Milton Keynes Aviation Society **Newsletter** ***mkas.co.uk***

FIVE STORIES OF D DAY AND THE BATTLE FOR NORMANDY

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1) THE FIRST AND LAST PEAGASUS PILOT (From March 2013)

James Wallwork, DFM, wartime glider pilot, was born on October 21, 1919. He died on January 24, 2013, aged 93.

'The Times' obituaries have increasingly become a rich source of stories about people who lived amazing, if not always enviable, lives during WWll. Few are more remarkable than Jim Wallwork, who died in January 2013. During the war he piloted troop-carrying gliders at the Sicily landings, on D-Day, at Arnhem and at the Rhine crossing.

In particular Jim was credited with an especially daring and brilliant piece of flying in landing troops to capture the 'Peagasus' bridge before the D-Day landings. His was the first glider down and stopped some 60 metres from the bridge. This operation, involving only six Horsa gliders and a small number of men, was brilliantly executed and highly effective.

Although the victors the Germans abandoned the use of gliders after its invasion of Crete in 1941 as being too dangerous. The British Commander in Crete (thanks to Bletchley Park) knew the German air-invasion was coming. Despite this and consequent heavy airborne casualties the Germans captured Crete with great heroism and sacrifice.

By contrast, the British adopted the technique of mass paratroop and glider invasions. The generals, especially Montgomery, seemed mesmerised by the imagined 'glory' of endless courage and pointless sacrifice, later seen at Arnhem and crossing the Rhine.

Bad weather or tow-pilot error resulted in the loss of 47 of the 134 British gliders launched on Sicily, but the Allies learnt from these experiences. The commander of the Allied air forces described the glider-borne operation on the Orne and Caen Canal bridges in the early minutes of June 6, 1944 on D-Day as, "the airmanship feat of the war". Jim Wallwork was the last surviving of the 12 pilots involved in the assault.

With the Sicily losses in mind, there was considerable scepticism over use of gliders in a precision role on D-Day. But the bridges over the Orne and the Caen canal were essential for the supply of 6th Airborne Division due to drop east of the two waterways on the left flank of the Allied bridgehead before dawn on June 6.

As a test, six two-man crews of "Horsa" troop-carrying gliders were ordered to Netheravon, Wiltshire, shown two triangles on the airfield and told to land at one minute intervals, three in each triangle, from a tow-aircraft release point at 4,000ft three miles away. The sceptics watched to see their doubts vindicated, but all six gliders landed exactly on target.

The crews were told few details of their mission, but simply to begin intensive training for an operation which would require them to be towed over the Channel in line astern, released at 6,000ft to land alongside an objective six miles away, three gliders to approach from one direction and three from the opposite one. Training began immediately with "Holmes Clump" an L-shaped wood near Netheravon as the practice target. Each Horsa was towed by a four-engined Halifax bomber and carried a simulated load of 30 fully equipped men.

On June 1 Major John Howard and his specially trained company of the Oxfordshire and Buckinghamshire Light Infantry arrived at Tarrant Rushton airfield, where the glider pilots had completed their final phase of practice night flights and landings. The objectives were revealed as the road bridges over the river Orne and parallel Caen Canal — to be taken by surprise attack. (In honour of the victors the Caen Canal bridge became known as 'Pegasus Bridge' and the Orne bridge as 'Horsa Bridge'.)

Following the anti-climax of a 24-hour postponement of D-Day owing to bad weather the moments after release of the gliders are best described in Wallwork's own words, "Six thousand feet, six miles to go; the coast of France below and a sudden uncanny silence. Six Horsas began to tiptoe into two little fields in Normandy with 180 fighting men in full battle order to give the German garrison the surprise of their lives and a lesson in taking a bridge."

The bridges had not only to be captured intact, but held after the demolition charges had been removed. From release, Wallwork's first Horsa led numbers 2 and 3 on a downwind descending course of 187 degrees at 90mph for three minutes and 45 seconds, made a right-angle turn, flew on down for a further two minutes and five seconds, turned back on the opposite of the initial course to slip silently down alongside the canal embankment close to the Caen Canal bridge at 16 minutes past midnight.

Meanwhile gliders 4, 5 and 6 had taken a separate, two-angled course down to the river bridge. Wallwork and his co-pilot Sergeant Johnnie Ainsworth were trapped in the Horsa cockpit, which collapsed when the nose hit the embankment. Major Howard and his 180 infantrymen and sappers poured out of the gliders, captured both bridges in ten minutes and held them until relieved by troops of the 6th Airborne Division at 0300 hours.

Both Wallwork and his co-pilot were injured in the landing, as they had to land close to the canal embankment to leave enough space for their two following gliders. Wallwork's head went through the Perspex windscreen and Ainsworth broke an ankle.

They were evacuated by a Citroën farm pick-up truck, sniped at while awaiting medical attention outside the local château and shipped home in a tank-landing ship. Wallwork was awarded the Distinguished Flying Medal for his gallantry and skilful piloting.W

Wallwork was discharged from hospital within three weeks and back at Tarrant Rushton in training for Operation "Market Garden" — Montgomery's airborne carpet to the bridges over the Neder Rijn at Arnhem in September 1944. After landing his Horsa safely, he joined other Glider Pilot Regiment pilots to fight as infantry in the Oosterbeek perimeter, three miles to the west of the Arnhem Bridge. He and another glider pilot re-crossed the Rhine to safety on the final morning of the evacuation accompanied, as he would remark, by "a little farewell sniping".

Even then his war was not over. Back at Tarrant Rushton he was trained on the much larger, equipment-carrying Hamilcar glider to transport a 17-pounder anti-tank gun with tractor and crew in the Rhine crossing on March 23, 1945. He delivered them safely and found himself fighting as an infantrymen, as at Arnhem, for a brief time until ordered back to England.

When gliders were first proposed to deliver troops to small-area targets, a senior and most experienced Royal Air Force officer gave as his opinion, "the idea that semi-skilled personnel - infantry corporals have I believe been suggested - be entrusted with piloting these troop carriers is fantastic.

Their operation is equivalent to forced landing the largest-sized aircraft without engine aid - than which there is no higher test of piloting skill." Four years later, with four major glider-borne operations under his belt, Jim Wallwork described the experience as "a short, sharp and clean way to go to war".

Credits: Adapted from The Times obituary,

Colour picture - northumbriangunner.blogspot.co.uk

Andy Cornwell.

2) EYES IN THE SKY: IAN NEILSON **(From April 2017)**

Lt Col Ian Neilson, DFC, gunner and pilot, was born on December 4, 1918. He died on January 20, 2017, aged 98. Obituary in The Times Register 8 March 2017.

On the evening of D-Day, June 6, 1944, Ian Neilson, an army pilot, was sent on a lonely mission, not in a plane, but on a motorbike. He had to ride across the battlefront and around minefields in order to find a site from which he could feed target corrections back to naval gunners — in the hope of stopping the Germans from bringing up reinforcements fast enough to counter the invasion.

With map references of only three potential sites identified from aerial reconnaissance photographs to help him he waded ashore at 7.30pm — six hours behind schedule — from a tank landing-craft on Sword Beach and collected the motorbike from a waterproofed vehicle. As the commander of B Flight, 652 Squadron, Major Neilson had the task of setting up the first British air observation post (AOP).

This, once he had established a place for it, would support 1 (British) Corps and 3 (British) Infantry division on land. Crucially, it would also direct the fire from the sea of the eight 15in guns of the battleship HMS Warspite, the two 15in guns of the monitor HMS Roberts, the 6in guns of the cruisers HMS Belfast and HMS Mauritius and the 5.25in guns of HMS Diadem.

HMS Belfast leaving Scapa Flow for the Normandy beaches, June 1944. (Note paintwork, discussed later)

Neilson would fly 55 sorties in June and July directing British naval bombardment; it was to his work, as much as the Royal Navy's, that Hitler's C-in-C West Field Marshal Gerd von Rundstedt would pay tribute to after the war when he told the historian Sir Basil Liddell Hart: "The fire of your battleships was a main factor in hampering our counterstroke. This was a big surprise, both in its range and effect." In one engagement Royal Navy guns supported ground troops at a range of 15 miles inland.

For his achievement Neilson was awarded the Distinguished Flying Cross, and in 2015 France appointed him to the Légion d'honneur.

Neilson made his choice of site for the AOP at midday on June 7: a field near the village of Plumetot, about six miles from Ouistreham. He rode back to collect his working party of five men and another officer, and the waterproofed vehicle, which contained explosives. The landing ground was ready after they blew up fences, electricity pylons and a concrete water trough. The squadron's first five Auster IV aircraft arrived the next day from the base in England.

Directing fire meant "climbing like mad" to observe a particular shell's flight from between 500 and 1,000ft. "The art was to get the aircraft pointing in the right direction when the shell came in to land," Neilson recalled. "I found myself often observing through the roof." To the gunners' "ready", he would use radio to give the order to fire.

The biggest shells, from 15in naval guns, were each several feet long and weighed as much as a modern Smart car - almost a ton. There was a risk of being hit; once, a smaller shell passed close under Neilson's left wing; and on another occasion, flying at 2,700ft for a more distant shoot, he found himself in the middle of a dogfight between four Spitfires and three Fw 190s.

Gunners protecting the unarmed Austers shot down 11 German fighters early in the campaign. By July 20 the squadron, often flying at dawn or dusk to observe the flashes of enemy batteries and taking low-level oblique photographs with wing-mounted cameras, had flown 856 sorties and conducted 458 shoots. "I only saw German tanks on two occasions," Neilson noted. "I think we had quite an effect."

The son of a solicitor from Glasgow, Ian Godfrey Neilson had loved model trains from childhood, and even after going on from school at the Glasgow Academy to take a law and forensic medicine degree at the University of Glasgow, would spend his lunch hour as a solicitor's articled clerk spotting locomotives at the city's Central station.

His father had died when he was eight, and he and his younger brother, Hugh, grew up in straitened circumstances. On the outbreak of war he progressed from the Territorial Army, which he had already joined, to 127 Highland Artillery Field Regiment. In 1940, after the fall of France, with the AOP idea just emerging, he seized the chance to learn to fly and do intensive combined operations training.

Just after VE Day he married Alison Aytoun, an artist from Birmingham, who for her war work trained as a medical social worker.

At the war's end Neilson's studies made him the man to be given charge, in the rank of lieutenant-colonel, of Britain's three war crimes investigation units in Germany, for which the Prime Minister, Clement Attlee, had called for officers "with drive and energy". It meant requisitioning vehicles and hiring pathologists, gravediggers and photographers. Many of the cases were of Allied airmen summarily shot on capture; the "top chaps" of Nazism, destined for trial at Nuremberg, were treated separately.

Neilson's units compiled reports for prosecutors and investigated crimes at Sachsenhausen concentration camp, using information learnt from two MI6 men held there throughout the war after being trapped by German agents at Venlo in the Netherlands in November 1939.

Neilson was demobbed in 1946 and worked for the Royal Institution of Chartered Surveyors, but returned to the air between 1948 and 1953 to found and command 666 (Scottish) Air OP Squadron. He wrote a book, 'Air OP — Action Remembered', and took a keen interest in the successor to the AOPs, the Army Air Corps, which uses state-of-the-art helicopters rather than flimsy old Auster IVs, or indeed motorbikes.

Footnotes

Auster IV AOP

The Auster was a twice-removed development of an American Taylorcraft design of civilian aircraft, the Model A. Before WWII the Model A had to be redesigned in Britain to meet more stringent Civil Aviation standards and was named the Taylorcraft Plus C. This led to the military Auster IV, mentioned above, a three-seat version with a Lycoming O-290-3/1 H.O. engine of which 255 were built.

Formation of the RAF's Army Cooperation Command in December 1940 led to the RAF rejecting the very notion of light AOP aircraft. Intercession by General Alan Brooke led to an accommodation whereby the first AOP pilot course for artillery officers took place in October 1940, and in 1941 the first AOP squadron, No 651, formed.

The Auster V, details below, was similar to the Auster IV but with blind flying instruments and flap modification, and with removable armour plate -installed for pilot only. 790 were built.

Auster V – General Information:

Engine: Lycoming O-290-3 flat-four piston
Power: 130hp
Crew: 3
Span: 36 ft 0in
Length: 22ft 5in
Height: 8ft 0in
Empty Weight: 1,100lb
Maximum take-off weight: 1,850lb
Max speed: 113 kts at sea level
Stall speed: 28 kts
Cruising speed: 97 kts
Normal Range: 250 miles
Takeoff run: 91 ft
Armament: none

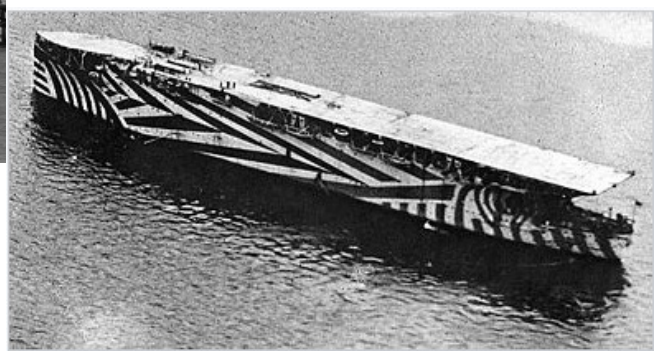
RN Cruisers at Normandy Landings

Two of the cruisers named by Nielson in the shore bombardment are:

HMS Belfast, now preserved on the Thames as a floating museum near the Tower of London.

The photograph, earlier, of HMS Belfast leaving Scapa Flow for the Normandy beaches shows limited 'dazzle' painting which aims to confuse rather than conceal the ship (as with camouflage).

The intention was to make it more difficult for an enemy to estimate a ship's type, size, speed, and heading, and thereby confuse U-boat commanders into taking mistaken or poor firing positions. The 1944 paintwork is quite restrained as compared with WWI, e.g. HMS Argos (the first full-deck carrier – 1918 to 1944), below:



The idea of dazzle painting is intellectually appealing and is portrayed as a way in which artists helped the war effort in both world wars. Whether it was successful is not clear.

For some truly bizarre examples see:
http://tinyurl.com/zhawymb

HMS Mauritius, (also in dazzle paint) was the light cruiser (12 x 6" guns) in which my mother's brother, Andrew Muir, served throughout WWII - including at the Normandy landing.

I am named after my uncle in the Scottish manner as ***Andrew Muir Cornwell***

3) THE NEW FOREST AIRFIELDS - Mike McKevoy's D-Day pilgrimage
(from July 2014)

The inscription, right, reads:
"In grateful remembrance of all personnel, service and civilian, British, Commonwealth and Allied, who served on the New Forest airfields during and immediately after WW2."

This June 6th (2014) I left the house early, on the road by 6.15, travelling south about a hundred miles and back seventy years. Before 9 o'clock I stood on the cliffs overlooking Bournemouth Bay exactly where I'd stood in 1944, an eight-year old diverted slightly on my way to school to look at a scene that's etched on my memory to this day; the bay covered from the Needles to Old Harry in merchant shipping with one solitary destroyer fixed in my mind's eye as dashing about like an excited sheepdog.

For some time I've had this Master Plan of revisiting the scene on the anniversary, and at the recent Duxford display I'd picked up "Twelve Airfields". This booklet, published in the 'nineties by a local aviation historian, lists with hand-illustrated histories a dozen airfields that had been carved out of the Forest in time to play their parts in the Invasion. Much of this was familiar and at least half-remembered; we'd moved down to the coast towards the end of 1940 with my fascination with aviation already developed, and absorbing the names and atmosphere of the area's contribution to what was going on around us.

So nudged by the book I decided that when I'd had my fill of a totally empty bay, even though the scene was overlaid by my memories, I'd go out to the Forest to revisit three of the names that have always stuck in my mind as associated with *Overlord.*

One of course had to be a fighter airfield; this was Ibsley, slightly north of Ringwood and with which I'd always bracketed Spitfires. The other two were Stoney Cross and Holmsley South which I'd always thought of as hosting large numbers of transports and gliders in June 1944 and which always come to mind when I see newsreels of striped Dakotas taxying nose-to-tail to the take-off point and especially of Stirlings, denuded of their gun turrets to tug a Horsa or two (Horsas always associated with Christchurch, but by now this was home to USAAF P-47s).

Checking the now-invaluable "Twelve Airfields" though it revealed that by mid-June, and indeed for a few months before and after, both these airfields housed more directly aggressive aircraft, with Typhoons and Mustangs being succeeded by USAAF Marauders at Holmsley and Stoney Cross housing P-38s and Marauders.

Regardless of any mismatch between memory, facts and legend it was to Holmsley that I made my way, having found that there was a memorial of some kind on the airfield to which I was led by the increasingly ubiquitous brown signs.

As you can see, it is a small enclosure by the side of a quiet road, centred round a plinth-mounted propeller (C-47?). The twelve airfields have individual plaques on the base, and there is a map of the area engraved on a separate plinth and showing the airfield locations; and thoughtfully there are three bench seats to aid relaxation and contemplation, very welcome in both roles on this anniversary visit.

For some reason in 1944 the headmaster was not impressed by my excuse for arriving late at school, and I was severely chastised; some people have no sense of history!

Mike McAvoy

4) ADVANCED LANDING GROUNDS (ASGs) IN NORMANDY
(from July 2014)

Sainte-Pierre-du-Mont as seen from the air – an impressive airfield given the four days it took to complete.

Introduction – The Road to Caen

I have put together this Introduction to put into context the vital role of Allied airpower in supporting the hard-pressed ground-forces in their long and bloody struggle to break-out from the Normandy beach-head areas. I use quotes from Max Hastings and Field-Marshal Lord Carver and have also included, with thanks, on an article by Huw Hopkins published on the web by GAR (Global Aviation Resource) website

Andy Cornwell

"The landings were brilliantly conceived by the host of clever civilians in uniform who did the staff work before the allied forces were unleashed in their heart-stopping magnitude. But it deserves to be emphasised that D-Day was followed by much costlier fighting. In the two months of strife preceding the allies' August breakout some infantry units suffered losses comparable with those of the Somme in 1916." ***Max Hastings***

Fighter-bombers and medium bombers, such as those in the New Forest airfields, were needed to maintain Allied air supremacy over Normandy and give immediate and close support to the hard-pressed land forces as they broke out from the beaches. These are discussed in the article below on 'Advanced Landing Grounds'.

The British Army had mechanised entirely in the 1930's. By contrast, 72 of the 78 German Army divisions directly defending the 'Atlantic Wall' still depended totally on horses, as they had throughout the war. The others six however were the fully mechanised, heavily armed and rightly feared SS Panzer divisions. Because of German uncertainty about where the invasion would begin some Panzer divisions were held back as a reserve to be deployed to wherever the landings took place. Constant harassment by the 2nd Tactical Air force and French resistance prevented some of these reserves reaching Normandy for up to three weeks.

The main objective of the British and Canadian armies after landing was to secure the left (Northern) flank of the beachhead. They planned to reach Caen, 8 miles away, within 24 hours; but it was two months before Caen fell. The British and Canadians eventually found themselves fighting 7 of the 10 SS Panzer divisions brought into Normandy.

Field-Marshal Lord Carver, who had commanded a brigade in Normandy, wrote: *"The undeniable fact . . . is that the German army in its leadership, tactical skill, fighting spirit and in the technical performance of most of its weapons was superior to those of the allies."*

The average age of British soldiers at Normandy was 19. Given Dunkirk was four years earlier it is

difficult to see how or when they might have gained combat experience. They were stiffened by some seasoned troops such as the 5th Royal Tank Regiment who had fought as part of the 8th Army across North Africa and up through Italy. They were battle hardened but also war weary and reluctant to be part of D-Day. Later in the war when US troops relieved a concentration camp General Eisenhower remarked of the US Army: "I don't think the men really know what they are fighting for – but they sure know what they are fighting against".

The 5th RTR were derisive about the square, vertical slab-fronted, lightly armoured, 1943 Cromwell tanks (above) which looked like something out of the early 1930's. Their previous tanks had been the American Sherman, also lightly armoured but with the merits of sloping armour, being roomier and having a much valued escape hatch in the side.

Both 'Medium' tanks had been designed for speed and manoeuvrability at the expense of armour. Each had a 75 mm (6 pounder/3") gun with a short barrel. This gun had less than half the muzzle velocity and range of a similar calibre long-barrelled high-velocity German guns that fired solid armour-piercing shot.

The Medium tanks were more designed for infantry support against 'soft' targets such as buildings, unarmoured vehicles and enemy troops. Against the SS Panzers the Allied Medium tanks were themselves the soft targets.

Following D-Day a British senior officer said that, to keep a strength of 150 tanks constantly in the field over a period of one month required over 1,000 replacement tanks to cover losses and breakdowns. Typically, five or six Shermans were lost for each Panzer tank destroyed.

Eventually new British tanks appeared that were converted Shermans (called 'Firefly'- right) with the lethal British 17 pounder (76.2 mm), high-velocity long-barrelled gun with armour-piercing shot. Fitting this gun into the Sherman turret was a piece of engineering ingenuity. It gave the Allies their first 'Panzer killer' and initially one accompanied some five or six 6 pounder tanks. Although highly effective it was unpopular with crews because of the length of the breech and the powerful recoil.

The SS Panzer units were dedicated and often barbaric members of a well-equipped fanatical military elite. When an SS Panzer unit killed French civilians and Allied prisoners the British army in some sectors were ordered to take 'no prisoners below Major'. In what became a battle of attrition three things stood between the previously invincible SS Panzers and victory:

- Their lack of close air support (previously provided by the Ju 87 'Stuka' in the 'Blitzkrieg' days)
- The air supremacy of the Allies that gave them close air support and also cut of from the rear the Panzers' supplies of fuel, ammunition and reinforcements.
- The relentlessly increasing capability of the Allies to replenish their armies, whatever their losses, against a diminishing German capability.

It was a bloody campaign all round; Over 425,000 Allied and German troops were killed, wounded or went missing during the Battle of Normandy. This figure includes over 209,000 Allied casualties, with nearly 37,000 dead amongst the ground forces and a further 16,714 deaths amongst the Allied air forces *[history.stackexchange.com]*. Some 20,000 French civilians *[dday-overlord.com/en/battle-of-normandy]*were killed, mainly by Allied bombing. The strikes were ordered by General Montgomery and were usually pre-emptive to deny Caen, in particular, and local villages to the enemy. The French civilians had no warning: few Germans were killed this way.

The Americans fought their own desperate battles further south in the Bocage region to take St. Lo using inexperienced troops. By mid-August the Allies almost encircled the German armour in the 'Falaise Pocket' (south east of Caen) where it was fiercely pounded by the Allied tactical air forces. Some German elements escaped via the 'Falaise Corridor' before that too was closed.

Against this grim backdrop let us look now look at how the Allied air forces were able to give the decisive ground attack capability essential to the survival and success of the ground forces.

The Advanced Landing Grounds

A P-38J Lightning of the 367th FG sits at rest on A21/Saint-Laurent-sur-Mer. The airfield overlooked Omaha Beach and shipping can be seen just off the coast.

Right: Wounded are evacuated on a C-47 Skytrain

In support of the advancing armies post-D-Day a large number of Advanced Landing Grounds were constructed by the combat engineer teams of the RAF and USAAF. They played an important role in resupply and allowing the Allied tactical air forces to operate close to the front. ***Huw Hopkins*** *examines this huge civil engineering achievement and what affect the ALGs had on the campaign.*

With the initial landings having been a success and the beachheads beginning to link up in the hours and days following the invasion the next phase was to breakout to the South and East, capturing the city of Caen on the British sector and Saint-Lô in the American sector. This push would encounter fierce fighting and would require a constant flow of troops and equipment to be landed on the beaches and, once established, the Mulberry and Gooseberry floating harbours in support; however, close air support would also be required.

Flying from British shores would leave the aircraft with enough fuel for only a short amount of time over the battlefield so the idea of ALGs was put forward by Sir Trafford Leigh-Mallory, Commander-in-Chief of the Allied Expeditionary Air Forces, and a plan was devised to construct a multitude of airfields in Normandy once the invasion force began establishing itself.

From these ALGs transport aircraft would bring in supplies and evacuate the wounded whilst fighter-bombers would provide close-air support for the advancing ground forces. From June 6 through to the end of July there were over 30 ALGs constructed in Normandy by the RAF Airfield Construction Wing (ACW), Royal Engineers and US Ninth Air Force's (9th AF) IX Engineering Command, an arm created specifically for this task and whose men were experienced in constructing airfields in the Pacific theatre.

Of such high importance were these ALGs, that advanced parties of from the RAF and USAAF construction teams began landing on the beaches on June 6 itself in order to begin surveying and construction as soon as the required ground was captured. In addition, 12 ALGs had been set up in Southern England (including the New Forest Airfields) in the months preceding invasion where the RAF 2nd Tactical Air Force (2TAF) and US 9th AF flew from.

Left: Construction of A21/Saint-Lautent-sur-Mer gets underway at the hands of the 834th Engineer Aviation Battalion.

ALGs in France were either existing airfields that were taken over and modified or brand new constructions, and were either dry weather or all-weather airfields, the latter incorporating runway reinforcements. The new constructions required flat land with good drainage and areas suitable for these were chosen using aerial reconnaissance beforehand.

The most basic type was an Emergency Landing Strip (ELS) that would be a simple runway designed as a put-down area for allied aircraft in difficulty over the beachheads and unable to make it back across the Channel.

Another type of initial construction would be a Supply and Evacuation (S&E) strip, located very close to the front to allow transports to land supplies and munitions before evacuating the wounded further back behind the lines. As the front would advance these S&E strips would be upgraded to Refuelling and Rearming (R&R) strips. These would allow fighter-bombers over the combat zone to be turned around quickly, not having to return to their home base in England before entering combat again, but simply land at these forward strips.

A photo reconnaissance F-51B Mustang being directed from a checkerboard covered cart .

As the front line moved further away still the airstrips would be turned into ALGs with more infrastructure – roads, water supplies, more dispersal areas. It is at this point that Fighter Groups would become based at these airfields, moving forward to other ALGs as the front advanced. Once an ALG was well behind the lines, it may be developed further into a Tactical Air Depot (TAD) with the addition of more infrastructure including hangars and more permanent fixtures. Left - *Flying Control was often a very rudimentary affair on ALGs as this photo clearly shows from the RAF at B2/Bazenville.*

Conversion of an existing airfield could take up to three days and the construction of new dry weather ALGs in one to three days, however the process slowed if more clearing or grading of the ground were required as well as infrastructure for all-weather strips, it could then take as many as three to ten days.

Initially a reconnaissance party would arrive at the proposed site as soon as the tactical situation would allow, and begin planning the layout as well as checking the area for mines. The plan would be put to the battalion commander and preliminary work would either begin, amendments would be made or, if deemed totally unsuitable, a new site would be found for the surveying process to begin again.

Initial preparatory work would then begin, including layout works, clearing and earth moving. These tasks would be increased as more men and equipment arrived, eventually totalling hundreds of men and equipment such as trucks, tractors, graders, clades and carryall scrapers, petrol saws, cranes and much more. To construct the runway the topsoil would be removed and then the subsoil compacted with rollers as well as the possible addition of reinforced tracking.

Left: The maintenance area of an ALG showing Thunderbolts and a Mustang in various states.

The rate at which ALGs were becoming operational post invasion was impressive, indeed, the first Emergency Landing Strip, ELS-1 Poupeville, was opened on June 6 followed by the A-21 Saint-Laurent-sur-Mer ALG on the 7th as being some of the first in the American sector, the men working in difficult conditions, often having to down tools and take cover from enemy sniper fire.

Right: A P-47 Thunderbolt departs from a steel tracked runway on another ground attack mission.

In the British sector ELS B1 Anselles opened on June 7th with a further five airfields in the next ten days. A great deal more ALGs would become operational in the following days, weeks and months.

One downside to these airfields, however, was the amount of dust when the ground was dry which made operating the aircraft tricky as it increased engine wear. The British airfields particularly suffered in this instance, and their Typhoons, with their temperamental Napier Sabre engines, as the fine soils beneath them drained rapidly. In an attempt to diminish the effects of dust airfields were even sprayed with water to dampen the surfaces.

Left: A Typhoon Mark IB of No. 184 Sqn RAF illustrates just how much dust could be raised as it takes off from B2/Bazenville.

Fighter Groups of the 9th AF and squadrons of the 2TAF moved over to Normandy so that they could hammer the German ground forces in close air support of the Allied troops. Recce squadrons also came across the channel too, with the 9th AF F-5 Lightning's and F-51 Mustangs as well as the 2TAF Mustangs. In some cases smaller ALGS were also created to accommodate liaison aircraft.

Conditions on the ALGs were primitive, with personnel sleeping in tents and flying control operating from one also. Life was tough for mechanics too as aircraft were serviced out in the open, with space in tented hangars and steel and canvas Butler hangars being at a premium. The personnel endured the conditions well though, and the ALGs were highly effective, allowing the fighter bombers to support the ground forces directly.

Conclusion

Without the tremendous amount of arduous work by the civil engineers during the battle for Normandy the Allied Expeditionary Air Forces would not have been able to carry out the tremendous pounding of German ground forces to such an extent as they did during the breakout from the beach-heads, in the Falaise pocket and beyond. Quite simply, the efforts of both the RAF Airfield Construction Wing and US 9th AF IX Engineering Command could not have been done without completing their tasks in an astonishingly short amount of time and contributing greatly to the successful advance Eastwards, continuing their tasks as the Allies advanced through France, Belgium, Holland and into Germany until the end of the war.

Huw Hopkins

Observations

The Role of the Typhoon:

'By the Normandy landings in June 1944, 2 TAF had 18 operational squadrons of Typhoon Ibs. The aircraft proved itself to be the most effective RAF tactical strike aircraft on interdiction raids against communications and transport targets deep in North Western Europe prior to the invasion and in direct support of the Allied ground forces after D-Day.

A system of close liaison with the ground troops was set up by the RAF and army: RAF radio operators in vehicles equipped with VHF R/T, travelled with the troops close to the front line and called up Typhoons, operating in a "Cab Rank" which attacked the targets, marked for them by smoke shells fired by mortar or artillery, until they were destroyed.'
http://en.wikipedia.org/wiki/Hawker_Typhoon

Under the umbrella of air supremacy the Typhoon proved an effective ground-attack fighter-bomber. Originally it was designed by Hawker as a high speed, high altitude, replacement for both the Hurricane and Spitfire. After initial structural problems it performed well at lower altitudes but was inadequate at higher altitudes. Its thick wings were probably a mistaken design but proved useful in the role of ground attack for which it is best known. The Typhoon carried four 20mm cannon and up to 18 wing mounted rockets. It was a fearsome attack and strafing weapon but its

tank-killing capability was vastly overestimated and over-claimed. Analysis of tank wreckage later by the government Operational Research unit showed that only 4% of pilots' claims were valid. However, in the slaughter of German forces in the Falaise Gap Allied aircraft were credited with half the vast number of 'soft skin' vehicles destroyed (artillery must have made a substantial contribution on the other half).

The area in which the Falaise Pocket had formed was full of the remains of battle. Villages had been destroyed, and derelict equipment made some roads impassable. Corpses of soldiers and civilians littered the area, along with thousands of dead cattle and horses (remember, horse drawn vehicles were the main means of transport in the German Army)

In the hot August weather, maggots crawled over the bodies, and swarms of flies descended on the area. Pilots reported being able to smell the stench of the battlefield hundreds of feet above it. General Eisenhower, the Allied Supreme Commander, recorded that:
The battlefield at Falaise was unquestionably one of the greatest "killing fields" of any of the war areas. Forty-eight hours after the closing of the gap I was conducted through it on foot, to encounter scenes that could be described only by Dante. It was literally possible to walk for hundreds of yards at a time, stepping on nothing but dead and decaying flesh. [Ref 3 below]

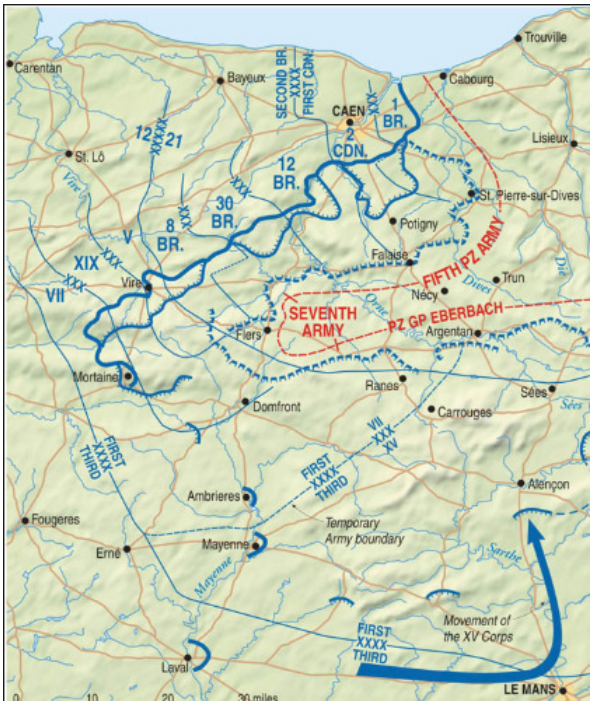
'Air supremacy', complete control of the skies, was a prerequisite for the D Day landings and the invasion of Europe. For all practical purposes this was achieved. The Advanced Landing Grounds were a highly effective way of maximising the close air support of ground troops and a major achievement within the invasion strategy.

Even with air supremacy Normandy was still a desperate and costly battle. The city of Caen, inland of the British landing beaches, was planned to be captured on D-Day. In fact it was not taken until some 45 days later. By this time it had been reduced to ruins by Allied bombers, with many thousands of French civilian casualties. Further south in the Bocage region, inland of the US landings, the impenetrable ancient hedges lining narrow lanes proved to be death-traps for the advancing Allied infantry and armour. A US Army soldier who had been a motor mechanic designed an ingenious plough to uproot the hedges and this was rapidly fitted to US Army Sherman tanks.

The 'Battle of Normandy' ended in a major defeat for the German Army which found itself surrounded by British, Canadian and Polish forces to the north and the US Army to the south and subjected to constant air attack and artillery bombardment. The east/west strip of territory held by the German Army became a killing-ground known as the 'Falaise Pocket', after the nearby town.

THE FALAISE GAP

The above is as far as the original article went. In reviewing it for archiving I felt that something further should be added about the 'Falaise Pocket/Gap' from which some, in fact too many, of the German Army escaped destruction or capture. This was the culmination of the Battle of Normandy, a hugely significant battle and much needed Allied victory which, again, depended on air supremacy. However, it was not as comprehensive a victory as it could have been and there are differing views on how large a German force escaped and what action could have been taken by whom to reduce or prevent that escape. My notes barely scratch the surface to simply give a mere glimpse of the battle of which I knew scarcely anything. Perhaps it will encourage the reader to also investigate further.



Main Sources:
[1] 'D-Day, The Battle for Normandy' by Antony Beevor. Skimmed rather than read at this stage, but most impressive.
[2] https://en.wikipedia.org/wiki/Falaise_Pocket *. A useful summary with some interesting quotes in the 'Analysis' section which counterbalance the also useful:*
[3] https://warfarehistorynetwork.com/daily/wwii/ike-vs-monty-command-failure-at-the-falaise-gap/ (The title gives a clue to the author's thinking)
For some quotes or sections of particular interest I give the above reference numbers.

Andy Cornwell

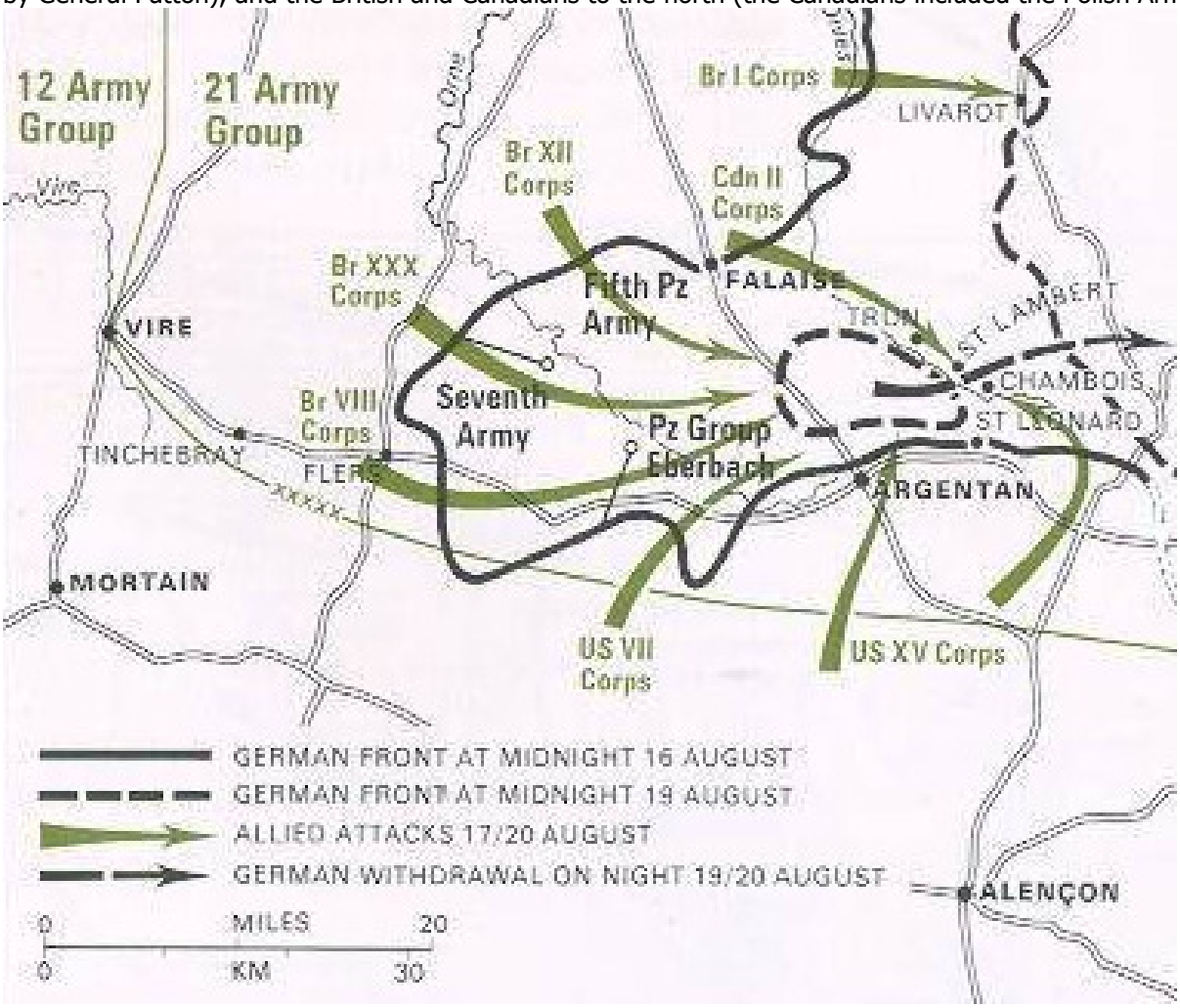
OUTLINE

Cain, 9 miles inland, was due to be taken by the British on D-Day itself; it was not completely taken (by British and Canadian Forces) until 20th July. By then it had been destroyed by Allied bombing and fighting on the ground. The fierce defence of Caen by Panzer divisions caused heavy casualties all round; but it also tied down Panzer divisions that would otherwise have moved west to attack the US forces.

Most civilian casualties resulted from Allied bombing, especially in and around Caen. It is believed that between 15,000 and 20,000 French civilians were killed during the Normandy Campaign, although many more fled their homes to escape the main combat area, making casualty assessments more difficult.

In western Normandy the US First Army cut off the Cotentin Peninsula, captured Cherbourg and then attacked southwards towards Saint-Lô, about 37 miles west of Caen, capturing the town on 19 July. On 25 July after a weather delay, the First Army began Operation Cobra on the Saint-Lô–Périers road, coordinated with the Canadian Operation Spring at Verrières (Bourguébus) ridge to the south of Caen.

Cobra was a great success and began a collapse of the German position in Normandy; the Allied break-out led to the Battle of the Falaise Pocket (12–21 August). The remnants of the 7th German Army and 5th Panzer Army (formerly Panzergruppe West) were almost trapped between the US Army, who had hooked south and then east led by General Patton), and the British and Canadians to the north (the Canadians included the Polish Army).



An Allied pincer movement was intended to close the gap to the east and fully trap the German forces. The Canadian and Poles moved down to Tron and the Americans (General Patton) north to Argentan and St Leonard. Adolf Hitler decided against his general's (Günther von Kluge) recommendation for a withdrawal from Normandy, instead he saw a chance to save France by counter-attacking the Americans – which failed, courtesy of prior intelligence from Bletchley Park.

MILITARY POLITICS

The Falaise Gap was a victory, but it was not closed quickly enough to be a comprehensive one since the gap remained open for ten days. The Germans lost 10,000 killed, 50,000 captured and a mass of equipment destroyed but a large force escaped (estimates vary from about 20,000 [1] via 50,000 [2] up to 200,000[3]).

The plot becomes murky here on how the ten day delay was allowed to happen. It appears that the Canadian/Polish army that advanced south to Tron was not adequately reinforced and was therefore unable to close the gap from the north; the Americans (some 250,000 soldiers) halted at Argenton, south of the gap, apparently at the insistence of General Montgomery as part of an agreement on how the battlefield should be divided up.

Air Marshal Arthur Tedder, RAF, was General Eisenhower's deputy as Supreme Commander in Europe 1943-45 (but no supporter of General Montgomery) is reported as saying: [1] "One of Monty's great errors was at Falaise. There he imperiously told US troops to stop and leave the British area alone. He didn't close the gap". *(Note 'One'!)*

It appears that the Panzer units were more successful in escaping through the gap, no doubt being more mobile, better armed, more disciplined and more determined. Source [3] asserts: *'Allied soldiers paid a terrible price for Montgomery's failure to destroy the German armies trapped in the Falaise Pocket. Professor Russell Weigley (a notable American military historian) wrote, "German higher headquarters for the most part escaped the Falaise Gap envelopment…. These headquarters [later] demonstrated the remarkable rapidity with which they could reconstitute divisions and corps around themselves. All 10 of the German panzer divisions that fought in Normandy were later reconstituted around cadres of men hardened in battle who had escaped from the Falaise Gap."*

FOOTNOTE

In attempting to round-off the article on Advanced Landing Grounds, and their vital contribution to air supremacy in the Battle of Normandy, I may have, as they say, 'raised more questions than I have answered'. The arithmetic and issues of responsibility concerning the battle of the Falaise Pocket/Gap are varied and contentious. If you are better informed on this battle, or become so perhaps inspired by this article, I should be glad to add further reliable sources to add to this article.

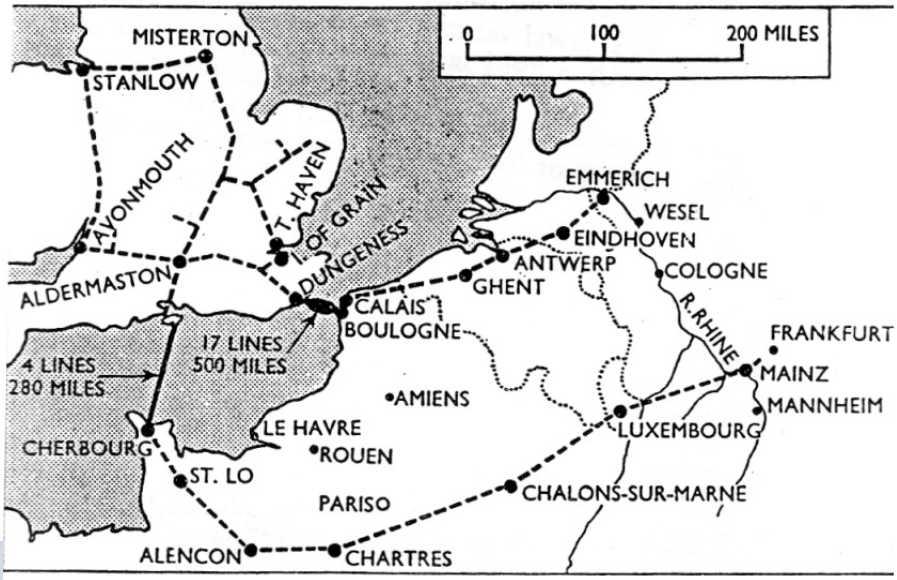
PS: After completing the above I rediscovered a source referenced in the original articles: https://www.dday-overlord.com/en/ . This gives a simplified and uncontroversial outline of D-Day and the Battle of Normandy and may be a useful introduction before the other more abrasive sources.

Andy Cornwell

See below for article on 'PLUTO'

5) PLUTO – PipeLine Under The Ocean (July 2014)

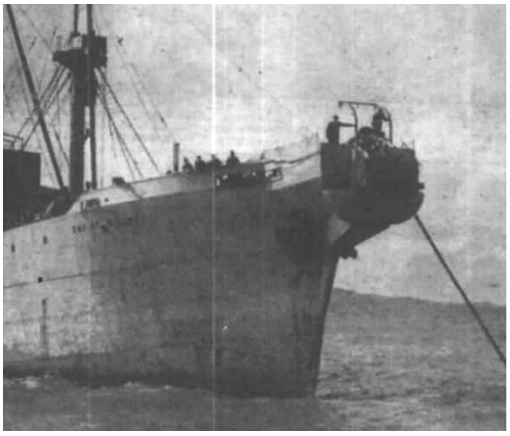
Credit:
http://www.combinedops.com/pluto.htm
which gives full credit to the engineers, companies and servicemen involved.
Andy Cornwell



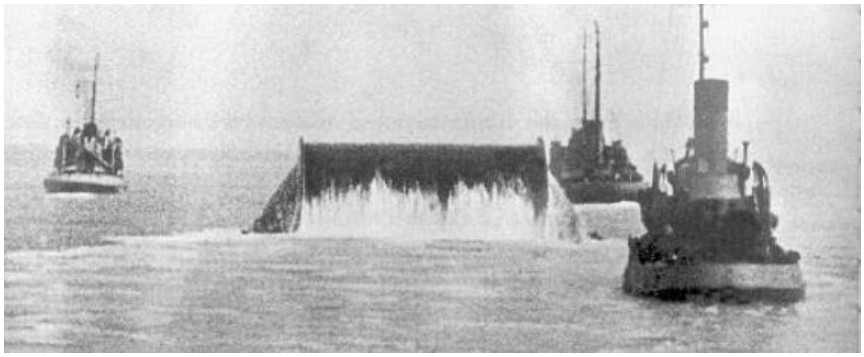
A reliable supply of petrol for the advancing Allied forces following the D-Day landings was of the highest priority. Planners knew that the future invasion of Europe would be the largest amphibious landing in history and without adequate and reliable supplies of petrol any advance would at best slow down, and at worst grind to a halt. A loss of momentum could jeopardise the whole operation as German forces would have time to regroup and counter-attack.

Conventional tankers and 'ship to shore' pipelines were in danger of cluttering up the beaches, obstructing the movement of men, armaments and materials and, in all circumstances, were subject to the vagaries of the weather and sea conditions and they were easy targets for the Luftwaffe. The idea of a 'pipeline under the ocean', (the English Channel), was an innovative solution.
Left: This pumping station at Sandown (IoW) for PLUTO was originally disguised as 'Brown's Ice Cream' and is still used today

It was known that oil storage facilities located near the English Channel would be vulnerable to attack by the Luftwaffe. To reduce the risk of losses, a network of pipelines was, during early discussions about PLUTO, already under construction. This was designed to carry fuel from safer storage and port facilities around Bristol and Liverpool to the English Channel. This network would later be linked to the planned pipeline at Skanklin on the Isle of Wight and Dungeness further to the west. The terminals and pumping stations were heavily disguised as bungalows, gravel pits, garages and even an ice cream shop (see above)!



Two kinds of pipeline were devised: one based on Post Office submarine telephone cable technology, and the other base on a flexible steel pipe. The former was laid by conventional cable laying ships (left): the latter by floating drums towed by tugs (below).



Many regarded PLUTO as yet another wild fantasy of Combined Ops Command; concerns were alleviated to some extent by the concurrent use of 'Tombola,' a conventional tanker-ship to shore storage system. Operation Pluto 'Minor' initially pumped fuel from tankers a mile or so off-shore and was fully operational by June 14 1944.

From the harbour of Port-en-Bessin two six inch pipelines, with booster pumps, carried motor vehicle and aviation fuel to the US tank farm at Mont-Cauvin, near Etreham, for British and American forces. The main line from Port en Bessin was routed alongside the D6 road to Escures passed the area where the British/Commonwealth Bayeux cemetery now lies. In addition to the two pipelines from Port en Bessin there were two from Sainte Honorine des Pertes. They joined up at Mont Cauvin where German prisoners filled jerry-cans for use in the field. By March 1945 the full Pluto network was delivering 1,000,000 gallons per day giving a total of 172,000,000 gallons delivered up to the end of hostilities.