THE GREAT OUTDOORS

American Buildings Survey, Creator, Charcoal Pits, Lakehurst, Ocean County, NJ. Documentation Compiled after 1933. Photograph, Retrieved from the Library of Congress, loc.gov/item/NJ0715?>.

Charcoal and Colliers

Charcoaling is part of our South Jersey heritage: it has shaped the forests we enjoy today.

By J. Morton Galetto, CU Maurice River

Over the past 30 years the topics of charcoaling and iron-making have arisen on interpretative hikes that I have taken in the pine barrens of southern New Jersey. In the Batsto Visitor Center Museum, for example,

displays are set up to explain the production of iron in the Pinelands.

Coal-making is part of our heritage and it has shaped our forest landscape. In our area few trees and essentially no woods exceed an age of 120 years because of industrial uses for woodland. We have few primeval forests, and in fact most naturalists say that just one remains: Bear Swamp in Downe Township.

If you explore the wilds of our region, knowing this history provides important insights into the topography that we see today. A number of industries have shaped the current landscape, including charcoal, iron, ship-building, glass-making, and farming – and much of our region's carved landscape is the result of sand-mining operations.

All of southern New Jersey's lakes are man-made and linked to a past manufacturing practice, generally the operation of a mill. Canals and raceways turned waterwheels that powered grist and flour mills, the hammering of iron, machining, ore-crushing, and pounding of fiber for cloth. In North Jersey and New England wood pulp was ground by these waterways to make paper.

I'd like to shed some light on charcoal, its properties, colliers, and the late ninetieth and early twenty century uses of iron.

Let's begin with Cornelius Weygandt's book *Down Jersey, Folks and Their Jobs, Pine Barrens, Salt marsh and Sea Islands*, first published in 1940. Weygandt was born in Germantown near Philadelphia and lived from 1871 to 1957. He graduated from the University of Pennsylvania in 1891 and worked as a reporter from 1892-1897. Returning for post-graduate work, Weygandt earned a doctorate in contemporary literature from the University of Pennsylvania, where he taught for 55 years in the English department. He had a special interest in America's cultural past and its influence on his own times.

He wrote *Down Jersey* after having spent a good deal of time in our region of the state, with a special interest in its industrial culture. He devotes a chapter to his search for the romantic life of a collier: a coal maker.

Here is how Weygandt Cornelius begins his chapter entitled "Charcoal Burners":

"There are those who say to me: 'There is nothing romantic about Jersey.' Nothing romantic, when there is the sea on Jersey's

shores, and ships on the great estuary of Delaware Bay west of Jersey, and on the mile-wide Delaware River above the Delaware Bay! Nothing romantic, where there are lighthouses, and gloomy swamps of white cedar, and white egrets under gray skies! Nothing romantic, where there are dream-laden and adventuring men that go down to the sea from Forked River and Wading River, Manahawkin Bay, and the Great egg Harbor Bay, to the earth-girdling sea where there are pathways to the Indies, to the diamond mines of South Africa, to New Guinea and the Fortunate Isles! Nothing romantic, when the mere clatter of horse hoofs on the ferry slip in Camden is challenging as a trumpet call out of the dark, bringing before me as it does the high wagons, charcoal-laden, that in the days of my youth carried their treasure from the pine barrens to the forges of Philadelphia!"

Weygandt continues: "Where charcoal is burned there is romance. From childhood they have fascinated me, those gipsy-hearted men and women we saw down Tuckerton way as we ran by train across Middle Jersey en route for Beach Haven or Barnegat."

He speaks of a rough-spoken catboat sailor on Manahawkin Bay who recited verses about his family being colliers in the pines.

Weygandt was most impressed when night fell and he was held up by a storm at Barnegat City and when he reached a railroad landing west of Seaside Park. The night was dark, but throughout the pines he could see great mounds with the campfires of colliers who guarded the results of their buried smoldering efforts – charcoal. He writes of his childhood fascination with coal and the "romance" of the process. The picture he paints gives much insight into aspects of coaling.

I assume his idea of "romance" is steeped in the Romanticism common to the literary and artistic movement of his contemporaries, defined by *mystery, remoteness, marked by imaginative or emotional appeal of what is heroic, adventurous, and mysterious* (Merriam- Webster and Princeton.edu). Weygandt found romance in those who tended and guarded their pit or kiln.

The word "pit," as the collier's mounds were referred to, is an odd choice since they were on the surface of the soil. In its heyday charcoal production was labor-intensive, with half of the workforce being woodcutters. After the wood was cut the making of charcoal itself was often a more solitary art achieved by the collier. The proper stacking of the mound and tending of the burn was common knowledge throughout the 18th and

19th centuries. Forests and wood from recently-cleared farms supported the coal industry, and ribbons of “blue smoke” dotted the countryside.

The iron furnaces of the Pine Barrens relied on ore found in boggy areas: “bog ore,” on flux from oyster shells or limestone, and on charcoal. In fact the production of iron in the United States relied entirely on charcoal until about the mid-19th century when coal and coke became the dominant fuel. But the demand for charcoal continued to increase until 1890 and persisted until 1945 (Schallenberg).

Collier applies “lap-wood” to kiln’s surface(see Library of Congress citation above).

Below: Colliers apply sod to surface of "lap-wood" beneath. After burning, piles were a third to a fourth of the original size (see Library of Congress citation above).

A collier's mound was constructed with a wooden flue, or "pigsty chimney," of logs surrounding a "fagan," an 18-foot pole in the center of the chimney. Around the fagan kindling was placed. The logs were stacked around the flue. Afterwards long poles were laid in a slanted fashion over the pile of logs.

Thick moist turf was cut from cedar swamps using a turf hoe. These slabs were mounded over the wooden assemblage – sandy-side out. Each of these pieces of sod was known as a float. Sand was piled on top of the turf.

The fagan would be removed and the fire would be started in the center of the stack. Air vents at the bottom of the stack provided ventilation; too much and the fire would burn too hot, too little and the fire might go out. It would take about two weeks for the mound to create charcoal. For an excellent detail of this process see Ted Gordon's pamphlet in sources or the description in the Hopewell Furnace site (https://www.nps.gov/hofu/learn/historyculture/charcoal-making.htm).

Charcoal is only produced if wood is burned in a confined space with limited air at around 572° Fahrenheit. Too much air causes the wood to burn to ash, bypassing the desired product. The procedure is a dehydration process of carbonization where the wood decomposes into charcoal. A collier had to keep just the right balance to obtain his product.

Why charcoal? Charcoal burns two times hotter than wood and is one-third the weight and one-half the volume of wood. Taking logs to a kiln was a heavy and bulky

business. A collier burning wood close to its source could make a more portable product: charcoal. It burns more evenly than wood because carbonization has removed both moisture and impurities. Thus charcoal was the preferred fuel of smelting operations. Its heat of 2600 - 3000 degrees Fahrenheit could reduce iron oxide into pig iron.

The Bridgeton Pioneer, October 13, 1887, reported that about twenty-five bushels of charcoal were derived from a cord of wood, fetching about 25 cents per bushel. The Pioneer article's main topic was the discovery of distilling wood-alcohol from the smoke, by mixing in lime and making a product called acetate of lime or calcium acetate. From a cord of wood 550 pounds of acetate was produced. This product was used by the textile industry as a dye fixative or mordant and for tanning hides. Thus coaling also gave birth to a different product.

Charcoal was used in smelting metals like iron, lead, and copper, the manufacture of gunpowder and other explosives, the drying of hops, cooking on grills, and as an artists' medium. In medicine its absorption properties mask odors and purify drinking water. Hens are fed charcoal to strengthen egg shells, and when poultry farming evolved into an indoor business chickens

were given charcoal to help eliminate odors. Charcoal is also used for fertilizer.

What was produced in the iron foundries that charcoal fueled? Endless numbers of implements were made from iron. Millville Manufacturing, an iron foundry, was established by David Cooper Wood initially on the Manumuskin River in 1803; it moved its operations six miles upstream, to the Maurice River in Millville, in 1813-14.

The Wood family mansion was across the street from their iron works. The house's iron fence, porch columns, and steps were all produced at the family's foundry. The large cast-iron bell in the front yard was made in Philadelphia. Similarly Budd's furnace on the Manumuskin produced iron tombstones and firebacks – an iron plaque that was placed behind the fire to retain and reflect heat. In the Pine Barrens, Batsto Village was famed for its production of the iron cannonballs used by the Continental Army in the American Revolutionary War.

Colliers' cabin. Photo: Rothrock, J.T. (1907). The Collier's Cabin. In Report of the Pennsylvania Department of Forestry for the Years 1905 and 1906. Harrisburg, PA: Harrisburg Printing Company.

In reading about colliers I learned many interesting anecdotal facts. J. T. Rothrock wrote about the collier's cabins in Pennsylvania for the Department of Forestry in 1905. One collier described the temporary shelters that they built near their "pit," which housed a collier and possibly an assistant or two. They were not all that dissimilar from the outside layer of the coal mound kiln itself. Eight to ten-foot posts leaned teepee-like, and then straw and leaves were applied. Smaller poles filled in the spaces much like the mound's construction. A rudimentary door was placed at the entrance.

Rothrock suggested, “If one disregards the aesthetic element, it might be safely said that the woodsman spent comfortable winters in these temporary structures.” He suggests they were well-ventilated and offered respite from foul weather. If fact, some doctors practicing medicine in Mifflin County, PA would prescribe that tuberculosis patients should live with colliers to get fresher air!

One collier relayed to Rothrock that snakes were especially fond of their quarters in summer. He commented, “The snakes didn’t seem to want to bite us. One morning I found a rattlesnake curled up on the foot of my bed. He could have killed me if he wanted to.” One method to discover whether snakes were present was to keep a toad in the cabin. If the toad disappeared, a snake hunt ensued.

I guess everyone’s idea of “romantic” is different; I prefer snakes curled up outdoors. Nonetheless I found reading about charcoaling in the pines fascinating and I hope you learned some fun facts too!

Sources

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(Please: scroll for addition information)

Herbert Payne photo by Ted Gordon

Want to learn more… about the coaling process? The South Jersey Culture & History Center has an excellent eleven-page pamphlet entitled: Herbert Payne: Last of the Old-Time Charcoal Makers in the Pine Barrens of New Jersey, Ted Gordon 1982.

Mail your request to: Stockton University, 101 Vera King Farris Dr., Galloway, NJ 08205 ($4)