WARM AIR 16 May 20

Aviation Sports Club Gliding Newsletter

THIS WEEKEND:		Club Cellphone 022 357 6731	www.ascgliding.org
Saturday	Instructing:	Rex Carswell	Bank Acct 38-9014-0625483-000
	Towing:	Derry Belcher	
	Duty Pilot	Ian O'Keefe	
Sunday	Instructing:	Ivor Woodfield	
	Towing:	Fletcher McKenzie	
	Duty Pilot	Matt Moran	

LEVEL TWO THURSDAY - WE WILL BE ABLE TO FLY THIS WEEKEND
We will separately send out the procedures we will use later in the week.

MEMBERS NEWS

WHAT ARE OUR MEMBERS DURING LOCKDOWN **Izzy Burr**

Short update on what I've been doing during the lockdown. I've been working a bit at New World as well as doing a lot of work for my cadet unit. In between that I have spent a decent amount of time building a Lancaster model I was given for Christmas. It is 'S for Sugar' from No 467 SQN RAAF based at RAF Waddington in England 1944. Would've liked to do the one at MOTAT but these were the decals it came with. I was never particularly good at art in school so it's not perfect, but pretty happy with how it turned out. Now just need to find somewhere to put it.

Some of my readers are sending me stuff like this……thanks John Issott

By Neil Williams - British Aerobatic Team member
1970 World Aerobatic Championships, practising at Hullavington

The weather at Hullavington was good, with 2/8 of cumulus based above 3,500ft, 1,066m. The wind was south-easterly, 5kt to 10kt and there was no turbulence.

Because there were three static balloons flying in front of ATC, it was decided that we would use runway 05/23 as datum and fly our sorties over the grass, parallel to that runway. This would keep us well clear of the balloons and the wind was so light that it did not pose any problems.

Two Zlins were operational that day, with three pilots. I had flown one sortie and took off on the second with full fuel tanks at 11.35 a.m. The sequence was flown twice through satisfactorily and the aircraft was climbed, for the next and final run through. Everything progressed normally until the completion of the fifth figure. which was a vertical climbing half roll, half outside loop to a vertical dive and pull out to level flight at about 1,000ft, 300m. During this pullout, as the nose came up to the level attitude, with 5g indicating. There was a loud bang and a severe jolt was felt through the airframe.

I have heard eyewitness reports in which the aircraft is said to have "staggered". That is perhaps the best way to describe the immediate sensation following the failure. At the same instant there was a sudden and very peculiar increase in slipstream noise. and I found myself leaning against the straps to the left although, as I looked left, the aircraft appeared to be flying level. I had reduced power and centralised controls instinctively at the first signs of trouble.

The reason for the sensation of being pulled to the left was very soon apparent. Although the left wing was flying more or less level, the rest of the aeroplane was rolling left around the failure point. At this stage there was some degree of control over the aircraft, which was by this time beginning to lose height. I throttled fully back to reduce speed and thereby reduce the flight loads, but this caused the nose to drop further. Dihedral was increasing steadily and the roll and yaw to the left were becoming progressively more determined. Full power was then applied in an attempt to get the nose up, but this had no effect at all on the situation. By this time the aircraft was outside the airfield and losing height fast. It was my intention to try to keep the wings as level as possible and to try to achieve a shallow flight path with the intention of arriving, if possible, right way up in the most convenient field available. It was, however, apparent that if control was being lost at that rate, it would have gone completely before reaching the ground. In fact all control was finally lost at about 300ft, 91m.

At this stage the aircraft had turned left nearly 90° from its original heading, and was banked 90° to the left (at least the fuselage was). I thought the wing had folded to about 45° but it was probably less than that, if one takes into account the fright factor. Full right aileron and rudder were being held on and the throttle was wide open as the bank reached 90° left and the nose finally dropped. The sideslip was very high, and the instinctive reaction to pull the stick back only worsened the situation. I had heard a report from Bulgaria some years ago where a top wing bolt had failed on an early mark of Zlin whilst under negative g and that the aircraft had involuntarily flick rolled right way up, whereupon the wing came back into position, and the aircraft was landed by a very frightened, but alive, pilot. I had guessed by this time that a lower wing bolt had failed and that I was faced with a similar situation, albeit inverted.

It seemed that if positive G had saved the Bulgarian, negative G might work for me. In any event, there was nothing else left to try. I centralised the rudder, rolled left and pushed, still with full throttle. The wing snapped back into position with a loud bang. which made me even more concerned for the structure. Immediately the negative G started to rise and the nose started coming up. Altitude was very low by this time and I had no instrument readings at all. For just a moment I thought I was going into the trees, but then the nose was up and the machine was climbing fast, inverted. I was just beginning to think that I might make it after all when the engine died. I checked the fuel pressure - zero. A check around the cockpit revealed the fact that the main fuel cock had been knocked off. This could possibly have been the result of the jolt which accompanied the initial failure. I think I was probably thrown around in the cockpit and may well have accidentally knocked the cock then. I selected reserve fuel and almost immediately realised that this position would take fuel from the bottom of the gravity tank, which was of course now upside down. I therefore re-selected main tank and after a few coughs the engine started and ran at full power.

Inverted circuit

I was quite low again by this time and initially started to climb straight ahead. I then turned back towards the airfield and continued the inverted climb to 1OOOft, 305m. By this time, the remainder of the team had been very quick off the mark and had alerted crash facilities. I throttled back to conserve fuel as I knew the gravity tank was only good for about 8 minutes safe inverted flight. I then turned the aircraft in steady flight and held the stick between my knees (no aileron trimmer) whilst I used both hands to tighten my shoulder harness even more. Had a parachute been carried I would have climbed as high as possible and used it.

I then considered using undercarriage and/or flaps, but rejected both. Flaps were no use to me whilst inverted, and I could not fly right way up anyway. Also if only one flap extended it would cause an immediate loss of control. The undercarriage required more thought. If I could make an inverted approach with a last minute rollout and if the aircraft arrived on its wheels damage might be minimised. However, if the gear fully or partially collapsed the aircraft might turn over. Also, and this was the biggest argument against, the Zlin undercarriage usually extends with a fairly solid thump.

I did not know exactly what damage had occurred and I was concerned in case the strain of lowering the wheels might remove the wing altogether. It was just as well that I left thewheels up, because the failure was not the wing bolt after all, but in the centre section inboard of the undercarriage leg.

I also considered four possibilities for landing, namely, inverted ditching, deliberately crashing inverted into trees to take the impact, inverted crash-landing on the airfield, or an inverted approach with a last minute rollout and hope for the best.

The last seemed to hold the best chances for survival, but I then decided to experiment to see which way was the best to rollout; if the rate of fold of the wing was sufficiently slow it might have been possible to exercise some control over what was obviously going to be a belly landing (I hoped). A rollout to the left was attempted, and the wing immediately started to fold, with the result that the inverted flight was quickly re-established. The rollout to the right was not investigated, as the left wing was obviously being weakened by these manoeuvres. Also the supply of adrenalin was getting rather low by this time.

A wide inverted circuit was made for the grass strip parallel to runway 23. As the crosswind was insignificant this afforded the best approach, clear of buildings and balloons. The threshold was crossed at 112 m.p.h., 180 k.p.h. at about 200ft, 60m with the throttle closed. Petrol and switches were left on in case it was necessary to overshoot; also the canopy was retained, since I did not want my height judgement affected by slipstream. The possibility of a jammed canopy was considered, but the hood is very light, and I felt that I could break my way out if necessary. A slow inverted flare was made and the aircraft was levelled as near to the ground as possible.

Low, low rollout

As the speed fell to 87 m.p.h., 140 k.p.h. a full aileron rollout was made to the right, and just a trace of negative G was maintained in order to hold the left wing in place. The aircraft responded well to the controls at this stage, but as it approached level flight the left wing started to fold up again. The nose was already down as a result of the slight negative G, and subsequent examination of the impact marks showed that the left wing tip touched the ground during the roll, although this could not be felt inside the aircraft. As the wing folded the aircraft hit the ground hard in a slight nose down, left bank attitude. I released the controls and concentrated on trying to roll into a ball, knees and feet pulled up and in, and head down protected by arms. I had a blurred impression of the world going past the windscreen sideways and then with a final jolt, everything stopped. I released the harness, which had done a very good job, and then found that the canopy had sprung 6in, 15cm open and jammed. I didn't bother to investigate this, as the petrol tanks had split! I gave the canopy a resounding blow and it flew open first time. I felt mildly surprised that everything was still working as I evacuated the area, and having decided that the aircraft was not going to burn, and having also collected some semblance of breath and composure, I returned to the aircraft and made all switches safe. The crash services were on the scene very quickly, which was most encouraging. Fortunately they were not required.

The aircraft was a complete write-off, but on reaching into the cockpit and checking the, seat, it was as solid as a rock, all the straps were intact, and on moving the control column, both ailerons worked in the correct sense. True, there was a failure, but it is a tribute to the Czech designers and engineers that the aircraft could be flown at all.

It was a nasty experience, but a lot can be learned from it, notably that the aileron was acting as a geared tab, as the wing folded. This resulted in the left aileron

being pulled down, since the aileron rods were intact, and as the wing moved, the aileron was applied without any movement of the stick. Any attempt to apply right aileron merely worsened this situation. I could have saved myself a lot of problems by rolling left immediately the failure occurred. It seems also that the damaged wing must be towards the ground during any rolls, either in or out. The ability to fly over an airfield with crash facilities is absolutely essential. This time assistance was not required, but lives have already been saved by this.

This situation may never be repeated but if such an accident does occur again the information in this account may be useful.

I hope it will never be needed.

LEARNING HOW TO STITCH……*Adam Woolley*

Strange subject line. I'm a flatland pilot, some would say that's easier, others would say that's harder – how do you know where the thermals are or where the micro-energy is in the sky? In this article, I hope to describe how to do just this, though for the blue, or as some might like to say in a dry sky, no cumulus…

I first heard of the technique from a very experienced cross-country pilot at my home club, on a blue day Adam, have you tried stitching the air? Or today was a great day for stitching, how did you find it? What on earth are you on about Hank? He explained…

Imagine you're on course, tracking due North to a turnpoint miles away, you're entering an area of lift, the glider, your backside and soon your instruments are telling you this. You gently slow down to feel the sky, it's evident that it's not a thermal or something you want to circle in. What do you do now? It's a blue day, just stumble along and wait until you blunder into something else? Start heading towards another area of hotter or higher terrain?

There's actually a street of energy there somewhere, you've just got to get onto it, just like you would on a cumulus day. To make it easier, assume this street is narrow and running slightly off course to our North track above. You've entered the lift, now you're leaving it direct on track, you fall out of the lift. Ok, now what? That's your first mistake, you haven't taken your calculated guess to improve your chances. You'll either continue in the sink or you'll just have no idea where the lift street is until you stumble into your next climb. This is how 'stitching' comes in…

So upon exiting the area of lift, purposely head off track in a known 'error' direction. In this case, head for the turnpoint on a heading of 350*, left of track. Almost immediately, the lift falls off – and that's ok! You now know where the lift is, it must be on the right, so now turn to heading 020*, guess what, the lift increases again, bingo! Hold this heading, because it's a known right of track 'error'. After a while, the lift will fall off again – and that's ok! Guess what you do next?

You got it, turn back to the left, back into the lift – keep repeating. You can easily see now that if you were

just to fly straight when you leave the lift area, it all comes down to guessing. I've been able to do this for 20km before, which naturally pays in dividends with your overall joy of the flight, speed, and points

Enjoy the next chance you get to go to a sewing group…

Adam Woolley was born into the gliding world, being the 3rd generation in his family. Going solo at 15, his thirst for efficiency in soaring flight & quest for a world championship title to his name has never wavered. One big passion is sharing his experiences & joy with other glider pilots all around the world. Adam is an airline pilot in Japan on the B767 & spends his off time chasing summer around the globe. He has now won 7 national Championships & represented Australia at 5 WGC's & 1 EGC.

The Assault Gliders Part 1 Jonathan Pote 2020

Thus far we have covered some of the unlikely gliders that were born of the Second World War. Whilst not necessarily failures, most had little future, the exception being the Messerschmitt Me 321 'Gigant' in which nearly one-hundred and fifty troops, surrounded by probably the entire output of aviation grade pine, ash and spruce timber from ten hectares of forest, trusted their lives to a triple tow. Some assault gliders, however, were extremely successful and achieved important military objectives that no other machine could at that time.

The DFS 230:

Wikipedia tells the story:

The **DFS 230** was a German transport glider operated by the Luftwaffe in World War II. It was developed in 1933 by the Deutsche Forschungsanstalt für Segelflug (DFS - "German Research Institute for Sailplane Flight") with Hans Jacobs as the head designer. The glider was the German inspiration for the British Hotspur glider and was intended for airborne assault operations.

In addition to the pilot, the DFS-230 glider had room for nine men who sat close together on a narrow bench located in the middle of the fuselage (half facing port, half facing starboard). Entry and exit to the cramped interior was by a single side door. The front passenger could operate its only armament, a machine gun firing over the pilot's head, to suppress opposition from defenders. It was an assault glider, designed to land directly on top of its target, so it was equipped with a parachute brake. This allowed the glider to approach its target in a dive at an angle of eighty degrees and land within 20 metres (60 ft) of its target. It could carry up to 1,200 kg (2,600 lb) of cargo in lieu of troops.

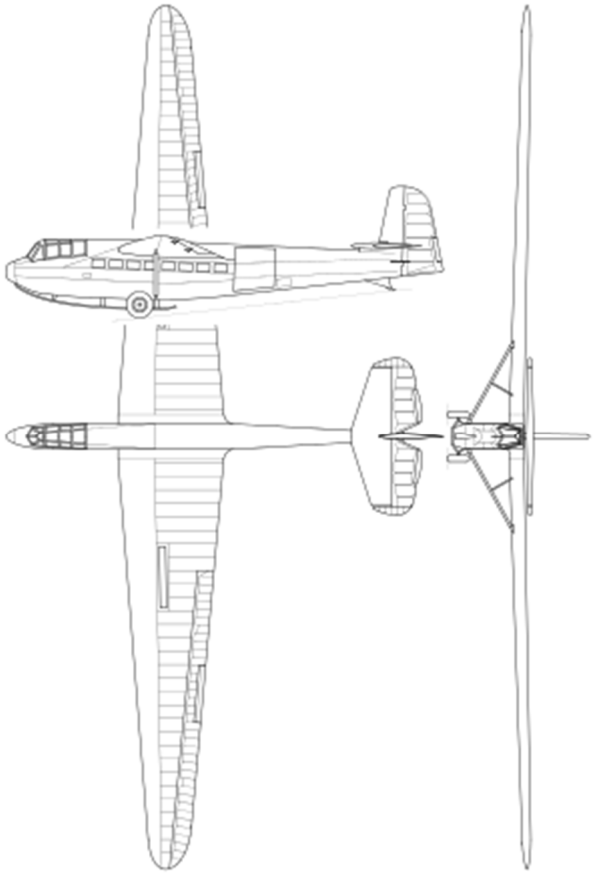
It played significant roles in the operations at Fort Eben-Emael, the Battle of Crete, and in the rescue of Benito Mussolini. It was also used in North Africa. However, it was used chiefly in supplying encircled forces on the Eastern Front such as supplying the Demyansk Pocket, the Kholm Pocket, Stalingrad, and the defenders of *Festung Budapest* (until February 12, 1945). Although production ceased in 1943, it was used right up to the end of the war, for instance, supplying Berlin and Breslau until May 1945.

Two DFS 230s flying over Italy, towed by a pair of Junkers Ju 87B tugs

By means of a cable running along the tow rope the pilots of the tow-plane and of the freight glider were able to communicate with each other which made blind flying possible, when necessary. The towing speed of the DFS-230 was approximately 190 km/h (116 mph). It dropped its landing gear as soon as it was safely in the air, and landed by means of a landing skid. The DFS-230 could be towed by a Ju 52 (which could tow two with difficulty), a He 111, a Ju 87, Hs 126, a Bf 110, or a Bf 109. The Ju 52 towed the glider using a 40 metres (131 ft) cable or, in bad weather, a much shorter rigid bar connected by an articulated joint to the tow aircraft. The DFS-230 had the highest glide ratio (18) of any World War 2 military glider other than

the Antonov A-7. This was because it was thought that the glider had to be capable of a long approach during landing, so that it could be released a considerable distance from the target so the sound of the towing aircraft did not alert the enemy. For comparison, the 'cutting edge' Grunau Baby of 1931 only managed a lift/drag ratio of 17.

The DFS 230



The capture of Fort Eben-Emael at the outset of the invasion of Belgium on May 10th 1940 (exactly eighty years ago this week) has been mentioned before. Two strategic bridges were also secured that day by a trio of DFS 230s landing at each end, the twenty-seven fresh troops in each trio easily overpowering second-rate defenders.

When the Germans invaded Greece, the Greeks having thrown out a prior Italian invasion, the same tactic was used to capture the strategic bridge across the Corinth Canal. Again, Wikipedia explains:

"On 26 April 1941, during the Battle of Greece between defending British troops and the invading forces of Nazi Germany, German parachutists and glider troops attempted to capture the main bridge over the canal. The bridge was defended by

Figure 1DFS 230 rounding out after an 80 degree parachute retarded approach.

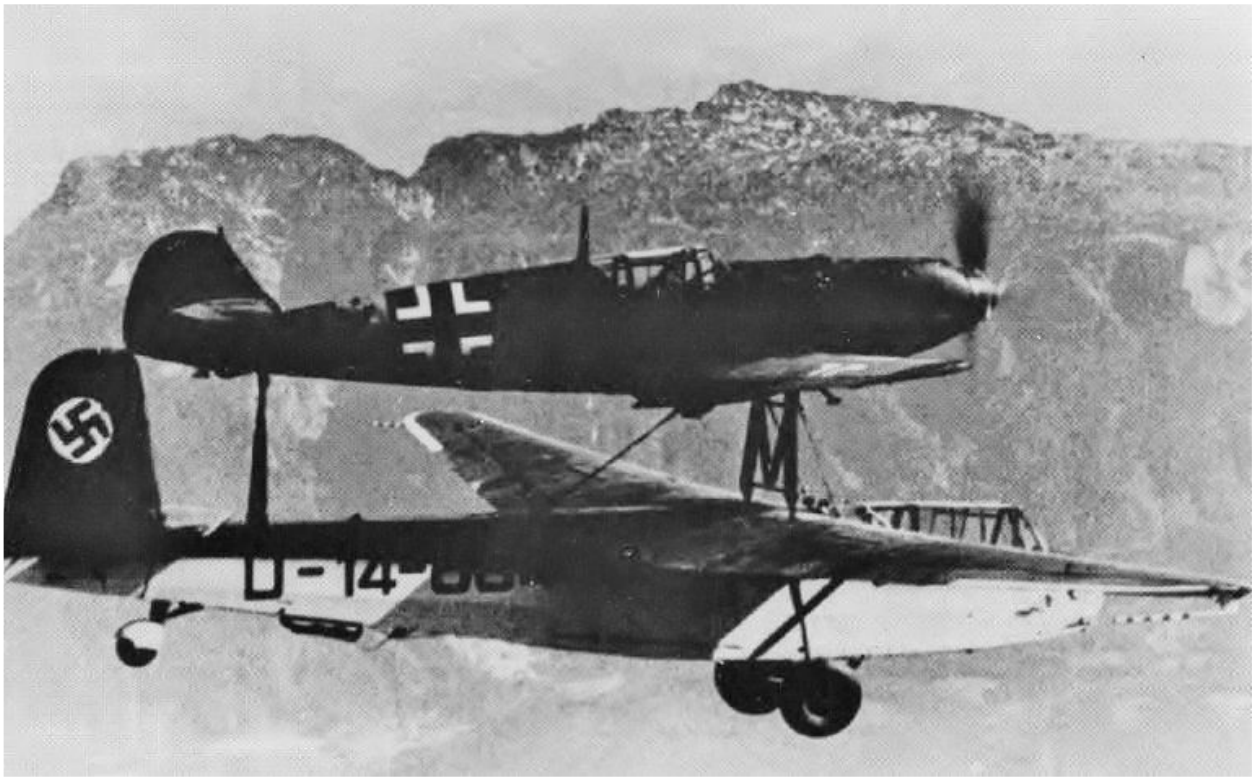
the British and had been wired for demolition. The Germans surprised the defenders with a glider-borne assault in the early morning of 26 April and captured the bridge, but the British set off the charges and destroyed the structure. Other authors maintain that German pioneers cut the detonation wires, and a lucky hit by British artillery triggered the explosion. The bridge was replaced by a combined rail/road bridge built in 25 days by the IV Railway Engineer Battalion, of the Royal Italian Army's Railway Engineer Regiment."

The fall of Greece was followed by the invasion of Crete, the defence of which was in large part New Zealand Forces. A wider significance of this campaign is generally not noticed: By having to bail out Italy in Greece (not part of his overall plan) Hitler had to delay the invasion of Russia (Operation Barbarossa) by six critical weeks. Had the German Army reached the area around Moscow six weeks earlier, before "General Winter" came to the assistance of the exhausted Soviet Armies and turned the tide over New Year 1941, history might have taken a very different course.

The DFS 230 had a metal frame which sometimes lay for years in old landing zones. About a dozen frames have been recovered, several completely rebuilt with the necessary woodwork to become museum exhibits.

Bundesarchiv, Bild 1011-568-1529-27A
Foto: Stocker, Dr. | 1943

Rapid egress, usually landing on the skid alone. Note extra exits, a field modification.



"Any additional method of launching must be discussed and cleared by the Operations Officer" Quote from the MOAP. The Me 109 could tow the glider but the later has no pilot and is presumably a remotely controlled 'glider bomb' after release.

British Designs

The Allies were quick to learn from Germany, at first copying even the mistakes (size) before creating a war-winning force. All British assault glider types were given names of leaders from ancient history beginning with 'H'. Thus the Hotspur, Horsa, Hadrian (the American CG-4 in RAF use), Hamilcar and Hengist all left the drawing board and flew. Luckily the assault glider gave way to the helicopter before history was shorn of all available historical 'H's – a letter surely better reserved for helicopters!

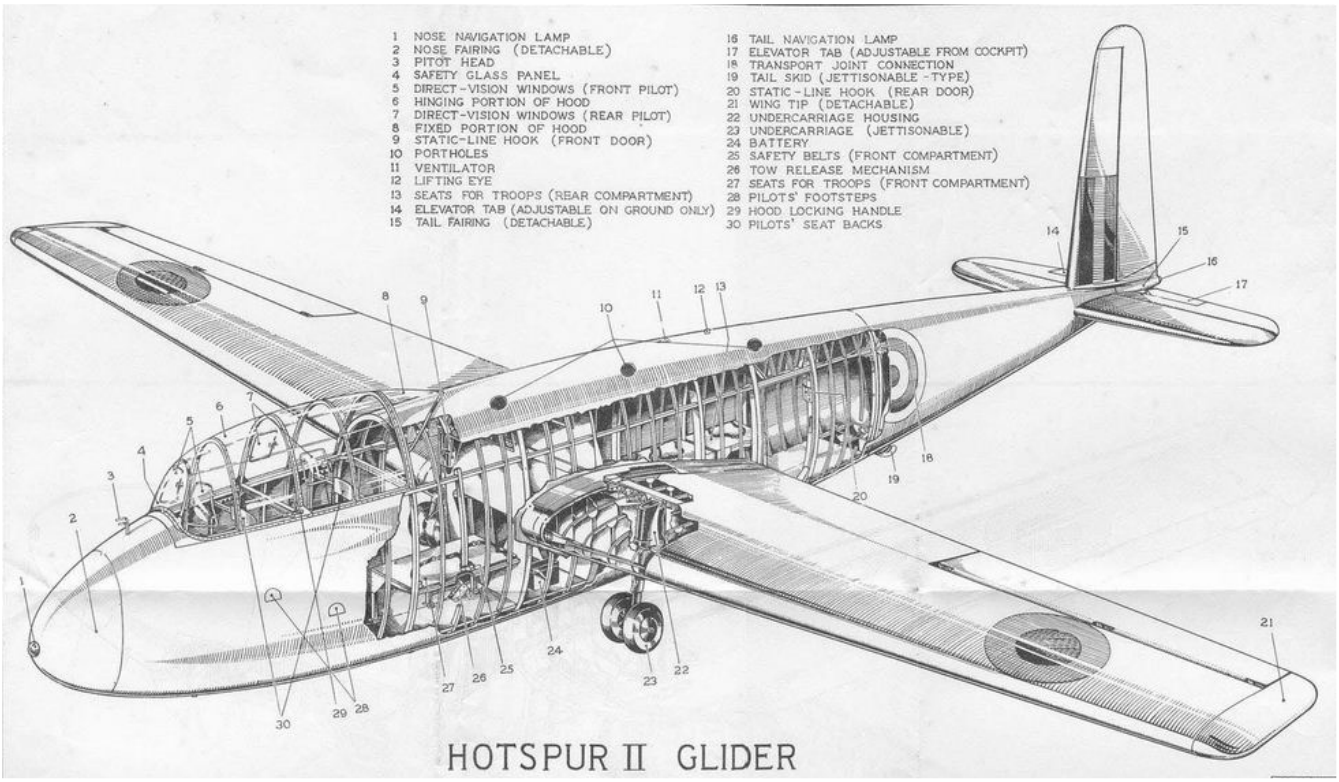
General Aircraft Hotspur

Glider pilots first trained at an Elementary Flying Training School on de Havilland Tiger Moths or Miles Magisters before converting to glider training. At the Glider Schools, a Hotspur MK III was first employed for dual instruction with the rear seats weighted for ballast and only the instructor and student aboard. The gliders were usually towed by Hawker Hector or Hawker Audax biplanes (later Miles Master and Westland Lysander "tugs") during training. From 8 to 11 dual-instruction flights usually preceded the student's first solo flight. At Operational Training Glider Schools, the flights were made with troops instead of ballast in Hotspur MK IIs. Release at high altitudes and night-flying was also part of the training.

The **General Aircraft GAL.48 Hotspur** was a military glider designed and built by the British company General Aircraft Ltd during World War II. When the British airborne establishment was formed in 1940 by order of Prime Minister Winston Churchill, it was decided that gliders would be used to transport airborne troops into battle. General Aircraft Ltd were given a contract by the Ministry of Aircraft Production in June 1940 to design and produce an initial glider for use by the airborne establishment, which resulted in the Hotspur.
Conceived as an "assault" glider which necessitated a compact design and no more than eight troops carried, tactical philosophy soon favoured larger numbers of troops being sent into battle aboard gliders. Due to this, the Hotspur was mainly relegated to training where it did excel and it became the basic trainer for the glider schools that were formed. There was an attempt to make the Hotspur more operationally useful by joining two fuselages but only a prototype flew.

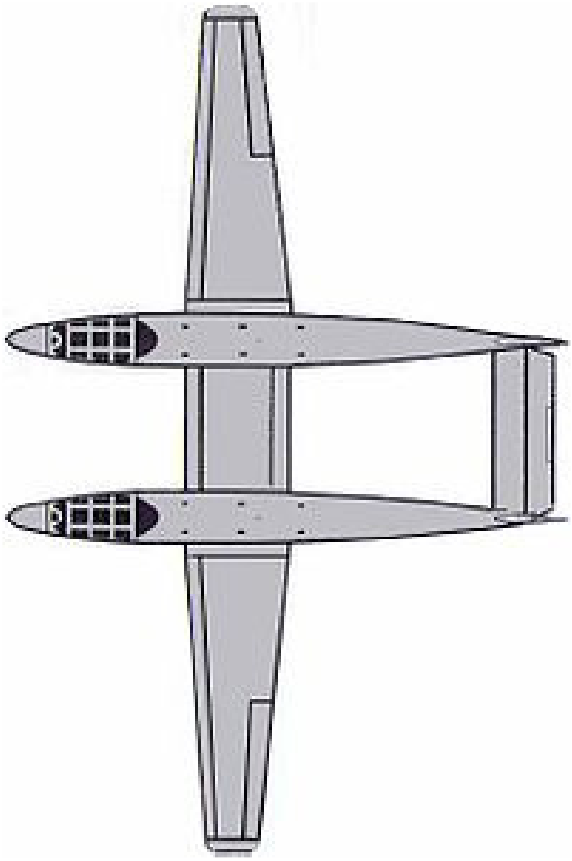
Hotspur training flight: Final instructions, wing man ready with bat.

The Hotspur was named after Sir Henry Percy, a significant captain during the Anglo-Scottish wars who was also known as "Hotspur". Sadly, being of all wooden structure, too small for a garden shed but ideal for firewood, no original Hotspur survived. The Army Museum of Flying, at Middle Wallop, has constructed a replica.



Just as the Germans realized that their DFS 230 was below optimum size, so did the Allies. The USA produced a slightly larger glider, the Waco CG-4A whose square cross section fuselage could carry slightly more troops or, importantly, bulky loads. The CG-4A could carry 13 troops and their equipment. Cargo loads could be a ¼-ton truck (i.e. a Jeep), a 75 mm howitzer, or a ¼-ton trailer, all loaded through the upward-hinged nose section.

Experience would show that the 'correct' size would be a twenty-five seater, able to carry a formed platoon of troops or light machinery, such as a Willys Jeep or light artillery. This could be towed by the ubiquitous Douglas C-47 Skytrain or Dakota, and allow perhaps twice as many troops to be landed in a confined landing zone compared to smaller gliders. Thus was born the Airspeed Horsa, the most important assault glider of all time. The Horsa and Waco CG-4A will be covered next week



Jonathan Pote

The Twin Hotspur

TAILPIECE

With the country moving to Level two Wednesday at midnight CAA have cleared recreational flying including Gliding and so has Base Commander. We are back in business but we will have some strict procedures in place that are designed to maintain social distancing as much as possible, have good contact tracing and good hygiene. Be careful and be safe. Welcome back.

ROSTER May/June 2020

Month	Date	Duty Pilot	Instructor	Towpilot	Notes
May	16	I O'KEEFE	R CARSWELL	D BELCHER	
	17	M MORAN	I WOODFIELD	F MCKENZIE	
	23	T O'ROURKE	A FLETCHER	A WILLIAMS	
	24	R BAGCHI	L PAGE	R CARSWELL	
Queens Birthday Weekend	30	T PRENTICE	P THORPE	R HEYNIKE	
	31	R WHITBY	S WALLACE	D BELCHER	
	1	I BURR	R BURNS	F MCKENZIE	
Jun	6	C DICKSON	I WOODFIELD	P THORPE	
	7	K JASICA	A FLETCHER	D BELCHER	
	13	J DICKSON	R CARSWELL	A WILLIAMS	
	14	B MOORE	L PAGE	R HEYNIKE	
	20	S HAY	P THORPE	R CARSWELL	
	21	K BHASHYAM	S WALLACE	F MCKENZIE	
	27	G LEYLAND	R BURNS	P THORPE	
	28	I O'KEEFE	I WOODFIELD	R HEYNIKE	