

The Telegraph

Dambusters: Cambridge scientists recreate daring World War Two raid

It was one of the most audacious acts of the Second World War and provided a huge propaganda boost to the Allies.



A scene from Channel 4's Dambusters



By [Caroline Gammell \(http://www.telegraph.co.uk/journalists/caroline-gammell/\)](http://www.telegraph.co.uk/journalists/caroline-gammell/)

5:50PM BST 01 May 2011

The development of a bouncing bomb - dropped at exactly 60ft above water in order to destroy German dams - was a testament to wartime Britain's innovation, daring and courage.

But when the calculations and plans for the Dambuster raids were lost in a flood in the 1960s, it seemed the secrets of the raids had disappeared with them.

Now a team of scientists from Cambridge University has painstakingly recreated the bomb and re-enacted its path over water, filming the results for a documentary.

It took them nearly a year - using the latest technology and without the fear of enemy gunfire - to carry out a feat first achieved 70 years ago.

Dr Hugh Hunt, who led the team, said: "There's no massive mystery in a theoretical sense but the fact that no one has been able to repeat the mission meant that there was no one alive who knew whether it was difficult, easy, or indeed possible.

"The question was really finding out whether anyone could do it again."

The original Dambusters raid was led by Guy Gibson – later awarded the Victorian Cross – who headed up the 19 Lancaster

bombers from the RAF's 617 squadron.

In the early hours of May 16, 1943, the Lancasters targeted the Mohne, Eder and Sorpe dams in Germany.

Using bombs designed by the scientist Barnes Wallis, the spinning explosives had to be dropped at exactly the right height and in the right place to ensure they bounced into the walls of the dam, sank and then exploded.

Two of the three main targets were breached, causing widespread flooding. Eight planes were lost and 53 out of the 133 crew involved were killed.

The modern day team, led by Dr Hugh Hunt from Cambridge's department of engineering, decided to recreate the feat in British Columbia.

Due to the tiny number of Lancaster bombers still in existence, they had to use a World War Two vintage DC4 aircraft instead.

Engineers constructed a purpose-built 130ft by 30ft concrete dam in remote area near Mackenzie.

Only a third of the size of the dams targeted in Germany, it meant everything else had to be kept to the same scale.

The project was nearly derailed when a permit for a series of test flights low over the dam was withdrawn at the last minute by the Canadian civil aviation authorities.

All the film crew, the DC4 and engineers who had already flown to the site had to go home again before the authorities relented and filming was allowed to continue.

Dr Hunt said: "While the mission itself has gone down as one of the most iconic episodes in Britain's wartime story, few details about how the bouncing bomb was built remain.

"The physics of 'ricochet' (the bouncing of objects on water) is quite well understood but actually doing it has been a different matter."

Dr Hunt used a model drawn up in 1976 by his Cambridge colleague, Professor Ian Hutchings, to try and build a bouncing bomb for real.

They fired cricket balls from a bowling machine at the Jesus Green open air swimming pool in Cambridge and gradually increased the scale of the model, firing fake bombs from a compressed air canon.

They then had to work out how to keep the "bomb" spinning on impact.

It either had to start spinning during flight, which was considered logistically complex, or spin while the aircraft was on the ground and kept rotating in the air.

Dr Hunt and PhD student Hilary Costello designed a shield – like a windscreen – to deflect air around the bomb.

"The movement of the air kept the bomb spinning so effectively that it was still turning at 1,000 RPM when it was dropped," he said.

"Our pilots had no one shooting at them, the engineers could use things like bowling machines to test their theories, and the whole thing was only at one-third scale - and even then it was hard enough.

"You compare that with the original challenge - for Barnes Wallis and for the pilots - and you realise what an amazing achievement it was."

:: Dambusters: Building The Bouncing Bomb will be screened on Channel 4 at 8pm on Monday.

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