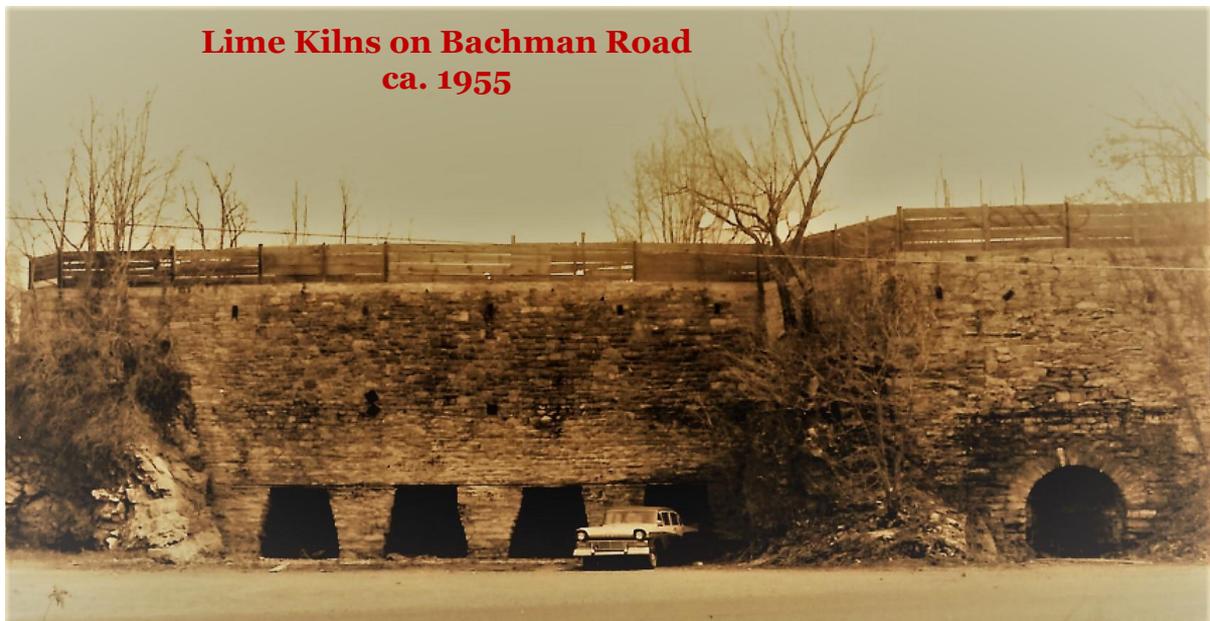


## **THE LIME KILNS ON BACHMAN ROAD**

**By Newton Bair, Lebanon County Farm Agent (circa 1995)**

The site of the Quittie Creek Nature Park that borders the Quittapahilla creek in Annville contains an artifact of history that has played an important part in the development of Annville and the surrounding community. The limestone quarry will always remain as a dominant feature of the park and the remains of the "Pot" kilns seen at the edge of the quarry will be preserved as a reminder of the economic importance of the many products derived from the stone.



The quarry along Bachman Road was one of nearly fifty small limestone quarries in the Valley. The land was owned by the Bachman family from 1849 until early in the twentieth century, when the site was acquired by John Ditzler, who, with several sons started a lime burning operation known later as the Annville Lime Co. About 1913, Uriah Becker (Hester Duffy's father), and his two brothers, Clinton and Harry Becker, began a stone crushing operation in the quarry. The stone was found to be too soft for road building, so they opened another quarry at the west end of Annville, where the stone was more desirable for their purposes. Ditzlers continued to burn lime until the 1930's when they sold the Annville Lime Co. to H.E. Millard Co.

The process of burning limestone to produce lime has been practiced since ancient times. Some of the earliest uses of lime were in mortar to bind brick and stone for building, and as a soil amendment in agriculture. Through the centuries hundreds of other uses were developed.

Limestone is composed of a combination of carbonates of calcium and/or magnesium. Early in the nineteenth century the limestone of the Lebanon Valley was found to be rich in  $\text{CaCO}_3$  (calcium carbonate), containing nearly 98% calcium. When this limestone is subjected to high heat in a confined space, the carbonates burn off in the form of carbon dioxide gas, leaving only  $\text{CaO}$  (calcium oxide), known as "quick lime" or "lump" lime, which is unstable and caustic but still hard and stone-like. Exposed to the atmosphere it slowly combines with moisture to form calcium hydroxide, which is chemically more stable, and crumbles to a fine powder. The process can be hastened by adding water directly to the quicklime, producing hydrated lime. The reaction is rather violent, producing heat and steam as the water combines with the  $\text{CaO}$  to form  $\text{Ca(OH)}_2$ .

The face of the quarry was blasted loose by drilling vertical dynamite holes with well drillers. The resulting large chunks of rock were then reduced to man-sized pieces by placing sticks of dynamite in hand drilled holes in the boulders, or by placing blasting powder directly on the surface of the boulders, covering it with a heavy cap of clay, called "mud-cap" blasting. Horse carts were loaded with the large chunks of rock by hand, and hauled to the top of the kiln. The thirty-foot tall, cylindrical kilns were loaded from the top, alternating layers of coal or coke with the layers of stone. The stone was kept in fairly large chunks to provide space for the draft, which increased the heat of the burning coke. Ignited from the bottom, it took about a week to burn through to the top of the kiln. The burned lime, or "quicklime" was then drawn out of the kiln through an opening in the bottom.

Much of the quarry work was done by hand labor, employing mostly unskilled immigrants to hammer the drills, load stone by hand into horse drawn wagons, and handle the raw lime. The quarry horses were stabled in the barn on Bachman road that is now the cold storage locker building. Some long-time residents recall that "hobos," "bums," and drifters liked to camp near the lime kilns to take advantage of the heat in the cold winters. In the summer, the dam above the mill was used for swimming. The remains of the earthen dam can still be seen, while only the piers remain as a reminder of the of the stone bridge which was destroyed by the Agnes flood in 1972.

The major use of lime in the early days was for agriculture. Lime is not only a source of calcium as a plant nutrient, but is also extremely alkaline, and acts as a neutralizer or "sweetener" to counteract soil acidity. Most of the "Pot lime" from the early kilns was loaded directly on to a farmer's wagon and, after "slaking" or dousing it with water from the creek or barnyard trough, was hauled directly to the field to be spread by hand. The job must be done before the lime becomes soaked by rain, causing it to "Puddle" and become hard and lumpy and unmanageable. It is recalled by old-timers as one of the nastiest jobs on the farm, causing skin blisters and lung irritation. However, the lime never failed to increase the productivity of the land.

After the demand for industrial use of lime increased, a way of "slaking" the quicklime was developed. A mill was built along the Quittapahilla creek beside the stone bridge on Bachman road. Powered by water from the creek, an iron waterwheel turned a large iron cylinder or basket slatted with holes, for the slaked lime to pass through after spraying the quicklime from the kilns with a measured amount of water from the creek. The properly hydrated lime was then bagged into 50-pound paper bags which could be marketed through hardware and farm supply stores. A fine powdery lime was produced without the necessity of grinding the stone itself, which requires large amounts of power.<sup>3</sup>

The Bachman Road quarry, along with the pot kilns and hydrating or "slaking" mill were abandoned about 1948, when H. E. Millard installed one of the first large capacity rotary limekilns at the main quarry west of Annville. The deteriorating hydrating mill was torn down about the same time, along with the house that stood beside the mill. The original limestone business was later sold to Bethlehem Steel Co., one of the largest industrial users of lime. In 1967, the site of the Quittie Park, containing the quarry and ruins of the kilns, was purchased by Annville Township. Bethlehem Steel sold the main quarry and lime operation in 1985. It is now owned by the Wimpy Co., a British Industrial complex, with a variety of customers worldwide, including manufacturers of paper products, glass, steel, paints, fabrics, and diverse chemical products. The main quarry is hundreds of feet in depth, and is reputed to contain enough raw material to last far into the twenty first century.

The Quittie Creek Nature Park should remain a place to enjoy the peace and beauty of nature, and be preserved forever as a memorial to the early history of Annville.

### **SOURCES of INFORMATION**

Mr. E. D. Williams Jr., conversation & recollections.

Mr. Don Seaton, the Wimpy Co.

Mr. David Shroyer, "Short History of W. H. Millard Co."  
(Lebanon County Historical Society pamphlet).

Mr. Levi Martin, conversations & recollections.

Mrs. Hester Duffy, conversations & recollections.