



## Coal, the Once (and Future?) Fuel

By Jean Luddy



Abundantly found in the United States, coal replaced wood in as the dominant fuel in the mid-19<sup>th</sup> century and powered the rapid growth of industrialization in Great Britain and the United States. In addition to its use in factories, coal provided heat for cooking and heating in most American homes through the 1920s and 1930s. Buying, storing, and handling coal were part of the daily routine for over 100 years until coal was replaced by natural gas, oil and electricity.

Derived from decaying plant materials, coal was formed 250-300 million years ago when swamplands covered large amounts of the Earth. As forest and plants died, they fell into swampy terrain. Generations of trees and plants grew and died making the layers of plant material thicker and denser. Over time these layers were subjected to heat and pressure causing them to become hardened and compressed into coal.

The composition of a coal deposit varies depending on the nature of the original plant materials, additional mineral inclusions and any bio-chemical reactions. Early geologists classified coal varieties by their concentration of carbon into 4 types: anthracite, bituminous, sub-bituminous and lignite. Each type is characterized by a different heating value and hardness, influencing the way they were used for industrial and commercial use. Anthracite, a hard coal, was preferred for domestic use and by the railroads, because it burned hot with little smoke and flame. Bituminous, a softer coal produced more smoke and ash than anthracite and was used in factories and power plants. Sub-bituminous and lignite, lower rank coals, were used to generate electricity and for other industrial uses. American consumers preferred to buy anthracite for home heating and cooking, but at times purchased bituminous which was cheaper than anthracite. Coal for home and business use was purchased by size: Steam- 4.5”to 6” for steamships, Broken- 3.25” to 4.5”, Egg- 2.25 to 2.3”, Stove- 1.5” to 1.65” for home stoves, Chestnut- 0.85” to .093” and pea 0.5” to 0.65”.



As the Industrial Revolution progressed during the 19<sup>th</sup> century, the demand for coal expanded rapidly. Early factories had been powered by machines that required wood. Better quality iron and steel were developed as a result of new techniques in metal production. As machines became larger, stronger, and faster, factory owners switched to coal which was plentiful and less expensive than wood. These improved factory machines worked effectively with the higher heat that a coal fire produced.

As in our day, commercial/industrial innovations made their way into the domestic realm. For generations, American homeowners used wood for cooking and heating. Houses were built with centrally placed chimneys and with multiple fireplaces. The heat was not spread evenly throughout the rooms and much of the warmth went up the chimney. Women prepared family meals and baked bread using large open hearth fireplaces. With the exposure to open flames and their long skirts, this type of food preparation was hazardous for them. The introduction of the cast iron cook stoves and coal furnaces changed life styles, food preparation procedures, and home design.



Cast iron stoves, introduced in the 1830s, became a common feature in American kitchens after the Civil War. These stoves took up less space than a fireplace and reduced the amount of smoke in the room. The enclosed firebox led to a safer cooking area. The oven could be heated to higher temperatures with better regulation. The cooking space on top had room for pans and kettles. Women using these stoves to prepare meals developed new cooking techniques and recipes. Several dishes could be cooked simultaneously. Housewives and cooks learned how to bank the stove fire at night, keeping the fire going without allowing the flames to go out. Starting a fire in the stove meant removing old ashes and coal chunks

followed by carefully inserting paper and kindling before lighting a fire. Once the fire was established, the coal was added.

For all of their improvements, these stoves did require daily maintenance from wives/cooks. Twice a day, the ash box had to be emptied and the ashes disposed up in ash cans. The cast iron required special treatment to keep the metal from rusting out. Almost daily the stove was rubbed with a thick black wax, and then polished. Most coal stoves required a daily average of 50 pounds of coal which had to be brought in from its storage place. "In 1869, Catherine Beecher and her sister Harriet Beecher Stowe estimated that in the mid-Atlantic states, it took three tons of anthracite to keep one fire burning through the winter, and four tons in the northern states." (Frazee, p145)

By the early twentieth century, new styles of stoves came on the market made from materials with porcelain finishes which required less care. These stoves relied on cleaner power sources such as natural gas or electricity. As new homes and apartments were built with systems in place to deliver these energy sources, people shifted away from using coal in their kitchens.

Coal furnaces appeared in larger homes by the mid-19<sup>th</sup> century. Like their smaller cousins in the kitchen, these larger units required maintenance and needed frequent infusions of coal. The furnaces were usually located in the basement of a home or building. The coal was delivered through a chute into a bin in the basement. Coal furnaces heated homes into the first decades of the 20<sup>th</sup> century before being replaced during the pre-World War II period by oil or electricity for heating. Some existing home units were reconfigured to handle the newer types of fuels.



As Rockville changed from a mill village to an industrial town with multiple mills, coal powered factories and homes. Coal was supplied by two area dealers, the Martin Coal Company and the Schwartz Brothers Coal Company. Both were located near the rail line that came into Rockville. The Martin Coal property faced Vernon Avenue near the corner of Grand Avenue. The Schwartz Company coal yard was on Nye Street. Both former yards can be viewed from the Rails to Trail path in Rockville.

Rockville native, Ellen Rowe's mother was the daughter of William Schwartz, one of the owners of the Schwartz coal yard. Mrs. Rowe grew up in the neighborhood near the business. In a recent interview, she shared some memories of Rockville in the coal era.



*William Schwartz on the left stands by the coal bins along Nye Street*

Her family's coal company was started in the late 19th century by William and John Schwartz, brothers who came to Rockville from Germany. The coal yard and business were located on Nye Street where the Ashe Fire Station is now. The long concrete wall along the property next to the rail trail was originally divided into sections which stored different sizes of coal. When the railroads delivered the coal in coal cars, each grade of coal was poured into a specific section. The track used by the railroad to deliver the coal was a side track off of the main line into Rockville. Mrs. Rowe remembered that sometimes after a coal delivery had been completed the trainmen would invite the boys (never the girls) for a ride into Rockville. She would have liked to have had a ride

The Schwartz's Coal Company and The Martin Coal Company were the main coal suppliers in Rockville. The Schwartz Company sold coal for the commercial and domestic markets. During the first half of the 20th century, 90% of the mills used coal for heating. Many homes in Rockville had coal furnaces for home heating. By Mrs. Rowe's youth in the 1920s and 1930s, few homes had coal stoves. The stoves required a lot of work. People switched to gas or electricity when they could. In the post- World War II years, most people in town used oil or electricity for heating and cooking.

Mrs. Rowe explained that the busiest time at the coal yard was the fall, because people started stocking up for the long winter months. Coal was delivered to customers by trucks. The coal was stored in basements because it was so dusty and dirty. Coal drivers would attach a chute to a coal truck. They dumped the coal into a homeowner's basement through a window in the home's foundation into a coal bin. From there the homeowner would shovel the coal into the furnace. The Swartz Company delivered coal to 90% of their customers. Coal deliveries dropped off during the summer.

Heating with coal created a lot of dust. The type of coal affected the amount of dust, too. Anthracite was harder and more expensive than soft coal, but anthracite made less dust. Mrs. Rowe remembered her mother cleaning frequently, but she always did a thorough cleaning in the spring after heating season was over.

Later, John Schwartz's son, John, took over the business. Around the time of World War II, he switched over to selling oil for home heating. The demand for coal was dropping, because many people were switching to oil or electricity for domestic heating. None of his children were interested in taking over the business, so John sold the land to the town. The John F. Ashe fire station was built on the property in 1970.

Using coal for heating and cooking in our homes is a thing of the past. However coal continues to be used by electric companies to generate power for domestic and commercial customers. Even during the years when coal was dominant, concerned citizens started to raise questions about the impact of coal production and consumption in our society. Certain types of coal mining wreak devastation on the landscape. Coal mining as an occupation has always been dangerous job and leaves miners who survive the mines with long term health problems. Coping with conditions caused by coal smoke and dust in homes and cities and their impact on health and cleanliness was a fact of 19<sup>th</sup> to 20<sup>th</sup> century life. These problems with coal continue to be a concern in the United States with the emissions from coal-fed electrical generation plants being blamed for acid rain, air pollution, mercury emissions, greenhouse gases, and respiratory illness.

Coal remains a viable energy source because the United States has large reserves. Coal costs less than foreign oil and is easier to ship to coal burning plants. Coal companies, power companies and government agencies sponsor research into technologies that will make coal cleaner to use. One possibility involves converting coal into a gas or a liquid as part of the energy generation process. Installing scrubbers to clean the coal before, during, and after combustion is intended to reduce pollution. Another process involves introducing bacteria into coal processing to separate the pollutants from the organic elements thereby removing sulfur and pollutants before the coal is burned. Any of these technologies will require the power companies to commit to major upgrades of their building and machinery. Their willingness to undertake these upgrades will be determined by the implementation of alternative energy technologies and the price of other types of fuel.

Once coal was king during the Industrial Revolution, it may one day return as a dominant source of fuel in the post-industrial age.

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