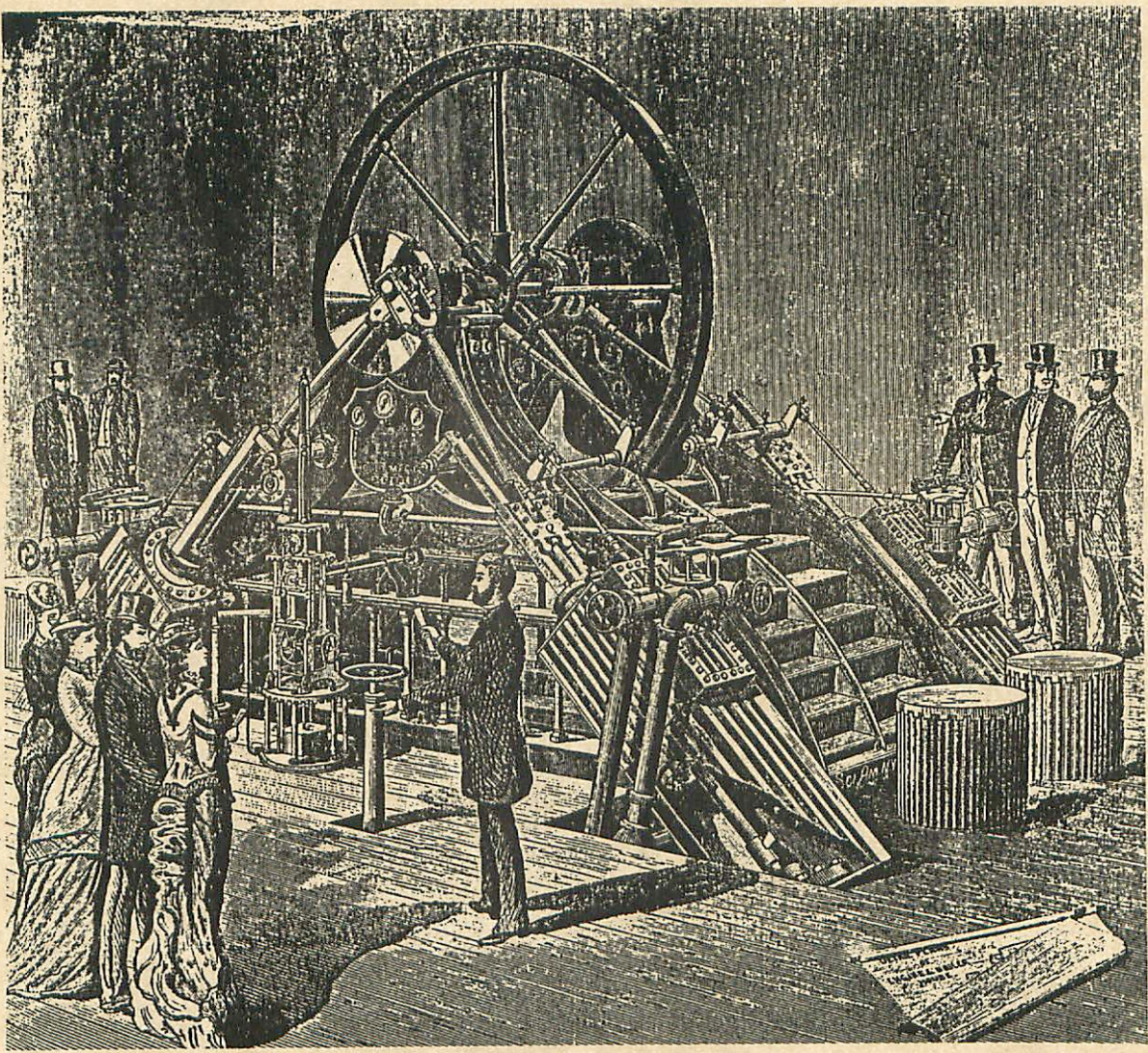


GOLDEN ☆ NOTES

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CLEAR CLEAN WATER



HOLLY'S NEW PUMPING ENGINE AND AUTOMATIC PRESSURE REGULATOR

CLEAR CLEAN WATER

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Fire, water and sanitation — these are three foundations of civilized living. Each is necessary, but each can create problems for men. The devastating fire of 1852 and the floods of 1850, 1852-3, and 1861-2 almost brought Sacramentans to their knees. But they fought back with improved water supplies, fire departments and levees. Successful disposal of animal and human waste was accomplished only toward the end of the nineteenth century. The need for clear, clean water for household use, however, was not met until well into the twentieth century. It is ironic that Sacramento with its great waterways should have problems with its water supply for almost a hundred years.

There was plenty of water, of course, but as the small gold rush settlement at the junction of the American and Sacramento Rivers grew into a commercial center of note, many problems associated with water developed.

Gold Rush towns were haphazard towns with no advance planning. Sacramento had water but it was usually below the level of the city and required pumps to make it available for homes, businesses and fire departments. The first entrepreneur to supply Sacramentans with water simply bailed it out of the Sacramento River, dumped it into his water cart and peddled it door to door. Soon a more resourceful supplier installed a suction pump and a five horse power engine on the banks of the Sacramento just upstream from I Street. He pumped the water into an elevated tank, from which he filled water carts by gravity flow; and they, in turn, delivered it door to door, charging by the gallon. Others sought to duplicate this system but were unable to supply the demand. Sacramento with its wooden shacks, open fires in kitchen and fireplace and no water system was especially vulnerable to fire. And the fire came in early November, 1852, leaving only a handful of structures in its wake.

The Common Council had already proposed a municipal water system, and now scheduled an election for January 13, 1853, to obtain public approval. In spite of the recent fiery devastation, the people voted against both plans proposed but did approve a special tax of three-fourths of one percent to finance a \$50,000 loan with which to build a water works.

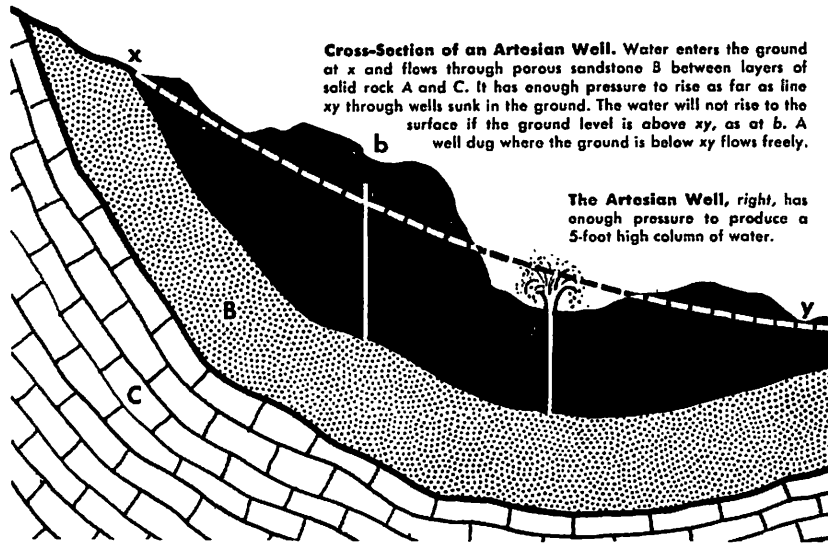
Consequently, the Common Council ordered specifications drawn for a municipal water work system. Work began on October 27, 1853. The building, to be at the foot of I Street, was to measure 125 by 50 feet with a roof 36 feet above street level. There were to be two tanks

on the roof, each six feet deep and capable of holding 240,000 gallons. A 13 inch cast iron pipe was to bring water from the Sacramento River to a holding tank under the building whence it was to be pumped into the reservoirs on the roof. The exact process is not clear. The *City Directory* of 1854 (probably written in late 1853 just as the project was beginning) states that workmen first dug an underground reservoir six feet below tide water and 35 feet below street level. They then lined it with 500 piles of Oregon pine sunk to an average depth of 20 feet to provide a four foot wide foundation for brick walls which lined the reservoir to prevent seepage. However, we found no other reference to this process. An archeological "dig" may be necessary to verify this account. In any case, two pumps hoisted the water to one of the tanks on the roof. Construction specifications called for "some suitable filtering medium," 9 to 12 inches thick between the two tanks, "so that water pumped into the receiving tank shall filter through it into the discharge tank". Periodically one of these tanks would be emptied and members of the "chain gang" (prisoners in the city jail located in the building under the tanks) would scrub away "the earthy deposits that there abound". By 1860 the roof had been divided into three tanks. The filtered water then flowed by gravity into a pipe system and was distributed throughout the city, and sold for about \$24 a month. By 1855 Sacramento had two and one-quarter miles of pipe with 50 hydrants; two years later there were eight and one-quarter miles of pipe.

The water works building completed on April 1, 1854 seemed to satisfy the immediate domestic needs for water and under enough pressure to enable volunteer firemen to fight fires. The pumps had a capacity of 20,000 gallons an hour and the roof top reservoir could hold 240,000 gallons. However, since the water moved through the mains by gravity flow alone, water pressure decreased in second floor faucets and with greater distance from the source. As the city spread out from its nucleus, the water supply became inadequate and the pressure virtually nil. An example of this problem can still be seen in the Governor's Mansion at the corner of 16th and H Streets. The house built in 1877 had its own water storage tank on the third floor, which provided adequate pressure for the rest of the house. The problem of Sacramento's water supply was further complicated in the 1850's by several years of drought, which increased the demand while reducing the level of the Sacramento River. To solve this problem the intake pipe was extended farther out into the

river in June, 1859 and an additional pump (a Worthington) was installed.

By 1870 it was clear that the water system was inadequate. The system broke down on April 6, 1870, denying water to the city for some time. In June of that year workmen raised the water works building fifteen feet in an attempt to develop more pressure but to little avail.



Meanwhile, various schemes were proposed to solve the city's water problem. Some suggested artesian wells or even canals to bring water from the foothills, but both solutions seemed impractical. A new proposal first appeared as a letter to the *Sacramento Bee* in July, 1869. A Sacramentan, who had traveled to the east coast on the newly completed transatlantic railroad, wrote from New York that a new system called the Holly Pump put water directly into the water mains under pressure, and that this pressure could be increased or decreased as needed. This pump would solve the city's problems of inadequate pressure due to the reliance on gravity flow. The fire department would have enough pressure to throw a stream of water to the top of a two story building, and people living on the outskirts of the city would have enough water. However, in March, 1871, the voters defeated a \$167,000 proposal to install a Holly pump. A little more than a year later, on June 26, the voters reversed themselves and the Board of Trustees signed a contract with the Holly Pump Company to install one of its huge pumps. After an addition was made to the water works building to house the new machinery, the

pump was installed and was put into action on July 28, 1873. One of the unexpected side effects of the new pressure pump was the effect on the water mains, many of which broke under the new pressure and flooded nearby streets and buildings. After several months the city solved this problem by laying new pipes.

Thompson and West, *History of Sacramento County* (1880) states that "time has shown that the Holly Rotary pumps are nearly, or quite, worthless". However, Sacramento's City Engineer wrote in 1924 that "the old Holly pump has been almost constantly in operation from that date [1873] up until last year". In any case, a new, big pump was soon added to the system. Built in the Central Pacific Shops and capable of pumping six million gallons a day, it was installed in March, 1878. According to the City Engineer in 1924, it was generally called the "Stevens Pump" after the shop foreman. It remained in use until 1903 when it was replaced by the ten million gallon a day Snow pump. The last pump to be installed in the old water works building was built by Edward P. Allis and Company of Milwaukee. Capable of pumping five million gallons a day, it was installed in April, 1897, and served until the plant shut down in January 1924.

By 1900 the main problem was not pressure but the quality of the water. Although the Sacramento and American Rivers were reportedly crystal clear in 1849, they had become quite muddied even by 1860. The floods of 1861-62 brought the problem into focus. Hydraulic mining in the Sierra Nevada had ruined the quality of the water, sending millions of tons of sediment down to the Sacramento and even into Suisun Bay. A common joke in Sacramento referred to its drinking water as "Sacramento Straight"; (our earliest documented reference is 1873). Residents of 1900 reported that when one drew water for a bath, one could expect to find about a quarter inch of sediment remaining in the tub. Many homeowners who took their water supply from the water works filtered their own drinking water by forcing it through a porous core in a five gallon jug. The core had to be removed and scrubbed daily.

Consequently, everyone was aware of the water problem but could not agree on a solution. The Board of Trustees on July 3, 1899 authorized a committee to investigate "furnishing the city of Sacramento with a clear water supply". The majority favored water from the Sacramento River but with a sophisticated filtering system. Nothing was done until

October, 1908 when the Trustees ordered another report, this one to be based on the experience of other cities that had a filtering system. The question was then submitted to the people on March 24, 1910, but failed to obtain the two-thirds majority needed. The plan was again defeated in a second election on November 10, 1910. The Chamber of Commerce then made its own study and, in a public report dated June 28, 1915, gave an unqualified recommendation for a filtration plant. This report led to still another committee appointed in that same year. It reported in April 1916 that "the most satisfactory, rational, dependable and economic source of a water supply for the city of Sacramento will be the Sacramento River...purified by rapid sand filtration and chemical disinfection".

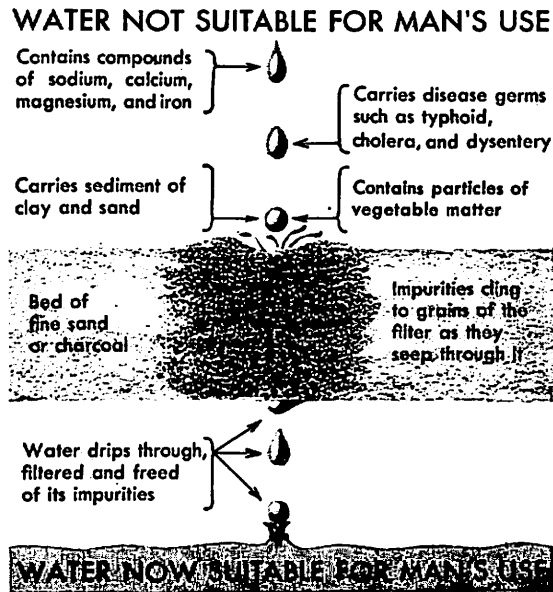
The issue of a clear and clean drinking water supply finally came to a head in 1919. On May 1 of that year, the City Council, which had replaced the Board of Trustees as the ruling body, ordered a \$1.8 million bond issue election for June 26, to finance an adequate filtration plant. There then followed seven weeks of intense publicity on the issue.

Sacramento at that time was divided geographically on the question. There was the "old city", consisting mostly of the area west of modern Alhambra Boulevard, and the recently annexed Oak Park area. Although both areas would vote in the election, each had a different source of water, and in that situation lay a crucial barrier to the passing of the bond issue. Residents of "the old city" received soft water from the Sacramento River via the city water works and paid seventy-five cents a month for it; residents of Oak Park used hard well water for which they paid \$1.25 a month. However, water in the "old city" was muddy, whereas well water in the annexed section was clear. And a favorable vote from Oak Park was necessary if the bond issue was to pass.

Much of the election propaganda, especially that of the Chamber of Commerce, was directed toward the people of Oak Park. They were told, and it was subsequently proved to be pretty much the truth, that if they voted for the filtration system, they would have both clear and soft water at a reduced rate and there would be only a slight increase in taxes.

However, publicity focused on the muddy water and its effect on personal taste, business and health. Newspapers published many references

to sediment in the water supply. A typical complaint came from a reader of the *Sacramento Union* (June 17) who stated that “In my house I am constantly cleaning dirt and sand out of the pipes and the bath tub. Our filter on our drinking water has to be cleaned at least twice a day and the amount of dirt removed is sickening”. On June 12 the *Sacramento Bee* published a front page story quoting the owner of the Eight Hour Laundry as stating that “unless filtration is passed, laundry prices will be raised. At present it is necessary to maintain our own filtration plant, so dirty is the water”. There was even an appeal to men to vote for filtration for the women’s sake as one speaker said “if you men don’t care for your own selves, show a little respect for your wives, daughters, sisters and sweethearts who have to stay at home and put up with muddy water.”.



The Chamber of Commerce strongly supported the filtration plant proposal. It presented a series of public lectures by various experts on the subject at the Clunie Theater. It also published an advertisement in the *Bee* with the names of forty-seven doctors who endorsed the “clean water” plan. Filtration of water from the Sacramento River was endorsed by the Sacramento Medical Society and many other civic organizations. The *Bee* emphasized the urgency of the issue when it editorialized (June 17, 18):

If you don't vote for filtration Thursday, you won't have clear water in Sacramento for twenty years to come. ...all people who are planning to leave the city on vacation before June 26 should postpone leaving long enough to vote for filtration.

Advertisements and editorials promoting the bond issue appeared in the *Bee* every day for a month before the election.

There was some organized opposition to the bond issue. Some opponents had private water rights on rivers other than the Sacramento and the American; others owned private wells and wanted filtration defeated so that the city would be forced to turn to them for clean water. The basic argument of these people was two-fold; filtration was harmful and naturally pure mountain water would be better; and filtration would be very expensive. However, on June 20, the City Commission countered this argument when it stated that no meters would be installed at private residences; there would be no increase in water rates due to filtration; and that, due to the financial condition of the city, no other source could be easily, or ever feasibly considered.

The bond issue passed by a vote of 7,065 to 3,122, or 254 more than the necessary two-thirds. Oak Park, which had its own well water, passed the bond issue 1174 to 912, less than two-thirds of the vote but much more than expected. Many of the votes against filtration came from the downtown business section which was afraid of an increase in the price of water.

Strong support by newspapers and many civic organizations undoubtedly strongly influenced passage of the bond issue. But there was another factor that may well have been critical. Women had become voters in California in 1911, and women as housewives were probably affected more directly than anyone else by the dirty water; quite possibly their vote turned the election.

The contract for construction of the filtration plant was let on a cost plus, bonus or penalty basis. During the early stages of construction there were many delays and cost increases. When Sacramento adopted the City-Manager form of government on July 1, 1921, one of the first projects of the new personnel was to determine how much work remained on the filtration plant and how much money was available for its completion. When it appeared that there were insufficient funds, a new \$100,000 bond issue was proposed and submitted to the people. It was explained that

the increased cost of materials after 1919 was the reason for the depletion of funds. The new bond issue was supported and opposed by many of the same people and organizations that had supported or opposed the original issue. The second bond issue was passed on December 21, 1921 by a vote of 7,188 to 1,490. However, construction was further delayed for seven and a half months when a defeated city councilman challenged the validity of the city charter. The litigation prevented the city from selling the bonds until the case was settled. As soon as the court ruled in favor of the city, the bonds were sold and the filtration plant completed.

On December 31, 1923 President Calvin Coolidge pushed a telegraph key, sending an electrical impulse across the continent and opening Sacramento's new filtration plant. So Sacramentans celebrated the New Year and the opening of a long delayed and much fought over filtration plant in one giant, joyous celebration.

SOURCES

1. Thompson and West, *History of Sacramento County*.
2. Albert Givan, City Engineer, *Historical Report of the Water Supply of the City of Sacramento and the Filtration Plant* (1924; typed copy).
3. Contract for Construction of the Waterworks Building (1853) and copies of other documents in the Sacramento City-County History Center.
4. Stephen McCaughey. Controversy over Water Purification (1919-1924). Mr. McCaughey, a student at California State University at Sacramento, submitted this research paper in a class in historical research.
5. Newspapers:
 The Sacramento Bee June 2, 12, 15, 17, 18, 20, 23, 27, 1919
 The Sacramento Union June 17, 1919; Jan. 1, 1924.

We wish to thank the staff at the City-County History Center for use of their facilities, collections and the pictures used in this issue.