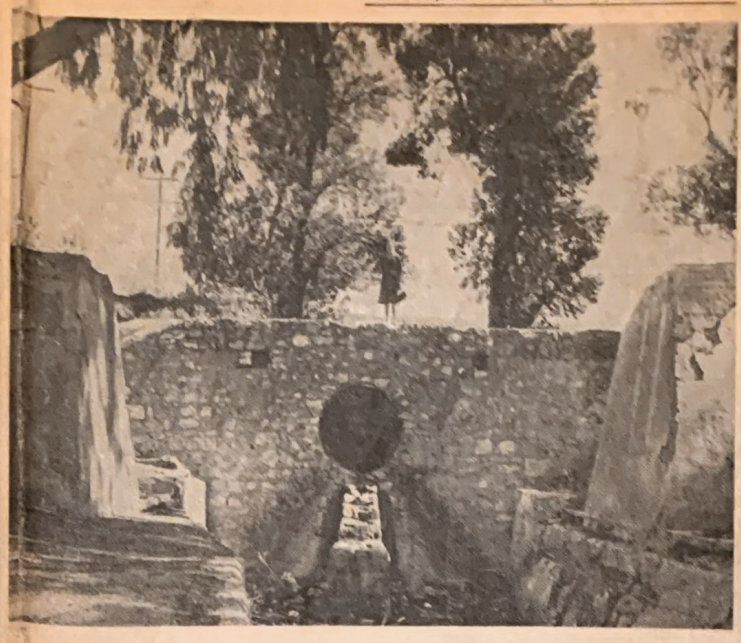




TODAY — Left picture shows the overflow of the Highgrove water plant today. Water doesn't overflow, however, because it passes



unimpeded through the old penstock. Right, Edith McCright, 240 Prospect, Highgrove, who remembers the water plant when its generators were humming, is standing above the penstock of the plant's abandoned foundations.

Tiny Highgrove plant pioneer in hydroelectric story

By TOM PATTERSON
 Press-Enterprise Staff Writer

An arc light flared with unbelievable brilliance from a pole in front of Wieck's Drug Store at the southwest corner of Seventh and Main in Riverside one night in the spring of 1888. There hadn't been so much excitement in years.

When it was quiet enough to listen, the people downtown could hear a whistling noise from the newly installed generators. They were three miles away, south of Highgrove, where the newly re-routed Riverside Water Co. canal dropped 40 feet into an arroyo.

THE NEW LIGHT source was used indoors for the first time in the city's one theater — a little makeshift one on the south side of Eighth just east of Orange. The manager later recalled that his two indoors arc lights that night attracted more attention than the play.

Historians of water power electric generation are, in recent years, discovering that the little Highgrove plant was rather significant.

In California the hydroelectric art flowered more promptly than in most other areas of the country. Highgrove wasn't the first plant in Southern California, but it was probably the first of commercial significance.

George Chaffey built a little generator in 1882 on his irrigation line for the Etiwanda colony. That was the year when U.S. commercial electric generation and distribution really started, with Thomas A. Edison's steam-powered Pearl Street Station in New York.

CHAFFEY'S served mostly as an advertising device. The glow from a light on a tall pole could be seen from Riverside, nearly 15 miles distant.

The little plant was not assimilated into later systems. It did stimulate the electric lighting idea. Small steam plants soon were being installed in various parts of Los Angeles.

An old water power mill on Warm Creek at Mill and Allen Streets in San Bernardino was converted to electric generation by Peter Kehl. Indeed, Kehl made a deal with C. R. Lloyd, who

used parts from his plant in the much bigger one at Highgrove.

Lloyd had a partner named Sinclair, but it was Lloyd who contracted with Riverside Water Co. for use of the Highgrove power drop. In December of 1886 he sold the Riverside City Council on electric street lighting. He had rivals, who wanted the city to install gas lighting.

GAS LIGHTING wasn't so obsolete as it now sounds. The gas mantle lamp had been developed and the state of its art was improving while electric lighting was in a raw beginning stage. The city paid \$27.50 per month for the first street light which operated only until 9 p.m.

One city faction, headed by Frank Miller of the Glenwood Hotel, (forerunner of the present Mission Inn) favored gas.

Banker O. T. Dyer was first to urge the electric plan. He later joined with Lloyd in the formation of San Bernardino Electric Light Co. in January, 1887 — the company that first operated the plant.

G. O. Newman, Swedish-educated chief engineer of the water company, Frank Miller's brother-in-law, designed the Highgrove plant with the help of an electrical engineer from Ohio. The plant produced about 300 horsepower — roughly 75,000 kilowatts — under normal water flow.

THE 1,000 VOLTS to which the transformers stepped up the power were sufficient to send it to Riverside and Colton, but engineers hadn't yet devised the means to transmit farther. San Bernardino had to wait three years before it got its first electric street lighting.

Seven arc lights soon were installed along downtown Riverside streets. They weighed 130 pounds each and the carbons would burn only four and a half hours.

A crew with portable tackle raised and lowered them daily to change carbons. Soon an improved type was developed. It burned 9½ hours without replacement and was called the all-night light.

Big outdoor incandescent lights were introduced a year later.

THE HIGHGROVE plant operated until 4:20 a.m. on Sunday, March 28, 1915, when a transformer exploded, spraying oil throughout the wooden power house. G. S. Garner, who was in charge, escaped unhurt, but the fire was so sudden that he could not even rescue the log books of the plant's 27 years of operation.

Long before then its machinery was outdated. It had the handicap of being on an intermittent stream. (There were periods when the canal wasn't used.) Hydro plants were vastly larger and more efficient. Power was by then being transmitted 300 miles to the Riverside-San Bernardino area from power plants in the mountains above Bishop.

Recently, however, investigators have discovered that the little Highgrove plant was oldest in the lineage of the vast Southern California Edison Co. although it never bore the Edison name.

ITS PARENT FIRM reorganized as San Bernardino Gas & Electric Co. in 1900, acquired several smaller plants including a combination steam and electric plant at the old Mill and Allen streets site, and in 1902 became part of Pacific Light & Power Co. P.L. & P. was the combine formed under leadership of Henry E. Huntington, which among other things, supplied his growing empire of electric streetcar and inter-urban railway lines.

Small power companies were uncertain in operation and their prices were high. In a spirit of independence, Riverside decided in 1895 to set up a municipal light and power system.

It was offered the Highgrove plant, but decided to build its own, powered by steam. An offer came from Redlands Light and Power Co., which had built its first plant on Mill Creek to the northeast. Riverside postponed constructing its steam plant and accepted the Redlands firm's offer of power at wholesale rates from more than 20 miles away, starting in 1896.

Three years later, with power needs expanding because of streetcar electrification and other matters, Riverside did build a municipal steam plant. Most of its 72-year experience in



OVERFLOW — This was the overflow at the forebay, where the canal enters the penstock. The bypass channel is on the right. Edith McCright and her father, Charles F. McCright, a citrus grower, are among the people in the picture.

municipal power distribution has been based on resale of purchased current.

WHEN MORE POWER was developed on Mill Creek and the upper Santa Ana River, transmission was started to Los Angeles, 83 miles away, in 1898. By that time Edison had acquired the Redlands and other firms of the vicinity.

Edison and Pacific Light and Power merged under the Edison name in 1917, two years after the Highgrove plant burned.

F. A. Worthley, original assistant engineer and later superintendent at Highgrove, was with Southern Sierras Power Co. (which had built the long line from Bishop Creek) at the time of the fire in 1915.

In The Press story of the fire he recalled the excitement and problems of the first street and indoor lights. He was then keeping, as a souvenir, the first incandescent lamp used in town. It weighed "six or seven pounds." It had produced 150 candlepower. The

Westinghouse company had "tried several times to get this lamp, but it is too valuable a souvenir to part with."

WORTHLEY was obviously aware of earlier hydro plants of negligible commercial importance. He had specifically mentioned the Kehl mill. But concerning Highgrove, he reasoned: "It had an important part in electrical development in California, and I hope for that reason it will be rebuilt."

It wasn't, but its penstock and foundations are still there and the canal water still cascades through the penstock between the foundation blocks.

The canal was re-routed in 1886 to take better advantage of the water company's Warm Creek rights.

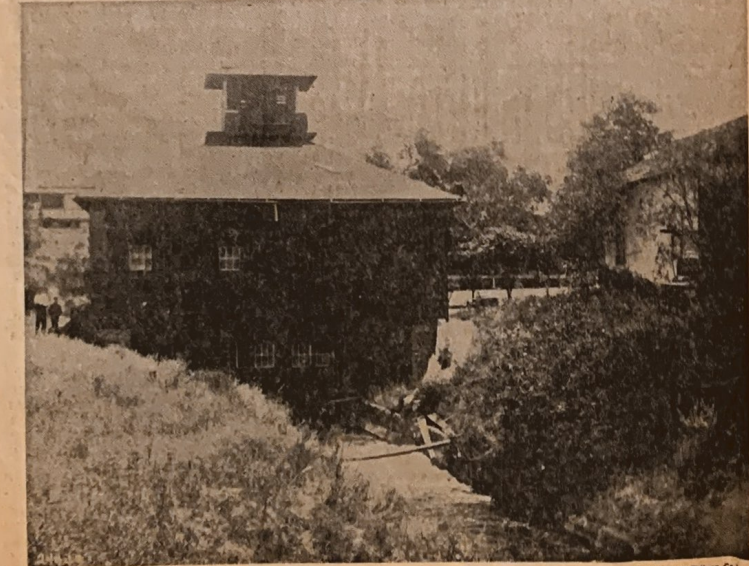
The new line went through Highgrove to the edge of an arroyo at the present intersection of Iowa and Spring. Originally it flowed into a 200-foot flume and was dropped vertically into the turbines at the bottom of the arroyo. At the time, Iowa Avenue didn't extend that far north.

LATER, PROBABLY in 1892, the flume, was replaced by the slanting penstock, 6½ feet in diameter, which goes under Iowa Avenue. The masonry in the foundation still shows where it was opened and rebuilt around the penstock.

Howard Creason, last superintendent of Riverside Water Co. and now head of its operations as a part of the City Water Department, discovered an engineering drawing — recognizable as the style of G. O. Newman, but with no identification of place or purpose. It shows a direct drop from the flume to the turbines, not the penstock that remains today.

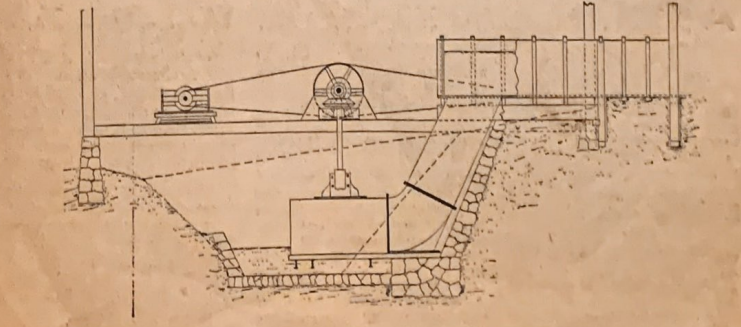
But it is otherwise compatible with the description of the operating plant in W. H. Hall's "Irrigation in Southern California," published in 1888.

And the remaining masonry foundations are compatible not only with Hall's 1888 description but with old photographs of the plant in operation, after the penstock was installed.



PIONEER — Here was the Highgrove hydroelectric plant in operation before 1915. The view is looking east, as the canal emerges from the

turbines. The superintendent's house at upper left was approximately on the present line of Iowa Avenue, at Spring Street.



DRAWING — This drawing, identifiable as the work of oldtime Riverside engineer G. O. Newman, evidently shows the original plan for the Highgrove water plant.