

NOTHING NEW UNDER SUN

Solar Heaters Used at Turn of Century

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The idea prevalent today, that solar water heaters are something new, is far from accurate.

They were extremely common in Southern California—and some other parts of the country—in the late 1800s through the 1920s, when the discovery of supplies of cheap natural gas gradually forced them out of use.

The story of the early days of solar energy use here is interestingly told, with a multitude of pictures from the time in the current (fall) edition of the CoEvolution Quarterly, put out by the publishers of the Whole Earth Catalog.

Coming forward to the present from the article by Ken Butti and John Perlin, the firm they name as the developer of the first modern solar water heater is not only still in business but is getting back into solar heating after an absence of several decades.

Early settlers had heated water in the sunlight for many years. A tank, usually painted black, was put in the sun and by late afternoon the water in it was hot enough for washing.

Something better was wanted and in 1891 Clarence M. Kemp of Baltimore patented it. Four tanks, usually of 8-gallon capacity, lay horizontally in a glass-covered box, mounted on a slant so one tank was above another.

Named the Climax, it was bought by two Pasadena businessmen, E. E. Brooks and W. H. Congers, in 1895. By 1900, some 1,600 Climax solar heaters were in operation throughout the Southland.

An improved heater, with better water flow and a back-up provision, was invented in 1898 by Frank Walker of Los Angeles. Ownership of the Climax changed hands several times and in 1905 Charles Haskell, then its owner, introduced the Improved Climax, with broader, shallower tanks which heated faster, with further improved water circulation and with a back-up.

The Climax and Walker devices could heat water to 120 degrees Fahrenheit by late afternoon; the Im-

proved Climax by early afternoon.

In 1908 William J. Bailey moved to Monrovia. He was an engineer and had been employed at upgrading manufacturing processes for the Carnegie Steel Co. in Pennsylvania. In 1909 he upgraded the home manufacture of hot water.

The cast- or galvanized-iron tanks in the current heaters were not particularly efficient in transferring heat, in fact, they had to warm up before the water would.

He solved two problems:

Bailey ran the water through copper (a better heat-transfer medium) pipes soldered to a copper sheet, both painted black. The smaller quantity of water exposed to the sun at any one time also heated faster.

Secondly, the water stored in the same tanks in which it was heated, cooled off at night and had to warm again the next day.

Bailey removed the storage from the heater and kept the hot water in an insulated tank, mounted on the rooftop or in the attic.

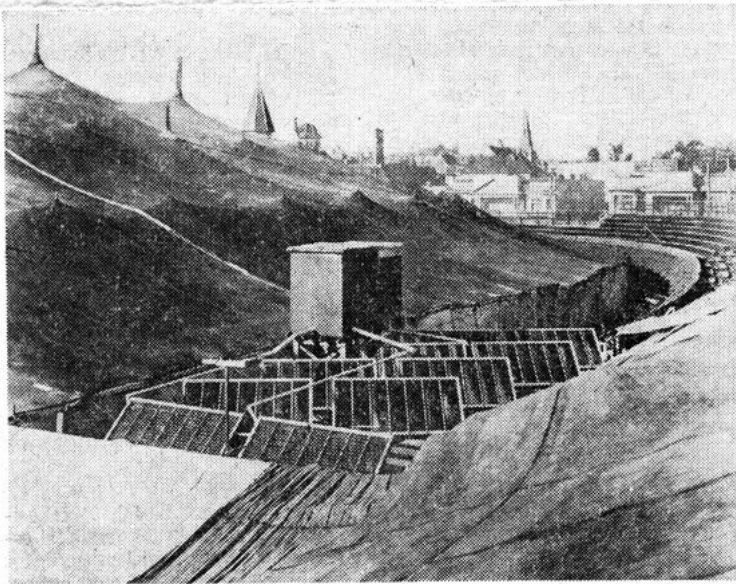
The idea worked; the water stayed hot all night and people could wash faces before breakfast or dishes right afterward. This was such an important advance that Bailey named his device the Day & Night Solar Water Heater and incorporated the business in 1911.

The final step came when the disastrously cold winter of 1912-13 froze solar heaters left and right, bursting the pipes. The flood of complaints ("There's water dripping through my ceiling . . .") nearly sank his company and forced him to create a new device in which a non-freezing solution was heated in the solar panel and then used to warm the tank water by being passed through an immersed coil.

At that point, Bailey had developed the basic configuration used in practically all liquid-activated systems marketed today. His concept of separating the heating and the storing functions is also used in air systems.

The reasons for the rise of solar

Solar water heaters were common in late 1800s through 1920s



EARLY USE OF SOLAR ENERGY

Because wood, coal and artificial gas were quite expensive, solar water heaters were common at the turn of the century. Above, arrow shows solar water heater installation on roof of Pasadena house in picture taken shortly after World War I. Day & Night heater had 120-gallon capacity. Below, Day & Night solar water heater exhibition and land show, 1912, at plant site in Monrovia.

heating were cost and comfort. They were also the reasons for its fall.

As noted in the CoEvolution Quarterly article, wood and coal were quite expensive around the turn of the century and gas even more so—not natural gas but artificial gas manufactured from coal. The original Climax, costing \$25, would save its owner about \$9 worth of coal a year.

Then, heating water with a stove, either on it or in a "side-arm" coil device, meant getting the stove hot first and by the time the water was hot the kitchen would be unbearable on most days of the year.

The discovery of huge fields of natural gas in Southern California in the 1920s and '30s brought the price down to a feasible level for most people. The invention of an insulated gas-warmed heater with a thermostat which turned the fire on and off—essentially what we use today—solved the comfort problem and provided hot water more dependably. The solar heater was on its way out.

In 1923, Bailey sold the use of his patent to an entrepreneur in Florida, where the solar water heater made its greatest success. The article said at least 60,000 were in use there in 1941.

Other sources estimate that about 25,000 were in use in Southern California during the 1920s and '30s.

The story of the Day & Night company was carried forward both by the article and by George Haladay, advertising manager of the company, now located at 855 Anaheim-Puente Road, City of Industry.

The company is now producing air conditioning and furnaces and is a division of Carrier Corp. William J. Bailey Jr., the son of the inventor, is president of Carrier. Day & Night sold its water-heater line to Phillips In-

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dustries and its last production run of them was Jan 24, 1974.

Both sources agreed that Day & Night continued to make solar water heaters on a small scale until the outbreak of World War II.

Its last shipment, bound for Canton Island for use at the way-stop there for the Pan American Clippers, was on the dock in San Francisco when Pearl Harbor happened. No one now knows what happened to it.

In fact, the war finished what the discovery of ample gas had begun, the destruction of the solar heating industry. The largest single factor was probably the restrictions on the use of copper. After the war, cheap electricity prevented a revival.

Haladay said some of the old Day & Night solar heaters are still around, principally as conversation pieces. The pipes have been disconnected and most of the solar panels have been removed.

"The tanks are still there, or a lot of them," he said. "They were big heavy things, usually in the attic, and it was easier just to leave them."

Haladay said he has heard of a school or former schoolhouse somewhere in the Santa Barbara-Goleta area with an old Day & Night heater still in use but he has not been able to track it down.

But the wheel has come full circle—two wheels, in fact.

Just as abundant, cheap gas and electricity killed the solar heater,

present shortages and rising costs have revived the corpse.

And the company which originated the modern system is reentering the field.

Haladay said Day & Night, in conjunction with the Payne air conditioning company, has an experimental solar house in Indianapolis while Carrier has one in Florida. There is one difference: They are concentrating on space heating and cooling, principally heating. Day & Night plans to put solar heating equipment on the market early next year.

And thus a punster might be excused if he summed it up by quoting the Preacher in Ecclesiastes:

"There is no new thing under the sun."

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