THE INVENTOR OF DYNAMITE LEFT A LEGACY OF PEACE

Alfred Nobel was determined to be remembered for more than his destructive invention

By Sue DePasquale

"Justice is to be found only in the imagination."
—Alfred Nobel

A grief-stricken Alfred Nobel was toiling in his laboratory in Sevran, France, in the spring of 1888 when he read the chilling words.

"The merchant of death is dead," reported a French newspaper, going on to report, "Dr. Alfred Nobel, who became rich by finding ways to kill more people faster than ever before, died yesterday …."

The obituary was written erroneously. In fact, it was Alfred's beloved brother and business partner, Ludvig, who had died of a heart attack the day earlier, at the age of 57. But for Alfred Nobel, the impact of those words was galvanizing.

By all accounts an extraordinarily brilliant man—scientist, inventor, author and entrepreneur, fluent in five languages and the first person in the world to create an international holding company—Nobel was best known in his lifetime, and beyond, for inventing dynamite. But Nobel saw himself as an inventor first, a lover of ideas, not a "damages maker." The holder of 355 patents, and a man unlucky in love who had neither a wife nor children, Nobel was determined not to leave behind a legacy of violence and destruction.

And so, in late 1895, just a year before his death, he quietly penned a new copy of his last will and testament. Fully contained on a single page, it outlined how his considerable fortune should be dispersed. Only a small amount would go to his extended family and close associates. The vast remainder would be awarded each year, in perpetuity, as prizes to "those persons who … have rendered the greatest services to mankind," in physics, chemistry, physiology or medicine, literature and—perhaps most notably—peace.

Visionary as he was, even Alfred Nobel could not have imagined the vast and far-reaching impact his prizes would have.

When Alfred Nobel came into the world on October 21, 1833, in Stockholm, Sweden, his parents were in financial crisis. His father, Immanuel, a successful inventor and building contractor with several patents already to his name, had recently suffered a series of business setbacks and the young family's house had burned to the ground the preceding December.

Immanuel and his wife, Andriette, struggled through, declaring bankruptcy and settling into a simple apartment. Little Alfred, who joined brothers Robert and Ludvig, was so frail at birth he almost died. This ill health would follow him into adulthood, contributing to a lifelong sense of isolation—of remaining, in his own words, a "pensive looker-on."

When Immanuel, facing debtor's prison, left to pursue a business opportunity in St. Petersburg, Russia, Andriette soldiered on, working nonstop from dawn 'til after dark to keep her three young sons fed and clothed—and enrolled in school, where the boys, particularly Alfred, excelled in their studies.

After nearly five years of separation (beginning when Alfred was 4), Immanuel finally called for his family in 1842. The Swede had managed to become one of Russia's most-sought-after engineers, transforming the weapons industry with his advances in land and sea mines. The newly reunited Nobels settled happily into life in cosmopolitan St. Petersburg. Now prosperous, the Nobel sons (youngest Emil was born a year after their arrival) were educated not at school, but by university-level tutors who came right to their home.

It quickly became obvious that Alfred was exceptionally intelligent. With his quick mind and far-ranging intellect, he excelled at chemistry, wrestled adeptly with politics and philosophy, and mastered foreign languages (Russian, German, English and French) with ease. "To spend an hour chatting with him was both a remarkable joy and a challenging exercise, because you had to stay on your toes to follow the wild sallies of his unexpected turns of thought and startling paradoxes," colleague Ragnar Sohlman would say many years later.

An insatiable reader, Alfred briefly considered pursuing life as a writer (his four-part prose tragedy *Nemesis* would be published in Sweden more than a century after his death). But his more pragmatic father quickly squashed the idea. In part to make up for dashing Alfred's writing dreams, Immanuel financed a study trip to America in 1850, when the boy turned 17. There, Alfred served an apprenticeship with John Ericsson. The widely admired inventor—and fellow Swede—had recently achieved advances in developing heat engines.

Alfred returned home to Russia after the apprenticeship to join the family's rapidly growing foundry business, which could hardly keep up with the defense industry's requests for weapons. But the end of the Crimean War in 1856 meant an overnight change in fortune. Facing bankruptcy again after the defense money dried up, Immanuel and Andriette left the high society life of St. Petersburg and returned to Sweden, settling into a small home in Stockholm.

It was during these next few years that Alfred became almost obsessed with figuring out a safe way to manufacture and detonate nitroglycerin, a highly explosive liquid substance that had been discovered nearly two decades earlier by Ascanio Sobrero. A few drops placed on an anvil, then hit with a hammer, resulted in "a report as from a pistol shot," Alfred noted with awe. He immediately recognized the substance's potential (for everything from mining to communication systems to weaponry) and began a round of endless—and very risky—experiments.

His big breakthrough came in 1862 when he hit upon mixing the substance with black gunpowder, then lighting it with a fuse. The result: an explosion considerably more powerful than gunpowder alone.

But controlling the explosion remained a major challenge. The potential for disaster became tragically clear on September 3, 1864, when a powerful explosion ripped through the family-owned factory in Heleneborg, where Alfred, brother Emil, and others had been conducting experiments. Emil and four others died in the explosion.

Devastated by the loss of his youngest son, Immanuel suffered a crippling stroke a month later—and remained severely impaired until his death eight years later. Other accidents would follow over the next few years—notably an explosion in Alfred Nobel's German factory—and the tide of public opinion turned against the young inventor, with editorials in U.S. newspapers excoriating him as a "trafficker in death."

But Nobel refused to be deterred in his attempt to tame nitroglycerin. And he was pragmatic. "Nobody should expect," he said, "that an efficient blasting substance will become available to the general public without loss of lives." He became an ambassador, testifying before the U.S. Congress to defend his work and extol the explosive's potential.

Nobel's persistence—and ingenuity—paid off. First he developed the "initial igniter," later known as the "blasting cap." It took the form of a small copper capsule, which he filled with a highly explosive material (mercury fulminate), before adding a quick-match fuse cord. The exploding cap pushed a pressure wave through the attached nitroglycerin, quickly heating and detonating it. "This simple but revolu-

Nobel Prize winners from the 20th and 21st century, left to right: Doris Lessing, Literature 2007; Gerhard Ertl, Chemistry 2007 for his studies of chemical processes on solid surfaces; Mother Teresa, Peace 1979; Albert Fert, Physics 2007 for the discovery of giant magnetoresistance (jointly with Peter Grünberg); Selman Waksman, Medicine 1952 for his discovery of streptomycin.

tionary invention opened the door to make the practical use of all new explosive substances possible," notes author Kenne Fante in *Alfred Nobel: A Biography*.

With the detonation problem solved, Nobel turned to finding a safer way to manufacture and transport his "blasting oil." The solution, after much experimentation: mix three parts nitroglycerin with one part kieselguhr, an inert, absorptive substance found along the banks of Germany's Elbe River. In the Swedish patent for his new product, dated September 19, 1866, he dubbed it "Dynamite or Nobel's Safety Powder."

With these breakthroughs, and Alfred Nobel's unmatched entrepreneurial skills, the industrialist's fortunes were made. He became widely known as the "Dynamite King," filing patents in country after country, building factories around the world—and a business empire that would eventually make him one of Europe's richest men.

But Nobel wasn't one to rest on his laurels. Ever the scientist, he doggedly continued his experiments (His credo: "If I come up with 300 ideas in a year, and only one of them is useful, I am content,") and, a decade later, bested the explosive power of dynamite with "blasting gelatin"—nitroglycerin mixed with the transparent, jelly-like guncotton. His next great discovery came in the mid-1880s with the invention of ballistite. The slow burning gunpowder (combining nitroglycerin, nitrocellulose and camphor) was virtually smokeless. The discovery made possible huge advances in the munitions industry, significantly improving the explosive power of artillery pieces and shells.

By the time he reached middle age, Alfred Nobel was wealthy almost beyond measure. His business dealings had him traveling constantly. He was a much-sought-after (though reluctant) dinner guest, a lover of fine horses, and a friend to influential thinkers of the day, including Victor Hugo, who dubbed him "Europe's richest vagabond."

Despite his great success in business, Nobel was a melancholy man. He described his existence as "half a life," and despairingly called himself "a nomadic condemned by fate to be a broken shipwreck in life." His severe headaches and digestive problems made him cranky. He found dealing with people tiresome, so he spent long hours instead in his lab and at his desk, keeping up with a never-ending load of business correspondence.

Protecting his financial interests around the world required a dogged energy (patent disputes were many over the years), not to mention a written fluency in many languages. Since finding an assistant with the necessary skills was almost impossible, Nobel ended up working himself to the brink of exhaustion.

Love did come to him eventually, at age 43, but it was short-lived. Smitten by the charming and intelligent Bertha Kinsky, who had traveled to Paris in spring 1876 to serve as his secretary, he soon asked whether her "heart" was "free." The answer was no. She left within weeks to marry her longtime love, the young baron Arthur von Suttner. Though the romantic connection between Alfred and Bertha was severed, their friendship endured until his death. Bertha von Suttner, author of *Lay Down Your Arms!*, went on to become an influential peace advocate, earning the Nobel Peace Prize in 1905. Her deeply held convictions—shared with him in correspondence and visits—undoubtedly influenced Nobel's decision to include the cause for peace in his will.

A few months after Bertha's marriage, Alfred took up with a local flower girl named Sofie Hess, more than two decades his junior. Their painful on-again, off-again relationship stretched on for 18 years, with Hess continually taking advantage of Alfred's generosity.

By the time he reached his 60s, with his health failing, the father of dynamite's thoughts turned to the legacy he would leave behind. In the years after brother Ludvig's passing, he rethought earlier versions of his will. On November 27, 1895, he signed the final version that left the bulk of his estate—valued at $5.2 million in 1896 ($250 million today)—to establish the Nobel prizes, stipulating that they were to be awarded "without regard to nationality."

Almost before the ink had dried, he shared news of the will's revised contents with an overjoyed Bertha von Suttner. No doubt, he was reassured by her reaction: "Whether or not I am still alive by then does not matter," she wrote. "What you and I have given will live on."

Alfred Nobel suffered a stroke and died, in San Remo, Italy, on December 10, 1896. Each year, as Bertha predicted, when the Nobel prizes are awarded in Stockholm and Oslo on the anniversary of his death, the world bears witness to his dream.