

HORRORS

THE AETNA CHEMICAL EXPLOSION

By Daniel Prevade

HEROISM

Aetna Chemical on
the afternoon of the
explosion.

Courtesy Oakdale History Room.

Members of the Red Cross march across the Sixth Street Bridge during the Second War Fund Parade on the afternoon of May 18, 1918. Many of the women went to Oakdale after receiving news of the tragedy.

Courtesy Jim Bullock.



On the afternoon of May 18, 1918, Pittsburgh hosted a Red Cross parade. The patriotic procession coincided with a national campaign to increase donations to the international aid organization. Nearly 40,000 spectators gathered to watch participants march from the city's North Side, across the Sixth Street Bridge, and up Fifth Avenue into the heart of town. Each of the 375 Allegheny County Red Cross auxiliaries sent a delegation of women, adorned in the traditional starched white dress and red, white, and blue veil of the Red Cross volunteer.

Following the women, 1,000 soldiers-in-training from the University of Pittsburgh and Carnegie Tech marched in formation.¹ They would soon ship out for the battlefields of France. Mothers who had already sent their sons to fight joined in the procession, following elaborate parade floats that depicted the history of the Red Cross.

The fervent patriotism of the afternoon was interrupted by newsboys from Pittsburgh's competing newspapers calling out the headlines of a tragedy.

"Many men killed and injured at Oakdale chemical plant!" proclaimed one boy, waving a newspaper near the Fourth Avenue train depot.²

"Blasts and flames destroy Aetna Works!" another voice countered.³

Fifteen miles west of Pittsburgh in the small railroad town of Oakdale, a scene very different from the parade was unfolding.



THREE YEARS EARLIER, IN 1915, THE Aetna Chemical Company, a subsidiary of New York City-based Aetna Explosives Company, acquired government contracts to produce wartime explosives. As European demand for munitions skyrocketed, Aetna Chemical constructed a 15-acre explosives manufacturing complex less than a mile south of Oakdale. Aetna became a leading manufacturer of explosives: the Oakdale facility specialized in the production of Tri-Nitro-Toluene, also known as TNT, being used in trench warfare. American munitions manufacturers could barely satisfy foreign demand. During World War I, France ordered

three quarters of its explosives from Aetna Chemical.⁴

In addition to the Oakdale plant, which listed 450 men on the payroll,⁵ Aetna also opened similar plants in the adjacent towns of Heidelberg, Noblestown, and Carnegie, relying heavily upon the presence of a large, mostly immigrant labor force. In addition, the company wanted proximity to railroad access when selecting the location. Each plant was positioned within a 10-mile radius of Oakdale, perilously close to residential areas. Indeed, from 1915 to 1918, 26 men died in industrial accidents at local Aetna plants.⁶ Soon, citizens understood that munitions manufacturing was extremely dangerous work.

As early as 1916, Oakdale residents were voicing concerns about the noxious fumes blanketing their town. Because Oakdale was in a valley, the fumes dispersed slowly. Many residents along its tree-lined streets found it difficult to breathe. In addition to the odors, there was the constant threat of an explosion.

The threat became reality on the evening of September 15, 1916, when the first Aetna plant explosion claimed the lives of five men.

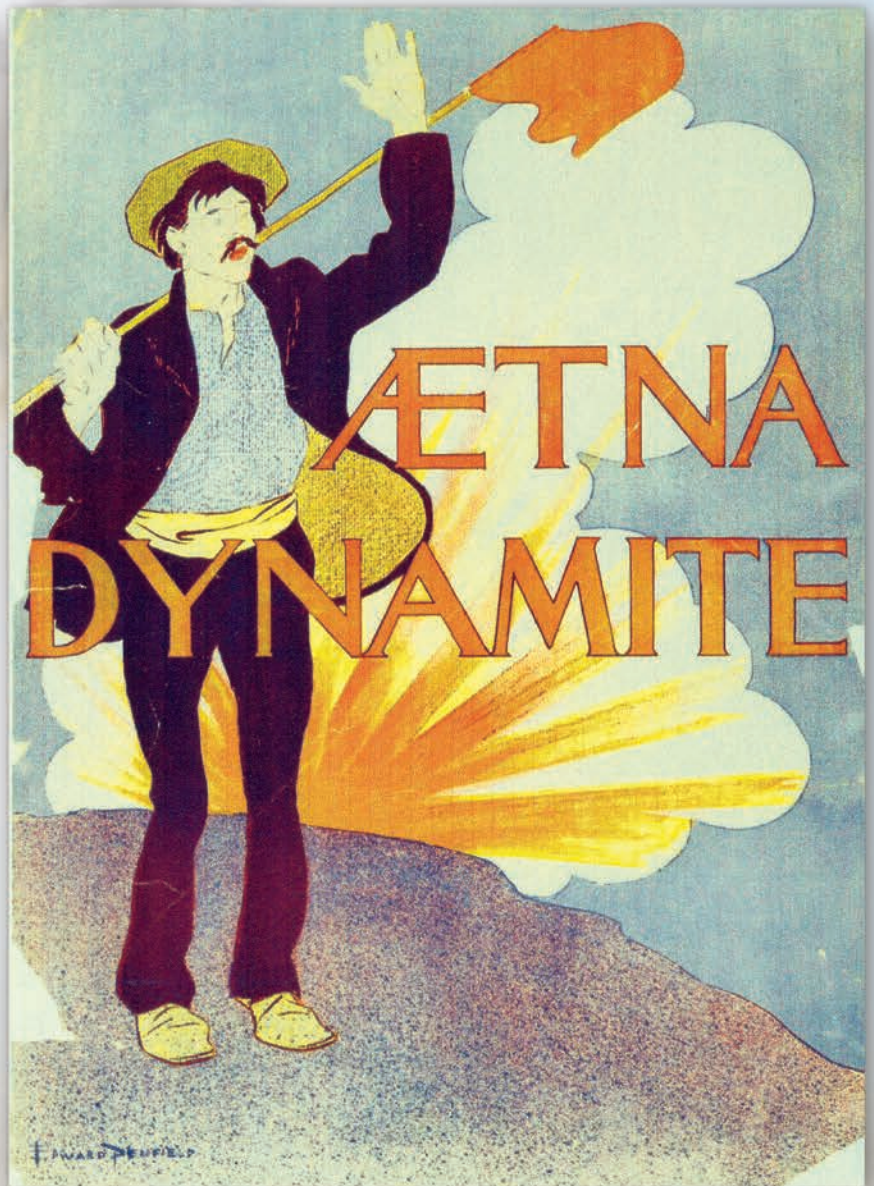
Prior to obtaining war contracts to manufacture TNT, the Aetna Explosives Company manufactured dynamite.

Library of Congress.

AS EUROPEAN demand for munitions skyrocketed, Aetna Chemical constructed a 15-acre explosives manufacturing complex less than a mile south of Oakdale. During World War I, France ordered three quarters of its explosives from Aetna Chemical.⁴

Aetna Chemical before the fatal explosion.

Courtesy Oakdale History Room.



According to the subsequent investigation, the blast that evening originated in a mixing pan containing ammonium nitrate, one of the chemicals commonly used in TNT production. Though company officials never determined exactly what caused the blast, those conducting the inquiry were quick to assure the general public that it was not an act of sabotage but rather a horrible accident. Burton Dodge, the 40-year-old night superintendent, and James Turner, an ammonium nitrate worker, were “blown to pieces” according to explicit reports in *The Pittsburgh Press*.⁷ John and Samuel Paul, brothers from the nearby town of McDonald, were also killed along with Frank Zygnersky of Adamsburg. All five worked within the ammonium nitrating department. The 1916 explosion was contained to the nitrating building, which was so damaged by the explosion that it was eventually razed.

The percussion shattered every window in the public school less than a mile from the scene, drawing even further attention to the safety of the plant’s location. Concerned residents presented Oakdale’s town council with a resolution, arguing that the Aetna plant had become a nuisance and could endanger

their welfare. Alarmed citizens requested that the plant be relocated to a less populated part of the state.⁸ The town council chose not to act until the town’s solicitor could examine the legality of the resolution. Residents’ concern would soon be vindicated.

Seven months later, the U.S. was drawn into world war. As American neutrality vanished, so did any plans to relocate Aetna Chemical. The increased demand for explosives required far more workers, driving the wage to 40 cents an hour.

Aetna Chemical immediately received a contract from the Bureau of Ordnance to supply 14.5 million pounds of TNT.⁹ Within a year, Aetna began experimenting with a new chemical called Dynol that could lessen the amount of nitroglycerine needed to produce TNT. The savings, however, would come with their own cost.



AT 11:58 A.M. ON MAY 18, 1918, AS THE morning shift of workers in the Oakdale plant awaited their lunch break, Kirven Lawhon was at his boarding house just a short walk from the plant, packing his few possessions. At only 16, he was far from his home in Brooksville, Florida. Lawhon wanted more than anything

to enlist and fight for his country, but being too young, instead he left home to find work in northern plants.¹⁰ His brother worried about Aetna and so invited Kirven to safer working conditions in Akron, Ohio. Kirven was leaving town that day, having quit his job with Aetna the day before.¹¹

He was stopped by a deep rumble that shook the world around him. He knew the source of the menacing sound and without a second thought, bounded down the steps and through the front door toward the plant. On the horizon, a thick cloud was filling the blue sky, growing darker as it rose above the trees. The boy from Florida had no idea what lay ahead, but ran on nonetheless.

Within hours, a chain of events would tear buildings and lives from the soft earth upon which Oakdale rested. As the first eruption awakened the town to the horrors that would follow, Gladys Adams, an employee at the Oakdale freight station, stood at her desk and watched through a window as massive flames and a large cone-shaped cloud of smoke rose into the sky.¹² She too immediately knew what had happened.

Company housing was scattered directly behind the factory on a small rise known as Dutch Hill. As was typical for company housing in America, factory workers and their families lived near the plant but also near its sights, sounds, and smells. As she had done on most mornings, Miranda Russell watched her husband make his way from their house down the hillside and onto the plant’s grounds. Later that afternoon, she saw the first blast tear through the nitrating building:

The roof of the big building on the TNT plant was lifted in its entirety and left its foundations cleanly. After rising a short distance it seemed to suddenly fall apart and scatter, the wreckage shooting violently in all directions. The lifting of the roof was followed by a tremendous volume of smoke which in a few seconds obscured the building and hung over it for some time. As it spread, the walls of the plant could be seen and began to resemble pictures of war torn villages in France.¹³

Aetna Chemical Company employee housing, which sat just above the smokestacks of the plant.

Courtesy Ellen Hennemuth.



KEENAN WAS HEARD to say,
**“God knows how many poor
 fellows are in there. Maybe I
 can help some.”**

Rescue efforts began almost immediately without any regard for personal safety or the possibility for other blasts. Several blocks away, 66-year-old James Keenan—who had been a mail carrier but quit the position to work at Aetna—was smoking his pipe in front of the *Oakdale Times* office when he witnessed the first explosion.¹⁴ Minutes later, as a small rescue truck stopped in front of him, Keenan was heard to say, “God knows how many poor fellows are in there,” and he climbed aboard.¹⁵ Henry Leiter, a blacksmith at the plant, was seated in back and heard Keenan say “Maybe I can help some.”¹⁶

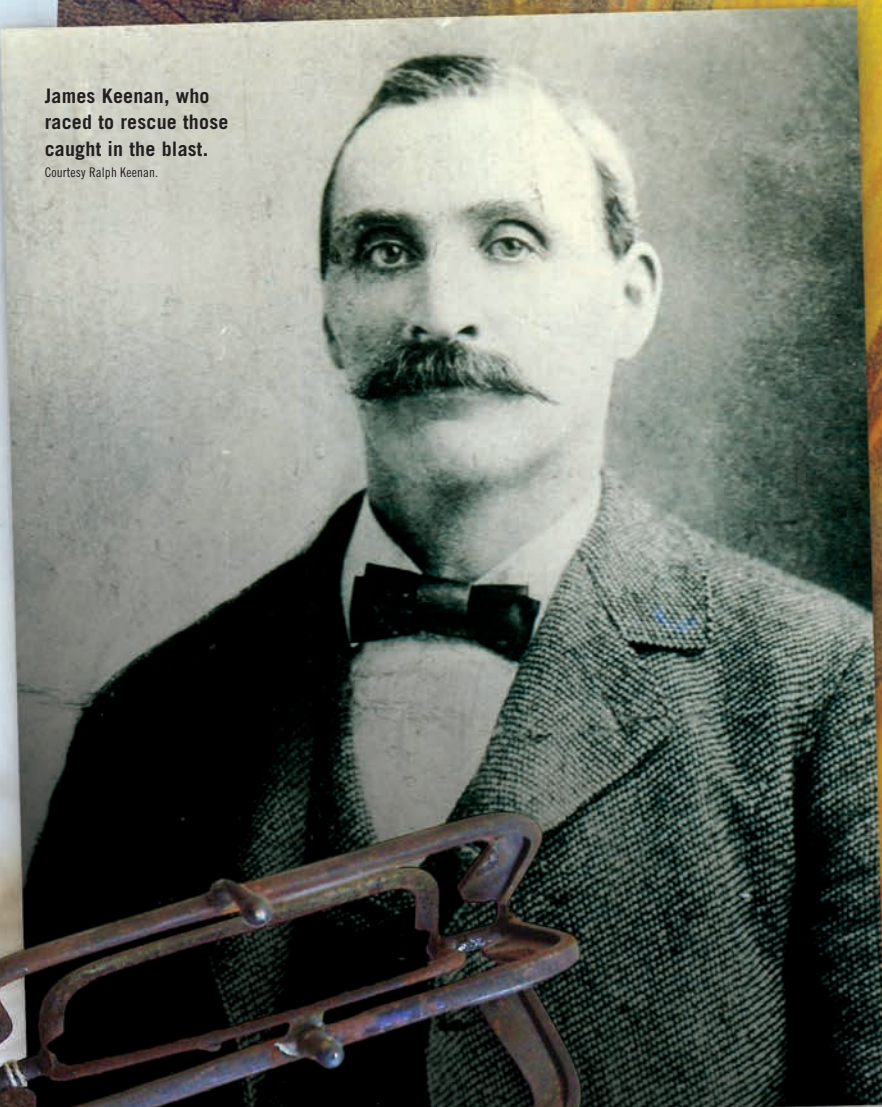
Charlie Fullick, another local boy, was with the rescue party just before another explosion around 2:00 p.m. Fullick was running from the plant when he turned to see Keenan 10 feet behind him. As Fullick paused to wait for him, Keenan cried, “Boy, keep on going!”¹⁷ Fullick obeyed and didn’t look back again, narrowly escaping as this larger explosion tore through the plant, claiming more lives, including James Keenan and Henry Leiter.

For the next several days, grieving relatives and curious onlookers stood at the entrance to W.C. Marshall’s livery and undertaking establishment, waiting for word of loved ones, friends, or relatives. The livery had become a makeshift morgue.

Five days passed before Keenan’s remains were gathered and brought to Marshall’s undertaking rooms, not far from the spot on which Keenan had climbed onto the

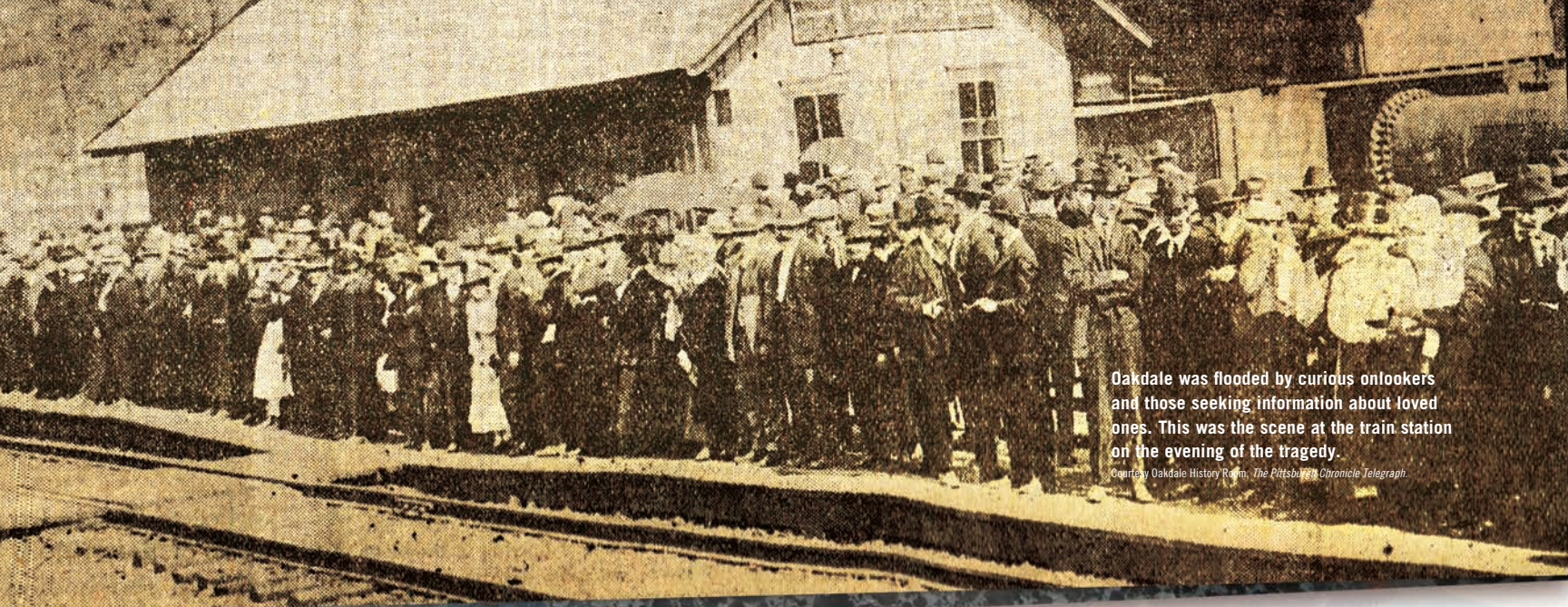
James Keenan, who
 raced to rescue those
 caught in the blast.

Courtesy Ralph Keenan.



Charles Keenan used this
 change purse clasp, belt
 buckle, and pocket knife
 to identify the remains
 of his father, James
 Keenan.

Courtesy Ralph Keenan.



Oakdale was flooded by curious onlookers and those seeking information about loved ones. This was the scene at the train station on the evening of the tragedy.

Courtesy Oakdale History Room. The Pittsburgh Chronicle-Telegraph.

truck. Keenan's son, Charles, a journalist for the *Oakdale Times*, was given the grim task of identifying his father's remains. Charles positively identified Keenan's pocket knife, belt buckle, and the remnants of a double clasp wallet—all that remained of his father.¹⁸ Fighting in the trenches on the western front of France, James Keenan's two other sons, Frank and George, could not attend their father's funeral on May 25. Both young men eventually received word of their father's heroism and sacrifice and the tragedy that had befallen their beloved hometown of Oakdale.

Moments before the nightmare began, John Johnson, the 37-year-old plant superintendent, was in his office dictating a letter to his stenographer, Homer Andrews. According to Johnson,

The building collapsed and both Andrews and I were buried in the debris. I saw Andrews' hand and tried to pull him from under some burning wood, but I couldn't budge him. I started to climb to an opening I could see above me but only succeeded in only getting about 10 feet when I was hopelessly stuck fast. The mass of wood was starting to burn fast by this time and the heat was intolerable. Just when I thought I would faint from heat and smoke, a second explosion shook the debris that held me and an iron bar was hurled about two feet above my head. It stuck fast and

by grasping hold of it I was able to pull myself to the top of the wreckage and got my lungs full of fresh air. I knew I was injured because blood was pouring over my face, but I couldn't feel anything but the terrible heat. I must have become unconscious then.¹⁹

Johnson's father, foreman of the plant's carpenters, had left his son's office moments before. Following the blast, he rushed back to help pull his unconscious son from the wreckage. Homer Andrews' remains were recovered the following day.



BACK IN PITTSBURGH, RED CROSS volunteers and eager parade-goers enjoying the afternoon were numb with shock when they heard the newsboys cry out headlines of the explosion. Feeling as if the war in Europe had suddenly arrived on their doorstep, nurses and other volunteers seized stretchers and supplies from the parade route and ran to catch the nearest train to the scene of the accident.

On the outskirts of Carnegie, Red Cross volunteers awaiting trains and streetcars to carry them to the parade abandoned their plans and turned for Oakdale. Unable to find transportation along the country roads into the small town, they walked several miles toward the disaster.

Dr. Lee Milford, a physician from St. John's Hospital, asked for nurses to assist him in Oakdale; he was joined by a graduate nurse, 21-year-old Marlyn Ashelman. The two were caught in one of the subsequent blasts. The doctor was lifted off the ground by the force of the explosion. When he got to his feet, he found Marlyn alive but seriously injured: "I found Miss Ashelman bleeding on the ground and found that her right leg had been severed," Milford said. "I had exhausted my supply of bandages and had to use my raincoat as a tourniquet to stop the bleeding."²⁰

Marlyn Ashelman would achieve notoriety as her tragic tale was dramatically told in local newspapers, but Milford found the young woman to be selfless throughout the ordeal, thinking only of her father. As she received medical attention, Ashelman said, "I would rather die than let Father know of my injury!"²¹

Police and county officials established a "dead line" around Oakdale to keep out curious onlookers, who by that evening had arrived en masse and expanded the town's population of less than 2,000 to nearly 10,000.²² A few days later, Allegheny County officials estimated the population had swelled to 50,000. Some sought word of loved ones, while some wished to help in recovery efforts. Others came only to satisfy a morbid curiosity.

Allegheny County Sheriff William Haddock was on the scene within hours of the first explosion and organized the Buckshot

Brigade, 95 men deputized to handle the large crowds. The state constable of Greensburg sent additional men the following evening.

Another local resident, Adam Moritz, came to symbolize the human tragedy of that day. Moritz had arrived at the Marshall

undertaking business within hours of the first explosion, offering assistance; he was burdened with the grisly task of sorting human remains as they were delivered in pails. Each vessel contained not only human flesh and bone, but personal artifacts found

with the remains. As Moritz respectfully received and gently organized the vessels, he suddenly stopped and lingered above one of the containers. Inside the pail were a watch, set of keys, and two rings: a Boy Scout ring and a signet ring. Recognizing the items as those of his 16-year-old son Johnny, Moritz collapsed under a wave of grief.²³ Johnny was a clerk at the plant and went missing after the first blast. Decades after the explosion, local resident Carrie Schwartz would recall a frantic woman pacing along State Street in front of the school, asking men coming from the plant if they had found Johnny.²⁴ The frantic woman was Mrs. Moritz, Johnny's mother. It was Adam Moritz who told his wife that Johnny had been found.

After fleeing the safety of his boarding house, Kirven Lawhon arrived at the devastated remains of the Aetna Chemical Company moments before a second explosion at 12:10 p.m. Hours later, Lawhon awoke at Mercy Hospital and briefly told a nurse of his experience. "I tried to enlist, but they wouldn't take me," he said.²⁵ He succumbed to peritonitis and shock after doctors removed an egg-sized piece of shrapnel that had pierced his stomach. In Akron, his brother Phillip heard of the blast and telegraphed Sheriff Haddock's office. Eventually, Phillip came to Pittsburgh to recover his brother's body from the Allegheny County morgue.

Several weeks later, Phillip returned and visited Mercy Hospital to meet the nurses and doctors who cared for his brother. Phillip poignantly depicted Kirven's awareness of his circumstances in a letter to their mother:

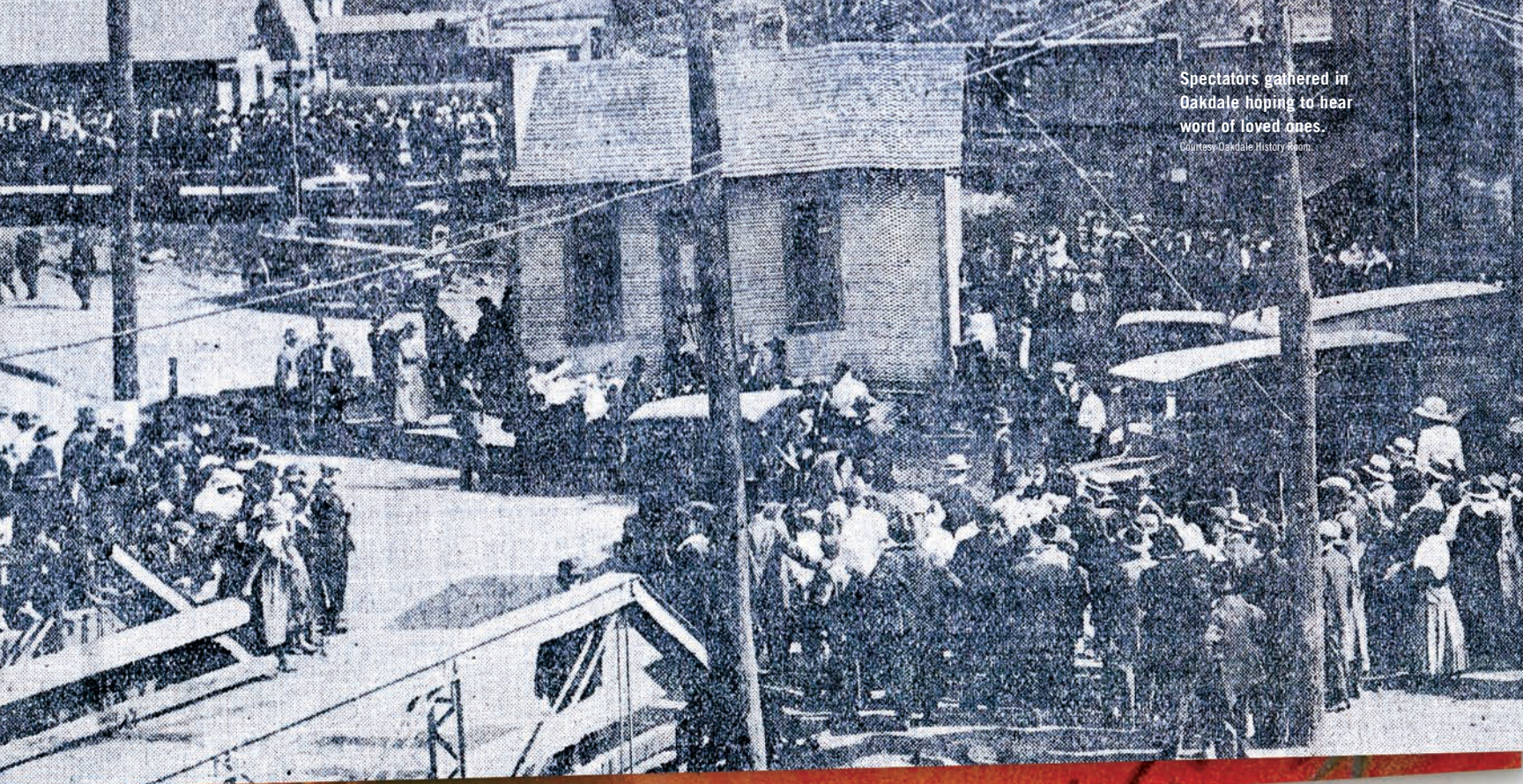
A lady said that she was talking to him about 30 minutes before he died and he made this remark. 'I'm going to die. Do you think I'm going to die?' The lady said that she didn't think she ought to keep it from him and she said yes. She asked him if he wanted her to get a minister and he said, "No, I do not need a minister but if I have ever done anything wrong I am sorry!" The lady said, "Well if you are, repeat it after me." And he did.²⁶

"I FOUND MISS ASHELMAN BLEEDING on the ground and found that her right leg had been severed. I had ... to use my raincoat as a tourniquet to stop the bleeding."

Nurse Marlyn Ashelman's right leg was severed below the knee by a piece of flying steel.

Courtesy Oakdale History Room, *The Pittsburgh Press*, Sunday, May 19, 1918.





Spectators gathered in Oakdale hoping to hear word of loved ones.

Courtesy: Oakdale History Room

THE TOWN'S POPULATION of less than 2,000 had expanded to nearly 10,000 by that evening. A few days later, officials estimated the population had swelled to 50,000.

The Pittsburgh Chapter of the American Red Cross, supported by nearly every woman in the Oakdale chapter, provided aid in the days that followed. Neighboring communities of Carnegie, Noblestown, and McDonald also sent supplies. In the basement of the First Presbyterian Church on the corner of State and Robinson streets, volunteers established a commissary to feed the workers who helped recover remains and guard the site. Even local Boy Scouts assisted in delivering food to recovery workers.

Red Cross volunteers also helped by contacting victims' families. A number of

plant employees were recent immigrants to the United States, and so most of the victims' relatives could not speak English. Red Cross workers comforted families until translators could arrive. Company officials guaranteed the Red Cross that Aetna would lend immediate financial support to loved ones. Any back pay owed to a deceased employee or surviving family member was immediately distributed.

To determine the number killed and missing, William Hoffman, the timekeeper for Aetna, registered the number of surviving employees. The grim task of identifying the human remains was left to the office of

Allegheny County Coroner Samuel Jamison. Two hundred individuals in and around the plant died as a result of the explosion.²⁷ Only 93 were officially identified; the other 107 victims were incinerated completely by the explosion and subsequent fires. In the days that followed the tragedy, Peter Cargle began digging graves at Oakdale Cemetery. Overwhelmed by the number of graves required, Cargle was forced to enlist the help of his wife and three daughters. Victims who remained unidentified were interred in a mass grave at the cemetery.



HARRY WOLLENBERG, GENERAL manager for Aetna, arrived from the company's headquarters in New York City the following morning. The company established temporary offices at the local Odd Fellows Hall and on Sunday, May 19, opened a two-day investigation. Relying on eyewitness testimony from those who escaped the blast, company officials concluded that the first explosion at 11:58 a.m. was an accident that most likely

began in the drying room used to process and store Dynol. That drying room was located in the TNT building, the hardest-hit structure.

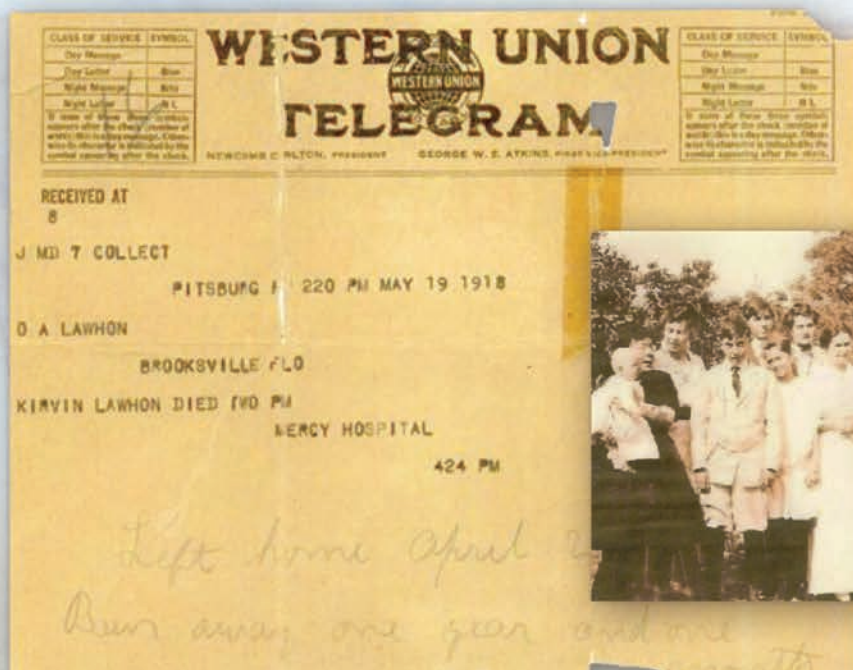
John Bush, identified in newspaper accounts as a “negro” employee, was subpoenaed during the investigation. Bush testified that prior to the first explosion, he witnessed another worker stirring a Dynol mixture with a large wooden paddle in the drying room. He also saw a flash come from that building.

Captain J. Herbert Hunter from the Bureau of Explosives in Washington, D.C., testified that Aetna had been ordered to cease using sodium bicarbonate, more commonly known as baking soda, to neutralize the chemical when manufacturing TNT. Experiments had shown that the combination of the two chemicals oversensitized the mixture. Due to this

KIRVEN LAWHON ARRIVED MOMENTS before a second explosion at 12:10 p.m. Hours later, Lawhon awoke at Mercy Hospital. He succumbed to peritonitis and shock after doctors removed an egg-sized piece of shrapnel that had pierced his stomach.

The telegram informing Kirven Lawhon's parents of his death.

Courtesy Kathy Schrader.

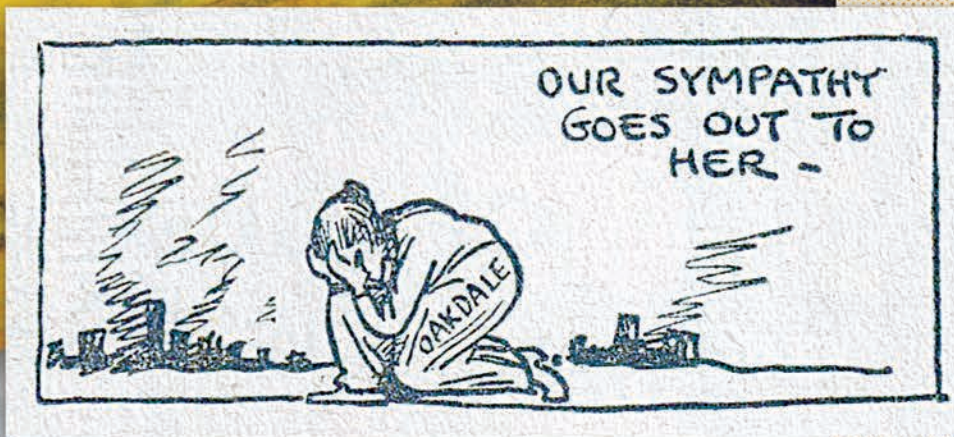


Kirven Lawhon, pictured in the dark tie and knee socks. His brother Phillip is behind his left shoulder.

Courtesy Kathy Schrader.

Intense fires from the multiple explosions burned the surrounding landscape.

Courtesy Oakdale History Room.



This cartoon in *The Pittsburgh Sun* captured the sentiment of the tragedy in a simple way.

Courtesy Oakdale History Room.
The Pittsburgh Sun,
May 20, 1918.

TWO HUNDRED INDIVIDUALS in and around the plant died as a result of the explosion. Only 93 were officially identified; the other 107 victims were incinerated completely by the explosion and subsequent fires.

volatile reaction, the Bureau of Explosives recommended that sodium sulphate be used instead. During his testimony, Wollenberg admitted that sodium bicarbonate had been used even though the company understood the danger involved. Officials concluded that the failure to obey the order led to the first explosion, which began the chain of events that leveled the entire plant and caused 200 deaths.

Company officials reported that destruction at the Oakdale plant was estimated at \$2 million. Property damage was an additional \$200,000.²⁸ The value of the loss of human life was incalculable. In the weeks that followed, light production resumed in remaining portions of the plant or areas that were hastily rebuilt, but Aetna never returned to pre-explosion production levels.²⁹ Though several small claims were filed with the Workmen's Compensation Board, the company was never held accountable for disregarding the order prohibiting the use of sodium bicarbonate.

Eventually, Oakdale residents were given what they had wanted: the Aetna Chemical

Company announced that its Oakdale plant would close. Production moved to the Aetna plant in Mount Union, Pennsylvania. With the conclusion of World War I in November just six months after the explosion, the remaining government munitions contracts held by the Aetna Chemical Company dried up.

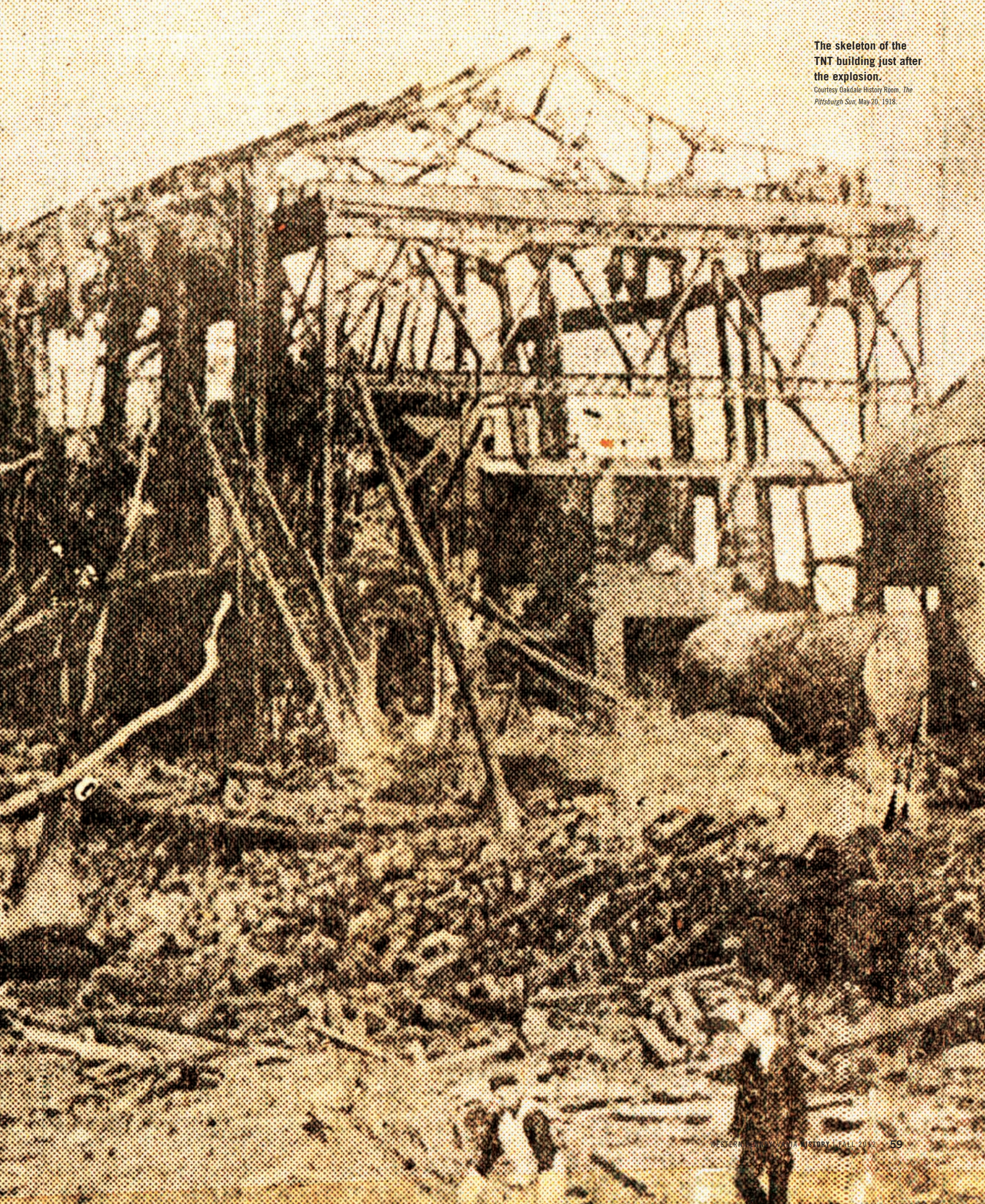
Oakdale had been transformed from a quiet village to a town ravaged by grief and despair. Similar to Johnstown after the deadly flood of 1889, the events of those days defined many of the residents and Oakdale itself as tales of heroism and sacrifice passed from one generation to the next.

Two months after the blast, on a July morning, a public memorial service was held on a hilltop at the Oakdale Cemetery. An estimated thousand people gathered for the ceremony, which opened with a hymn from a military band. Next, John Johnson, the young superintendant who had been pulled from the wreckage of his office, announced that a public monument would be erected at the cemetery to pay tribute to those killed at the plant or in the rescue effort.



The skeleton of the
TNT building just after
the explosion.


Courtesy Oakdale History Room, *The
Pittsburgh Sun*, May 20, 1918.



A bystander demonstrates the force of the explosion as he holds up a piece of twisted steel.

Courtesy Oakdale History Room, *The Pittsburgh Dispatch*, May 20, 1918.



The monument erected for the civilian soldiers of the Aetna Chemical Company still stands above the quiet valley that decades ago was cast in the long shadow of sorrow, sacrifice, and war. Carved into granite, the tribute to those victims speaks of their sacrifice: "Like soldiers, they died in their country's service."³⁰ 

Daniel Prevade is a high school social studies teacher in the West Allegheny School District. He is writing a book about the Aetna Chemical explosion.

¹ "35,000 In Red Cross Pageant," *The Pittsburgh Press*, May 18, 1918.

² "Huge Death Toll In Oakdale Blast," *The Pittsburgh Press*, May 19, 1918.

³ "Over 100 Men Are Killed and More Injured By Explosions in Oakdale Chemical Plant," *The Gazette Times*, May 19, 1918.

⁴ Kathryn Steen. *Frontline and Factory: Comparative Perspectives on the Chemical Industry at War, 1914-1924*. Dordrecht : Springer, 2006.

⁵ "75 Dead, 72 Injured and 26 Missing," *The Pittsburgh Dispatch*, May 20, 1918.

⁶ "Accidents at Aetna Chemical Co. Plants," *The Pittsburgh Press*, May 19, 1918.

⁷ "5 Known Killed In Explosion At Chemical Plant," *The Pittsburgh Press*, September 16, 1916.

⁸ "Say Aetna Chemical Plant Nuisance," *The Pittsburgh Press*, October 3, 1916.

⁹ Report of the Chief of Bureau of Ordnance, The United States Department of the Navy, Government Printing Office, 1918.

¹⁰ "Young Victim Expires After Doing His Bit," *The Pittsburgh Sun*, May 20, 1918

¹¹ Ibid.

¹² Coroner Inquest Report of Gladys Adams, May 19, 1918.

¹³ "75 Dead, 72 Injured and 26 Missing," *The Pittsburgh Dispatch*, May 20, 1918.

¹⁴ "In Memoriam: James Keenan," *The Oakdale Times*, August 10, 1918.

¹⁵ "James Keenan," *The Oakdale Times*, May 30, 1918.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Allegheny County Coroner's Report, May 23, 1918.

¹⁹ "75 Dead, 72 Injured and 26 Missing," *The Pittsburgh Dispatch*, May 20, 1918.

²⁰ "Floral Tribute Paid to Nurse Crippled While Ministering to Aetna Explosion Victim," *The Gazette Times*, May 20, 1918.

²¹ Ibid.

²² "70 Bodies Found in Explosion Ruins," *The Pittsburgh Chronicle Telegraph*, May 20, 1918.

²³ "75 Dead, 72 Injured and 26 Missing," *The Pittsburgh Dispatch*, May 20, 1918.



Remnants of the Aetna Chemical Company.

Photo by Daniel Prevade.

²⁴ Carrie Schwartz to Alice Schwartz Dunkle, December 1, 1991, Oakdale History Room Archives, Oakdale, Pennsylvania.

²⁵ "75 Dead, 72 Injured and 26 Missing," *The Pittsburgh Dispatch*, May 20, 1918.

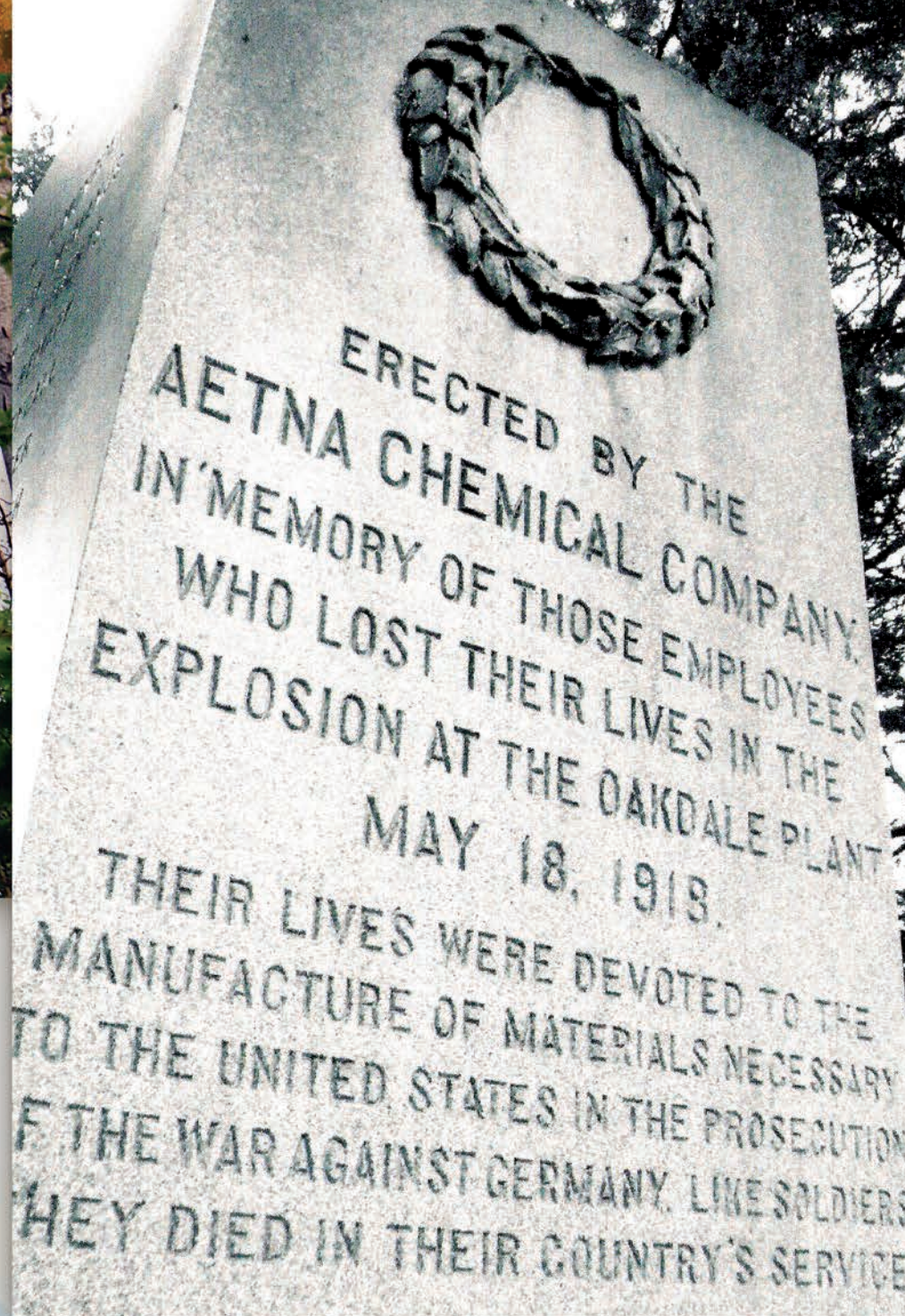
²⁶ Phillip Lawhon to Hulda Highnote Lawhon, personal letter, circa May 1918.

²⁷ "Real Cause of Deadly Blast Remains Mystery," *The Pittsburgh Press*, May 20, 1918.

²⁸ "75 Dead, 72 Injured and 26 Missing," *The Pittsburgh Dispatch*, May 20, 1918.

²⁹ Aetna Chemical was the name given to the munitions subsidiaries in Oakdale and other towns; they focused on military contracts. Aetna Explosives was the parent company in New York City. Due to poor financial management, Aetna Explosives faded into history when the Hercules Powder Company acquired it in 1921.

³⁰ Memorial to the victims of the Aetna Chemical explosion, Oakdale Cemetery, Oakdale, Pennsylvania.



This monument to the victims stands in the Oakdale Cemetery.

Photo by Daniel Prevade.

DESTRUCTION AT THE OAKDALE PLANT was estimated at \$2 million. Property damage was an additional \$200,000. The value of the loss of human life was incalculable.