

50 YEARS LATER

The Arms Race

World stockpile of nuclear bombs the day after Trinity: 2.

Two years later: 13.

Twenty years later: 31,500.

Yield of Trinity bomb (1945): 18,500 tons of TNT.

Yield of Bravo "Hydrogen Bomb" test (1954): 15 million tons.

Yield of Minuteman 2 intercontinental ballistic missile (ICBM) warheads (deployed in 1959): 1-2 million tons.

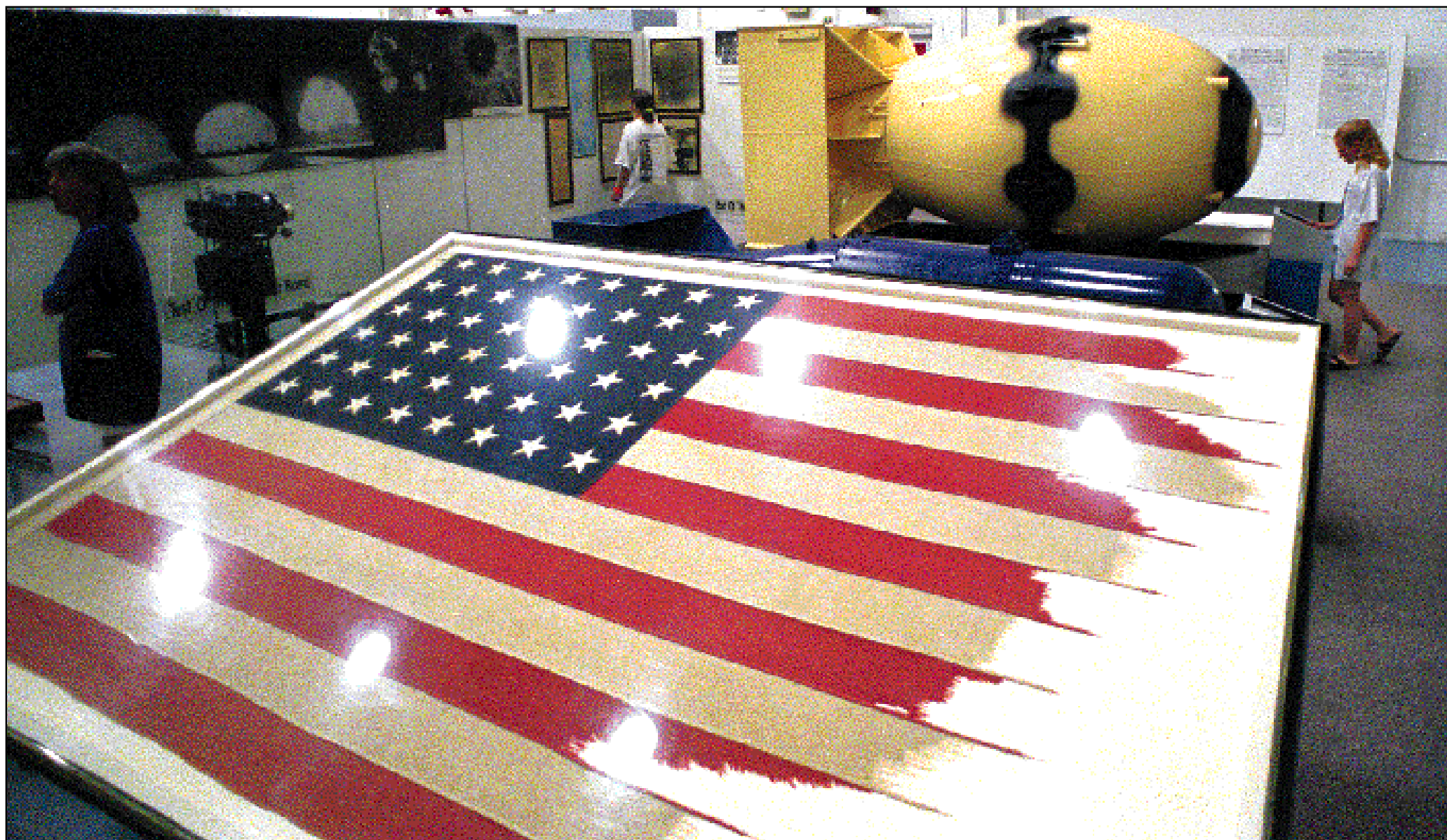
Yield of Spartan Anti-Ballistic Missile (ABM) warheads (1967): 3-5 million tons.

Yield of Poseidon and Trident submarine missile warheads (1978): 90,000 to 100,000 tons.

Yield of Minuteman 3 ICBM Multiple Independently Targeted Re-entry Vehicle (MIRV) warheads (1979): 335,000 tons.

Cost of the Manhattan Project: \$2 billion.

Combined annual budgets of Los Alamos and Sandia National Laboratories in the early 1990s: \$2 billion.



RICHARD PIPES/JOURNAL

The flag that was flown at Base Camp during the Trinity test is kept at the National Atomic Museum in Albuquerque. The damage was caused by high winds.

Moral Fallout

Some, such as scientist Edward Teller, see the atomic bomb project as a savior for the Free World. Others think atomic weapons extended the Cold War far past its time

By LARRY CALLOWAY
Of the Journal

Edward Teller, revisiting northern New Mexico in June and carrying a tall staff, was in enemy territory, but there were no enemies. At 87, he's outlived them.

Among other things, at a friendly Ghost Ranch conference, he took credit for the advancement of thermonuclear weapons after the first atomic bomb at Trinity Site 50 years ago.

"I was the only one who said it can be done and should be done. Had I not spoken up at that time, in weaponry the Soviet Union would have gotten far ahead," he said. "It was a very unpopular move, but there was no one else to do it."

History might vindicate the Hungarian-born physicist who has been called everything from "Father of the H-bomb" to "Dr. Strangelove."

Look around: No more Soviets. "The overall effect of the new weapons, in particular the atomic weapons, was to stop the Soviets. The Soviets wanted to dominate the world," Teller said in a Ghost Ranch interview.

He said advanced nuclear weapons "stabilized the world in a period of disturbing factors like Stalin and have done so without killing anybody."

Not everybody agrees. "You could argue that the presence of the weapons also exacerbated and loused up the peace," said atomic-bomb historian Barton Bernstein at Stanford University, where Teller also has his office, at the Hoover Institution.

"It's not clear the weapons stopped nations from doing what they otherwise wanted to do," said Bernstein. Vietnam and Korea, two "proxy wars," killed 100,000 Americans — or one-third the American fatalities in World War II.

'I am a little ashamed'

Another Teller theme at Ghost Ranch involved J. Robert Oppenheimer, and it's a touchy theme still at Los Alamos, which regards itself as "Oppenheimer's laboratory."

Teller said several times during his four days among the Ghost Ranch Presbyterians that he regretted his failure to sign the famous anti-bombing petition circulated by Leo Szilard beginning the day after Trinity.

As Teller put it in the interview, "I am a little ashamed, and I am ashamed of other wartime scientists in Los Alamos, for not having submitted as an alternative a

demonstration of a nuclear explosion 30,000 feet over Tokyo Bay so that on an evening 10 million people, Japanese, including the emperor, could have heard it and seen it. That might have ended the war."

Asked why he never proposed the idea himself, Teller responded, "I will tell you. Because I did not think of it. Because what happened was that I was working on immediate problems very much under the direction and being pushed by the lab director, Oppenheimer."

Teller said he received the petition by mail, and, "I would have signed it, but Szilard also asked me to collect signatures, and that I felt I could not do without asking the director, Oppenheimer. I did, and Oppenheimer said, 'Absolutely not!'"

No alternative

Nobel laureate Hans Bethe, 89, who watched the Trinity test with Teller, said from his office at Cornell University, "It is true that Szilard sent Teller a petition not to drop the bomb but to have a demonstration instead, a demonstration for the Japanese. It is true Oppenheimer told Teller not to circulate it. How strongly he said that, I do not know."

Bethe himself agreed with Oppenheimer that there was no reasonable alternative to dropping the bomb. "At the time I wasn't too sure. In retrospect I fully agree with it."

Bethe explained, "The war would have lasted much longer and the Japanese would have had far greater casualties than they did in Hiroshima and Nagasaki because the conventional fire bombing would have continued until the Japanese gave up. That might have been weeks. It might have been months."

Bernstein, the historian, quoted from a July 2, 1945, letter to Szilard in which Teller said, "Our only hope is in getting the facts of our results before the people. This might help convince everybody the next war would be fatal. For this purpose, actual combat-use might even be the best thing."

"Not exactly a letter of somebody who is itching not to use the bomb," Bernstein said.

Reinventing history?

The importance of all this is that after the war Teller and associates, in Bernstein's words, "began recollecting how they had opposed the use of the A-bomb on Hiroshima and made much of the fact that Oppenheimer had supported it. The function of this re-remember-

ing was that this made Oppenheimer bloodthirsty in 1945 and they non-bloodthirsty and therefore, they denied they were being bloodthirsty in '49-'50 during the H-bomb dispute. Which they won."

Bethe says, "Teller saw great virtue in ever increasing the power of atomic weapons, including the hydrogen weapon, and Oppenheimer thought the hydrogen weapon had no military value."

Bethe also was against the H-bomb, but he agreed President Truman had no choice but to develop it after the discovery of its secret (X-ray implosion) by Stan Ulam and Teller. "It was clear that hydrogen bombs could be made, and if they could be made by us, they could be made by the Soviets. At that point, I think it was necessary to go ahead with the development."

Oppenheimer by then agreed, says Bethe, "and I think Teller never acknowledged this fully."

'A strong bit of nihilism'

David Hawkins, a Berkeley friend of Oppenheimer who wrote the official wartime history of Los Alamos, says Teller even then "belonged in the company of the engineer who wants to build the tallest building or the longest bridge. He wanted the biggest bang."

Oppenheimer had assigned Teller and his special theoretical group to investigate the question of whether the atomic bomb might trigger a runaway nuclear reaction of nitrogen in the Earth's atmosphere.

"Teller told me the chance of such a thing happening was one in a million," Hawkins says, but it bothered him. "I knew very well that was a figure of speech because you don't calculate that kind of chance."

Hawkins wondered if the atmosphere of the Earth actually might burn up. So he asked Teller. "He smiled at me and said, 'Well, David, worse things could happen.' And I knew then he had at least a strong bit of nihilism in his makeup."

Teller's response at Ghost Ranch: "I would think Hawkins had a certain amount of nonsense in his makeup."

Question of sins

Two years after Hiroshima and Nagasaki, in November 1947, Oppenheimer said in a speech, "The physicists have known sin; and this is a knowledge which they cannot lose."

Hawkins says the statement was misunderstood as "some sort of invitation to repentance." Oppen-

heimer was speaking the language of religion, of the Garden of Eden, of lost innocence. The physicists who made the first bomb, Hawkins says, "had that experience for the rest of their lives as a commitment to do something about it."

And many of the Los Alamos people, including Oppenheimer and Hawkins, went to Washington after the war to lobby for international controls.

Teller said, "I believe the idea of sin, etc., has been oversold." When the bomb went off at Trinity, he said at Ghost Ranch, "I did not think about any sin, although I was worried about this being used in earnest in the near future. I was a little worried about not signing Leo Szilard's petition because Oppenheimer, who had known sin, told me that we should drop the bomb."

Teller's animosity came to a head with his testimony in the secret 1954 Security Board hearing of the Atomic Energy Commission called after President Eisenhower became concerned about Oppenheimer's loyalty to the United States. The hearing resulted in the termination of Oppenheimer's security clearance. Teller's paraphrase of his testimony about Oppenheimer is this: "He would not hurt the interests of the United States intentionally. I consider him loyal. But he is complicated. He did things that I do not understand. I wish that the security of the country should be in hands that I understand better and therefore trust more."

Bernstein says the Teller testimony "made a decisive difference" in influencing the board's 2-1 decision. The phrasing, the historian said, was "a way in that context of casting innuendo, and Teller understood the context."

U.S. security was shaken when the Soviet Union tested its own atomic bomb in August 1949. The following year, Klaus Fuchs in England and David Greenglass and Julius and Ethel Rosenberg in America were uncovered as spies who had given Los Alamos secrets to the Soviets. Fuchs, a physicist with the British delegation at Los Alamos, and Greenglass, an Army machinist at the lab, both confessed in their separate cases and received 14- and 15-year sentences.

The Rosenbergs, operating out of New York City, had recruited Greenglass, who was Ethel's brother. Mostly on his trial testimony, they were found guilty of treason and executed in 1952.

Sen. Joseph McCarthy was tyrannizing the American Left with his crusade against domestic Communists, and in this atmosphere Oppenheimer inexplicably insist-

ed on a security hearing and lost. The main loyalty issue was his failure to report promptly a comment by a Berkeley friend, Haakon Chevalier, about providing technical data to the Soviets and then trying to cover up the incident to protect Chevalier. But a larger issue was Oppenheimer's opposition to the H-bomb, which Teller was promoting.

In the ensuing years, Teller got his own laboratory, Lawrence Livermore, with its own staff and budget for separate nuclear testing. But the physicist wasn't welcomed to Los Alamos again until the early 1980s. The 1954 testimony, says Bernstein, "rendered him a pariah in the community of scientists whose affection and respect he most craved."

One of them was Hans Bethe, who said from Cornell: "I thought that the attack on Oppenheimer was unjustified and that Teller was very largely responsible in the outcome. And it destroyed Oppenheimer, who had done so much for the United States."

Oppenheimer's security clearance was never restored. He died of cancer on Feb. 18, 1967.



COURTESY LOS ALAMOS NATIONAL LABORATORY

J. Robert Oppenheimer, director of "Project Y," Los Alamos' code name for the Manhattan Project, stands with Maj. Gen. Leslie R. Groves, director of the Manhattan Engineering District at Ground Zero after the Trinity test.