Episode Book

EPISODE #5793

Little Boy: The Untested Bomb That Changed War

PUBLISHED	9 October 2026 at 09:41 UTC
DURATION	32:28
LISTEN	myweirdprompts.com/episode/little-boy-untested-bomb-hiroshima/
HOSTS	Corn, Herman, Hilbert
SCRIPT MODEL	deepseek-flash
VOICES	chatterbox-regular (chatterbox-local)
PIPELINE	V5.2
SOURCES	10 cited by the research (listed at the end)
BOOK GENERATED	19 October 2026 at 17:40 UTC

SYNOPSIS

Little Boy was the least efficient nuclear weapon ever built, throwing away 98.5% of its fuel — and it was the one Los Alamos trusted without a full-scale test. This episode traces the strange engineering of the gun-type bomb, from the death of the plutonium Thin Man design to the 72-inch cannon barrel that became the world's first deployed atomic weapon. Then it follows the morning of August 6, 1945, from Tinian's runway to the detonation 1,968 feet above Hiroshima. And it confronts the harder question: what does it mean that a 15-kiloton weapon — 3,300 times smaller than Tsar Bomba — killed over 100,000 people and permanently changed how states think about war? Yield and human consequence, it turns out, are not linearly related. The smallest weapon of the nuclear age was already enough.

TRANSCRIPT



Corn

Two episodes of monsters. One tested once, one never built.



Herman

Fifty megatons and then a proposal that made fifty megatons look like a firecracker. And now we go the other way.



Corn

Daniel sent us this one. He wants to go back to the beginning. Little Boy, Hiroshima, the sixth of August, 1945. And he's asking for three things. What the thing actually was, the design, the gun mechanism, the size, the yield, and how much confidence the scientists had in it given it had never been tested full scale. Then what happened that morning, Enola Gay through detonation and the aftermath. And then the harder one, what Hiroshima means in the history of all this. He was explicit about one thing though. He said this is not a proposal or a test, it is the use of a nuclear weapon against a populated city, and he doesn't want the engineering to obscure what happened to the people there.



Herman

He's right to flag it. And I think the way we hold both is to go slowly and take the technology seriously on its own terms, because the technology is strange, and then let it run straight into the testimony.



Corn

So let's start with the scale. Because the scale is the whole story.



Herman

Roughly fifteen kilotons for Little Boy. Tsar Bomba was about fifty thousand. That's a factor of about three thousand three hundred. And Sundial would have been larger still.



Corn

Three thousand three hundred times smaller.



Herman

And it killed over a hundred thousand people and permanently changed how states think about war. That's the inversion the whole episode turns on. Yield and human consequence are not linearly related. Blast effects scale roughly with the cube root of yield, which means going from twelve kilotons to twenty kilotons buys you about zero point one four miles of five-psi radius. The smallest weapon of the nuclear age was already enough. Everything after it was redundancy.



Corn

Which is a strange thing to sit with, given what we spent the last two episodes talking about.



Herman

It reframes both of them. Tsar Bomba and Sundial aren't a different phenomenon. They're this phenomenon with more zeros.



Corn

So we've got three movements. The machine and how it got built, and why nobody thought it needed testing. The morning of the sixth, and what it did to a city and the people in it. And then the afterlife. The decision, the argument, and what it did to strategy.



Herman

One thing up front on sourcing. Where casualty numbers are disputed I want us to give ranges and say who's saying what, not pick a number and move on. And where something is contested among historians I want to say so rather than pretend there's a settled answer.



Corn

Agreed. So let's start with the machine itself. Because the machine is strange, and the strangeness is the point.



Herman

Little Boy starts as a different bomb. It starts as Thin Man.



Corn

The plutonium gun.



Herman

Same idea, longer, thinner, plutonium core. And it died in July of 1944, and it died because of Emilio Segrè's group at Los Alamos finding something in the reactor-bred plutonium that Hanford was starting to produce. Pu-240. Spontaneous fission. The plutonium was spontaneously fissioning fast enough that if you assembled it slowly, down a gun barrel, the chain reaction would start before the assembly finished. Predetonation. The thing would fizzle.



Corn

So the gun design was fine. The fuel was wrong for it.



Herman

Which left the gun design viable for exactly one material, uranium-235. And it forced the plutonium program entirely into implosion, which is a completely different engineering problem. So you end up with two parallel weapons programs sharing almost nothing, and Little Boy is what's left of the gun idea.



Corn

Walk me through the mechanism, because I want people to actually see it.



Herman

It's a gun. That's not an analogy. It is a gun. A cordite charge, same family of propellant as artillery, fires a uranium projectile down a seventy-two-inch smooth-bore barrel into a uranium target cylinder. The two pieces are both subcritical on their own. Together they're supercritical. Muzzle velocity about a thousand feet per second. The assembly takes about ten milliseconds, and once it's assembled, the chain reaction runs in under a microsecond.



Corn

Ten milliseconds from shot to boom.



Herman

And it's a cannon. The entire weapon is a naval gun barrel with a physics experiment on the end of it.



Corn

The dimensions.



Herman

Ten feet long, twenty-eight inches in diameter, nine thousand seven hundred pounds. It carried sixty-four kilograms of enriched uranium. Most of it enriched to about eighty-nine percent, some of it as low as fifty, averaging around eighty. The Nuclear Museum splits the fuel as roughly eighty-five pounds in the target and fifty-five in the projectile.



Corn

And how much of it actually fissioned?



Herman

Less than a kilogram. The Nuclear Museum puts it at about one point three eight percent of the fuel. Zero point seven grams of mass converted into about fifteen kilotons of energy.



Corn

So ninety-eight and a half percent of the fuel was just... thrown away.



Herman

Little Boy was the least efficient weapon design in the history of the program. Nothing else comes close.



Corn

And yet.



Herman

And yet it was the one they were sure of.



Corn

That's the part I want to sit on. Because the efficient weapon, the clever weapon, is the one they tested. And the wasteful one is the one they put on a plane untested.



Herman

And that's not a paradox once you look at it from the engineering side. The gun design is mechanically boring. You know exactly what a cordite charge does to a projectile in a smooth-bore barrel, because navies have known that for a century. There was nothing in the design that could surprise you. The confidence came from the absence of things that could go wrong, not from verification.



Corn

And implosion was the opposite.



Herman

Implosion is a lensing problem. You're taking a sphere of high explosive and detonating it in such a way that the shock converges perfectly symmetrically on a plutonium core. If the symmetry is off, you get a fizzle. And nobody had ever done that before. So the sophisticated design is the one that required a test. Trinity, the sixteenth of July, 1945, was a plutonium implosion device. There was never a full-scale gun test. Not before Hiroshima, not ever.



Corn

Why not? Material?



Herman

Material. And this is the number that explains the whole decision. K-25, the enrichment plant at Oak Ridge, was designed to produce about thirty kilograms of enriched uranium per month. Each Little Boy used over sixty. A test would have consumed a weapon's worth of fuel and pushed the use back by weeks.



Corn

So one test equals one bomb.



Herman

One test equals one bomb you can't drop. Meanwhile Hanford was producing about twenty kilograms of plutonium per month, and each Fat Man used about six. Which is why plutonium could be spared for Trinity and uranium could not. It's not a physics decision. It's a supply-chain decision.



Corn

So they tested the components individually.



Herman

They fired dummy projectiles down the barrel. They tested the cordite, the fusing, the radar altimeters, all of it. Ernest Lawrence actually argued for a full-scale test. And by early 1945 the weapon was regarded as nearly a sure thing, expected to out-yield the first-generation implosion bombs.



Corn

And the components were built where?



Herman

Three separate plants, deliberately, so that no single facility had the complete design. The Naval Gun Factory in Washington, the Naval Ordnance Plant in Center Line, Michigan, and the Expert Tool and Die Company in Detroit. Each plant made its part without knowing what the whole thing was.



Corn

There's a detail about the diagrams I want to get to, because it's wild.



Herman

For fifty years, every published diagram of Little Boy showed a small solid projectile fired into a large target. In 2004, John Coster-Mullen corrected it. The larger piece, the hollow one, about sixty percent of the mass, was actually the projectile. The solid piece was the target.



Corn

Backwards. For fifty years.



Herman

Backwards. And the reason is that hollow cylinders have higher critical masses, so the hollow piece had to be the one that moved, because the hollow piece needed minimal contact with the tungsten-carbide tamper. So the thing that flies is the thing that's hollow,



Herman (continued)

which is the opposite of what you'd draw if you were reasoning from intuition.



Corn

Right. And then there's the safety decision on the mission itself, which is the setup for everything that comes next.



Herman

Parsons kept the cordite powder bags out of the bomb until after takeoff. That was deliberate. If the B-29 had crashed on takeoff with the propellant loaded, Tinian would have been destroyed. So the bomb flew without its propellant, and Parsons and Lieutenant Morris Jeppson armed it in flight.



Corn

So the plane took off with a nuclear weapon that physically could not function yet.



Herman

Physically could not function. And that's the part I want to land, because it answers the confidence question directly. The scientists' confidence in Little Boy was high precisely because the design was crude. The weapon that was never tested was the one they were sure of. The weapon they tested was the one they weren't.



Corn

So that's the weapon. Now let's talk about the morning of the sixth of August, and about what it did to a city.



Herman

Oh two forty-five, Tinian time. Enola Gay, B-29 number eighty-two, Colonel Paul Tibbets at the controls, lifts off with Little Boy aboard. Two accompanying planes, The Great Artiste and Necessary Evil. Three weather planes out ahead, Straight Flush, Jabit III, Full House.



Corn

What was the crew doing in the air?



Herman

Between about three ten and three twenty, Parsons is down in the bomb bay inserting the gunpowder and the detonator into Little Boy. At seven fifteen, Jeppson removes the safety devices and inserts the arming devices. Green plugs out, red plugs in. At seven thirty, Tibbets comes on the intercom and says, we are carrying the world's first atomic bomb.



Corn

Did anyone say anything after that?



Herman

Not much. What's there to say. At eight twenty-four, Straight Flush, the weather plane over Hiroshima, reports cloud cover less than three tenths at all altitudes. Advises the primary. Tibbets says, it's Hiroshima.



Corn

So the city was chosen by cloud cover that morning.



Herman

Partly. Kokura was also on the list. The cloud decided it.



Corn

And the drop.



Herman

Nine fifteen and fifteen seconds, Tinian time. Eight fifteen and fifteen seconds, Hiroshima time. Bomb bay doors open. Little Boy drops from thirty-one thousand and sixty feet. The nose of the Enola Gay rose ten feet when the weight came off, and Tibbets immediately pulls into a hard one hundred and fifty-five degree turn to get away from the blast.



Corn

Because they had no idea how bad it was going to be up there.



Herman

They had an estimate. They had no idea. The bomb falls for forty-four point four seconds. It detonates at nineteen hundred and sixty-eight feet, plus or minus fifty, above Dr. Shima's Clinic, about five hundred and fifty feet from the aiming point, which was the T-shaped Aioi Bridge. And by that moment the Enola Gay was eleven and a half miles away.



Corn

Eleven and a half miles.



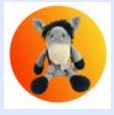
Herman

Eleven and a half miles, and the shockwave still hit them.



Corn

What did the crew see?



Herman

Bob Caron, the tail gunner, was the only man on board facing Hiroshima. He saw a shimmer approaching, and then three shockwaves struck the plane in sequence. He described the view as a peep into Hell. Tibbets felt a strange sensation in his teeth, like touching a fork to a filling.



Corn

The fillings one gets me. Everyone always repeats the mushroom cloud line but the teeth are the part that's real.



Herman

Parsons's coded message back to Tinian. Clear cut, successful in all aspects. Visible effects greater than Alamogordo. Conditions normal in airplane following delivery. Proceeding to base. They landed at Tinian at fourteen fifty-eight. Twelve hours and thirteen minutes, door to door.



Corn

Now the actual physics of what happened under the plane. Because this is where I want people to actually feel it.



Herman

The fireball. Twelve hundred feet in diameter. Surface temperature around ten thousand degrees Fahrenheit, which is roughly the surface temperature of the sun. At one tenth of a second it was a hundred feet across at five hundred thousand degrees. Neutrons and gamma rays reached the ground.



Corn

And the blast.



Herman

The shockwave propagated at about two miles per second. Seven thousand two hundred miles an hour. Almost everything within one mile of the hypocenter was destroyed, except about fifty reinforced concrete buildings, which survived as shells. The five-psi lethal area was two point two miles in diameter.



Corn

Then the fires.



Herman

The fires started simultaneously across the city, and about twenty minutes after detonation they merged into a single firestorm roughly two miles across. The Manhattan Project's own report estimated that sixty percent of the immediate deaths were caused by fire. The Department of Energy history says the firestorm engulfed four point four square miles.



Corn

And it jumped the rivers.



Herman

It jumped river channels. It jumped prepared firebreaks. A firestorm generates its own wind and it pulls in oxygen from outside itself, and a river is not a barrier to that.



Corn

Radiation.



Herman

Here's the thing that people get wrong about Hiroshima. It was an air burst at about nineteen hundred feet, so there was no bomb crater. There was no local radioactive fallout at the hypocenter. The lethal radius of direct neutron and gamma radiation was about zero point eight miles. And an estimated thirty percent of the immediate fatalities received lethal radiation doses, but they died in the firestorm first. Over six thousand people survived the blast and the fire, and then died of radiation injuries.



Corn

Which is a different death, weeks later, from a different cause.



Herman

A different death entirely. And there's black rain, radioactive and charcoal colored, falling over a wide area beyond the city, contaminating people who came in afterward looking for family. Keiko Ogura talks about that. And then the nuclear shadows.



Corn

Explain those for anyone who hasn't seen the photographs.



Herman

Thermal radiation bleaches stone and leaves a permanent shadow where a body absorbed it. There's a woman on stone steps eight hundred and fifty feet from the hypocenter whose shadow was burned into the steps. There's a man pulling a cart whose outline went into the asphalt. They're not drawings and they're not photographs of a person. They're a record of where a person was when they stopped being a person.



Corn

Sixty thousand of the city's ninety thousand buildings demolished.



Herman

About that. And the copper dome of the Industrial Products Display Hall, which is now the A-Bomb Dome, was stripped down to the girder skeleton, which is what you see in every photograph of the site today. That skeleton is the building that didn't fall down.



Corn

Let's go to the testimony. This is the part of the episode Daniel was most insistent about.



Herman

Keiko Ogura was eight years old in 1945, and she was interviewed in February of 2019. She survived because her father had moved the family about two point four kilometers from the hypocenter the previous year. She notes that within the thousand-meter radius, about sixty percent of the people died.



Corn

She gives the word for it.



Herman

Pikadon. Pika is the flash. Don is the sound and the blast. And here's her description of the moment. First, there was a strong flash. And then, soon after, there was a blast. I couldn't breathe. I couldn't stand. It was so strong, like I was in the midst of a typhoon or a tornado.



Corn

Then the fires.



Herman

The land started to burn, and most of the people jumped into the rivers. Soon, rivers were full of those dead people, dying people.



Corn

Herman.



Herman

Yes.



Corn

The rivers part is the line that I keep coming back to. Because you picture people running to the water because that's what you do when you're burning, and the water is already full.



Herman

She talks about the radiation killing people who had no injuries at all. People who did not have any scars and burns all of a sudden died. Her sister-in-law's sister had been shielded by her grandmother, so she had no burns. And then she developed bleeding gums, a high fever, and hair loss. She said, get me a mirror. Get me a mirror. I want to see myself without hair. And she died within two weeks.



Corn

The mirror.



Herman

That's the request. Not water, not a doctor. A mirror.



Corn

What does she say about the medical response?



Herman

The wounded were directed to shrines and schools that had been designated as first-aid stations. And she says, there was only one soldier with a tin bucket with oil. That's all.



Corn

One soldier.



Herman

One soldier and a bucket. Her father cremated over seven hundred bodies a day in a park near their home.



Corn

Seven hundred a day. That's not a statistic, that's a man with a job.



Herman

And the stigma afterward. Survivors hid their identity. She knew classmates whose weddings were canceled because they had been in the city. She didn't tell her story for fifty years. Her nightmares stopped only after she started speaking publicly.



Corn

And then there's the thing she carried that isn't about the bomb at all.



Herman

She gave water to dying people. Two of them died immediately after drinking. And she believed for years that she had killed them.



Corn

She was eight.



Herman

And there is no version of that where she did anything wrong, and it took her decades to know it.



Corn

There's another testimony I want to bring in.



Herman

Chiyoko Okazaki, written at age seventy-one, for Hiroshima Speaks Out. She was exposed at about a kilometer from the hypocenter, inside a relative's house. I was covered with blood all over when I finally crawled my way out. I saw clouds down to the ground. She lost her cousin's ten-year-old son, a boy she had hoped to adopt.



Corn

And she kept a record of her symptoms, which is unusual and valuable.



Herman

She did. Bleeding from the back, the neck, the thighs, the legs, the arms, the hands. Fingers turned purple. Vomiting for about a month from the eighth of August. Diarrhea for a year from the twentieth of August. Near-complete hair loss from the twenty-eighth of September to December. Fever for a month from early September.



Corn

The dates matter, because that's the shape of acute radiation syndrome on paper.



Herman

That's exactly what it is. And the one doctor she saw, in her words, gave me no treatment and just shook his head.



Corn

A doctor with nothing to give.



Herman

Because there was nothing to give. And because a large percentage of the trained medical personnel in the city were among the dead. The relief system failed at the exact moment it was needed, which is a thing that every serious planning document about nuclear war since then has had to reckon with.



Corn

Casualty figures. And I want to do these carefully, because Daniel specifically asked us not to flatten this.



Herman

Hiroshima's population at the time was about two hundred eighty to two hundred ninety thousand civilians, plus about forty-three thousand soldiers. Immediate deaths, roughly seventy thousand from blast, heat, and radiation, including about twenty American prisoners of war.



Corn

Who were in the city.



Herman

By the end of 1945 the figures diverge and this is where I want to give the range. The Department of Energy says probably over a hundred thousand. The Radiation Effects Research Foundation review gives ninety to one hundred twenty thousand dead, out of about three hundred thirty thousand people in Hiroshima by the end of that year. The United States Strategic Bombing Survey estimated seventy to eighty thousand.



Corn

That's a big spread.



Herman

It's a big spread and it's honest. Later still, the Department of Energy says the five-year death total may have reached or exceeded two hundred thousand. The city of Hiroshima's own estimate is two hundred thirty-seven thousand killed directly or indirectly. Those aren't the same kind of number, and they're counting different things.



Corn

Radiation sickness peaked three to four weeks after, and tapered off seven to eight weeks after.



Herman

That's the acute phase. And then the long tail, which is the most rigorously documented part of the whole story, because the survivor cohort was tracked for decades.



Corn

Give me the numbers.



Herman

Three hundred fifteen leukemia deaths in the Life Span Study cohort, with ninety-eight of those, about forty-five percent, estimated as radiation-attributable excess. Seventeen thousand four hundred forty-eight solid cancer cases, with eight hundred fifty-three of those, about eleven percent, attributable to radiation among the people exposed to more than zero point zero zero five gray. The excess relative risk per gray for solid cancer incidence is about zero point four seven.



Corn

And the finding that actually matters most for the survivors themselves.



Herman

No radiation-related heritable disease has been observed in the children of survivors. That was the fear that ran through a whole generation of families, and it did not materialize in the data. That's important, and it's important to say clearly.



Corn

So that's what happened. The harder question is what it meant. And that question is still being argued about.



Herman

Start with the decision itself. The Interim Committee, chaired by Henry Stimson, the Secretary of War, formed in early May of 1945. It recommended using the bomb without warning, on what it called a dual target. A war plant surrounded by workers' homes.



Corn

No warning.



Herman

The reasons for rejecting a demonstration were specific and practical. The bomb might be a dud, which would have been catastrophic diplomatically. The Japanese might put prisoners of war in the area. And the delivery plane might be shot down before it ever got there.



Corn

There was internal dissent though, and it's often flattened.



Herman

The Franck Report, James Franck with Glenn Seaborg and Leo Szilard, argued for international control and a demonstration. The Scientific Panel, Oppenheimer, Fermi, Compton, Lawrence, disagreed, concluding no technical test would convince Japan to surrender. The Interim Committee concurred on the twenty-first of June.



Corn

The target list.



Herman

Kokura Arsenal, Hiroshima, Niigata, and Kyoto. Stimson vetoed Kyoto, on the grounds that it was Japan's most cherished cultural center. Nagasaki replaced it.



Corn

And Hiroshima.



Herman

Hiroshima was deliberately spared conventional bombing so that its damage could be studied.



Corn

So the city survived the firebombing campaign because the nuclear program needed a clean test subject.



Herman

It's one of the most uncomfortable details in the whole story, and I think it's earned its place near the top rather than buried.



Corn

Now the debate. And I want us to give both sides fairly.



Herman

The orthodox position is that the bombings ended the war and avoided Operation Downfall. Truman in 1953 said he had been advised casualties could range from two hundred fifty thousand to a million. Churchill's line is worth quoting directly. I am surprised that very worthy people should adopt the position that rather than throw this bomb, we should have sacrificed a million American and a quarter of a million British lives. The Joint War Plans Committee, in a paper from the fifteenth of June 1945, estimated forty thousand American dead and one hundred fifty thousand wounded. MacArthur on the eighteenth of June predicted ninety-five thousand casualties in the first ninety days.



Corn

And the revisionist position.



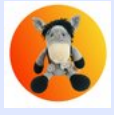
Herman

That the bombings were militarily unnecessary, and that a blockade plus conventional bombing would have forced surrender. Tsuyoshi Hasegawa, in Racing the Enemy, argues the Soviet entry into the war was the decisive factor. Admiral Soemu Toyoda said, I believe the Russian participation in the war against Japan rather than the atom bombs did more to hasten the surrender. Prime Minister Suzuki said Soviet entry made the continuance of the war impossible.



Corn

And the counter-evidence to that.



Herman

Robert James Maddox argues no Joint Chief ever told Truman the bomb was unnecessary or immoral. And the Japanese-side evidence cuts against pure revisionism too. Kichi Kido, Hirohito's adviser, said, we of the peace party were assisted by the atomic bomb in our endeavor to end the war. And he went further. I believe that with the atomic bomb alone we could have brought the war to an end. Chief Cabinet Secretary Hisatsune Sakomizu called the bombing a golden opportunity given by heaven for Japan to end the war.



Corn

Which is not what you'd expect to hear from the losing side if the bomb hadn't mattered.



Herman

It isn't. And I want to be careful here, because I'm not trying to settle this. J. Samuel Walker in 2005 wrote that the controversy over the use of the bomb seems certain to continue, and that the fundamental issue dividing scholars is whether the bomb was necessary to achieve victory on terms satisfactory to the United States. That was twenty years ago and it's still accurate.



Corn

There's a context point that reframes the whole "was this uniquely barbaric" frame.



Herman

Operation Meetinghouse. The firebombing of Tokyo on the ninth and tenth of March, 1945. About one hundred thousand civilians killed. More than either atomic bomb. And across the incendiary campaign, about three hundred fifty thousand civilians killed in sixty-seven cities.



Corn

So Hiroshima wasn't the first mass-casualty bombing of the war.



Herman

It was the first single-weapon mass-casualty bombing. That's what was new. Not the death toll per se. The fact that one aircraft, one bomb, one moment did all of it.



Corn

Which is the thing that changes strategy forever.



Herman

It changes it completely. Hiroshima demonstrated that a single weapon could destroy a city. And the logic of the arms race runs directly out of that observation. If one bomb is enough, then the question becomes how many one bombs you need, and then how many one bombs the other side has, and then you're in the numbers game that produced Tsar Bomba and everything after it.



Corn

And deterrence.



Herman

The experience of the two cities produced the conviction that nuclear weapons could not be used again. That conviction became the foundation of deterrence theory. The weapons exist to prevent their own use. And the taboo isn't a treaty, it isn't a signed document. It's a norm built on the memory of these two cities. Every arms-control effort since then has drawn on the moral vocabulary those bombings created, and the survivor testimony carries weight in disarmament debates precisely because it's first-hand.



Corn

Which brings us back to the scale thing one more time, and I want to land it properly.



Herman

Little Boy was about fifteen kilotons. Tsar Bomba was about fifty thousand. Sundial was proposed to be larger still. So we're talking about the smallest weapon of the nuclear age being the one that actually killed over a hundred thousand people and permanently changed how states think about war.



Corn

And the reason the megaton weapons aren't a different kind of thing.



Herman

Because of the cube-root scaling. Beyond a certain point more yield does not mean proportionally more destruction, because the destruction is already total. Going from twelve kilotons to twenty kilotons buys you about zero point one four miles of five-psi radius. The megaton weapons weren't unimaginably more lethal in kind. They were the same catastrophe, multiplied across a wider map.



Corn

The thing I want to leave with is this. The numbers we spent the last two episodes being astonished by, the fifty megatons and the hundred-megaton proposal, those aren't a separate subject. They're this subject with the volume turned up. Hiroshima is what those numbers actually mean. It's the reference point that makes the arithmetic real.



Corn

And speaking of the gun barrel...



Hilbert

They got the tolerance right, is the thing. The barrel was a modified naval gun tube. A battleship gun tube, cut down. That's not a figure of speech. The projectile had to fit the bore closely enough that the cordite charge could drive it without the assembly seizing up, and that is a tolerance a naval yard does in its sleep, and that no other shop in the country could have hit in 1944. They machined it like a gun because it was a gun. That's why it worked.



Herman

Hilbert, the tolerance point is exactly right, because...



Hilbert

I'm not finished. The thing I kept thinking about listening to you two is that everybody keeps saying crude. Crude and inefficient. And I think that's backwards. The inefficiency was the point. A weapon that wastes ninety-eight and a half percent of its fuel but works every time is a weapon you can put on a plane without testing it. The implosion bomb was the clever one. And the clever one is the one you have to test. You said it yourselves. You just didn't say it like a machinist.



Corn

So the waste was the feature.



Hilbert

The waste was the insurance. I had a relative on the ordnance side of that program. The machining. And the one thing he ever told anybody about it was that the barrel gave them no trouble at all, and that everything else in the building gave them nothing but trouble.



Herman

Which tracks with what we said about the components being built in three separate plants.



Hilbert

Three plants because no one was allowed to see the whole drawing. Which is a fine way to run a war and a terrible way to run a machine shop. He said it was the only job he ever had where he was told off for asking what the part was for.



Corn

How did anyone get told off for that?



Hilbert

They didn't get told off. They got moved. Different department, different building, same pay. He said the gun was the only part of it that made sense to him, because a gun barrel is a gun barrel.



Corn

There's a detail you're sitting on. I can hear you sitting on it.



Hilbert

He was paid partly in a case of Navy-issue canned peaches. He said they were the best peaches he ever had. He kept the last can in a shed for eleven years because he couldn't bring himself to open it. We have a photograph of the shed.



Herman

Eleven years.



Hilbert

And he said the peaches were the reason he never got called back for the second one. Because he was too busy guarding the shed.



Corn

He was too busy guarding a shed.



Hilbert

That's what he said. I never asked him to explain it and he never offered.



Corn

Okay. So where does that leave us?



Herman

Where it leaves us is that the casualty figures remain disputed. There is no single number. We gave you the range and who's saying what, and that's the honest state of the record. And the necessity debate is unresolved and probably unresolvable. Walker's assessment that the controversy seems certain to continue is still accurate two decades on.



Corn

The thing I keep coming back to, and I'll say it once. The last two episodes were about weapons that were never used. One tested once, one never built. Hiroshima is the one that was used. And it was the smallest of the three.



Herman

The scale inversion is the whole point. The megaton weapons are not a different kind of thing. They're the same thing, multiplied. And the peaches, incidentally, are the only part of this episode I'm going to be thinking about at three in the morning.



Corn

If you take one thing from this, let it be that the smallest weapon of the nuclear age killed over a hundred thousand people and permanently changed how states think about war. Everything after it was redundancy.



Herman

One bomb, one aircraft, one moment. That was the new thing. The fact that it was all at once.



Corn

Our producer is Hilbert Flumingtop. This has been My Weird Prompts.



Herman

If you're enjoying the show, a review helps more than you'd think.



Corn

And send us your own prompt on Telegram at t dot me slash MWP listener bot. We'll be back soon.

SOURCES

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