May 5, 2019 Eleventh Annual CAHS Toronto Chapter Dinner Meeting

Topic: *Dam Busters: Canadian Airmen and the Secret Raid Against Nazi Germany*
Special Guest Presenter: Ted Barris
Reporter: Gord McNulty

Speaker Ted Barris

An excellent turnout of more than 40 people, including Chapter members and guests, enjoyed our annual Chapter Dinner Meeting on May 5 at the Armour Heights Officers' Mess of the Canadian Forces College. Ted Barris impressed everyone in chronicling his latest book, *Dam Busters: Canadian Airmen and the Secret Raid Against Nazi Germany.* Chapter President Sheldon Benner introduced the Head Table, including 1st Vice President John Bertram and his wife, Mary Gordon; Gord McNulty and his wife, Angie; 2nd Vice President Geoff Pyne; Treasurer Brigadier – General (Ret'd) Paul Hayes; and new Director Eric Roscoe of Ancaster. Sheldon also acknowledged Past President Howard Malone and his wife, Pat; and Volunteer Bob Winson and his wife, Bernice, and son, Greg. Murray MacCausland said Grace before the customary fine dinner of roast beef, chicken or vegetarian lasagna.

John Bertram introduced Ted, a prolific award-winning journalist, author and broadcaster. A longtime Chapter member, Ted has spoken to the Chapter on numerous occasions, exemplified by his presentation in November 2014 (Flypast Vol. 49, No. 3) on his award-winning book, *The Great Escape: A Canadian Story*. Ted's best-selling non-fiction books include *Juno, Behind the Glory, Deadlock in Korea, Victory at Vimy* and *Breaking the Silence*. He has written 18 compelling books. His latest, *Rush to Danger: Medics in the Line of Fire*, is coming this fall. He regularly writes for the national media and has hosted many CBC Radio programs and shows on TV Ontario. He recently retired as full-time professor of journalism at Centennial College.

Dam Busters Crew Survivors June 17, 1943.

Ted began his presentation with the airfield photo of 16 Lancaster crewmen in uniform, obviously colourized, on the cover of Dam Busters. It was taken on 17 June, 1943, around 11 a.m. or noon. These airmen had flown all night, returning to Scampton in Lincolnshire from midnight to about 1:30 a.m.

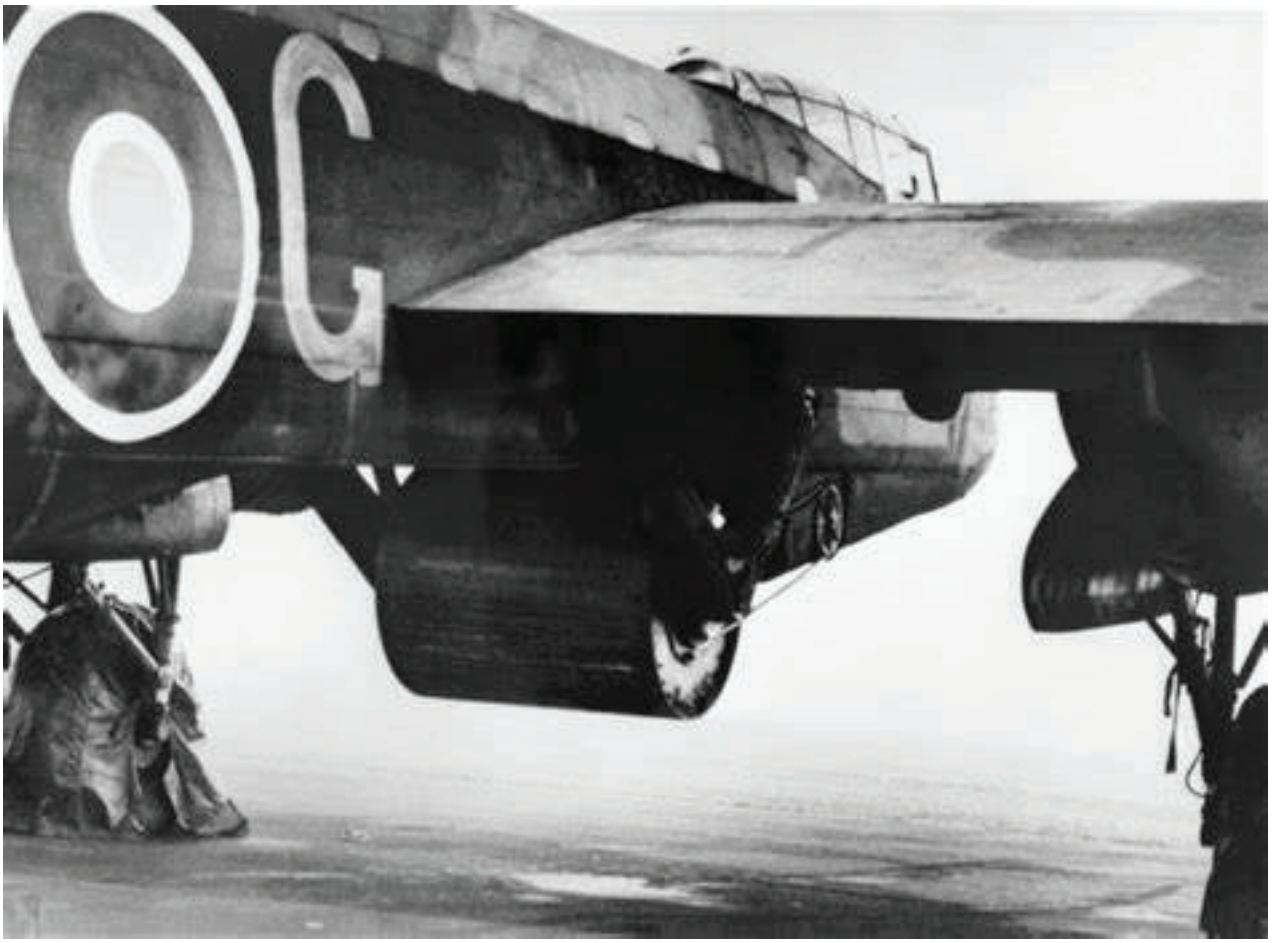
They were exhausted by the six-hour flight from Britain to the Ruhr Valley and back. Upon landing safely in Scampton, they had the most precious meal in all of England: bacon and eggs. They were then awakened for official RAF 'special occasion' group pictures of the aircrews --- the British, Australians, New Zealanders, Canadians, and an American, Joe McCarthy (no relation to the senator). The faces of the crewmen were telling. They were young. There probably wasn't one older than 26 among them. The sun was shining. There may have been satisfaction in a job well done. But a sense of loss was evident. A lot more crewmen should have been in the photo. Fourteen Canadians did not return from the operation, involving 30 Canadians in all. The photograph was emblematic of a time when the war wasn't going well for the Allies.

Barnes Wallace Inventor of the Bouncing Bomb.

Ted cited the arrival of inventor Barnes Wallis as pivotal in advancing the Allied cause. Wallis, extraordinary if slightly eccentric, joined Vickers Armstrong in the 1930s. He designed the R100 airship, which flew over Canada in 1930, and also the Wellington bomber, known for the geodesic construction that strengthened the fuselage and allowed it to carry greater bomb loads. In 1937, Wallis had been on a committee examining where the Nazis were most vulnerable. He felt the objective wasn't to remove the enemy weaponry, but the steel in the weaponry. Wallis identified the Ruhr valley dams as vital to the hydro power crucial to Germany's steel-producing foundries that produced weapons. The committee agreed the water behind the dams left the Nazi regime vulnerable. Ted showed a scene from the 1955 movie, *The Dam Busters*, where actor Michael Redgrave as Wallis articulated the problem and the potential solution. Three enormous dams held 400 million tons of water, capable of generating massive hydro-electricity. The movie script suggested dropping a 10-ton bomb from an aircraft at 40,000 feet into the structure would create a devastating shock wave. Ted, however, noted, a 10-ton bomb didn't exist, nor did a bomber flying at 40,000 feet. It also wouldn't have been accurate enough. While the movie was "dreaming in technicolour," Ted noted it underlined an earthquake effect was more likely to work than trying to blow the dams part. That concept became clearer to Wallis as he developed the bouncing bomb that was ultimately used.

The Nazis had been certain that no one was going to touch their dams. They protected them lightly, placing wooden booms beneath which steel nets were hung to defend against torpedo attacks. They thought torpedoes were the only threat to the dams. Guns in the towers were lightly armed.

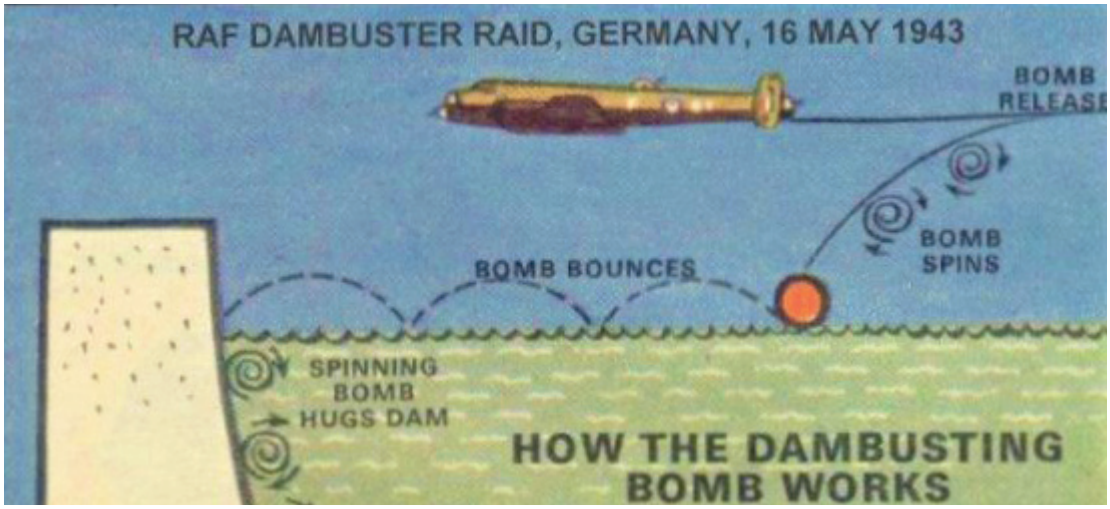
Wallis discovered the 'eureka' secret to bringing down the dams on a visit to the Waterloo Bridge. In the 1930s, the bridge was being reconstructed to strengthen and widen it. That required concrete piles to be driven into the bed of the Thames River. Wallis recalled that massive drop-hammers driving the concrete piles into the river bedrock caused the tops of the piles to explode upward. The shock wave reverberated back up the pile at 15,000 feet per second. The seismic impact of such tension was much like an earthquake,



View of Bomb Rack and Bomb.

enough to take the dams down, if used in a bomb. Wallis considered a spherical, ball design to deliver the bombs to the dams. A cricketer friend told him that if you put spin on a sphere, and it hits the surface of the water or earth, it propels the ball forward. So Wallis developed back-spin on the bomb to project it farther along the water. He deduced that it should spin at 500 revolutions per minute, backwards across the water. Vickers Armstrong told him it would take two years to design such a bomb, too long for Wallis. He adopted a more conventional drum design, weighing 10,000 pounds, the ultimate design.

By 1942, Lancaster Bombers rolled off the assembly lines. The RAF removed the mid-upper gun turret and the bomb bay doors to create space for a caliper system to cradle the 10,000-pound bomb. Every Lancaster would carry a 10,000-pound bomb. A motor would close and open the doors and turn the bomb on its end to make it spin backwards. Pilot Ken Brown of Moose Jaw recalled that when the bomb was spinning in the belly of the Lancaster, flying at 235 miles per hour, "it was like a car going over cobblestones." The RAF determined the Lancaster had to fly only 60 feet above the water. It couldn't be 80 feet, as the bomb would disintegrate on the water if dropped that high, as it did on many trials. Thirty feet, meanwhile, would be too low as the plume from the splash would hit the tail of the bomber. Two lamps were installed to deliver the bomb, one just ahead of the bomb bay and one to the back. When those two spotlights came together in one dot, the angle was correct for exactly 60 feet. Altimeters didn't work, so they used this system effectively over water at night. The bomb would spin backwards, bounce over the torpedo nets, gently roll into the back side of the dam as its forward momentum slowed, then sink and explode like a depth charge. The bomb had to be dropped within 800 to 1,000 yards of the dam. The Lancaster crews had only five to eight seconds to complete the operation successfully.



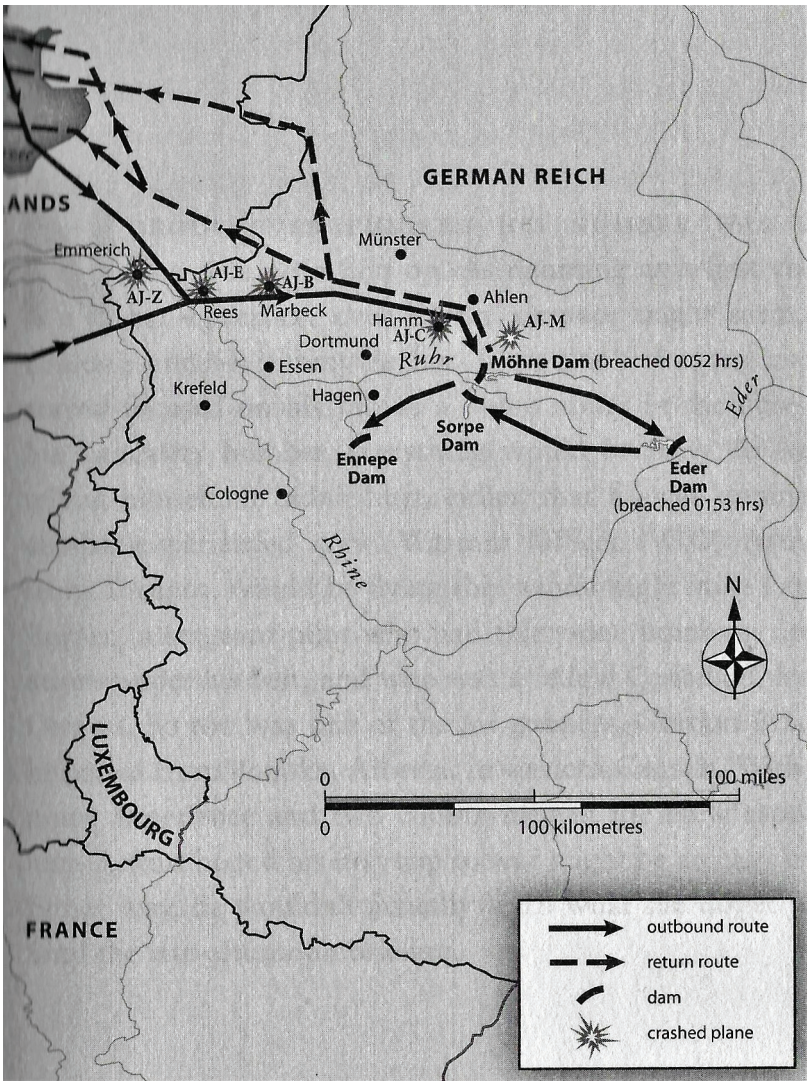
Dambusting Bomb Graphic

Ted showed the first footage of the prototype bouncing bomb being dropped from a Mosquito. The scaled-down, spherical bomb bounced a few times and lost momentum but it continued in a straight line toward the target. By December, 1942, Wallis had achieved his objective. Wallis then had to enlist the support of Sir Arthur Harris, head of Bomber Command. Harris regarded the plan as nonsense and asked why he should risk the lives of seven crewmen for it. Wallis turned to his friend, Max Aitken, Lord Beaverbrook, Minister of Aircraft Production, to sell Winston Churchill on the idea. In 1940, Beaverbrook suggested to Wallis that he go to the United States to learn how the Americans were developing pressurized cabins for high-altitude aircraft. Wallis replied he already equipped a Wellington with pressurized compartments. He told Beaverbrook that he'd rather stay in England to build bombers that could deliver loads potentially up to 10 tons to win the war. Beaverbrook instructed the RAF to work with Wallis.

In the movie, actor Richard Todd, a Second World War British Army veteran, played Wing Commander Guy Gibson, leader of the Dam Busters as Commanding Officer of 617 Squadron. The movie showed Gibson, in March, 1943, telling 133 crewmen assigned to the unknown mission they must practice low-level flying, day and night, to a point where they could "do it with their eyes shut." Pilots who flew Lancasters in the movie were Cold War RAF airmen, accustomed to flying jets. They liked the challenge of flying 60 feet above the water. In fact, when film director Michael Anderson asked them to fly at only 40 feet to make it even more dramatic, they readily agreed. All of the movie flying took place at 40 feet.

The crews completed 2,000 hours over 6½ weeks of low flying. Gibson sent one Lancaster crew to photograph open areas of ground and water around England, to plan a cross-country flight. Then he sent out Royal Observers, trained to identify aircraft and their altitude. They made sure the Dam Busters pilots did all of their low-level flying. The Dam Busters pilots started at 200 feet, but as Ken Brown noted on his first cross-country flight, they were told to fly at 100 feet or lower. Imagine Lancasters flying for six hours at that low level. Brown recalled a hangar under construction was dead ahead of him at an RAF station. If he stayed at 60 feet, he would hit the hangar. The workers started jumping from the building when they saw him. At the last second, Brown brought the Lancaster to 200 feet to avoid disaster. Lo and behold, the Royal Observer Corps duly reported Brown to Gibson. Ted showed a video clip of Ken recalling the story. Ken repeated the flight the next day, keeping the Lancaster to 60 feet as requested. The same thing happened at the hangar. The next day, Ken recalled Gibson telling him, "Brown, I said, 'Low, but not that low!"

It wasn't until May 16, when the Dam Busters left to attack, that they learned the dams were the target. The pilots were just told to keep flying low. The raid involved Lancasters from RAF Station Scampton in Lincolnshire flying in three ways across the North Sea. Ken Brown said they were flying so low they had to dodge the islands. When the German batteries caught up with them, they were shooting down at them, not up. It was incredible flying at such low levels, but the Dam Busters had to fly "under the radar" as the German radar could spot everything above 100 feet. A Dambusters! painting by Mark Postlethwaite puts the demands of the operation into perspective. It shows a Lancaster going in on a dam at the last moment. The pilot, on the left side of the cockpit, has flown low for 3 ½ hours in the darkness, moonlit, from Scampton. Next to him, the flight engineer manages the airspeed to 235 mph. Behind him, the navigator looks down and instructs the pilot as to the moment when the two spotlights must come together. Next, the wireless operator must get the bomb spinning at 500 revolutions per minute. The bomb aimer in the nose, flat on his belly, is responsible for dropping the bomb after the Lancaster is within 1,000 yards of the dam and closes to 400 yards. He uses a simple sight, a Y-shaped device made of wood. He looks through the round opening, with the legs of the Y pointing away from him. When the two white pegs at the end of each leg of the Y line up with the towers of the dam, the aircraft is exactly in the correct range and the bomb is dropped. The crew also included front and rear air gunners to defend against German fire.



Outbound and Return Flight Routes to Dams *Courtesy - Ted Barris.*

Ted described the operation as the most remarkable piece of flying and teamwork he had ever heard of. It was amazing. If all of the variables didn't work out in that critical five to eight seconds, it was a dummy run and they would have to do it all over again. Joe McCarthy's crew, who bombed the Sorpe Dam, made nine passes before they dropped their bomb. Dave Rodger, a rear gunner, said it felt as if "we were seven men against the Reich." They had to depend on each other to complete and survive a mission deep into Germany without any help.

Ted showed pictures of the mostly Canadian crew who photographed the cross-country flight across England. Albert Garshowitz, the wireless operator, took photos of the land and the water in the route. He also took shots of his buddy Floyd Wile, of Scotch Village, NS, and his front gunner, Frank Garbas, who grew up with him in Hamilton. Garbas joined the air force together with Garshowitz, also as a wireless air gunner in the same squadron and the same Lancaster on Operation Chastise. Garshowitz also photographed some of the Lancasters on the cross-country flight. Photos of the crew in the Lancasters were illegal as it was

a top-secret operation. Somehow, Garshowitz managed to tuck the photos into an envelope and send them to his family in Hamilton. They are the only photos of the six weeks of training between the assembly of the squadron and the raid.

Garshowitz was also an avid writer. At noon on the May 16, he and the crew learned the Ruhr dams would be the target. Just before taking off in Lancaster B-Baker that night, he took a piece of chalk, and wrote on the bomb, "Never has so much been expected of so few." Tragically, B-Baker did not return. It collided with a hydroelectric pylon near Malbeck, Germany, and crashed, killing all aboard. The stories of all seven crew members would have been lost if not for Garshowitz's wartime letters and photos.

Joe McCarthy, of New York City, applied in 1939 to be a USAAF fighter pilot, but was turned down because the U.S. was neutral. One of 6,000 American aircrew who served British and Canadian air forces through the Clayton Knight Committee, McCarthy could have transferred to the USAAF after Pearl Harbor. He remained in the RCAF and did a full tour on bombers. His crew were Canadians, including flight engineer Bill Ratcliffe of New Westminister, BC., Dave Rodger, of Sault Ste. Marie, and navigator Don MacLean, of Toronto. They loaded Q-Queenie on the night of the raid but one engine was leaking hydraulic fluid. McCarthy knew there was a spare bomber, T-Tommy. They hurriedly loaded their gear on T-Tommy to catch up to the other Lancasters that had already left. McCarthy's crew would attack the Sorpe dam, the third of the dams to be attacked after the Mohne and Eder dams. The Sorpe was an earthen dam, not a gravity dam like the Mohne or Eder, and would be bombed in parallel as opposed to right angles. They had to fly down a very high ridge, past a church, and in about 1,000 yards find the dam, shrouded in fog. They would drop the bomb and make an equally difficult exit from the valley. McCarthy made nine dummy runs to ensure perfect conditions and on the tenth pass they dropped the bomb.

Artist Conception of Bomb Drop - Look closely for the two spotlights. *Courtesy History.net.*

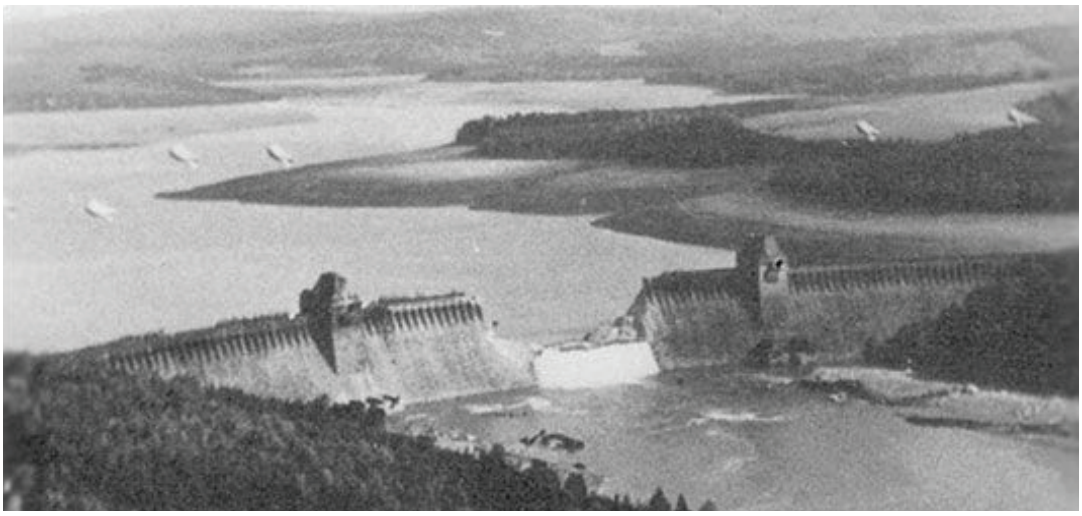
Don MacLean made a decision that saved his crew. Some navigators didn't like cumbersome paper maps. They wanted to trim the maps to make them narrower and put them on rollers. MacLean, however, didn't like the roller idea and preferred big paper maps. When they flew out to return home, McCarthy was surprised to fly over the city of Hamm, with searchlights and guns. He quickly turned the Lancaster around. Then the aircraft was hit on the starboard side, but it wasn't brought down. Q-Queenie's compass readings had been inaccurate. MacLean produced new co-ordinates, using maps with the wider perspective, and they returned to Scampton. Upon landing at 1:37 a.m., they found the right landing gear was gone. The shell blew the wheel apart, pierced the top of the wing, (narrowly missing the fuel tanks) and smashed into the astrodome. It showered hot shrapnel on MacLean with his map table. McCarthy managed to bring the Lancaster down safely with a ground loop. MacLean signed his navigation log in shaky and uneven scrawl. He wasn't comfortable flying and had a foreboding premonition. He had told his two sons that before taking off on every flight, he had said to himself that he wouldn't survive that day. Yet he carried on.

Other aircraft weren't as Lucky. *M-Mother* was shot up going across Holland. Anti-aircraft shells penetrated the nose into the cockpit, killing front gunner George Gregory and wounding pilot John Hopgood. He was bandaged by flight engineer Charlie Brennan of Calgary so he could keep flying. Navigator Ken Earnshaw of Ohaton, AB and the rest of the crew pressed on. But they were hit again and set afire. The bomb was released but Hopgood ordered his crew to abandon the Lancaster and climbed as fast as he could to give them a chance to bail out. None of the crew were wearing parachutes as they were too close to the ground to eject. John Fraser, in the bomb aimer's blister, reached for his breast parachute, strapped it on and pulled the escape-hatch door loose. He was so close to the ground that he rolled out as the tail wheel whizzed by his ear. Fraser, on the ground within three seconds, was one of only two to survive the crash.

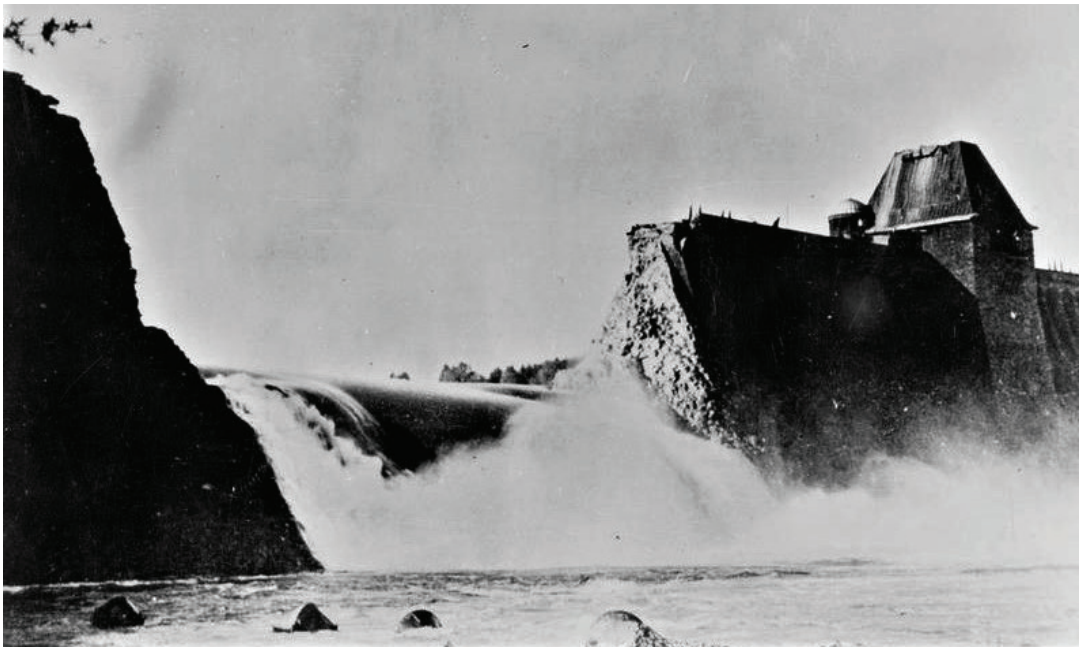
Thirty Canadian crewmen, from coast to coast, participated in the raid: pilots, navigators, bomb aimers, wireless radio operators, flight engineers, gunners, and one radar technician on the ground. Ted credited the BCATP for the excellence of the Canadians. In fact, 56 of the 133 airmen who flew Operation Chastise were trained in Canada. They breached the Mohne and Eder dams, causing a deluge that killed 1,400 people --- mostly forced labourers and POWs --- and wiped out factories, town buildings, bridges, railway lines, farms and livestock. The raid didn't crush the German war machine. But the Germans were so taken aback that they undertook a crash program to rebuild the dams. They rebuilt the Mohne in 79 days, but they had to bring 7,000 workers from across occupied Europe to do it. Workers needed to strengthen the Atlantic Wall were diverted to dam rebuilding, so the dams raid probably assisted the D-Day invasion. The raid boosted Allied morale as the newspapers celebrated it. Churchill had ammunition to bolster his case for the U.S. to join the offensive against Germany.

The 1954 movie cost 200,000 pounds to produce in England. Four RAF Lancasters were repurposed, with three restored to Dam Busters configuration. It cost 100 pounds per engine for each hour of running time. Did the British get it right? In part, at least. For example, they shot the film in black and white so they could include the footage of the practice bombing run. On the other hand, the film showed Todd as Guy Gibson determining who would go on the raid. Unfortunately, the Canadians weren't mentioned. Canada patches on some of the actors' shoulders were as close as Canada came to the movie. Gibson had two Canadians on his Lancaster --- George Deering of Toronto and Harlo Taerum, a Norwegian Canadian, of Milo, AB. Harlo graduated from the top of his class as a navigator, crewed a Lockheed Hudson from Gander to Scotland in record time, caught Gibson's eye, and became the lead navigator on the whole operation. Gibson said Harlo led 617 Squadron to the dams, but he wasn't even mentioned in the movie.

Ted presented his book, pre-publication, at the CWHM celebration of the 75th anniversary of the raid in 2018. One woman, ordering a book, wrote an inscription to her father, F/Sgt. James McDowell. Ted had to get her story into the book. Sadly, Jimmy McDowell was among all seven crewmen who died when Lancaster K-King was shot down and sank on the outbound trip of Operation Chastise. His daughter, Marilyn, was eight years old at the time. Ted worked all night to include her story before the book was published. It was launched last August at the Bomber Command Museum in Nanton, with 16 Dam Busters families represented. Ted was delighted to give Marilyn the first book. Ted closed by saying we must never forget the incredible courage and sacrifice that made the Dam Busters pivotal in boosting the morale of the Allies. As for the cost, Ted showed a movie clip where Redgrave, as Wallis, lamented the loss of 53 airmen. Todd, as Gibson, replied he "mustn't think that way," since none of the men would have dropped out if they knew they wouldn't be coming back. The scene ended on a poignant note as Gibson said he had to write letters to the families before turning in for the night. Ted, answering many questions, paid tribute to aviation museums and the families of the airmen for preserving the story. John Bertram thanked Ted for his dedication to Canadian history and arranged for a gift to our speaker for his dynamic presentation.



Aerial view of breached Mohne Dam.



Mohne Dam Breached - View from ground level.