

1945 September 24-30

The Secret of the Hopkins Institute

City Resident Helps Perfect Secret Weapon

A new and devastating secret U. S. weapon has come to light. On Sept. 20, when information was released by the armed services on the "radio proximity fuse," a device used for detonating high-explosive projectiles by means of a "pint-size" radio transmitting and receiving set fitted into the nose of the projectile. Fleet Admiral Ernest E. King, USN, describes the radio proximity fuze as a "great scientific achievement that contributed greatly toward winning the war for the United Nations."

This weapon was developed by the applied physics laboratory of Johns Hopkins university, Silver Spring, Md., where for the past several years Clarice E. Fillner of La Crosse have been engaged in the projects.

The basic components of the radio proximity fuse are miniature vacuum tubes, rugged enough to stand the tremendous stresses of being shot from a gun, as essential elements of simple electrical circuits; a miniature rugged battery to provide electrical power, and safety devices to prevent operation of the fuse until the projectile had traveled a safe distance from the gun.

The oscillator generates a continuous radio-frequency signal. When a target is approached, part of the radiated signal is reflected back to the fuse and an impulse is set up in the fuse by the interaction of the radiated and returned signals. This impulse is amplified by an amplifier in the fuse and is fed to a thyatron tube which serves as a trigger to initiate the detonation of the projectile.

Detonation of the projectile is accomplished by an electrical detonator much like a dynamite cap. When the thyatron is triggered by the impulse generated by approach to a target, it causes enough electric current to pass through the electrical detonator to make it explode.

(La Crosse Tribune, 1945 September 27, page 15)

The radio proximity fuze, also called the [VT fuze](#), was one of the great technological achievements of World War II, and it had given the Allies a decisive edge on the battlefield. It could also be said that the VT fuze was the precursor of today's laser-guided munitions.

Who was **Clarice E. Fillner of La Crosse**, and how did she get involved in one of the top-secret projects of World War II?

Clarice E. Fillner was born in Ettrick, Wisconsin, on April 13, 1919.¹ Her parents were John C. Fillner and Clara (Hagestad) Fillner, and there were seven children in the family.²

The family moved to La Crosse in 1930, and took up residence at 924 South Front Street.³ John Fillner was a painter and interior decorator in the area for about 60 years.⁴

Clarice Fillner was an honor roll student at Lincoln Junior High School.⁵

She was involved in the Girl Scouts as a child and later served as a Girl Scout leader.⁶

When she was a student at La Crosse Central High School, her secret ambition was to be a tap dancer and her favorite sport was swimming.⁷ When her senior class graduated in June 1936, Fillner was one of the speakers at the graduation ceremony.⁸



Clarice Fillner, 1936

(*The Booster*, La Crosse Central High School, 1936)

She then attended La Crosse State Teachers College.⁹ One of the places where she lived while going to college was 502 North 7th Street.¹⁰ In 1940, Fillner was living at 1117 1/2 Market Street and working as a secretary while attending college.¹¹ She graduated from La Crosse State Teachers College,¹² and went into teaching.

In 1941, Fillner was teaching and living at 410 North 14th Street.¹³

Fillner must not have remained in teaching long because sometime in 1941 she started working as a clerk for the La Crosse city water department.¹⁴

She remained at that job for three years. At the end of April 1944, Fillner left La Crosse to become a "government girl" in Washington, D.C. She lived with her sister, Miriam (Mrs. R. W. Sherwin), in Silver Spring, Maryland.¹⁵ Government jobs were plentiful during the war, and there were frequent newspaper articles pleading for women to fill jobs in Washington, D. C.

Fillner got a job at the [Johns Hopkins Applied Physics Laboratory](http://www.jhu.edu/~appliedphysics/) in Silver Spring. She and her female co-workers called themselves the "Wench Bench." Their job was to assemble prototypes of the VT fuze for testing .¹⁶

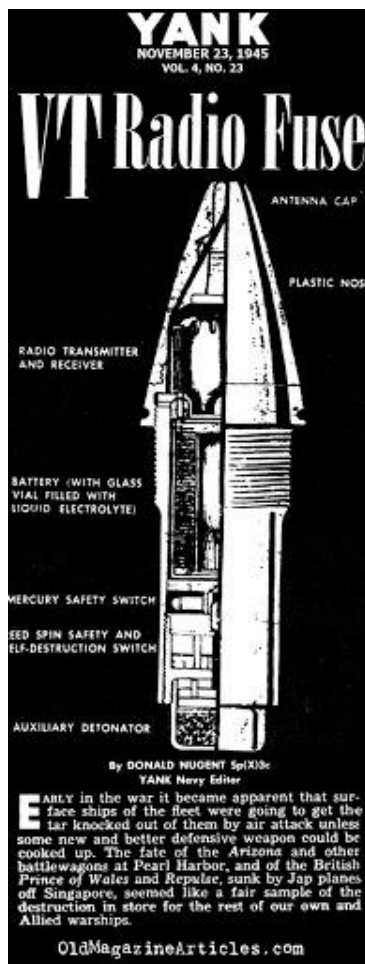


Proximity fuze components
(www.memorialhall.mass.edu)

She worked in a building that had been the Wolfe Motor Company at 8621 Georgia Avenue in Silver Spring. The "Used Cars" sign was still attached to the building, but a security guard was stationed outside. Fillner was among the group of women who worked during the night and left in the morning. Men came every day. Neighbors wondered what was going on in there.¹⁷

It is a good thing the people back in La Crosse did not have easy access to Washington newspapers in 1943 and 1944. For about a year, there were stories about the Hopkins Institute being a cover for prostitution.¹⁸ One *Washington Post* headline was "Hopkins Institute Revealed as High Class Call Girl Ring."¹⁹ But the hometown folk need not have worried that Clarice Fillner, La Crosse Central Class of 1936, had been caught up in a white slavery ring. That Hopkins Institute was a massage parlor on the 2700 block of Connecticut Avenue Northwest in Washington, D.C., about six-and-one-half miles away from the place where Clarice Fillner worked.²⁰

The "Wench Bench" and the research and development team at the Hopkins Applied Physics Laboratory were hard at work on an innovation in military munitions that would prove very important in the transition from "dumb" projectiles to "smart" projectiles.



(OldMagazineArticles.com)

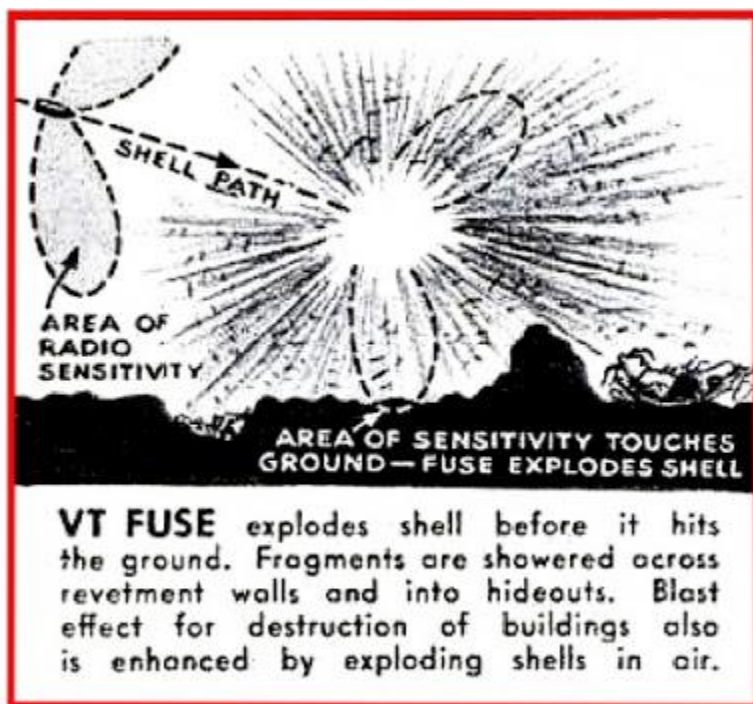
One of the earliest war projectiles was the cannonball. It was a crude weapon that worked with all the subtlety of a battering ram. Whatever it hit, it crushed. But the destruction was limited to the point of impact, whether that be a man's body, the wooden side of a ship, or the masonry of a castle wall.

Later artillery ammunition was built with fuzes so they would explode on contact. Impact fuzes, such as those on bombs and artillery shells, caused the round to explode on impact with the ground or an object.²¹

Timed fuzes caused the detonation of munitions at a set time after firing to burst in the air and spread fragments. These were used to defend against attacks by airplanes. The problem with timed fuzes was that hundreds of rounds had to be fired into the sky to bring down a single airplane with anti-aircraft fire.²²

By World War II, aircraft were so fast that trying to shoot them down from the ground or a ship was largely a guessing game. Scientists were put to work to develop a better system.

[Dr. Merle A. Tuve](#), an alumnus of Johns Hopkins University, had created a prototype for a radio proximity fuze in 1941. With Navy funding and the support of Johns Hopkins, Dr. Tuve brought his project back to his alma mater for more development. This led to an artillery shell that used radio waves to detect the proximity of a target and trigger the detonation. By the end of the war, 110 factories in the United States had manufactured more than 22 million proximity fuzes. The Navy used them to shoot down Japanese aircraft in the Pacific, anti-aircraft crews in Europe used them against [German V-1 buzz bombs](#), and Army artillery subjected German ground forces to devastating barrages of cannon shells that burst just overhead.²³



(OldMagazineArticles.com)

Their effectiveness was demonstrated on the battlefield. Just two Navy destroyers shot down 156 Japanese aircraft during the Battle of Okinawa. On one day, the Germans launched 104 V-1 buzz bombs at England. Anti-aircraft fire using proximity fuzes shot down 68 of them. Even though the Navy had started using [proximity fuzes](#) on January 5, 1943, they were not used on land until late 1944 to prevent the capture of duds by the enemy. American artillery and anti-aircraft batteries used them with great effect during the Battle of the Bulge. In just a few weeks, proximity munitions brought down more than 1,000 German airplanes. General George Patton wrote in a letter to the War Department, "The new shell with the funny fuze is devastating. I am glad that you all thought of it first. It is really a wonderful achievement." The Navy Ordnance Bureau considered it second only to the atomic bomb in its importance as a military weapon.²⁴

After World War II, Clarice Fillner returned to La Crosse for a time before going back to Maryland. While she was working at the [Naval Ordnance Laboratory](#) in White Oak, Maryland, she met a co-worker who would become her husband, physicist Robert G. Rolfe.²⁵ Rolfe had been a radar technician with the United States Marine Corps during World War II. Rolfe worked at the Naval Ordnance Laboratory for more than 30 years designing and testing sonar defense systems for the Navy. He retired in 1979 as a senior engineer in the Underwater Electrical Engineering Department.²⁶ They had a son and a daughter together.²⁷

Clarice Rolfe loved cats, reading, the Washington Senators (before they moved to Minnesota and became the Twins), and later the Washington Nationals when major league baseball returned to the nation's capital.²⁸

Clarice Rolfe's parents died within six months of each other. Her mother died in October 1961.²⁹ Her father died in March 1962.³⁰

So it was too with her and her husband. Clarice Rolfe was 92 years old when she died on April 5, 2012, in Olney, Maryland.³¹ Her husband of 59 years, Robert G. Rolfe, died 25 days later at the age of 90. There was a joint celebration of life for them on May 19, 2012.³²



Clarice (Fillner) Rolfe
(Rapp Funeral and Cremation Services)

Clarice (Fillner) Rolfe, the former Girl Scout and La Crosse Central graduate whose secret ambition had been to be a tap dancer, literally had a hand in producing the weapon that could be called the first smart bomb.

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Sources & Notes:

- ¹ "Clarice E. Rolfe," *Rapp Funeral and Cremation Services*, accessed 2020 October 3, <https://rappfuneral.com/tribute/details/25042/Clarice-Rolfe/obituary.html>.
- ² "John C. Fillner," *La Crosse Tribune*, La Crosse, Wisconsin, 1962 March 14, page 2.
- ³ *Wright's La Crosse (Wisconsin) City Directory 1930* (Milwaukee, Wisconsin: Wright Directory Co., 1930), 180.
- ⁴ *La Crosse Tribune*, 1962 March 14.
- ⁵ "21 Lincoln Junior High School Pupils Get Special Honors," *La Crosse Tribune*, La Crosse, Wisconsin, 1932 November 22, page 11.
- ⁶ "Attend Scout Meeting," *La Crosse Tribune*, La Crosse, Wisconsin, 1945 October 12, page 2.
- ⁷ *The Booster 1936*, (La Crosse, Wisconsin: Central High School, 1936), 39.
- ⁸ "170 To Graduate At Central High Friday Evening," *La Crosse Tribune*, La Crosse, Wisconsin, 1936 June 7, page 14.
- ⁹ *Rapp Funeral and Cremation Services*.
- ¹⁰ *Wright's La Crosse (Wisconsin) City Directory 1939* (Milwaukee, Wisconsin: Wright Directory Co., 1939), 158.
- ¹¹ 1940 U.S. census, La Crosse County, Wisconsin, population schedule, La Crosse, p. 12B, dwelling 233, family 277, John C. and Clara Fillner; image, *Ancestry.com* (<http://www.ancestry.com> : accessed 2020 October 2); citing NARA microfilm publication T626, roll 2667.
- ¹² *Rapp Funeral and Cremation Services*.
- ¹³ *Wright's La Crosse (Wisconsin) City Directory 1941* (Milwaukee, Wisconsin: Wright Directory Co., 1941), 158.
- ¹⁴ "Employee Of Board Takes Federal Job," *La Crosse Tribune*, La Crosse, Wisconsin, 1944 April 26, page 12.
- ¹⁵ *La Crosse Tribune*, 1944 April 26.
- ¹⁶ *Rapp Funeral and Cremation Services*.
- ¹⁷ Joanne Cavanaugh Simpson, "The Funny Little Fuze With Devastating Aim," *Johns Hopkins Magazine*, 2000 April, <https://pages.jh.edu/~jhumag/0400web/10.html>.
- ¹⁸ "Hopkins Institute Kept List of Men's Names, 'Receptionist' Says," *The Evening Star*, Washington, D.C., 1943 June 29, 2-X.
- ¹⁹ Simpson.
- ²⁰ "Trial of Eight Women In Hopkins Institute Case Delayed," *The Evening Star*, Washington D.C., 1944 April 24, B1. Seven women were convicted of receiving money for sex at the Hopkins Institute. See: "Women Ask Retrial In Hopkins Case," *The Evening Star*, Washington, D. C., 1944 May 5, page B1.
- ²¹ Logan Nye, "The revolutionary fuze that won World War II," *We Are The Mighty*, 2020 May 14, <https://www.wearethemighty.com/history/proximity-fuze-world-war-2?rebelltitem=8#rebelltitem8>.
- ²² Nye.
- ²³ Simpson.
- ²⁴ "Military Magic," *The Springfield Reporter*, Springfield, Vermont, 1945 November 15, page 2.
- ²⁵ *Rapp Funeral and Cremation Services*.
- ²⁶ "Robert G. Rolfe," *Legacy.com*, accessed 2020 October 4, <https://www.legacy.com/obituaries/washingtonpost/obituary.aspx?n=robert-g-rolfe&pid=157543579&fhid=3397>.
- ²⁷ *Rapp Funeral and Cremation Services*.
- ²⁸ *Rapp Funeral and Cremation Services*.
- ²⁹ "Mrs. Clara A. Fillner," *La Crosse Tribune*, La Crosse, Wisconsin, 1961 October 19, page 18.
- ³⁰ *La Crosse Tribune*, 1962 March 14.
- ³¹ *Rapp Funeral and Cremation Services*.
- ³² *Legacy.com*.