

The Dams Raid

An Air Ministry Press Release, dated Monday, 17th May 1943, read as follows:

In the early hours of this (Monday) morning a force of Lancasters of Bomber Command led by Wing Commander G. P. Gibson, D.S.O, D.F.C., attacked with mines the dams at the Möhne and Sorpe reservoirs. These control two-thirds of the water storage capacity of the Ruhr basin. Reconnaissance later established that the Möhne Dam had been breached over a length of 100 yards and that the power station below had been swept away by the resulting floods.

The Eder Dam, which controls head waters of the Weser and Fulda valleys and operates several power stations, was also attacked and was reported as breached. Photographs show the river below the dam in full flood.

The attacks were pressed home from a very low level with great determination and coolness in the face of fierce resistance.

Eight of the Lancasters are missing.

That short statement lacked some of the secret details and the full human story behind one of the most famous raids in the history of the Royal Air Force. It is the real story of the Dambusters.

The story of the “bouncing bomb” designer Barnes Wallis and 617 Squadron is heavily associated with the film, starring Michael Redgrave as Dr Barnes Wallis and Richard Todd as Wing Commander Guy Gibson – and featuring the Dambusters March, the enormously popular and evocative theme by Eric Coates. The film opened in London almost exactly twelve years after the events portrayed.

The main detail of the raid which was not fully disclosed until much later was the true specification of the bomb, details which were still secret when the film was made.

The idea of selecting dams as targets dated back to the late thirties, when war with Germany again seemed inevitable. In requesting available information on dams, Barnes Wallis became part of a sizable group of scientists and officials who were working on the idea.

At the beginning of the war Bomber Command struggled with equipment and limited accuracy in night-time raids. Barnes Wallis had been critical of current bomber operations, and some of his reports were unlikely to have pleased senior RAF officers. Bomber Command's Air Officer Commanding, Arthur Harris, for one, was a strident opponent of the various so-called "war-winning schemes" which he'd been shown. The Wallis plan initially seemed to be just another such scheme.

Wallis was an aircraft designer with the Vickers aircraft company; he'd designed many aircraft including the Wellington bomber. Partly in his own time, and given relatively free reign by Vickers, he worked on a method of destroying dams from the air because he theorised that if the dams which provided power to the Nazi war machine could be destroyed, it would be like cutting the enemy's power.

Other studies had worked towards planning the destruction of German dams, and a list of dams considered to be of strategic importance had already been drawn up. Barnes Wallis initially suggested that a massive bomb dropped from forty thousand feet would create sufficient destructive shockwaves in the earth that would destroy selected targets. But an aircraft big enough to deliver such a bomb would have to be a huge six-engine bomber, which of course didn't exist and would have to be designed from scratch. For this reason the idea was shelved. Barnes Wallis looked at other methods of delivery, and was inspired to use an explosive charge with ricocheted across water. He tested his theory using marbles borrowed from his children, and a tin bath full of water.

Most German dams were defended by anti-aircraft gun batteries, which made aerial assault difficult, and submarine netting making an attack from the sea

impossible. Defences aside, attacking and breaching a dam from normal altitudes in the air using conventional bombardment would require a large explosive charge, and this would need to be dropped from a great height. But Wallis worked on the principle that a smaller charge might successfully breach a dam if it was detonated close to the dam's wall at very low level. Wallis initially selected a spherical shape but as his research continued he decided on a cylinder shape for greater accuracy.

Initial testing used scaled down explosives on models of the dams. These tests were initially done with the explosion taking place near the wall of the dam. But when a second test was tried against a model that had already been damaged, but with the explosive detonating on contact with the wall instead of close to it, the focus of the experiments altered as impact explosions were proven to be more effective. Testing soon moved from scale models to aircraft tests in a Handley Page Halifax in early December 1942 near to Chesil Beach on Dorset coast.

It's called a "bouncing bomb" but is in fact a mine because its detonation is triggered by an event. A bomb explodes on contact with a target, but Wallis's invention, which was codenamed "Upkeep", spun as it was dropped from a Lancaster at low level so that it would bounce across the submarine netting and hit the wall of the dam. "Upkeep" then rolled down the wall, exploding below the surface of the water, which was the triggering event for the explosion. It was shaped like a large barrel, designed to be dropped between four hundred and four hundred and fifty yards from the Dam, with backspin – against the direction of travel – which gave it greater lift and enhanced the ricochet effect.

This approach was unorthodox at the time because it didn't directly attack the target; rather it breached a dam and the ensuing flood was the method of destruction of the power stations and transport links. This was very different from the kind of bombardment that Arthur Harris advocated, and which is often unfairly attributed to him and him alone.

As tests continued there was interest from the Admiralty in an anti-shiping version of the mine, and “Highball” was designed for this purpose, to be delivered from a De Havilland Mosquito. As both “Upkeep” and “Highball” were proved in testing to be viable, research continued on the targets and the potential effect on the enemy of the destruction of specific dams. Although Arthur Harris wasn’t at all impressed with the plan, it was decided to put it into action and to develop “Upkeep” during the course of early 1943. Harris’ objection was that “Upkeep” was too complicated, and that there was too much uncertainty associated with an experimental weapon. He regarded the lives of bomber crews very highly, and the Lancaster bombers of the RAF to be too precious to waste on a scheme which could jeopardise both. However the Chief of the Air Staff, Air Chief Marshal Sir Charles Portal, supported the project and authorised the conversion of three Lancasters for “Upkeep” trials. Those in the Air Ministry and the RAF who supported the plan were impressed with the idea of breaching dams on the Ruhr because of the potential effect on German industry and also what it would do in general to morale: boost the morale of the Allies (who would see it as a massive victory in a war which was being bitterly fought) and diminish the morale of the enemy (who’d see their opponent as having awesome destructive power that could literally flood a river valley).

The project’s momentum built very quickly after its approval, with modification of more Lancasters and production of “Upkeep” mines for further tests. Planning for what was now known as Operation Chastise had begun, and a new Special Duties squadron of the Royal Air Force was created to carry out the raid.

In order to complete the mission, which was secret during the planning phase, a new RAF Squadron was formed, initially nicknamed Squadron X but later formally named 617 Squadron. The formation of this new and secret squadron meant that many didn’t know of its existence, and equipment such as chairs and accommodation had to be found on the existing operational

base at RAF Scampton. The Squadron's Commander was Wing Commander Guy Gibson.

The twenty-four year old Gibson had already achieved a considerable reputation during the course of his RAF career which began in Bomber Command and continued in Fighter Command piloting Beaufighter Night Fighters. He had won a DFC and Bar by the time he was selected for 617 Squadron.

The aircrew was assembled from various RAF Squadrons, the individuals having varying degrees of experience and of varying ranks. They were not, as is commonly thought, all known to Gibson and during the training process there was some thinning out of those who weren't performing to the required standard. Gibson knew scant details of the mission, only that it was a series of special targets and that they would need to be attacked at a low level by moonlight, from 100 feet travelling at 240 miles per hour. Before he knew that the target was to be dams, Gibson feared that it was a mission to attack the *Tirpitz*. The warship was one of the later missions for the new 617 Squadron.

Practice for this level of precision flying was aided by the use of "Synthetic Night Flying Equipment": these were dark celluloid coverings for the Lancaster's windshield, side windows, and turrets. There were also amber-tinted goggles with varying shades. These turned out to be very good aids to training for map reading at night.

Another aid was the special sight devised to line up the aircraft between the sluice towers of the Möhne dam, which were 700 feet apart. The sight was a wooden triangle with two nails which the bomb aimer lined up with the towers. When perfectly aligned, the bomb was released. This was invented by Wing Commander C. L. Dann, the head of aeronautics at the Royal Aircraft Establishment, and was tested at the Derwent Dam. Other sights were created for the task of accurately attacking the targets, and the crew modified their methods as the raid was practised.

A pair of converging lamps created an aid to selecting a low altitude.

Because of the film version it's commonly thought that this idea occurred to Guy Gibson when he was at a theatre, or that some of his crewmen had seen a similar lighting effect in a London club. In fact the Spotlight Altimeter Calibrator, as it was called, was based on an earlier idea for using lights to aid low-level flying in anti-submarine operations.

Forming the first attack wave, targeting the Möhne and Eder dams, Gibson and the first flight of three Lancasters set off from Scampton at 2139 on May 16th, with the other two taking off shortly afterwards. The first bombers encountered flak once they arrived at the Rhine. Some of the other bombers were less fortunate, with navigation problems and the perils of low-level flying. One of the Lancasters – piloted by Flight Lieutenant William Astell, crashed after apparently being shot at north-west of Dorsten. All seven crew were lost.

Almost at the same time, Gibson and his flight arrived at the Möhne Dam, followed shortly by the second flight. Gibson surveyed the area and prepared his fellow pilots to attack the dam when instructed. Gibson flew the first attack, and the first Upkeep was dropped at 0028. It exploded close to the dam, causing damage but no breach.

Next, Flight Lieutenant Hopgood attacked. The flak batteries were prepared this time, and his aircraft was hit. The mine was dropped late, bouncing over the dam and the bomber was crippled and went down in flames. Three crew escaped, but only two survived and were taken prisoner.

Gibson flew alongside Flight Lieutenant Martin in the third Lancaster's attack, drawing some fire away from it. The mine was deployed but again it failed to breach the dam. Squadron Leader Young then flew in for the fourth attack. It also didn't hit the dam properly, but most probably did further damage to the structure. The fifth attack resulted in the first deployment of Upkeep as planned, and also was the first to properly breach the dam, sending a plume of mud and water one thousand feet into the air. After four signals of failure,

Gibson was able to signal success and call off further attacks on the Möhne dam, and the remaining aircraft turned and headed for the Eder dam, about sixty miles away.

The first attack on the Eder, in Flight Lieutenant Shannon's Lancaster, was thought to have failed. The second, flown by Squadron Leader Maudsley, missed the dam and the explosion crippled the bomber, and all of the crew were lost. The third attack by Pilot Officer Knight's Lancaster successfully breached the dam.

The second attack wave, which took off before the first, was to attack the Sorpe dam. Two aircraft were damaged en route and returned early to Scampton. Only the fourth Lancaster, flown by Flight Lieutenant McCarthy, reached the Sorpe dam and caused damage but no breach.

Two of five aircraft in the third wave crashed en route to their targets. All on Pilot Officer Burpee's Lancaster lost their lives. Only one of the seven crew of Pilot Officer Ottley's crew survived when that Lancaster was shot down on the way to attack the Lister dam. Sergeant Tees was captured and became a prisoner of war. Flight Sergeant Anderson's Lancaster returned to Scampton because of a problem with the rear turret, which left two bombers to attack the Sorpe and Ennappe dams. Flight Sergeant Brown and Flight Sergeant Townsend and their crews deployed their mines but no further damage was done.

After the raid was launched, for the personnel at RAF Scampton there was the wait for news of the mission. In the archives of the Royal Air Force Museum, there is the memoir of a WRAF aircrew, Aircraftwoman 2nd Class Morfydd Gronland.

*"We stood silently until the final sounds of their engines died away.
Then we all drifted away to our duties.*

There was no sleep for anyone that night, our hearts and minds were in those Planes. We WAAFs just sat waiting, we had laid out the tables and a hot meal would be ready on their return.

The night wore on, twice we heard the roar of engines and rushed outside to see what Planes were returning. One was AJW piloted by F/L. Munro. The other was AJH piloted by P/O Rice. They had returned early. One had been badly damaged by flak over the Dutch coast and had to return. The other had flown too low over an inland sea in Holland, and hit the water tearing the bomb from the aircraft, by a miracle the plane did not crash and the pilot by superb skill brought his crew back to Scampton safely.

We settled back once more to wait. The WAAF Sergeant made us all coffee and calmed us down, "It will not be long now before our boys start to come back" she said. We nodded back at her.

Some time later we heard the sound of engines in the far distance. Once again we all ran to the landing strips. The first planes came in low and taxied to a halt. Then at irregular intervals other planes began to land. We were ordered back to the Sergeants Mess to start serving the first arrivals. We waited but no Aircrew came in, Two hours later our WAAF Sergeant entered, she called us together, I must tell you now the very sad news, Of our nineteen aircraft, only eleven have returned. Eight have been lost and fifty-six of our young boys will never return.

We all burst into tears, we looked around the Aircrews Mess, the tables we had so hopefully laid out for the safe return of our comrades, looked empty and pathetic. The Sergeant told us to go to our quarters and try to get a few hours sleep, because tomorrow will be another working day.

The following few days were a nightmare, we were still shattered by the terrible loss, but gradually we began to adjust to Squadron routine.

However things would never ever be the same again.”

The raid was over. The breach of the Möhne Dam flooded a 20 mile stretch of the Ruhr, and more than one thousand two hundred people were killed. The breach of the Eder dam caused a 30 foot tidal wave, sweeping away power stations and pumping stations in its wake. Water supplies and transport were severely affected by flooding but the effects were not as disruptive as the Air Ministry had hoped. Furthermore, critics of the raid point out that many of those who lost their lives were what would in modern terms be known as collateral damage: they were prisoners of the Reich. For the Allies, though, it was a tremendous success and in retrospect it can be seen as a signal of the turning of the tide against the Nazis. Wing Commander Guy Gibson received the Victoria Cross for this and other acts of courage in adversity, but tragically he and his crew were killed when the Mosquito he was flying crashed during a raid on a factory at Rheydt, near to the Ruhr.

617 Squadron was established for “special operations” like the Dams Raid, and the later sinking of the Tirpitz, but it will forever be associated with the destruction of the Ruhr Dams, which provided the image for the Squadron’s badge and its motto – “après moi le deluge” (After me the flood).

The story of the Dams Raid has chiefly been represented in the collective memory by the film. War films by their nature stir the emotions, and modify the reality of the story to make an entertaining drama. The real story is one of detailed planning and technical skill, for a mission carried out by skilful aircrew, fifty-two of whom are buried in war-graves in Mainland Europe. One of the most tragic factors in warfare is the amount given for received gain, and how the memories of the dead are sometimes allowed to take second place behind debates and conclusions which are easy in hindsight. In as much as it’s a wartime operation which is still remembered by many, that’s a lasting legacy for Barnes Wallis, Guy Gibson and everyone involved in the operation.