



Gilbert Gia's Historic Bakersfield and Kern County

School Heater, 1892

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In 1912 a natural-gas manufacturing plant was just across the street from the Bakersfield Children Shelter. Adjacent to the plant was a 60-ft diameter, 100,000-cu-ft gas holding tank.¹ Exactly why the factory was built so close to a home for orphans is surprising because safety for Bakersfield children was a consideration twenty years earlier.

In April 1891 Bakersfield's second public school house was being built at the northwest corner of 20th and H streets.² The building might have been the last city school without utilities, with the exception of running water.³ In Summer 1892 the district hired George H. Tay & Co. of San Francisco to install a modern heating system called the Backus.⁴

In June 1892 the *Daily Californian* described the Backus: "It is a very elaborate affair, in one sense, and yet when once understood it is seen to be very simple and apparently very effective in its action." The explanation that followed could just as well have explained the cooling system of a Model T Ford, a vehicle sold without a water pump.

In the school's cupola, Tay & Company installed a tank connected to the town's octagonal water tower at 17th and Chester. Via gravity, the water made its way to a newly-installed brick furnace in the basement, and from there it fed into a boiler plumbed with 343-feet of 1-1/2-inch gas pipe. Heated water rose in the new piping to the classrooms above.

This "very elaborate affair," as the paper termed the Backus, was simplicity itself when the boiler was fired and the magic of convection

¹ *Sanborn Fire Maps*, Bakersfield, California, 1912. Tank diameter was estimated by comparing its dimension with the width of city streets, for which Thomas Baker used the surveyor's rod.

² *Weekly Californian*, April 11, 1891. This was called the H Street School. Today, the lot is the site of Bakersfield Fire Station No. 1, just north of the Fox Theater. H Street School was renamed Bryant School in 1904. It was razed in 1936 (*Bakersfield Californian*, Mar 9, 1936, p 9); In 1904 the first Fire Station No. 1 was built at 20th and K streets. It was razed in 1938. (*Bakersfield Californian*, p. 9, Mar 8, 1938); author's interview with Charley Dodge, Mar 2002.

³ In 1890 a Bakersfield company manufactured some coal gas for lighting, and it distributed a small amount of electrical power from a steam-driven dynamo. Not until 1897 did hydroelectric generators at Kern Canyon first deliver appreciable electricity to Bakersfield homes. (Lynch, George. "Bakersfield's Hydroelectric Plant." *Kern County Historical Society Quarterly*, Fall 2005, Vol 55, No 3); Natural gas as we know it today was generally not available for domestic use here until after 1900.

⁴ *Daily Californian*, June 21, 1892

began. Heated water was less dense, and thus lighter, and it slowly rose to the schoolrooms, where Tay had installed wall-mounted racks, each with seven parallel tubes. Heated water entered on one side of the racks, and when cooled became denser and thus returned by gravity to the basement through a second pipe.

Important to the Backus system was placement of the racks. Each was squwed higher on one end than the other. As hot water passed through, it gave up its heat, and a thermosyphon action started which induced the continuing flow of hot water. In effect, the school modeled an over-sized Model T engine's cooling system.

Safety for children was then an issue for the *Californian*, "Since the system is always open to the air, there can never be any excessive pressure. Each series of radiators--as the group of seven pipes in each room may be called--has also a valve by which any air collecting in the system of pipes may be drawn out."⁵

The *Californian* said the Backus system was successful: "A trial was made of this system on Saturday last, and seven stacks of four-foot wood were used during the morning, by means of which all the water in the pipes was heated, and such circulation was established that each radiator pipe became too hot to hold the hand upon. It seems to be a very successful method, and such has been its record elsewhere."⁶

⁵ Ibid

⁶ Ibid