

*A History of Welsbach Streetlighting Co.*

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1.	Introduction (click to advance to next slide)
2.	Gaslights have illuminated the streets of this Burlington County borough since 1908 (for more than 25 years before that, the lamps used oil). (click to show gas mantle factory photo) This presentation will trace the development of the Welsbach Streetlighting Company from the invention of the incandescent gas mantle by Carl von Welsbach in the late 19th century to its demise in the 1970s. (click to show inventions photo, postcard detail, and advertising tray) In addition to Welsbach's contribution to gaslight technology, a number of other achievements of the great Austrian scientist and inventor will be highlighted. There will be details about the original and reproduction gas streetlamps of Riverton, you'll see some vintage and contemporary views of Riverton, plus a display of Welsbach advertising collectibles. (click to advance to next slide)
3.	Riverton's original gas lamps were Baltimore-Philadelphia Welsbach Boulevard lamps. Welsbach started gas street lighting in the 1890s. (click to show square lamp at Indep. Hall) Patented October 31st, 1899, the Welsbach No. 36 Boulevard gas lamp was one of the first successful transitions from a square-sided lamp to round lamp. (click to advance to next slide)
4.	It became America's most popular style gas lamp for streets in the early 1900s. A great innovation of the time, it became the quintessential American gas streetlight. (click to advance to next slide)
5.	These vintage photos and postcards of Riverton show typical installations. (click to move over photo to show streetlamp in 1st photo) (click to show 2nd postcard) The first gas streetlamp was installed on Lippincott Avenue, near Broad, in 1908, as a test, or exhibition piece. (click to show 3rd postcard) Shortly thereafter, inspired by the success of the new lighting system, Riverton installed 51 lights and Palmyra, 60. (click to advance to next slide)
6.	Prior to this, public streetlamps were fueled by kerosene lamps like this square one on Bank Avenue, or... (click to advance to next slide)
7.	...this older type in front of the Lyceum. In his book, Tale of Three Towns, Lloyd Griscom wrote, "In 1880 some fifty oil street lamps were installed on the few streets constituting Riverton at that time. Lemuel H. Davis organized this project, which was supported by popular subscription. Ann Holvick was named as a lamplighter at \$7.50 annually per lamp. These lamps survived until 1908 when the Borough replaced them with picturesque gas lights." (Page 46) (click to advance to next slide)

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8.	<p>At first, the River Shore Gas Company supplied the gas for home cooking, heating, and interior lighting through a system of gas mains for the town of Riverton in 1899.</p> <p>(click to show Welsbach ad)</p> <p>This portion of a 1900 Sanborn map shows that the offices for the company sold gas fixtures, and doubtless, some of them were Welsbach products.</p>
9.	<p>That building is now occupied by Zena's.</p> <p>(click to advance to next slide)</p>
10.	<p>However, the oil to gas operation was short-lived since River Shore Gas Company would become absorbed into South Jersey Gas Electric and Traction Company in 1903.</p> <p>(click to advance to next slide)</p>
11.	<p>Through its subsidiary, South Jersey Gas, Electric and Traction Company, Public Service laid its gas main from its huge Camden gas plant sometime between the merger in 1903, and July 1905, the date of the Sanborn map that depicts the local Riverton gas plant as "not in operation."</p> <p>So, all told, our local gasworks was probably actually in operation for 3 years or less. It appears they laid piping to the various customer homes, but did not provide the gas or the piping for street lighting. It would take the business power of the South Jersey Gas, Electric, and Traction Company (Public Service) to effect this change in Riverton.</p> <p>(click to advance to next slide)</p>
12.	<p>There is evidence of some privately owned outdoor gas fueled lighting as early as 1900, but this note...</p> <p>(click to enlarge NOTE)</p> <p>...on the 1905 Sanborn map clearly has the public lights still fueled by kerosene.</p> <p>(click to advance to next slide)</p>
13.	<p>By 1909, South Jersey Gas, Electric, and Traction Company had expanded to include service throughout a larger region which included Riverton.</p>
14.	<p>By 1911, the notation by the gasworks on the Sanborn maps says, Lights: Gas.</p> <p>But another notation for public lighting says only electric. Was that test piece on Lippincott just a trial and Public Service did not install the remaining lights until after 1911? For now we must say that we do not have a conclusive answer.</p>
15.	<p>The Sanborn Map Company made such maps for fire insurance companies and their agents to aid them in assessing risk for fires without going out and doing a detailed field survey. The maps include detailed information regarding town and building information in approximately 12,000 U.S. towns and cities from 1867 to 1970.</p> <p>It is from a series of these maps that these notes were taken. You'll recall, however, that the gas for consumer use was not locally produced gas, but gas that was piped in from Camden. Years later, the site of the old River Shore Gasworks site would prove to be a headache for Public Service when...</p>

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16.	<p>...it became an environmental cleanup site because of coal tar contamination. It was started in 1985 and complete by 1991.</p> <p>(click to fade map and show 10th Street today)</p> <p>According to Roger Prichard, a member of the Planning Board at the time, all the houses on 10th street which back up to the little creek (Jack's Run) were condemned and purchased by PSE&amp;G as the corporate successor to the original gas company, because all the soil was declared hazardous many decades after the plant was demolished. Several feet of the soil was removed, an impermeable barrier put down, and then the homes resold with full disclosure to the new owners.</p> <p>(click to advance to next slide)</p>
17.	<p>(click to advance bullets as speaker proceeds)</p> <p>The lamp came in black or white and, excluding post, measured 18 inches in diameter by 40 inches high. It weighed 66 lbs. and delivered 150 candlepower of illumination.</p> <p>Cast iron posts weighed 300-350 lbs. and the cast iron cross arm supported the ladder.</p> <p>(click to advance to next slide)</p>
18.	<p>A smaller version of the Boulevard lamp was the Victorian which measured 17 inches in diameter by 30 inches high and weighed 44 lbs.</p> <p>(click to advance to next slide)</p>
19.	<p>The following is a replacements parts price list from 1960.</p> <p>Lamp frame (globe holder) \$88</p> <p>Posts (original cast iron) \$100</p> <p>Cross arm \$6</p> <p>Dome \$6</p> <p>Globe \$10</p> <p>Chimney \$1</p> <p>(click to advance to 2nd pg. of price list)</p> <p>Mantle \$1</p> <p>Burner \$9-\$11</p> <p>(click to advance to next slide)</p>
20.	<p>This is the cover illustration for the Municipal Streetlighting booklet, published in the early 20th century. It shows a number of different styles of lamps, posts, and burners tested in various cities prior to installation.</p> <p>Notice the variety of post, lamp, and globe configurations which follows.</p> <p>(click to advance to next slide)</p>
21. - 33.	<p>(click to advance to each successive slide)</p>

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34.	...And despite the lack of a location in the caption, can you tell where this shot was taken? (click to advance to next slide)
35.	Welsbach was the largest supplier of upright mantles for outdoor gas lights in the US. (click to advance to next slide)
36.	Welsbach was for a number of years the largest manufacturer of gas mantles in the world. (click to advance to next slide)
37.	<p>The Welsbach burners improved the flat flame burners by 10 times the luminescence. (click to enlarge picture)</p> <p>The new burners were originally developed during the years 1885-1886 by Carl Auer von Welsbach, hence the company name Welsbach. (click to advance to next slide)</p>
38.	<p>He was awarded a patent of and raised to the rank of baron for his discoveries by Emperor Franz Josef and so, thereafter, was known as Baron Carl Auer von Welsbach.</p> <p>The popularity of the new invention is indicated by these rapid sales statistics for Great Britain. (click to show bar graph)</p> <p>(click to advance to next slide)</p>
39.	<p>In 1896 Welsbach Street Lighting Company of America installed Welsbach Boulevard gas lamps with the first mantles used in this country in Freehold, NJ. These lamps glowed with a clear, steady 60 power light, tripling the previous 20 power from the same amount of fuel. (click to show quotes)</p> <p>It is unknown whether Freehold's high praise of the product influenced Riverton's decision to purchase from Welsbach. (click to advance to next slide)</p>
40.	<p>The Welsbach modern gas mantle was one of many inventions by the chemist who studied rare-earth elements in the 1880s and who had been Robert Bunsen's student.</p> <p>The new mantle which was invented and patented in 1885, provided a light that was 8-10 times brighter than an open flame.</p> <p>However, the original mantles gave off a green-tinted light and his company which established a factory near Vienna in 1887, failed in 1889.</p>

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41.	<p>In 1890, he discovered that thorium was superior to magnesium and in 1891 perfected a new mixture which produced a stronger mantle and gave off a much whiter light.</p> <p>In 1895, he made further improvements to the chemical recipe and the mantle was soon put into many streetlamps throughout the world.</p> <p>(click to advance to next slide)</p>
42.	<p>(starts with mantle photo and ad)</p> <p>(click for Glasgow photo)</p> <p>After being introduced commercially in 1892, it quickly spread throughout Europe.</p> <p>(click to show diagram of photo shoot)</p> <p>The gas mantle remained an important part of streetlighting until the widespread introduction of electric lighting in the early 1900s.</p> <p>(click to advance to next slide)</p>
43.	<p>(click to show first caption)</p> <p>To produce a mantle, cotton is woven into a net bag, impregnated with soluble nitrates, and then heated. The cotton burns away and the nitrates fuse together to form a solid mesh. Later mantles were made from guncotton or collodion rather than ordinary cotton.</p> <p>(click to show 2nd bulleted caption)</p> <p>When the salts are oxidized the gas flame then causes the mantle to become incandescent.</p> <p>(click to show 3rd bulleted caption)</p> <p>The result was a light output which was 10 times the previous candlepower.</p> <p>Early mantles often had a binding thread of asbestos for tying on to the lamp fitting, but because of its carcinogenic properties, it has been replaced with wire or ceramic fiber thread in modern mantles.</p> <p>(click to advance to next slide)</p>
44.	<p>The Welsbach Museum in Austria says that Welsbach "...had a rare double talent of understanding how to pursue fundamental science and, at the same time, of commercializing himself successfully as an inventor and discoverer."</p> <p>(click to advance to next slide)</p>
45.	<p>(click for 1st caption)</p> <p>His work in the field of rare-earths led him to...</p> <p>(click for 2nd caption)</p> <p>the discovery of four elements on the periodic table</p> <p>(click for 3rd caption)</p> <p>The invention of the incandescent mantle</p> <p>(click for 4th caption)</p> <p>The development of Ferrocium – the flint in lighters</p> <p>(click for 5th caption)</p>

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45.	<p>(5th caption CONTINUED)</p> <p>The invention of the first metal filament electric light bulb which is used billions of times each day.</p> <p>(click for 6th caption)</p> <p>He is listed in the book, The Top 1000 Scientists From the Beginning of Time to 2000 AD penned by Phillip Barkel.</p> <p>(click to advance to next slide)</p>
46.	<p>(click to show all commemorative items)</p> <p>The great researcher, scientist, inventor, industrialist, and philanthropist Carl Freiherr Auer von Welsbach remains a highly honored and distinguished figure in Europe.</p> <p>(click to advance to next slide)</p>
47.	<p>(click to start succession of bullets)</p> <p>Pennsylvania Globe Streetlighting Company began in 1877. Two names familiar in Philadelphia history, Widener and Elkins, were associated with its beginnings.</p> <p>In 1882 the same group formed the United Gas Improvement Company.</p> <p>By 1899 U.G.I. would come to control Pennsylvania Globe stock as well as many other companies in the street lighting field.</p> <p>Exclusive North American manufacturing and selling rights for the Welsbach mantle were held by a U.G.I. subsidiary, the Welsbach Company in Gloucester, NJ.</p> <p>Although held by U.G.I., the Gloucester operation and Pennsylvania Globe remained independent companies.</p> <p>(click to advance to next slide)</p>
48.	<p>The former General Gas Mantle Company first appears on Camden property maps in 1915 and it was in operation through 1940.</p> <p>(click to show postcard view of Gloucester factory)</p> <p>The Welsbach factory located in Gloucester, NJ is known to have manufactured incandescent gas mantles during the period 1896 through 1940. The former Welsbach facility is now an active port area along the Delaware River, next to the Walt Whitman Bridge, called Holt Cargo.</p> <p>(click to advance to next slide)</p>
49.	<p>Pictured here are a few of the postcards which are part of a 48 card series which shows the many production steps which took place at the Gloucester site.</p> <p>(click to advance to next slide)</p>
50.	<p>We can see these gentlemen at work in the lantern shop, but...</p> <p>(click to advance to next postcard)</p> <p>...if the employees had only known how hazardous the thorium was, they wouldn't have stuck their hands in the stuff. (click to advance to next postcard)</p> <p>(click to advance to next postcard)</p>

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51.	<p>There are two contaminated sites in South Jersey from the manufacture of gas mantles – one in Camden and one in Gloucester City.</p> <p>Both sites were deemed Superfund sites when initially detected during an aerial gamma radiation survey conducted in May 1981.</p> <p>(click to show factory) The contaminated properties include two former factories, 23 residential properties, 7 commercial properties, and 9 open spaces.</p> <p>(click to show backhoe and caption) Thorium is the major site contaminant at and near these sites and it has a half-life of 14 billion years.</p> <p>(click to show EPA logo and cleanup caption) The processing of an ore used to extract thorium used in the production of gas mantles during the 1900s caused radioactive contamination. By the way, mantles today are made with non-radioactive yttrium.</p> <p>(click to advance to next slide)</p>
52.	<p>Welsbach also had several subsidiary companies including a water company in Mexico City...</p> <p>(click to advance to 2 more photos)</p> <p>...and a shipbuilding company in the Port Norris, NJ area.</p> <p>(click to advance to next slide)</p>
53.	<p>Welsbach was sold in 1971 and merged into Jamaica Water in 1974. At this point, manufacture of Welsbach gaslamps stops, at least by this company.</p> <p>However, you have not heard the last of Pennsylvania Globe.</p> <p>(click to advance to next slide)</p>
54.	<p>The last known local supplier of original Welsbach lamps and parts was the Continent Supply at 1321 North Front Street, Philadelphia, PA. Here are two internet vendors for lamps and replacement parts.</p> <p>(click to advance to next slide)</p>
55.	<p>The last remnants of the Welsbach legacy are a handful of advertising collectibles and some of the original posts bearing the Welsbach name.</p> <p>(click to advance to round tray)</p> <p>(click to advance to lighthouse ashtray)</p> <p>(click to advance to bookmark)</p> <p>(click to advance to next slide)</p>
56.	<p>(click to advance to letter opener)</p> <p>(click to advance to tape measure)</p> <p>(click to advance to postcard)</p> <p>(click to advance to next slide)</p>

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57.	<p>(click to advance to executive presentation lamp)</p> <p>A few special electrified brass lamps such as these were made as presentation pieces for Welsbach executives.</p> <p>(click to advance to larger image of presentation lamp)</p> <p>This one belonged to my (Jeff Cole's) grandfather who worked for the Welsbach Company. He started in the Philadelphia offices of the company as a floor sweeper and literally worked his way to the top - retiring with 61 years of service after becoming vice-president and treasurer.</p> <p>(click to advance to next slide)</p>
58.	<p>click to advance to round tray)</p> <p>(click to advance to small streetlamp replica)</p> <p>(click to advance to next slide)</p>
59.	<p>When real estate websites describe Riverton as a charming Victorian town with old trees lining the quiet streets, they always mention the old-fashioned gas streetlights.</p> <p>(click to advance to next slide)</p>
60.	<p>They add to a property's curb appeal and are one of the many things which have helped to make Riverton an attractive place to live.</p> <p>(click to advance to next slide)</p>
61.	<p>The town is one of only a few in New Jersey to retain gas light street illumination (others include Palmyra, Glen Ridge, South Orange and some parts of Orange.</p> <p>(click to advance to next slide)</p>
62.	<p>It would be hard to imagine Riverton without its cherished gas streetlamps.</p> <p>(click to advance to next slide)</p>
63.	<p>There was a time during the Carter Era energy conservation legislation in the late 1970s when it looked like Riverton's gas streetlamps would be snuffed out for good.</p> <p>(click to fade photo and show quote)</p> <p>Some 30 lamps in the borough had already been removed in the 1950s and removing the remaining 52 would have meant cutting down trees to install electrical wires. As president of the Historical Society of Riverton, Betty Hahle called the lamps, "essential to the overall Victorian picture," and fought to save the existing lamps.</p> <p>(click to fade in new article)</p> <p>Through the cooperation of Borough Council and the Historical Society of Riverton a petition was written to the state Board of Public Utilities for an exemption to the rule. The Burlington County Cultural and Heritage Commission and the state Department of Environmental Protection's Historical Preservations Department supported the exemption.</p> <p>(click to advance next slide)</p>

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64.	<p>Less than 5 months after it had decided to shut off the gas, the state Board of Public Utilities decided to let the gas keep flowing.</p> <p>(click to advance next slide)</p>
65.	<p>The gaslights have now become iconographic, or symbolic, of all that is reminiscent of Riverton's stately past and its present Victorian charm.</p> <p>(click to advance to next slide)</p>
66.	<p>Perhaps they remind us of an elegant era of gracious living and less hurried times.</p> <p>(click to advance to next slide)</p>
67.	<p>(click to advance to streetlamp images)</p> <p>So, the next time that you walk down the streets of Riverton look for the Boulevard and Victorian style lamps...</p> <p>(click to advance to show post photos)</p> <p>...that are mounted on at least six different types of posts...</p> <p>(click to advance to next slide)</p>
68.	<p>(click to show embossed patent dates photo)</p> <p>...embossed with the original patent date and Welsbach lettering.</p> <p>(click to show dedication plaque)</p> <p>Riverton still has 52 of its original gas streetlights. You will also notice the newer lamps with dedication plaques. Those are the ones which were added by the Riverton Improvement Association. It was formed with the objective to preserve that Victorian town feeling and the organization persuaded individuals, groups, and businesses to purchase new gas lamps. Main Street received most of the 44 new lights which were added to the town.</p> <p>(click to advance to next slide)</p>
69.	<p>Architect Dan Campbell was a participant on the project. He recalled that Bob Thompson, who was not affiliated with the HSR, took it on as a personal project from approximately 1997 to 2000 to install gaslights in exchange for donations. There were some hand-marked maps of the existing gaslights and it was pointed out that the lights had been staggered diagonally at intersections and along streets. That plan was not followed for the new lights, concludes Dan, because when someone wanted one directly in front of their house, and they were paying approximately \$1800 to \$2000 for the lights, they got to determine where they wanted them. Once in operation, maintenance and operation costs were the Borough's.</p> <p>(click to advance next slide)</p>
70.	<p>This is the vendor which was used for that purchase.</p> <p>(click to show brown booklet)</p> <p>Note that the name is the same as the one on this undated booklet, circa 1900.</p> <p>It has been in business since 1877, and was once held by United Gas Improvement Company. Now they are alive and well and situated in Connecticut.</p> <p>(click to advance to next slide)</p>
71.	<p>Clearly, that we even have the gas streetlamps today to enjoy, it is the result of a combination of the efforts of many people over the decades.</p> <p>(click to advance to next slide)</p>

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72.	Carl Auer von Welsbach and the company which he started, and those early entrepreneurs of the lighting and gasworks industries were there at the dawn of the 20th century to answer a public need for more efficient street lighting. (click to advance to next slide)
73.	Later, individuals such as Betty Hahle and groups like the Historical Society of Riverton so tirelessly led efforts to preserve our gas streetlamps. (click to advance to next slide)
74.	And, more recently, efforts of the Riverton Improvement Association resulted in the addition to our inventory of gas streetlamps. (click to advance to next slide)
75.	Here is a glimpse of gaslamps now... (click to advance to next slide)
76.	...and then. (click to advance to next slide)
77.	Enjoy the gas streetlamps and remember those whom we have to thank for them.
78.	(The End)