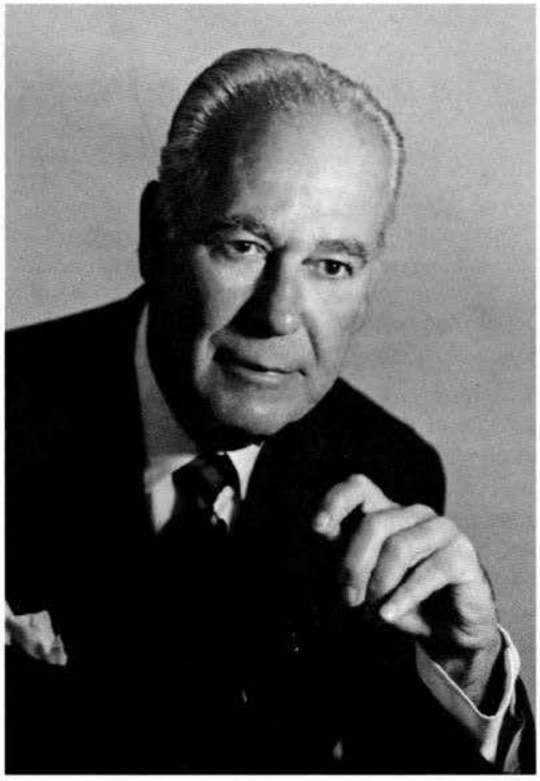
PublicService Company of Colorado

Providing Energy for More Than a Century



A Look Back

As the nation pauses to consider its origin and growth during its first 200 years, Colorado also evaluates the progress it has made in the first century of its existence as a state. Involved in that progress, with more than 100 years of history of its own, Public Service Company of Colorado provides a barometer of achievement for the Centennial State.

Company and community have grown up together, in fact and in fortune. The relationship has been as intimate as one between two old friends.

In the pages that follow, just a small part of the total story is told. The lives that have touched Public Service Company of Colorado and its many predecessors would be material sufficient for a hundred books. A few, to some degree, influenced the Company, the state and the nation. Others merely brushed them in passing. Nevertheless, each life has left its own particular imprint on the whole.

The following is dedicated to the memory and accomplishments of those who have participated in that long parade.

Chairman of the Board
and President

Public Service Company of Colorado: Its Past and Its Present

Colorado was seven years away from statehood when the first investor-owned utility was formed in Denver

Marauding bands of hostile Indians were still on the warpath in the Colorado Territory and this frontier land was seven years away from statehood when the Denver Gas Company, first predecessor of Public Service Company of Colorado, was incorporated on Nov. 13, 1869.

The Founders

By the feeble glow of a kerosene lamp, this pioneer parent of Public Service Company of Colorado was formed in a room of the original *Rocky Mountain News* building, which was at what today would be about 1555 Larimer Street in Denver. Gathered there were William N. Byers, owner of the *News*; Colonel James Archer, a merchant who was to become the first president of the company; Louis Bartels, merchant, rancher and banker; Walter Scott Cheesman, railroader and water utility founder; John Evans, medical doctor, builder of railroads, founder of the University of Denver and second governor of the Colorado Territory; David Moffat, banker and railroad builder; Lewis N. Tappan, merchant; and D. Tom Smith, freighter.

Since that day, the histories of Public Service Company and the State of Colorado have become part of the same fabric.

Ten years earlier, the famous Pikes Peak gold rush spurred settlement of the territory. Other gold strikes helped fan the flame of desire for the precious metal. Then came the decade of the Sixties. Placer gold mines had played out, and refractory ore — ore difficult to extract and process — was encountered in the mines. The Civil War claimed the territory's citizens for soldiers, and Indian resistance threatened the territory's existence.

Nevertheless, by 1869 Colorado was on the threshold of a new decade of prosperity and growth. Founding of the Denver Gas Company that year was an act of faith in the Mile High City's future. The Seventies were to see the railroads extend into Colorado. Narrow-gauge rail lines would climb into the mountains to carry off the silver being mined there. Colony towns were being founded. Agriculture would develop to support the increasing immigration.

Construction of the first gas plant and distribution system was delayed, however, waiting for the railroad to reach Denver. High freight rates and the dangers involved in transporting equipment and supplies by horse or oxen-drawn wagon trains between the Mississippi River and Denver made the delay an economic necessity.

Founders of PSCo's First Predecessor Company

JAMES ARCHER: Born in Belfast, Ireland, in 1820. Arrived in St. Louis in 1845. Worked as a clerk in a grocery. Soon became a partner in the business. During Civil War, sold wagons and harness to government, became wealthy. Acquired title of "colonel" during war. Came to Denver in 1869. Organized Denver Gas Co. and became its first president. The next year, organized Denver City Water Co. Built a home at 13th and Welton Streets in Denver. Had a ranch in Littleton. Died at Wagon Wheel Gap, near Creede, in 1882 of a heart attack at the age of 62.

LOUIS BARTELS: Born near the German university town of Goettingen in 1826. Educated at the university and migrated to St. Louis. In 1851, went to Albuquerque, N.M., and opened a merchandising business. Became wealthy in four years. Returned to St. Louis in 1856. A short time later, opened a grocery business in Bellevue, Neb. Wiped out in 1860 as result of national financial panic at that time. Arrived in Denver in 1861 and opened store on Front Street in West Denver. Store was successful. Opened others in Trinidad, Las Animas, Fort Garland, and San Antonito. Also made a fortune in cattle raising. Organized the Colorado Savings, Building and Loan Association and later the German National Bank. Bartels was secretary of the Denver Gas Co. at the time of his death in 1874 at the age of 48.

WILLIAM NEWTON BYERS: Born near Jefferson, Ohio, in 1831. His birthday was the same as George Washington's, February 22. Like Washington, Byers also was a surveyor. Was deputy surveyor for the state of Iowa before he was 21. Supervised the platting of Omaha City in the Nebraska Territory. Surveyed and laid out the township of Hot Sulphur Springs, Colo., in 1864. Arrived in Denver April 17, 1859, and had the first issue of the *Daily Rocky Mountain News* on the street less than a week later. Price, 25 cents a copy. Byers was one of the greatest promoters of Denver and Colorado. In his paper on April 23, 1863, he noted: "All we want here now is a Yankee card writer, a spectacle man, and a good-looking Dutch organ girl to make the town 'finished.' Street watering and gas light would also help." The meeting at which the Denver Gas Co. was incorporated was held in his newspaper office November 13, 1869. Byers lead a full and meaningful life and died in 1903 at 72.

WALTER SCOTT CHEESMAN: Born at Hampstead Harbor, N.Y., in 1838. Was a pharmacist and in the drug business in Chicago for six years, from 1854 to 1860. Came to Denver in 1860 and opened a drug store at the corner of 15th and Blake Streets. Later became involved in the organization of many western and southern railroads. For many years, was a director of the Denver & Rio Grande. Organized the Denver Depot Co. and in 1880 secured the funds from Jay Gould to build Denver's depot. Also helped establish the Denver City Water Co. in 1870. Later left that organization and started the Citizen's Water Co. in 1889. Began a price war with Denver City Water Co. the next year and gave away water for two years – until Denver City Water went broke. The entire system was sold to the city of Denver in 1914, seven years after his death. Cheesman was 69 years old when he died in 1907.

JOHN EVANS: Born in Waynesville, Ohio, in 1814. He was a medical doctor and a teacher of medicine at Rush Medical School in Chicago. Types of obstetrical instruments invented by him said to still be in use today. Founded Mercy Hospital in Chicago and Northwestern University in Evanston, Illinois, which city was named for him. Was an alderman in Chicago and helped organize the Chicago & Fort Wayne Railroad, of which he was managing director for many years. Was editor of the *Medical and Surgical Journal* for a number of years and was instrumental in the establishment of the Methodist Book Concern and the *Northwestern Christian Advocate.* A personal friend of Abraham Lincoln, he was appointed second Governor of the Colorado Territory in 1862. Also was interested in the establishment of many railroads. In Denver, founded the University of Denver and was a director of it until his death in 1897 at the age of 83.

DAVID MOFFAT: Born in Washingtonville, N.Y., in 1839. At the age of 12, went to work in the New York Exchange Bank as a messenger. At 16, was an assistant teller. Later, became a teller in a bank in Des Moines, Iowa. In 1856, at the age of 17, went to Omaha to be a teller in a bank there. This bank went bankrupt, and Moffat was kept on to clear up the final business. It is said that he paid every penny to every depositor before locking the door for good. He was 20 years old at the time. Arrived in Denver in 1860 with a wagon load of books and stationery, and opened a store at 11th and Larimer Streets. Five years later, took a job as cashier with the First National Bank and in 1880 became president of that organization. Held that position for 30 years. Also interested in railroads, Moffat took on the chore of building the Moffat Road and Tunnel in 1904 at the age of 65. He passed away in New York City in 1911 at the age of 72, still active in banking to that time.

LEWIS N. TAPPAN: Born at Manchester, Mass., in 1831. Went to Boston at the age of 17 to learn the hardware business. Went to Kansas in 1857, where he stayed long enough to become a member of the legislature and secretary of state. In 1859, came to Denver with his brother to open stores in Denver, Golden, and Central City, specializing in hardware and mining supplies. Nine years later, built Denver's first three-story building – the Tappan Block at the corner of 15th and Market Streets. Tappan is credited with establishing the first Sunday school in Denver in 1859. Established the first horse-drawn street railway in Denver in 1867. Returned to Massachusetts in 1869 and became the third member of his family to hold a seat in the state legislature there. On a return trip to Colorado in 1880, he contracted pneumonia in Leadville and died at the age of 49.

D. TOM SMITH: Here is a man of vague beginnings. His early life before he came to Denver is difficult to determine. However, according to stories carried in the newspapers of the day, Smith enjoyed somewhat less than a routine life while in Denver. In the *Rocky Mountain News* of March 15, 1884, the stepped headline on the story of Smith's death read as follows:

> "POOR TOM SMITH. A Once Prosperous and Influential Citizen of Denver Dies With His Boots on. The Sad Fate that Befel (sic) D. Tom Smith at Bisbee, Arizona, about 60 Days Ago. An Instance of What Whiskey and Women Will Do For a Man if He Has a Leaning That Way."

Smith was killed in a gunfight in Bisbee, and General Dave Cook carried the news to Denver. He reported: "The killing occurred about sixty days ago, and the man who shot Tom was sentenced to be hanged for the crime, but the people took him out of jail and strung him up." The details of Smith's infamous life are still preserved in that issue of the newspaper.

The Railroad Arrives

The wait ended in 1870. In that year, Denver had two major rail links with the Eastern markets and one with those in the Pacific Coast. The first train pulled into Denver June 22, 1870, amid wild demonstrations and celebrations. A silver spike was hammered into place commemorating the occasion, the completion of the Denver-Pacific Railroad between Denver and Cheyenne, where it interconnected with the transcontinental Union Pacific. Denver had a tie with both coasts for the first time.

The second link with the East occurred when the first train of the Kansas-Pacific Railroad arrived in Denver Aug. 15, 1870, a direct line connecting Denver with the Missouri River 639 miles away.

Laying of the gas pipe in Denver began September 20 of that year. Retort houses were built on the southwest corner of 18th and Wewatta Streets, site of the Union Pacific railroad yards. In the retorts, actually large furnaces, gas was manufactured from coal. Gas began to flow through the system's two miles of line late in 1870. A year later there were eight and one-half miles of gas distribution mains in operation in what was to become Colorado's capital city.

Manufactured-gas pipe on its way to being installed in Denver in early 1900s.

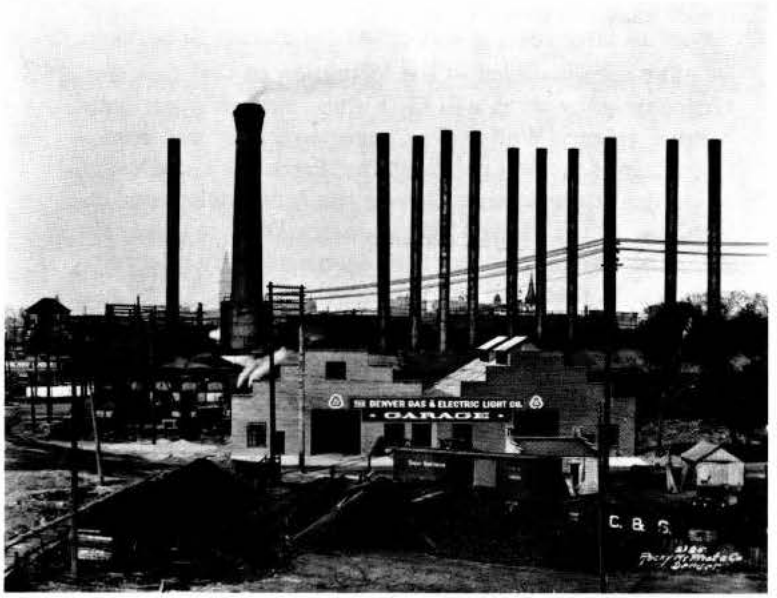
Removing the coke from the huge retorts in this early day gas manufacturing plant was hot, tedious, dangerous work. Coke was all that remained of coal baked to release gases used to illuminate Denver's first street lights in 1870. Such gas was later used for illuminating homes and businesses and for cooking. There was only one manufactured-gas house heating customer in January 1922, and the number grew to 730 by 1928, when natural gas arrived from Texas.

Gas Lights Greet New State

Denver Gas Company's gas street lights brightened the way in the bustling city when Colorado was admitted to the Union Aug. 1, 1876.

At first, manufactured gas was used exclusively for street lighting. Later it was used for illumination in homes. Denver streets were lighted by gas lamps on iron posts. Lamplighters maintained the lights with the aid of a short wooden ladder they carried over their shoulder or trundled down the sidewalk in a wheelbarrow. In a ritual repeated each night, the lamplighter's match brought into flame the hissing gas. He then moved on to the next street light.

The days of the "old lamplighter" were numbered, however, for Denver was among the first cities in the world to adopt electric street lighting.



This manufactured gas plant, built in 1889 by the Denver Gas & Electric Co., was acquired by the Denver Gas & Electric Light Co. in 1911. Coal was "baked" in huge ovens to produce combustible gas.

Arc light hanging above intersection of 15th and Lawrence Streets in the early 1880's.—Denver Public Library Western Collection photo.

Electric Light Makes Debut

Citizens of Denver got their first look at electric lighting in 1880. A decade had passed since the arrival of the railroads and manufactured gas. Denver's population had swelled to more than 35,000, and new families were arriving at a rapid rate. Population of the state increased to 195,000 — five times what it had been at the time statehood was granted.

On April 21, 1880, a throng of people gathered at 390 Curtis Street in Denver to see a demonstration of electric lighting. It is recorded that they were amazed to see light produced at the end of a wire. The possibilities of this new "white magic" were grasped by some of Colorado's richest and greatest men.

On Feb. 21, 1881, the Colorado Electric Company was incorporated. The first electric plant was built at 21st and Wewatta Streets and was called East Side Station. In later years it was called the Barker Substation.

The men involved in the formation of that first electric company were Will G. Fisher, pioneer department store owner; Walter S. Cheesman, who was also a founder of the first gas company; Frederick Gold Vaille, who had organized in Denver the fourth telephone exchange in the United States; James Duff, manager for English capital that built the internationally celebrated Windsor Hotel and other large enterprises;

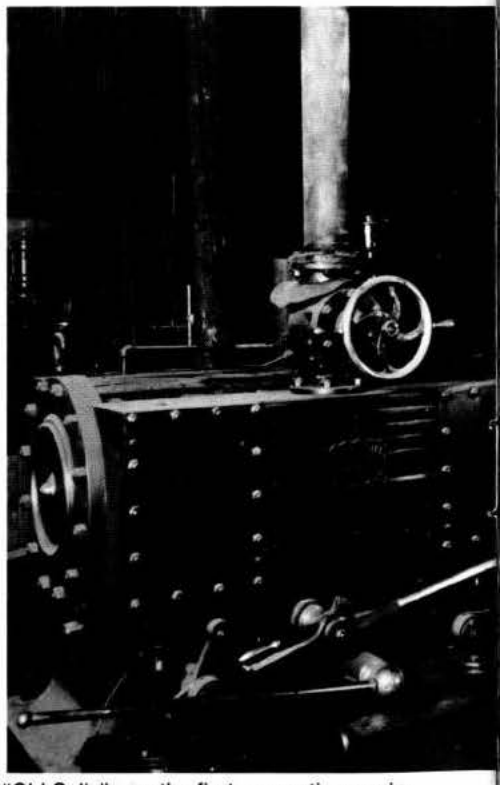
Edward W. Rollins, who was to become nationally known head of the investment firm of that name; Nathaniel M. Tabor, son of the celebrated H. A. W. Tabor, the picturesque Leadville millionaire, U.S. Senator, and builder of the famous Tabor Grand Opera House; Thomas E. Johnston; and Charles G. Ruthrolf.

Denver's First Dynamos

William J. Barker was sent to Denver in the spring of 1881 to install and operate two 35-hp Brush-Swan direct-current dynamos. They were the first west of the Missouri River. To drive these dynamos, he installed a 250-horsepower Wright Steam engine, which at that time was the third largest of its kind in the United States.

The engine's fly wheel weighed nine tons and was 17 feet in diameter. "Old Sally," as it has been nicknamed, still can be seen by visitors to the Company's Valmont Station near Boulder. There "Old Sally" has been placed in the shadow of the power generating station as a monument to the early pioneers of electricity in Colorado.

Under its charter, the Colorado Electric Company was established to generate electricity for street lights and for general use in homes and stores. The Denver Gas Company's contract with the city for street lighting had until 1885 to run, however, and so the use of electricity was confined initially to dwellings and places of business.



"Old Sally" was the first generating equipment west of the Missouri River when installed in Colorado Electric's plant in Denver in 1881. The 250-hp Wright steam

Commercial lighting of stores and businesses was initiated in 1881. The famous Daniels and Fisher Department Store, since razed, except for the tower section, was the first store to be arc lighted. In those early days, most residences were not wired for electric lighting. Lighting could be ordered for special occasions, however, and the electric company would furnish temporary wiring, lamps and batteries.

A horse-drawn wagon carrying a load of huge storage batteries to some Denver home became a familiar sight. The batteries were parked outside the residence during the night of the event and were taken away the following morning to be recharged for the next customer.

With the entry of the new electric company into the lighting field, fierce competition developed between gas and electricity as a source of lighting. It must be remembered that the existence of the Denver Gas Company in the first few years depended largely on the use of gas for street lighting. In spite of the fact that the gas street lighting contract still had four years to run, the electric company decided to demonstrate the superiority of electric street lighting in 1881.

engine, used to drive the dynamo, was third largest in the United States at the time.

Lighthouse of the Plains is what such a street lighting tower was called in the early 1880's. There were eight in Denver, 150 to 200 feet high, each supporting eight 3,000-candlepower arc lights. This one was on Capitol Hill.

'Lighthouses of the Plains'

Between 1881 and 1885, the famous "lighthouses of the plains" were constructed. These were eight iron towers ranging from 150 feet to 210 feet in height and located at strategic positions throughout the city. It is known that one tower stood at 16th and Curtis Streets, then on the edge of the residential section but now in the heart of downtown Denver. Others were at West 32nd and Shoshone, 9th Street and Colfax, and 23rd and Ogden.

Each tower carried eight 3,000-candlepower arc lights, capable of lighting a large area. All 64 arc lights were serviced daily by men ascending to the top of the towers in a small cage manipulated by a cable. These towers remained in use until 1891.

In 1885, the electric company won the franchise to illuminate the city's street with electric lights. In a short time, the gas lamps and the lamplighter disappeared. The posts that formerly supported the gas lights were equipped with 20-candlepower electric globes, feeble lights by today's standards yet much brighter than the gas lights they replaced.

Denver's population tripled between 1880 and 1890. During that decade, the number jumped from 35,629 to 106,713, The demand for electricity and gas grew accordingly. To keep up with the increasing demand, several competing electric companies were formed to serve the city. They soon found, however, that as competing utilities they were all faced with expensive and wasteful duplication of facilities which resulted in higher rates to customers, deterioration of services or both. As a result, a series of mergers, consolidations, and outright purchases of electric companies (including the pioneer Colorado Electric Company) took place. On May 7, 1889, the Denver Consolidated Electric Company was formed, representing an amalgamation of those early electric utility companies.

Growth of Gas Business

The gas utility business also showed a steady growth during the Eighties. Although the city had awarded the street lighting franchise to the electric company in 1885, demand for gas lights in homes and business had developed apace. This growth was spurred on by refinements in burner tips, largely because of the introduction of lava and nonmetallic materials and a lower cost of gas service.

The Wellsback mantle, which produced a more brilliant light than an open gas flame, did not come into general use until after 1890. Had it made an earlier appearance, even greater progress would have been made in combating the competition of electricity. Even so, the demand for the gas lights did grow, necessitating an enlargement of the gas retort plant and a move to a new location.

Site for a new coal retort house was purchased at 7th and Wewatta Streets on March 25, 1886. The new plant went into operation in September 1889. It was built for 22 benches, which were interconnecting units of a long furnace. Each bench was capable of producing 50,000 cubic feet of gas per day.

As the electric companies had done earlier, Denver's gas industry also recognized the need for consolidation. To improve service and efficiency and keep rates as low as possible, the Denver Gas Company, the United Gas Improvement Association, and the People's Gas Light Company (the latter two being inoperative companies) merged as one company Oct. 29, 1891. The resulting company was the Denver Consolidated Gas Company, with offices at 1714 Curtis Street.

In the meantime, the new state of Colorado grew on a grand scale during the Eighties. Mining wealth poured forth from Leadville and other mining centers. Smelters were erected for reduction of the ore. Agriculture flourished with the construction of irrigation systems. The livestock industry thrived, and wool production soared. Cities grew in number and size. It was, indeed, the period of the "prosperous Eighties."

The momentum of people into Denver carried beyond the city limits. Several new towns were born in its suburbs. Early pioneers spoke of such towns as Montclair, Colfax, South Denver, Brooklyn, Elyria, Highlands, and others. Several new suburban electric companies were formed between 1890 and 1893 to provide service to those fast-growing communities.

Office of the Denver Gas & Electric Company, taken in about 1903, was situated where the Brown Palace West Hotel is today, at 405 17th Street. The building had been the office of the Denver Consolidated Gas Company before the DG&E and was the office of the Denver Gas & Electric Light Company in 1910. The sign on the roof is electric. The sign on the side of the building, the company's name, is illuminated with gas coming from small holes drilled in pipe letters.

Sherman Act Repealed

The prosperity of Denver and the state suffered a severe shock in 1893, however, when the Sherman Silver Purchase Act was repealed. Under the act, the government had been authorized to make large purchases of silver. Since silver had been Colorado's most important product during the Eighties and early Nineties, the prosperity of the state largely was built on it.

The depression years that followed in the decade of the Nineties saw no new electric companies being formed. In fact, the uneconomical competition between the gas and electric companies for the same business during that time probably was the prime reason for the incorporation of the Denver Gas and Electric Company in 1889. For the first time, all the gas and electric services in the City and County of Denver were brought together under a single management.

On the threshold of the twentieth century, Colorado was again looking toward a promising future. Gold discovered in the Cripple Creek area was taking the place of silver in the state's economy. Farming continued to expand. New crops such as sugar beets created new wealth. Investments in irrigation during the last of the Eighties were to have a profound effect on the economy. By 1910, investments for this purpose increased fivefold, and the irrigated land area increased by more than one million acres, or 75 percent.

Renewed prosperity in the opening decade of the new century brought with it the organization of several new, competing electric companies.

Lacombe Electric Formed

Lacombe Electric Company was incorporated to do business in Denver in April 1900. A street lighting franchise was granted to the new company by the city, and the Lacombe power plant was built at 13th and Zuni Streets. This later was to become known as the Zuni Station of Public Service Company of Colorado.

Denver Gas and Electric Light Company (not to be confused with the Denver Gas and Electric Company, in operation since 1899) was formed Nov. 29, 1909.

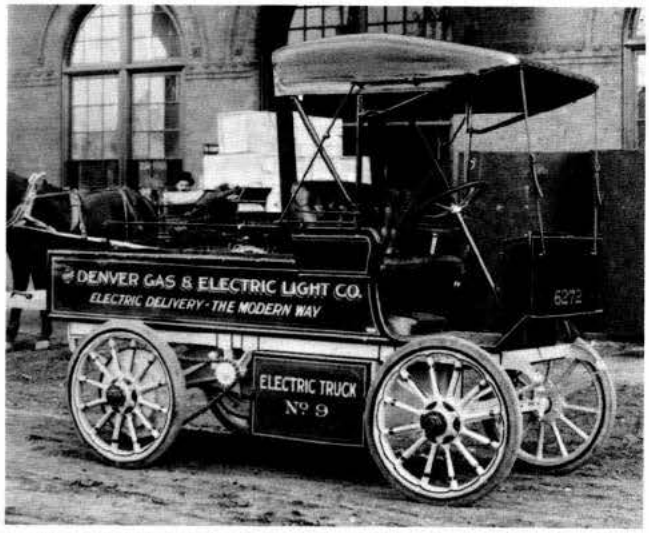
Thus, Denver once again had several competing utilities serving its gas and electric requirements. In that opening decade of the 1900's, Denver's population rose from 133,859 to 213,381. During the same period, population of the state increased 48 percent — greatest of any decade in Colorado's early history.

At the turn of the century, the gas companies, having relinquished the business of illuminating the city to electricity, developed gas cooking, water heating, room heating and other uses. The additional business more than offset the losses in the lighting field.

With the growth of business, work began in March 1906 on a new retort house for 20 additional coal-gas benches, with a capacity of 70,000 cubic feet per day for each bench. In the year 1910, the plant had a grand total of 52 benches, making it the largest hand-fired retort house in the country.

Hand-firing a retort 10 feet long and 28 inches high was no simple task. The stokers, stripped to the waist, opened the retort door and skillfully flung a scoop of coal over the red-hot coking bed. The coal had to be spread deftly, evenly, and loosely. Otherwise, it would pack down, producing an undesirable spongy coke.

Few night scenes, it was said, could equal the picture of the old Denver retort house with its hundreds of firing doors continually popping open with a belch of flame and being fed by the sweat-dripping, half-naked, shovel-wielding men. To those who witnessed the production of gas in those times, the sight of the huge retorts and the sweating shovelers provided a lasting impression.

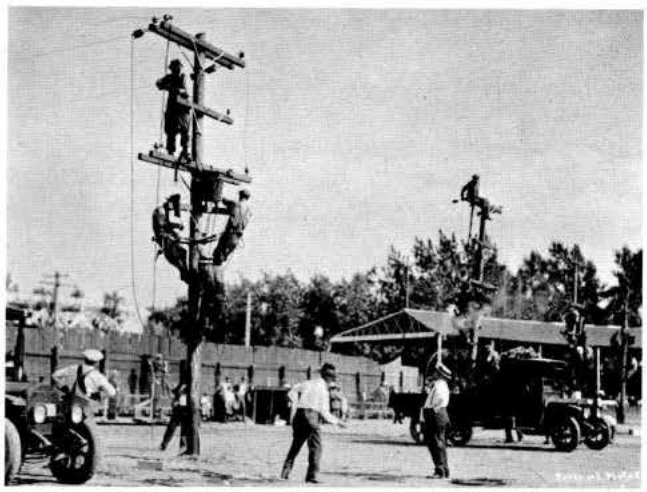


Service truck used by Denver Gas & Electric Light Co. The firm, founded in 1909, was acquired by PSCo in 1923.

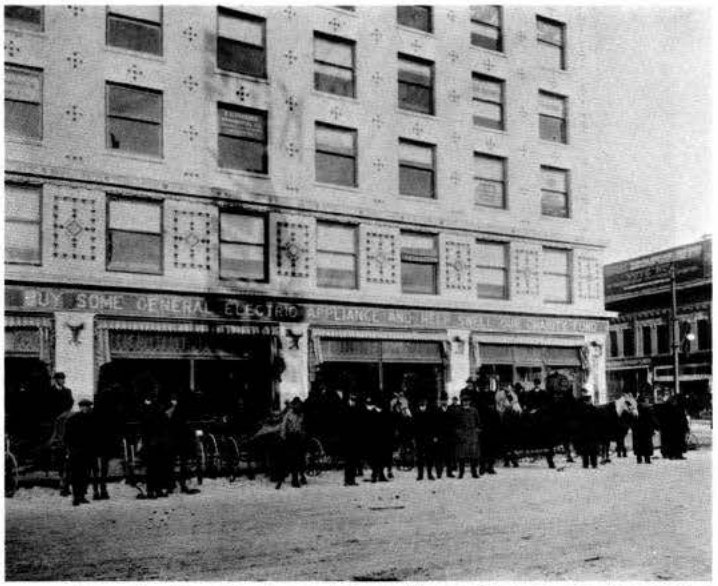
Cities Service Company Starts in Denver

Cities Service Company, which was to become a nationwide utility holding company, was formed in August 1910 with the Denver Gas and Electric Light Company as its foundation. Less than a year later, on July 11, 1911, all gas, electric, and steam heating were combined once again under a single management. The Denver Gas and Electric Light Company was the survivor of the merger and property transfer of all the gas and electric utility companies serving Denver and its suburbs. Headquarters of the new company was in the Gas and Electric Building at 15th and Champa Streets, which had been occupied by the Denver Gas and Electric Company Nov. 10, 1910.

The Gas and Electric Building had been officially opened that Saturday night at 8 p.m., when Mayor Robert Speer pushed a huge button on a platform two stories high. With that action, 13,000 electric lights on the structure flashed on, and a great shout of approval welled up from the throng that filled the 15th and Champa intersection.



Linemen of the Denver Gas & Electric Light Co. install transformers on distribution line power poles using up-to-date equipment, including a modern line truck of the Twenties. This was an intracompany competition at the annual picnic in Denver.



An early day sales team included two salesmen, a horse and a driver. Lineup of teams shown here was the start of a flatiron sales campaign in 1915.

In the early days of the industry, the uses for electricity were demonstrated at every opportunity, as shown here in the late 1920's.

Early Day Sales Promotion

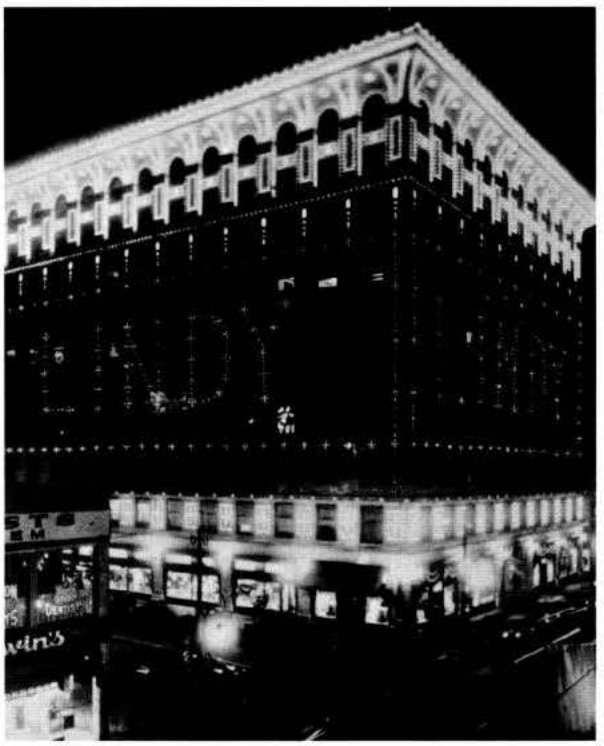
Denver Gas and Electric Light Company entered into a period of normal operation and growth from 1911 to 1922. A sales promotion of the time was described by an employee in this way:

"We used high-pressure, but wholly legitimate, methods to place irons in Denver homes. Every two salesmen were assigned a driver for a horse-drawn wagon, piled high with electric flatirons. We drove down each street, with one salesman covering each side of the street. We would ring the bell, shove a flatiron into the hands of the housewife, explain that this was a free one-week trial of the iron and that we would be back within a day or two to show her how to operate it.

"We would then dash back to the slowly moving wagon and disregard the housewife's usual protests that she didn't want a flatiron, that she already had a perfectly satisfactory sadiron (a heavy iron heated on a stove) and that she did not care to try it. Our reply — thrown over the shoulder as we hurried away — was that she was under no obligation and that we would be back in a day or two. The return call was made on a bicycle so it was obvious that we could not transport the flatiron back to the office.

"Sometimes on our return call the flatiron would still be on the front porch, sometimes just inside the door, and sometimes back in the kitchen. We persuaded the housewife to permit the flatiron to remain for a week's trial or to do some ironing with it. When we returned with the horse-drawn wagon at the end of the week — sometimes it was ten days or two weeks later — an occasional sale would be made."

Sales display area in the old Gas & Electric Building of PSCo at the corner of 15th and Champa Streets, Denver. Taken sometime in the 1930's.



The exterior lights of the old Gas & Electric Building could be used for spectacular lighting displays, as is this example, honoring the lone flight of Charles A. Lindbergh across the Atlantic Aug. 31, 1927.

Public Service Company No. 1

Public Service Company of Colorado was incorporated Aug. 2, 1923, to build a steam-electric generating station to supply electricity to Northern Colorado and to the Denver area. This was the first of three separate Public Service Companies. The second came into being two months after the first. Public Service Company of Colorado II was the merger of PSCo I, the Denver Gas and Electric Light Company, and the Western Light and Power Company into a single company.

Economy and dependability dictated that Valmont Station, the purpose for PSCo I coming into existence, be located near the lignite coal fields of Northern Colorado. The site selected, therefore, was five miles directly east of Boulder.

Construction started in 1923 on a 600-acre plot of ground. A five-story brick building was completed in 1924 to house coal-handling and pulverizing equipment, the boiler, generator, and accessories. Outdoor transformers were installed, and a 120-acre lake was formed immediately adjacent to the plant building. A 20,000-kilowatt Westinghouse turbine-generator was installed.

Valmont Station was one of the largest, most modern powdered-fuel generating stations between the Missouri River and the Pacific Coast when started up in December 1924.

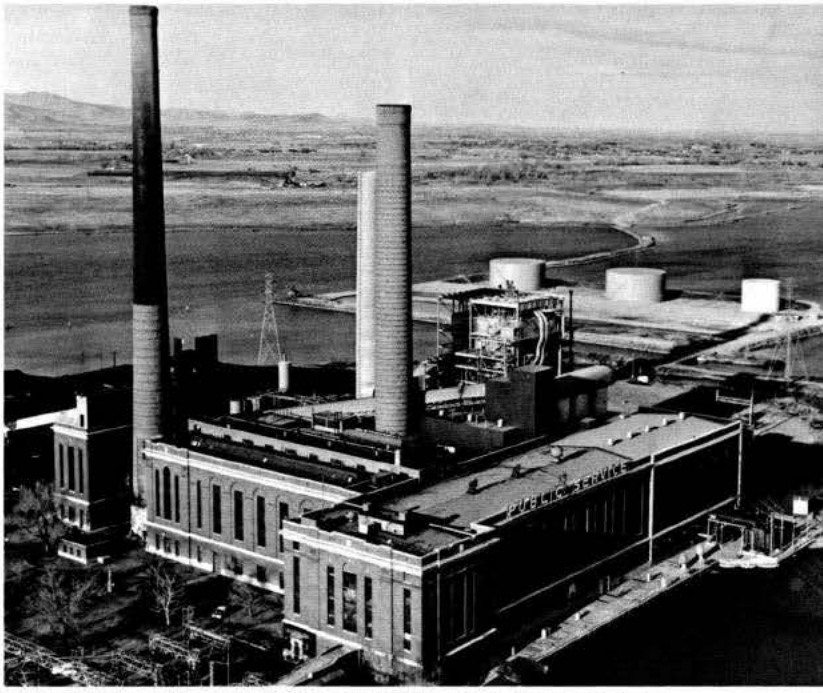
Present Company Born

By the time it went into operation, however, Public Service Company III, the present Company, had been born. PSCo III was incorporated Sept. 3, 1924, merging PSCo II and the Colorado Power Company. By that time, much of the early-day romance of the utility business in Colorado was rolled into the one Company. Some of those early companies are worthy of further examination.

Northern Colorado Power Company

Northern Colorado Power Company, the brainchild of a Denver man named Joseph J. Henry, went into operation in 1907 and was one of the first successful systems of central generation and transmission in the country. Henry had been actively securing control of isolated utility properties for investment appreciation. His plan for the territory north of Denver was to build the latest type of steam generating station at Lafayette — in the midst of the Northern Colorado coal fields — and transmit power at high voltage to the surrounding towns.

Growing towns in the heart of rich agricultural, dairy,



Valmont Steam Electric Generating Station, which generated its first kilowatt in December 1924, was the largest powdered-fuel generating station between the Missouri River and the Pacific Coast. Present gross generating capability of the plant's five units is 314,000 kw.

and mining areas were close at hand for power consumption. Within a 45-mile radius of Lafayette were Boulder, Longmont, Loveland, Berthoud, Fort Collins, Greeley, Fort Lupton, and Brighton. All could be joined in a transmission loop 150 miles in length. And only 47 miles to the north of Fort Collins was Cheyenne, capital of Wyoming, a candidate for service.

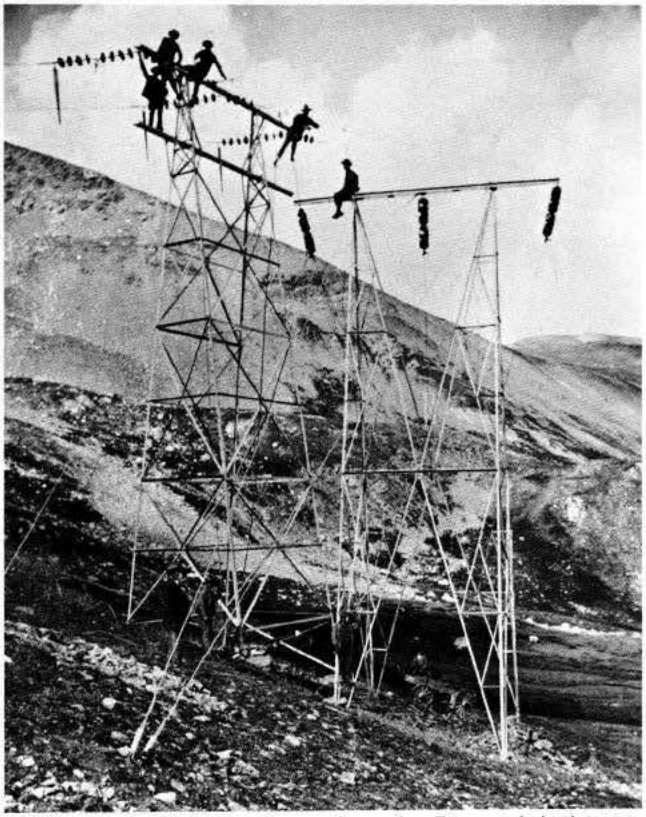
Key to the system was the abundance of coal from the numerous mines surrounding Lafayette, especially those in the Louisville area. They would supply the fuel for the generating system.

Mr. Henry, who managed to interest an eastern financial institution in the project, obtained options on franchises in many of the towns. With the necessary financial backing, Northern Colorado Power Company was organized April 3, 1906. The firm of Westinghouse, Church, Kerr and Company received the contract to build the Lafayette steam generating plant.

Much of the equipment in the plant had been on display at the World's Fair in St. Louis and was among the most modern available. The 6,000-kilowatt plant began turning out power in 1907.

The company prospered for the next seven years. The planned 150-mile transmission line was completed in 1911 and operated at 44,000 volts. During that period, Northern Colorado Power acquired the Cheyenne Light, Fuel and Power Company in 1906 and the Boulder Electric Light and Power Company in 1914.

At that point, fortunes of the company changed. Technical problems, strikes, and the financial depression in the area retarded progress. Reorganization of the company became necessary. On Sept. 10, 1914, the reorganization was accomplished, and the name was changed to Western Light and Power Company, which it remained until merged into PSCo II Oct. 3, 1923.



Working on the Shoshone line on Argentine Pass early in the century.

Central Colorado Power Company

Central Colorado Power Company was founded in 1906 by Myron T. Herrick, who later became governor of Ohio and ambassador to France. Herrick had some theories on hydroelectric generation that needed to be tried, and he came to Colorado to do so.

Hydroelectric power resources were thought to be limitless in the Rockies. Thriving mining camps throughout the mountains seemed ready markets for electricity. Livestock raising and agriculture also were becoming important industries.

Extensive plans were formulated by Herrick. He envisioned an era of hydroelectric generation the likes of which had never before been seen by man. In this trackless frontier, high up on the Continental Divide in Colorado, a proving ground would be established on which to demonstrate methods and practices of power generation that would revolutionize the industry.

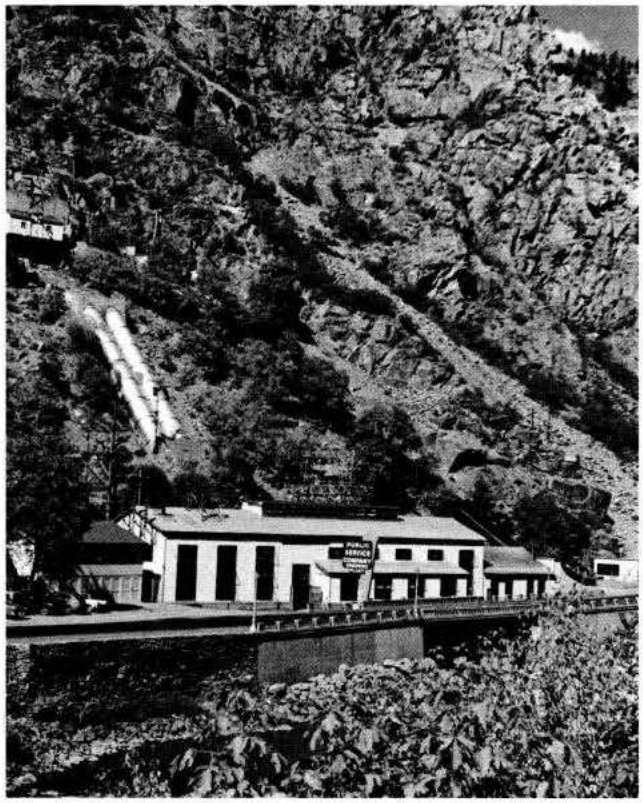
Shortly after Herrick incorporated Central Colorado Power Company Nov. 13, 1906, work started on the construction of Shoshone hydroelectric plant in the majestic Glenwood Canyon about eight miles upstream from Glenwood Springs. At the same time, work began on a 150-mile-long, 90,000-volt transmission line, which would cross the Continental Divide three times on its way to Denver. It was for many years the loftiest of its kind in the world.

Unique Shoshone Hydro

The Shoshone plant, unlike any other hydroelectric plant in the world, was to depend on river flow rather than captive water from a reservoir for its power. Early in 1907, therefore, construction was started on a diversion tunnel to divert the Colorado River. The tunnel was two and one-third miles in length through the solid granite wall of the canyon to the power plant. Even today the tunnel is regarded as a remarkable engineering feat.

Shoshone started generating power May 24, 1909. At first its rated capacity was 10,000 kilowatts. This was later increased to 14,400 kilowatts. Today, as then, the plant operates year around. Winter production, however, is curtailed in direct proportion to the decrease of water flow in the river. Five transformers boost the generators' 4,000-volt power to 115,000 volts today for transport over the famous Shoshone transmission line to Denver.

Many aspects of this famous line are among the most unusual in the world. Beginning at the plant itself, three shining aluminum cables leap 1,800 vertical feet to a tower perched atop the cliffs. Huge steel towers anchored in solid granite suspend the line in its sweep to the canyon rim. In its 150-mile journey to Denver, the line is suspended on more than 1,000 towers and passes over some of the most forbidding terrain in the world. It snakes its way over Hagerman Pass at 12,055 feet, Fremont Pass at 11,346 feet, and rises to 13,532 feet to cross

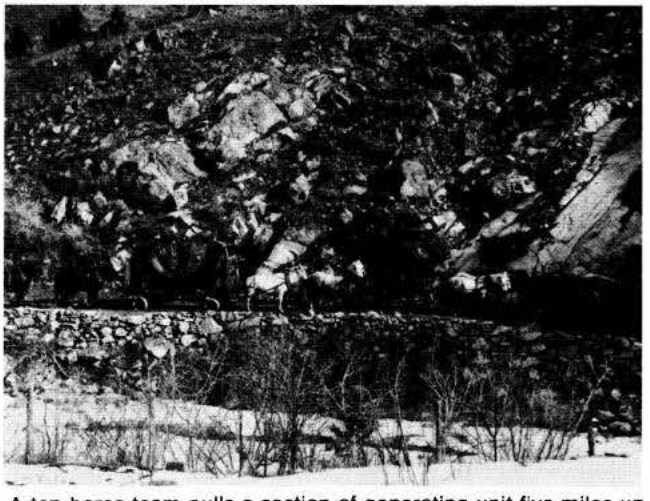


Shoshone Hydroelectric Generating Station, one of PSCo's oldest and most colorful plants, is located in the beautiful canyon of the Colorado River about eight miles east of Glenwood Springs. The plant, in operation since 1909, has a gross capability of 12,500 kilowatts.

Argentine Pass. The line terminated in a substation two miles west of Denver. The great line was completed early in 1909, in spite of the rugged terrain and treacherous weather of the high mountains it had to cross.

Diversion tunnel carrying water from the Colorado River to the Shoshone Hydroelectric Plant is 2½ miles long and bores straight through the granite wall of the canyon.

Workers being taken to construction site of Barker Dam near Nederland in the first decade of this century.



A ten-horse team pulls a section of generating unit five miles up rugged Boulder Canyon during construction of Boulder Hydroelectric Plant, which went into operation in 1910. The horses to the rear are relief teams.

Boulder Hydroelectric Station, nestled in Boulder Canyon five miles west of the city of Boulder, has been generating electricity since August 4, 1910. The 20,000-kw plant is fed by Barker Reservoir, near Nederland, which stores more than 3½ billion gallons of water.

Boulder Hydro Has False Start

Another segment of Herrick's dream included the construction of a hydroelectric plant in Boulder Canyon about five miles west of Boulder. Work began on the Boulder plant simultaneously with that on Shoshone in 1906. The construction on Boulder Hydro was suspended the following year, however, because of depression conditions that developed. Construction resumed in 1909.

The original dam site was abandoned in favor of that where Barker Dam now sits near Nederland. Barker Reservoir is 12 miles west of the generating plant on Middle Boulder Creek. The gravity line is 11.7 miles in length and drops from Barker Reservoir at 8,188 feet above sea level to Kossler Reservoir at 7,697 feet, containing four tunnels and seven siphons in its length.

It took 18 months to complete the dam. The dam is 175 feet high and stretches 720 feet across Middle Boulder Creek at its crest. Actually, construction of the gravity line to feed the hydro plant offered more engineering difficulties than did the dam. Clearing of dense stands of timber, tunneling and "mountain moving" were among the thorny problems to be solved.

Construction methods and machinery were relatively crude by today's standards and, therefore, magnified the scope of the venture. Water behind Barker Dam, when released, flowed in the gravity line to Kossler forebay on a mountain above the plant. The penstock feeding the plant dropped 1,828 feet from the forebay, creating a pressure of 800 pounds per square inch at the plant. This tremendous pressure caused the riveted butt-joints of the penstock pipe to leak excessively.

Out of the leakage problem arose a new method of acetylene welding, then in its infancy. After much experimentation, it was discovered that hammering the welds with a ballpeen hammer while the weld was still warm prevented joints from cracking when the weld cooled. Thus, ballpeen welding was introduced to the world.

One For The Books

Experimentation was the watchword in construction and operation of the hydro plant itself. Practical knowledge in high-pressure hydroelectric generation was virtually nonexistent in the early 1900's. Many of the principles derived from "theory in practice" at Boulder Hydro were later used as examples in textbooks on power plant design.

When completed, the plant operated on a higher head (1,828 feet) than any other hydro plant in the nation.

Water flowed from Barker Reservoir for the first time Aug. 4, 1910. Boulder Hydro's turbines produced 10,000 kilowatts at that time. Over the years, additions to the plant have increased the capacity to 20,000 kilowatts.

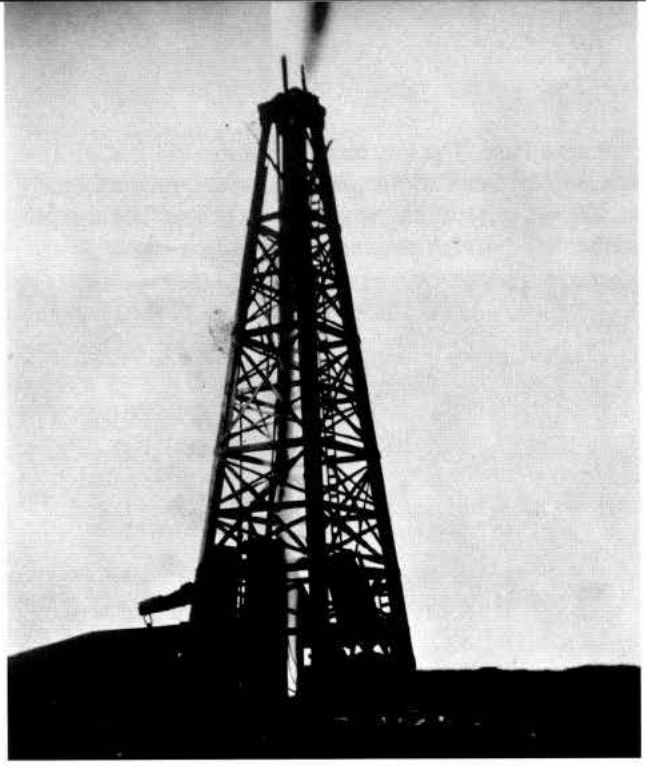
The five years following completion of the Boulder Hydro project were trying for Central Colorado Power Company. Having completed its plants and systems in the face of great difficulties, and now ready to deliver power, it found the market dwindling. Mining had slowed in the districts of Leadville, Dillon, Georgetown and Boulder.

At the same time, although Denver was still growing, its rate of growth was retarded to such an extent that the population increase from 1910 to 1920 was only 20 percent — compared with the phenomenal 48 percent growth in the previous decade. A combination of these circumstances, coupled with the burden of a $15 million indebtedness, caused the financial collapse of the ambitious project.

A reorganization was brought about, and on April 2, 1913, the Colorado Power Company was formed to acquire the property and assets of Central Colorado Power Company and the Leadville Light and Power Company, which had been organized by the same group in 1907.

Following the reorganization, Colorado Power Company purchased several utilities during 1915 and 1918. The company did not particularly strengthen its position as a large-volume producer of electric power by these purchases, however, for all but one of these properties were isolated systems.

The present Public Service Company of Colorado (PSCo III), as indicated earlier, came into being Sept. 3, 1924, with the merger of PSCo II and Colorado Power Company. With that action, Shoshone Hydro and Boulder Hydro became part of Colorado's largest integrated electric generation and transmission system.



Cheyenne. Discovery well in the field, shown here, "blew in" on Armistice Day, Nov. 11, 1923, knocking down the derrick and rigging. Picture was taken before the crash.

The First Natural Gas

Transporting of natural gas created a great deal of interest nationally in the early Twenties. It was reasoned that natural gas could be transported by pipeline from the source fields to cities where it could be used. Because of the lower cost and higher heat value of natural gas, it was seen as having a great potential for general heating purposes.

On Armistice Day, Nov. 11, 1923, the discovery well in the Wellington oil field, 10 miles north of Fort Collins, "blew in." The force was so great that the derrick and rigging were blown all over the landscape, and capping of the well took many days.

Eight months later, in July 1924, the Mitchell well in the same field came in with an explosive roar. The escaping gas ignited in a billowing torch 150 feet high. The immense flame was said to be visible in Denver, about 75 miles away.

The Colorado-Wyoming Gas Company was formed Dec. 1, 1925, to transport the gas coming from the Wellington field. Two pipelines were built by Colorado-Wyoming Gas. One extended south to Fort Collins and was completed Dec. 9, 1925; the other carried gas north to Cheyenne and was completed July 7, 1926.

Colorado-Wyoming Gas Company became the property of PSCo Sept. 22, 1931, when its 50,000 shares of common stock were turned over to PSCo in settlement of a debt owed by Cities Service Company. Colorado-Wyoming continued to operate as a subsidiary of PSCo until Dec. 31, 1964, when it merged with Western Slope Gas Company, another PSCo pipeline subsidiary.

Gas Arrives From Texas

In the meantime, negotiations between PSCo and the City of Denver, which had been under way for some time, were consummated on Sept. 19, 1927, giving PSCo the right to distribute natural gas in the city. Shortly thereafter, Colorado Interstate Gas Company began building a pipeline from the gas fields in the Texas Panhandle to Denver.

Officials of Denver and PSCo turned the valve admitting natural gas to the Denver system for the first time at 9 p.m. June 23, 1928. The ceremony signaled the completion of a pipeline extending 340.7 miles. Among the several cities served along the way was Pueblo. The Pueblo Gas and Fuel Company became a subsidiary of PSCo in 1943 and was redesignated a division of PSCo in July 1973.

With the arrival of natural gas, the fires that had burned night and day for years in the retorts for the manufacture of gas were banked for the last time Aug. 1, 1928.

Natural gas was introduced in Denver on June 23, 1928, through pipeline constructed by Colorado Interstate Gas Co. from Texas Panhandle gas fields. This photo shows ceremony turning gas into the city mains of Denver. Denver Mayor Ben F. Stapleton is third from left, Guy W. Faller, PSCo vice president, is third from right.

PSCo Becomes Independent

On Nov. 29, 1943, Public Service Company of Colorado became a locally owned and operated company. At the order of the Securities and Exchange Commission, Cities Service Power and Light Company, a subsidiary of Cities Service Company, divested itself of all PSCo's common stock, which was purchased by some 8,300 investors. By the end of 1943 there were approximately 12,500 holders of preferred and common stock in PSCo.

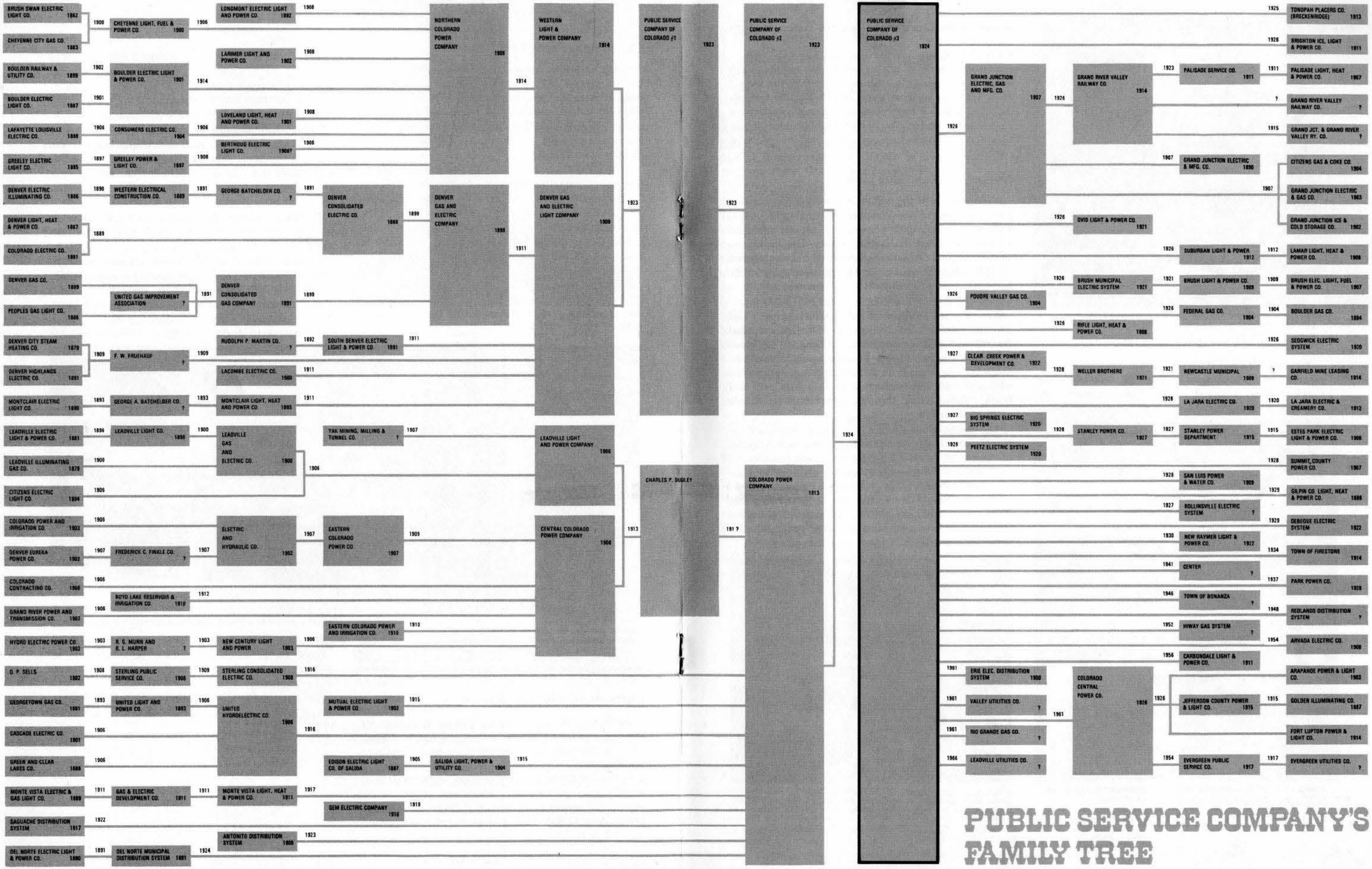
Population of Colorado passed the 2 million mark in 1966. By 1975, Colorado's population had reached 2,584,383, according to the state's Planning Division, and the Company's common and preferred shareholders had grown to more than 43,000.

In the years following World War II, the state's population and economic growth were phenomenal. In the 31 years between 1943 (when the Company became independent) and through 1974, the number of gas customers rose from 99,893 to 564,607 and electric customers grew from 155,523 to 653,091.

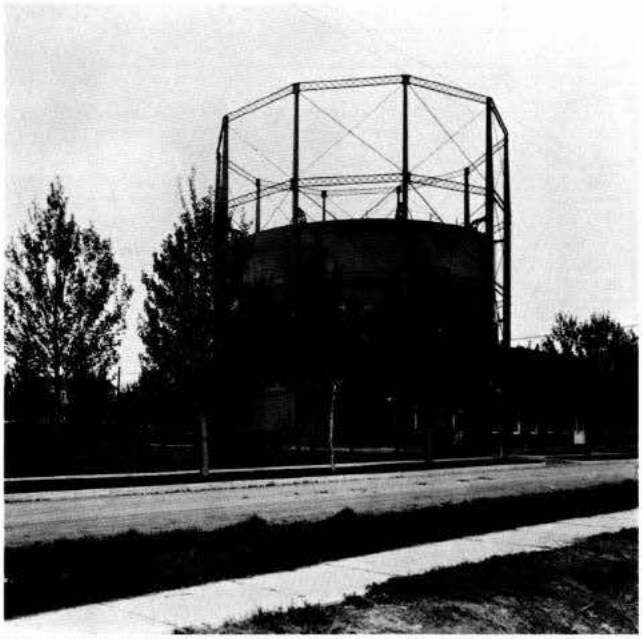
During that period, PSCo undertook a vast expansion program necessary to keep pace with the growth in demand for its services.

Illustrative of this, the Company's investment in property, plant and equipment was $72 million in 1943. By 1975 it had grown to more than $1.1 billion. Simultaneously, generating capacity increased from 202,000 kilowatts in 1943 to nearly 2.5 million kilowatts at the start of 1975. At that time, an additional 680,000 kilowatts of generating capacity was under construction, 330,000 kw of which was nuclear. A second unit of 350,000 kw at the Comanche Steam Electric Station was scheduled for operation in 1976.

Similarly, gas sales grew from 15 billion cubic feet annually in 1943 to more than 205 billion cubic feet by 1975.



PUBLIC SERVICE COMPANY'S FAMILY TREE



Long gone from the scene is this partially filled gas holder, in which gas was stored for peak period use during the day.

New Pipelines to Denver

Between 1947 and 1953, several new gas transmission pipelines into Denver were built by Colorado Interstate Gas Company. A 20-inch pipeline was completed from Hugoton, Kansas, in 1947, and in 1949 system capacity was increased when another 38 miles of 20-inch line was installed, looping the system at the Denver end. A 215-mile line of similar size was built in 1951 by CIG from the Amarillo Gas Field to Kit Carson, Colorado, the half-way point on the Denver-Hugoton line.

The following year, the Amarillo line was extended to connect with the 38-mile line built near Denver in 1949. This provided PSCo with another direct pipeline supply from a gas field. Gas from five states — Colorado, Kansas, Oklahoma, Texas, and Wyoming — is delivered to PSCo by Colorado Interstate.

Western Slope Gas Company was incorporated in 1952, as a wholly owned subsidiary of PSCo, to build and operate a pipeline to bring gas to Grand Junction. The parent company was, and still is, its largest customer. The 13 miles of 10-inch pipe connected the city's distribution system to the Asbury Creek Field. Eventually depleted, that field now serves as a gas storage reservoir for peaking and emergencies.

Merging of Pipeline Subsidiaries

The gathering lines and transmission system of Western Slope Gas gradually covered a wider area. In 1964, Western Slope Gas merged with another subsidiary of PSCo, Colorado-Wyoming Gas Company, to become at that time the largest intrastate gas pipeline company in the nation.

The 100th producing well supplying natural gas on Western Slope Gas Company's entire system was connected in 1963.

By 1976, Western Slope Gas had 142 employees, a capital investment of approximately $48 million, 1,835 miles of gathering and transmission pipeline, and annual gross gas sales of more than 78 billion cubic feet. At the time, PSCo was the largest customer, purchasing 55 billion cubic feet. Western Slope Gas also served 12 other gas distribution companies and 24 industrial customers.

Nation's Highest Gas Line

Construction of the highest natural gas transmission line in the country was climaxed by Western Slope Gas Company Sept. 8, 1962, when natural gas was turned on for the first time in the San Luis Valley. The line crosses the Continental Divide near Summitville at an elevation of 12,060 feet. It crosses the Divide twice again to the north on its way to Leadville and two more times on its journey to Eldorado Springs in the Front Range.

The Western Division of the pipeline company tied together two isolated systems in 1974. One extended from Grand Junction northward to Rangely. The other extended from DeBeque in a northeasterly direction to Steamboat Springs. Both of these systems were joined with a 26-mile line between West Douglas Creek and Black Sulphur Creek, through one of the most remote areas of Colorado.

The Southern and Eastern Divisions of Western Slope Gas are connected and extend from the southern border of the state in La Plata County to the northern border of the state in Weld County. These two divisions were intertied in 1969 with a line over Rollins Pass (also known as Corona Pass). Construction of this line proved that the necessary trenching and backfilling could take place through a delicately balanced ecological system with little or no disturbance.

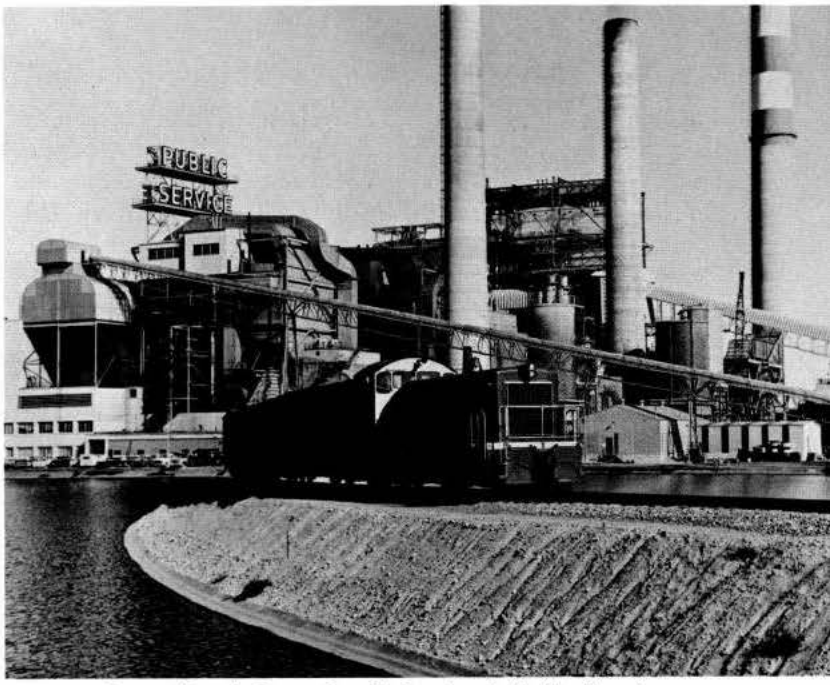
A bulldozer cuts a trench for the Hunters Canyon line of Western Slope Gas Company near Grand Junction in the fall of 1966. Difference in the highest and lowest wells on this system was 1,200 feet.

Electric Operations Grow

Electric operations of PSCo grew accordingly. The years following PSCo's establishment in 1943 as an independent company were marked with great development. In existence at the time were steam electric generating stations at Sterling, Brush, Lafayette, Salida, Alamosa, Cheyenne, Grand Junction, Boulder, and Denver. Of those, existing today are the Valmont Station at Boulder, the Zuni Station in Denver and the Alamosa Plant. Obsolesence claimed the others.

Hydroelectric generating stations, more numerous than today, were located at or near Georgetown, Dillon, Salida, Glenwood, Rifle, Estes Park and Boulder. In addition, the Company did and still does operate under contract a small hydro plant near Palisade. Today, Company-owned hydroelectric plants in operation on the Company's system are at Salida, Boulder, Glenwood Springs, Georgetown and Cabin Creek.

Since 1943, larger, more efficient plants that have been constructed are the Arapahoe and Cherokee Stations at Denver, Cameo Station at Palisade and Comanche Station at Pueblo, all steam electric; Cabin Creek near Georgetown, 35 miles west of Denver, a pumped storage hydroelectric project; and Fort St. Vrain Nuclear Generating Station near Platteville, 35 miles north of Denver.



Cherokee Steam Electric Generating Station, located in Northeast Denver, has a total generating capability of 780,500 kw. The largest station on the PSCo system, Cherokee has four units, the first of which went into operation in September 1957.

Cabin Creek Pumped Storage

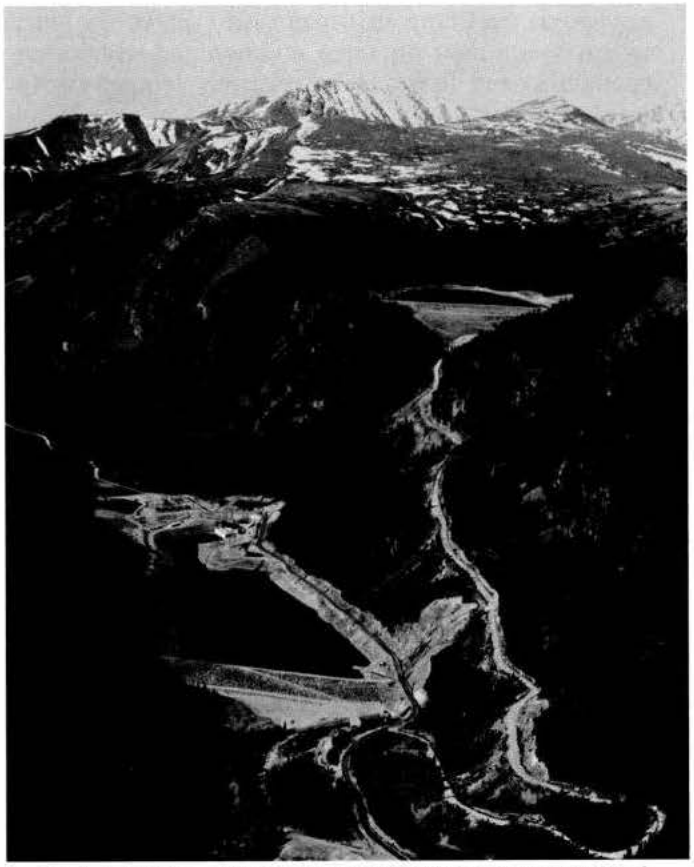
Cabin Creek Pumped Storage Project is the highest hydroelectric project in the United States and the largest in Colorado. It has two reservoirs. The dam of the lower reservoir crests at an elevation of 10,012 feet above sea level, and the upper one crests at 11,202 feet. The two reservoirs are joined by a 4,300-foot power tunnel and penstock.

The powerhouse on the lower reservoir has two units with a capacity of 150,000 kilowatts each. The total average capacity for both units over a five-hour generating cycle, however, is 268,000 kilowatts.

In operation, the motor-pump combination raises water from the lower reservoir to the upper reservoir during off-peak periods at the rate of 70 million gallons per hour. It then becomes a turbine-generator when the water is released for generation at peaking periods. There are two such units in the plant's powerhouse.

In effect, Cabin Creek acts like a massive battery to store surplus off-peak power generated by steam electric stations.

Cabin Creek construction began in 1964, and the project went into production in 1967. The following year it was given the highest honor of the electric utility industry. The Company was presented the Edison Award of the Edison Electric Institute for "an outstanding and successful undertaking, involving courageous and ingenious concept, and engineering and construction under severe conditions of altitude, climate, and terrain."



Cabin Creek Pumped Storage Hydroelectric Project, completed in 1967, won the electric utility industry's highest honor, the Edison Award, as an outstanding engineering and innovative accomplishment contributing to the advancement of the entire electric utility industry.

Gas Research

The Company is also actively engaged in gas research and development through the efforts of the American Gas Association and the Midwest Gas Association and as a contributor to the Institute of Gas Technology. This includes research in the manufacture of high-quality synthetic gas from raw materials such as coal and oil shale, in developing new gas equipment and improvements in utilization of gas for refrigeration, incineration and many other purposes.

Still another prospect for improving the nation's gaseous fuel supply lies in coal gasification. The Company is supporting research along that line being conducted by the American Gas Association, the Office of Coal Research and the Electric Power Research Institute.

Gas Storage in Coal Mine

The continued development of the Leyden Mine Gas Storage Facility 14 miles northwest of Denver is a particularly interesting aspect of the Company's research and experimental program. The underground storage of natural gas in an abandoned coal mine is believed to be the first of its kind — attracting worldwide attention.

Leyden was one of 16 structures investigated as possible storage sites. Leyden was chosen because it was close to Denver, the Company's major load center; the mine cavern would have optimum injection and withdrawal conditions; and it would be relatively inexpensive to convert to storage.

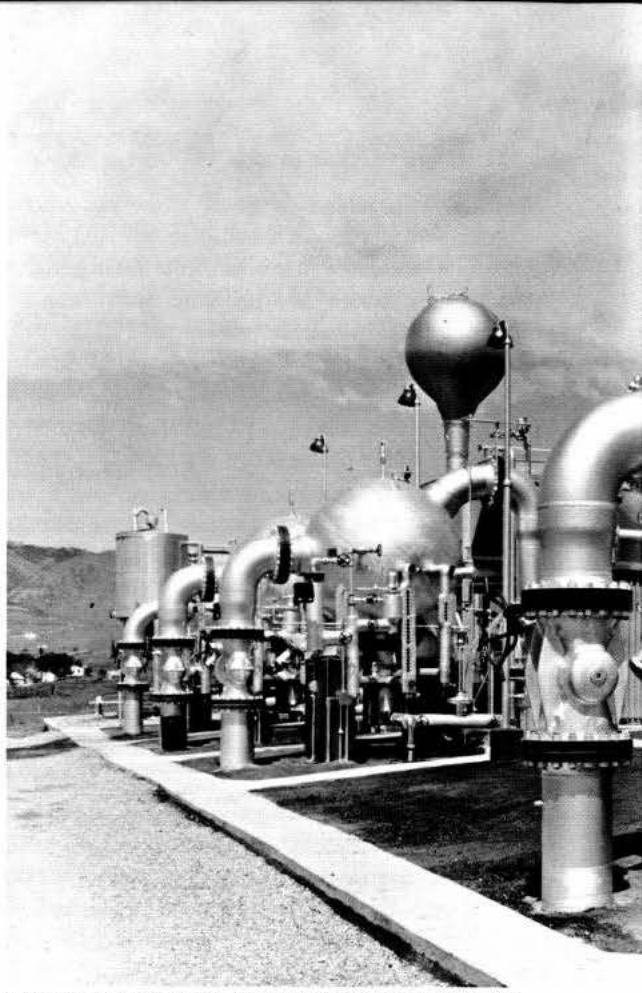
Abandoned in 1950, the mine consisted of two horizontal coal seams, eight to 10 feet thick, 700 to 1,000 feet below the surface. During 47 years of mining, some 6 million tons of coal were removed, leaving a void of 150 million cubic feet.

Conversion of the mine to a gas storage facility began in April 1959 with the drilling of the first well. By December of that year, water had been removed, all openings had been sealed, and the cavern was tested for its ability to hold gas. Development of the facility continued, and by 1965 it contained 11 gas injection/withdrawal wells, two water withdrawal wells and five observation wells.

Leyden Proves Value

The first real test of the project occurred during the period from Dec. 10, 1961, to Jan. 9, 1962. On the final day of that period, in which temperatures dropped to -25 degrees, the mine supplied approximately 12% of the gas consumed in the Denver Metropolitan area.

In 1974, another test had to be met — the gas shortage. To stay abreast of the rising customer needs, PSCo asked CIG for a 6% increase in gas to meet its peak-day requirements. CIG was unable to satisfy the request, so PSCo planned to offset that 6% deficit in part by increasing the deliverability of the Leyden mine. The 12th well was started in June 1974. The project was completed for the 1974-75 winter season, increasing the mine's deliverability by 25 million cubic feet per day, from 160 million c.f. to 185 million.

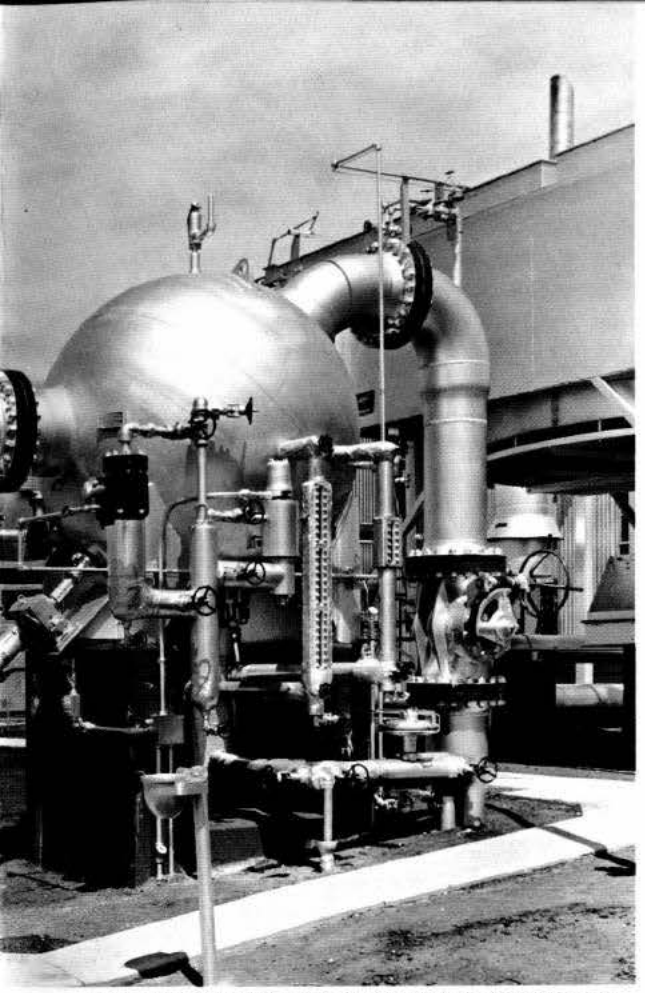


Aboveground facilities at PSCo's Leyden Mine underground storage facility. This was the first aban-

The Asbury Creek Gas Storage Facility, 15 miles north of Grand Junction, was started by Western Slope Gas Company in 1965. This is a nearly depleted natural gas field that supplied gas to the city of Grand Junction initially in 1952. The field now serves as a storage facility for gas used to help meet the Western Division's peak period energy needs during the winter. The field has a daily deliverability of 4,816,000 cubic feet of gas.

To supplement the supply at Asbury, another depleted field was located. The Fruita field is about four miles northwest of the original storage facility. The first injection into the project was made in 1971. Now, Fruita has a daily deliverability of 1,320,000 cubic feet. Together, the two fields have 4.1 billion cubic feet of storage capacity for use in the Western Division during peak usage periods.

The underground storage of gas, such as at Leyden, Asbury Creek, and Fruita, ensures a reserve supply of gas during extreme and extended cold weather. It also improves the reliability of service and makes substantial contribution to pipeline capacity by improvement of load factor. The effectiveness of underground storage has been proven so completely that further research is being conducted into the feasibility of other natural gas storage projects on the PSCo system.



doned coal mine known to be used for gas storage.

Independent Gas Development

As the need for natural gas has increased so have the difficulties in purchasing the gas from independent producers. To alleviate some of the problems of purchase, the Company's role expanded from supplier to include that of independent developer.

In 1968, Western Slope Gas embarked upon a program to acquire its own production. These efforts were moderately successful, but soon it became apparent that a separate company could handle this program more efficiently and, at the same time, expand into fields where WSG had not ventured.

Fuelco Formed To Increase Reserves

Fuel Resources Development Co. (Fuelco), a wholly owned subsidiary, was incorporated under the laws of the State of Colorado Dec. 11, 1970. Fuelco officially opened its doors for business Jan. 4, 1971, with offices in the Public Service Company Building, 550 15th Street, Denver, and was staffed by members of Western Slope Gas Company's gas supply division.

Fuelco's first and foremost assignment was to develop new natural gas reserves in order to provide reliable supplemental supply for the natural gas customers of Western Slope Gas Company and PSCo.

The supply problem had become quite obvious. The national natural gas reserve life index had dropped 39% in the previous decade to an 11.8-year life (excluding Alaska) by the end of 1970. And the downward trend was continuing. Although there was no imminent shortage of natural gas in PSCo's area at that time, prudence dictated that steps be taken to locate new reserves for dedication to PSCo. Western Slope Gas had initiated this effort by acquiring several gas-producing properties in Western Colorado and a modest undeveloped leasehold in prospective gas areas.

By December 1970, Western Slope owned gas production of 4.5 million cubic feet per day, a leasehold of 28,000 acres, and had dedicated wellhead reserves estimated at 239 billion cubic feet. But the obligations and restrictions arising from its status as a large instrastate gas pipeline company prevented Western Slope Gas from taking full advantage of exploration opportunities.

Competition For Gas

There was rapidly increasing competition from gas suppliers of other urban and industrial areas throughout the country in exploration for Colorado's undiscovered but potential gas reserves. With the heightened exploratory drilling in gas-prone areas throughout the Rocky Mountain states, Fuelco was a logical approach to alleviating the problem.

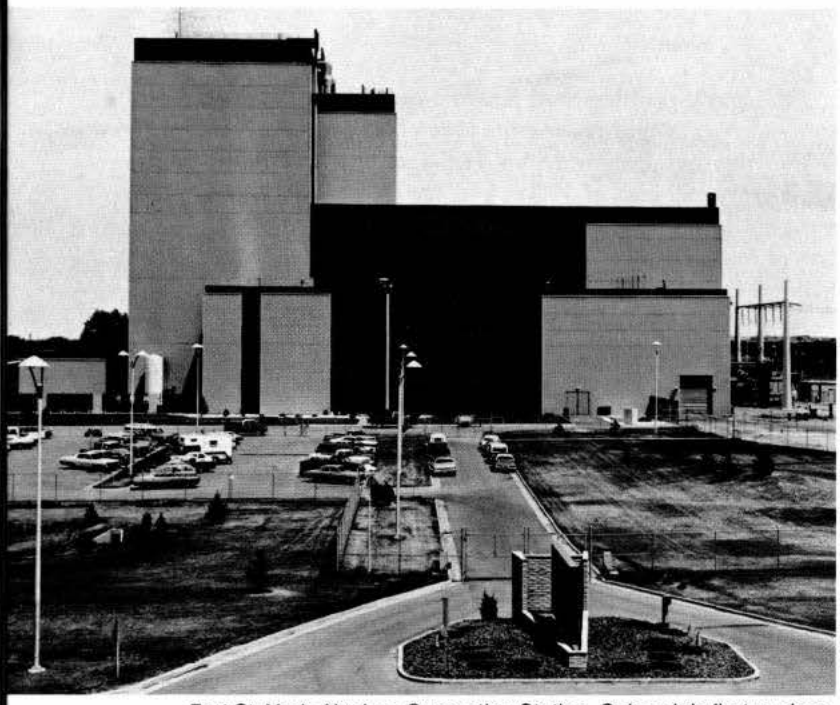
Fuelco's first order of business was the purchase of Western's exploration and production facilities (including eight producing gas wells in the Thornburg and Garmesa fields) and oil and gas leasehold interests and participations in scattered areas of Colorado, Wyoming and Utah.

Initially, the goals of Fuelco were to search for, purchase, lease or otherwise acquire and to own, develop and operate facilities to sell natural gas, oil, oil shale, sulphur, uranium and all other minerals, either alone or in association with other corporations, toward the end of making a maximum profit for its stockholders. At the same time, another strong consideration was to be a good corporate and public citizen.

At the end of Fuelco's first two years of operation, these goals were still valid, but they were broadened to recognize and pursue all basic energy sources, specifically adding geothermal resources and coal to the earlier list. Objectives were widened to develop such energy sources, where possible, for the direct benefit of PSCo and its subsidiaries.

Fuelco has interests in Colorado, Louisiana, Montana, Texas, Utah and Wyoming. It is producing both natural gas and oil. By 1975, Fuelco had 852,932 net acres under lease, with 57 producible wells and with estimated reserves of nearly 49 billion cubic feet of gas.

Progress and growth have been characteristic of the Company through the years.



Fort St. Vrain Nuclear Generating Station, Colorado's first nuclear power facility, is the most modern and efficient nuclear station in the United States. Gross generating capability is 330,000 kw.

Fort St. Vrain Nuclear

Fort St. Vrain Nuclear Generating Station, situated near the confluence of the South Platte River and St. Vrain Creek, is not far from the site of the former Fort St. Vrain, a major fur trading post of the mid-1840's.

The decision to build the nuclear generating station was the result of more than a decade of research and investigation. The Company launched into a study of various concepts of electric generation with nuclear power in 1954, shortly after the U.S. Atomic Energy Commission made nuclear information broadly available to private industry.

The early studies were conducted, for the most part, through the Company's membership in the Rocky Mountain Nuclear Study Group, formed in 1954, and the Rocky Mountain Pacific Nuclear Research Group, established in 1958.

In 1958 the Company began to concentrate its studies on the high temperature, gas-cooled reactor (HTGR) concept. At that time, it joined 52 other investor-owned utilities to form High Temperature Reactor Development Associates in the construction of a 40,000-kilowatt prototype HTGR plant at Peach Bottom, Pa.

Full attention was focused on the HTGR concept in 1963, when PSCo took the lead in forming Advanced Reactor Development Associates (ARDA). This group immediately initiated studies of the feasibility of a commercial-size HTGR plant, based on Colorado economics.

Thus, the Company's decision, announced in 1965, to build the Fort St. Vrain Nuclear Generating Station was based upon careful analysis and years of intensive study and research.

Construction started immediately after the granting of a construction permit by the U.S. Atomic Energy Commission Sept. 18, 1968. Major construction was essentially completed by mid-1973, and a full-power operating license was granted by the Atomic Energy Commission Dec. 21, 1973.

Initial Fuel Loading

The initial fuel load was placed in the reactor between Dec. 27, 1973, and Jan. 16, 1974, and preoperational testing started. Initial criticality — the self-supporting chain reaction in the nuclear reactor — was demonstrated Feb. 9, 1974, in ceremonies attended by dignitaries from the U.S. Congress, Atomic Energy Commission, Gulf General Atomic and PSCo. Gulf General Atomic (now General Atomic Company) was designer and prime contractor of Fort St. Vrain.

Fort St. Vrain's advanced converter reactor is fueled with a mixture of uranium and thorium. This results in considerable fuel economy because thorium, an element much more plentiful than uranium, is converted during operation of the reactor to a fissionable isotope of uranium. In brief, this means that Fort St. Vrain actually produces a part of its own fuel as it generates electricity.

The plant's turbine/generator has a capacity of 330,000 kilowatts and was expected to go operational in early 1976. The high pressures and high steam temperatures made possible in the HTGR provide efficiencies equivalent to those of the most modern fossil fuel generating plants — the first nuclear plant in the world to do so. It is also the first in the United States to use a prestressed concrete reactor vessel.

Because of its higher efficiency, which means that more of the reactor heat is utilized to produce electricity, there is less waste heat to be discharged into the atmosphere. Fort St. Vrain also utilizes cooling towers, which eliminate the need to discharge any heated water directly into nearby streams.

Nuclear Information Center

An information center at the Fort St. Vrain site is open year-round. It has hosted visitors from each of the 50 states and from more than 75 foreign nations.

Fort St. Vrain does not represent the end of PSCo's pioneering role in the field of nuclear power. PSCo is a member of a utility group sponsoring a development program on a gas-cooled fast breeder reactor with General Atomic Company. The fast breeder, which produces more fuel than it consumes, would employ many of the basic features used in the Fort St. Vrain HTGR.

Research and Development

In addition to its activities in the field of nuclear power locally, the Company also continues to support research and development in this and other fields nationally. It is one of nearly 500 member organizations contributing to the work of the Electric Power Research Institute (EPRI).

The EPRI is an outgrowth of the Electric Research Council, formed in 1965 to coordinate sponsorship of electric energy research. Represented in that group were the Edison Electric Institute, the Tennessee Valley Authority, the American Public Power Association, the National Rural Electric Cooperative Association, and the U.S. Department of the Interior.

The most important product of this group was the R&D Goals Task Force, which issued in 1971 the most comprehensive study ever developed on electric utility R&D requirements. It called for total R&D expenditures by the utility industry, federal government, and electric equipment manufacturers averaging $1.12 billion each year for the balance of the century. The EPRI was formed in 1973 to provide the direction and support for the program.

There are four divisions within the EPRI.

The Nuclear Power Division is responsible for research in nuclear safety, analysis, engineering, operations and materials.

The Fossil Fuel and Advanced Systems Division promotes development of new technology for using fossil fuels. This division also is responsible for conversion and storage systems, and for new energy sources; such as, fusion, solar, geothermal, magnetohydrodynamics and fuel cells.

The Energy Systems, Environment and Conservation Division is concerned with supply, demand and conservation of energy; system planning and simulation; and environmental problems.

The Transmission and Distribution Division investigates improvement of overhead and underground electric transmission and distribution systems.

By early 1975, there were more than 320 research projects under EPRI management or in contract negotiations, the value of which was in excess of $220 million. Approximately half the research funds were aimed either directly or indirectly at environmental considerations.

Helicopter replaces the horse in transmission line construction in the mountains.

High Altitude Testing

A research program now completed, but worthy of mention, involved the Company's high-altitude, high-voltage tests on a special line constructed at Leadville. These tests attracted international attention from the time they began in 1956 and resulted in knowledge that minimum power loss and radio interference can be maintained on a smaller-diameter, less-expensive conductor than was formerly believed possible at high altitudes. The reduction in line size, with a corresponding reduction in the size and cost of supporting equipment, was to have its effect on subsequent construction projects. For example, the data from these tests were incorporated in construction of PSCo's 230,000-volt transmission system, cutting costs significantly.

The initial construction of the line, extending from Cameo Station near Grand Junction to the Hopkins Substation near Carbondale, was completed in 1961 and operated at 115,000 volts initially. The second section extended from Hopkins Substation to Leadville and was completed in 1963. A section between Fort Lupton and Brush was completed in 1964, and the following year another section was built between Waterton, just south of Denver, to a point midway between Colorado Springs and Pueblo.

The first section of the system to go into operation at 230,000 volts extended from Cherokee Station to Cabin Creek. It was energized at the higher transmission voltage in December 1966. The outer belt transmission line for the Denver area was completed in 1968 and was energized at 230,000 volts when Cherokee No. 4 went on the line later that year.

PSCo's headquarters office building in Denver, completed in 1962, is a particularly striking addition to the Mile High City's skyline. The sunset pink granite and stainless steel facade makes the building one of the most unusual in the downtown area.

Symbol of Solidity

Symbolic of the Company's progress in the broad community it serves is its Headquarters Office Building at 550 15th Street in Denver. The 12-story structure's stainless steel and sunset red granite facade also projects an image of solidity and permanence.

The first shovelful of dirt was turned Sept. 1, 1959, climaxing three years of planning. The structure extends 32 feet into the ground and 204 feet, 8 inches above the sidewalk level. The building was topped out in September 1960, and internal construction continued for more than another year. The move-in began in January 1962.

While the former home of the Company at 15th and Champa was characterized by its external lighting, the new headquarters is distinguished by its internal lighting. Almost every type of interior lighting known at the time of its completion was used in the building in order that each could be demonstrated to prospective users under actual operating conditions.

Designed by the architectural firm of Berne, Muchow, Baume & Polivnik, the building's clean lines were to maintain it in the class of "modern" edifices in downtown Denver for many decades.

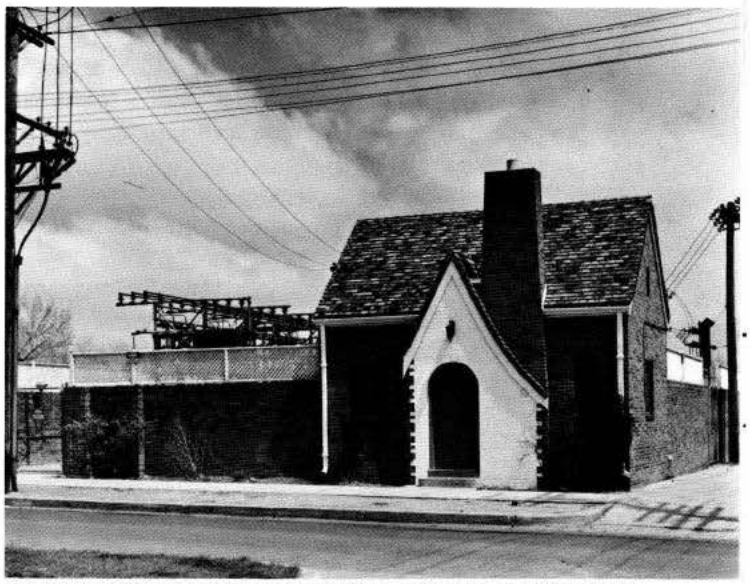
Environmental Awareness

The environmental awakening of the 1960's and 1970's had an impact on the Company — and the industry as well — that was not fully appreciated at the outset.

Beginning in 1948, mechanical collectors were installed on all new generating units up to the time of Comanche No. 1 in 1973. Because of the hot-side precipitator at that station, mechanical collectors were not necessary there. The first of the mechanical collectors, however, was installed at Zuni Station in Denver.

The mechanical collector was designed to remove more than 75% of the fly ash from the flue gas stream leaving the boiler. Use of this device was dictated by the increasing size of ensuing generating units. It was recognized that there would be a substantial fly ash emission problem without them.

On Oct. 28, 1963, the first of the electrostatic precipitators went into operation at Zuni Station. Others were installed later on units at Arapahoe, Cameo, Cherokee and Valmont Stations. These were installed on the major units in an effort to reduce further the amount of fly ash reaching the atmosphere. These precipitators functioned substantially below their design standards, however. An extensive research program brought out the fact that the low-sulfur content of the Western coal being used by PSCo limited the effectiveness of the electrostatic precipitators.



Denver's Highlands Substation, 3160 W. 38th Ave., in 1950, showing the long-time concern of the Company for the neighborhood environment of its facilities.

Arapahoe Steam Electric Generating Station, located in Southwest Denver, has a gross generating capability of 256,500 kw. The first of its four units went into operation in October, 1950.

Gas Conditioners, Wet Scrubbers

Early in 1970, the Company announced a comprehensive program to install additional equipment to assist in the control of particulate emissions. This was accomplished in two phases. In the first phase, gas conditioning systems, which injected minute quantities of sulfur trioxide into the gas stream thus reducing the resistivity of the fly ash, were installed on eight boilers. A wet scrubber was installed on Valmont No. 5. At the same time, Zuni Station was taken off coal and placed on firm natural gas for boiler fuel. This phase was completed by mid-1971.

The second phase called for the addition of wet scrubbers on the other major generating units. This phase was completed in September 1974, when the final scrubber went into operation on Cherokee No. 4.

In the meantime, the availability of natural gas from the Company's principal pipeline supplier became limited. On Jan. 1, 1975, Zuni Station was taken off firm gas and converted to the use of No. 6 fuel oil for boiler fuel. The gas then became available for the higher priority use, mainly house heating.

Coincidentally, water pollution control standards were established under which it was necessary to upgrade the water disposal and treatment facilities at each of the Company's generating stations.

The High Cost Of Quality

The measures that had to be taken by the Company to exercise proper air and water quality control had a substantial financial impact on PSCo. By the mid-1970's, the Company had spent $58 million on air-quality-control equipment and $13 million on equipment to purify water discharges from its facilities. It was estimated at that time that the program would probably require as much again through 1978.

A further economic consideration of the program is that a substantial part of the electrical output of each plant is directed to the operation of the air and water quality control equipment. The amount of power being required for this purpose in the mid-Seventies was approximately 65,000 kilowatts.

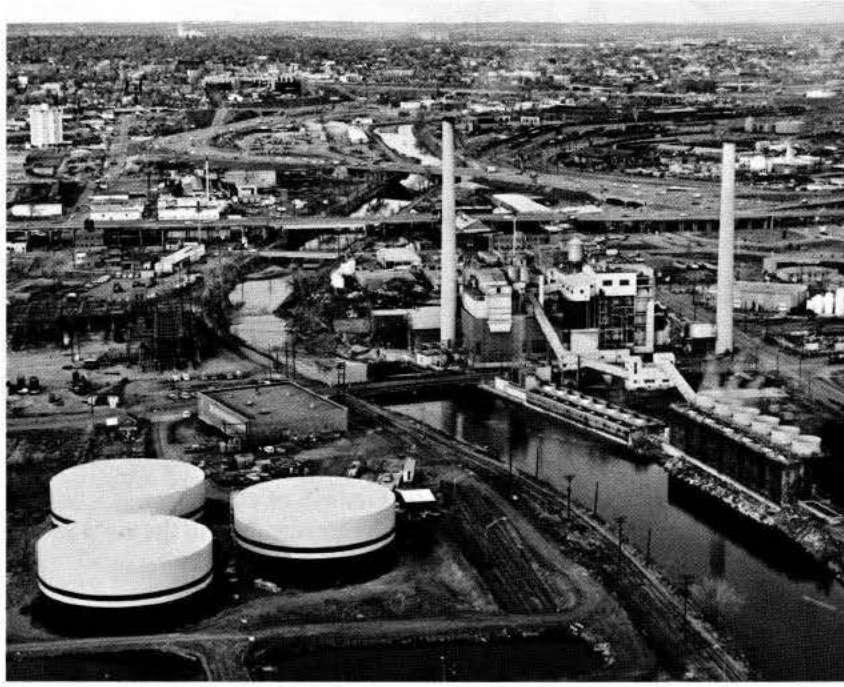
Prospects In Mid-1970's

Colorado moved into the mid-1970's with mixed emotions. According to the Colorado Division of Commerce and Development, population of the state had been growing at the rate of 3 percent annually over the previous decade, while the national index was moving upward at the rate of 1.2 percent annually. It was anticipated that the state's population increase would level off at a 1.8 percent gain in 1975, some 46,000 persons.

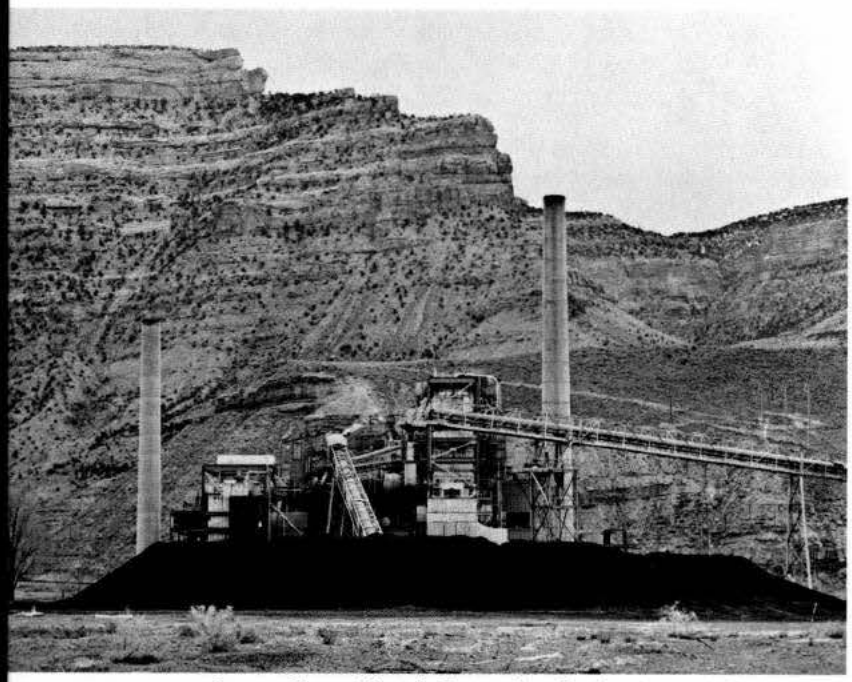
The nation's economy was being shaken severely by a fuel crisis, inflation and growing unemployment. While Colorado was suffering the same symptoms of economic stress, it was, nevertheless, looking toward a less agonizing time than the nation as a whole.

Agriculture in Colorado found itself peering into a maelstrom of rising costs and falling receipts. Agricultural employment was declining. Any statements of optimism in that sector were being made in hushed tones.

Mining and the production of petroleum products, including natural gas, on the other hand, were taking on a brilliant hue. Considerable stimulation was given the industry by the need for such resources and the rising prices that made the necessary production possible.



Zuni Steam Electric Generating Station, close to downtown Denver, bears little resemblance to its predecessor on the same site, built by Lacombe Electric Co. in the early 1900's. Its two generating units have a total capability of 115,000 kw.



Cameo Steam Electric Generating Station, located 17 miles east of Grand Junction in DeBeque Canyon on the Colorado River, has been operating since September 1957. Its 79,000-kw generating capability plays a vital role in serving the power needs of Grand Junction and neighboring communities, as well as many industries on Colorado's Western Slope.

Mining On The Rise

The state was looking forward to mineral production in the neighborhood of $795 million in the year 1975. Production of silver, gold, zinc and molybdenum were on the rise. Following a period of decline in the production of petroleum in the state, the trend was reversed by the mid-Seventies. The value of petroleum and natural gas produced within Colorado's borders was expected to reach more than $371 million by the middle of the decade. Coal, because of its increasing desirability as a fuel, was in the ascendancy in importance to the state's mining industry.

Economic pressures nationally had their effect on the manufacturing sector of Colorado's earning potential. Nevertheless, Colorado was outperforming the nation as a whole as a manufacturer.

The years 1972 and 1973 had been the years of greatest growth for Colorado in the construction sector. After that, the index began to drop, as it did for the entire country. The high cost of money and economic uncertainty were to be felt everywhere. Even so, the construction index in Colorado was holding up better than the national index.

Colorado's utility industry, faithful barometer of local conditions, readjusted its sights in the middle of the Seventies and took aim at slightly lower growth projections for the future. Growth of customers, it was anticipated, would be at a lesser rate than in the early years of the decade.

Composite Of Companies

Today, Public Service Company of Colorado represents a composite of more than 80 gas and electric companies dating back to 1869 and 1881, respectively. The latest company to merge with PSCo was the Colorado Central Power Company, which joined PSCo Dec. 29, 1961.

Colorado Central (not to be confused with the Central Colorado Power Company, mentioned earlier) provided electricity, purchased wholesale from PSCo, to some 42,000 customers in a rapidly growing area, predominantly south and west of Denver, including Englewood, Littleton, Golden, Evergreen, and the Fort Lupton area, which was isolated to the north.

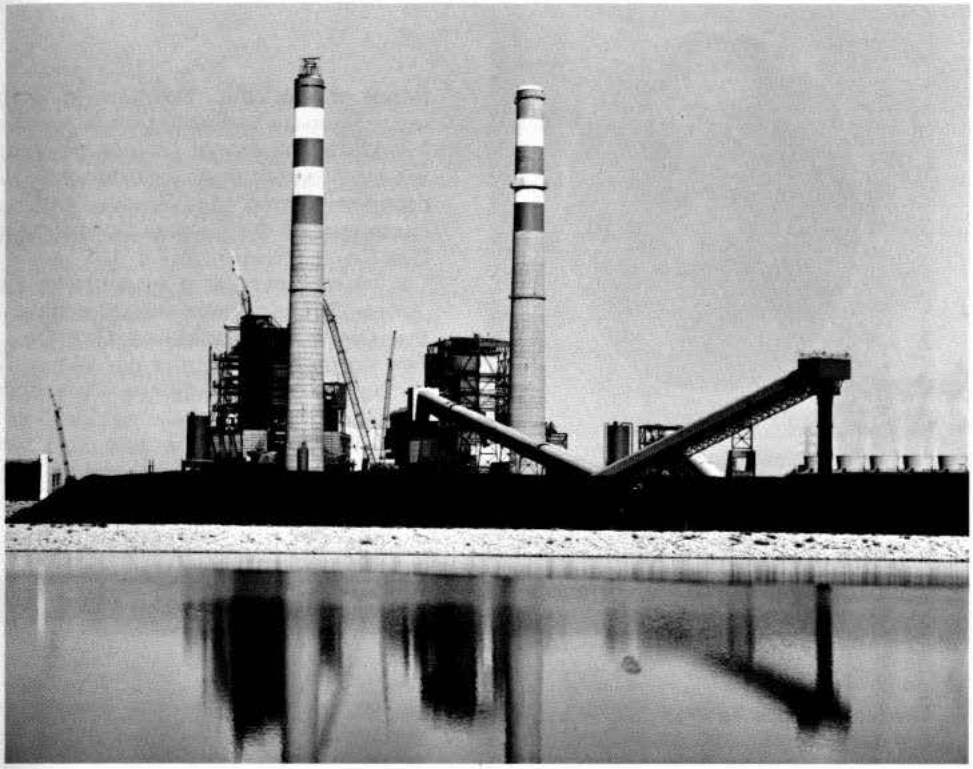
PSCo and Cheyenne Light, Fuel & Power Company were providing electric service to 182 communities with more than 653,000 customers and gas service to 127 communities with more than 564,000 customers by 1975. The total number of communities served was 208, reflecting the communities receiving either gas, electric or both services. Steam service was being provided in Denver and Cheyenne, water service in the Evergreen area, and bus service in Boulder. At the time, sale of the bus system was being negotiated between the Company, the City of Boulder and the Regional Transportation District.

Adaptable Organism

The Company's ability to adapt to changing conditions has been demonstrated through the years in its structure. As decentralization became necessary at various times in order to continue to provide adequate and dependable service, divisions and districts within the divisions were established to fill that need.

At the beginning of 1975, the Company had 11 operating divisions: Boulder; Cheyenne Light, Fuel & Power Company (actually a subsidiary); Front Range, with headquarters at Evergreen; Mountain, headquarters at Leadville; Northeastern, Sterling; Northern, Fort Collins; Platte Valley, Brighton; Pueblo Gas & Fuel (formerly a subsidiary but made a division in 1973); San Luis Valley, Alamosa; Western, Grand Junction; and Denver.

In 1975, the evolution continued. The Denver Division, core of the Company's service territory, began to undergo further decentralization. The first of five new divisions to be created out of the Denver Division was established Feb. 20, 1975, and was called the Southeast Metropolitan Division. At this writing it is expected that after sufficient operating experience has been gained and efficiencies expected are demonstrated, a further decentralization of the Denver Division will occur.



Comanche Steam Electric Generating Station is near Pueblo. Its second generating unit was scheduled to go into operation in 1976, making Comanche the second largest plant on the Company's system, with a generating capability of 700,000 kw. Coal is supplied to Comanche via three unit trains which run continuously between the plant and a coal mine near Gillette, Wyo.

A Company Of People

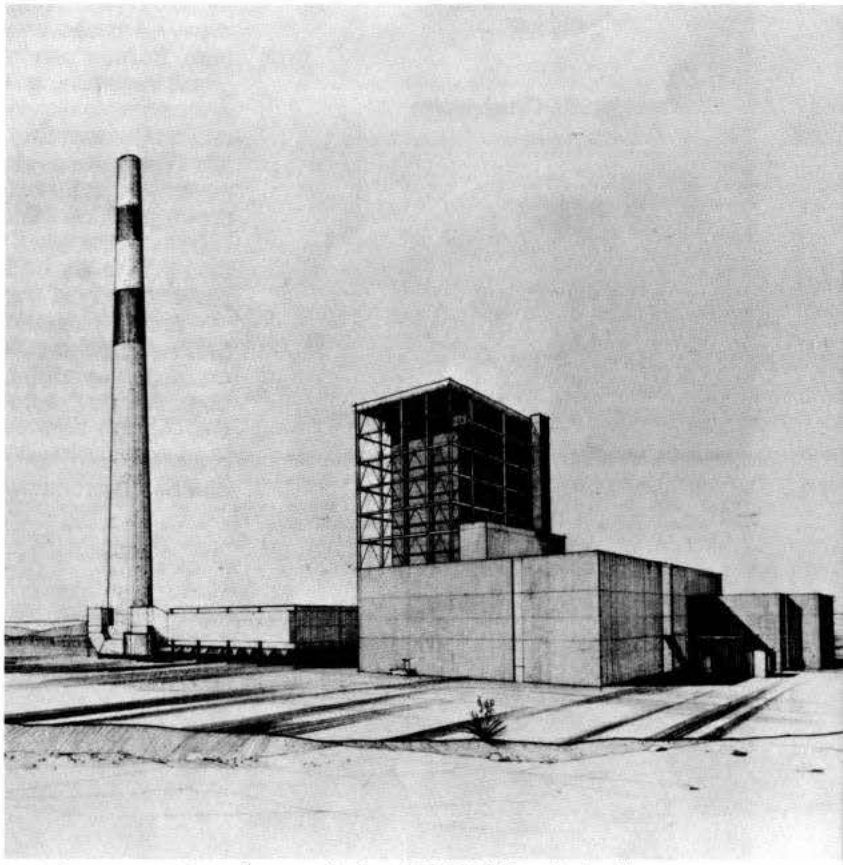
While the Company recognizes that adequate facilities are indispensable, it fully appreciates that the heart of its operations and the essence of good service rests in its more than 5,600 employees.

Just over 3,700 persons were working in the Denver Division at the start of 1975, and 1,168 of those were employed in the Headquarters Office Building. The work force in the subsidiaries and other divisions of the Company, therefore, required one-third of the employee force. At that time, the Company's plant investment per employee had, for the first time, exceeded a quarter-million dollars.

Robert T. Person, President of the Company since 1959 and Chairman of the Board since 1966, made the following observation:

"As we close 200 years of history as a nation and 100 years as a state, it seems to me that the same pioneering spirit that shaped the West and our Company is still alive. Let us not for a moment be lulled into the complacency of belief that pioneering in our Company is passe. Rather, this pioneering spirit will continue to carry us through the years ahead as we keep up with rapidly developing technical advancements in the industry and as we continue to keep ahead of the rapidly expanding energy needs of the people and area we serve.

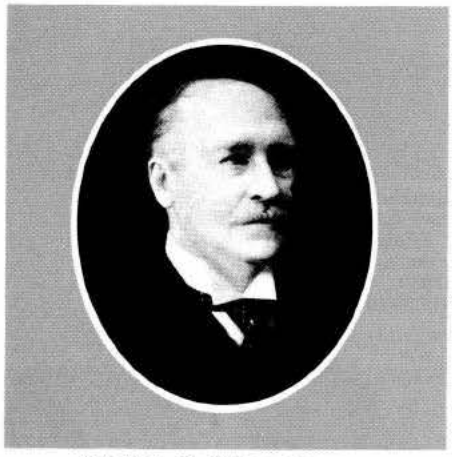
"While those future years will have their challenges, we know we will have the material and human resources to meet and solve them. We are enthusiastic about the years ahead for our Company, our state and our country. As our pioneering predecessors did, we look forward with the greatest confidence."



Artist's concept of the Company's first 500,000-kilowatt electric generating station, near Brush, Colo. The coal-fired unit, largest on the Company's system, was scheduled for completion and operation in 1979.

James B. Grant

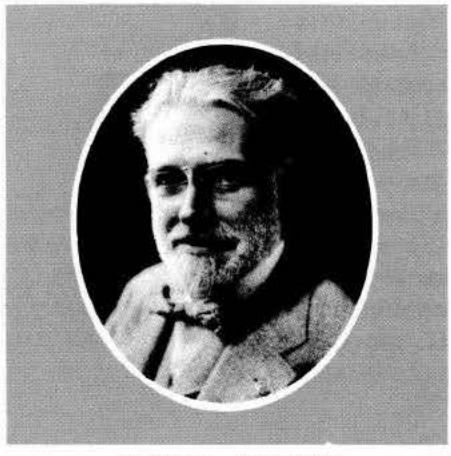
James Archer



Walter S. Cheesman

Edward W. Rollins

John H. Poole



Henry L. Doherty

Notable Names in

The history of any organization is the story about men and their deeds. During the past century, thousands of men and women have had their part in molding Public Service Company of Colorado into what it is today. The names of many of those people are lost for all time, but the results of their labors are given testimony in the gas and electric systems now serving more than a half-million customers.

While many of the names are forgotten, many are still remembered. Although we cannot tell about all those people in the more than 80 companies that eventually became PSCo, we can present a few of the more notable.

Still in existence are a few photographs of *James Archer,* who is given credit for establishing the first utility company in Colorado, the Denver Gas Co. Archer was that company's first president and largest stockholder.The company is considered the great grandfather of the utility business in Colorado. From its beginning on November 13, 1869, the day of its incorporation, we mark our birth as a company. That company lasted for 23 years and became part of the Denver Consolidated Gas Co. on November 16, 1891.

Also extant is a photograph of *James B. Grant,* who was president of the Denver Consolidated Gas Co., a firm under which all the gas properties in Denver came together. This company was formed October 29, 1891, and operated under that title until June 5, 1899.

In the meantime, the first electric company, the Colorado Electric Co., came to Denver on February 23, 1881. The president of that company was *Walter S. Cheesman,* who also was a founder of the first gas company. Colorado Electric remained in operation until May 7, 1889, when it was absorbed by the Denver Consolidated Electric Co.

On that date, Denver Consolidated Electric Co. was incorporated, with *Edward W. Rollins* as president. Here, again, the properties of independent electric utilities were gathered under one corporate title. And, as with the Consolidated Gas Co., the Consolidated Electric Co. existed until June 5, 1899.

That date marks the beginning of dual utility operations in Denver and Colorado. As the 19th century was dying, the Denver Gas and Electric Co. came to life. The president of the new company was *John H.Poole.* Denver G&E existed until July 11, 1911.

Credited for putting together Denver G&E, at the age of 29, was *Henry L. Doherty.* He served as president of that company from 1905 until 1911. In a rate-slashing war with the Lacombe Electric Co., builder of what today is known as PSCo's Zuni Station in Denver, Denver Gas & Electric went bankrupt in 1902. From that time on until 1911, the company was in receivership, with Doherty as receiver. On November 29, 1909, he established the Denver Gas and Electric Light Co., which was to become one of the basic companies of Henry L. Doherty & Co. This, in time, became Cities Service Co., a holding company controlling over 200 electric and oil properties in 33 states.

In the earlier company, the Denver

Gas & Electric Co., one *Irvin Butterworth* served as president and general manager before the regime of Doherty.

When the Denver Gas & Electric Light Co. was formed in 1909, it was headed by *Frank Frueauff,* who was its vice president and general manager until 1913. At that time, Frueauff became president of the company and was succeeded by *William J. Barker.* Barker, in turn, was succeeded by *Clare N. Stannard* in 1922.

The following year, on August 2, 1923, PSCo No. 1 was incorporated to build the Valmont Station, near Boulder.

Frank W. Frueauff

Irvin Butterworth

PSCo's History

Stannard thus became the first vice president and general manager of PSCo. The company was still a property of the larger Cities Service holding company. Later that same year, October 3, 1923, PSCo No. 2 was formed to merge the first PSCo, The Denver Gas & Electric Light Co., and Western Light & Power Co. Again, Stannard was vice president and general manager of the new company.

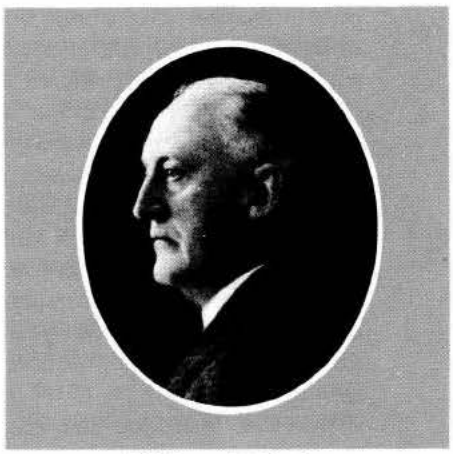
With the formation of PSCo No. 3 on January 1, 1934, which merged PSCo No. 2 and the Colorado Power Co., *Guy W. Faller* became vice president and general manager. Through all this, Doherty was still the president. In 1940, however, Faller was named president of the Company, and he became chairman of the board in November 1943.

It was at that time, November 29, 1943, that PSCo was severed from Cities Service Co. at the order of the Securities and Exchange Commission.

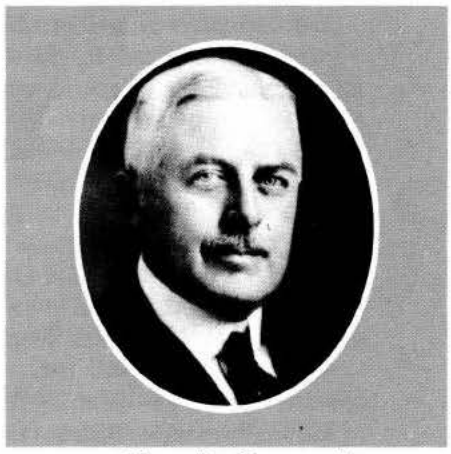
For the first time, PSCo was an independent company. First president of the independent company was *John E. Loiseau,* who had joined PSCo in 1923 as secretary and director. He had been elected a vice president in 1938. In November 1943, he was elected president. He served in that capacity until January 1, 1959, when he retired as president and became chairman of the board.

At the time of Loiseau's retirement, *Robert T. Person* was elected to fill the position of president. Loiseau was chairman of the board until his death September 1, 1966, at the age of 75. On September 28, Person was elected by the board to serve as its chairman while continuing to function as president of the Company. He still serves in this dual capacity.

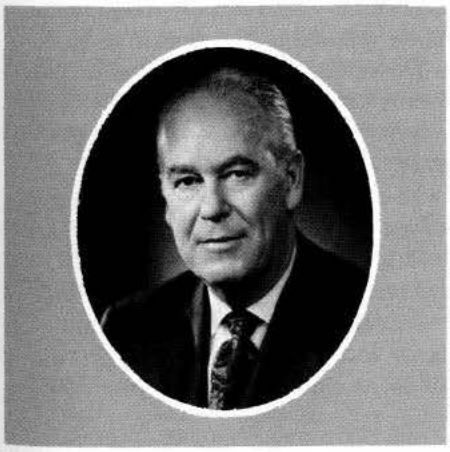
At best, this is but a partial story of the Company's lineage. It does, however, give some notion of continuity of the utility business in Denver, site of the first operating company.



William J. Barker

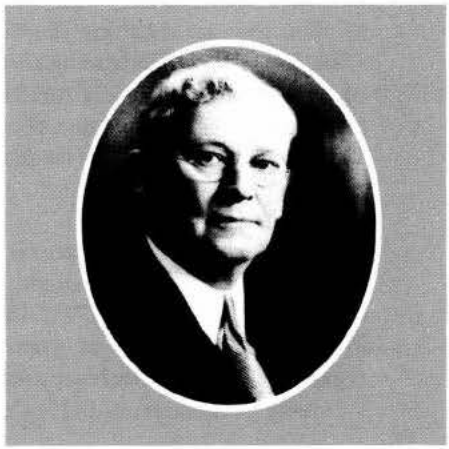


Clare N. Stannard



Robert T. Person

John E. Loiseau



Guy W. Faller

The Story of Gas

The story of gas really has two facets: manufactured gas and natural gas.

Natural gas, which is colorless, odorless, and tasteless, is found in porous rock formations in the earth. There is a variety of manufactured gases, including oil gas, producer gas, water gas, acetylene gas, and LP gas, but the most common man-made product in the 1800's and early 1900's was coal gas.

In fact, the "father of the gas industry," William Murdock, utilized coal in early development of gas lighting.

The idea of making gas from coal had been discovered by othr men earlier. In 1609, Jean Baptiste Van Helmont of Brussels, found that an elusive "wild spirit" escaped from heated coal. He named this spirit "gas."

Around 1660, Dr. John Clayton, a minister in Yorkshire, England, roasted what he called "shelley coal" and collected the gas in bladders. He would then prick the bladder and light the escaping gas to produce a jet of flame that lasted an hour or more.

In 1792, Murdock, a Scottish engineer, made an iron retort for distilling gas from coal, which he used to light his home in England. Ten years later, he had perfected the process so that he was able to light the outside of a factory.

By 1804, Murdock had accomplished a remarkable feat in industrial lighting: he had 900 burners operating in the cotton mills of Manchester, England.

A dozen years after that, the first United States gas franchise was issued to the Gas Light Company of Baltimore to manufacture and distribute gas in the Maryland city.

The retort process developed by Murdock was used in the production of gas for Denver until the introduction of natural gas to the city in 1928.

No one knows when or how natural gas was first discovered, but the Chinese are known to have transported it through pipelines made of hollow bamboo tubes, burning the gas to distill salt from sea water.

As long ago as 1000 B.C., a Greek herdsman discovered natural gas escaping from a crevice on the side of Mount Parnassus. Because inhalation of the gas made them lightheaded, the Greeks believed it to be a supernatural force, and they appointed a priestess and built a temple, thus establishing the Oracle of Delphi.

In 1900, workmen tearing down an ancient fire temple on the Caspian Sea near Baku discovered a secret pipe bringing natural gas from a rock fissure to the fire altar. The flame had been used to inspire worshippers with a belief in the supernatural powers of a priest of Zoroaster.

The first evidence of natural gas in this country was found bubbling up through a pool of water near Charleston, W. Va., in 1775. This "burning spring" was in the heart of the first great natural gas producing region — the Appalachian area.

Ninety years later, in 1815, Captain James Wilson discovered natural gas while drilling a hole in search of salt water. Around this time, gas was discovered under similar circumstances near Pittsburgh, Pa.

The drilling of the first well specifically for natural gas, and the construction of the first pipeline, occurred in 1821 near Fredonia, N.Y., after gas accidentally was discovered seeping from the banks of Canadaway Creek.

Realizing its potential, William A. Hart drilled a 27-foot-deep well, and piped the gas through hollowed-out logs to nearby buildings to provide light.

When General Lafayette, the Frenchman who helped the Colonies gain their independence, visited Fredonia in 1825, gas was being used for lighting and cooking food at the inn where he was staying. This is the first recorded commercial use of natural gas in the United States.

The first industrial use of natural gas in the United States occurred in 1840, when it was used to evaporate brine near Centerville, Pa.

The first corporation to supply natural gas for lighting in the United States was the Fredonia, (N.Y.) Gas Light Company, organized in 1858.

The discovery of oil at Titusville, Pa., in 1859 was a boon to the natural gas industry. Although there was no gas in the Titusville discovery, it set off a wave of exploration and drilling all over the country that resulted in the discovery of vast gas reserves.

By the year 1900, natural gas had been discovered in 17 states, with Pennsylvania the largest producer. The huge Spindletop field near Beaumont, Tex., was discovered in 1901, and the Texas Panhandle field, second largest in the country, was opened in 1918.

The largest dry gas reservoir in the world, discovered in 1920, is the Hugoton Field. Colorado Interstate Gas, PSCo's supplier, gets much of its gas from this field, which stretches from the Texas Panhandle through Oklahoma and into Kansas.

Gas was considered a nuisance in the early days of the oil industry. In fact, gas found in many oil wells was flared off, because there was no way at the time to transport it to marketing areas.

This wasteful practice has been virtually eliminated as pipelines have been constructed. One of the earliest was a two-inch iron pipeline stretching five and one-half miles from Newton to Titusville, Pa., completed in 1872. In the same year, a 25-mile line, made of Canadian pine, with an outside diameter of 12½ inches, was laid from Bloomfield to Rochester, N.Y.

By 1891, Chicago was connected to gas fields in Indiana by 120 miles of pipeline. Los Angeles was first connected to a gas field in 1913, and Denver in 1928.

Today, over 800,000 miles of pipeline crisscross the country. One of the most spectacular is the 2,400-mile, 26-inch diameter "scenic inch," stretching from New Mexico to the state of Washington and supplying 150 cities along the way.

The Beginning of Electricity

Although the serious investigation and development of electricity began only about 400 years ago, this still-mysterious energy that exists everywhere in matter and is so essential to modern living was first discovered over 2,500 years ago.

The original discovery came when Thales, a Greek philosopher, found that rubbing a piece of amber on cloth gave amber the ability to pick up lightweight objects, such as a feather.

Although he didn't understand it, Thales had stumbled upon the electric charge, or static electricity.

Apparently, no one else realized its potential for some 22 centuries, because it was not until around the year 1600 that William Gilbert, a British physician, rediscovered the electrical charge.

Through experimentation, Gilbert found that other substances besides amber could acquire static electricity. He also deduced the magnetic characteristics of the earth.

Gilbert's findings, coupled with other discoveries over the next century, eventually led Michael Faraday to the principle of electric generators in 1821.

Around 1650, Otto Von Guericke devised a machine with a ball of sulfur mounted on a rotating shaft. Electricity was generated by pressing a hand against the rotating globe. In 1709, Francis Hawksbee made a similar machine, using a hollow glass globe that produced a glowing light.

Discoveries by Stephen Gray in 1729, and Charles du Fay in 1733, proved that some substances could be electrified when rubbed (conductors) and some could not (insulators).

In 1745, George E. von Kleist, Bishop of Pomerania, Germany, produced the prototype of the present-day capacitor while attempting to store electricity. The following year, a Dutch physicist, Pieter van Musschenbroek, working independently of von Kleist, stumbled on the same discovery at the University of Leyden in Holland, thus giving the Leyden jar its name.

Three-quarters of a century later, in 1820, H. C. Oersted, a Danish physicist, found that a wire conveying an electric current deflected a pivoted magnetic needle to which it ran parallel.

The following year, Faraday made the first of his great electrical discoveries: electromagnetic rotation. He hung a rigid wire with its lower end in a pool of mercury. A vertical magnet was fixed with one pole beneath the point of suspension. When a current was passed through the wire, it rotated rapidly.

Faraday gained much publicity and fame from this and many other electrical discoveries, but the work of an early-day American probably received far more acclaim than it deserved. Benjamin Franklin's most important contribution was his discovery, through the famous kite experiment, that lightning and electricity are identical.

The man who gave the most impetus to the development of the electric industry was Thomas Alva Edison, the genius of Menlo Park and one of the greatest inventors in history.

In 1879, he announced the development of a practical incandescent electric lamp. After hundreds of failures, Edison and his associates made an electric lamp that would give light for 40 hours or more without burning out.

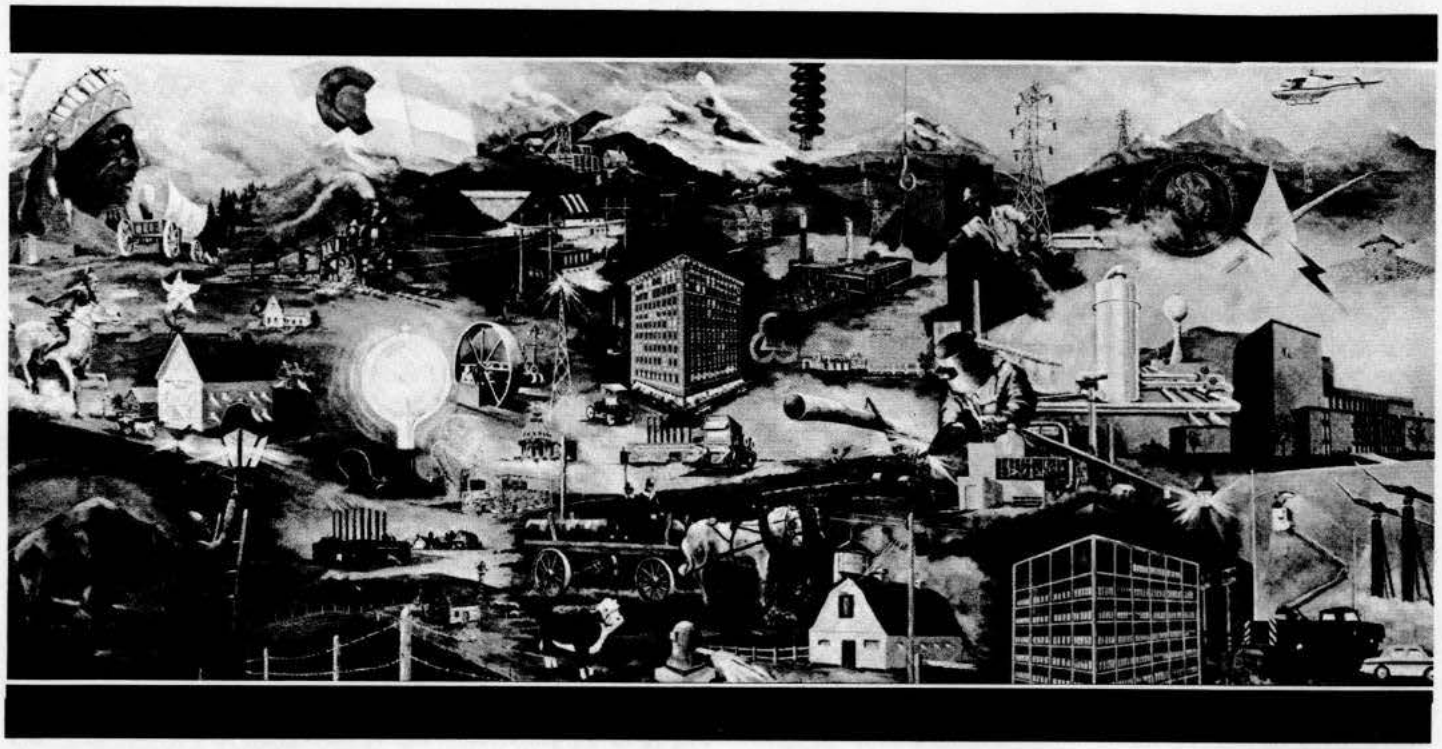
When Edison was asked about the exact cost of the new light, he was quoted as saying: "After the electric light goes into general use, none but the extravagant will burn tallow candles."

Although the principles of the generation and transmission of electricity had been known for more than 100 years, it wasn't until three years later that the first central station for large-scale commercial generation and distribution of electricity went into operation.

The facility was the Pearl Street generating station in New York City, built by Edison with $40,000 of his own money and an additional $300,000 invested by several New York bankers.

And so, the age of electricity was born — an industry that was to be an integral part of all the numerous achievements in the fields of science, engineering, and the useful arts that would have been impossible without an abundant supply of electricity.

Fifty years later, during the 1929 Light's Golden Jubilee celebration, Edison said: "I must confess that I never dreamed that from the incandescent lamp would come the stupendous electrical industry of today."



About the Cover

More than one hundred years of progress leave a record of memorable events. Starting from the left, this panoramic painting by Edwin G. Taylor, PSCo's Director of Art, Design & Display, captures some of the highlights of the Company's history.

With the Indian and buffalo still roaming the plains, the Colorado territory was suddenly ushered into a new age of light with the introduction of the gas light by the Denver Gas Company, which was incorporated November 13, 1869. Thus, seven years before Colorado was to become a state, PSCo's first predecessor was born.

Edison invented his incandescent lamp in 1879, and the first central electric generating system began operating in New York City in 1882. A year earlier, in 1881, the Colorado Electric Company was formed to provide electric arc lighting, and the new firm installed "Old Sally," Denver's first electric generator (see just above Edison and to the right of his lamp). "Old Sally" now rests, as a memorial to the past, on the lawn at Valmont Station, near Boulder.

In 1909, Shoshone Hydroelectric Generating Station went into operation. Shoshone line, highest in the nation, began carrying power to Denver, more than 150 miles away, crossing the Continental Divide three times. A year later, in 1910, Boulder Hydro began producing electricity.

The same year, the Gas & Electric Building at 15th & Champa in Denver (center of painting) was lighted for the first time. It was a landmark of national renown with its 13,000 incandescent lights. In 1910, Cities Service Company, a holding company with a distinctive triangular emblem, was formed.

The vast majority of PSCo's predecessor companies were formed before 1910. PSCo was formed in 1923 to build the Valmont Station. Previous and subsequent mergers brought together more than 80 utility companies serving town and country dating back to 1869.

With the arrival of natural gas from Texas in 1928, gas manufacturing was discontinued. Natural gas lines gradually stretched out for hundreds of miles throughout Colorado.

Following World War II, PSCo grew at an unprecedented rate. Arapahoe and Cherokee stations were constructed; Valmont and Zuni were enlarged. The Company developed Leyden, first coal mine in the world to be used for natural gas storage. In the mountains above Georgetown, the Company built Cabin Creek, the highest pumped-storage hydroelectric project in the nation and the largest hydroelectric project in the state.

Now, in this centennial-bicentennial year, the first nuclear power generating station in the Rocky Mountain region goes into operation.

Symbolic of the Company's desire to be a meaningful and permanent part of the area it serves is the Headquarters Office Building at 550-15th St. in Denver (lower right). The sunset pink granite and stainless steel facade of the building projects the stability of the organization and its confidence in the territory it serves.

The emblems commemorating the Colorado centennial and the nation's bicentennial, inside the front and back covers, are the work of Richard E. Fugier, Display Department Supervisor.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