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50 years later, the price still being paid for the atom bomb

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Gleaming white from its fresh coat of anti-flash paint, the Valiant bomber of the Royal Air Force took a lazy circuit through the clear Pacific skies.

An hour earlier, Wing Commander Ken Hubbard had powered up the plane's four Rolls-Royce engines for the take-off from the coral atoll of Christmas Island.

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Britain detonated its first nuclear bomb exactly 50 years ago

He and his crew were being particularly careful - they had an historic piece of kit on board.

The year was 1957, the date May 15 - exactly 50 years ago yesterday - and down in the bomb bay was a four-ton metal cylinder containing ultrahigh explosives, obscure metals and isotopes, a spaghetti of electrical circuitry, top secret triggers and a team of boffins from the secret Atomic Weapons Research Establishment at Aldermaston in Berkshire.

If everything went to plan, there would be an almighty bang. But, given the rush in which the job had been done and the uncertainty of the complex science involved, that was very much in doubt.

The last components for the bomb (code-named Short Granite) had arrived only five days before and the scientists still seemed to be doing their sums, changing their minds and arguing, right up until the last minute.

There was much at stake. This was an explosion on which the hopes of a nation rested, because it would pitch Britain into the premier league, laying claim to be alongside the United States and the Soviet Union as a nuclear super-power.

Thousand of miles away in London, the recently appointed prime minister, Harold Macmillan, waited for the news that would determine his bargaining strength as a leader in the post-war world.

From Christmas Island, Hubbard had aimed the Valiant south, over the equator, and was now circling at 45,000ft above Malden Island, a low outcrop notable only for its coating of bird dung.

He had made two practice runs over the drop zone and was on his third, waiting for instructions from scientists on board HMS Narvik, the control ship cruising 30 miles away.

This time it was "GO". The bomb dropped from its shackles, free-falling through the air as Hubbard turned the Valiant away in a high-speed escape.

The bomb fell for nearly a minute before the time fuse launched the ignition process and, 8,000ft above the sea, at 10.38am local time, it exploded.

Down below, on the ships in the nuclear test flotilla, all personnel - the boffins, the observers, the sailors - were in protective clothing and equipped with badges made of special film to monitor radiation; those on deck were wearing anti-flash gear, goggles and respirators.

Or so the official archive confidently tells us.

Able Seaman John Lowe, a 21-year-old national serviceman on Narvik, remembers it differently.

He pulled on a flimsy white suit with double cuffs, a balaclava, rubber gloves and an old World War II gas mask.

And the only reason he had all that paraphernalia was because he was part of a special decontamination team.

If radioactive fall-out settled on the ship, everyone else would hide below while they scrubbed the decks with brooms and caustic soda.

For now, the 160 crew sat on deck with their backs to the drop zone, their hands over their eyes, waiting.

What followed was both majestic and horrific. The intensity of the flash penetrated hands and eyelids so that some men claimed they could see their bones through their skin, as in an X-ray. A flush of heat burst against their bodies.

Ten seconds later, the spectators turned round to see, in the words of an observer on the aircraft carrier HMS Warrior, "an enormous ball of fire that changed swiftly into a bubbling cauldron of coppery red streaked with grey.

"This fantastic mushroom bridged sea and sky like some giant waterspout."

Britain had what she desperately wanted. As the headline in the makeshift newspaper cobbled together that day on Christmas Island proclaimed - and the rest of the world's press soon repeated - "Bomb gone: H-bomb puts Britain on level terms."

It wasn't strictly true. To the experts, the bang that day 50 years ago was more of a whimper.

At 300 kilotons, it may have had 20 times the power of the atom bombs that destroyed Hiroshima and Nagasaki in 1945, but the Americans and Soviets were already experimenting with explosions calculated in megatons.

(A kiloton is the equivalent of 1,000 tons of TNT, whereas a megaton is a million tons.)

More importantly, they were doing so with a new sort of science. Atom bombs worked on the principle of fission, where atoms split apart and release huge amounts of energy.

The new H-bomb was based on forcing hydrogen atoms to fuse together. And the power produced by that fusion was so great that the calculations ran off the end of the physicists' blackboards.

It was, in theory, limitless. A-bombs could destroy whole cities, but Hbombs could devastate entire regions. And it was this power the British government wanted.

The Malden Island blast was not it. The device dropped from Wing Commander Hubbard's Valiant was - like a genuine fusion weapon - a double bomb, using the heat from an atom bomb as a trigger for a second detonation.

But no fusion took place. The only real "H" that day was for Hype, along with "B" for Bluff.

Nonetheless, May 15, 1957, went down in history as the day Britain became a nuclear super-power, and a long-held hope of British prime ministers of both parties was realised.

It was also the start of a long-running controversy over the effects of radiation. A new study has found significant genetic damage in servicemen who took part in the event, and some of them are still fighting for redress.

Ironically, given the pacifist and anti-nuclear division within the Labour party (then and now), it was Clement Attlee, often voted the hero of British socialism, who was first on the quest for nuclear weapons.

Attlee, unexpected winner of the 1945 general election, decided that a British atom bomb was "essential to our defence".

A month after taking office, he set up a secret Cabinet committee, GEN 75, and it was at one of the meetings of this Atom Bomb Committee that a serious split appeared in the Labour camp.

The Chancellor, Hugh Dalton, and President of the Board of Trade, Stafford Cripps, questioned whether the country could afford it.

As they made their case, there was a commotion, the door opened, and the pugnacious Foreign Secretary, Ernest Bevin stumbled in, apologising that he had fallen asleep after a heavy lunch.

He listened momentarily to the Cripps/Dalton argument, then went ballistic.

"No, that won't do at all," he thundered. He had recently had discussions with the Americans, "and I don't want any other Foreign Secretary of this country to be talked at, or to, as I was.

"We've got to have this thing over here, whatever it costs. We've got to have the bloody Union Jack on top of it."

An even more secret cabinet sub-committee, from which Dalton and Cripps were excluded, took charge, and Britain's nuclear weapons project was under way.

The case made by Bevin for Britain never to stand cap-in-hand before the Americans was trotted out by subsequent British leaders. Churchill, when he returned to Downing Street in 1951, said the bomb was "the price we pay to sit at the top table".

As the race for bigger and more lethal weapons hotted up, he gave the order in 1954 to upgrade to hydrogen bombs.

WAS it jingoistic pride, the last blast of empire or sensible politics? A bit of all three, one suspects.

But, at a time of declining British power around the world, there was an edge of desperation in the orders and in the way our weapons scientists were egged on.

Atom bombs they could manage, and did, in sizeable numbers at Aldermaston. But thermo-nuclear devices - H-bombs - were uncharted territory, where the others, with their massive head start and unlimited funds, were racing ahead.

The Soviet test of a thermo-nuclear device towards the end of 1955 increased the pressure for Aldermaston to come up with a multi-megaton bomb.

But pressure was also coming from another source. Round the world, there were growing protests over nuclear testing and demands for a total ban.

The Americans and the Russians were of a mind to accept. Their testing was pretty well complete. They had mastered the technology that was proving so elusive in Berkshire.

For Britain, the prospect of such a ban at this time was appalling. It was as if they had invited themselves to a party just as it was coming to an end. Something had to be done - and fast.

That something was Operation Grapple, so- called because it would involve all prongs of the military, the Army, the Navy and the Air Force, hooked up together with civilian scientists in the biggest combined operation since the end of the war.

The aim was to detonate a bomb at least one megaton in power. Spring 1958 had been the original target date. Now the deadline was brought forward a whole year.

While the scientists chewed anxiously over theories, drawing sketches, considering the relative merits of lithium-6 and uranium-238 in the cycle of detonation, the Kermadec Islands in the south Pacific were picked as a test site.

But the Prime Minister of New Zealand, whose territory they were, refused permission.

The spotlight shifted to Malden Island (which came under joint UK and U.S. administration), with Christmas Island, 365 miles away, as the base from which the tests would be conducted.

The Christmas Island atoll was midway between Australia and the west coast of America. It had been a staging post for U.S. bombers during the war and so had a rudimentary runway.

It would be a major engineering job to resurface it for the jet bombers and transport planes about to use it, and also to build a "town" of tents and huts for the thousands of men about to descend on it.

This was no tropical paradise. It was hot and exposed, with no source of food except coconuts and fish, and infested with flies and vicious land crabs. Everything had to be shipped or flown in, from food and water to heavy machinery.

Corporal John Sadler was one of the first Royal Engineers to arrive. He was 22 and recently married, and this barren land would be his home for the next year:

"We worked seven days a week because there was nothing else to do."

Soon the island was buzzing with activity. Sadler recalled the tension and expectation rising among the 4,000 new inhabitants of Christmas Island as HMS Narvik arrived, followed by the aircraft carrier Warrior.

Overhead, the bombers and the Canberra "sniffer planes" - which would fly directly into the mushroom cloud to take samples - flew constantly, practising their runs and testing their equipment.

When D-Day came, Sadler watched the Valiant roll down the runway and take off. But after that, he saw and heard nothing. Though he strained his eyes to see the mushroom cloud it was too far away.

"But I felt very proud. We knew we were making history. That bomb would make our country a greater power in the world."

The scientists on board HMS Narvik who had witnessed the explosion were landing back on Malden Island by helicopter to check their instruments.

Debris floated in the sea, the island scrub was on fire but radioactive contamination was light.

Even seaman John Lowe was allowed ashore to see the fires for himself, assured that it was quite safe.

He and his mates played cricket on the roasted ground and threw themselves into the rolling waves that crashed onto the beach.

Back on board, they fished for tuna and cooked what they caught.

Contamination? He gave it no thought . . . for now.

The scientists on Christmas Island and back at Aldermaston were now in almost permanent session. This first shot in Operation Grapple had been a "disappointment", even though in London it was being trumpeted as a triumph.

What had gone wrong? More tests were needed.

The next one, on May 31, gave off 800 kilotons of power, close to the magic megaton - which was fortunate since a party of journalists had been invited.

Grapple-X on November 8, 1957 produced 1.8 megatons. Six months later, on April 28, 1958, Grapple-Y managed a thunderous three megatons.

The prime minister at last had his thunderball to rival the super-powers. It was "a symbol, not a weapon", as one historian put it.

For the rest of the 20th century, British leaders could look American presidents in the eye. But, in the process, trouble was brewing.

For reasons of economy and logistics, the later bomb drops had been carried out off Christmas Island itself rather than over the distant Malden Island.

During the early tests, only those on the ships had been close to the explosion. Now many more servicemen were in the front line.

One of those was Scottish sapper Ken McGinley, who remembered the growing fear as the bomb test neared.

"It's the biggest bomb the world has ever attempted to set off," he wrote to his girlfriend. They had no idea what to expect. "There's boys writing out their last will and things like that."

They mustered on the beach for the Grapple-Y countdown. He was given a white cotton suit to put on over his shorts and shirt but he clearly remembers others standing there in their normal clothes, with no protection.

"I've seen photographs of men wearing futuristic-looking goggles with hoods and special boots who were reputedly stationed on Christmas Island, yet I never once clapped eyes on any such equipment," he said.

The flash was "like a second sun", followed by a slow, searing heat. He screamed in pain. He saw trees snapped in half by the shock-wave.

More sinister were the thick, black cloud that was drifting towards the camp, the torrential rain and the dead cormorants he was sent to clear from the beach, their eyes burnt out.

McGinley went down with a series of ailments before being discharged from the army as medically unfit. He never really got better; he suffered nightmares; he discovered he was sterile.

But at least he was alive, unlike other Christmas Island veterans he kept hearing about.

In 1983, he was instrumental in setting up the British Nuclear Test Veterans' Association to demand recognition, compensation and pensions for their widows.

It has been a thorn in the side of the Ministry of Defence ever since. The official line remains resolutely unchanged - that safety precautions were taken, there was no evidence of radioactive contamination afterwards, and that the death rate among Christmas Island veterans is statistically normal.

But talk to John Lowe, once that young sailor on Narvik, now the association's chairman, and it is hard not to be moved by the men's stories, and to feel that not everything about the tests was as harmless as the MoD would like us to think.

The pressure was intense, time was running out. At the very least, corners were cut, lives endangered? Was the attitude to safety "as casual as if the men had been at a Guy Fawkes bonfire party", as one MP put it in the House of Commons?

The new study, from New Zealand, seems to bear that out. Scientists found "high numbers of rogue cells" in sailors present at Operation Grapple.

Fifty years ago, Britain got its big bomb "with a bloody union jack on it". But that independence came at an unknown human price.

From those super-bomb blasts half-a-century ago, sadly the dust has yet to settle.

Tony Rennell's latest book, Home Run, is published by Viking.

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My dad was on Christmas island during the bombings. He has since died of cancer after living a very healthy smoke free life. WHY?

- Elizabeth, Canada, 16/5/2007 05:59

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It was a horrific time growing up a child in the fifties and sixties when it was deemed perfectly allright for nations to test their atom bombs into the atmosphere. I can remember my parents talking about warnings of impending dust clouds of radiation wafting over much of the British Isles and contaminating home grown produce, farmlands and milk products. Stay inside at certain times were the warnings. What madness man bestows upon us all!

- Chriss, BC, Canada, 16/5/2007 05:56

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The veterans have my sympathy. They at least know that there is some reason for the damage to them.
The radioactive dust and water that were injected into the atmosphere must have circled the world time and again.
Has anyone got figures for cancer incedence befor the atmospheric tests.
We know it is common now, blamed on cigaretts, sunlight etc.
Was it the same before these tests?
If they had the information would the government release it?
Any answers?

- John Sizeland, Eccles on Sea, Norfolk, 15/5/2007 23:47

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