Rock Furnace Trail

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The Rock Furnace Trail:

The Rock Furnace Trail is a short (1 ½ mile), straight trail in southern Armstrong County that interconnects a well marked parking area off Brownstown Road with the heavily used “Roaring Run” hiking/biking trail that runs along the Kiskiminetas River. Both trails were built and are maintained by the Roaring Run Watershed Association. There are many ways to splice together hikes or bike rides over both of these trails. I will start our “hike” today, though, at the junction of the Rock Furnace and Roaring Run trails.

A short, railroad tie bridge (left) crosses over Roaring Run just before it joins the Kiskiminetas River. This bridge interconnects the upper and lower sections of the Roaring Run trail. The lower trail runs back toward Apollo and stops at the large trail parking area about a mile and a half away. The upper trail follows the Kiskiminetas River and passes several acid impacted mining areas undergoing various stages of rehabilitation. After a little over two miles, this upper trail narrows down to a rough, often wet, dirt trail that winds its way upriver toward Edmon and Salina. The lower trail section is built on top of the old Pennsylavnia Main Line Canal path. A few yards down from the bridge are the remains of the stone walls of Lock Number 15. This lock lifted canal barges and boats between the slack water of the Kiskiminetas and the shallow confines of the canal.

The mouth of Roaring Run (right) is choked with gravel and sediment. There is a dense stand of young trees and shrubs growing on this deposited debris. The stream runs through this “delta” in a twisting, tortuous, path. From a canoe out on the river it is difficult to actually see the creek. Roaring Run is clear and runs rapidly under the bridge as it enters the resistance of the gravel bed. There are small fish clustered in the slow water behind the stream rocks and a few frogs splashing and croaking in the shelter of the weeds.

The Roaring Run trail is a very active place. Bicycles race past and rumble over the vibrating cross ties of the bridge. Groups of walkers pulse by talking animatedly. Joggers run by listening to music, eyes focused straight ahead. There is a bench up on the rise over the creek, and people occasionally stop for a rest and a longer look.

We head up the Rock Furnace Trail and pass a handsomely carved marker stone. This trail follows the northwest side of Roaring Run. This path, like the main trail, is broad and smooth and surfaced with crushed limestone. The foot and bike traffic is less than on the main trail, but it is still a well used path.
Roaring Run (left) cuts noisily through dense tumbles of sandstone making small waterfalls and miniature white water runs. Leaves from last fall still cling to the creek sides and to the tops of taller rocks. Small pools behind the rocks are filled with the same tiny fish we saw from the bridge. The trail rises steadily for about a half a mile and then drops quickly down and then crosses the creek on a newly completed wooden, suspension bridge (below). There is also a set of rocks just upstream on which you can cross the water in a more primitive (but very satisfying) way.

The trees along the trail are primarily the same mix of sun-tolerant, fast growing species that we saw along the West Penn Trail and along the banks of the Kiskiminetas River: ash, yellow birch, yellow poplar, red and sugar maple, and black cherry. The trees are very similar in size. There are very few larger (older) trees although a few of the red maples and, in the shady areas along the stream, a few American beeches have reached diameters of 1 ½ to 2 feet. The understory vegetation is dense and dominated by several fast growing exotic invasive plants like multiflora rose, barberry, and garlic mustard. There are also some dogwood and witch hazel growing in between the lower and upper vegetation. The great abundance of Japanese knotweed that chokes the streamside of the main trail is somewhat reduced back here. Raspberry and blackberry canes are thick on the forest edges.

The stream bed of the creek is covered and lined with great boulders and slabs of sandstone that have been frost wedged out of the capping of the hilltops. Erosion of the weaker shales under this upper sandstone allowed the great pieces to tumble down the slopes and gather in chaotic piles all along the creek.

The trial on the other side of the creek hugs the hillside and rises steeply. More boulders are visible on the hillside. Many of the rocks are densely covered with polypody ferns, moss, and young trees. The roots of some of the trees have grown over the edges of the rocks and extend down to the surrounding soil. The green of the ferns and moss seems to glow in the low light of the ravine. A large rock looms up on the right side of the path. This is “Camel Rock” (left). There is a very well used path that climbs up behind the rock and leads to its relatively flat upper surface. There is also a large, cool, shady hollow under its
extended edge. A small seep trickles through the underlying fragmented shale. Across the ravine, almost level with Camel Rock is another almost equally large boulder. In the summer, it is difficult to see this second rock because of the dense cover of the surrounding trees and underbrush.

Camel Rock has a number of yellow birch seedlings growing out of the tiny cracks on its vertical face. If these trees survive, their roots will accelerate the inevitable fragmentation of the rock mass.

In the flat area along the stream on a line in between the two great rocks, is a pile of obviously cut blocks of sandstone. These stones are the remains of an old charcoal iron furnace that operated here between 1828 and 1852. The furnace (called “Biddle’s Furnace” after its first owner) utilized the limestone and hematite (“iron ore”) that could be dug from the surrounding rock strata and charcoal made from the controlled burning of the abundant hardwood trees that abounded in the area’s primal forest. Three tons of iron ore mixed with 190 bushels of charcoal and 300 pounds of limestone were put into the large, cone-shaped, stone furnace and ignited. The mix would yield one ton of pig iron that would flow, hot and molten, out of the bottom of the furnace into cooling beds of sand.

These iron furnaces used prodigious amounts of charcoal. An acre of forest a day needed to be cut and cooked into charcoal in order to keep a furnace fired. A single furnace required up to 30,000 acres of available forest around it to keep the cutting and natural re-growth cycles running. Hardwoods (like hickory, oak, ash, and chestnut) were preferably cut and fed into the collier’s pile. Secondary growth that sprang up from stump sprouting and seedling growth on the logged sites was harvested after 20 or 30 years. Some colliers, in fact, preferred these smaller, secondary trees to the primary trees for the quality of the charcoal produced. Great swaths of forest lands throughout Western Pennsylvania were repeatedly clear cut through the nineteenth century to meet the demand for charcoal.

(Note: the information about iron furnaces comes from the U.S. Department of Agriculture Lake Vesuvius website, and from a Penn State video about the history of Pennsylvania forests. See the Reference List for specific reference information).

Standing here in front of the debris of the furnace, it’s hard to imagine the energy and effort that filled these quiet woods during the two decades of its operation. Cutting teams of 50 to 75 men mowed through surrounding forests and sent acre after acre of cut wood to the charcoaling piles. Wagonloads of charcoal and cartloads of limestone and hematite rumbled across narrow dirt roads and up and down slopes and converged on this point. Great mountains of slag (the waste from the furnace firing) were carried away and dumped. Many of these slag piles are still visible along the main hiking trail. Thousands of acres of forest were cut. The surrounding hillsides were bare and exposed and surface litter and soil eroded into the creek and washed down toward the Kiskiminetas. The smoke from the furnace filled the hollow. The original forest of oak, hickory, and chestnut was changed into a more sun tolerant secondary forest of maple, ash, poplar, and black cherry. The hidden, shady groves of hemlocks that probably grew in the deeper hollows of the ravines were also cut. A handful of hemlocks persist along Roaring Run, and several of these do seem to have clusters of younger trees arising down slope from the cone bearing older individuals, but the hemlock stands were to all intents and purposes destroyed by the logging and subsequent soil erosion. As H.E. Clepper wrote in 1934, “hemlocks could not endure civilization.” One of the larger hemlocks along the trail was recently broken in a

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wind storm. I counted 83 growth rings from the broken trunk 25 feet up from the ground, and I am guessing that the tree was 130 to 140 years old. The moist areas of the hollow now have stands of beeches and red maples.

It is likely that the secondary forest that arose in the early decades of the nineteenth century was in turn cut in the early decades of the twentieth century for firewood, mine props, railroad ties, or a myriad of other uses. Judging by the sizes of the surrounding trees, what we see here now is probably a tertiary forest of maybe a hundred years of age. The large number of trees in the sixty or seventy year age group represents the second stage colonizers of the initial shrubby brush land that grew up after the second clear cutting. Fires in these very susceptible shrub and slash lands may also have further delayed the establishment of the present day forest.

In the spring, this section of the trail is a riot of white trillium flowers (left). In the Fall, all along this section of the path the bright, red berry clusters of trillium stand out sharply against the brown leaf litter and the dark green fronds of the ferns. The trillium berries are commonly gathered, dispersed, and buried by ants as a cold season food source. Lost and forgotten berries germinate in the spring and advance the spread of these beautiful wildflowers. Less obvious than the trillium berries are the brown, foot high stems of a plant called beechdrops (*Epifagus virginanis*). Beechdrops look at first like the dry, dead stalks of some woody herb. On closer examination, though, the soft flexibility of the stalks and the tiny, delicate brown flowers indicate that these plants are, indeed, alive. The total lack of green color in the plant parts, though, identifies beechdrops as a non-photosynthesizing, parasitic plant that is similar in ecology to Indian pipe (right) and squawroot (left). The stems and flowers of beechdrops connect to an extensive, underground root system that is intimately intertwined with the roots of the surrounding beech trees. The plants draw nutrients out of the tree roots and live in a parasitic symbiosis with them. Recent studies involving Indian pipe, though, have shown that this type of symbiosis may be more complex than was formerly thought. There is the suggestion that some trees in association with Indian pipe actually grow better and obtain more nutrients from their supportive soil volume. The symbiotic connections of the tree and plant roots actually increase the absorptive surface area of the root system to the great benefit of both the tree and the plant. Possibly beechdrops also assists the root system functioning of the beech tree in a similar manner.
A concrete bridge crosses Roaring Run just below its juncture with the much smaller Rattling Run. The beds of both creeks are paved with flat pieces of sandstone, and the streams flow in thin sheets across the smooth, algae covered rocks. A hemlock growing near the creek junction extends its branches over a deep pool just to the left of the bridge. In past years, northern water snakes and black snakes basked on the under supports of the bridge and even on the extended branches of the hemlock, catching the diffuse sunlight that filters down to the floor of hollow. We saw no snakes from 2004 to 2007, but, the good news for snake lovers everywhere, is that the snakes, in the summer of 2008, are back! To the right is a picture of one basking on the thick branches of the hemlocks relying on its camouflage for safety and, if needed, gravity to allow it to drop quickly into the pool below it for a rapid escape.

This stretch of the Rock Furnace Trail is staggeringly beautiful. The central creek roaring through its rocky stream bed, the dense stands of trees that rise up to the very rims of the steep, enclosing hillsides, and the atmosphere of quiet and peace that all work together to generate a place of uncommon character and quality. It is so hard to imagine that 160 years ago this was a place of industry and smoke and, from the point of view of the forest, devastation and destruction.

Across the bridge the trail rises up to a three-way split. Near the split, on the right side of the trail is an old well, walled with cut stone (right). A downy service berry tree with a partially rotted trunk is growing out of its upper edge, but its depths are clearly visible.

The trail on the left follows the course of Rattling Run up through its narrow ravine. Its steep cut down through the rock layers of the hillside generates a wonderful system of waterfalls and pools. The side rocks in several places have dense coverings of mosses and liverworts and generate a wet, shady environment dominated by gentle sprays from the falls and the greens of the vegetation.

The middle trail also follows Rattling Run up this hillside, but from a higher, more easily walked perspective. This trail climbs a very rocky path up to the top of the hill where the largest of the waterfalls (“Jackson’s Falls”)
tumbles over layers of shale into a circular pool below. Rattling Run is shallow and narrow above the falls and easily crossed even in high water times. This path connects with a system of trails that I describe in the “Roaring Run Up and Over” trail narrative.

The trail on the right climbs steadily along the edge of the hillside that overlooks Roaring Run. The surrounding trees are increasingly dominated by oaks and hickories. Off on the uphill side of the trail a well hollowed out standing tree was a nest tree for a pileated woodpecker pair in summer 2008. In June the incredible racket of begging nestlings drew us to the tree much to the distress of one of the parental woodpeckers. We saw the head of one of the nestlings poking out from a large, circular hole high up on the tree.

There are wild grape vines high up in the canopy which attract large flocks of birds in the fall. Alongside the trail are old drainage ditches that have become isolated and form persisting pools of water in the spring. These small, “vernal pools” are typically filled with eggs and then tadpoles of frogs each spring. Each year we watch the race between tadpole development and the inevitable evaporation of the pools. In all but the driest years, the pools persist long enough to allow full metamorphosis of the young frogs. In the wetlands along Roaring Run, large numbers of spring peepers are heard each year. These peepers sing all through the day in the shady environment of the hollow.

At a gas well about a quarter of mile from the end of the trail, there is a high, crumbling, rocky hillside that opens its concave face to the southern sky. The brown and gray rocks of the hill act like solar collectors. Even before the surrounding snow has melted the first Colt’s Foot blooms in the area are seen here. In the fall, this same area holds its golden rod blooms almost into winter.

A hundred more yards brings us to the Rock Furnace parking area. This short trail has so much to offer: history, ecology, and aesthetic beauty. It is, indeed, a pleasure to hike.