it out of the cockpit a few seconds before taking off. He reached Zaragoza after a very, very long glide over a valley. The Sky sailplane seemed to have a fantastic performance, partly due to the ground falling away. He was not sure he had reached the right aerodrome till another sailplane came in even lower than he had; it was Philip Wills.

Racing to Torre Saviñan, one started from an aerodrome which was 2,000 feet above sea level for a goal which was 3,500 ft., and an escarpment came obliquely in from the right. On the first race he wasted a lot of time, then got good height and glided in at maximum speed.

The second distance day was one of blue thermals. He had to land in the Calatayud area; the fields were too small, and in trying a fly-on-the-wall landing he stove in the bottom of the sailplane.

In the second race (final day) he was determined to rectify the mistakes of the first. He was fortunate in being first to go off, as storm clouds were building up. His previous experience of cumulo-nimbus was to keep away from it because of the spreading cirrus; but in this case, as others have said, the right thing was to go at it. Stephenson had worked out, and marked on his map, heights from which to glide in from various points; but the downcurrent, so strong as to be "off the clock", upset these calculations. A second chance came when he got a corking thermal in company with Hanna Reitsch, climbed higher than necessary according to calculation, set off again, and once more encountered the downcurrent.

Lorne Welch decided to give his impression of the gliders, since so much was already being said about the flying. In his opinion no glider ever wins a competition: it is the person inside; and the glider accounts for not more than 30 per cent of the result.

There was quite an interesting collection of sailplanes at Madrid. The Weihe, the Kranich and their descendants—e.g., the Condor IV—have quite a good performance but he thought they were the "end of the line." Regarding the French machines, the Air-100 resembles the Weihe—metal construction results in too high a sinking speed. Pierre's machine had a bulbous body, but its V-shaped tail was an advantage when landing in corn: it had a slightly higher sinking speed than ours.

One important feature of the Sky was its absence from petty serviceability troubles.

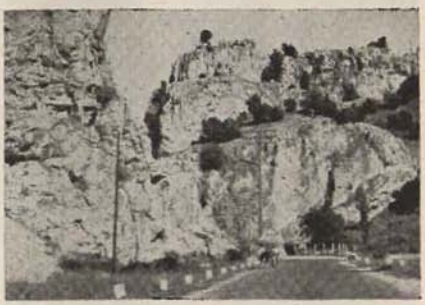
The United States machines were, he thought, in many ways very good. The Schweizers were very simply produced, well finished, but "lousy" to rig and de-rig; the spoilers have to be pulled out against the wind. The RJ-5 had a fine surface, but its skid was unsuitable for Spain.

The most interesting, in some ways, were the German Kranich III and Mu-13E, which had no resemblance to the previous Kranich or Mu. To improve the rear man's view, the wings were lower and swept forward; but the wing tips were too low for landing in the rough and in crops. The new Kranich was ludicrously heavier, weighing about 700 lbs. But unless we do something, the Germans will sweep the world market with quantity-produced machines in the manner of Tiger Moths.

We were very well helped by the rest of our equipment. The Americans were wretchedly served by their cars of local origin, which did only 30 m.p.h. Landings were made in cornfields, fallow fields and lucerne. There were no power or telephone wires, cows or hedges to obstruct landings. But it was difficult from the air to recognize slopes or banks; furthermore there was no smoke, with the result that one would find oneself near the ground about to land down a 30 m.p.h. wind.

F. N. Slingsby began by saying it was a great honour to have contributed even 30 per cent (laughter). He was not much impressed with the German machines, but was with the American Schweizers, which were well built.

Dr. R. S. Scorer said that, having got there after the practice period, he had to go round picking each pilot's brains and then retailing what he had learned to the other pilots. It appears that, through forgoing his siesta, Dr. Scorer learned quite a lot about Spanish afternoon weather that was previously unknown in that country. The more serious part of his contribution covered the same ground as is dealt with by him in a separate article in this issue.



"Claptrap" country, 100 miles to the N.E., photographed by Jack Lang during a retrieve.

On the way to Madrid on 20th June: George Gregory, of Lorne Welch's team, and Lady Kinloch, B.G.A. Secretary, guide a trailer into the yard of the Hotel du Paradis at Dreux, in northern France, for its first night on the Continent.

At the Spanish frontier: Lorne Welch's crew, having notified the Team Manager, by radio from France, of their time of arrival, find "elevenses" ready and waiting for immediate consumption. L to R: Lorne Welch, George Gregory, Frank Irving, Mike Neale.

Senor Jose Ordovas, head of the Gliding Section of the Spanish Air Ministry, took on the main burden of organising the Championships and was the hardest-worked official at the meeting. He is multi-lingual, and is here seen (furthest right) talking fluently to some of the German team in their own language. Hanna Reitsch has her back to the camera.

Fred Slingsby, just arrived at Cuatro Vientos, finds a job of work waiting to be done on a "Sky" fuselage which G. H. Stephenson had to put down on rough ground on the last contest day but one. Frank Foster watches him in admiration. A large British party worked hard on the repair and got the machine back into the air on the last flying day.

Ann Douglas, British Team Manager, is here seen sitting by the window of the telephone room (called by the Spaniards "Recuperacion"), taking down messages of landings. As the evening wore on and more landing messages came in, the crowd round "Recuperacion" would grow and could only be kept at bay by the organisers writing all information on an enormous blackboard. Beside Ann sits Lieutenant-Commander Tony Goodhart.

Gerard Pierre, who was leading on the first three contest days and finished in second place, is here seen beside his Castel-Mauboussin 8-15. Note the butterfly tail and a portion of the curiously-shaped air brake.

Ricardo Bazet, from Argentina, in the cockpit of the tailless Horten XV which he flew in the contests. Note the rectractable nose-wheel: it was the collapse of this wheel in the second Horten XV, when landing during the practice period, that put it out of action till the contests were over.

The two Australian competitors: Furthest left, Fred Hoinville, with Jose M. Cristobal, leader of his Spanish crew. Right: Mervyn Waghorn (in shirt) with some of his Spanish helpers. Hoinville flew a Kranich solo and Waghorn a Weihe, both loaned by the Spanish.

Helli Lasch, the sole South African entrant, is seen on the left with his famous umbrella under which he was always cool and calm; he is beside his Spanish Weihe. On the right is G. J. Ordelman, of Holland, sitting in the British "Sky" sailplane in which he finished in seventh place.

Left, the Sohaj, of Czechoslovak design, flown by M. Gildermyn, the only Belgian competitor. Right, the Jtalian pilot Mantelli in the two-seater Canguro.

With the Canadians in Spain

by Peter Rivers

MANY teams from small or distant countries were able to fly in the World Championships because of the generous Spanish offer to lend sailplanes and transport to anyone unable to bring their own. One such team was that of four Canadian pilots, with mixed Canadian and British ground-crews; and an account of some of their adventures and problems during the practice period may form a useful contrast with the triumphant story of the self-contained, home-equipped and experienced British teams.

Having arranged to be in Madrid for the two practice weeks before the actual Championships, I found that I would have several days before the arrival of the pilots themselves—who were to make a leisurely journey through France in a 1935 London taxi—in which to organise their equipment. With memories of the months of work the British teams had put in to get most of the foreseeable bugs out of their equipment, and cheered by rumours of the clapped-out state of Spanish cars, I anticipated a pretty hectic time; that was before I had met the Spanish tempo of life.

After a two-day train journey, and a day in Madrid trying to find out from the Aero Club and Air Ministry how to get to Cuatro Vientos airfield, I linked up with the British crews and arrived, for the first time, at the little office marked "Recuperacion". Four days later, with some of the technique imparted to me by Mervyn Waghorn after his successful acquisition of a Weihe, I had the promise of two Weihes and a Kranich, when some real, live Canadian pilots showed up. By then I had given up trying to explain that I was English, but acting as ground crew for Canadians; it was so much easier just to be "a Canadian". I had given up trying to pronounce "Jeffery" in Spanish, and wrote it down instead; and like everyone else, I had become a little Spanish, reckoned time in days rather than hours, accepted Fate as a friend, and had my siesta instead of putting on a mad-dogs-and-Englishmen act.

From working with the British crews during this time, I had seen enough of the lack of communications, and the unreliability of messages passed on, to appreciate that retrieving would be tough; it would also be slow, because the towing-cars were only capable of 30 m.p.h. or so, although they did at least look reliable, being new, German built, and rugged. These caricatures on wheels, called Unimogs, had Diesel engines, six gears forward or reverse, a colossal ground clearance, a diminutive truck body behind a normal-sized cab, and a peculiar scuttling gait as they went about the airfield on their normal towing jobs.

At last the taxi-load arrived, with three Canadian ground crew, including Blodwin Thomas of Imperial College, who had organised the English end of things, and three pilots: Barrie Jeffery the captain, still on a crutch after a skiing accident; Frank Woodward, his second pilot in the Kranich; and "Shorty" Boudreault, quite the squarest and most massively built little man I have ever seen. A day later Albie Pow, an ageing cherub, and holder of the Canadian distance record, arrived by B.E.A., and then a carload of British ground crew: Harry Midwood of Hucklow, Dick Watson of Surrey Club, and Bob Ward and "Mac" Head of Farnborough.

By then we had received the numbers of our trailers, and started to paint CANADA on their sides and to chase the organisation again for various small repairs to be carried out. Unimogs evidently were not going to be issued until the last moment, and so we moved machines on the field with the taxi.

On the second practice day, the last before the contest began, we had the Kranich lined up for a tow at midday when we found that Frank Woodward was in Madrid shopping, and as a tow lost then meant no tow till after siesta, I lost no time in getting aboard as second pilot to Barrie.

A few minutes later, with a little green tug bobbing up and down ahead of us at the end of a snatching steel line, with impossible-looking fields flashing past only a few hundred feet below, after a mile of towing, and with the variometer showing sink as often as lift, I began to wonder why I had been so keen. Then away to join a Weihe in a thermal, after him to a better one—2 to 3 metres per sec. and surprisingly

The 1934 London Taxi.

narrow, as we were doing 15-second circles most of the time—and so up to cloudbase at just over 2,000 metres. As the Weihe and another Kranich seemed to have squatters' rights on that cloud, we went off towards Madrid, with Jock Forbes suddenly beside us in close formation; and there, over the grey city, we pottered happily in and out of clouds, up to 2,500 metres a few times, across to Barajas, the main airport, back to the centre, and finally tired of the traffic, which was heavy at cloudbase. Too many sailplanes, or groups of two or three, would float past, and below we caught the occasional flash of sun on brightly coloured wings as more came up, so we went south-west a little, over the rough scrub country, to play on our own.

There we tired of cloud flying, and, finding a strong, active street leading away south-eastwards, decided to fly without circling as far as possible. At 100 to 120 km/hr. we slogged on, climbing at 2 to 3 metres per sec. under each cell of cloud, sinking fast between, and back to cloudbase again under the next. Thus we reached the Douro River valley about 25 miles away, made our turning point over a prominent bridge in a clear patch, and, down to 1,500 metres, decided to play safe and circle in our next thermal. This took us back to cloudbase, now 2,500 metres, at 5 m/sec., and we sailed back home as we had come, at 120 km/hr. all the way. Tired after four hours of rather heavy control work, and harassed by the swarm over the airfield, we opened the brakes and spiralled down.

Later that evening the Kranich flew again, and the brakes came open suddenly in a fast dive. So it was that, on the first contest day, while the other 57 machines were towed off, the Canadian Kranich sat outside the factory while an astonishingly keen Spanish repair party fitted three new brakes, and two hours after the last sailplanes had left, one solitary Kranich appeared on the field, to be towed off by a temporarily siesta-less tug pilot, and to disappear towards Valencia to the south-east. This seemed a fairly sound direction from the met. point of view, without offering spectacular chances as the north-east did to the earlier departures, and the pilots had seen the ground from the road on their way to Madrid.

The road-crew, Bob, Mac and myself, next set out to follow, which we did some two hours later, after a lengthy search for some vital holding-down bolts for the trailer, a leisurely shave by our Spanish driver, and a lively altercation via an interpreteuse, who did not seem to understand what all the hurry was about, anyway. Then, when we found we were bowling steadily along National Route IV to God-knows-where, instead National Route III to Valencia, we also found that our education did not seem to include the Spanish for "left" or "right", or "Stop, we must go back!"

By the time we had managed to stop Antonio, the last course seemed too roundabout, and we decided to map-read craftily across to our proper road, by a secondary one. That worked very well, until we came to a fine steel-and-concrete river bridge—with just one span missing, a legacy of the Civil War, no doubt—and turned back to Madrid.

Some twenty miles out on Route III at dusk, in a torrential thunderstorm, we found the Kranich alongside the road in a ploughed field, but until the rain slackened neither side would emerge from what cover it had. Then we set out to de-rig our first Kranich, never de-rigged before, all split-pinned together, and with three enthusiastic Guardia Civiles, tommy guns and all, heaving on the wing tips. That, and loading the trailer, with a monolingual party at each end, took two and a half hours.

When I had to leave for England the next evening, the various small holes in the Kranich due to our efforts had been patched and the two Weihe crews were back after their own navigational troubles, together with nearly all the other competitors in various states of disrepair. It seemed a pity to leave just then, but work and pay called, and the thoughts of not having to de-rig the Kranich again was some consolation.

Dust Devils in Egypt

by R. H. Swinn

Chief Flying Instructor, Egyptian Gliding School

As dust devils are only the naughty brothers of our more common or back-garden thermal, but are so much more readily visible, a few moments spent on recalling my experiences in them may prove of interest.

Generally dust devils are seen in Egypt on most days of the summer and are independent of the lapse rate for their birth and initial growth, but are affected by it when they reach upwards of 1,000 feet.

The dust devils used by our School generally start their life in a tented camp about 500 metres away from our line of launch; this area lies outside the airfield. Their frequency may be anything from five minutes to every half-hour, and in most cases they are followed closely by a little brother dust devil, which is a modest little chap and trails along about 100 to 150 yards behind. When the cycle of frequency of the dust devil's birth is interrupted, as for example when a local change of wind takes place—as often occurs in mid-afternoon, when the wind can be seen blowing the chimney smoke in four different directions over an area of two miles square—energy is released to give birth to several tremendous dust devils and our tented camp is pleased to show us that it can produce the largest in the area. On these occasions the dust devil often reaches 500 yards in diameter, a majestic swirling mass of sand moving at a leisurely pace along the edge of the aerodrome; its slow pace tends to belie its tremendous power, but a stroll through its outer wall and on into its milling vortex robs one of his breath, and has long ago taught me to think of them with the greatest respect.

The technique we use for flying in these dust devils is to keep a sharp eye on the tented camp whilst one is making normal training flights, and when a dust devil is seen to start, wait a few seconds for it to develop and gather a good body of sand, noting well its direction of rotation and line of travel. (The direction of travel in its early stages near the ground is not always directly down wind but in a line that deviates to the side on which the dust devil rotates in the down wind direction).

The pilot is briefed rapidly on the possible state the dust devil will be in by the time he reaches it, and his circling technique in the light of this. The glider is launched and the release made at around 500 feet; the pilot turns towards the dust devil and cuts his speed as he approaches it to the minimum consistent with the control of the glider. As he nears the whirling column of sand he makes a circle on the outside of the dust devil against the direction of rotation, care being taken to give it a wider berth on the downwind side. In the light of the variometer reading on this initial circle, closer contact is made with the column or a hasty retreat is beat to a safer orbit. Prior to any pilot making a solo flight, he must have attended a given number of our weekly lectures, have passed a stiff oral examination, and have flown twice in a dust devil with the C.F.I.

Of the large number of flights I have made in these dust devils I will describe one which combines most of the features I have met with in the others.

On the day of this flight I was doing dual instruction, with the French high-performance machine (Air 100) lying at the launching point. A dust devil had built up in the tented camp. I landed the T-21B and dived into the Air 100. After being launched to 500 feet, I released and travelled rapidly in the direction of the rising column of sand. Unfortunately I had forgotten to note the direction of rotation, and near it its direction could not be clearly seen. I stayed away from the swirling mass, watching its root for evidence of rotation. Striking with increased force I saw a large mass of sand being flung round anti-clockwise.

I now made my approach in a clockwise direction, describing a fairly large circle, during which my variometer was giving its maximum reading. A too tight turn on the downwind side put a part of my inside wing into the vortex; the shock threw me into the straps and the wing bent in an alarming manner. This central area of greatly

reduced pressure is something to be experienced to be believed. Closely following on this was the shock of hitting the area of greatest uplift just outside the central core. The net result was that the machine was thrown completely out of the column.

Whilst flying just outside the column and licking my wounds prior to getting to grips with it again, I noticed that the base was travelling in a line that would bring it directly over a large store of coal that is used to fire the Egyptian State Railway engines. Avoiding flying in the influence of the dust devil, I flew around it and waited for the base to strike the coal yard. Suddenly black masses of coal dust were being flung violently into the column and climbing at an alarming rate. I turned into the dust devil and was quickly engulfed in this black mass.

I thought to look down the centre of the vortex to see if it was as clear as had been those of my experience in the past. Tightening my turns, I whirled nearer and nearer to its centre, being pressed firmly down in my seat until I thought I would go through it. The machine, I felt, must be stood on its wing tip, and then suddenly I was looking down the vortex of the dust devil with the coal dust forming a dense wall, the whole of which gave one the impression of looking down a gigantic chimney. Needless to say, the view was obtained in snatches, as I was being thrown about violently, on one occasion passing through the centre of the vortex with a terrific downward plunge, only to be arrested with a violent shock and flung upwards again on my spiralling path. Looking at my altimeter for the first time, I found it had passed the 4,000 ft. mark and was going round like the second hand of a clock.

Into the edge of the vortex I went again, thrilled with the thought of seeing 4,000 feet of swirling coal dust form a huge chimney from me to the ground. But I was to be disappointed, as now the chimney hung in the air with its base swirling many hundreds of feet above the ground, and it was beginning to bend half-way up so that only a restricted view of the interior of the funnel was available. For a moment I had that horrible feeling one gets when looking over the edge of a high building.

With bits of paper and much coal dust whirling round me, I settled down to keep in the outer wall of the funnel until its bottom end reached me, to get an impression of what happened when this arrived and the base passed me on its upward journey. I have no recollection at what height this happened, but I recall clearly the odd surges of lift and zero replacing the racing stream of the dust devil, followed by a normal rate of sink whilst, like a huge tortured snake, the gyrating mass swung upwards over my head, its exposed end looking like a huge frayed garden hose.

I kept my circles fairly tight for some time after passing the base of the funnel, and retained my position to feel the after-effects which trail along in the funnel's path; but on this occasion everything became as smooth as a mill-pond. Checking my bearing and height, I found I was 7,200 feet high and over the town of Maadi. I returned to the Heliopolis Aerodrome and continued with dual instruction. Later the same afternoon, Flt.Lt. Wahab was thrown up to 4,000 feet in no uncertain manner amid flying sand, to gain his C certificate in a Prefect.

Dust devils have no regular habits and vary in size from a foot in diameter (in which case they absolutely race along the ground) to many hundreds of yards across.

The conditions which appear to be necessary for the birth of a dust devil are intense heating of the air just above the ground in a wind-shadow, such as the leeward side of a hangar, or many small wind-shadows such as the tented camp mentioned. The latter seems to be the most efficient, as the constant feeding in of small bodies of superheated air over a large distance builds the dust devil into a thing of blind fury.

In speaking of intense heating, one must remember that one cannot put one's bare hand on the sandy surface during the day, and concrete, etc. is worse still, whilst to touch accidentally a metal surface gives rise to language that is in itself sufficient to start a thermal.

Outside our hangar there is a large stretch of wind-sheltered concrete which becomes intensely hot. In this area, close to the foot of the hangar, one can start up one's own little thermals on occasions by a quick sweep of a signalling bat from shoulder level in circular and downwards direction to a point almost touching the ground; one must step rapidly back or the vortex that is set up is spoilt. Such a miniature thermal starts about a foot in diameter and quickly assumes a conical

shape about two feet high, moving along the ground at a walking pace. Its rotation increases very rapidly, until one has the impression of a whirling snake in front of one. As it reaches the edge of the concrete a little sand is thrown up and the thermal dies away. One wonders what initial energy is required to keep the thermal going.

Approaching to land with the T-21B on one occasion, I found a little to the left of my approach path a dust devil about 100 yards across. I was then very low, and decided to fly straight through it to experience the effect. I struck the dust devil at a height of six feet. The glider received a slight twist in the direction of rotation and a bump that may have given me a few inches in height. For future encounters I learned to apply a little aileron and rudder just on striking the dust devil.

Several such flights have proved to me the wisdom of instructing pupils to fly through dust devils when they are encountered on the approach at very low altitudes, rather than adopt the more dangerous practice of trying to avoid them.

The lowest height at which I have used a dust devil for soaring is 50 feet with the Air 100, and 100 feet with the T-21B. By U.K. standards these heights may appear to be unsafe; but when one is sure of the very strong lift one gets and the fact that the column is clearly outlined in flying sand, it assumes a safer aspect.

Regarding the direction of rotation, this varies from thermal to thermal. I have been able to observe that the direction of rotation is decided at the beginning of the life of the dust devil when it is just breaking away from the ground. For example, if the left side of the thermal (facing down wind) strikes an obstruction as it begins to break away, the direction of rotation is then anti-clockwise. In the event of the obstruction being on the right, it will be clockwise.

I have carried out a few experiments in changing the direction of rotation of the smaller dust devils. The most successful of these was to drive a truck at the dust devil at a fairly high speed, passing through the side of the dust devil rotating towards the oncoming truck.. In one case only was the direction of the dust devil's rotation changed; in this case it was broken at its base completely, and it struck again some 200 yards further on, rotating in the opposite direction. (Since writing these notes I have seen the direction of rotation of a dust devil of a diameter of 5 metres changed completely by merely passing over a small trench with the excavated mound of sand lying along its edge, the whole lying at an angle of 45 degrees to the line of travel of the dust devil.)

A dust devil when working well over the desert will, on striking houses, collapse completely near the ground, but continue to rotate above the houses, the bottom of the funnel ascending slowly. If the area to be traversed is not too great, the funnel will strike again behind the houses, but if the area of the houses is of considerable extent the funnel will not strike again and will recede upwards.

Passing over a hill of gentle slopes and of a height of 100 feet, the funnel will show a great burst of energy as it strikes the foot of the hill and then a quick weakening of power as it climbs the slope with only the downwind edge of the dust devil sweeping

the ground with sufficient force to raise dust. At the very top of the hill all ground action ceases; then just over the top rotation can be detected again, whilst at the foot of the hill on the leeward side very violent rotation builds up, and at this stage the rotation is more violent than in the funnel's original state prior to its striking the hill.

The action of the dust devil as it passes over a depression in the ground is very interesting and varies according to the nature and size of the depression. In the case of a sand pit of a depth of 70 feet, the vortex did not reach the bottom, but a widening of the funnel took place and the base of this mass lessened its speed of rotation, sweeping about six feet above the floor of the pit with occasional little isolated whirlpools reaching out of the main mass to strike the floor of the pit. A pit with steep sides breaks up the bottom of the funnel.

A pit 30 feet deep with smooth, gradually sloping sides fed the funnel to a hissing, madly whirling mass that threw up great masses of sand. The funnel hung back in the pit and a great bend took place in the main mass which was carried by the free air above the pit. In this case the root of the funnel finally left the pit to align itself some distance further on under the main mass; but in one case the main column broke away and left the base of the funnel rotating in the pit to die out in a few seconds, the funnel of the main mass striking again a little distance outside the pit.

There seems to be a very close relation between the strength and life of a dust devil and the amount of visible suspended matter it contains,—so much so that I strongly suspect that the absorption of the sun's rays by this swirling mass adds new energy to the funnel and makes it almost independent of ground-collected hot air for its continued life. I have not yet been privileged to see the spectacle of a dust devil extending from the ground into cloud. But I have, flying the T-21B solo, once entered a dust devil at 400 feet and stayed with it into cloud; but in the base of the cloud only the odd bit of paper could be detected being carried along.

I have been given a pair of sun glasses of polarized material having a reddish tint; a glance through these glasses transforms a bright blue sky into a glider pilot's paradise; columns of rising air having a slight dust content are seen everywhere. I have learned, however, from experience that not all the columns seen can be used, as many having the appearance of being relatively near are in fact lying a good distance back from their apparent neighbour, with the result that T-21B takes a dim view of the foxhound technique and threatens to deposit the crew in the most awkward places when one's enthusiasm drives her to attempt to cover too much barren territory between these re-filling points. But in the Air 100 one can spend many enjoyable hours under these Utopian circumstances.

A snag is that as one gets within a distance of around 500 metres of the dust column, the spectacles do not function any more, which calls for a technique of lining up one's glider with the thermal when still a good distance away. This technique is not as easy as it would appear, but it is sufficiently successful to have opened up quite new fields of soaring on most days.

Soaring one day on the Ataka mountain range near Suez, I saw approaching the mountainside a rather large dust devil with its column of whirling sand very well defined and rising to a considerable height. I put myself into a position to fly into it with a view to seeing what effect the mountain barrier would have on it. I flew into the funnel when it was about 200 yards from the face of the mountain. For a moment after entering the funnel all was well; then suddenly I was flung up in the most alarming manner, and by the time I realised my position I was well over 1,000 feet above the mountain top. Things had happened so quickly and with such violence that I was unable to form any clear recollection of the effect of the dust devil striking the mountainside; by now the funnel was clearly outlined a little distance back from the top of the mountain, but the base of it was hanging in the air at a little less height than I was at. Flying straight for it, I was surprised to find that although the distance was apparently short I was well below the base of the funnel when I reached it, and I found no lift. Beating a hasty retreat to the mountain top again, I found the usual "down" behind the crest and I had to make a most undignified return to the landing ground on the other side *via* a very rocky gully, much to the delight of my students whom I had previously instructed never to approach this gully under any circumstances.

American National Contest

THE nineteenth American National Contest, held at Grand Prairie, Texas, from 18th to 29th August, produced outstanding results. Two new world's records and six national records (including four for women) were set up; 26,000 miles were flown across country, including 12 flights exceeding 300 miles (five of them to goals); 4 Silver, 6 Gold and 1 Diamond C were completed.

Fred Hoinville, who visited the meeting on his way back to Australia, has kindly sent us all the daily bulletins; he took over the editorship of these after the first four days.

On **Monday, 18th August,** competitors arrived and some took the air, finding dry thermals to 9,000 ft. a.s.l.

Tuesday, 19th, Dick Johnson was first off at 10.45 a.m., followed by Coverdale and Ivans, as "pretty little cumulus buds were beginning to burst into blossoms". Coverdale, Ivans and Parker went 327 miles to Amarillo (first two were goals), and Johnson reached his goal at Lubbock, 290 miles.

Wednesday, 20th: All yesterday's long-distance pilots were back and all but Parker started again. Dick Johnson made the longest flight of the contest, 373 miles to Petersburg, Kansas. A national two-seater record for goal-and-return, 158 miles, was set up by Ted Nelson and Harry Perl.

Thursday, 21st: In a goal-and-return race, with Mineral Wells as turning point, 16 out of 22 completed the course of 124 miles. Fastest speeds in m.p.h. were: Dick Johnson, 51; Ivans, 46.2; Coverdale, 43.2; Parker, 42.7; Dave Johnson in two-seater, 35.3. Betsy Woodward set up a national feminine record for out-and-return distance.

From this point on, we give extracts from the bulletins issued

by Fred Hoinville

Friday, 22nd: Bill Coverdale breaks world record with round trip of 268 miles. Interviewed by our special reporter (me), Bill modestly said, "Aw, it was easy", as he smiled a Hard, Stern smile and tenderly rubbed a Hard, Stern spot.

Betsy Woodward breaks Women's national distance record, and earns first woman Gold C in brilliant 205-mile flight to Sweetwater, Texas.

Dick Johnson and Paul Beikle make 325-mile goal flight to Odessa and seven other pilots make their goals, six being of Diamond goal distance. Lorraine Bell and George Lambros, in BG-6 and Wolf, exceed 7½ hours to complete their Silver C's.

Saturday, 23rd: Dick Johnson breaks world speed record. Around a 79-mile triangular course, under official F.A.I. conditions, Dick averaged 48.8 m.p.h. One of these days Dick is going to finish the RJ-5 and make it into a really good sailplane.

Dave Johnson breaks national record for two-place speed event. Those Johnson boys are plumb monotonous. No imagination at all. Can't do a thing except break records. Dave averaged 38.1. All except one contestant completed the course, and five beat the previous U.S. record.

Monday, 25th: No records were broken. Bill Ivans was top scorer with a measly 308 miles. Never mind, Bill, the weather can't be good every day, even in Texas. Bill Coverdale, 286 miles, and Paul Bikle, 275 miles, were next.

The race for the title is getting grim. Johnson, 1,695; Coverdale, 1,674; and Ivans, 1,644, only have a moderate lead on the others. Dave Johnson with 213 miles top-scored in the two-place section. Brother Dick had an off day with 189 miles. In fact, as you can see, the day was barely soarable.

Tuesday, 26th: Here I am, still publishing statistics on the silver, gold and diamond production of Texas. Which means to say that Paul Schweizer got a Gold C with one Diamond to-day; Steve Bennis a Gold C; Lawrence Gehrlein completed his Gold C; Little Larry, a Silver C; and Harry Moline also a Silver C. Rudy Opitz (Horten IV) made Diamond C distance with 318 miles.

Other good flights include: Dick Johnson —remember the name?—328 to Amarillo. Brother Dave (I seem to have heard of him before, too) did a two-place goal of 215 miles to Sweetwater. Dave reached his goal at 4.50 with plenty of time to spare. Ray Parker, who has been well up with the leaders, made 308 miles in the Tiny Mite, a lovely little ship.

Bill Coverdale still holds second place with his goal of 290 miles to Woodward, Okla. He gained a few points on Ivans, who did 306 miles (no goal) to Midland, landing at the remarkable hour of 7.36.

Wednesday, 27th: Since this was a task day, the task was selected as a speed dash to Sherman and return, 67 miles each way. Bill Ivans made the best time at 38.8 m.p.h., happily announcing that the lift was strong and plentiful, so that he didn't work anything under 6 ft/sec. Ray Parker, with 29.7, was next in, reporting thermals scarce and weak and very uncertain. Paul Bikle, with 29.7, found lift so rare that he had to use every bit. Close questioning and examination of all the available evidence indicates that all three *did* go to Sherman and back, and that it was the same Sherman in each case.

Thursday, 28th: Our Texas weather returned to normal to-day, one world record and one national record being chalked up. Dick Johnson (monotonous, isn't it?) smashed his own speed record to raise the world figure from 48 to 53.3 m.p.h., giving all rivals a lesson in generalship as well as firing power. Dick started fairly early, did the speed course cautiously at 37.3 m.p.h. to ensure a safe score. After landing, he tried again, and this time he went flat out, gambling for a big score with little to lose. The gamble paid off, and will most likely ensure Dick's winning in the final accounting.

Bill Ivans with 40.8 and Bill Coverdale at 38.4 also did very well. Betsy Woodward added another national record to her present string with a women's record of 28.05 m.p.h., which, for the BG-7, was mighty fast going and showed some of the boys the way home, round the 80-mile triangular course.

Friday, 29th: It's all over. Dick Johnson (no hum) came in first in the open flying with Opitz, Ivans and Coverdale next. Betsy Woodward made a new national women's record, just to keep things normal for this meet—77 miles goal. Longest distances: Johnson, 283 miles; Paul Bikle, 281; Bill Ivans, 254; Bill Coverdale, 250; Rudy Opitz (tailless) 224 to goal.

Dick Johnson rigs his RJ-5 at Madrid

Final Results

	Name	*Sailplane*	*Points*
1.	R. H. Johnson	RJ-5	2045
2.	W. S. Ivans	1-23	1927
3.	W. H. Coverdale	1-23	1880
4.	P. F. Bikle	1-19	1739
5.	R. Parker	Tiny Mite	1702
6.	K. Trager	T-3 Exp.	1617
7.	R. Opitz	Horten IV	1530
8.	D. Johnson	L-K Flattop	1492
9.	B. M. Carris	1-23	1394
10.	S. Bennis	L-K	1251
11.	L. Gehrlien Snr.	1-23C	1145
12.	W. J. Krohne	L-K	1096
13.	D. A. Reed	L-K	1081
14.	Ted Nelson	Hummingbird	881
15.	W. Wiberg	Li'l Doggie	789
16.	Betsy Woodward	Briegleb 7	780
17.	P. Mulloy	1-23	690
18.	P. A. Sherman	L-K	579
19.	R. Lyon	L-K	559
20.	G. Lambros	Wolf	546
21.	R. W. Jackson	TG-2	442
22.	S. Nephew	L-K	376
23.	K. Flagler	TG-2	317
24.	L. A. Bell	Briegleb 6	277
25.	D. Bradley	1-19	219
26.	R. W. Breiling	L-K	218
27.	Virginia Bennis	L-K	201
28.	L. J. Gehrlien	1-23C	136

Champion: Richard H. Johnson.

Two-place Champion: David Johnson.

Woman Champion: Betsy Woodward.

Junior Champion: Douglas Bradley (age 14)

Club Championship:
Elmira Area Soaring Association.

Texas State Championship:
Delbert A. Reed.

Operation Cumulus

by F. H. Ludlam

(Imperial College of Science)

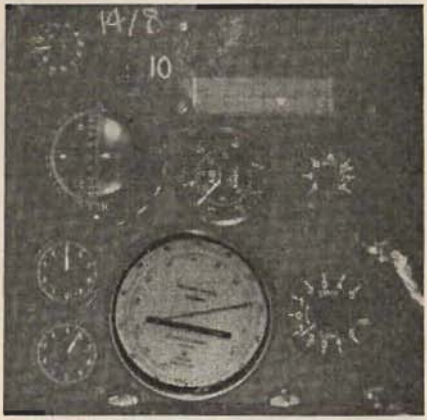
DURING the first fortnight of August an attempt was made at Cranfield, in Bedfordshire, to obtain data on the structure of thermals and small cumulus. The work, called "Operation Cumulus", was organised by the Imperial College, but had the co-operation of the College of Aeronautics, the Royal Aircraft Establishment (Farnborough), the Meteorological Office and Cambridge University.

"Daisy", the T-21b of the Imperial College Gliding Club, was filled in the second seat with an automatic observer constructed under the supervision of Frank Irving. The flight instruments in this observer were fed with electricity by two 12-volt accumulators housed beneath the observer, and were photographed at intervals of about two seconds by a special 35-mm. camera. The picture shows a typical record and the general lay-out of the instruments; those of primary interest to the meteorologist are a very sensitive aneroid giving atmospheric pressure, and a thermometer. This latter consisted of a 20-junction copper-constantan thermocouple, housed in a radiation-shield beneath one wing-root, which deflected a galvanometer-spot completely over a 10-cm. scale for a temperature change of 12°C., so that it easily indicated temperature to 0.1°C.

"Daisy" was towed by a Storch (piloted by John Sowrey) to some two or three thousand feet in the vicinity of the airfield, and its pilot (Frank Irving usually, but Lorne Welch also helped) then released in a position suitable for making one or two traverses of the thermal beneath a particular cumulus cloud. The automatic observer was switched on before entering the thermal, and off again well after leaving it; meanwhile the pilot tried to keep a constant attitude, and occasional sightings from two theodolites at the ground determined his exact height.

This work was designed to give accurate measurements of updraught-speed and excess-temperature across thermals. All went smoothly, but until the last day the weather was too violent for completely successful operation—there were cumulonimbus and heavy showers or thunderstorms on each of the first nine days! On the last day the cumulus were all that could be desired—all over the sky, slow-moving; base 4,500 ft., tops 8,000 ft., with 10 ft/sec. lift both inside and beneath. Unhappily, early in the afternoon "Daisy" landed in a field four miles away, with the trailer still back at Lasham. The party was not upset, however, and by divers ways and means had Daisy back at the airfield by dusk; security veils must be drawn over the details of this unique retrieve, but it can be said that very strong arms were needed and were provided.

It will take several weeks to analyse the film records which were obtained, and to integrate all the other data which were obtained, of which the most valuable are



Print from a typical auto-observer film during "Operation Cumulus." The instruments, from left to right and top to bottom, are: Clock, signal lamp, thermometer galvo, pitch-and-roll indicator, air speed indicator, voltmeter (for calibration), two Desynn indicators for rate of pitch and incidence, precision aneroid, and Horn variometer.

probably those of the Meteorological Research Flight, who charged around in our neighbourhood, making all kinds of measurements in and around cumulus, and even using a cunning hot-wire updraught-meter and a thermometer with a millisecond time-constant to compete with "Daisy" in sampling thermals.

The Cambridge University Air Squadron Anson made temperature-soundings and tried seeding cumulus with finely-ground common salt, according to my recipe. During this period, however, it seemed that Nature herself had provided the clouds with salt enough, and ours was not required. A radar watch was kept on the precipitating clouds.

The cumulus were also explored by Olympias piloted by Alan Yates and Paul Blanchard, and reconnaissance-aircraft of the R.A.F. took photographs from very high levels to record the general appearance and distribution of the clouds. Time-lapse movie pictures were taken from the ground to examine the typical life-histories of individual clouds.

A team of students from Imperial College determined the wind distribution by following balloons with two theodolites, and they also maintained thermo-hygrographs at 1 foot and 60 feet above the ground. These instrumental records, together with special soundings by barrage-balloon at near-by Cardington, will provide valuable information about the properties of the super-adiabatic layer next to the ground.

The research party spent a most educative and very tiring fortnight at this work. The operations of each section combined easily with those of the others, largely because of the use of Pye radio for inter-communication. Another very great help was the excellent accommodation provided by the College of Aeronautics, and their great helpfulness with all the flying arrangements.

Our party was in good humour throughout, and very much enjoyed the help of Paul MacCready and occasional visits by other personalities well-known to the gliding world (for example, Jock Forbes looked in and tried hard to persuade us that thermals are rotating "chimneys", not "bubbles").

The wealth of experience and data which we have obtained will provide us with many pondering hours this winter, and are sure to broaden and refine our ideas on thermals. You may be sure we shall tell you all about them!

Oskar Ursinus

1877 - 1952

OSKAR Ursinus was rightly regarded as the father of soaring flight throughout the world. Before his time, soaring had been attempted by a few isolated experimenters, rarely with success. He inspired a movement which led to the mastery of soaring flight and its widespread practice.

Ursinus has related how, in despair at the treaty restrictions on German aviation in 1919, he betook himself to the Wasserkuppe mountain, lay on his back, saw buzzards soaring overhead, and had an idea. Thereafter, gliding contests were held annually for 20 years on the Wasserkuppe, at which most of the important pre-war advances in soaring technique were achieved.

On 6th July last year, I called at his home in Frankfurt-am-Main and took the photograph reproduced above. He died of a stroke on 6th July this year.—A.E.S.

The B.G.A. Inspection System

by the Chairman, British Gliding Association

ONE of the great attractions of the British Gliding movement is that we are, to a large degree, allowed to control ourselves in a Britain where officialdom is more and more taking over control of most aspects of our lives. When the Ministry of Civil Aviation delegated to the B.G.A. responsibility for maintaining a safe standard of Airworthiness amongst its affiliated clubs and individuals, the B.G.A. introduced its own scheme for the renewal of Certificates of Airworthiness, and its own system of Approved Inspectors.

During the years that this scheme has been running there has, so far, been no instance of serious structural failure in the air, but an examination of Approved Inspectors' reports has thrown up several instances which might—indeed should—have led to serious trouble. It is thought desirable, therefore, to bring a selection of such instances to general notice, not to cause embarrassment to the people concerned (who shall remain strictly anonymous), but so that their lucky escapes may possibly save other people's lives.

The large majority of inspections show nothing to worry about, but the following examples do show the great importance of our C. of A. scheme. Gliding can be, and should be safe; but any device which elevates the human frame into the air without any visible means of support obviously can be lethal if not treated with proper respect.

Anyone exceeding speed limitations or indulging in aerobatics for which his machine is not stressed, or failing to report a heavy landing, is risking the neck of a perfectly innocent pilot who may subsequently fly the machine. It is a responsibility which no sane man would undertake if he realised what he was doing. Which is the reason for this report.

Case 1.—A cantilever sailplane developed movement between the wing root fittings and the spar. The owners tightened the attachment bolts and continued to fly. As the tightening of the bolts did not eliminate the trouble, they had the machine inspected and it was found that the movement of the root fittings had unstuck the joints of the root end ribs and the root torsion box skin had developed signs of failure. The bolts were of too short a plain length and had threads in shear.

REMARKS.—The slack bolts were unlikely to have caused failure, but structural failure in the air was imminent due to the secondary effects on the root rib and torsion box skin.

LESSON I.—Investigate *fully* defects found on Daily Inspection. *Do not exceed placard flight limitations.* In the above instance it was known that the speed and permitted manoeuvre limitations had been exceeded on several occasions.

Case II.—During a C. of A. inspection it was found that both aileron master hinges had pulled through the aileron sub-spar. On this type, the master hinge is the only location of the aileron in a spanwise direction. The machine had been flown on the morning of the inspection.

REMARKS.—A lapse of daily inspection. The causes were excessive cable tension and tail-wind loading on the ailerons.

LESSON II.—Thorough daily inspections are vital.

Case III.—Whilst examining a machine of the same type, it was noted that the split pin at the connection of the aileron cable to the horn was missing. The machine had almost certainly been flown like this the previous day.

REMARKS.—Another lapse of daily inspection. The aileron had been removed for repair a few days before.

LESSON III.—It is standard aircraft practice to have duplicate inspection of flying controls by two separate individuals when adjustments or replacements are made.

Case IV.—On a Grunau it was found that the top skin of the neck of the fuselage was unstuck. This was re-glued and the machine continued to fly. On the C. of A. examination it was found that the whole internal structure of the neck had become unstuck, requiring major work on the main bulkheads, neck side skins and diagonals.

REMARKS.—Machine in danger of structural failure in the air.

LESSON IV.—Investigate snags *thoroughly* when found. *This failure probably originated in a number of unorthodox landings some time previously. It was also known that flight limitations had been exceeded.*

Case V.—C. of A. examination on an intermediate glider revealed a very home-made repair near the root of the rear spar. A very short splice of Z form had been used. Investigations with the previous owners failed to determine how or when the repair had been made.

REMARKS.—Repair carried out by someone unqualified. As found, there was a definite risk of structural failure in the air.

LESSON V.—Under no circumstances allow major repairs to be carried out by unqualified persons, and before purchasing a second-hand machine have it inspected by an approved inspector.

Case VI.—When called to repair damage to the front skid anchorage in a two-seater, it was found that the bulkhead carrying the main control column assembly was split right through, necessitating replacement of the bulkhead.

REMARKS.—Machine was being flown in this state, with serious risk of complete loss of aileron and elevator control in the air. Lapse of inspection after heavy landing.

LESSON VI.—All heavy landings must be reported, and a thorough inspection given the aircraft.

Case VII.—A machine was found with six diagonal braces in the wing sheared through. Damage most probably caused by excessively steep climbs on a belly-hook.

REMARKS.—Climbing too steep and too fast on a belly-hook is dangerous.

LESSON VII.—Check the ultimate strength of the weak link used. *Neither the pilot nor the winch-driver should tolerate excessive climbs on a belly-hook.*

Revival in Japan

MR. Tadao Shizuru writes that the "Glider Federation of Japan" was formed last May. The Federation has 25 branches and a membership of about 1,500. In pre-war times, he states, about 80,000 people "enjoyed the glider sport", of whom about 300 had soaring experience.

The first Japanese sailplane to be built after the war, illustrated in the accompanying photograph, had its maiden flight on 11th May at Tamagawa, Tokyo. Four more sailplanes, 10 secondaries and about 30 primaries are at present being built in various parts of Japan.

Round a 100-Kilometre Triangle

by Tony Goodhart

On Sunday, 17th August, the "Met" reported a col between Saturday's and Monday's deep and extremely damp depressions; accordingly I decided to try for the 100-kilometre triangle U.K. local speed record which, as far as I know, has not so far been claimed.

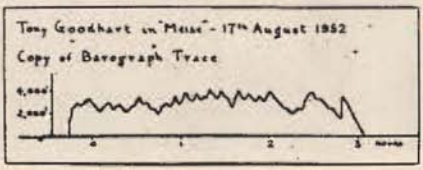
Turning points presented a slight problem, as the other half (Nick) of the Goodhart organisation was too busy, teaching Dartmouth Cadets to fly, to be able to fly round in his Auster and mark the points. However, by choosing White Waltham and Halton, at both of which R.A.F. stations A.T.C. gliding was taking place, the problem was solved.

After some discussion with the Met man at Culham Naval Air Station on the relative merits of going CW or CCW, I was towed off in the Naval Meise by Nick at 13.20 and released well clear of my starting line at about 2,000 ft. at 13.30. The sky was sparsely dotted with minute cumulus at about 3,000 ft.; a couple of hours earlier there had been a lot of the curious eyebrow-like Pileus described by Dr. Scorer in this Summer's issue of GLIDING; these had by now disappeared and the thermals were just condensing before arriving at the inversion. I soon found that the very small cumuli tended to indicate where a thermal *had* been, and the best ones were to be found elsewhere.

After a bit of fumbling I crossed my starting line at 13.47 and set off towards White Waltham. The sky promptly became devoid of cumulus, though there were plenty to be seen about 10 miles to the east, and I spent rather a long time keeping Benson R.A.F. aerodrome under my lee in case I had to make a fresh start; however, things soon picked up and, except for some few minutes when I started studying suitable fields near Henley, I had no further trouble in reaching White Waltham (at 14.50). After spending five minutes there watching the A.T.C. cadets and hoping (vainly) for the previously agreed recognition signal, I set course for Halton.

By now I was in an area of frequent strong thermals (sometimes up to 20 ft/sec.), and reached Halton with no trouble at all against a slight headwind at 15.40. Cloud base had now worked up to just over 4,000 ft. but back towards Culham the cumulus were, to say the least of it, sparse, and high cloud was getting rapidly thicker and cutting off the insolation. A convenient thermal over Halton enabled me to spend ten minutes there waiting, again vainly, for recognition and watching the activities of the A.T.C. I am assured, however, that recognition signals were in fact made and that it must have been I who failed to receive them.

I then headed west into a wilderness of no thermals and no cumulus and was soon down well below 2,000 ft. and had almost decided to place down at Thame R.A.F. Station, when I saw a minute cumulus form over a slightly sunny patch up towards Aylesbury. It, or more probably its successor, worked, and I was soon back to nearly 4,000 ft. From here it looked as if Culham



might conceivably be within reach and I studiously flew at best gliding angle; large areas of sink, however, confounded my calculations and, although I could see Culham, I could see that, from 1,500 ft., I wouldn't make it. There was a thoroughly decayed-looking bit of cumulus between me and Culham, which, when I reached it, was gracious enough to give me my best rate of climb of the day and whisked me to 3,500 ft. before I could bring myself to break away from its tender caress, so that I re-crossed my line at 16.45, doing 70 knots with 1,500 feet in hand.

One hundred and seven kilometres in 2 hours 58 minutes—36 km. per hour or 22.3 m.p.h.

Telephone calls to White Waltham and Halton both confirmed that I had been observed and I now await the promised observation certificates before forwarding the proper documentation to the B.G.A.

It may be observed from the barograph trace that I tried to work between cloud base and 1,000 ft. below. Whenever I did get well down I found the thermals weaker than higher up, and also at times the Chilterns reached up some 800 ft. towards me, so altogether it seemed prudent to try to keep high. (Incidentally all heights, except the Chilterns, are above Culham, which is 200 ft. a.s.l.)

My object in writing up this flight, which was in no way spectacular, is to try to show that the 100-kilometre triangle really presents very little difficulty on a day of little or no wind. If it is successful it entails no retrieving at all, and at worst the retrieve can be no more than 23 air miles—say 30 road miles.

Correspondence

THE TOTAL ENERGY VARIOMETER

Dear Sir,

Having been much impressed, if not a little bewildered by F. G. Irving, M.ENG., D.I.C.'s article, in the Summer issue of GLIDING, on the Total Energy Variometer, my brother and I decided to apply the principle to the Naval Meise and accordingly arranged to have the special venturi copied. Test flights showed that the device worked perfectly, so well in fact that the variometer showed "down" the whole way round a series of three consecutive loops.

I would like, however, to sound a note of warning. On 3rd August, when flying from that superb site, the Long Mynd, I was swept up to rather over 12,000 ft. in a nice fat "cu" and, as freezing level was about 7,000 ft., I collected a respectable growth of ice including a good lump all over the venturi. The vario appeared to be working thoroughly satisfactorily—*but*—on the way down, soon after getting below freezing level when the ice started melting, I found that the vario had stuck hard "a-down" and a gain of height of 1,000 ft. in the next thermal failed to induce it to change its mind. I then observed that the "down" tube was half full of water. After some juggling behind the panel (accompanied by a variety of quasi-aerobatic manoeuvres), I got the Cobb-Slater vario free and was confronted by the inscription "Do not blow down these tubes"; no doubt sound advice, but a surprising quantity of water came out when I did. Even so, however, it had obviously "had it" and, not being of the high standard of these B certificate experts who happily soar uninstrumented Tutors around the sky all afternoon, I soon found myself placed in a field awaiting "recuperacion" by Nick.

To misquote an old adage, the Sucker (me, or the venturi?) was sucked. Being connected to a vessel gasping for air on being brought down some 7,000 feet, it is obvious that the small suction exerted by the venturi was overcome and a large quantity of air was required to go in, taking with it copious draughts of cold water.

The solution to this awkward problem would appear to me to be twofold :

(1) To fit a water tap between venturi and vario.

(2) To fit another vario on the panel with the static open to cockpit pressure.

We are also considering trying an air "leak" in the tube connecting venturi and vario. The idea of this is that, however much suction is exerted by the bottle, the venturi will always be able to suck out to atmosphere. Whether this idea will work, remains to be seen. Perhaps Mr. Irving may have other ideas on the subject.

In conclusion, may I say that Mr. Irving's device makes all the difference to accurate thermal soaring, particularly when flying blind, it completely eliminates such inaccuracies as "stick lift" and .ike errors.

TONY GOODHART.

Clubs & Associations

Derbyshire & Lancashire Gliding Club

OUR figures up to the end of July show an increase in club activities over the corresponding period of last year, although of course the total figures are down on account of no Competitions this year.

Certificates gained have risen by an all-round figure of 30%, while club aircraft and private owners in the club did 2,490 launches for 831 hours flying, launches being practically the same as last year and flying times 25% up. T-31 training launches and times are up by 3% and 36% respectively, with 949 launches and 118 hours. This means, of course, a longer average flight time, and the significance of this is not readily apparent. Possibly it means that we are gradually approaching that ideal state where a pupil starts with long soaring flights during which he learns to make the aeroplane do what he wants, and then goes on to "circuits and bumps" where he learns to know what he wants the aeroplane to do. Far more likely, it just means a larger proportion of soaring to circuiting days than last year.

The A.T.C. are repeating last year's experiment with a five weeks' camp at Camphill. About a dozen cadets at a time (all with B certificates) spend a week at the camp, using a Sedbergh, T-31 and Tutor. The object of the exercise, of course, is for the cadets to get their C's, and from this point of view the weather has been definitely unkind, at least during the first three weeks, but we hope to be able to report better luck for the enterprise as a whole, later on.

The Cambridge Club spent a week at Camphill in June, with four machines, doing 50 hours flying, getting four Silver C legs and completing one Silver C with a cross-country of 55 miles.

Special activities this summer have included a week's camp in June for ab-initios, and a fortnight in July for members of the Royal Naval G.S.A., using our equipment and aircraft. Both ventures may be said to have been successful, together having 587 launches, 70 hours flying, 21 certificates and no damage to aircraft.

G.O.S.

Association of 2nd T.A.F. Gliding Clubs

THE 1952 competitions took place at Scharfoldendorf from 20th to 29th May. In spite of persistent rain and low cloud which prevented competition flying for five days, a very successful meeting was held. Some 240 launches were made, with more than 135 hours flown. Notable among the flights were 9 Silver C's gained, 4 Gold C distances and a Gold C height.

On the first day conditions were very good. Three competitors landed in Belgium, while a fourth landed at Trier. Transport difficulties delayed some of the retrieving, but remaining competitors, particularly in the Meise and Grunau class, scored well. Unfortunately bad weather, which arrived on 24th May, remained, and it was not until the last day that flying was resumed.

Team and best individual scores were:—

		Points
1.	Headquarters 2nd T.A.F. Club	1719
2.	R.E. Club, Hameln	1272
3.	R.A.F. Luneburg	1191
Class A (Weihe)	1. Flt.Lt. Osland	196
	2. Lt. Ball	178
Class B (Meise)	1. Cpl. Brennan	207
	2. Major Macey	203
Class C (Grunau)	1. Sgt. Hodgson	104
	2. Cpl. Hutt	80

Best individual performances:—

Class A, Flt.Lt. Osland
Class B, Major Macey
Class C, Sgt. Hodgson

Outstanding flights were:—

20th May		*Kms.*
Lt. Ball	Tongres (Belgium)	318
Major Macey	St. Vith (Belgium)	309
Cpl. McKercher	Blevet (Belgium)	335
Flt.Lt. Osland	Trier	329
Fg.Off. O'Sullivan	R.A.F. Wahn	214
Cpl. Slater	Endert	216
Mr. Gray	Eifa	133
21st May		
Cpl. Brennan	Rinnen	268
Sgt. Hodgson	Neuenrade	145
Miss Bell	Attendorn	152
29th May		

Fg.Off. Sullivan—Gold C Height (approx. 11,000 feet, subject to confirmation).

Central African Gliding Association

In April this association was officially formed. Jack Wall was elected Chairman, Robert Mitchell Hon. Secretary with George McLellan as Assistant Hon. Secretary, and Captain Derek Lane as Treasurer and Chairman of the Flying Subcommittee. Other directors were E. Burditt, Chairman of the Salisbury Club, Jim Harrison of Umvukwes, and J. Harrold of Umtali and Salisbury. It was decided to take steps to acquire registration with the F.A.I., so that Rhodesian certificates can be issued, and records established. Gliding is prospering so well in the country that the Association is felt to be well timed.

Bulawayo.—There is little news from this club. It has not been officially formed in that no subscriptions have been called for from members; nevertheless the club has almost finished constructing its winch, has its tow car, and a Primary.

Gwelo.—This club is even more embryo but it is understood that an acting committee has been formed and is endeavouring to acquire a Primary.

Thornhill (Gwelo) R.A.F.—With S/Ldr. Lamond as Secretary, this club has commenced operations with a Primary, and more recently a Tutor, which is flying with struts borrowed from the Salisbury Gliding Club. So far the accent has been on training ab-initio pupils; the club is lucky in having the use of a large flat airfield, and at present is using a V8 and piano wire for auto-tow. Efforts are being made to acquire a T-35, or T-31.

Umtali.—There seems to be a state of Status Quo in Umtali. The T-31 which was delivered 4 months ago was left standing without protection at the docks, and the club appears to be taking no action pending the decision of the insurance companies. In fact, the members seem to be so despondent that they have not even been flying their Primary.

Umvukwes.—The club's first aircraft, a T-31, arrived last April in kit form, and, to judge from the absence of Messrs. Harrison, Bulman, and Darby from meets of the Salisbury club, progress must be being made on the assembly. Luckily Jim Harrison has already constructed a runway on his farm, so little should delay operations to the first rural club to be formed in Rhodesia.

Salisbury.—This club has gone from success to success. Already its pilots—namely Messrs. Lane and Wallis, and Harrold hold world height records of 11,600 feet for the T-31 and 14,000 feet for the Tutor, respectively, and a most successful Easter was achieved. Messrs. Bone, Doug Elliott, and—at last—Robert Mitchell made 11,000 feet, this in a T-31, and Burditt was endeavouring to make a leg for his Silver C in H-17. Twelve hours was achieved in the four days from a flat site and one winch, of which we are proud. Many new members have also been enrolled and many are awaiting for conversion to the Cadet.

The two-seater, with Messrs. Lane and Fletcher, ran into a down over the approach losing 250 ft. in a tight turn, and needing to lose 260, a ground loop in ten-foot grass resulted, writing off nose and tail. The damage has been repaired in the last month, the Cadet has been assembled, and both aircraft are due to be test-flown at Whitsun.

Derek Lane's Kite is still in too many pieces, thanks to a local shortage of materials, but should be flying when the soaring season returns again. By this time, too, we hope to see Jack Wall's Kite vying with it and the H-17. Watch out, Rhodesia!

R.M.

Salisbury Club's T-31 about to take off for a 11,600 ft. climb.

London Gliding Club

June.—Saturday, 7th, brought remarkably good thermals at Dunstable as at most other clubs, with the whole soaring fleet going up repeatedly to cloud base at 5,700 ft., including both two-seaters.

Nixon went 53 miles to Earl's Colne for Silver C distance, staying between 5,000 and 6,000 ft. all the way and finding that "every cloud worked". Stephenson went to Oxford and back, reaching 8,000 ft.; Dodd to Henlow and back; Wheatcroft to Luton, Leighton Buzzard and back; Buckle to Hatfield; and Tarnow got Silver C height in the Prefect. Total flying, 60 hours.

Foster took the Sky to Aylesbury and back on the 11th. The month provided a lot of good thermal days, and Scarborough frequently had his passengers up at cloud base.

July.—The instruction course was run energetically by George Scarborough and Peter Fletcher. Several of the 12 pupils brought their families as a result of the club undertaking to house and feed them. Pupils were roused at crack of dawn (we are told) and flying went on till dark.

On the 20th, Waller did a short cross-country, several people reached the clouds and Yates went inside, reaching 5,600 ft. Nixon made an out-and-return to Cranfield on 22nd, and Ellis landed at Halton on 24th.

Lawrence Wright got 9,400 ft. in cloud after an aero-tow on 22nd, and on 25th made a goal flight to Lasham. Next day he tried to fly back against a light wind and got as far as Booker. The place seems to have become a sort of posting-station on the Lasham-Dunstable run.

Preston obtained Silver C height in the Grunau on 26th, a windless day.

August.—The social event of the month was a Discussion on the International Contests, under Yates's chairmanship. Speakers, in order of hearing, were Philip Wills, Paul MacCready, Jock Forbes, Geoffrey Stephenson, Lorne Welch, Fred Slingsby, and Dr. Dick Scorer, after which Hugh Latto showed his films. Other visitors we were pleased to welcome from the U.S.A., as well as Paul, were Jon Carsey, President of the Soaring Society of America, and Mrs. Carsey.

Several front-like cu-nims came over on the 3rd, and quite a few pilots made cloud-base. Peter Rivers got under a hanging curtain of cloud and went up with the variometer off the clock.

A notable day was Tuesday 12th, when Foster in his Rhönbussard and Ellis in an Olympia both flew into Lincolnshire, further north than anyone has soared from Dunstable before. A S.W. wind of about 25 knots was blowing across the route.

Foster went 111 miles to Binbrook in 3 hrs. 7 mins. Ellis, who started at 3 p.m., saw too many jets around there for comfort, and deviated to Ingoldmells (Skegness), 99 miles. He said the going was good to Petersfield, then became poor; Foster also found the air getting flat towards the end. But both pilots saw lots of good clouds further inland after landing.

Pat Foster completed her Silver C on 17th by catching a thermal off the winch and taking the Rhönbussard 41 miles to Farnborough. Three cross-countries on 23rd were: L. Wright to White Waltham, Wynter to Hockcliffe and Hennessey to Luton.

Annual General Meeting.—This was held on 16th August, with Dudley Hiscox in the chair. The figures for launches, 4,670, and flying hours, 1,658, during 1951 were both down on the previous year; nevertheless, the club did one-sixth of the total launches and one-fifth of the flying hours put up by all the 21 B.G.A. affiliated clubs.

Club trophies were awarded as follows:—

Desoutter Cup for best constructional effort, to Peter Rivers for instrumental improvements to club fleet.

Cellon Cup for best ab-initio of the year, to Derek Abbott.

Dent Cup for best flight from Dunstable, posthumously to Jack Hanks for flight to Norfolk coast.

Derry Trophy for the most useful work for the Club, to Dudley Hiscox.

Committee members elected or re-elected: Abbott, Ellis, Hennessey, Hiscox, Betty Richardson, Williams.

A.E.S.

Air Training Corps

AIR Ministry authority has been obtained for publication of the A.T.C. "avoidable accident/incident rate" during 1951, which was 6.6 accidents/incidents per 10,000 glider launches (two-seater rate 2.2), against the civil gliding club rate of 18.0 accidents/incidents per 10,000 glider launches.

Deeside Gliding Club

TRAINING has continued at an increased rate, the total number of launches reaching the 200 per month mark in April and May. Pilots have still been confined to the airfield as, till now, only an SG-38 and a Cadet (the latter pranged at the beginning of May) were available; nevertheless, with the aid of a variometer, several sustained circuits of up to over 7 minutes were possible with the latter aircraft. At the time of writing we have, however, just acquired a Kite I, on which great expectations are based, particularly concerning possible soaring in neighbouring North Wales. We have also purchased a second retrieving vehicle which will act as a useful tender to the Kite. V.B.

Bristol Gliding Club

We have long felt that the weather doesn't often give us a square deal at Lulsgate, and it is very heartening to find that our pilots can still put up a good show when weather condi ions are reasonable, as they were during the last week in July.

It is an all-too-familiar experience at Lulsgate to find it surrounded by promising-looking cumulus clouds which all lie many miles away, while the well-watered and poorly-drained country around the proximity of the Bristol Channel keep the skies above devoid of any lift-producing cloud. As at the Whitsun Camp, we frequently find that we can soar for an hour or so around the 2,000 ft. mark, but the lift rarely extends high enough to permit a Silver C climb, or a good start to a cross-country. Too often the bold spirits who have essayed a cross-country under these conditions have had to land before they could reach the better country to the west.

However, a Soaring Camp held at Lulsgate from 21st-27th July happened to come at the end of a long spell of hot sunny weather which had dried out the damp low-lying country nearby, while northerly breezes brought unstable air from inland, so that for once the cumulus formed in quantity and quality over Lulsgate.

On 25th July Mike Hodgson, a pilot who had only recently converted to the Olympia, flew 91 miles to Launceston in Cornwall, reaching 4,700 ft. a.s.l. on the way. He thereby won his Silver C height and distance and broke the Club distance record. The previous day Bill Moreton had won his distance leg by taking the Grunau 39 miles to Broadwinsor, Dorset, while Mike Garnett had obtained his Silver C height by climbing the Olympia to 4,850 ft. a.s.l. Garnett won his distance leg on 26th July when he flew the Olympia 52 miles to Thruxton. Several other pilots were able to make climbs to more than 4,000 ft. a.s.l. during the Camp.

The Summer Holiday Gliding Courses are in full swing and proving as popular as ever. Training is mainly by the solo method, but the two-seater is used to give air experience and instruction in stalls and incipient spins, and also comes in useful when the weather is unsuitable for solo training.

Approaches and landings at Lulsgate have shown a distinct improvement since the introduction of a new rule whereby pilots are briefed to land on the upwind side of a landing-mark placed 250 paces upwind of the lee fence. Pilots are discouraged from making dicey approaches by being demoted to a machine of lower category if they land the wrong side of the mark.

The Club fleet has been augmented by the purchase of another Cadet, though it was speedily converted to a Tutor by the fitting of a spare pair of Tutor wings.

Flying totals, which by the end of June had reached 2,629 launches and 193 hours, are being helped along by occasional evening flying parties, which set out from Bristol immediately after work on week-day evenings.

J.M.H.

Yorkshire Gliding Club

At the time of writing, all our activities are centred on preparations for the Rally. The Clubhouse renovation programme has had to give way to the more urgent hard labour on the airfield . . . bulldozer, pick and shovel and bare hands rolling boulders . . . but we feel sure that visiting pilots will appreciate the changes wrought in the landscape, and turn a blind eye to minor defects such as lack of interior decoration in the Club house.

We have been overwhelmed by the most generous offers of help. Pye Radio is loaning and installing two walkie-talkie sets so that we can maintain radio contact with machines in flight, and Shell-Mex are giving valuable assistance in a number of directions.

Applications for membership are rolling in daily, and club members are rallying round with inexhaustible energy, patience and bright ideas. We only hope that those taking part in the Rally will enjoy it as much as we are enjoying getting ready for them.

In spite of pressure of Rally preparations, Henry Doktor, who gained his C early this summer, has found time to gain his Silver C duration, during which flight he reached 3,100 ft. above take-off. The Slingsby Group trainees now have three A's and a B, and an enthusiastic group of members have enrolled for training which is now available every week-end at Sutton Bank, under instructor Allan Pratt.

P.S.

Sutton Bank Rally

23rd—31st August

THERE is only time before going to press in this issue to report briefly on the first week-end of the meeting held by the Yorkshire Gliding Club at Sutton Bank, but it is already clear that this rally has achieved results better than anyone's most optimistic expectations.

Both Saturday 23rd and Sunday 24th produced gentle soaring winds, with rather little thermal activity. Whilst, therefore, pilots did not have an opportunity to carry out any startling flights, from the spectators' point of view conditions were ideal. On Sunday over 3,000 spectators arrived, and on both days a continual flow of passengers were taken up in the two T-21's available. A new feature of great public interest was the fitting of these two-seaters with radio lent generously by Messrs. Pye, with the result that those on the ground could hear the comments and instructions of passengers and pilot in flight.

A second extremely popular attraction was an ancient primary suspended on one of Slingsby's new ground-training tripods. Members of the public flocked to pay a shilling a time to try out their ability at the controls of a real (if slightly improbable) aircraft.

Two Silver C duration flights were achieved on the 23rd; also a visiting Olympia from the Mynd attempted a Silver C distance flight, but landed 13 miles away.

Many of the old pre-war faces were there, and in addition a new post-war crop of enthusiasts, of whom we shall be hearing more and more as time plods on its irrevocable way.

Sutton Bank is still the most beautiful gliding site in England. With the funds raised at this meeting and the abounding enthusiasm of Yorkshire G.C. and Newcastle G.C. members, it has only to raise its sights to providing facilities up to Silver C standard to resume its rightful place as one of our leading sites.—C.

Oxford Gliding Club

THE club has now followed the modern trend and started two-seat instruction with a T-31 acquired (with a Beaverette and a two drum winch) from the Hereford club. Members who had flown only the Primary found the two-seater so much more sensitive to the controls that they were at first taken aback. But after a number of circuits they easily mastered the new machine, and when they again flew the Primary the effect was most apparent, and circuits were almost faultless.

May and June were very busy months, with 284 and 357 launches. In July, with the two-seater temporarily out of action, and the student members away, launches were still nearly 250. In the last three months, Ayres, Bolt, Sullivan, Gales, Brooks and Spies have qualified for the B.

Soaring from winch launches has been achieved on numerous occasions. The two-seater with Hall (a temporary member) and Varley once managed to reach 1,500 ft. The Grunau syndicate, in spite of apparently spending most of their activities in carpentry, finishing their very smart trailer, have made some good flights. Herbert took his C from a winch launch and was airborne for nearly two hours on 26th June, and Stow in the same machine made a 1,000-metre climb two days later, also from the winch, and he and Varley in the Olympia were for a time using the same thermal at over 4,000 ft. Stafford-Allen got the height qualification for the Silver badge on 26th July in the Olympia.

The few cross-country flights have been of varied merit. Stow's landing at Weston-on-the-Green appears to have been a social call. Varley's 12-mile flight on 10th August was remarkable only for the number of fire-engines and ambulances which appeared on the scene. Goodall's flight in the Olympia from a 1,500 ft. aero-tow on 13th August was much more profitable. Lift was not very vigorous, and the maximum height reached was a little over 3,000 ft., but he stayed up for nearly two hours and landed 7 miles beyond Bedford, a distance of 49 miles, which leaves him only the height qualification for the Silver badge.

The club had its first soaring visitor when John Hickling landed at Kidlington after his fine flight from the Mynd. Other visitors, who brought their Kite II by road, have been Fisher and Worley from Gloucester.

Royal Naval Gliding & Soaring Association

Summer Camps.

THE over-subscription to these camps, mentioned in the Summer issue, gradually increased as the dates approached and it was finally arranged that the two camps were run at both the Midland and the Derbyshire and Lancashire Clubs—four camps in all. A total of 36 naval officers and ratings attended the camps and 10 of them stayed for both weeks. The first week, beginning 21st July, had anticyclonic weather and was perfect for circuits and bumps; in the week following, the conditions conveniently changed and good westerlies blew on most days, though a certain amount of rain also occurred.

The total number of certificates qualified for was 14 A, 14 B, and 9 C, and in addition many hours of hill-soaring were accomplished. Most satisfactory results, and we are indeed most grateful to the two clubs for taking on this invasion of naval aspirants to the sport of aerial yachting.

Branch Clubs.

Compared with last year there has so far been a noticeable and regrettable reduction in the number of launches achieved. In the main, it is the result of shortage of properly qualified instructors. The clubs at Lossiemouth and Arbroath have hardly been active at all, but the other three at Gosport, Yeovilton and Eglinton have all been doing a fair amount of flying and are having to turn away prospective members in order that a reasonable number of flights may be given to already existing members.

Displays.

The association has been called upon to provide gliding displays at several naval air station "air days", and also had the honour of doing so at the Royal Aeronautical Society's Garden Party at White Waltham. A.G.G.

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Army Gliding Club

CLUB activity continues at a high level compared with last year, with 3,626 launches logged in the five months March-July. July was a good month with 392 launches and 154 hours 25 minutes flying time. Our launching efficiency has improved tremendously, thanks to Charles Dorman, Bob Hopkins and the many other members of the M.T. Section. Stripped gears, worn out engines, broken half-shafts are replaced almost without a pause in the launching.

Cross-country flying is the only side of the club which has done less this year, but this has been more than compensated for by a great increase in local soaring flights, and on many occasions the whole club fleet of four aircraft has been soaring and a launch-line waiting with nothing to do. Silver C height legs have been gained by Morrison, Dorman, Adair, Perkins, Gamblin, Wright and Mrs. Deane-Drummond. Stuart Morrison got his distance with a 60-mile flight to Cranfield; but undoubtedly the cake must go to Colin Bennett, who completed the first all-Lasham Silver C, by soaring the Grunau locally for 5 hours 45 minutes, most of it at about 5,000 ft.

Local thermal-soaring has also qualified for their C's, Gamblin, Wenham, Milne, Kerridge, Dumas, Adair, Plummer, Wright, and Hopkins, and except for Wenham and the last two, all were ab-initio pilots trained by the Club. Nearly all these have now logged several hours local thermal soaring and are hoping for their chance at a Silver C.

Mid-week courses are all completely booked up for the rest of the season, and on one day, August 14th, every single member of a course of 8 had soaring flights of between 20-45 minutes. The two-seater did not spend much time on the ground that day.

Our two-seater and John Free continue to be over-utilised, and John has already had 150 hours flying in the last five months, which is more than he did in the whole of last year. John's enthusiasm and hard work is at the back of a great deal of the club's activities.

We have not been able to utilise our second Grunau as much as we should like because we have not been able to operate more than one line, except over the Easter week-end. There is no doubt that two lines are essential to ensure utilisation of four aircraft on a flat site, and we hope next year we will be able to do this.

As a tailpiece we might mention that we find a reef knot in the piano wire used for auto-launching works better than the old "nut, bolt and washer" method. There were a lot of sceptics at first, but now all are convinced and it is both cheaper and quicker. Knots wear out in about 10 launches, so that provided all knots are replaced before the beginning of each day's flying, no trouble should be experienced.

A.J.D.D.

Cambridge University Gliding Club

IN June a Club Camp enjoyed the kind hospitality of Derby & Lancs. Over 50 hours flying were obtained, but the visit was sadly marred by the demise of the veteran Cambridge I, "Pons". For the second time in his first 9 months of gliding, A. McDougall exceeded 8,000 ft. in the Prefect in a standing wave, and he also completed his Silver C with a flight of 55 miles.

In recent months two town members, V. Pollard and Bill Parr, have both done Silver C cross-countries to the vicinity of Southend.

At the beginning of August a party visited Pont St. Vincent in France, and although they were not so fortunate with their flying as the earlier visitors from the Surrey Club, Barbara Alexander completed her Silver C with a 50-mile flight to Thionville near the Luxemburg frontier, and all the participants thoroughly enjoyed their holiday. Reports that "The Wheel came off the Hearse" is heading the French hit-parade should not be taken too seriously, but several educative songs about monks and various other French institutions have been added to the Cambridge repertoire.

ONE CHAMPION GREETS ANOTHER !

"AUTOBRITE" – FAMOUS CAR POLISH – PLAYED PART IN HELPING BRITISH TEAM TO VICTORY AT MADRID.

Entirely on their own initiative certain members of the British Gliding Team competing in the 1952 World Championships (including the New World Champion) treated their sailplanes with "AUTO-BRITE", the high gloss polish which was found to reduce air resistance and materially assist the British Victory. We heartily congratulate the new World Champion and members of the British Glider Team. Below are two extracts from their actual letters.

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"It was I who found 'AUTOBRITE' the very first week it was on the market. Truly it is wonderful stuff. We have got half the London team using it. We used it on the 'Sky' through last year's championships, and it was the only thing that removed the acid dirt formed by cloud flying over industrial towns. The Squadron Leader who generously lends us both his 'Sky' and his car says they are always returned like new—we use nothing but 'AUTOBRITE' on both!"

Mr. LORNE WELCH says:

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East Midlands R.A.F. Gliding Club

THIS club was formerly the Bomber Command Gliding Club, and was operating from R.A.F. Upwood last year. Under the reorganisation scheme of the R.A.F.G.S.A. the club was moved to R.A.F. Scampton, Lincoln, and commenced operations in May this year. It serves stations in the Lincolnshire and Nottinghamshire areas, and enquiries from prospective members have amounted to about 100 persons, most of whom are untrained or have the A certificate.

The club equipment consists of a Kirby Cadet, an Eon Baby and an Eon Olympia. These are all in use at present. In addition we have a Slingsby T-31 two-seater which has been partially completed from a kit of parts, and a very ancient and weatherbeaten Falcon III which needs extensive repairs before being made airworthy again. Launching is by winch, and a Jeep is used as the club maid-of-all-work—cable retrieving, trips for spares and general running about.

Club officials include the following:—C.F.I., Flt.Lt. J. F. P. Archbold; Chief Technical Officer, Sgt. W. D. Campion; Secretary and Treasurer, Flt.Lt. F. Ridgway.

Among the members, including the above, we have four Silver C's and several C's, and names include Sgt. Myrtle May (W.R.A.F.), Cpl. J. S. Williamson, and Cpl. "Ricky" Collins (W.R.A.F.), in addition to a large number of very keen learners.

So far, we have not made any outstanding flights, but thermals should be plentiful in the right conditions. We are situated on the "Lincoln Edge", which is a low limestone ridge running from near Grantham and petering out north of us towards the Humber.

Club policy is take members up to Silver C stage, using the T-31 for basic training, when it is finished, and soaring training in the Baby and the Olympia. We hope to pay a visit to our hospitable friends at Camphill in the near future.

We have hopes of prospecting a ridge near here, on the western side of the Lincolnshire Wolds. The slope has a good profile and is unobstructed; it reaches 450 feet and extends for about three miles north/south, so it ought to provide some lift in a west wind. This remains to be seen.

J.F.P.A.

Scottish Gliding Union

WE have now become accustomed to the Olympia. No longer is its nonchalant circling at 3,000 ft. followed minutely by a host of eager eyes. A short three months has seen the first trepidant launches followed by rapidly growing familiarity, several flights of over 90 minutes and three Silver C legs, two heights and, wonder of wonders, a cross-country.

The laurel wreath for achieving the first Silver C distance in Scotland now rests on the brow of Pip Pearce, who flew the 35 miles to Carnoustie across the Tay Estuary in 1½ hours, climbing to 3,000 feet and an inversion in each of four neatly-spaced blue-sky thermals. The height legs went to Andrew Thorburn and Bill Lawson, both of whom climbed to 5,000 feet—Bill in a cu-nim.

All this has been made possible by the Kemsley Flying Trust, whom we must thank for the generous terms accorded to our Club in the purchase of this machine.

The thermals have not been the monopoly of the Olympia either. Both the T-21B and the Tutor have been finding lift regularly, and now that the Tutor is fitted with a belly-hook which gives an average launch of 1,100ft., that elusive first thermal is brought within easier reach.

There is, of course, nothing more calculated to invigorate club members than the sight of winches and retrieving cars lying idle and all the machines circling at cloud base. Consequently ground engineering has gone ahead with renewed enthusiasm. The most notable achievement in this field has been Jimmy Rae's conversion of the club's Fordson tractor into a mobile winch eminently suited for the rough terrain of Bishop Hill. The cable drum is bolted direct to a power take-off, and a massive roller box and cable guide is suspended over the off-side front wheel. First tests show plenty of power and promise an invaluable addition to club equipment.

The Club's Holiday week 2nd-9th August was badly hit by the weather, but nevertheless a fair number of launches were put in. Highlight of the week was a spot-landing competition arranged by Bill Lawson, who himself landed right on the spot "just to show what was wanted". Everyone enjoyed thenselves and this holiday is assured of a permanent place in the S.G.U. calendar.

R.L.P.

Surrey & Imperial College Gliding Club

SINCE the last notes, Tony Oram has completed his Silver C with a trip to Detling (72 miles) and five hours spent at Harting Hill, our nearest soarable slope on the South Downs.

Bill Tonkyn and our Secretary, Malcolm Laurie, have also been to Detling. Two C's have been obtained in thermals in the uninstrumented Tutor, by John Jeffries and Johnny Johnston. The Weihe and the second Tutor are now flying again after their C's of A, and together with our various visitors it is not an uncommon sight at week-ends to see over a dozen gliders at or above the launching point.

During the first week in September there is a private course for the Iraq Petroleum Company's members, followed by the fortnight's course as already advertised.

The most notable incident during the last quarter was the subsidence of the Silver Tutor onto a plantation of saplings just outside the aerodrome. The de-rigging whilst treeborne was thoroughly enjoyed, and the only damage, a small fabric tear, was not considered sufficient to prevent it being test-flown the same afternoon.

Subject to the C's of A, we may be keeping an Olympia at another site this winter, so as to give our members an opportunity of slope-soaring. And, talking of winter, our Christmas party will be held on Saturday, 13th December, this year, so make a note of it.

13th December, 1952

SURREY GLIDING CLUB

CHRISTMAS PARTY

and Pantomime *(more or less)*

FANCY DRESS BAR and BUFFET

All details from the Secretary, Lasham Aerodrome, Hants

Midland Gliding Club

WE are very much on the up-and-up, with 50 new members since January. Consequently a report of our activities would almost fill a complete issue of GLIDING. Here are some of the highlights:—

Whitsuntide provided excellent weather on Sunday, Monday and Tuesday for club members; meanwhile the Blue Olympia was in Derbyshire defending a beer-tray originally presented in 1937 and won in that year by the Midland Club. A flight on Sunday of 51 miles to York by Hickling and one on Monday by T. Adams of 85 miles to near Boston resulted in the return of the tray to the bar overlooking Wales.

Perhaps the best day for convection during the period was 7th June. Hickling set off for Lympne but undershot by 100 miles, landing at Kidlington, the Oxford Club's headquarters; but fortunately his speed was sufficient to bag the 100-km. speed record (U.K. Local) at 32 m.p.h. Also on this day David Ince reached 7,500 ft. on an out-and-return attempt to Welshpool. Stan Jones obtained Silver C height and Alan Pickup duration.

On 15th June Doc Cotton landed at Shofden (18 miles) on a distance leg attempt.

A wave appeared on 21st June, lifting John Horrell in T-21 to 5,200 ft. a.s.l. and Rick Prestwich in Blue Olympia to 7,000 ft. a.s.l.

On Saturday, 28th June, T. Adams visited a garden party by air at Abbotts Bromley (45 miles) but had to do his own retrieve.

July Camp.—This started with a roaring east wind and finished with an equally strong west wind; but, in between, 165 hours were piled up,—in fact, on Saturday, 12th July, the club record for one day's flying was easily broken when 86 hrs. 25 mins. were flown. Part of this total was contributed by a contingent from Cranfield with a Tutor and a Grunau IIb. They succeeded in doing 77 hours, plus 8 C's and one Silver C completed, during their 14 days' stay.

The Royal Naval G.S.A. will not regret their visit in July. In the first week 8 members obtained B certificates from scratch; the following week 8 more obtained C's.

August Camp.—This Club Camp was reinforced by visitors from northern parts in the form of the Newcastle Petrel and Meise; also a syndicate Olympia from

Derbyshire. On Saturday, T. Adams was the only cross-country aspirant, doing his "milk run" home to Sandon, near Stafford, 40 miles.

Sunday resembled the national contests, with five cross-countries (this must be another Mynd record). Tony Goodhart arrived with his brother, rigged the Meise and was off, landing at Rugby, 70 miles, after gaining 12,000 ft. on the way. Pick flew the Petrel to Cannock, Murray did a goal flight to Lichfield (40 miles) for his Silver C in the Derby Olympia, John Cotton fell short of his distance by landing the Blue Olympia at Perton (30 miles), and Harry Primrose made a trip to Wenlock Edge in the Red Olympia. On Monday Roger Dickson flew his Olympia to Lichfield.

During the camp period of 9 days, 174 hours were flown.

The outcome of all this activity is that, since January, 1,050 hours have been flown and a good proportion of our new people have taken certificates.

J.H.H.

Southdown Gliding Club

STILL we wait for a complete Silver C on our own Club machines. The Olympia has spent a lot of time this summer at Lasham, including ten days at the end of July, and there have been some very good efforts at cross-country flying, but none were quite far enough. We seem to have missed the best week-ends. Don Snodgrass went to Romsey on an anticyclonic and hazy day; Ray Brigden got half way to Friston, but was forced down when conditions deteriorated, and Dr. Jameson flew as far as Ringwood but this was off a 2,000 ft. aero-tow, so did not qualify for his Silver C distance. We have, however, gained two more height legs; Don Snodgrass reached 4,200 ft. on his cross-country and George Constable climbed to 5,100 ft.; again this was at Lasham. We have decided that next year we shall have to put even more into flying the Olympia at such places as Lasham.

During the summer months the cliffs have produced soaring conditions on three occasions, on Whit Sunday, on Saturday, 21st June, and at August Bank Holiday. On Whit Sunday 25 hours were flown by the two Tutors and T-21b. David Parsey and Dr. Jameson went to Beachy Head in Tutors, but lift was not good. Even though there was a strong south-westerly wind, the first launch at 10.00 hrs. on August Sunday proved that there was very little lift over the cliffs, but subsequent launches showed that it was rapidly getting stronger. The lift was not on the usual broad band in front of the cliffs, but was very patchy and seemed to be affected by small cumulus coming off the sea, their cloud base being about 1,500 ft. The Olympia and Tutor reached 1,100 ft. and 1,000 ft. respectively, but could get no higher. Alan Simmonds went along to Beachy Head in the Olympia but found poor lift so returned to the Seven Sisters; both he and Ron Willbie in a Tutor completed their five hours. The next day, Bank Holiday Monday, the same wind was blowing and soaring continued until 3 p.m.; by then the wind had veered and decreased. However, circuits for the rest of the day were extended to about 10 minutes duration by flying over the cliffs. Over 30 hours were flown during the Bank Holiday for over 80 launches.

We have had a few thermals on one or two week-ends, but they have been very small and broken. The T-21b climbed to 1,300 ft. in the hands of Jack Godley on one day, and on another David Parsey kept it in the air for 20 minutes.

In the evening of Saturday, 19th July, the wave over the Cuckmere Valley appeared. Ron Willbie and Ellis of the London Club went as far up the valley as Alfriston at 1,500 ft.

David Parsey, Jo Hahn and Alan Simmonds went to Madrid to see the International Championships. They had a very good holiday and the trip was made even more worth while by the success of British pilots and sailplanes. To Philip Wills we all offer our congratulations. We do on the other hand feel sorry that such bad luck should have befallen Frank Foster.

Don Snodgrass and Jack Godley have been on their annual trip to France; this year they went to a gliding club at Blois. Both did flights of about 55 kms., so completing their Silver C's. Don, who was flying a Grunau Baby, landed at an aerodrome at Orleans, and Jack in a Castell 311 landed at another aerodrome nearby. They both reached 6,000 ft. on the way. They seem to have enjoyed their visit very much, and it seems the French club could not have done more for them.

A.R.S.

Newcastle Gliding Club

SINCE we reported that permission had been obtained for us to operate on Newcastle Municipal Airport at Woolsington, we have focussed attention on the overhaul of both the T-21 and the Tutor for club use, and major alterations to the winch. Most of the credit for the completion of this work must go to O'Grady, Tate and Anderson.

We are also greatly indebted to Basil Meads for the efforts he has made on our behalf in overcoming the many obstacles which had been preventing our tenancy of the Airport.

Flying activities were delayed at first, but since temporary accommodation was made available we have had over 70 training launches in the T-21, and are now adding Tutor flying.

For the first time there has been a queue of aircraft to enter the workshop at the City Headquarters. Bill Tweedy, Jack Anderson and O'Grady were overhauling the Blue Kite for renewal of C. of A. while Andy Coulson and the Olympia were waiting to get into the workshop.

The Tutor was passed for C. of A. and test-flown on August 13th, when Shott earned the first civilian club certificate for this site. Jorgen Blom (C pilot), a Dane here for two months, has had two hours soaring a Tutor at Sutton Bank.

Kylo and Morphett are being trained as winch drivers; Tony Morphett is from Australia.

Our activities at the Airport have so far dovetailed satisfactorily with the operations of the Aero Club and Charter firms. A sheet of operating instructions for aerodrome access and procedure has been issued to all Pilot and Observer members.

Mrs. Tate has a team of char's lined up to clean out the Air Charter Waiting Room.

We were delighted to welcome Gerry Smith and his crew at our City Headquarters after the National Air Race meeting, where their exhibition flight in the Sky was much appreciated.

We are glad to report the return to home ground of Ian Wilton and Allan Curry.

It is important that members should attend at City Headquarters either Monday or Friday evenings to ascertain the weekly programme, because mid-week flying is always taking place at short notice.

A.P.M.

Dublin Gliding Club

ALTHOUGH gliding and soaring got off to a good start in Dublin during the thirties with the formation of the semi-military Baldonnel Club and the Volunteer Force Club, the movement was, so to speak, strangled at birth by the outbreak of World War II. As in Great Britain, 1946 saw a revival here, but after some three years of sporadic activity the Baldonnel Club wound up. Protracted negotiations with the Department of Defence finally resulted in the transfer of the Club's aircraft into civilian hands and thence into the possession of the present Dublin Gliding Club.

Elementary training commenced early this summer at Weston Aerodrome (by arrangement with Captain Kennedy), the trainer being an open Dickson Primary—kept on a short tow-line in view of the wing section (Göttingen!) with its uncomfortably high lift. Its last slide ended with a compound fracture of the port wing and, fortunately, an uninjured pupil. Repairs were delayed, so we cast about for a more modern trainer, and found a suitable Cadet with one of the Services Clubs convenient to London (i.e., Northolt). We expect to have this machine in the air by the time of publication. The old Dickson will then go into honourable retirement on a tripod.

The precious G.B.II has not been flown by us as yet, nor will it be until our "C" men have had refresher courses with a craft somewhat lower on the performance scale. A pair of Tutor wings is here indicated as the next step.

A member's rebuilt Scud will shortly take its place in the hangar, while we are on the trail of a crated Dagling Primary with wings in kit form which, we hope, will provide some indoor work during the winter.

Members holding British C Certificates are : K. Mellor, (Instructor), J. Simonds (Met. man), and J. Quinn. There are also five holders of British A licences.

The position with regard to the issue of certificates in this country has not yet been formalised. We are at the disadvantage of having to break new ground with gliding here, and feel somewhat of an orphan club, lacking a parent body like the B.G.A. The B.G.A., it should be mentioned, has been most helpful in many ways, as has also been the Bristol Club. We take this opportunity of thanking them both.

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