

The Telegraph

The day the Dam Busters returned... in Canada

Tom Chivers learns why Channel 4 asked engineers to rebuild Barnes Wallis's bouncing bomb.



Explosive: a scene from Channel 4's new documentary about the Dam Busters mission Photo: Channel 4



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“The physics of bouncing something on water is relatively simple,” says Dr Hugh Hunt, breezily. “But actually doing it, at scale, under a plane, building a dam and blowing it up, is much more of an engineering exercise than a science exercise.”

There are few more memorable stories in the history of Britain's Armed Forces than that of Operation Chastise – better known, of course, as the Dam Busters raid. The bravery of the pilots who flew Lancaster bombers at the great dams of West Germany is the stuff of Second World War legend.

But while the pilots, understandably, have held the public imagination, what is sometimes forgotten is what a huge engineering challenge the raid – employing the famous “Upkeep” bouncing bomb – constituted. [Barnes Wallis](http://www.telegraph.co.uk/news/uknews/1532969/Who-were-they.html) (<http://www.telegraph.co.uk/news/uknews/1532969/Who-were-they.html>), the aeronautical engineer behind the idea, spent four years developing the bombs before the attack took place.

Now Dr Hunt, a senior engineering lecturer at the Dynamics and Vibration Research Group (“I specialise in spinning things”) at the University of Cambridge, has taken on that challenge again for television. He wants to give a more scientific account of the raid than the 1955 film *The Dam Busters*.

“Nothing describes accurately what happened, because it was so shrouded in secrecy during the war that none of the information was available for 30 years afterwards, and since then a lot of the information has been lost,” he says. “So we thought the best way to figure out how it was done was just to do it.”

[Fly-past marks Dambusters anniversary](http://www.telegraph.co.uk/news/1967218/Fly-past-marks-Dambusters-anniversary.html) (<http://www.telegraph.co.uk/news/1967218/Fly-past-marks-Dambusters-anniversary.html>)

[The Dam Busters bounce back](http://www.telegraph.co.uk/culture/film/7818392/The-Dam-Busters-bounce-back.html) (<http://www.telegraph.co.uk/culture/film/7818392/The-Dam-Busters-bounce-back.html>)

[Ray Grayston, one of last British Dambusters, dies \(http://www.telegraph.co.uk/news/uknews/7625031/Ray-Grayston-one-of-last-British-Dambusters-dies.html\)](http://www.telegraph.co.uk/news/uknews/7625031/Ray-Grayston-one-of-last-British-Dambusters-dies.html)

The resulting Channel 4 programme, *Dam Busters: Building the Bouncing Bomb*, shows his team's attempts to "just do it". Working in remotest northwest Canada with Buffalo Airways, a madcap bunch of Canadian pilots, he tries to reenact what the 617 Squadron pulled off in 1943.

"The first real decision we had to make was how big we were going to make the bomb, and how big we were going to make the dam," he says. "It came down to a trade-off between cost, practicality and timescale." He settled on a 10-metre-high dam – about a third of the size of Germany's Mohne dam, which was attacked in the original raid – and a bomb half the diameter of the one Barnes Wallis used.

The Buffalo Airways team, who specialise in "doing pretty wacky things" according to Dr Hunt, make their bombing runs in a period aircraft – a Douglas DC4, made in 1943 or 1944. "We were quite keen to use an aircraft which essentially had the same capabilities as the Lancaster – same speed, same payload, same wingspan," he says. Naturally, it was impossible to get one of the two remaining airworthy Lancasters for the show, but Dr Hunt feels that was unimportant.

"The Lancaster was a very special aircraft, but we weren't having to dodge enemy fire, so we weren't trying to recreate every last detail," he says.

Despite this, it was still a dangerous process. Like Barnes Wallis's original daredevils, the pilots had to fly their cumbersome aircraft just 60 feet above the water at 200mph to drop their bombs without shattering them.

"The biggest concern [for Wallis] was that the splash would come back and hit the plane, and water would be ingested into the air intakes of the engines and the plane would crash. On one occasion water came up and damaged the tailplane of a Lancaster." In the programme, a clip shows a test in which a bomb is dropped from just 10 feet, bouncing up and knocking the aeroplane out of the sky.

Even though Dr Hunt's team used a lighter bomb, he says that "on the final run the water does come up and does hit the plane, when we came in a bit too low." Luckily, no pilots were harmed in the filming of this programme.

The same cannot be said, of course, of the original raid: 53 airmen and eight Lancasters were lost.

Dr Hunt is quick to note the dark side of the mission. "We talk about it as a great wartime story, but it was pretty grim," he says. "Thousands were killed, most of them prisoners of war. So the majority of people killed were not Germans, and those who were German were civilians. Now, it would be totally against the Geneva Convention. But from an engineering perspective, it was fascinating."

'Dam Busters: Building the Bouncing Bomb' is on Monday 2 May on Channel 4 at 8.00pm