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The Centennial Light Bulb: A Symbol of Livermore's Resilience and History

Founded as a small agricultural and mercantile town in 1869, Livermore, California, is a city that is known for its rich rodeo culture, world-renowned wineries, and contributions to both science and research through the Lawrence Livermore National Laboratory and other scientific laboratories. However, beyond these well-known attributes of Livermore's culture, there is an additional remarkable piece of its history that remains. The Centennial Light Bulb, an old light bulb that stands representative of the city's century-long strength and resilience, despite changes in innovation and technology. Located in Fire Station #6 on East Avenue, the Centennial light bulb is not only the world's longest-burning light bulb but also a famous piece of Livermore's history and heritage that has lived through many of its historical eras.¹ For more than 120 years, this seemingly simple inanimate object has outlasted generations, historical events, and even technological advancements, becoming a true representation of the city's commitment to preserving its history.

History and Origins:

The Centennial Light Bulb was first installed in 1901 at Livermore's fire department hose cart house located on L Street. During this time, electric lighting was still a pretty new innovation, and many firehouses relied on gas lamps or the newly designed incandescent bulbs as a light source. The bulb, which was manufactured by the Shelby Electric Company, was designed during a time period when lightbulbs were still in the early stages of development. The average incandescent lightbulb had a typical lifespan of 1,000 hours. To put this into

¹ "Centennial Light Bulb." *City of Livermore*, www.livermoreca.gov/things-to-do/centennial-light-bulb.

comparison, other light bulbs such as LEDs or compact fluorescents manufactured at the time had an average lifespan of 20,000 to 30,000 hours—even with dimming for energy preservation being taken into consideration.² Now, the Centennial has been burning bright for over 100 years, equating to roughly 876,600+ years!

After remaining at the hose cart house for two years, in 1903 the bulb was moved to the newly constructed Fire Station #1, located at the intersection between First and McLeod Street. Over the next several decades, Fire Station #1 underwent numerous renovations, including a major remodel in 1937. Throughout the years of these changes, the Centennial Light Bulb continued to glow, defying the typical lifespan of incandescent bulbs and remaining lit despite being turned off briefly during the remodeling and construction process.

By the time the bulb had been in use for three decades (approximately 36 years) most incandescent light bulbs of its type had long since burned out. Standard incandescent bulbs from the early 20th century typically had a lifespan of approximately 1,000 hours. Even today, modern incandescent bulbs have an average lifespan of around the same duration, significantly shorter than other lighting technologies. Given these statistics, the fact that the Centennial Light Bulb has continuously glowed for a century is an amazing feat.

The Centennial's Relocation:

The Centennial Light Bulb remained in its home at the Fire Station #1 for a total of 75 years. Connected to the city's 110-volt power supply, it served as a guiding light for the firefighters stationed there, illuminating their stations and providing a small but meaningful sense of continuity throughout the years. However, in 1976, when the fire station underwent significant changes, the historic lightbulb relocated to its new home.

² "YouTube, uploaded by Livermore Centennial Light Bulb, www.youtube.com/watch?v=3GYaCnVQUJY&t=34s."

Recognizing the Centennial's significance as a local symbol and piece of history, the Firestation #1 captain at the time, Fire Captain Kirby Slate, carefully transported the Centennial light bulb to Fire Station #6 at 4550 East Avenue, Livermore with a full police and fire truck escort.³ The move was carried out with careful care to avoid damage, making sure that there was no concern of failure due to disconnecting and reconnecting the bulb. Ultimately, the transfer was successful, and the Centennial Light Bulb continued to glow in its new home, where it has remained until today.

The Science:

One of the biggest reasons behind the lightbulb's popularity is its scientific appeal. Many scientists, engineers, and historians have been intrigued by the question of why the Centennial Light Bulb has lasted so long. Shelby Electric Company, the company that manufactured and produced the bulb, was known for producing high-quality carbon-filament light bulbs in the late 19th and early 20th centuries. Unlike modern tungsten-filament incandescent bulbs, which burn brighter but at higher efficiency, early carbon-filament bulbs were designed to be able to operate at a lower temperature, being dimmer but more long-lasting. This reduced stress on the bulb and allowed it to eventually dim to preserve energy when needed.

Additionally, the Centennial Light Bulb has been operating continuously since it was first installed, another source of intrigue for scientists trying to understand the aspects behind its long lifespan. Lightbulbs are the most vulnerable to damage during power surges or when they are frequently turned on and off. This is because the sudden changes in the electrical current and amount of electricity when the power goes out and comes back on or when the bulb is turned on and off result in the filament expanding and contracting, leading to breakage, cracking, or even dying out. In consequence, the fact that the Centennial Bulb has remained

³ **"Centennial Light Bulb - World's Longest Burning Light Bulb." *Centennial Bulb*, www.centennialbulb.org/.**

uninterruptedly lit has likely played a role in its long-lasting endurance. Since it is not often turned off, it has been able to preserve its energy and avoid damage to the filament from unwanted electricity fluctuations.

While experts do recognize that there is a part of the lightbulb's longevity that cannot be explained scientifically, the fact that it has remained functional for so long can also be attributed, in part, to its design by early electrical engineers, the production company's craftsmanship, and the quality of materials that were used during its construction. The lightbulb is made of a strong carbon filament in a vacuum bulb orientation which enhances its durability and allows for it to remain bright despite fluctuations in energy. It was originally produced to be a 60-watt light bulb but now consumes only 4 watts at the low temperature of 1452K to reduce stress on its thin filament.⁴ Scientists report that at this level of energy, and with the correct temperatures and circumstances, the Centennial light bulb may continue to last for many more decades.

A Symbol of Bravery:

Beyond its scientific intrigue and technological achievement, the Centennial Light Bulb holds a highly symbolic meaning for the residents and friends of Livermore. It has witnessed over a century of the city's history, surviving two world wars, the Great Depression, the rise of new modern-day technology, and countless other changes in both history and society. Throughout all these years, it has remained bright, continuing to glow as a witness of Livermore's evolution.

⁴ "The Longest Light Bulb." *ResearchGate*, www.researchgate.net/publication/36630340.

One of the most significant aspects of the bulb is that it has spent its entire lifespan alongside Livermore's brave first responders. Whether hanging in a firehouse in 1901 or today, it has provided light to the firefighters who have dedicated their careers to protecting their communities. Many residents believe that the bulb is more than just an artifact—it is a symbol of our Livermore first responders' resilience and perseverance, and an attribute of the spirit of Livermore.

Due to this, the city has also embraced the Centennial Light Bulb as an important part of its identity. The Livermore Heritage Guild, a nonprofit organization dedicated to preserving the city's history and others alike have spent their time ensuring that the bulb remains protected and celebrated throughout the years. The bulb has also been recognized by the Guinness World Records as the world's longest-burning light bulb, and the local firefighters of Livermore are always happy to provide tours and visitations.⁵

Conclusion:

Livermore is well known for a multitude of reasons. To name a few: its rich history, the rodeo, its scientific contributions, wineries, and its people—all of which contribute to the city's culture and heritage. In addition to these memorable pieces of history, the Centennial Light Bulb also remains a piece of Livermore's culture, symbolic of its ever-changing eras and growth over time. The Centennial not only represents Livermore's endurance but is also a testament to the service and hard work of our emergency responders and firefighters.

Having remained bright for over a century, the lightbulb is both a fascinating scientific phenomena and a piece of history that allows us to look at the technology and craftsmanship style of the past. For over 120 years, the Centennial Light Bulb has illuminated fire stations,

⁵ **"Lighting with Longevity: The Centennial Light Bulb." *EDN - Voice of the Engineer*, www.edn.com/lighting-with-longevity-the-centennial-light-bulb/.**

witnessed historical events, and stood as a beacon—both literal and figurative—of Livermore’s heritage. As it continues to glow in Fire Station #6, it remains a symbol of resilience and stands as the unwavering bright spirit of Livermore, California.

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