

Citrus Roots

Preserving Citrus Heritage Foundation



Tulare County: Help us identify the area shown and the packer (Porterville?)...



Your Foundation, through the work of Tom Pulley, is compiling a list of citrus brands of each packer... A FIRST! We want to match a packinghouse photo to the majority of the packers on this list, and that is where you enter!

WE NEED YOUR HELP IN FINDING PHOTOS OF CITRUS PACKERS IN

Delano	Hamilton City	Orosi	Seville
Dinuba	Ivanhoe	Oroville	Strathmore
Dixon	Lemon Cove	Palermo	Terra Bella
Edison	Lindsay	Porterville	Visalia
Exeter	Orange Cove	Rocklin	Woodlake
Fairoaks			

Check out our website...
www.citrusroots.com

Our "Mission" is to elevate the awareness of California citrus heritage through publications, education, and artistic work.

We are proud of our accomplishments as a volunteer organization, which means each donated dollar works for you at 100% [for we have no salaries, wages, rent, etc.]. All donations are tax deductible for income tax purposes to the full extent allowed by law.

Citrus Roots – Preserving Citrus Heritage Foundation

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The views of the writer may not be the same as this foundation.

50 Citrograph March/April 2012

Electricity Lights the Packinghouse

Foot-powered equipment was totally out of step with the vigor of the emerging California citrus industry...

Richard H. Barker

December 31, 1892, marked the world's first commercial long-distance high-voltage transmission of electricity by Pomona's San Antonio Light & Power Company (SAL&P).

Dr. Cyrus G. Baldwin, the first president of Pomona College, enjoyed weekend outings in the San Antonio Canyon, and the "Hogsback" was his favorite area. There was something vibrant or dynamic about the power of the water rushing uncontrolled over the waterfall.

Perhaps it was this very sensation which suggested to him the solution to the needs of power in the area. As he stood from a high point at dusk, looking down on the darkish floor of the valley lowland, he envisioned a hydroelectric plant tapping the power of the San Antonio Creek and lighting the valley.

His mind flashed back to the critical need for a source of cheap power. Steam plants were common in the East, but the scarcity of fuel here made this option too expensive. Coal was imported from Australia or Wales, and wood fuel was also clumsy and costly.

He thought of his research which proved his original observation was correct. Water power was far more economical than steam and gas engines. He retraced back to his visit and observation of the small electric plant in Ventura generating power from a small water drawn dynamo. The idea of hydroelectric transmission was now a burning issue in his heart and mind.

A fateful day and the right man

Dr. Baldwin brought up his determined idea with a friend and fellow Congregational minister regarding harnessing the power of the San Antonio Creek through a hydroelectric plant, and, from this enterprise, endowing his young Congregational, Pomona College. The upshot of this was a resounding pledge to help. Almarian William Deck-



Dr. Cyrus G. Baldwin

er, a self-taught, well-read and brilliant electrical engineer, vowed to do the engineering even though he was fighting for his life against tuberculosis.



Almarian W. Decker

Decker went right to work on this project, for he had already studied and focused at length on this subject. A fateful day and the right man!

Excerpts from the book "*Citrus Roots ... Our Legacy - Citriculture to Citrus Culture*" (Barker), p. 142:

"Confident and fortified, Baldwin carried this concept to the Pomona Board of Trade (a forerunner of the Chamber of Commerce), and his contagious enthusiasm convinced the local business people into funding this project.

"Among the men infused by Baldwin's enthusiasm were J. Albert Dole, a businessman from Pomona; the former U.S. Senator from California, Thomas Bard; Lyman Stewart, an Upland investor and later founder of Union Oil Company; Nathan Blanchard, a Santa Paula citrus grower and later president of the Limoneira Ranch; Charles Harwood, an Upland developer of citrus acreage; and others. His next move was to secure water rights. He negotiated an option of water rights in the San Antonio Canyon through "Dr. Nichols, President of the Pomona Land and Water Company, a man who had also been active in establishing Pomona College. Everything was falling rapidly into place.

"On July 7, 1891, the San Antonio Light and Power Co. was incorporated under the laws of California with a capital stock of \$240,000, divided into 2,400 shares at \$100 per share. About \$30,000 were subscribed at once; the following names appeared as subscribers to the stock: Chas. E. Harwood, Thomas R. Bard, John D. Hooker, J.F. Conroy, J.A. Dole, W.S. Chamberlain, Edward Hildreth, N.W. Blanchard, A.J. Cook, J.F. Baldwin, W.H. Holabird, Mrs. J.T. Ford, M.B. Campbell, G.A. Rawson, C.T. Weitzel, E.S. Williams, A.W. Burt, J.T. Ford, C.G. Baldwin, and Mrs. Mary Rawson.

"Additionally, the following were listed as incorporators: N.W. Blanchard, W.S. Chamberlain, A.W. Burt, C. G. Baldwin and Thomas R. Bard.

"At a meeting of stockholders held July 29, 1891, Thomas R. Bard, N.W. Blanchard, J.A. Dole, M.B. Campbell, J.D. Hooker, A.W. Burt and C.G. Baldwin were elected Directors. On the same day the Directors met and organized, electing Thomas R. Bard, President; J.A. Dole, Vice President; A.W. Burt, Secretary and Manager, and People's Bank of Pomona, Treasurer. San Antonio Light and Power Company was off to an excellent start!"

The next task was to order the equipment. This was totally another experience! There were only two electric manufacturing companies in the United States: the Thompson-Houston Company and Westinghouse Company. In addition, there was the Stanley Electric Company in Pittsfield, Massachusetts, which specialized in transformers or "converters". Being the first to make such a plant made this situation even harder since there was no comparable installation which might have served as a model.

Armed with about half of the funds thought to be needed to build the equipment and the specifications listed by Decker, Dr. Baldwin stepped on board a train to attend a missionary conference in Pittsfield, Massachusetts. His

planned detour was to first call on George Westinghouse in Pittsburg and from there go to his conference.

Upon meeting Westinghouse, this overbearing man branded the venture as "a piece of foolishness." He would not risk his reputation on "such a wild project of 10,000 volts", for this was totally out of their line. Dejected, Dr. Baldwin left for Massachusetts.

Encouraged and invigorated

Stepping out of the meeting the first night in Pittsfield, he observed arc lights brilliantly illuminating the town. He asked, "Who was behind this?" He was immediately compelled to meet the young inventor.

The next day he visited Stanley Electric Company. Here, the college president found a receptive audience. He was encouraged and invigorated when the staff of Stanley Electric Company thought the transformers in a series could produce 15,000 volts.

As Dr. Baldwin was preparing to depart, Mr. Stanley pledged, "If George Westinghouse still declines to build your generators and transformers, I'll find a way." Westinghouse and staff, after hearing Stanley's affirmation, immediately agreed to build a 10,000-volt plant without the three-phase proposition and would guarantee its success for one year



This photo shows the catalyst that produced the world record! Decker made a "rule of thumb" that to advance a mile, it required 1,000 volts (this became a standard). The use of transformers was to increase the voltage or step up the pressure to reach the distance. At the destination, there was another bank of transformers as a "step down" to lower the voltage to a norm. This revolutionized the transmission of electricity and the electrical utility system.

providing they made the installation.

As a first, Westinghouse also learned from this experience. When the transformers were tested just before shipping, they broke down. This was embarrassing. They discovered that there was moisture in the "dry cotton" insulation of the coils. When the transformers became warm, this moisture transferred itself to the upper part of the coil as water and caused the transformer to shut down. This was corrected and caused no further trouble other than a compromising delay by a haughty Mr. Westinghouse.

Another excerpt from the Richard H. Barker book, "*Citrus Roots ... Our Legacy - Citriculture to Citrus Culture*", p. 143:



Dr. Baldwin standing on the left in a dark suit with J. Albert Dole at mouth of tunnel and A.W. Burt with transit. (1882)



Water of San Antonio Creek diverted through tunnel and directed into the penstock (high-pressure line to powerhouse).



This photo shows the completion of the work in lining the tunnel with a cement floor to stop seepage.

“Back in the canyon, the plan agreed upon was to tunnel through “Hogsback”, approximately 1,200 to 1,300 feet in length and build the powerhouse a mile below. The building when completed was 30 feet by 30 feet and built right into the side of the mountain against a solid rock. It was constructed of cement that was brought around ‘the Horn’ from Liverpool, England because at that time the availability on the West was very limited (the Colton deposit had not been developed ... see picture).

“Difficulty followed difficulty due largely to lack of money, but finally the tunnel was completed. The pipeline was installed, the water wheels were set and connected directly to the 120-kilowatt generator, and the plant was ready.

“With all of the directors and other interested parties present, the water was turned into the tunnel, but not a trickle came through! The tunnel leaked like a sieve! All work was held up until the whole tunnel was lined with cement (see picture).

Not always according to plan

“When the plant and the transmission lines were complete, the Congregational Church of Pomona was select-

ed as a place to show the ‘doubting Thomases’ that electricity could be generated at some distance away and the transmission carried out. This church was selected because J. Albert Dole, president of San Antonio Light and Power Company, was an active member. As Arthur W. Burt, a brother-in-law of Baldwin and secretary/general manager of the company, described in an article delivered before the Lions Club of Upland on November 10, 1927:

‘We were all on hand for the evening service and everything was fine except the amount of light - the twenty lamps gave about as much light as twenty fireflies. You see, we had failed to make a test... I can almost feel now the sweat of embarrassment that fairly oozed from every pore as I heard the snickers of the congregation. The only good thing about it was that it was too dark for them to see by blushes.’

“(The 10,000 volts reported at the power plant dwindled by half when the load was actually directed to Pomona.)

“The main transmission line was a two wire system. The wires were strung on pine poles set about five feet in the ground and equipped with insulators (which made great targets for



San Antonio Light and Power plant was built into the side of the canyon wall. This plant made history on Dec. 31, 1892. It was the first commercial application of transformers to effect long-distance, high-voltage transmission of electricity with the use of alternating current.

practicing hunters, Arthur Burt wrote in an accounting). From there, a line ran east to San Bernardino and another ran diagonally to Pomona.

“The business establishments in San Bernardino had contracted for lighting, but their contracts would become null and void if the firm failed to deliver by January 1, 1893. At 5:30 p.m. on December 31, 1892, lights illuminated the Times-Index Building in San Bernardino. The contract had been met!

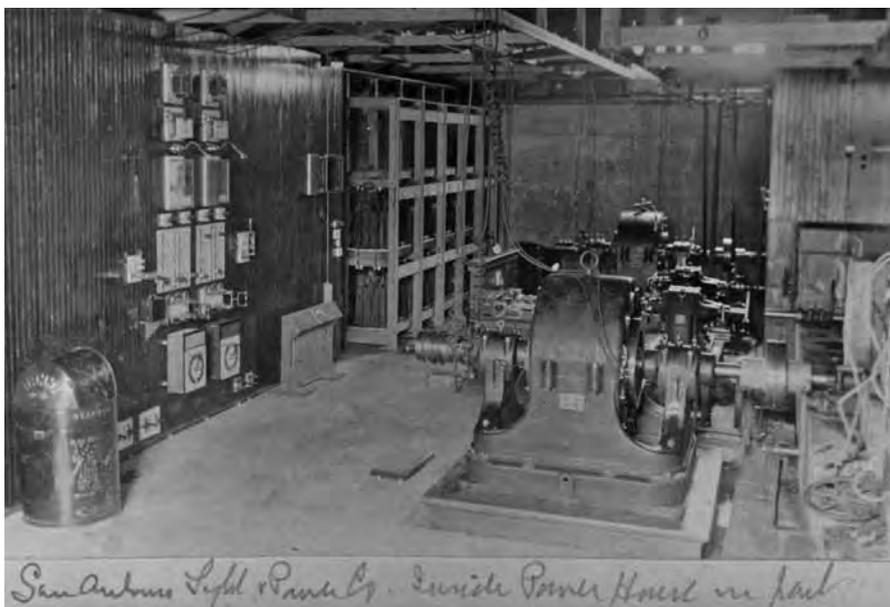
“These lines were the world’s first commercial application of transformers to effect long-distance, high-voltage transmission of electricity and further formed the basis for today’s modern electric utility transmission system. History was also made with the use of alternating current ... a first!”

Another interesting added enterprise associated with the electrical business was the telephone service. The lighting system ran until midnight, starting at 5 p.m. The lines during the day were used as phone lines. The telephones were cut in at a fixed hour in the morning, and cut off as earlier mentioned. Therefore, when the lighting started, there was no phone service. It is interesting to note that J. Albert Dole retained an interest in this emerging franchise and passed the resources to his son Arthur, who served on the board of General Telephone Company of California until his death in 1955.

“Old Man Winter” showed no favors to Baldwin’s San Antonio Light and Power Company. In December of 1894, the area was hit with a flood which washed out many poles. Pomona was in the dark for two days. The next year,



Panorama of San Antonio Canyon (a part) showing the caretaker’s cottage and the pressure pipeline (penstock). The powerhouse was below the caretaker’s cottage hidden in this photo by the trees. This photo was taken by C. Baldwin.



San Antonio Light & Power Co. Suicide Power House in part
The plant interior. Water wheels were behind curtain wall (right side). Baldwin’s handwriting can be seen in the margin.



Times-Index building in San Bernardino was illuminated on Dec. 31, 1892, by SAL&P Company at a distance of 29 miles of lines.



Downtown Pomona showing an arc light powered by SAL&P (December 1893) at Second and Thomas streets.



On Feb. 14, 1901, the Sierra Power Plant went into operation in the San Antonio Canyon. It is still generating power today for SCE.



Inside the Azusa Ice and Cold Storage Company, circa 1903.



Left to right: Mr. Pate, AT&SF; J. G. McKinney, Los Angeles Ice & Cold Storage Co.; B. A. Woodford, manager of the Azusa/Covina Fruit Exchange and general manager of the California Fruit Growers Exchange; G. H. Powell, pomologist, USDA; and, Walter Barnwell, assistant freight agent for the AT&SF Railway. Their visit was to learn the efficiencies by seeing first-hand the energy or power employed in making ice... the economical means by which ice was being produced.

they experienced a strong windstorm. The northern part was struck severely with most of the poles down.

Then during the years of 1897 to 1899, an extreme drought was felt. An oil steam plant was installed to offset some of the lost electrical power due to the creek being just a seepage. Then the knockout punch – a blizzard struck and caved in the roof of their hydroelectric plant.

Funds were depleted, and this company could not survive the forces of nature. One could only find comfort in a quote of Dowden: “Sometimes a noble failure serves the world as faithfully as a distinguished success.” This company proved to the world it could be done!

Late in 1899, negotiations for the sale of the property were begun with William G. Kerckhoff of San Gabriel Electric Company, and in early 1900 the stock and bond holders surrendered their certificates to Kerckhoff (you will learn more of this man in a coming issue of *Citrograph*).

To light the valley floor

Although the life of San Antonio Light and Power Company was short, it started a chain reaction of followers. It pioneered the way for long-distance transmission of electric power to be delivered to users far from the source of generation. It proved the water of the canyon could light the citrus packinghouses and citrus-linked businesses. Just as Dr. Cyrus Baldwin had dreamed, this creek could light the valley floor.

One never knows the fate of an act. On February 14, 1901, William G. Kerckhoff’s new plant, named the “Sierra Power Plant”, went into operation about 2,000 feet below the former SAL&P plant.

This plant is still generating power for Southern California Edison in the original building and using most of the same equipment (see “Citrus Roots ... Our Legacy - Citriculture to Citrus Culture”, p. 150 & 151).

Again, one never knows the fate of an act. Mr. Kerckhoff began at age 23 his working career primarily as a lumberman. Now, at the age of 35, his lifetime work changed and was driven by the potential and the power of water. This event marked the direction of his life for about the next 69 years.

In January 1891, he purchased 15 acres on the Santa Fe tracks where the water of the San Gabriel River belonging to an irrigation company crosses a gulch in a flume that drops



Bond and equity instruments financed the building of this power company. Dr. Cyrus Baldwin’s contagious enthusiasm impressed the investors.

60 feet and then continues in its ditch downward. Here he built the building and a hydroelectric plant solely for Azusa Ice and Storage Company. The Santa Fe system had agreed to purchase all surplus ice before the plant was even built, and within a year they were buying daily up to 100 tons of ice. This was about two years before the Union Ice Company commenced to build in Redlands. If the California citrus industry were to grow, it needed ice and a way to automate its packing facilities.

Now in retrospect, in 1899 it would appear to the contentious that SAL&P was a failure. Its failure was due to the fickle and unpredictable weather. Yes, in looking back, they had more than their share of reversals, though they were forerunners.

This company, as we know, was the first to establish the commercial feasibility of long-distance, high-voltage transmission of electric power through the use of transformers - an honor of being the "world's first!" Probably its highest consideration to this forerunner company was that it established the primary foundation and principles of the grid system used worldwide by the electrical utility industry.

(In an upcoming issue of this magazine, we will look into the story of two other neighbors, also leading the way as "world's firsts". It seems unusual that these "world's firsts" were originating from the citrus belt only a short distance apart from what today is known as the "Inland Empire".)

Richard H. Barker is the founder and president of the Citrus Roots-Preserving Citrus Heritage Foundation. For a number of years, he has been leading a drive to bring about a higher awareness of the role citrus played in developing



Observing this source and the power of the current at the San Gabriel River Diversion Box. Mr. Kerckhoff conceived of the potentialities of water. Now he was driven to utilize this economical source.

California. Dick is a retired investment banker and was a third generation Sunkist grower. He has published four volumes on citrus heritage.

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This 1897 scene shows a shed of the Houser Bros. Co. in Covina. They used kerosene lamps for lighting, and the equipment was powered by a treadmill device. The two men in the center standing on top of the sizing machine were the power source.

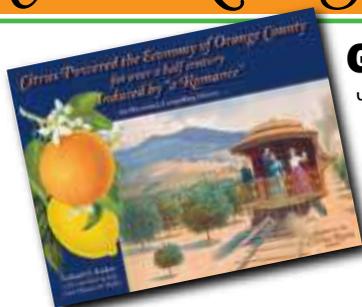


(Left) Redlands Eclipse Orange Association powered their packing shed by womanpower! Note the women seated in chairs on both sides of the area. They operated the treadle. Their electric service came from Mill Creek #1 owned by Redlands Electric Light and Power Company (circa 1898).



Ontario Fruit Association had electric lighting from Sierra Power Plant, though they did not have three-phase power as their sizing machine was powered by men. Observe the two men facing each other seated on top of the sizing machine. They operated the treadmill. The growing California citrus industry was ready for modernization! (circa 1902).

Citrus Roots Series...

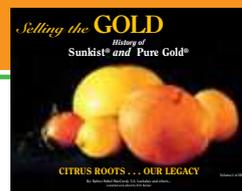


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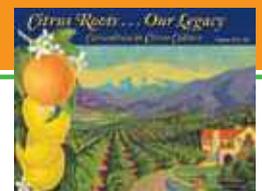
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