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Cover Photograph.—The Japanese sailplane Tohi-SA, in which a new national duration record of 28 hours 8 minutes has been set up (see page 31).

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West End Week-end

THERE was a time, twenty years ago, when we felt the need to enter a protest, in the B.G.A. official organ, against the holding of conferences, discussions and meetings of any sort at ground level when the participants might otherwise have been flying gliders. The proper time, we thought, was either after dark or on week-days. But the attitude at the centre, in those days, tended to the view that the public would be impressed, and a subsidy best angled for, not so much by showing what gliders could do, but rather by repeatedly stating at ground level that one wanted to get somebody else, commonly called Youth, into the air.

Times have changed. British sailplane pilots are now regularly putting up more than 17,000 hours' flying every year, and so many people can keep the existing gliders airborne that it is doubtful whether any flying hours were lost during the week-end 7th-8th March, in spite of the large number of people who were grounded by the spate of activities organised in the West End of London by the British Gliding Association. Not only was there the Annual General Meeting on Saturday and an Instructors' Conference on Sunday, as last year, but a conference of Approved Inspectors put in a whole day's work, while a Victory Ball at Londonderry House on Saturday night included a cabaret put on by several club troupes, and the presentation of the 1952 trophies by the Parliamentary Secretary to the Ministry of Civil Aviation, Mr. John Profumo.

The Approved Inspectors now have the advantage of periodic visits from an Examiner, Mr. R. B. Pinniger, who stated at the conference that he had found the airworthiness standards to be satisfactorily high at the great majority of clubs, including all the larger ones, though in a few of the smaller clubs there was still room for improvement. To quote two examples of the numerous technicalities discussed, there was the problem of the gradual drying up of wooden structures, and that of pushing a metal pin through a hole in wood without scraping off the protective covering. Mr. Pinniger recommended removing a sample of wood from each machine every four or five years ; when a wooden glider has at last dried up, he said, it should be burnt forthwith, because there is no cure.

At the Instructors' Conference the Chairman, Mrs. Ann Douglas, described the work of the panel of instructors which has been visiting the clubs in turn to categorise their instructors and, where needed, to give advice, for which the recipients have been most grateful. She warned against trying to push on promising pupils too fast, since they need a certain background of experience to ensure that they will cope with an emergency ; another warning was against confusing a pupil with too much theory at an early stage of instruction.

At the Annual General Meeting Mr. Philip Wills was re-elected Chairman for another year. By the time this is in print, our Chairman will have attended another A.G.M., that of the Royal Aero Club, to receive the Club's Gold Medal for 1953 as a reward for winning the last International Championships.

B.G.A. News

National Contests

THE 1953 British National Gliding Championships will be held at the Derbyshire and Lancashire Gliding Club, Great Hucklow, Derbyshire, from 25th July to 3rd August.

"A" Certificate Fee

The fee for "A" certificates has been reduced from 5s. to 2s. 6d. The fee for endorsement for "B" and "C" certificates remains at 5s. each. Badges remain at 5s. each.

Minimum Age of Pilots

In a letter to the British Gliding Association, the Ministry of Civil Aviation states: "It has been decided that solo flying in gliders should be restricted to persons of not less than 16 years of age but that dual instruction may continue to be given to persons less than that age."

INSTRUCTION COURSES, 1953

DATES of instruction courses at gliding clubs, open to non-members, are given below; further particulars can be had from each Club Secretary at the address given.

Yorkshire G.C.: 4th-12th April, 26th May-2nd June, 27th June-5th July, 5th-13th September. (' Norlands", Middlecave Road, Malton).

Imperial College G.C.: 29th March-6th April. (Lasham Aerodrome, nr. Alton, Hants.)

Surrey G.C.: 7th-18th April, 4th-15th May, 7th-18th September. (Lasham Aerodrome, nr. Alton, Hants.)

London G.C.: 9th-16th May, 6th-18th July, 31st August-21st September. (Dunstable Downs, Beds.)

Midland G.C.: (mainly for B, C and aeroplane pilots, but a few beginners accepted): 20th-28th June, 4th-12th July, 15th-23rd August, 29th August-6th September. (82, Ravenhurst Road, Harborne, Birmingham, 7).

Scottish Gliding Union: 4th-11th July, 18th-25th July, 1st-11th August, 22nd-29th August. (Westermillig, Helensburgh, Dumbartonshire).

Bristol G.C. weekly courses from June—September. (K. R. Brown, 63 Sefton Park Road, Bristol, 7).

F.A.I. Report

REPORTS of the General Conference of the Fédération Aéronautique Internationale held at Madrid from 3rd-11th May, and of the session of the International Commission for Motorless Flight on 8th July, 1952, also at Madrid, are included in the Federation's Bulletin published in late 1952.

Among various tables at the end of the Bulletin is one, the substance of which we reproduce herewith, giving figures of gliding activities in 19 different countries during the year 1951.

Commenting on these figures, the Secretary points out a 22% reduction in total flying hours compared with 1950, but this reduction is concentrated in six countries and he attributes it to bad soaring weather. For a diminution of 8% in the total number of club gliders, one country is mainly responsible. Total B certificates have increased by 10%, though C's are 5% down; this is a sign that more people are taking up gliding.

The Lilienthal Medal is awarded by the F.A.I. to Mme Marcelle Choisnet-Gohard (France) for her duration record of 28 hours 41 mins. on 22nd November, 1951.

The Motorless Flight Commission discussed two proposals by the Royal Aero Club of Great Britain. One, that the distance leg for the Gold C Badge can be flown on a triangular course, whose sides measure not less than 80 kilometres each (49.71 miles), was accepted by the Commission.

The other proposal was that, at World Championships, each country participating with at least three pilots can take part as a team, and the winning country would be that whose (best) three pilots obtained the highest average of points. The Commission rejected this proposal on the grounds that:

(1) Many countries cannot send three pilots.

(2) The Olympic Games, for example, do not recognise classification by nation.

(3) National jealousies should not be encouraged.

(4) Soaring is an individual sport.

(5) There would be a risk of such a classification favouring professionalism.

A Turkish proposal that aerobatics be included in the World Championships was rejected, on the ground that aerobatics in gliders do not enter into the performances which specifically characterise soaring flight.

International Gliding Statistics for 1951

(Figures for 1950 in brackets)

Country	*Flying hours*	*Club gliders*	*Private gliders*	*"B" Certifs.*	*"C" Certifs.*	*Silver Badges*	*Gold Badges*	*Diamond Badges*	*No. of Clubs*
Argentine	31200 *flights*	387	—	57	66	15	—	—	45
Austria	1137 (725)	121 (72)	3	202 (30)	112 (12)	21 (21)	1 (1)	—	80 (60)
Belgium	1565 (962)	21 (20)	2 (1)	46 (40)	21 (15)	8 (2)	—	—	11 (12)
Cuba	—	—	—	— (1)	— (1)	—	—	—	1
Denmark	1150 (1125)	75 (78)	—	77 (30)	75 (51)	7 (4)	— (1)	— (1)	28 (27)
Finland	1000 (920)	109 (104)	1 (1)	94 (48)	46 (50)	6 (7)	—	—	49 (45)
France	54299 (79613)	1050 (1379)	—	1125 (1350)	735 (916)	131 (265)	11 (14)	1	390 (390)
Gt. Britain	7736 (7560)	139 (129)	50 (48)	836 (644)	240 (242)	63 (47)	— (2)	—	31 (31)
Greece	2 (28)	5	1	1	—	—	—	—	5
Holland	2550 (2750)	83 (66)	—	175 (112)	45 (35)	8 (14)	—	—	16 (16)
Israel	131	8 (8)	1 (1)	20	1	—	—	—	1
Italy	—	20 (18)	2 (2)	22	10	1	—	—	9 (8)
Portugal	155 (500)	18 (18)	—	111 (94)	51 (28)	—	—	—	—
Spain	2542 (2801)	— (201)	180	231 (394)	252 (324)	3 (4)	—	—	4 (5)
Sweden	3585 (3942)	214 (230)	—	245 (306)	202 (205)	269 (249)	22 (20)	—	39 (39)
Switzerland	3893 (5524)	171 (192)	—	—	— (1223)	— (202)	— (7)	— (2)	— (48)
Turkey	1297 (804)	109 (115)	—	215 (33)	18 (31)	—	—	—	3 (3)
U.S.A.	5500 (4000)	45 (50)	400 (419)	—	66 (64)	18 (19)	5 (6)	— (1)	30 (35)
Yugoslavia	—	—	—	—	—	37 (30)	— (6)	—	no special clubs

NOTE:—a blank does not necessarily mean zero: in some cases it may mean no returns have been sent in.

The British figure for flying hours does not include 5,500 hours by the Air Training Corps and 4,000 hours by the B.A.F.O. Clubs in Germany.

Standing Waves over the Pyramids

by R. Swinn

Chief Flying Instructor, Egyptian Gliding School

HAVING in mind the controversy raised some time ago on standing waves over the Pyramids, I have paid particular attention to the appearance of any such conditions, and it is interesting to recall that, among the many appearances of wave formations along the Nile valley, those appearing on 23rd January of this year, the day when Cairo was celebrating its six months of liberation from the old regime, gave as clear an outline of these peculiar conditions as any we have experienced. The local papers printed pictures of these waves and wrote of them as symbols of the liberation of the fatherland. To us of the Gliding School they were only a more pronounced occurrence of a common phenomenon.

I would like to say at the outset that these Pyramid waves are only part of a long chain of waves stretching on either side of the Nile Valley. These two long lines of waves are extremely interesting, being a visible sign of the conditions which periodically exist along the Nile Valley when a difference in temperature of the air over the cultivation and the surrounding desert exists. This difference in temperature on certain days, and under conditions of little or no wind, appears to give rise to two huge rolls of air, one on each side of the valley.

The first evidence of these conditions being set in motion is the appearance in the clear blue sky of several large bubble-like clouds (see first photo) appearing to form from above and leaving streams of condensation in their trails; these bubbles appear in regular patterns in the sky. In a few minutes these patterns form themselves into roll-like clouds typical of standing waves; these clouds remain stationary and at first have straggling edges. After a time they appear to tighten up in the centre of each roll with almost military precision from one end of the line of waves to the other, and a distinct rotational movement can be seen in them at their middle postion. After a short period of activity they go back to a normal lazy existence in which rotation is no longer apparent, but the clouds remain in very much the same position for around half an hour, after which they become thinner and then disappear altogether.

These lines of roll clouds do not appear haphazardly, but begin with a long line along the eastern edge of the valley, and some time afterwards the system breaks out some ten miles away on the western side. The last part of the western line to form is over an area in which the Pyramids are situated (which is higher ground than the rest) but here the wave clouds are much more active when they do appear; and as one has been warned of their imminent appearance, one is better able to follow the life cycle of this section. It would appear that the waves are only created at the commencement of the cycle of these two huge rolling masses of air which occur on either side of the Nile Valley; and when the system gets under way, the conditions that caused the waves disappear in the general rotary circulation taking place on either side of the valley.

Whenever possible I have taken the Air-100 sailplane up immediately after the appearance of these waves, and invariably I have been able to take advantage of the conditions to soar for long periods. On the occasion of the waves shown in the accompanying pictures, I was launched and stayed up at 5,000 feet for a period of over 5 hours, which incidentally gave me a marvellous view of the town's celebrations below, and, as some people told me later, provided my own little show. Apparently the helicopter display below me drew much attention and speculation about the silent plane hanging high in the sky above the display aircraft.

Starting out from the aerodrome, I was able to make my way across to the area alongside the cultivation, at which on previous days I had found the roll lift, and there it was at 2 feet per second at 1,000 feet. This rate of climb remained constant until I moved my position away from the clear-cut line where the desert meets the cultivation, attracted by a bald-like patch of sand in the midst of the vegetation in which is situated the emergency landing





ground of Khanka. I had, on previous occasions, found a strong column of rising air going up over this area, but today it let me down.

Crossing the area of vegetation again to its outer edge at 800 feet, I felt cross with myself, as it looked as though the flight would have to end with a hasty dash back across Heliopolis to the aerodrome to land. Deviating slightly to the north of Heliopolis in my dash to the aerodrome, I again crossed the demarcation line between the desert and the cultivation, and with careful flying I was again gaining the odd foot per second lift, interspaced with zero. After a difficult struggle I managed to climb to 2,000 feet, at which height the lift became steady and reliable.

Flying now in a line along the edge of the vegetation, I kept in the narrow belt of rising air. Whenever I found myself to one side or the other of this narrow lane, I paid the appropriate price on the variometer. Timing myself in straight runs across the line of demarcation, I came to the conclusion that the rising lane of air was no more than 500 metres across and only the centre portion of the lane gave 2 ft./sec. up, the rest running out to zero at the edges with about 3 ft./sec. down on the river side. I did not on this occasion try to cross the river to the lane on the other side of the valley, as previous attempts had proved to me that to venture into the air between the two lanes was the surest way of being pushed down until those few thousand feet wound off at an alarming rate.

After the attraction of watching the endless processions running through the main streets of Cairo, I wandered many miles along the edge of the Nile Valley and always found myself on this amazing aerial road, but at no stage could I climb higher than 5,200 feet, at which height the lift equalled the rate of sink of the machine. I reasoned out that the lift should bend inwards towards the river at this higher level, but it would appear that this happened at a much higher level than I was flying at, as always I found myself over the same landmarks. The rising air appeared to be confined to a clear-cut narrow channel rising absolutely vertically.

Looking around for factory chimneys to see how the smoke was affected, I could see only one chimney from which smoke was coming and that was at Helwan, many miles away; the smoke from that chimney was

drifting lazily out from the valley towards the desert without any gain of height.

The sun sinking lower on the horizon towards the close of day brought with it a slowing down of the rotary system. and I found myself gradually losing height. For a short time the conditions became bumpy, and then this gave way to smooth "down" in absolutely calm air. At 1,500 ft. I turned for the aerodrome and landed outside the hangar, having added a few more hours of soaring to my experience of this weird aerial roadway.

EDITORIAL NOTE.—On enquiry at the Central Forecasting Station, Dunstable, we learned that no Upper Air data were available for this particular day in the Cairo region.

A Visit to Finland

by Robert C. Gairns

WHILE in Finland for a few sessions of the Olympic Games, I took the opportunity of visiting the headquarters of civil flying at Helsinki. There I had a talk with Mr. R. Winter, Secretary of private flying clubs, and with Mr. U. Hokkanen, Chief Inspector of gliding in Finland.

Due to expense and to the difficulties besetting a country recovering from two recent wars, it appeared that there was little private power flying, though a few light monoplanes had been designed and built since 1945.

There are about 60 gliding clubs at which instruction is at week-ends only. However, a good training is given for ab-initios at the Central Gliding School at Jämijärvi, 200 kilometres north of Helsinki. There, courses are for 1, 2 and 3 weeks. It serves as a centre for experienced pilots also, who can go for a gliding holiday. In 1952 the National Competitions were held there. Mr. Hokkanen was motoring to Jämijärvi the next day and kindly took me with him, travelling over earth roads through the countryside with its woods and many lakes.

Jämijärvi is near the village of that name in the midst of pine woods. Flat, sandy stretches are used for take-offs and landings. Due to the flat landscape, no hill-soaring is possible, so launches are by winch (two old Chrysler cars have drums driven by the propeller shaft). A club Tiger Moth and a private Piper Cub provide aero-tows.

Jämi is a gliding centre in summer and a skiing centre in winter. There is a large hostel where 200 can be fed. There are four hangars, two wood workshops and a metal workshop. Eequipment includes a jeep, a U.S. Army staff car, and a Volkswagen station-waggon. A small wood-working factory is also at the centre, the profits going towards gliding costs. There is a permanent staff consisting of hostel manager and kitchen staff, a sailplane designer, and a chief flying instructor.

The hangars were inspected and the machines were found to be in excellent condition. About 50 pupils were staying at the hostel, some being club members on holiday. Trainees included four or five girls. The following machines were seen :—

POWER PLANES : 1 Jungmeister, 1 Jungmann, 1 Czech tandem biplane, 1 Tiger Moth, 1 Praha two-seater monoplane ; also a privately owned Piper Cub.

GLIDERS : 1 Kranich and 2 Weihe (German built) ; 3 Olympia, 2 Rhönbussard, 3 Grunau Baby, 3 Pik-5, 1 Pik-3, 1 Harrac primary, 1 Salamander intermediate—all Finnish built. The Pik-3 flew in Spain in the single-seater class.

The condition of the gliders was very good. Wood is plentiful and Finns early learn how to handle a knife. With this ability and the availability of materials, a lot of the clubs build their own machines, many choosing the Pik-5, designed at Jämijärvi. This machine has a single boom to the tail with bracing wire supports. It is easy to construct, is lighter than a Baby, and can be areo-towed.

The flying standard seemed fair—the primary was not seen flying and it would appear that the pupils were put on to the Baby quickly. There is very little two-seater

training as there is only one two-seater in Finland, the Kranich, and this is not used for primary instruction.

Just as in this country, mistakes are made. A few days previously a cable break with a too steep launch resulted in a crash in which the machine, a new Pik-5, was wrecked, the pilot being seriously injured. While I was at the centre, another pilot with 50 hours experience made a low turn (in the Salamander) and the port wing struck a small tree. In this case only the glider was damaged.

At the time (August, 1952) there was only one woman Silver C pilot in Finland. There are, however, one or two others fast catching up who will doubtless gain theirs shortly.

Meals were at 7.30 a.m., 11 a.m., and 5.30 p.m., the food being simple but wholesome.

A word about finance. Some industrialists have been persuaded to contribute to the noble cause of gliding. From such sources, and from money received from air displays, the cost of petrol for the winches is met, so that ab-initios only pay for board and lodging (6s. 8d. per day at current rate of exchange). Aero-tows are charged for, amounts being £1 for the Kranich and 15s. for Rhönbussard or Olympia. After the release, no further charge is made.

In general, the spirit was very good, and because of this most clubs build their own machines and are able to overcome many obstacles.









Top left : a Baby in front, a Harrac on the right, a Salamander on the left, and probably a Baby behind. Top right : waiting for the wind with a Pik 5. Bottom left : Mr. U. Hokkanen, Chief Inspector of Gliding in Finland (left), and Mr. Anke Okse. Bottom right : an aerial view of Jamijarvi, the chief training centre.

—"—

The Table Mountain Wave

by Betty Rowell

SOME years ago, as observer on a meteorological flight, I noticed a lenticular cloud at 14,000 ft. While flying on the leeward side of this cloud, although the aircraft was climbing steeply at full throttle, the altimeter was showing a loss of height; but on approaching the windward side of the cloud, we gained height rapidly. It was so pronounced that I mentioned it to the chief meteorologist, who explained the theory of a "standing wave" to me.

Later, when I became interested in gliding, I spent many a week-end at the Club, expounding the theory and trying to persuade the Club Captain of the practical use to which we could put the wave. In those days our fleet consisted of a Primary, a Kadet and Grunau Baby, and our only means of launching was by winch. To fly the wave, we decided an air-tow was essential, but unfortunately our Grunau Baby, through age and accident, was not suitable. However, persevering over a matter of years, we eventually acquired a Wolf, then persuaded the flying school to equip one of their Tiger Moths with towing gear.



The Table Mountain Wave is known as "Betty's Wave" after its discoverer, Betty Rowell, who is here seen taking part in the last South African National Championships. *Courtesy "The Aeroplane."*

During this time I had studied the conditions under which a wave was formed. I must explain that the topography is ideal inasmuch as the wind sweeps across the sea, is suddenly forced over an obstacle 3,000 ft. high, down a sheer drop, then over flat ground stretching for 30 miles. I have seen as many as seven consecutive waves over this area.

The width of the mountain is too narrow for great heights, as the energy tends to fan around the sides as well as over the top. Ideal conditions occur with the approach of a front. The surface winds are usually N.N.W'ly at approximately 15 knots, with the upper winds swinging to N.W'ly or W'ly, freshening with height to 35-40 knots. As the front gets closer, the surface winds back to N.W'ly or W'ly and freshen to 25-30 knots. As the range of mountains runs from S.S.W. to N.N.E., the N.N.W'ly winds hit the range at a sufficient angle to form a wave, but it is most efficient when the surface wind has backed to W.N.W'ly and freshened.

The distance of the crest of the wave from the mountain varies by the depth of the mountain against which the relevant winds blow. For instance, if strong N.W'ly winds strike the base of the mountain, the 3,000-ft. obstacle causes a series of waves to form approximately four miles from the mountain and the same distance from crest to crest. Should the winds below 2,000 ft. be calm, or very light, with the strong N.W'ly winds only striking the mountain at 2,000 ft., the remaining obstacle of 1,000 ft. causes the first wave barely a mile away, and lessens the distance between crests accordingly. Below the level of the mountain there is extreme turbulence, so vicious that it is only just possible to control the machines on air-tow.

The wave is encountered in an erratic form from 2,000 ft., and above 3,000 ft. gives a perfectly smooth lift of 20+ ft. per second on the variometer, and of 3,000 ft. per minute on a Harvard climb indicator. This excessive lift continues till 4,000 ft., then settles down to a steadily decreasing rate of

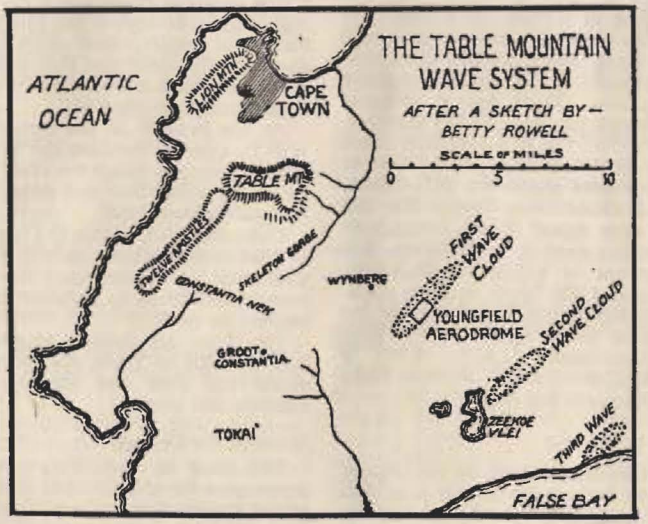
ascent. Unfortunately, on the occasion that I soared in the wave, my variometer stuck, so that I was unable to take notes of the rate of lift.

The air mass should preferably be stable and dry; an inversion often meant relatively calm lower-level winds which weakened, if not destroyed, the wave. In unstable air I have seen large orographic cumulus forming over Table Mountain with cumulus and stratocumulus in a broken layer over the whole area, and yet a lenticular cloud has formed at heights varying between 6,000 ft. and 12,000 ft. I presumed that although the convectional currents in the cumulus broke up the even flow of wind necessary to form a wave, the orographic cumulus itself was acting as an obstacle to the more stable air above it.

When at last it was my turn to attempt the wave, I eagerly scanned the synoptic charts and upper air readings until perfect conditions were forecast for the following day. I contacted the Club Captain and Chairman and also arranged for a day's leave.

I was towed off at 10 a.m. before the surface wind had strengthened and—most important—before the turbulence became violent. To avoid disappointment and the possibility of landing in a built-up area, I released from tow at 5,000 ft., with instructions to stay at 10,000 ft., since I carried no oxygen. The sensation was fantastic. My forward speed of 35 m.p.h. was counteracted by the headwind; there was a feeling of speed, with the wind rushing past, yet I remained over the same piece of ground which slowly got smaller.

At 10,000 ft. I flew out of the lift area, lost height, then gained it again. I cruised around, mapping the extent of the wave, then I found a place where the lift was the same as the glider drop. What can I say? "Sometimes I just sits and thinks, and sometimes I just sits." I did try to while away the time by eating butterscotch, but alas, I had to desist as it almost made me sick. I had a glorious view of the whole peninsula (there were no clouds at all, not even a wave cloud), but after two hours my thoughts chiefly centred on the *extremely uncomfortable* seating accommodation in the Wolf. After five hours, however, I came sliding out of the sky, thrilled with myself, the wave, and even the Wolf. I was pulled up roughly when I hit the turbulent area, and it was a somewhat chastened aviatrix who came in to land in a 30-knot wind. Although I didn't care to sit down again for some time, it was worth it.



The British Gliding Association
Chairman's Report for 1952

You will, I know, wish me to open my Report this year by tendering all our congratulations to your Vice-Chairman, Mrs. A. C. Douglas, for her appearance in the New Year's Honours List. After her many years' skilled and devoted service to the gliding movement, culminating in her remarkable work as Team Manager in Spain, it is indeed gratifying that this public recognition of the value of our movement to the community should be given.

Membership

Our paid-up Membership in 1952 (1951 figures in brackets) was 14 Full Member Clubs (13); 19 Association Member Clubs (18); 24 Private/Group Owner Members (24); 25 Individual Associate Members (26). The Army Club, which had been an Associate Member, became a Full Member, and the Yorkshire Club and Coventry Club joined as Associate Members.

Operations

At the time of writing, 21 Clubs have completed the Annual Questionnaire, and report that from their Club sites they have flown a total of 8,577 hours, involving 54,933 launches. These figures compare with 7,736 hours, involving 43,055 launches, reported in 1951. The R.A.F.G.S.A. Clubs (354 hours, 5,097 launches) are included in the 1952, but were not in the 1951 totals.

Over and above these figures the Air Training Corps report 5,203 hours with 92,692 launches against 5,500 hours with 88,498 launches in 1951; and B.A.F.O. report approx. 4,000 hours in both years.

The Association has issued during the year (previous year's figures in brackets) 1,613 A Certificates (1,423); 1,492 B (836); 355 C (240); Silver C 47 (63); Gold C 3 (nil); Diamond legs 4 (2).

Finance

The most significant item on the income side for 1952 is the substantially increased number of certificates and badges issued. The A.T.C. increased their previous year's results by nearly 60½%, the Service and Civilian Clubs each by about 17½%. Of all certificates issued, 65% are to A.T.C. Cadets, 18% to Service Clubs, and only 17½% to Civilian Clubs.

Your Association's satisfactory financial results are therefore based largely on the A.T.C., an additional increasingly valuable source of income being the sale of equipment, which is also proving to be a real service to our Member Clubs.

The issuing of large numbers of certificates and badges, the mailing of increasing numbers of our official organ, GLIDING, and the sale of large numbers of gliding ties (of which over 1,000 have now been sold), and of various manuals and so forth, mean that our Secretariat are now busier than ever before in day-to-day work. The revenue figures in the accounts are made up of very large numbers of small sums.

Kemsley Flying Trust

Cordial relations between the Kemsley Flying Trust, your Association and Member Clubs continue to be based on the unfailingly helpful attitude of the Trustees and the successful results which clubs continue to show for the assistance that is given them. All clubs have stood faithfully by their commitments to the Trust.

At the request of the Secretary of the K.F.T., a Sub-committee has been set up to consider ways in which the Trust can further assist the expansion and consolidation of the gliding movement.

Our entry in the World Championships at Madrid was greatly assisted by a K.F.T. guarantee for the necessary finances and a loan to enable us to purchase three of the trailers we used.

The Trust are anxious to assist, in any way possible to them, the enlargement of established sites and the acquisition of suitable new ones.

Work of the Council

The flood of work has resulted in an active year for the Council, but the affairs of the Association are so efficiently handled by Lady Kinloch and her staff that there is

not very much worthy of report; members will not be interested by an account of routine matters.

Investigation into the effects on gliding clubs of the Carriage by Air Order resulted in a descriptive circular to Clubs. The invaluable work of the Accident Analysis Committee and the Instructors' Panel led to much consideration of steps to improve safety, which are referred to elsewhere in this report. The organisation of the 1952 World Championships led to much Council work, but the heroes of this aspect of our work are, of course, the members of the Committee concerned, particularly their Chairman, Mr. Furlong, and most of all the Secretariat itself. Work has already started on the necessary preparation towards our offering to hold the 1954 Championships at Camphill. Selection of the holding country will be made by the Gliding Committee of the F.A.I. in April or May next.

Committees

The following Committees were set up during the year :—

Committee	*Chairman*
Flying	E. J. Furlong
Technical	Professor A. Hall
Accident Analysis	Grp. Capt. G. J. C. Paul
High-performance two-seater	P. A. Wills
Equipment	P. A. Wills
Publications	P. A. Wills
World Championships Master Committee	E. J. Furlong
Instructors' Panel	Mrs. A. C. Douglas
Ostiv co-ordinators	Dr. A. E. Slater A. H. Yates

High-Performance Two-Seater

Slow and difficult progress has continued towards the eventual production of this important aircraft.

Additional support for the production of the wing was forthcoming in the shape of a development contract from R.A.E., Farnborough, and it is possible that by the time of the Annual General Meeting one or more complete port wings will have been completed for testing. This should then make it possible to estimate the finance and time required for completion of the starboard wings, and of the whole project.

In the meantime, to speed the day when a prototype can be ready for flight-testing, our contract with Messrs. Miles is, with the agreement of the Ministry of Supply and the K.F.T., being terminated after their



Above is a model of the M-76 side-by-side two-seater high-performance sailplane mentioned in the Chairman's Report, and now under construction. Data are:—

Span, 18 metres (59 ft. 1 in.), Length, 6.28 m. (20 ft. 7 ins.), Aspect Ratio, 18. Tail Vee angle, 45 deg.

Weights (estimated): Tare, 550 lbs., Max. disposable load, 450 lbs., Max. all-up weight, 1,000 lbs.

Performance (estimated): Min. sink, 2 ft./sec. at 45 m.p.h., Max. L/D, 33 at 55 m.p.h., Terminal velocity (brakes out), 120 m.p.h., Stall, 37 m.p.h., Max. aero-tow speed, 100 m.p.h., Max. diving speed, 160 m.p.h.

Semi-aerobatic category.

completion of the first fuselage, which may be delivered around March, and with a part of the unexpended funds so released a contract for a pair of wooden wings is being placed with Messrs. Elliotts.

With a machine actually airborne and Messrs. Miles in a position to estimate the cost of plastic wings, and with the remaining technical difficulties of the plastic method overcome, our hands will then be free to take whatever steps lie within our power to press on to our ultimate goal, which remains the production of the design with plastic wings, once these are known to be technically superior and economically advantageous to normal constructional methods.

Publications Committee

The fortunes of GLIDING recovered after a rocky start to the year. The first issue of 1952 resulted in a serious loss, due entirely to the continued inflation of costs, but the steps then taken, and the continued and growing support from both subscribers and advertisers, coupled with the splendid work of our Editor, Dr. Slater, and Mr. Porter and Miss Fennell of the Trade Press Association, have again placed it on a profitable basis and we expect to end the year with a small profit. The value of our publication in cementing our movement together is incalculable.

Safety

It is now clear beyond a shadow of doubt that safe operations can be achieved by:—

(a) *Two-seater instruction* carried out by competent qualified instructors.

(b) *Good operational discipline*, including full compliance with B.G.A. Operational Regulations.

Your Council are doing everything possible to make available Instructors' Courses so that the physical means will be there to enable all clubs to achieve and refresh qualified instructors, and a personal appeal to the Minister has been made to allow us a number of annual courses at the A.T.C. Instructors' School, Detling. The Army Club have also generously made available the services of Mr. Free at Lasham for such courses.

The Council has also enlarged the Terms of Reference of the Instructors' Panel to make them available to clubs for periodical visits and tests of instructors and operational standards, and I am glad to say that clubs so far visited have been very appreciative of this service, and have undoubtedly benefited thereby. Our gratitude is due to Mrs. Douglas and the members of the Panel for taking on this additional serious burden.

The Future

Our success this year in Spain must undoubtedly have contributed to the increased public and official interest in gliding which is now evident. This goes to prove a point on which I have long been personally convinced, that club flying and high-performance flying are two sides of the same penny. High-performance flying attracts recruits into the clubs; club operation produces pilots for high-performance flying.

My personal view is that we may, however, miss a large proportion of the possible benefit unless clubs feel able now to put up their production, and particularly to increase the amount of flying their members can get in return for each hour's work on the ground. I believe club flying hours could, in some cases, be at least doubled without further aircraft, by employing one or more permanent staff members, and by the acquisition of better retrieving cars and winches. This latter is a serious problem, as the supply of ex-war balloon winches has dried up and no satisfactory alternative source of supply is in sight.

All instruction camps reported to the Association were filled this year before the end of the summer, and late applicants could not be fitted in. There is clearly a demand for more such camps, which can be very profitable. A permanent staff sufficient to enable each sizeable club to run camps and provide flying facilities on six or seven days a week would, in my view, ensure that we take the best possible advantages of the opportunity now offered us, and might well pay for itself or more. It is hoped therefore, that K.F.T. assistance may be broadened to help clubs in this sphere. An advance here would also tend to assist our safety campaign.

The general picture in the civilian clubs is that the larger clubs appear to be slowly growing; but the small clubs are having the greatest difficulties in keeping alive. This must be because, below a certain size, club members cannot get enough flying to balance

the immense amount of ground work involved.

Conclusion

The past year has seen the achievement of two of my personal hopes; our success after many years' labour and disappointments in the World Championships; and the re-affiliation of the Yorkshire Club, with which, as I was initially responsible for the acquisition of the lease of Sutton Bank, I have always felt ties of co-parental affection. A further ambition remains: to be able to record a year's operations without serious avoidable accident. We shall not be established on solid rock until we achieve this.

Chairmanship

If you desire it still, I shall be happy to continue in the Chair of your Association, but no-one is more aware than I am of the desirability of new blood, and if you wish to appoint a successor I can think of no more pleasant moment at which to give way to another.

PHILIP WILLS,
Chairman.

The Reports of three other Committees were circulated with the Chairman's Report; from them the following extracts are reproduced:—

World Championships Master Committee

It is impossible to give an adequate account of the tremendous amount of work done by the committee, the pilots, their wives and members of their teams. It would be unfair to pick out any individual other than perhaps the Team Manager, Mrs. Douglas, whose efforts have been recognised by the award of the M.B.E.

It seems that the results are the best possible indication of the work done, especially now the generally accepted comment that "the British team was way ahead of the others in equipment and organisation".

For the first time it was felt that our pilots had the backing they deserved and their efforts and achievements fully repaid all the hard work put in by the committee.

It should be put on record that the various damages sustained by the machines during their time in Spain was not in any way due to negligence or lack of skill on the part of the pilots, particularly in the case of the machine that was written off.

The following people and firms gave the greatest possible assistance and it was their generous help which made the British entry possible:—

Lord Kemsley, F. N. Slingsby, Sir John Black, The Standard Motor Co. Ltd., Pye Radio, J. C. Rice, and Messrs. Pullin & Co. Ltd.

Technical Committee

During 1952, 107 Certificates of Airworthiness were issued (100 in 1951), and there are now 24 Approved Inspectors and 7 Approved Firms. Mr. Pinniger, Examiner of Inspectors, has visited eight clubs, and has been favourably impressed by the standards of maintenance and repair at most of them. However, the situation is less happy at some of the smaller and more remote clubs, and we must do our utmost to improve it.

In general, the renewal of C's of A. has now become a routine matter, but the Committee continues to give considerable attention to the certification of "one-off" types and certain pre-war machines, whose weight and centre of gravity seem to vary remarkably from year to year.

A competition for technical improvements was won by Mr. P. H. Blanchard, who submitted an electric pitot-heater. Several inquiries have been received relating to potential privately constructed gliders, but it is disappointing to observe that such a machine has yet to fly. One of the major tasks for the Committee in 1953 will be to consider modifications to Design Requirements for Gliders for submission to the Air Registration Board.

F. G. IRVING, *Deputy Chairman.*

Instructors' Panel

All Full Member Clubs have categorised Instructors. Of the Associate Member Clubs, 6 have categorised instructors, 3 operate under alternative service regulations, 6 are inactive or do not train, 1 is overseas (Perak), and 3 have not yet managed to get a categorised instructor.

In September the Terms of Reference of the Panel were altered to allow the Panel to inspect Clubs as well as test for categories. Since then Inspection visits have been made to 6 clubs. These have been very instructive from the Panel's point of view, as it has brought out very clearly the many difficulties with which the clubs are faced at this time.

ANN DOUGLAS, *Chairman.*

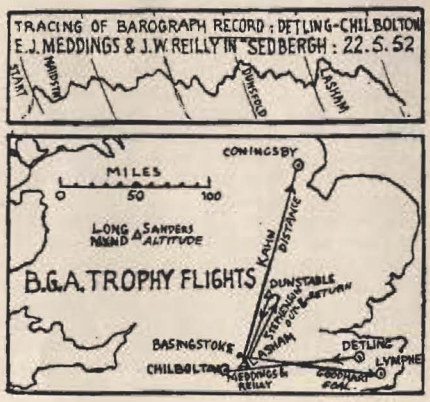
The B.G.A. Trophy Flights for 1952

Manio Cup for Goal Flight
G. A. J. Goodhart

LIEUT.-CDR. Goodhart had in mind the newly-instituted U.K. straight-line speed record rather than the Manio Cup when, from an aero-tow at 10.55 from Lasham on 7th June, he cast off over Basingstoke and flew 93 miles to his goal at Lympne in 3 hrs. 26 mins. After reaching 7,000 ft. he found strong lift near the coast which still carried him up, although he dived at 60 knots with brakes out; this delayed his descent and so reduced his average speed, which was 27.2 m.p.h.

Seager Cup for Two-Seater
E. J. Meddings and J. W. Reilly

ON 22nd May a Sedbergh of the Gliding Instructors' School at Detling started by winch at 11.43, piloted by Flg./Off. Meddings and Flt./Lt. Reilly. They cast off at 1,000 ft., soared to 2,300 ft., set off at 11.50 and were down to 600 ft. at Maidstone. They remained below 3,000 ft. till 13.00 hrs. but reached 4,600 ft. at 15.00. The wind was N.E'ly at first, became light N'ly during the two hours taken from Tonbridge to Farnham, then became more E'ly and better progress was made. They landed at Chilbolton after covering 91 miles in 4 hrs. 24 mins; this is believed to be the longest Sedbergh flight ever made in the country.



Volk Cup for Out and Return
by G. H. Stephenson

THIS flight was a sort of acceptance test of the Sky which I was to use in Spain. John Furlong, with his usual generosity, had just handed over his sailplane, car, trailer and parachute—this just as the soaring season was starting.

The task for the day at Lasham was a distance flight. Since, however, the car was a deep drinker, I did not enquire too closely whether the distance had to be in a straight line, and so declared Dunstable out-and return. Dunstable is N.N.E. of Lasham and the wind was blowing almost directly towards Dunstable at about 10 m.p.h.

After a good winch launch at 11.30, I struggled to gain height for 20 minutes. Locally there was blue sky, but about 20 miles to the north plenty of cumulus could be seen building up.

I was taking the first part very cautiously, when Wally Kahn overtook me in an Olympia, about 15 miles out. Soon conditions became better, and apart from one sticky bit near Great Missenden, the lift became stronger all the way. Whilst I was making a fast semi-circle round Dunstable, Wally Kahn was in the centre, fighting his way down. Wally then gave the first reliable report to my wife who was waiting with the trailer at Lasham.

On the return journey I flew down the Chilterns as far as Princes Risborough because conditions were good here. Then came a time when I had to cross a vast area of blue sky to reach a line of cumulus towards the S.E. It seemed very doubtful whether the lift would arrive before the ground did and I was very anxious.

My anxiety was increased by the fact that my navigation had gone completely wrong and I was quite noticeably lost! It was only after landing that I discovered that the compass was accurate on the outward journey, but had a large error when turned on the reciprocal course.

Eventually I recognised the Thames near Windsor and at the same time struck very weak lift at 2,000 ft. After half an hour I had reached 5,500 ft. and had drifted further from my goal. The sky ahead now looked very dead and I reckoned there was little chance of getting back. I was now a long way east of my track and so made a large correction towards the west. However, still unaware of the compass error, I was soon lost again.

On a long, steady, unmitigated glide I had plenty of time to look around and eventually recognised Farnborough over to the west. This meant I was no nearer my track line, and began for the first time to suspect the compass.

All hope of reaching Lasham was now abandoned, and the only remaining question was whether Odiham was in reach. It proved to be so, and there was not a ripple in the air or a cumulus in sight as I prepared to land. Just to the west of Odiham I passed over a slight hollow in the ground: at that moment quite miraculously a little thermal popped up. This was the first lift I had encountered for half an hour and it gave me enough height to cover the last uphill bit from Odiham to Lasham.

The moral of this story is: always conceive it possible that your instruments are in error.

De Havilland Cup for Height

by A. A. J. Sanders

A HOT, fine day, with a chance of thunder, was the forecast for 18th May. R.A.F. Shawbury detailed convection starting with 73°F at ten o'clock and going to 8,000 feet, later to 16,000 feet, with cloudbase lowering to 2,000 ft. There was no wind.

Motoring out of Wales towards the Mynd face, about 10.00 a.m. one could see cloud pillars rising like elm trees above each hill-top, with a row of pillars along the Mynd. By noon I was ready for launching, and winched off to join the club Olympia and John Hickling in his blue Olympia at cloudbase.

Conditions were not so easy as I expected, and I took half an hour to climb to 2,500 ft., the base of the cumulus above the Mynd (4,000 ft. a.s.l.) Eventually I followed two playful buzzards, alternately circling up and diving on each other, and got up over the sweeping curves of the newly made Forestry Road up the S.E. Priors Holt face of the Mynd.

Once at cloud base, I made off for another cloud, to be clear of the other Olympia and the T-21 which were all soaring happily together. A cloud running south from Church Stretton to Marshbrook showed "green 15" at cloudbase, and I circled up inside: lift was smooth until 8,000 ft. a.s.l., when it grew turbulent and I toppled my horizon gyroscope by banking over 80 degrees.

The next few minutes were very unpleasant and I felt very queasy by the time I got clear of the cloud, mainly by means of my directional gyroscope. I tried caging and uncaging my toppled horizon but it wouldn't erect properly, possibly because of the extra electrical load imposed on the Venner batteries by the gyroscopic direction indicator.

A tall, narrow column of cloud was growing over Wenlock Edge, and I cruised over that way while my shaken stomach settled down again. Arriving at 6,000 ft. a.s.l., I quickly got up to 9,000 ft. but then sailed out of the narrow top. The sky was by now rather chaotic, with masses of grey and white cumulus in every direction except north-east. Over there, a firm haze layer had a clearly-defined top at about 5,000 ft. with only one or two anvil-headed storm clouds away towards Stoke-on-Trent.

The original row of pillared cumuli along the spine of Long Mynd had by now developed into a formation rather like a cold front, stationary above the dark heather. I chose a cumulus above Pole Cottage at the 1,700 ft. high point of the Mynd, entered its side and climbed to 8,000 ft. or so before the lift ceased and I found the lower part dissolving while the cloud-top anvilled out in lead-coloured mammatus.

I was by now feeling rather unwell and chilly, but took a grip and flew for a while in smooth air towards the south. I tried the gyro-horizon again, and it seemed to be erecting properly, so I made towards Craven Arms where a new narrow cumulus was towering upwards in the grey shade of an anvil from Clun Forest.

As I approached this cloud pillar, through a frame of cumulus sides and anvil tops, I could see that behind it there was a much larger cloud of similar shape. Accordingly I re-set the directional gyroscope and flew

a course through the first cloud pillar (which produced 20 f.p.s. green) into the main core of the larger cloud.

After 84 seconds on course—I was chanting the seconds to reduce the queasiness in my stomach—I ran into really strong lift and both the Horn and Cosim variometers indicated maximum rise. I went straight into a steep right-hand turn, still counting, and began climbing rapidly in a smooth, powerful surge of lift. Apart from one or two corrections, early on, to get into the hot core of the lift, I circled smoothly at between 20 and 30 degrees per second and climbed at over 1,000 ft. per minute.

After 480 seconds, the smoothness of the climb was suddenly shattered by most violent turbulence and intensely noisy rain and hail. Large, glassy patches of clear ice appeared on the canopy and on the wings, while the Olympia tossed about so rapidly that the corrective movements of the controls had not time to take effect. It was all I could do to maintain a reasonable attitude by means of the gyro-horizon; quite suddenly a series of violent gusts hit the aircraft, which groaned under the shock, and the speed shot up to 80. I opened the air-brakes, which were instantly coated with ice and frozen in that position, and straightened up on the directional gyro. Still the severe shocks continued, and it seemed that the wings must fail; then the turbulence decreased and we came out of cloud, with somewhere between 14,000 and 15,000 on the clock—i.e., about 16,000 ft. a.s.l.

I was feeling a variety of emotions—fright, cold, and dizziness—and my mouth and face felt intensely dry, almost like paper. I did not look back at my cloud, but flew among the tops of many smaller cumulus heads wherever there was clear air, under the great spreading anvil heads of the storm. There was nothing but cloud to be seen: great dun-coloured cumulus, grey anvils, and dark fragments along the sides of the storms, whose sides darkened to an ugly slate colour at the bottom of the ravine along which I flew.

The cloud corridor curved around to the south, and blue sky appeared ahead; then the sun shone through, and I headed towards it to warm up the icy cockpit. The dive-brakes were still open, and though I could waggle the lever a little, their ice coating prevented them retracting. Gradually the ice crust broke away until I could get them back into the wing except for an inch or so, and I flew with one hand on the brake lever holding them in this position. The aerofoil was warty with ice particles below, and the leading edge bore a half-inch coat of clear ice.

About 14,000 ft. I caught sight of the Mynd through a clear chimney in the clouds, and about 10,000 ft. a.s.l., feeling much better, I sighted the Radnor railway and turned towards Bishops Castle. A mammatus shelf produced snow and then rain, and by 7,000 ft. I was clear of ice, and shut the dive-brakes. Rain was falling heavily on the Mynd, and the indigo mass of rain and fracto-nimbus hid the hangar from view; over Clun another storm, likewise raining hard, flashed with lightning.

There is no future in soaring active thunderstorms in wooden sailplanes and I stayed over the sunshiny Stiperstones until the storm drifted away, keeping one eye on the airstrip in the valley. Eventually the little cu, that had lifted me and the buzzards two hours previously, died away in thunder and hail, and I slid in to land at the hangar, still in time for a late Sunday dinner. The smoked baro tinfoil had worked fine, and the shining trace showed 16,400 ft. absolute height, with 14,200 ft. gain above low point —Gold C height at last!

Wakefield Trophy for Distance

by W. A. H. Kahn

THE fact that the longest flight carried out in Britain during 1952 was only 138 miles was due to two things: firstly the weather, which was not up to standard, and secondly because all the pundits rushed off to Spain.

However, this little piggie stayed home and one day was blown downwind. So here goes. On Saturday morning, 28th June, I heard what the B.B.C. call a weather forecast and had visions of tephigrams lined with gold edges. The usual panic ensued but by 11 o'clock I was actually ready, complete with oxygen, sweets, sandwiches, maps, panacea, pencils, knee pad and all the other clobber that people like P——— W——— never use.

I was launched up to 600 feet into a beautifully blue sky (I was in the Weihe). The wind was light S.W. It takes eight minutes at the Weihe's sinking speed to lose 600 feet. I did. I tried three more times

with the same result. Then Nick Goodhart arrived, had a launch to 800 feet and stayed up. Not to be outdone, I breathed in hard and we managed 700 feet. It worked. The time was 12.09 hrs.

Soon Nick and I were fumbling around in weak lift which finally took us up to cloudbase at 3,000 a.s.l. Cloud was only just forming and there was no lift to be had, so after the traditional wave to Nick I pressed off. In a moment of supreme optimism I had declared Driffield, which would give me (if I reached it) my Gold C with a Diamond. Thus with Basingstoke disappearing below, I flew down the red line I had drawn on my map. By the way, I belong to the displaced Surrey Club in Hampshire and we fly from Lasham, just seven miles south of Basingstoke.

The wind increased to about 10 knots S.S.W. and my course was north. By the time Stony Stratford hove in sight, I was distinctly optimistic. It was then that the trouble started (it always does). The root of all evil was a stupid boiled sweet. There I was at 5,000 ft. a.s.l. and I wanted to eat a boiled sweet. It was not the sort that has paper sensibly wrapped round it. It was one of those infernal ones where the paper is wrapped first and the sweet poured in afterwards so that it is virtually impossible to unwrap it. After dropping it, finding it and eventually eating it I had lost the best part of 1,500 feet. However, we pressed on and the Weihe soon took me back up to five grand. We then enjoyed a bit of lunch over Northampton. The sight of my sandwich wrapper rushing up into cloud was too much for me (especially as I am sure that it had not obtained permission in writing from the Minister and, what is more, had no radio), and I see from the barograph chart that I lost more height here.

North Luffenham passed underneath and a couple of Sabres to port just on 3 o'clock. Kahn started to get hot under the collar—things looked distinctly rosy. There we were, 80 miles to go and three hours to do it in. Ha ha! Coming up to the Lincoln Edge I saw, away to the north-west, some nice clamp moving in and obscuring the sun. By the time I had reached Cranwell it was 8/8th cover and was moving across to the east fairly quickly. I decided to fly round to the east and see if the high ground there would help to keep me airborne for the next 50 miles. However, this was not to be, and at 15.40 hrs. I landed in front of the



Mr. Kahn is presented with the Wakefield Trophy by Mr. John Profumo, Parliamentary Secretary to the Ministry of Civil Aviation, at the B.G.A. Victory Ball.

Photo by P. A. Lang

mess at Coningsby. Soon after I had touched down, the high cloud covered the whole sky and the thermals went to bed for another day. I heard later that John Neilan, who had taken off after me, had been forced down near Rugby by the clamp some 80 miles from Lasham.

The Duty Staff Officer looked after me very well (I let him sit in the Weihe and I sat in his Washington) and by the time my crew came they had to dismantle the bar as well as the glider to take me home.

The Pundits always finish their articles with masses of conclusions. I am no pundit, but I have thought up a couple.

1. Even if you are too tall to wear a jacket in a glider, take one along. Appearing in a mess wearing only a sordid nylon shirt and flannel bags does not go down too well.

2. Buy sensible sweets (Barker and Dobson Tangerine Balls are just the job).

Although our club subsidizes every flight over 100 miles, this cross-country business means no beer for a long time afterwards. Nick did a short out-and-return and had just as much fun (except that he did not win the Cup and have to write a —— article).

Thermal Sources and Cloud Streets

by Peter Rivers

In his discussion of Cloud Streets from the meteorologist's viewpoint (GLIDING, Winter 1952-53) Dr. Scorer is, in my opinion, wrong on two major points. My experience as a pilot shows that cloud street convection is not necessarily weak, and my experience in heat transfer engineering leads me to believe that the cause of cloud street formation is more likely to be found in a detailed study of thermal sources than in the behaviour of the upper air.

Firstly, then, while the lift under streets in light winds is weak, as described by Dr. Scorer, if streets form in strong winds the lift can be strong, as only two or three examples are needed to show, thus:—

Dunstable, 24th March, 1951 : the wind was N.N.W., strength 40-45 knots at cloudbase. Powerful cloud street convection developed during the afternoon, and John Currie, who flew an Olympia 56 miles to Sussex in just over an hour, found steady lift of up to 15 ft./sec. under the streets.

Dunstable, 17th June. 1951 : the wind was W.S.W. and increased from 15 m.p.h. in the morning to over 30 m.p.h. in the afternoon, light areoplane clubs being partially grounded because of the wind strength. Two other pilots and myself, all in Olympias, reached Boston, 80 miles north by a little east, and one other landed nearby in the evening. With too much cloud cover at Dunstable to distinguish any pattern, over the Fens the clouds were definitely in streets. I had no barograph, and a leaky variometer of unknown calibration, so cannot quote lift figures, but Dudley Hiscox and Dan Smith averaged 40 m.p.h., flying 45° across a 30-40 m.p.h. wind, and one does not do that on weak convection. Philip Wills made a Diamond C goal flight downwind from Bristol to Coltishall that day, so may be able to give some figures.

Madrid, 2nd July, 1952: Barry Jeffery of Canada, and myself, in a Kranich, found streets lying N.W. to S.E., between 4 and 5 p.m., which gave lift of up to 10 ft./sec. when we were flying the Kranich at 100-120 km./hr., at which its sinking speed must be very high. I have no idea of the wind strength, but this was definitely not the day referred to by Dr. Scorer.

From these and similar experiences, I conclude that feeble convection is *not* a main requirement for street formation, but that a particular range of wind speed/thermal strength ratio is, this range lying above that for random cloud distribution, and below that at which thermals become unusably broken.

Now for the behaviour of thermal sources. This is so tricky a subject to formulate that most theorisers about thermals leave it severely alone. However, certain very much idealised cases may show some of the significant facts of a thermal source's life on the ground, and in describing them I hope to stimulate discussion and observation, although not claiming these as anything like full accounts of what goes on. I have used written descriptions rather than formulae, in the hope of not putting off those readers who claim to be non-technical, since I want everyone to be in on this discussion, and trust that the others will excuse the clumsiness that results—there is also the fact that I have not yet been able to produce expressions neat and consistent enough to face the hard, cold analysis of the pundits, anyway.

1. The thermal source as a heat exchanger

A heat exchanger is a device in which heat is transferred from one solid or fluid to another fluid, and an example which is familiar to everyone is a car radiator, in which the cooling air passing through takes heat from the water which has been heated by the waste energy in the engine, itself a heat exchanger in this context. To keep the water and engine cool enough, the air must flow rapidly over the finned surface of the radiator, and usually needs a fan to make it do so.

A thermal source is heated by radiation from the sun, the rate of heat input from which is constant for a given place, time of year and time of day. The surface of the ground is the hottest part, and the temperature falls with depth until a level is reached at which the surface changes have no effect.

Heat is conducted from the surface to the air above it, and raises its temperature up to some small height, perhaps uniformly within a shallow layer, since the air can mix by small-scale convection.

The rate at which heat flows to the air depends on the area of the surface, the difference in temperature between the surface and the air, and a "transfer coefficient" which is determined by tests (most difficult) or guessing (easy but unreliable), but which we do know increases with the speed of the air over the surface, from some fixed value at zero speed. The air temperature must always be lower than the ground surface temperature, otherwise no heat would flow out to balance the radiation input from the sun.

2. Calm conditions : wind speed zero

If such a day ever occurred, this is what would happen. The solar heat input to the ground would be balanced out in two ways, part to raising the temperature of the ground, and part transferred to the air over the ground, thus raising its temperature. Using a little shorthand,

$$S = G + A$$

S we said would be constant.
G depends on the type of ground and
A depends on the transfer coefficient to the air, and the surface temperature due to the effect of G; while a heat loss from the ground, it is a heat input to the air, so also depends on the depth of air affected, which we do not know, and its specific heat, which we do. The temperature of the ground rises, and so does the air temperature, which at last reaches some critical value, whereupon the air mass breaks away, and starts to rise as a thermal. At once air from outside the thermal source flows in to replace it; this air, from cooler ground, perhaps, may be at a lower temperature, and, because it is moving, the transfer coefficient increases. The term A thus becomes much greater, and exceeds the fixed value of S, so that the only way for the thermal to be fed is for G to reverse, and the ground cools down: at this stage

$$A_1 = S + G_1$$

Eventually the surface temperature falls to a value too low to sustain the thermal, and the inflow stops. The transfer coefficient falls to its zero wind value, and the ground and the cool air over it start to increase in temperature again, as at the beginning. When the air temperature reaches the critical value, another thermal starts and the whole cycle repeats itself. It keeps on doing so, at regular intervals, which will only alter as the value of the solar radiation varies with the time of day.

If we consider the air flowing in to the base of the thermal as doing so only in a shallow layer close to the ground, a plan view of the flow pattern is as Fig. 1, with straight radial streamlines, and the air speed increasing towards the centre. The blank circle represents the true base of the thermal where the flow ceases to be two-dimensional and no proper pattern can be drawn.

3. Uniform light wind

In the heating-up stage, the airflow over the ground is undisturbed, and a plan view of the shallow layer near the ground is as Fig. 2A. The transfer coefficient is higher than for a still day, and therefore the heat transferred to the air A is greater, and the heat to warm up the ground G is less. The ground temperature rises more slowly than on a calm day, but the difference between the surface and air temperatures may be a little less. (You may say: "But surely you are not heating up the same air all the time, now, so how does the air temperature keep increasing?" and the answer is that the air coming to the thermal source has been heated by the surrounding country, not so well, perhaps, but it only needs the extra kick given it by the good source.)

When the critical air temperature is reached, a thermal begins to rise, and air flows in towards the base. The flow pattern close to the ground now becomes something like Fig. 2B—which aerodynamicists and others will no doubt recognise as that for a "sink in a uniform stream", with the central area again excluded.

Upwind of the source, the air speed is increased by the thermal inflow and the ground cools off more rapidly than downwind, where the air speed is reduced by the thermal inflow, and may even be reduced to a dead calm, over an area which commences to warm up more rapidly than it was doing before. In other words, the thermal creates a wind-shadow source just down-

wind of itself, and at this stage the whole affair probably trundles off downwind as a travelling column type of thermal, and keeps going until exceptionally poor ground, or the general decay which affects most such phenomena, stops it.

If the inflow is not confined to the shallow two-dimensional layer we considered, but a rolling motion takes place, and a down-draught feeds the thermal root from above, as shown in Fig. 3A, the ground heating pattern is not changed appreciably, and the same creeping tendency will be present.

Due to the fact that the range of variation of transfer coefficient is probably different from that in the no-wind case, the frequency with which thermals are released from one source is changed.

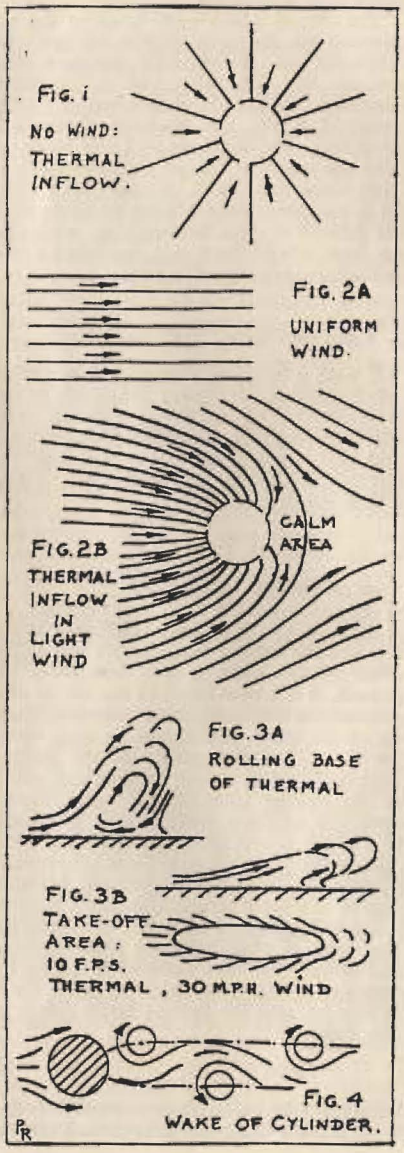
4. Uniform strong wind

As the ratio of wind speed/thermal strength increases, the scale of the flow pattern of Fig. 2B changes, and the calm area disappears inside the excluded area. The wind speed will still be reduced on the downwind side of the thermal, but not very much, and the creeping tendency will be reduced. The very great slope of the thermal column or bubble at its base, now, means that the projection of its diameter on the ground covers a very long area, as shown in Fig. 3B, and this lengthening of the thermal-affected area downwind might affect development of the thermal system. Alternatively, the frequency of release of bubbles or columns at these high wind speed/thermal strength ratios might get in step with their natural size at cloud level, and so form streets.

There is one more interesting hypothesis, however.

5. Ground speed of thermal less than wind speed

If the heating processes described above are correct, a thermal column would travel across country at less than the wind speed. If we consider a thermal to be discontinuous with the main mass of free air, the column is then a cylinder, roughly circular in section, with the free air flowing round it; it will affect the pressure distribution and streamlines of the air, and it will have a wake. Unless the relative velocity is less than one tenth of 1 m.p.h. the Reynolds Number of the thermal is so high as to put it off the



scale of all the data available to me. (For a 600 ft. diameter thermal cylinder, at 5 m.p.h. R.N. = 29 million. For those who have not met it, Reynolds Number is a non-dimensional way of quoting the size and speed of a body, to enable tests at different scales to be correlated.)

However, the characteristic wake of a cylinder at speeds high enough to give break-away of flow is known as a "Karman trail" and in section is like Fig. 4. Vortices are shed from either side of the cylinder alternately, at a spacing which can be determined by aerodynamic theory, and, most important from our point of view, the air speed along the centre-line of the wake is much less than the free stream speed. The vortices, even if they started up in the air a little, would strike back to the ground, and so this reduced airspeed in the wake will affect the transfer coefficient at the surface, and form a line thermal source downwind. Possibly this wake effect only becomes strong enough to cause cloud streets at high wind/thermal ratios.

So there you are. These ideas may help to explain things; they may promptly be shot down in flames by the meteorological *cum* aerodynamic pundits. If one had dozens of synchronised recording wind speed and direction indicators in a stretch of country, one could get a picture of the wind variations, which, like wool tufts on an aeroplane, might tell one a lot. That is impracticable, but a few wind-tunnel tests with porous cylinders with suction applied might give interesting results, and would convince me a lot more than rolls in aluminium paint, or air bubbles in water.

Dr. Scorer Replies

MR. Rivers's ideas call for some comment. Weak convection does not necessarily mean that gliders will only find weak updraughts; it means simply that the amount of heat being carried up over unit area of ground is relatively small. The presence of streets makes it easier to find the upcurrents and so the pilot may gain the impression that there are more good ones.

In asserting that a particular wind speed/thermal strength ratio is required for streets, Mr. Rivers merely states that this ratio must not lie outside that range within which it must lie in order to form streets. Let us have some figures instead of tautologies.

Mr. Rivers's belief in the existence of a "transfer coefficient" is too beautiful to criticise; but while wishing him luck with it I think he will find the coefficient to be just as complicated and dependent on everything as the original problem. As he marches forward to his solution he pushes the whole problem bodily before him.

His next thrust, to assert that there is a critical temperature at which the thermal breaks away, requires more explanation. Presumably his definition of the critical temperature is that at which thermals break away and again he packs the whole problem into a neat little phrase and marches onwards carrying it still intact with him.

His quantity S is not fixed when cloud shadows occur.

His suggestion that "the whole cycle repeats itself" implies that all thermals are the same size, which is not the case. His implication that thermals all start from the ground in the form that they will have subsequently gives no reason why thermals are more difficult to find close to the ground. There is evidence for this quite apart from gliders who might be too concerned about landing to find them.

If the air were calm ahead of a thermal, then, according to Mr. Rivers, the heat would get away from the ground more slowly because there would be no mechanical stirring. The thermal would therefore die. Similarly his rolling thermal would die because it is fed with cold air from the downdraught.

I think Reynolds numbers are irrelevant because molecular viscosity is quite unimportant in the atmosphere in comparison with effects of eddy motion.

A thermal has no rigidity and has no means of maintaining a pressure distribution around it like a solid body. I would have thought a porous cylinder in air to be much less like a thermal than bubbles of air in water or rolls in aluminium paint, for it has nothing to do with buoyancy! The idea of hundreds of wind indicators over the countryside seems to me a nightmare of ad-hoc-ery: let's get away from rigid boundaries and examine the motion of buoyant fluids. Mr. Rivers does not even mention the appearance of the clouds in the streets he is discussing!

R. S. SCORER.

Soaring Costs

by Fred Hoinville

FAMOUS GLIDER PILOT ARRESTED

POLICE SWOOP AFTER BANK HOLD-UP

CRIMINAL CONFESSES

ASKED how the Police traced the criminal so quickly and made such a smart arrest, the Commissioner of Police modestly replied :

" Elementary, my dear Watson. The cleverness of the crime, and the enormous size of the haul by one man, obviously indicated a very superior type with high intelligence, resource, initiative, with daring bordering on insanity, extreme fanaticism, and a sudden need for a huge fortune. Science did the rest for us. All clues were fed into our newly-installed Electronic Brain, which had the answer for us in less than two-fifths of a second—' Glider Pilot buying Sailplane '. So we simply sent our crack anti-bandit squad to surround the factory of the Heaven Sailplane Company and arrested the first buyer of the new Heaven model.

In his possession we found all the stolen money and the mysterious weapon, the Golden Button with which he had hypnotised the bank staff, and the pocket amplifier with which he stunned them into awed submission."

Don't let this happen to you! How many pilots today are teetering between acute melancholia and bank robbery because of *soaring costs*.

Are We paying Too Much for High Aspect Ratio ?

Here I am again, back on the same old theme. *Get those costs down.*

In gliding, there are many direct and indirect costs, and they are all roughly proportionate to the weight of the glider. This applies to its construction or purchase, launching and maintenance, and, most of all, retrieving.

Once there was a day when gliders were light and cheap, and almost anybody could afford the exhilaration of Silent Flight. Then came the lordly Gods of Evolution, closely followed by the leering Devils of Inflation. Between them they have given us Heavenly gliders that can fly higher, faster, further than the most blissful dreams of the early birds, and Hellish costs beyond their wildest nightmares.

Somewhere this side of dreams and nightmares lies reality. Let's analyse the position.

Weight means material, size means man-hours. New plastics may reduce the cost of material and the number of man-hours needed to fabricate it, but only in bulk. That means numbers, and can only be achieved by low prices. The plastics are not yet in volume production. Let's put them aside for the moment and think of materials and designs now available.

Probably the greatest single cause of weight is aspect ratio. A high aspect-ratio wing needs to be so heavy to gain strength, so it needs a heavy fuselage to carry the wing, so we have a lot of weight all round. In return for this we get super-performance.

But we have reached the point where we already know what can be done in the way of using higher and higher aspect-ratios. No matter how many new designs we produce along those lines, we demonstrate nothing new. Nor is the result of any great value to aeronautical science, for we are producing a design which has no future for anything except gliders.

On the other hand, if we make a determined effort to increase the efficiency of low-aspect-ratio designs, we will at first lose some performance, but I believe that we will eventually work out a practical design with much better performance than a Grunau Baby, for example, and right from the start we will get the valuable benefits of light weight, great strength and low cost, plus ease of ground-handling, lower launching costs and easier retrieving.

What if we *do* give up visions of 500-mile flights for a while ? Even if *you* could buy a half-ton super job, could you afford to pay all the heavy costs to operate it, and maintain a private Army Supply Column to retrieve you from your few cross-country flights ? And just how many pilots *can*

afford to buy the super sailplane in the first place, without forming a syndicate so big that they will be very lucky to get one chance a vear at a cross-country ?

Wouldn't you rather own a small, light glider and do many cross-countries a year, retrieving with a light car with a roof rack or very cheap trailer ? I would. *And* I'm going to, even if I have to design and build the damn' thing myself—a job I would much rather leave to qualified designers or people with more spare time.

I have plenty of reason to believe that the overwhelming majority of good soaring opportunities are missed because of lack of a large number of moderately good gliders, and that I could have done many better flights in such a glider than in the heavier machines which need such a team to operate and so are really available only when lots of other people are free to help me ; and as you know too, the best clouds always show up Mondays to Fridays.

About the best way to encourage the development of smaller gliders will be to get the F.A.I. to establish grades of gliders, and recognise records for each grade. I implore the British Gliding Association to support this plea and take positive action along these lines, now. I also ask that all readers in other countries seek to get the support of their national controlling bodies.

Already many promising designs have been seen. There is a Japanese super-light weight design with performance good enough for long flights, and in the U.S.A. a new flying wing type has been built at Vanderbilt University, which is said to claim a glide angle of 35:1 for a span of 26 feet and an aspect ratio of about 4:1. If these figures can be accepted (I read the claim in a popular magazine and suggest that the designer, D. F. Farrar, be asked for authorative figures), then perhaps we need look no further for our ideal design.

However, Farrar's design provides for a prone position for the pilot, and I think that the undeniable advantage of that arrangement should be sacrificed for the slightly less efficient normal seat, because of the risk of serious injury to the pilot in a crash, which would prevent the design from being used as a trainer and would greatly reduce its value to the gliding fraternity.

I think there was also a German all-wing design with the fantastic span of somewhere around 12 feet, and a promising performance before it crashed due to a trailing edge accidentally damaged during road transport. I would like to find out more about that one. Can any reader supply further details, please ? [It was described in *Aero* (Munich) for October, 1951, and illustrated in *The Aeroplane* for 31st August. 1951, on p. 256.—ED.]

My idea is that all gliders should be classed as (1) high performance, with high aspect ratio, (2) medium performance, with low aspect ratio, and (3) trainer, and that each should have its own record categories. I am confident that this would give a great impetus to the production of cheap, light gliders.

Meanwhile, how about some public-spirited citizen offering a prize for the best design with a span of less than 30 feet ? My own hankering is for a span of 22 feet. Something small enough to land on Australia's bush tracks and country roads would be a wonderful help to us in this sparsely settled land, where sometimes we find large tracts of country with nothing to land on except roads, and mighty few of these. I know one stretch of 200 miles through stunted trees, with a dead-straight road 30 feet wide with rough but tree-cleared borders all the way, through otherwise perfect gliding country. If we could land on that road we could open up a 400-mile route for gliders. Mountain country would be much safer, too, as there are always some tracks.

How about a design featuring a pilot seat almost entirely buried in the wing, with a bubble canopy, deep chord and thickness, tapering sharply, with movable wingtips to give washout only when needed, if necessary separated from the main wing by a small fin, and with either a central extended rudder or two rudders from the fins, and extended elevators at the trailing edge, which could serve as ailerons, too, unless it was feasible to use the movable wingtips as ailerons ?

If such a design is feasible, it could be of extremely low aspect ratio, light weight, and great strength. It would have almost no fuselage drag, and it might be possible to keep the induced drag within reason.

If you don't think the suggestion feasible, how about sending in a better one, right now ? Then maybe you won't be reading that bank-hold-up headline in the papers after all.

Waves Across the Irish Sea

by R. S. Scorer

THE photographs show wave clouds which existed over the Irish Sea on 28th August, 1952. Looking out to sea into a N.W. wind from Hoylake, on the tip of the Wirral, it was possible to see parallel bands of strato-cumulus lying across the wind at a distance of about 20 miles. These bands tradually spread towards the coast, not by he movement of the clouds but by the creation of new waves on the downwind side of the region. When they reached the position shown in Plate II they were, for the most part, stationary relative to the ground, but not entirely: some wheeling motion seemed to be occurring and they were moving with a bit more than half the wind speed to the S. and S.W. over Wales, but were stationary over the Formby Point area. After about 3 hours from the time of Plate I, the bands had spread into the Wirral and South Lancashire, but seemed to disintegrate over Wales where the development of cumulus was more vigorous. At this time, 18.00 G.M.T., the waves still existed over the sea but were more fragmentary.

The cirrus cloud showed no particular wave formation. The waves were apparently lee waves in the lee of the Isle of Man or the mountains of Antrim and probably covered the whole of the N. Irish Sea. There is no reason why they should be damped out over the sea once they are set going.

The motion relative to the ground may have been due to the shape of Liverpool Bay, the effect of the Welsh mountains on the wind, or some unsteadiness in the motion. It was difficult to tell with no telescope whether they were motionless well out to sea, but new waves could be seen to appear as the system extended towards the coast. Over Formby they were quite stationary. There was probably anything up to a hundred consecutive waves in this airstream over the Irish sea: is this a record?



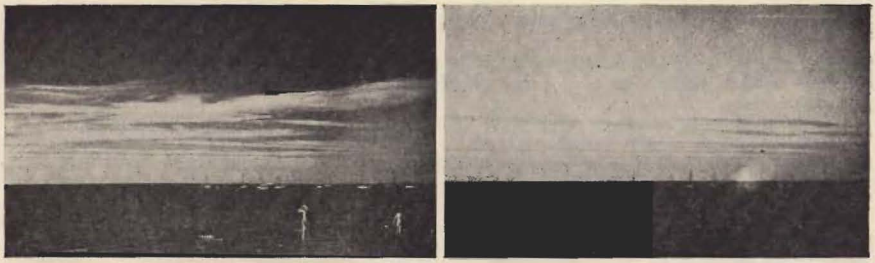


Plate I.—The wave system seen out to sea at about 15.30 G.M.T., looking N.W. from Hoylake. On left (a): polaroid and red filter. Right (b): polaroid turned through 90 deg. and blue filter; cirrus now indistinguishable from blue sky and wave clouds dark.

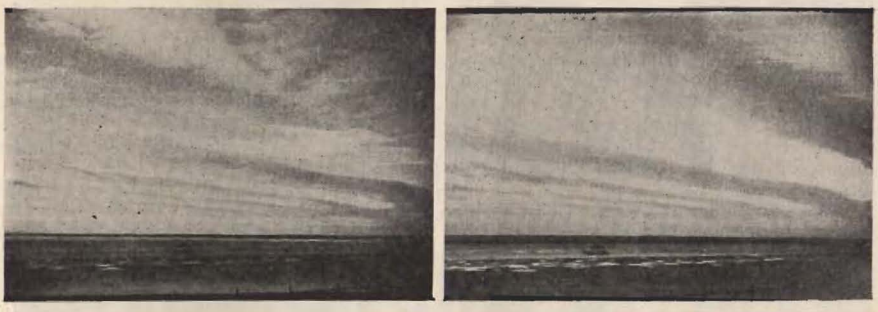


Plate II.—The waves have now appeared overhead and, though stationary to the N. and N.W., appeared to move with more than half the wind speed over the Dee and Flintshire. Taken at 17.15 G.M.T. looking N.W. Left (a): polaroid as in I(b) and red filter. Right (b): polaroid as I(b) and blue filter, smoke and cu over Lancashire scarcely visible.



Plate III.—At 18.00 G.M.T. the clouds became broken. Again they were stationary over Lancashire but moving and discontinuous overhead and to the S. Looking northwards: (a) red filter; (b) blue filter a few minutes before (a) in which clouds are seen to be disintegrating.

More Irish Sea Wave Clouds

by A. E. Slater

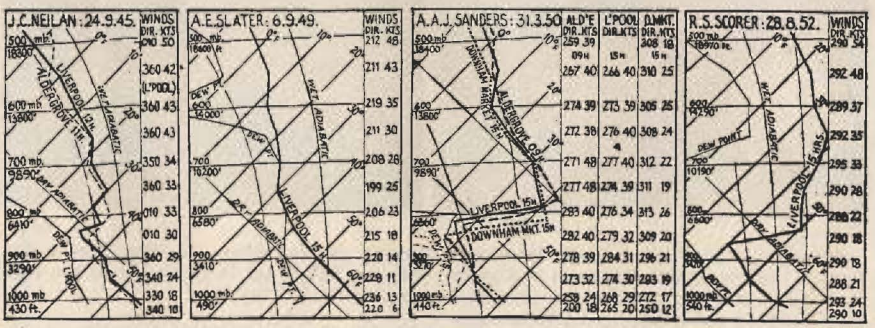
In the preceding article Dr. Scorer asks if a hundred consecutive waves over the Irish Sea constitute a record—atmospheric waves, that is, not sea waves. So here are three further observations of wave clouds over the same Sea, two from aeroplanes and one other from ground level.

First, John Neilan, on 24th September, 1945, left Belfast in a Rapide at 13.45 and arrived at Liverpool at 15.00 after flying above a layer of strato-cumulus rolls orientated parallel to his flight path. From the southern end of the Isle of Man into Liverpool Bay he flew along the windward side of individual rolls and found that, with constant throttle setting, and lowering his nose to cancel out the effect of the up-current, he increased his speed by 10-15 m.p.h. He was flying at 7,000 ft., which was about the level of the tops of the wave clouds.

Neilan attributed the wave system to the mountains of the Lake District, which were 50 miles upwind of him. Upper air data, kindly supplied by the Meteorological Office at Dunstable, are given below in the first tephigram. As demanded by Scorer's theory, there was a constant increase of wind with height (actually up to a maximum of 138 knots from 360° at 34,200 ft.), except, curiously enough, at the level of the cloud tops. The temperature curve shows a multiplicity of stable layers, probably a spurious effect due to the radio-sonde balloon having passed through several waves on its way up, as F. H. Ludlam has pointed out. Actually, the main inversion must have been at cloud level, and of anticyclonic type, since the air above it was very dry, as shown on the tephigram by the divergence of the dew point from the temperature curve.

The next observation is one of mine. Sitting on the western shore of Anglesey at Aberffraw, on the 9th September, 1949, I saw a procession of cumulo-nimbus clouds, apparently triggered off from a common source in the Wicklow Mountains of Ireland, and continuing to grow as they drifted out to sea. At 17.10 hrs. (B.S.T.) one of these was seen to subtend a visual angle, from horizon to cloud-top, of 1 in 13 (1½ inches measured along a ruler held upright 20 inches from the eye), which means that a sailplane could have glided across to Wales from half-way up the cloud. But the most curious feature was that the "anvil" at the top of the cu-nim was being continually transformed into a series of small, shallow wave clouds, which gradually spread in a wide belt right across the Irish Sea, reaching a point N. of Holyhead Mountain by 19.00 hrs.

The tephigram shows a typical (for cu-nim) moist, unstable atmosphere with a lapse rate greater than the wet adiabatic (enabling clouds to grow in it) up to 8,000 ft. The Liverpool balloon must have entered a cu-nim between 800 and 700 mb., where the dew point meets the temperature curve.



and the air is therefore saturated.

The next observation, by Sqn. Ldr. A. A. J. Sanders, speaks for itself in the following article, which should, like this one, be read in conjunction with the map on p. 24. The tephigram shows a terrific anti-cyclonic inversion at cloud level, and a particularly interesting feature is that the reduction of wind speed from west to east is accompanied by a reduction in wave-length, according to his observations. It is remarkable that the wave-length is reduced just about proportionally to the square of the wind speed, as with " gravity " waves on the sea ; in fact, these aerial waves were explained by meteorologists as gravity waves until Dr. Scorer came on the scene.

The last tephigram, for the day of Dr. Scorer's photographs, also shows an anti-cyclonic inversion and a marked increase of wind with height ; the wind reached a maximum of 72 knots at 35,000 ft.

Waves from Ulster to Kent

by A. A. J. Sanders

ON 31st March, 1950, I flew an Anson down from the Ulster Gliding Club site to the Clwyd Gate site, to the Long Mynd and finally past Dunstable to Detling, and found wave conditions the whole way.

The Aldergrove ascent shows an intense inversion at 6,000 ft. This was causing very poor visibility over Lough Foyle under a wide belt of wave cloud. From Foyle shore to Mt. Benbradagh the sky was clear, with a wave leading-edge sitting over this N-S ridge of the Sperrins. The cloud base here was 3,300 ft. with the typical smooth upper surface of the cloud sloping up at about 20°-25° to tops at 6,000 ft.

The air was typically rough near the ground and the rate of climb (independent of hill or wave lift) was about 300 ft./minute. Dull grey cumulus was forming at base 2,400 ft. with the cu heads penetrating the main lenticular cloud base.

I was still using climbing power, at about 2,000 ft., when I passed over the Benbradagh N-S ridge of the Sperrins. Beyond the alto-st. lent. ceiling I could see a belt of blue sky with the second wave leading-edge beyond, and arrived at this wave with 3,000 ft. of height. I turned and flew south (195°-200° Magnetic) along the wave leading-edge.

The Anson now began to climb very fast and I reduced power to normal cruising. The rate of climb at normal cruising speed varied between 900 and 1,200 f.p.m., i.e., 15-20 f.p.s., until the sloping back of lenticular started to taper off in thickness and in gradient. I turned and flew back along a five-mile beat and continued to soar the wave lift to 7,500 ft. a.s.l. At this level there was a filmy "cap" at gradient 5° with a zenith at 7,800 ft., in otherwise clear upper sky. The entire upper surface of the 9/10-10/10 cloud sheet was a rolling surface—looking exactly like the enormous waves you get in the water of the open Atlantic in a full gale.

From crest to crest these billows were about five miles, with a maximum depth from leading edge to crest of 3,000 ft. I continued at 7,700 ft. a.s.l. until a VHF/RT fix put me over Strangford Lough, and then dived below the cloud sheet through the very shallow trough of one of the waves, mainly to get relief from flying into the brilliance of the unclouded sun. Heavy cu, base 1,500-2,000 ft., were building up into the alto-st. lent. base and the air was very rough until we reached Chicken Rock (Isle of Man).

I flew low down the soaring face of the Clwydians, passed Crease's Olympia trailer parked in the car park of his Clwyd Gate Cafe, and inspected a possible future site for the R.A.F.G.S.A. some four miles south of Ruthin.

Over Shawbury the sky, still 10/10 overcast, was showing unmistakable dark-light-dark bands running N-S across the 280°/35 knots wind, and I landed to refuel and phone the Midland Club hangar of the wave conditions. I flew on over the Mynd and found one Cambridge Olympia soaring, with another Olympia and the Kranich changing crews, but no obvious wave to be seen.

Over Northampton the visibility was extremely good, with again the typical

dark-light-dark bands of cloud ceiling. I climbed up through the light belt, heading 020°, entered the cloud at its level base of 4,000 ft. and broke through at 4,400 ft. I was, of course, flying along the trough of a wave system, and climbed by soaring the rising side to the cloud crests at 6,200 ft. The waves were not uniform but averaged 2,000-3,000 yards from crest to crest, lying at 90° to the 290° wind. The steepest slope of the clouds' upper surface was about 35° and a section through the wave would have showed a perfect sine curve.

The very good visibility—40-50 miles—continued until Southend-on-Sea airfield, when we ran into the London drift of haze. South across the Thames as far as Rochester the visibility dropped to two miles or less, but by Maidstone it was again reasonably clear—10-15 miles. On landing at Detling the cloud seemed quite amorphous with fracto-cu below the dull upper cloud at 4,000 ft. and a surface wind around 300°/15 knots.

You will remember my talking at Dunstable of the enormous wave over the Clwydians one day in early March, 1950. The waves on the 31st were very much smaller than that enormous one but nevertheless were very effective. It seems clear that in such conditions it should be possible to soar across country entirely above cloud, using successive air waves exactly as the albatross uses the Atlantic rollers of the Roaring Forties. The only difficulty is first to climb through the overcast and obviously this needs a mountain start or a very high aero-tow. Also in due course you'd want a fix before going down through the cloud ... but it is an interesting possibility anyway.

Accident Analysis for 1952

by the Chairman of the Accidents Analysis Committee

THE outstanding thing about this year's report is that it represents a decrease both in total number of accidents and in the expense they caused. The figures are 46 reported accidents at a cost of £3,719.

The most striking changes are :—

1. A striking decrease in the number and cost of accidents during landing. It is very likely that this is the result of the Instructors Panel's work to improve instruction, and the adoption of more dual trainers. This is borne out by the decrease in cost of accidents involving instruction, and of accidents involving two-seaters.
2. The increase in costs due to accidents "in flight". This is the result of four aircraft being involved in collisions and of three pilots spinning in, out of control. One of these was killed and the other two were seriously injured.

The relative accident risks of two-seater and single-seater training show a marked advantage to the two-seater. It continues to be the opinion of the Accidents Analysis Committee that the adoption of two-seater dual training is, in spite of the increased initial outlay, one of the best investments that Clubs can make.

Items which seem to require special attention are these:—

i. Improved instruction to prevent accidents due to loss of control (i.e., spinning in). Even Clubs now giving all-dual training do not seem to have made certain that their older members are well practised in this essential evolution.

ii. Collisions are lethal. After one in the Autumn of 1951, there were two more in 1952. It is clear that renewed attention is necessary to the traffic rules on crowded sites, particularly ridge sites, and that pilots do not always keep an adequate look-out for other aircraft when flying in these conditions.

Finally there is the particular case of an accident in which a boy apparently "froze" at the controls and was killed in the resulting crash. The Accidents Analysis Committee have no evidence to suggest either that his age had any bearing on the matter or that there exists a type of person who is liable to "freeze" at the controls. After hearing the

opinions of various experts, including specialists in aviation medicine, the Chairman of the Committee believes that:

i. There is a serious tendency to advance alert and apt pupils too fast, and that although they may appear to have absorbed the instruction, the very fact that they have not learned the hard way, by making and correcting mistakes, means that this impression is misleading.

ii. When solo instruction methods are used, the danger to a quick learner is especially great, since he may make his first mistake at a lethal height after a very small total time in the air.

iii. The accident in question seems to fall into this category, and the Chairman urges strongly that, in addition to adopting universal dual training, the compulsory syllabus should be of sufficient length to ensure that pupils are thoroughly accustomed to being airborne and have made mistakes in large numbers, before flying solo.

Statistics relating to 1952 and the previous year are attached as an Appendix to this Report.

CHRISTOPHER PAUL.

Chairman, Accidents Analysis Committee.

Accident Statistics

Summary of Totals

Item	1952	1951
Accidents reported	46	59
Total cost	£3,719	£4,281
Fatal accidents	2	1
Accidents involving serious injury	4	3
Aircraft operated by reporting clubs	151	154
Total launches	49,836	43,055
Total hours	8,223	7,736
B.G.A. Categorised Instructors	50	29
Launches per accident	1,083	730
Cost of accidents per launch	1s. 6d.	2s. 0d.

According to Type of Accident

Type of Accident	1952	1951
During hops & Slides	5	7
Cost	£235	£414
When pilot was not in charge	3	5
Cost	£78	£230
During landing	15	26
Cost	£372	£1,790
During approach	11	11
Cost	£863	£382
In flight	6	2
Cost	£1,820	£952
On take-off	6	6
Cost	£351	£220

According to Pilot Ratings

At the controls	1952	1951
Pilot under training	19	26
Cost	£1,519	£1,331
Qualified pilot	16	15
Cost	£832	£951
Instructors	10	14
Cost	£1,290	£1,778

According to Type of Aircraft

Type involved	1952	1951
High-performance	nil*	nil
Cost	nil	nil
Medium performance	14	19
Cost	£2,017	£2,585
Two-seater trainer	9	9
Cost	£387	£622
Single-seater trainer	25	31
Cost	£1,237	£1,069

*Excludes one accident in Spain, not reported to Accidents Committee.

EDITORIAL NOTE.—Comparable statistics for 1949 and 1950, as well as those for 1951, were given in our issue of Summer, 1952, on pages 76 and 77.

Glider Log Books

by C. O. Vernon

Technical Committee, British Gliding Association

THIS note is intended to draw attention to the need for accuracy and completeness in making entries in glider log books. A lot of it is so obvious that it will have been forgotten; that is partly why it has been written. It is meant mainly for ground engineers and inspectors, though owners might also take heed.

The purpose of a log book is to define the life history of the machine, and to do this satisfactorily it should contain a record of:—

(i) The aircraft's operations, and

(ii) Repairs, maintenance and modifications.

As regards (i), no great detail is necessary. An entry at suitable periods, e.g., monthly, of the number of launches and hours flown is probably all that is strictly necessary. It may be helpful also, however, to note any events likely to have a bearing on (ii) at a subsequent date, such as heavy landings after which no immediate damage is evident but which may have "started" something that may get worse in subsequent bumps. If this does occur, it may be in such a place that it does not get picked up in Daily Inspections and it is then essential that it be found at the next C. of A. inspection. This will probably happen anyway, but the presence of a number of such entries in the log book will lead the inspector to examine all the more thoroughly.

Turning now to the second item, this can be divided under various headings.

First, repairs. This is perhaps the most vital one of the lot. It is essential to state just what has been done, including where it has been done; the entry should be sufficiently detailed to make this clear beyond all doubt. For example, in the case of a rib boom repair, the rib number, whether top or bottom, and whether in front of or behind the spar(s), should be stated. If a spar is repaired, the members affected (top boom, rear web, etc.) and the spanwise location, either in terms of rib stations or distance from an identifiable datum, should be mentioned. Thus: "rear spar repaired one-third of the way out" is hardly good enough when what was actually done was "rear spar front web replaced between ribs 5 and 7". Note that in this instance the more precise form is but little longer than the other, and this will often be the case.

It is also important that *all* the repairs made at any one time are mentioned. It is easy to forget those odd gussets which had to be re-glued, but while in such a case the exact location of every one is perhaps not vital, at least the number and some indication of position should be given.

Secondly, maintenance. In general, similar remarks apply as for repairs; it is to be hoped that the maintenance is regular and the repairs only spasmodic. Under this heading are included not only the C. of A. overhauls involving extensive examination of controls, structure, etc., and replacement of badly worn parts, but such simple items as occasional re-greasing of hinge pins, or re-adjustment of control circuits when such adjustments are likely to affect the flying characteristics.

Thirdly, modifications. Here, a brief descriptive statement is all that is required, together with a reference to a modification and/or drawing number. In the case of a "home-made", as opposed to a manufacturer's modification, a copy of the assembly drawing can with advantage be held available, either with the log book or near the place where the latter is ordinarily kept. In passing, it may be pointed out that modifications, unless minor, require B.G.A. approval.

If repairs and/or modifications are sufficiently extensive to be likely to affect the weight or C.G. appreciably, the aircraft should be re-weighed, and the new figures entered in the log book.

Now, just why is all this necessary? Our second paragraph said "to define the life history of the machine", and the reason is that only by knowing this can one be sure of the condition *now*. A machine which has been under the charge of a particular inspector since it was new should present no difficulties, but the many which change

hands, particularly if non-standard or "one off" types, are a different proposition, and in such cases a well and accurately kept log makes the inspector's task considerably easier. If the aircraft and log book do not appear to tell the same story, there is cause for suspicion as to the quality of the previous maintenance, and the inspector cannot be blamed if he demands extensive stripping down in order to carry out his examination sufficiently thoroughly to clear his conscience.

Again, quite apart from whether a machine is airworthy in actual fact or not, any repair, modification and, strictly speaking, adjustment, invalidates the C. of A., and only the inspector's signature in the log book restores the validity.

Finally, a word of advice to prospective buyers of second-hand machines. When examining your intended purchase, ask to see the log book, and note the standard of the entries and whether they correspond with the hardware. If in doubt, take a qualified inspector along with you and get his opinion.

Duration Record in Japan

by Yoshio Kaneko

A NATIONAL duration record of 28 hours 8 minutes was established in February by Isamu Oda, of Hiroshima, beating the previous record of 13 hours 41 minutes set up by Tadao Kawabe in 1941.

Oda was launched from Mt. Ikoma at 13.02 hrs. on 7th February by a single shock cord 60 metres long, into a W.N.W. wind of 13 m/sec. (29 m.p.h.) He caught a strong upcurrent just after the start, and was able to maintain an altitude of about 1,000 or 1,500 metres, soaring along a beat of about 7 kilometres from north to south. In Japan we have strong north-west wind every winter all over the country.

At 17.30 hrs. the plane was soaring between 1,500 and 2,000 metres. After that the wind velocity changed as follows: 10 m/sec. at 21.15 hrs., 11 m/sec. at 21.35, 7 m/s (16 m.p.h.) at 01.00 on 8th February, 9.3 m/s at 05.30. After dawn on the 8th, the wind velocity increased to about 10 m/sec. (22 m.p.h.) and Oda soared at a height of between 1,000 and 2,000 metres (3,280-6,560 ft.)

At noon on the 8th, the wind velocity reached 13.5 m/sec., and Oda caught a nice thermal, climbing to 3,300 m. (10,800 ft.) After that the wind was almost as good and he soared between 2,500 and 1,000 metres. From 16.00 hrs. onwards the wind decreased gradually till by 17.10 it was down to 5 m/sec. (11 m.p.h.), and Oda landed at his starting point. The wind then went quite calm.

The sailplane was of type Tohi-S.A., of 14 metres span; weight 160 kg. (353 lbs.) empty, 235 kg. loaded; aspect ratio 15; minimum sink 0.7 m/sec.; best gliding angle 1 in 23 at 62 km/h (38.5 m.p.h.) It was designed last year by Mr. Kei So Yo, of Tokyo, and built by him in December.

Isamu Oda took up gliding in 1935 and afterwards became an instructor. In the summer of 1940 he flew an Olympia-Meise from a point on the famous Mt. Fuji, 2,600 m. high, and landed 71 kms. away. This is still the distance record for Japan. He is 37 years old.



Mr. Isamu Oda in the Tohi-S.A. sailplane in which he has broken the Japanese duration record. The sailplane is seen in flight in our cover photograph.

Forecasting Waves

by R. S. Scorer

It is a complicated matter to calculate wave amplitudes and lengths in a simple hypothetical case, but some indication as to whether waves will be good or not can be fairly simply given. Best waves are produced by hills with smooth, fairly steep lee slopes if they lie across the wind, but the air current must also be of the right kind. Waves are more likely if the wind direction does not vary much with height and is across a mountain ridge, but even so the quantity l^2 must decrease with height. It is actually more convenient to calculate l^{-1} as follows:—

(1) Obtain an estimate of the wind and temperature profiles of the air current, and plot them on a tephigram up to 400 mb at least.

(2) For each 100 mb layer obtain the thickness Δz in feet and the difference in potential temperature between the top and the bottom of the layer in degrees F. These can be read directly from the tephigram.

(3) From Figure 1 read off the value of $(Ul)^{-1}$; multiply this by U, the average wind speed in the layer in knots, and so obtain l^{-1} in miles.

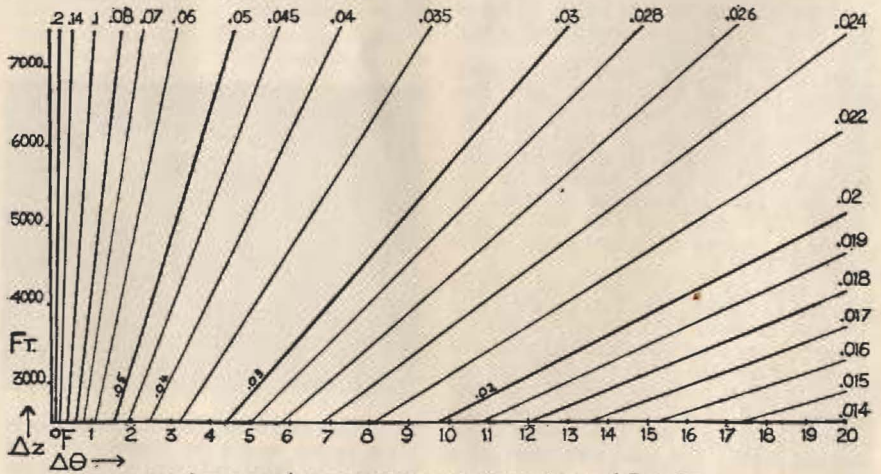
If l^{-1} increases substantially with height waves are more likely than if it does not. The best conditions are when there is a layer at least 200 mb. thick near the ground in which l^{-1} is considerably less than in a layer higher up at least 300 mb. thick. Sharp inversions and changes of wind with height are best smoothed out in these calculations. The formula is not accurate in these regions if the inversion is a fairly thin layer or if the velocity profile is very curved, but it is adequate over most of the heights we are concerned with.

If l^{-1} is very large near the ground, a thicker layer above in which it is small (with another layer in which it is large above that) is required for waves.

If l^{-1} does not change much in the lowest 500 mb. it may be necessary to continue the calculation up to 300 or 200 mb.

Very roughly the lee-waves have a maximum amplitude at the top of the layer in which l^{-1} is small, i.e., at the level where l^{-1} begins to increase substantially with height.

The wavelength of lee-waves will be less than $2\pi l^{-1}$ as measured in the upper layers



ISOPLETHS OF $\frac{1}{Ul}$, TO GIVE $\frac{1}{l}$ IN MILES WHEN U IS IN KTS., $\Delta\theta$ IN °F, Δz IN FEET.

and more than $2\pi/l^{-1}$ as measured in the lower layers; and it will be in miles if l^{-1} is calculated as just described. If the ridge is well defined and fairly narrow, the first lee-wave is only three-quarters of a wavelength from the ridge crest.

If during the day, because of a decrease in lapse-rate in the lower layers, l^{-1} increases, the wavelength also increases; but as it cannot exceed $2\pi/l^{-1}$ as measured in the upper layers, waves may become impossible, only to return again in the evening with a slowly shortening wavelength.

Generally, when conditions are favourable for lee waves they also favour large-amplitude disturbances over the hills themselves. If mountains have great extent in the direction of the wind, the disturbance may not be proportional to the height. In such cases there may not be much observable vertical motion unless the mountains have a fairly steep lee slope.

It is impossible to be more precise than this without also becoming much more involved. It seems best that this simple calculation should be tested for its adequacy first.

Reference

R. S. SCORER: Theory of airflow over mountains, II—The flow over a ridge. *Quart. J. R. Met. Soc.*, vol. 79, p. 70 (1953).

EDITORIAL NOTE.—To carry out the author's instruction No. 1, upper air data should be obtainable by telephone from the nearest meteorological station, preferably naming the gliding club which needs the information. A list of 17 of these stations, distributed over Great Britain and Northern Ireland, is given in Form 2453, "Regulations on the Supply of Weather Reports . . . ", obtainable from the Meteorological Office, Air Ministry. Tephigram forms (Form 2810) are obtainable from H.M. Stationery Office, either direct or through a bookseller.

Two New Zealand Records

16,000 feet and 90 Miles by S. H. Georgeson

Two high climbs in New Zealand by Mr. S. H. Georgeson have already been described in GLIDING: to 10.600 ft. (Spring, 1952, p. 22), and to 13,000 ft. (Winter, 1952-3, p. 178), both in a Slingsby Prefect.

Early in February this year, flying the Weihe which he has now acquired from Philip Wills, Mr. Georgeson made a climb to 16,000 ft. (12,000 ft. gain), followed by a cross-country flight of 90 miles, beating the records of 11,300 ft. (10,300 ft. gain) and 66 miles formerly held by Mr. G. A. Hookings.

The following account of the flight, taken from a newspaper, has been sent by him:—

Mr. Georgeson left Harewood about 9.50 a.m. under tow by a Canterbury Aero Club Tiger Moth and was released over the Oxford district at about 6,000 ft. From the release he encountered rough conditions and dropped to 4,000 feet and after climbing to about 8,000 feet he was caught in a bad downdraught and returned to about 4,000 feet. Above 8,000 feet again he received a smooth lift to 14,000 feet. At that point, however, it seemed that the lift would take him no higher, but a quarter of an hour later another lift took him to 16,000 feet.

For about an hour Mr. Georgeson remained at between 15,000 and 16,000 feet. At that height the inside of the canopy of the glider was covered with ice, which formed from the pilot's breath. Mr. Georgeson could not use oxygen as his equipment is not yet complete, but he kept an eye on his finger nails, which turn blue when there is a lack of oxygen. At the end of an hour at the 15,000 to 16,000 feet level he felt that he had been at that altitude long enough.

Mr. Georgeson left the Oxford area about midday and half an hour later was over the Ashburton river at 9,000 feet. He was then too low to reach Timaru and he spent an hour over the same area regaining height to 14,000 feet. Forty minutes later he was over Timaru at 4,000 feet and came in to land at Saltwater Creek airport. Mr. Georgeson will claim a New Zealand distance record of 90 miles. The existing record, held by Mr. Hookings, is 66 miles.

Mr. Georgeson said he believed that with oxygen he could have gone higher and made a longer flight.

Correspondence

INSTRUMENT FLYING

Dear Sir,

Tony Goodhart, in his otherwise excellent article (GLIDING, Winter 1952-3, p 150), makes what I consider a serious, but very common mistake. He says: "What decides your rate of turn? Mainly angle of bank." Now this is quite true in the long run, and in a fast aeroplane is true always. In a sailplane, however, where the speed is slow and the span large, the immediate effect of applying bank is to cause the aircraft to yaw in the opposite direction.

This effect is very confusing when flying blind and can be completely avoided by using rudder to control the turn needle and ailerons to control the slip indicator. I would go so far as to say that whilst this is a method which works, the other in its simplest form does not.

In actual fact, both methods ultimately come to the same thing, since a pilot will eventually learn to combine the use of the controls and achieve perfect precision. In the meantime, however, for people like me, who have not achieved perfection, there is no question about which is the better method.

I realise that I shall be regarded as a heretic by most flying instructors, but I can only ask them to experiment with the two methods, preferably in a large-span machine.

I think the tendency to adopt Tony Goodhart's method is partly due to our readiness to accept aeroplane methods of instruction without first examining their suitability to our needs.

G. H. STEPHENSON.

Dear Sir,

Perhaps Tony Goodhart is too well known for his very fine article on Instrument Flying (GLIDING, Winter, 1952-3) to convince every pilot who has yet to dabble in his first cloud that he, too, can do it. May I, therefore, as a quite average club pilot, support his theme, and confirm that anyone who uses his methods intelligently, with calmness and a slight air of detachment, will go high and probably find, as I do, that Cloud Flying is Fun.

Quite a number of averagely experienced club pilots that I have met, made excellent climbs on their first attempt: usually, like Tony, feeling somewhat surprised, and wondering what all the fuss was about—second attempts often seem less easy going. As an example, my own first cloud flight, in a Prefect, started because I needed a few hundred feet more for Silver C height, and ended three-quarters of an hour later, when I emerged at 6,000 ft., 22 miles away and, remarkably enough, on course for my goal. In between, I had been within 1,200 ft. of Gold C height, and had met all the usual trimmings—hail, icing, and so on; the quarter-hour I spent trying to fly a straight course out was definitely the most difficult, and wearing, part. Since then, only tactics, navigation or prior occupation have kept me out of clouds.

A few points from my own experience may add usefully to Tony Goodhart's description. He uses the modern power-flying technique of correcting turn with aileron, slip with rudder, but some very experienced sailplane pilots prefer the other method, of correcting turn with rudder, slip with ailerons. There are arguments both ways, but my own feeling is that one will probably be least confused using the same rule in cloud that one does in clear air, whichever it may be. I use the first method. In actual practice I have always found airspeed and rate of turn to increase together, and have reduced both to normal by taking off bank. Perhaps this means that I fly in a permanent incipient spiral dive, but I have found no way of altering this state of affairs, and find that it rather simplifies the "Needle — Ball — A.S.I." routine, anyway, and thus leaves more time for watching the variometer.

Air brakes, which Tony does not mention, should be used early, say 55-60 m.p.h., to limit one's forward acceleration and give one more time for the usual drill of taking off bank if one has left it late. I only needed them on my first trip or two, and have never had the speed above 2 × stalling speed, which is perfectly safe.

Textbooks sometimes show the needle and ball positions for a spin or spiral dive, but I can never remember them, much less work them out when blind; high rate of turn, with airspeed below stall or high and increasing, show you a spin or a spiral dive, and the ball is best forgotten until you are straight and level or turning steadily once more.

As far as extra instruments go, I eagerly

await my first trip with a total energy variometer, which I think will soon be considered a necessity. A gyro direction indicator is a luxury, but would be most useful for coming out of cloud on the right course. I couldn't care less about an artificial horizon; if one must fly around like a heavy bomber, carry oxygen. You can break the British altitude record with a turn-and-bank: you can't without oxygen.

Summing up, there is only one way to learn to blind-fly sailplanes: get as clued up as possible on the ground, learn to fly cleanly, and then Have a Go.

PETER RIVERS.

Lieut.-Cdr. Goodhart Replies

Dear Sir,

I am delighted to have the opportunity of replying to G. H. Stephenson and Peter Rivers. Steve says : " the immediate effect of applying bank is to cause yaw "; I would say that applying *aileron* initially causes adverse yaw, and that it is instinctively cancelled by application of rudder, but that bank (which is by no means immediate) causes turn. However, as I said, I am *not* an expert at instrument flying and next time I get into a nice cloud I shall certainly try out the alternative method Steve recommends (though I shall have to switch off my cherished artificial horizon first). In fact, I'm not sure that I don't already use a bit of a compromise of both methods. I admit that my ideas on the subject were obtained from brother Nick, who is a Naval test pilot, (though he did learn to glide first), and I am quite prepared to believe that, in the particular case of the large-span sailplane, " stick for slip " and " rudder for turn (or yaw) " may produce an easier answer.

Peter Rivers suggests that the artificial horizon is little more than a means of increasing all-up weight. Having done one season without and then one with, I entirely disagree and I would almost rather go on a diet to compensate in order to keep the horizon. I am hoping to equip the Navy's Mu-13 " heavy bomber " with both horizon *and* oxygen this year. I am assured that two hours' supply of oxygen, complete with all accessories and ancillaries, can be made to weigh less than 10 pounds (avoirdupois).

TONY GOODHART.

RADIO IN AUSTRALIA

Dear Sir,

I read with interest Mr. Wills's article in the last issue of GLIDING in which he referred to the success of the radio equipment employed by the British team at the Spanish Contests.

Mr. Wills appears to have entirely overlooked the results obtained with the radio employed by the Sydney Soaring Club for the past seven years. Information with regard to this equipment and its performance has been previously published and the results obtained are considerably better than those obtained by the British team in Spain.

The "Gullfinder", as our type of set is known, is consistently employed for communication up to 200 miles and the retrieving methods have been greatly improved as a result of its use. In practice we have found that we can eliminate the use of a retrieving car, and instead, the retrieving car remains based at the point of departure and remains in communication with the glider at half-hour intervals throughout the day until, when the day is ending, or it appears that the glider is landing, we despatch our tug aircraft to a point near where the glider is. If the glider has not landed before the tug departs, we arrange for the tug to telephone us on his arrival at some point near to the anticipated glider landing ground, where we advise him of the exact position of the glider.

The "Gullfinder" radio, complete with batteries, headphones, microphone and all accessories weighs 20 lbs. The batteries have a capacity sufficient to operate the set for approximately three weeks. For short-time operation this weight can be reduced to approximately 15 lbs. with smaller batteries.

We operate on frequencies in the H.F. band and so we are not restricted to line-of-sight operation and are able to communicate with the glider whether it is on the ground or in the air and, on the occasions when we do choose to follow the glider with the retrieving car, we employ a whip antenna in the car and talk to and fro without stopping.

L. N. SCHULTZ,
10, *Kardinia Road,*
Mosman, N.S.W.

[Unfortunately, in most parts of the world, including Western Europe, H.F. radio telephony is not permitted.—ED.]

FIRST WITH DUAL INSTRUCTION

Sir,

I should like to correct the impression, given by J.S.R. Salmond in the Winter edition of GLIDING, that Cranwell R.A.F. College were the first people to break with the then traditional method of training.

The Midland Gliding Club were using dual instruction before the war on a limited scale, and have used nothing else since gliding re-started in 1946. The decision to use two-seaters for instruction was largely influenced by H. T. Testar, who returned to the Club after doing some thousands of hours instructing of both pupils and instructors on aeroplanes and heavy gliders. In fact, we were successfully giving dual when the rest of the movement, in the main, thought the idea highly impractical.

J. H. HICKLING,
C.F.I., Midland Gliding Club

The Way to Lasham

To get to Lasham (Army, Surrey and Imperial College Gliding Clubs), you must catch a train to Basingstoke or Alton that arrives in time to connect with the Wilts and Dorset bus service No. 107, which runs between Basingstoke Station and Alton Station. This service passes one corner of the airfield about a quarter of a mile south of the New Inn at Herriard. This is the best place to get off. Seven to ten minutes walk will then bring you to the Clubhouse. It is nearly always quicker to go through Basingstoke when you are coming from London.

	Friday		Saturday				Sunday
	p.m.		a.m.		p.m.		
Dep. Waterloo ..		7.30R	9.00		12.39		11.00
„ Surbiton ..	7.13		9.18		12.43x		10.43x
„ Woking ..	7.38		9.36		1.10		11.32
„ Aldershot ..	7.57			9.27		1.27	10.50x
Arr. Basingstoke ..		8.25	10.05		1.55		12.01
„ Alton	8.17			9.47		1.47	
Dep. Basingstoke ..		8.40	10.20		2.00		12.15
„ Alton	8.40			10.10		2.00	
Arr. ¼ mile S. of Herriard	9.21	9.05	10.45	10.48	2.25	2.38	12.40

Notes: R Restaurant Car. x Change at Woking.

	Sat & Sun	Sat. only
	p.m.	p.m.
Dep. Herriard	9.05	9.20
Arr. Basingstoke		9.46
„ Alton	9.43	
Dp. Basingstoke		9.56
„ Alton	9.54	
Arr. Aldershot	10.14	
„ Woking	10.32	10.24
„ Surbiton	11.00	11.00x
„ Waterloo .	11.16	10.56

These tables show selected services which run at the times most frequently required. It is nearly always possible to get a lift back to London on Sundays. However, the last return services for Saturday and Sunday evenings are also shown.

EDITORIAL NOTE.—These times applied at the time of writing and are, of course, subject to alteration.

News from Sweden

by Bengt Micrander

BACK in 1945, general interest in gliding in Sweden was very great. In some clubs instructing began at 4 o'clock in the morning so that the greatest number of pupils should fly before evening. There was a decrease in the following years, but, if one may believe statistics, interest is going up again. In 1952, 3,900 hours were flown (3,600 in 1951): this in spite of the fact that the flying weather was the worst ever since gliding began in Sweden, e.g., South Sweden had 20 rain days in July, 28 in August and 20 in September. About 37,000 launches were made (about 33,000 the previous year), 299 C, 17 Silver C and 5 Gold C certificates were obtained. The total number of these certificates in Sweden now amounts to 2,405 C, 292 Silver C and 28 Gold C. The Trollhättan Gliding Club can be proud of having earned 3 of the 5 Gold C's taken in 1952 (flown by Larsson, Pedersen and Stahl).

The increase of gliding interest is certainly to some extent due to the aid given by the Air Force in various forms. In 1953 it will be giving up gliding entirely and the gliding equipment and tug planes will be distributed to those gliding clubs most in need of them. This comes as a last-minute rescue to some clubs, which otherwise would have had to pack up either for good or temporarily. In January, 27 SG-38's, 13 Babies, 15 Kranichs and 5 Weihes will be given away as well as 11 Focke-Wulf Stieglitz 150 h.p. tug-planes, excellent for their job and able to tow a Kranich or a Slingsby T-21 at a very decent rate of climb. The gliders were built in 1942-3 and many of them badly need overhaul.

It ought perhaps to be mentioned that the Swedish gliding movement is far from totally state-subsidized; e.g., about a third of the high-performance planes, a fourth of the intermediates and over two thirds of the primary gliders have in one way or another been privately financed by the clubs. Besides, all the tug planes are private club property. Nor are the "state" gliders wholly state-financed; the clubs have to cover about one third of their cost.

Some of these Air Force gliders may be taking part in the Easter Wave Week at Aare in the mountains of North Sweden. This week has become something of an institution. Karl-Erik Ovgard, later killed when wave-soaring at Bishop, California, realized the possibilities of wave-soaring here and was the originator of these meetings. Hitherto, altitudes of about 4,000 metres (13,000 ft.) have been reached, but still greater heights are possibly attainable. During the Easter of 1952, five gliders (one Kranich, one Weihe and three Babies) flew 95 hours in four days. On the last day, a member of the Ostersund Gliding Club flew his Silver C distance leg from a wave to his home site—53 miles (85 kms) in 38 minutes in a Baby-Falken, an improved Swedish version of the Grunau Baby. This may give a little indication of the possibilities here.

The Central School of Alleberg (about 100 miles N.E. of Gothenburg) is situated on top of a hill, Alleberg, about 400 feet above the plain below. The east and west slopes are soarable and some one mile in length. There are two landing strips, one of some 1,000 yards stretching N-S, and one of 600 yards E-W. The latter was completed in 1952. At this site 3,300 launches and 700 hours were flown, including 570 aero-tows, during June, July and August, 1952, flying at the school being restricted to these months of the year. The following flying equipment is at disposal at the school: 2 SG-38's, 3 Grunau Babies, 2 Baby-Falken, 1 Schweizer S.G.U. 1-19, one Schweizer S.G.U. 2-22, 2 Slingsby T-21, 1 Kranich, 3 Olympias and 3 Weihes. For aero-towing the school has two Tiger Moths.

Instructing is entirely by dual control, as being quicker and safer. In addition, safety in instructing will be further ensured by the use of radio transmitters. Some ten clubs were allotted transmitters in 1952 and still more clubs will receive similar ones in 1953. This will certainly reduce the crash rate a great deal (in 1952 the rate for sailplanes was 0.6 per 100 hours and 1.1 per 1,000 launches). Especially when the pupil makes his first solo flights, these gadgets will certainly in a high degree reduce the mental sufferings of the instructor on the ground—to say nothing of the pupil himself.

Clubs and Associations

London Gliding Club

DURING 1952 the club flew 2,007 hours. The Sky is now in use, two months earlier than had been expected, owing to the terrific efforts of "Johnnie" Walker and Noel Quinn in the workshop, for which Johnnie has received the Desoutter Trophy and Quinn a suitable memento. At a ceremony on 24th January, Miss Carole Carr, the television star, named the Sky "Elizabeth", after which Dan Smith took it up on the first flight ever made by a club-owned Sky.

Another improvement in club operation came into use at the end of February, when a winch was placed well behind the top of the hill, at the easternmost limit of the club ground, and launched the gliders from the westernmost limit by the Tring Road. This gives a launching run of 1,300 yards in easterly winds when the slope is unsoarable. At the first trial, the T-21 was launched to 1,100 ft. above take-off and the Prefect to 1,400 ft., but the wind was light and there was still some friction of the cable against bushes on the hillside. These will soon be cut down, so that, with strong winds to help, greater heights should be possible. For lightness, a length of piano wire is added to the cable at the glider end.

Thermals began on January 25th with climbs to 850 ft., and in February N. P. Anson reached 3,000 ft. During the week-end 21st-22nd February, just over 100 hours were flown.

Dr. Scorer visited us on February 7th to stimulate an instructive discussion on thermals, and with a further discussion on cross-country flying to be held on March 28th, the club should be all set for a season of exploration.



After naming the London Club's new "Sky", Miss Carole Carr is presented by Dan Smith, C.F.I., with a bouquet.

Courtesy "The Aeroplane."

Deeside Gliding Club

SOMEWHAT worse weather conditions than usual have limited activities during the last quarter. Occasional soaring flights, of disappointingly short duration, have been made from the Clwyd Gate, but a 30-minute thermal flight from a winch launch at Sealand in January has raised hopes of what may be possible in this direction in the spring. A couple of exploratory flights have been made from the Dyserth site and this looks promising. This is particularly important now that access to the usual launching point at Prestatyn appears to have been cut off by new fencing.

A very successful New Year dinner was held at Crease's Clwyd Gate Hotel, at which Deeside had the pleasure of the company of several members of the Cambridge club, who also took the opportunity of their visit north of doing some circuits in our "vintage" SG-38 and also in the spoiler-fitted Kite I.

V.B.

Royal Naval Gliding Club

It has been decided to purchase an additional two-seater Tutor so that all four clubs operating this year may use dual instruction, in conformity with the strong recommendation of the B.G.A.

Branch Clubs operating in 1953 are :—

Portsmouth Naval G.C. at Gosport.
Heron Gliding Club at Yeovilton.
Gannet Gliding Club at Eglinton.
Fulmar Gliding Club at Lossiemouth

Since last year's camps at the Midland and the Derby and Lancs. Clubs were such a success, the Hon. Secretary, Lieut. Cdr. Tony Goodhart, has arranged two camps for this season to take place at the end of July : a soaring camp at the Long Mynd, and an ab-initio camp with the Army Gliding Club at Lasham.

A supply of ties and squares incorporating the Association's emblems, the naval crown and sailplane, has been ordered and will shortly be available to members of Branch Clubs and to service personnel who have attended camps organised by the Association.

A.G.G.

HOW TO GET "GLIDING"

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Maroon Leather Cloth Binder, with Gold-Lettered spine, taking 12 issues (3 years) : price 15/- post free from the B.G.A.

Surrey and Imperial College Gliding Clubs

FLYING re-started after the winter shut-down on 25th January; but as, since then, only training has taken place, this seems to be an opportunity to give some information on our first year at Lasham and also of our hopes for 1953.

Lasham is obviously a superb thermal site, and now that we are over the problem of settling in, we can this year set about the exploitation of its possibilities. This will be made easier by the acquisition of a tug, which it is hoped, if negotiations go according to plan, will arrive early this year. The lack of a tug, an essential for a flat site if training is not to be disrupted, explains the rather pathetic number of cross-country miles for 1952, for though we achieved 5,939 launches, we only flew 1,184 cross-country miles. (This figure includes Wally Kahn's trip to Faldingworth, 138 miles, for which he was awarded the Wakefield trophy) Other figures for 1952 show that Club gliders flew 360 hours and that we flew on 126 days, of which 61 were soarable, during the year.

The Clubs' fleet at present consists of Daisy, our T-21b, two Tutors, four Olympias and the Wiehe, but we are hoping to sell one of the Tutors and replace it with a T-31 so as to have 2 two-seaters; 1953 should also see the arrival of the two-drum winch, which is being built around a Rolls Royce engine. As the result of a general discussion held at the Club in January, the Committee have decided that we are now of a size where a full-time ground engineer is a necessity, and enquiries are being made for a suitable person.

We are hoping to send one or two of our Olympias to the Mynd at Easter, and for Whitsun we are holding an open week-end at Lasham and are asking visitors from other Clubs and private owners to come and compete against us.

There are four courses arranged so far this year:—Imperial College, 29th March—6th April; Surrey, 7th—18th April, 4th—15th May, 7th—18th September. Anyone wishing details of these should write to the Secretary, Surrey Gliding Club, Lasham Aerodrome, near Alton, Hants, or ring Herriard 270 at week-ends.

H.T.

Army Gliding Club

FOG, snow, ice, high winds, low cloud—all these have played their part to reduce the amount of training we have been able to do this winter. A hard core of keen members continued to turn up, despite the weather, to do many jobs necessary to get our ground equipment ready for this season. We hope they will reap their reward in Silver C's.

Last year again saw an increase in club activity and efficiency as the following statistics show:—

Total launches	5,677
Flying hours	707
Cross-country miles	700
Accidents (minor)	1

We were able to do a great deal of local thermal soaring, but cross-countries were few, due chiefly to lack of retrieving facilities. The club has now bought the famous Wills mobile Ford V8, so no excuses *this* season, please.

We have also exchanged our Cream Grunau for a new Prefect, which has already sampled the Lasham air. Pilots who have flown the Prefect say she handles like an Olympia, which should result in good utilisation.

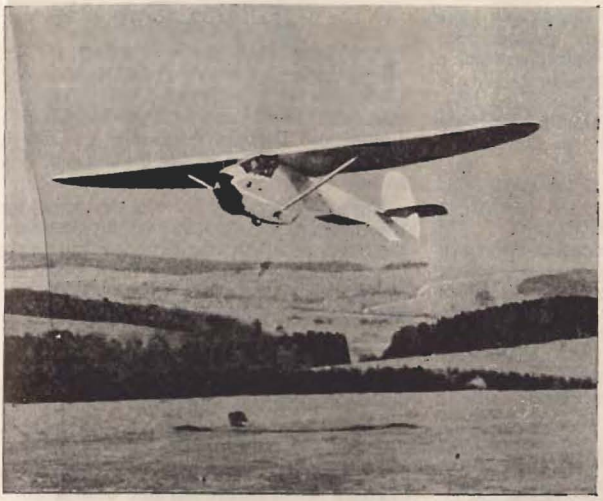
By suggestion of the R.A.F.G.S.A., the Jock Forbes Weihe will be kept at Lasham this season. The idea is to form a Weihe Club, open to all who are competent to fly this very rare bird. Passing out pilots to fly and keeping the accounts will be the responsibility of John Free and the Army Gliding Club.

A.J.D-D.

Air Traffic Control.

The Ministry of Civil Aviation has written to suggest that in the interests of air safety all gliding clubs should obtain and display the recently issued perspective map of the U.K. Airways System. Because of its perspective effects the chart is not suitable for navigational use, but has been specifically designed to provide a readily assimilated mental picture of the air space involved in the Airways System, and its relationship to the ground.

Copies obtainable from the Royal Aero Club, Aviation Centre, 19 Park Lane, London, W.1, for 3s. 6d. each plus 3d. postage.



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Midland Gliding Club

UNFAVOURABLE weather conditions have prevailed for a longer period than usual this winter, and the maintenance side of the Club has definitely benefited. We are able to report that our long-awaited two-drum winch is very near to being a working proposition—thanks mainly to Dave Dennett and his assistants.

We did not organise a Club party this year, but a specially arranged Christmas dinner was very well attended.

During the period December-February we had several good circuiting days with a light north wind prevailing, and at times this was sufficient to keep someone up for perhaps half an hour at the slightly north-facing south end of the site. Numerous members have now converted to the Prefect and its popularity is not in doubt; in fact, we are eventually hoping to get a second machine of this type.

The only outstanding soaring occasion to report was 21st December, when a small "wave" was laid on all day. The Petrel in the morning with Bob Neill, Snr., and in the evening with Teddy Proll reached 7,400 ft. a.s.l., Rutherford 6,800 ft. in the Olympia and Anstey 6,000 ft. in the Silver Tutor, while Hickling in the Blue Olympia, Thwaite, Dennett and Proll in the Prefect all reached over 5,000 ft. a.s.l.

The main feature of the day was the almost complete lack of cloud, and some exceptionally good air photographs were taken by Bob Neill, Snr., from 6,000 ft.

Statistics for 1952:— Total launches from site 3,671 (club 2,568). Total hours 1,530½ (club 1,103¾). Certificates gained from site, 21 A, 23 B, 34 C, 5 Silver C, 23 Silver C legs, 1 Gold C height. Flying members, 119; non-flying, 24. Flying days, 141; soaring days, 104. Cross-country mileage from site, 1,265. Average time per launch, 0.417 hours (club, 0.429 hours).

J.H.H.

At the Annual General Meeting in February, the following were elected to office:—President, C. E. Hardwick, M.B.E.; Chairman, R. N. Thwaite; Vice-Chairman, R. L. Neill; Secretary, S. H. Jones; Treasurer, F. G. Batty; C.F.I., J. H. Hickling; Deputy C.F.I., J. W. Horrell. Other committee members, H. T. Testar, J. Anstey, R. Rutherford, F. Wright, A. Sheffield.

Cambridge University Gliding Club

THE Blue Olympia was hired by five senior members of the Club and spent Christmas at the Clwyd Gate. The five members, Ken and Elizabeth Machin, Lionel and Barbara Alexander and David Martlew flew the Deeside S.G.38 and Kite as well.

Barbara Alexander flew the Olympia from the Clwyd Gate and tells me that she found the effect of lift in one direction but in the opposite direction over the same place she found sink. The wind was moderate and was blowing obliquely to the hill.

Ken Machin flew from the top of Prestatyn Hill in a N.W. wind and after one hour and a half he landed back on top in a hurry as snow was imminent.

Lionel Alexander and David Martlew flew from Moel-Y-Pare to explore the site. They found smooth, reliable lift from different wind directions and also a good bottom landing field. They also found mud and this hampered their movements more than somewhat.

The Sky we have been testing has left us. The tests required some 40 aero-tows and the results are not yet known

Flying has continued unabated throughout the winter with the T-21b "Bluebell" and the Prefect. Marshall's Airfield has been foggy and soggy but the authorities have been helpful.

The Olympia trailer that made a name for itself at Camphill last summer has been scrapped and another one built. The new one is bigger and a little heavier but it is expected to stand up to the rigours of gliding better. The trailer is built by our genial G. E. Ted Warner, and was designed by W. Parr, one of the senior Club members.

The Club has also bought a Bedford 15-cwt truck as a retrieving vehicle to replace the Beaverette which has been with us since the war. The mechanical sub-committee under Dr. Rizk's guidance have repainted it and modified it for club use.

The appearance of these two new items of equipment marks the end of an era in the life of the club and they will get their first real test at our March camp which we are again holding at the Mynd.

J. C. RIDDELL.

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Yorkshire Gliding Club

HAVING been snowed up for several weeks, we have little flying activity to report. On 15th February two members visited the clubhouse on ski, along the edge, the only way in. A week later, hardly a trace of snow remained, and on 23rd February a wave enabled Stan Skelton to reach Silver C height, 4,700 ft. (alas, no barograph!) and M. Bishop and W. J. Pearce of Middleton St. George R.A.F. Gliding Group reached 7,150 and 5,200 ft. respectively.

Though still suffering from a chronic shortage of available instructors, we hope, within a few weeks, to have a resident Instructor/Ground Engineer, so that our 16 ab-initios, still incredibly enthusiastic in spite of many frustrations, will have a chance of being ready to enjoy some summer soaring.

Plans are going ahead for our summer activities; enquiries re membership and Training Camps are rolling in, all we need now is the weather. We are especially looking forward to meeting old friends and making new ones at our Whitsuntide Rally.

S.P.

Southdown Gliding Club

OUR Annual General Meeting was held at the Norfolk Hotel, Eastbourne, on Saturday, 14th February. It was reported that the amount of flying done during 1952 was down compared with the previous year, hours being 347 (438 in 1951) for 2,184 launches. In consequence our financial state was not as good as we should have liked; after some discussion it was decided to raise the Country and Full Flying Member's subscription a guinea to four and five guineas respectively. The Committee's suggestion that soaring in the Cadet should be at a rate of 5s. per hour, minimum 2s. 6d. was approved.

Together with most other gliding clubs the weather affected the amount of flying done. Our hill site at Firle was only visited on three occasions and only on one of those were conditions ideal. There was also a lack of soaring over the cliffs, and Beachy Head was only soared on two days. Philip Wills was guest of honour at the dinner which followed, and Mrs. Kronfeld presented the Cups. The Learney Cup went to Dr. Jameson for his flight from Lasham, 37 miles to Romsey; the York Cup to George Constable for gaining 4,100 ft., also from Lasham. Ray Brigden's outstanding flight along the Downs from Firle to Kithurst Hill earned him the John Lawford Cup.

C. of A's have been in progress since the middle of November; Ray Brigden, Don Snodgrass and Ken Pirelli are again shouldering the main burden, together with a few other stalwarts. A Tutor on which the work is being carried out in Brighton is being fitted with spoilers, a cockpit cover and being generally made more efficient. The year's flying commenced on Sunday, 18th January, and since then has been confined to training circuits. The Surrey Gliding Club's GreenO has been at Friston since the beginning of the year with the hope of doing a little cliff soaring; we hope the S.W. wind will soon oblige.

A.R.S.

Scottish Gliding Union

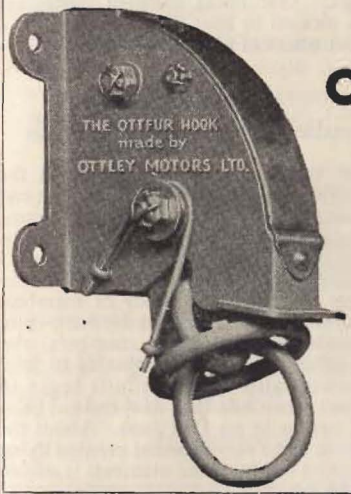
NO outstanding flights have taken place since the last issue of GLIDING. In fact, the Olympia has not been flown for three months up to the date of writing these notes. Activity has been confined to training circuits at Balado and occasional excursions to slope-soaring sites with the Fordson winch or bungey. On one occasion at a north wind site, eight miles east of Balado, the first launch produced pleasant soaring at 1,100 ft., while the second resulted in a steady glide to the bottom. The reason was considered to be damping of the slope lift by waves from upwind, the roll clouds being visible all day upwind and downwind of the site.

We were pleased to have a visit from Ann Douglas and Lorne Welch on the first week-end of the year. Two of our Instructors were examined for categorisation and the C.F.I. of the Aberdeen Gliding Club was also present. We appreciate these periodic visits by the Instructors' Panel and find the suggestions and advice very helpful and the discussions stimulating.

Summer Holiday Courses

Three seven-day courses and one ten-day course will be held this year, charges being the same as before. The dates are as follows:—4th-11th July, 18th-25th July, 1st-11th August, 22nd-29th August.

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Bristol Gliding Club

A PARTICULARLY wretched winter restricted flying activity somewhat during December, January and February, but the annual C. of A. inspections on the aircraft are being carried out one by one at Lulsgate. By the end of February the inspections for the Green Tutor and the Sedbergh were complete. The latter presented quite a problem because the original paintwork was peeling off badly, but extensive re-covering and re-spraying were carried out with the kind assistance of an obliging aircraft company not a hundred miles from Bristol. The Red Tutor is being fitted with a belly-hook, while a certain amount of rebuilding of fuselage structure on the Grunau Baby is having to be undertaken as a result of deterioration due to damp. A leaky hangar roof prompted us to de-rig the Olympia and store it in the club-house building pending the return of better weather. The remaining aircraft in the Club fleet, the Yellow Cadet, is flyable but gets very little use as Club pilots usually go solo on the Tutor.

The state of our hangar and clubhouse buildings at Lulsgate is giving us cause for concern. War-time structures relying mainly on corrugated iron, they were clearly not meant to last for ever and are rapidly rusting away over our heads. Adequate repair of the roof of our large blister-type hangar is a task beyond our financial resources and we don't seem to get much joy from our "landlord", the Air Ministry.

We now have the use of two adjoining fields at Roundway, though they are divided by a right-of-way flanked on each side by a fence; these, together with the cows with whom we have to share the fields, give rise to some interesting problems in winching. Another major snag at Roundway is the tendency for all wheeled transport to get bogged down in the sea of mud which appears in rainy weather. However, we hope for increased activity there this year, and plan to start with an Easter Camp.

Total launches for 1952 were 5,776, an increase of 151 on the 1951 total. Flying hours show a decrease: 420 hours for 1952 as compared with 466 for 1951. Restricted conditions at Roundway and the absence of the National Competitions in 1952 doubtless had something to do with this.

It looks as if the Hon. Treasurer will again be able to announce a surplus of some hundreds of pounds on the year's workings at the Annual General Meeting. Credit for most of this must again go to the Summer Holiday Courses, so ably organised by John Burleigh. Our many satisfied customers will be pleased to hear that we plan to run a further series of Courses this year.

J.M.H.

Handley Page Gliding Club

AFTER our earlier experiments with the combination of auto-tow launching and dual instruction, our training programme continued at high pitch in the spring and summer of 1952. It was found quite feasible to get some useful flying time in on week-day evenings to satisfy the needs of members who normally return home at the week-ends. This enabled us to attract members who would otherwise have been unable to join. Our concentrated training efforts began to bear fruit when our first dual-trained pilot Hyde, went solo on 15th June. About the same time some very pleasant evening flying was carried out by those members qualified to fly the Buzzard.

It soon became evident from the good aileron handling characteristics of the T-31b that it was a disadvantage to convert a dual-trained pupil from the two-seater to a Cadet Mk. I. The obvious answer was to convert the Cadet to a Mk. II (or Tutor, depending on who you speak to). We succeeded in buying a pair of Motor Tutor wings and a set of Tutor wing struts. Conversion of the wings proved rather a bigger task than we had anticipated, but when the job was completed the result was gratifying, as several extra provisions, such as a barograph compartment, had been incorporated.

While this programme was in progress we are ashamed to admit that we damaged our T-31b in an undershoot landing. As damage was largely confined to the wings, we decided to fit those from the Motor Tutor, and being closely related the combination worked very well, the rear pilot having an improved view through the transparent wing-panels.

Having got the two-seater flying again, our attention has now returned to the Cadet conversion with renewed vigour, and one or two new ideas, on which we hope to report in due course, are being tried out.

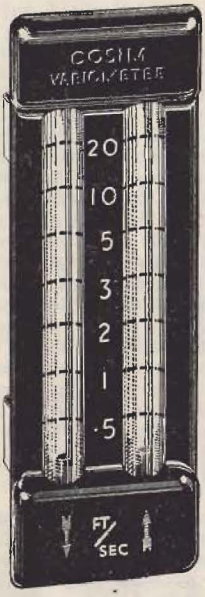
G.R.

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Oxford Gliding Club

FLYING at Kidlington has continued steadily through the winter at week-ends, but in December only four days were possible, and on one of these conditions clamped down after the first flight! But there were 69 launches in the month. It was tantalising on 21st December to see a definite stationary wave cloud about a mile away to the north of the site, which vanished before anything could be done about it.

In January eight days were used, with 165 launches, and both Woodford and Macleod qualified for the B certificate in the Cadet. February was better. with just over 200 launches on the six days possible. The 7th produced conditions which looked soarable, but eight attempts in the Olympia failed to make contact, and it was not until the 28th that Stafford-Allen kept the Olympia up for half an hour, reaching 1,500 feet.

With the prospect of the arrival of soarable machines there is considerable competition to fly the Cadet, from which a number of pilots are ready, or almost ready, to graduate to the G.B., when it arrives from its C. of A. overhaul. Then the private owners will have to look to their laurels!

Derbyshire & Lancashire Gliding Club

SO often in the winter, just when you have managed to get everyone interested in a job of some kind, the weather clears and there is a terrific "bind" to fly. All work stops, of course, and one man gets perhaps half an hour's flying—at the cost of anything up to 20 or 25 man-hours of work on maintenance or what-have-you. This winter the state of our winches, Beaverettes, etc., reached such an all-time-low that we decided to stop all flying during February and undertake "Operation Refit". The response of the members to this scheme was, on the whole, very satisfactory, and a number of major jobs were tackled. Of course, we did not complete all that we should have liked, but at least we shall not now come to a compulsory dead stop just as the better soaring weather begins.

Our analysis of launching and flying costs is, we feel, of considerable interest. It shows that launching (i.e., petrol, oil, winch wires, bungey, maintenance and depreciation of winches and motor transport) was more or less self-supporting at 2s. per launch. over the 3,600-odd launches carried out by club equipment in 1952. Flying, however (i.e., insurance premiums, depreciation of aircraft, professional maintenance of, and repairs to, aircraft and materials for same) cost nearly three times what we charged for it—this figure covering the seven club machines with a total of just over 700 hours flying.

The gross cost of flying, on the above basis, was just over 31s. per hour, and with an average utilisation of over 100 hours per aircraft, we feel that this is a genuinely representative figure. Since flying fees brought in just over 11s. per hour, the discrepancy is a serious one, and the ordinary member would do well to remember it when contemplating any "moan" about the expense of his flying.

Our Saturday night programme of entertainments has carried on through "Operation Refit", with the exception of a dance organised by the ladies for February 14th, which had to be called off on account of snow. The last event of the winter programme was a lecture by Dr. Scorer on 28th February, at which he explained his conception of thermals. Attendance was not all that could be desired, but those who did come were well rewarded. The lecture was illustrated by a film which showed, amongst other things, the incredible evolutions of Dr. Scorer's bath water.

G.O.S.

Royal Air Force Gliding & Soaring Association

Wessex R.A.F. Gliding Club

THIS club has done no gliding since the end of September, 1952, but we have acquired one Olympia and one Baby Grunau in the last couple of months, to add to our two Kirby Cadets, one T-31 and one Gull IV. It is hoped to enter a team from Boscombe at the Easter meeting at Long Mynd and with some luck, a team in the Nationals.

A.J.R.R.

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