

ENRICO FERMI: NAVIGATING THE NUCLEAR AGE

by Anna Lelii Forte

The work of Enrico Fermi, one of the most important scientists of the 20th century, has recently been recognized with a new commemorative U.S. postage stamp, but few people know how much more America owes this Nobel Prize physicist.

If you go to the post office to purchase the Fermi stamp, don't be surprised if a puzzled postal clerk asks you, "Enrico *who*?" Even in our own Italian American community, the man's achievements are not fully understood. At a recent social gathering, I asked the other guests if they knew who Enrico Fermi was. Most answered, "The man who invented the atomic bomb."

They were only half right. Although Fermi was one of a team of physicists who helped develop the atomic bomb, his greatest contribution was in designing and directing the first controlled self-sustaining atomic chain reaction. His work on the development of the atomic reactor and the control of an atomic fission reaction ushered in the era of peacetime atomic power.

HIS LIFE

Fermi was born in Rome in 1901. He earned a doctorate in physics from the University of Pisa when he was only 21, doing his thesis on X rays, and later studied in Germany and the Netherlands. When he was 23, he began teaching mathematics at the University of Florence and later taught theoretical physics at the University of Rome.

In 1938, he was awarded the Nobel Prize for his work on the atomic particles known as neutrons. After going to Sweden to accept the Nobel Prize, he brought his wife and two children

to the United States rather than returning to Italy. At that time, Italy under Mussolini had enacted a number of anti-Semitic laws, and Fermi was worried about the safety of his wife, Laura Capon, who was Jewish.

He settled in New York City where he taught at Columbia University and then accepted a professorship at the University of Chicago. There, working with fellow physicist Leo Szilard, Fermi built the first nuclear reactor, based on the fission or splitting of uranium atoms. A The Italian navigator has entered the New World,@ Fermi said of his first successful nuclear chain reaction.

During World War II, he was one of the scientists working on the U.S. government=s top-secret Manhattan Project in Los Alamos, New Mexico that resulted in the creation of the atomic bomb. After the war ended, Fermi, now an American citizen, returned to Chicago where he remained until his death in 1954.

HIS WORK

Enrico Fermi was one of the first scientists to realize the potentially devastating power of atomic fission. In 1939, he, Szilard and Albert Einstein met with President Franklin Delano Roosevelt at the White House to express their concern that an atomic fission reaction could be used for mass destruction on a scale the world had never seen. They also suspected that Germany was developing such a weapon.

This White House meeting eventually led to the founding of the above-mentioned Manhattan Project. On December 2, 1942, Fermi presided over the first controlled atomic fission reaction. He permitted the chain reaction to continue for twenty-eight minutes. Fermi then ordered that control rods be pushed back into the graphite reactor he had designed. The

chain reaction stopped. Fermi had proven that energy could be produced from splitting the atom and that the production of the energy could be controlled. The Atomic Age had dawned.

HIS ACHIEVEMENTS

Through his work on the Manhattan Project and the development of the atomic bomb, Enrico Fermi helped end World War II and for this, in 1946, a grateful U.S. government awarded him the Congressional Medal for Merit, the nation's highest civilian honor. Today, the Fermi National Accelerator Laboratory near Chicago continues his important research in nuclear physics.

The OSIA also honored Fermi by making him an honorary member in 1947. The ceremony took place in Chicago where Fermi was teaching.

Fermi's scientific breakthroughs could be used to destroy the world or make it a better place to live in. In the United States today, many cities, including Chicago, Newark, and Omaha, generate much of their electrical energy from nuclear power, often called the *Aclean@* fuel because it does not pollute the air or release greenhouse gases. It does, however, give off harmful radioactive waste and the problem of safely disposing of this waste remains to be solved.

THE STAMP

The Enrico Fermi stamp was issued a year ago on September 20 B the 100th anniversary of his birth. All Americans of Italian ancestry are urged to purchase and use it. If your post office does not have it, ask the postmaster to order some. Fermi stamps also are available online. For an Internet purchase, go to **www.usps.com**, then to "*The Postal Store*," followed by "*Collector's Corner*" and "*Stamp Issues*."

Celebrate the achievements of this great Italian scientist. Use his stamp on all your mail!

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