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## Reflections on Reading

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## REFLECTIONS ON READING

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*Professor John E. Jackson of the Naval War College is the Program Manager for the Chief of Naval Operations Professional Reading Program.*

In July 2023, the attention of much of the world was focused on a Hollywood blockbuster movie titled *Oppenheimer*, which dramatically retold the story of the design, construction, and testing of the first nuclear bomb, which had rocked the New Mexico desert—and the world—seventy-eight years before. This movie was inspired by the Pulitzer Prize–winning book *American Prometheus: The Triumph and Tragedy of J. Robert Oppenheimer*, by Kai Bird and Martin J. Sherwin (Knopf, 2005). About six months prior to the movie’s premiere, the evening newscasts were filled with stories about a Chinese “spy balloon” that crossed the entire continental United States before being downed by a missile from an Air Force F-22 Raptor. While many observers considered a long-distance balloon flight unusual, history tells us a different story.

These two events brought to mind several exotic weapons used during World War II that were so obscure that many considered them to be mythical. We begin with a weapons-development program that in the 1940s was confused occasionally with the Manhattan Project, which was depicted so brilliantly in the film *Oppenheimer*.

### ***Bat Bombs***

When the welfare of a nation is threatened by an aggressive adversary, it energizes the talents and creativity of the nation’s industrial base and of individual citizens to design, manufacture, and employ innovative weapons to meet this aggression and carry the conflict to the enemy. Such was the case in the United States in the 1940s. The efforts of the massive Manhattan Project to develop the atomic bombs used against Japanese cities have been documented well. But little is known about a different approach that sought an alternate method to destroy targets on the Japanese home islands.

In January 1942, a Pennsylvania dentist named Lytle Adams sent a letter to President Franklin D. Roosevelt suggesting that thousands of Mexican free-tailed bats—each with a tiny, time-delayed, incendiary bomb attached to its

body—could be dropped in canisters from long-range bombers. The bats were expected to seek shelter in the eaves and attics of wood-and-paper structures, and the subsequent ignition of the newly invented napalm would set massive fires across large areas.

Roosevelt passed the idea on to the Army Air Force for development with a note that said, “This man is not a nut. It sounds like a perfectly wild idea but it is worth looking into” (Couffer, p. 5). During tests conducted in May 1943 at the Carlsbad Army Air Field, in New Mexico, a group of armed bats was released accidentally, which resulted in the fiery destruction of the test range. The Army passed the project to the U.S. Navy in August 1943, and the U.S. Marine Corps assumed responsibility for Project X-Ray in December 1943. Successful tests were conducted at the Dugway Proving Ground at the end of 1943, but despite the fact that the National Defense Research Committee concluded that it could be “an effective weapon,” Fleet Admiral Ernest J. King canceled the program when he learned that it could not become operational until mid-1945. Plans to produce one million bat bombs were canceled, and the project was relegated to the dustbin of history. Additional information can be found in the fascinating book *Bat Bomb: World War II’s Other Secret Weapon*, by Jack Couffer (Univ. of Texas Press, 1992).

We turn now to the notion of using balloons for military purposes.

### ***Balloon Bombs***

While American scientists and engineers worked on the Manhattan Project and Project X-Ray, their counterparts in Japan were hard at work on their own remarkable weapon: the *fu-go* balloon bomb. Motivated by the famous Doolittle Raid, which attacked the Japanese homeland, the Imperial General Headquarters sought a retaliatory bombing capability against the United States. The resulting hydrogen-filled balloons were thirty-three feet in diameter and made of strips of paper from *kozo*-tree bark glued together with a starchy paste made from a potato-like vegetable. Suspended below each balloon was a lightweight metal ring that carried sandbags for ballast and both incendiary and antipersonnel bombs. Launched from several locations on the island of Honshu, the balloons were designed to ride the jet stream eastward, crossing the Pacific in about three days. Daytime heating of the gas and nighttime cooling would cause the balloons to vary their altitude; they dropped ballast as necessary to stay aloft. After the final sandbag was released, the bombs would drop over America’s Pacific Northwest region and ignite forest fires on impact.

From November 1944 to April 1945, over nine thousand *fu-go* balloons were launched against the United States. The remains of at least three hundred balloons were discovered in the United States and western Canada; the most recent

discovery was made in 2019 in British Columbia. In an attempt to avoid panic on the West Coast from silent bombs that were nearly impossible to detect and engage, the War Department imposed censorship on all reports about these mysterious weapons. This news blackout likely contributed to the deaths of one adult and five children who apparently discovered and disturbed an unexploded *fu-go* in the forest near Bly, Oregon. They were the only casualties attributed to the balloon-bomb attacks, and they were the only civilians killed in the continental United States as a result of the war.

Complete *fu-go* systems are on display at the Smithsonian Institution in Washington, DC, and at the International Balloon Museum in Albuquerque, New Mexico. You can read the fascinating details in *Fu-go: The Curious History of Japan's Balloon Bomb Attack on America*, by Ross Coen (Univ. of Nebraska Press, 2014). (I reviewed this book in the *Naval War College Review* 69, no. 2 [Spring 2016].) The Royal Navy demonstrated another remarkable use of balloons in warfare during an attack on Nazi Germany in Operation OUTWARD, in which the service launched nearly one hundred thousand balloons from Britain against Germany and German-occupied Europe.

One lesson we can draw from these historical vignettes is that there is no shortage of innovative ideas that may be pursued in the search for increased security or war-fighting potential. I may never look at a balloon—or a bat—in the same way again!

JOHN E. JACKSON

(Note: This is a revised version of a column originally published in the *Naval War College Review* 73, no. 3 [Summer 2020].)





