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der Kallickoffe The Lime Kiln



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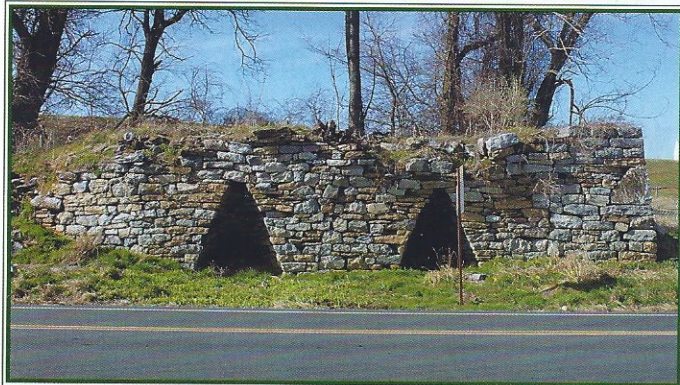
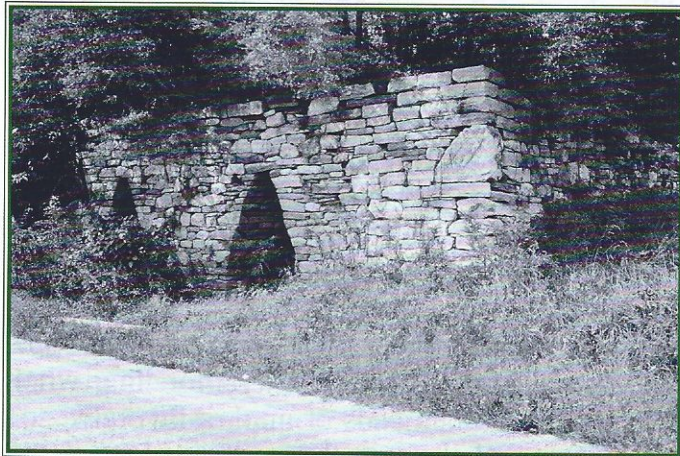
der Kallickoffe

The Lime Kiln

by Hilary Fraley

"Country by-roads have a strange way of awakening vague desires for glimpses of the past, and often times bestow satisfactions too" (Leichenthaeler, 1939, 32, 1).

One day last fall as I was driving through Geigertown I looked off to see the McGowans' fields all white with a fresh dusting of lime. Residents on the land for generations, the McGowans probably don't give it a second thought. Even though many of the old ways are past, some still hold true. It got me thinking about lime, and the old kilns you see now and again, and how, to the alert eye, our countryside still harbors signs of an



Lime Kiln on Rt. 419, south of Womelsdorf in 1940 (above) and present-day (below).

early industry, the old kiln and the burning of lime. In our bustling lives we might not even register these remaining stone artifacts unique to our fields, silent talismans of distant relatives and days gone by.

Today, many of us may be unaware of the historical importance of lime burning in this area. There are still some kilns remaining in Berks County. A partial list is available at the end of this article. In addition, the authors have a website dedicated to the photographic history of the kiln in three states. A testament to the structural beauty of the kiln, it's worth checking out. You will find the link at the end of this article.

The history of the uses of lime and the firing of the kiln go back a long way in Pennsylvania farm life. Recently while reading Amos Long's fantastic book *The Pennsylvania Farm Family*, 1972, I was entranced by his depiction of the social history of the culture of lime burning and facts about the kiln structure. This article will describe some of what I learned, and hopefully encourage you to look around your area, and find history in your midst.

* * *

Lime, a naturally occurring mineral, consists mostly of calcium carbonate (Oates, 2010, 1). Long (1972) suggests that the Pennsylvania Germans were among the first to burn lime in these parts, and that in the late 18th century lime quarries and kilns were abundant. Old atlases of the area show kiln sites, mostly along cart roads, canals and near the bed of the Schuylkill River. A visit to the Henry Janssen Library found little mention of the local lime kilns or the folklife that surrounded the burning of lime in Berks County.

Looking further into it, I discovered the following in an address delivered by a Dr. Emerson in 1853 before The Agricultural Society of Chester County, Pennsylvania,

From ancient histories we know lime was used in agriculture by Greeks and Romans, the Gauls and Britons. Cato described modes of setting and burning limestone kilns in his day, and Pliny speaks of some of the useful applications of lime to fruit trees.

From those remote periods of history up to the present day, it is probable that lime has never been dispensed with by husbandmen (1853, 6).

The use of lime as an essential agricultural ingredient for neutralizing acidic soil and increasing productive yields came with the early settlers. Bringing the knowledge of the power of lime with them from home, early records indicate settlers were searching for lime deposits on their land. In 1685, Thomas Budd wrote, "There is no Lime Stone as we yet know of, but we make lime of Oyster Shells which by the Sea and Bay side are plentiful" (Budd, 1865, 35-36).

Historic agricultural records show evidence that lime was first produced in America near the end of the eighteenth century, by English farmers in Philadelphia, and according to Long (1972), by Pennsylvania Germans in Lancaster County. The on-line Whitemarsh Township History page tells the story of how, in 1686, a farmer in Oreland Township, Thomas Fitzwater, erected a kiln to process the lime deposits found on his property. The kiln attracted the attention of William Penn who ordered a highway built from the port of the Delaware River to the kiln site. Named Limekiln Pike, the road was used to transport lime to Philadelphia, and still exists today (Whitemarsh Township, 2014).

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In 1754 Governor Pownall of Pennsylvania reported a lime kiln on every farm he visited in Lancaster County (Williams, 1952, 77-78). Benjamin Rush, in his *Account of the Germans in Pennsylvania* tells of a group of immigrants that departed London from Palatinate in 1709 and settled first in Bucks and Montgomery Counties before moving to South Mountain (Kapp, 1709, 90). Letters back home extolled the deposits of lime found here, resembling those they had worked for centuries. "Of several factors that contributed to the transformation of Pennsylvania agriculture between 1790 and 1830, lime and land plaster were the most important" (Fletcher 1950, 132-136). According to credible written sources, by the 1830s the application of lime was firmly established as standard farm practice (Long, 1972, 470).

"In one form or another, lime may be regarded as the farmer's sheet anchor and a certain quantity of it is indispensable to all soils to secure their highest degrees of productiveness" (Emerson, 1853, 6).

The general use of lime was probably preceded by a period of roughly 40 years (1780-1820) when gypsum was used as a soil amendment to promote the growth of clover, a well established soil enhancer (Long, 1972, 469). Gypsum (land plaster) turned out to be mostly a stimulant and active in dry and sandy soils, but its effects were lost over time. Gradually it became clear that the value of lime outweighed the hardships of producing it, and gained popularity among early farmers.

There is still a difference of opinion among farmers concerning the merits of using lime. Folk legend has it that lime is not necessary, "if a good stand of clover and grass is present" (Long, 1972, 485). Some early farmers had no need for lime when their land contained beds of marl, a favorable soil enhancer. Depending on the purity and its ability to be ground, marl could be used in place of lime to good effect (Long, 1972, 470).

* * *

Most of us today wouldn't know limestone if we saw it, although chunks of escarpments and loose rock are plentiful here along old roads and in fields, especially in the Oley Valley. A bluish color, limestone had to be dug up from underground. Stones above ground were said to have lost their gases and would not burn well (Leidy, 1956, 107). Experienced understanding of the nature of the stone and its properties was im-

portant. The quality of the stone determined to a large degree the amount of coal or wood required to complete the burning process (Long, 1972, 479).

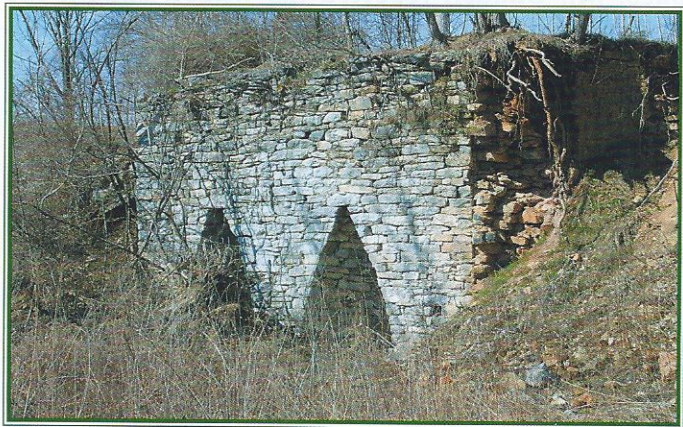
The kiln was built by the farmer primarily for his own or local use, and was constructed singly on an isolated hillside, woodlot or ridge, often on land too rugged for cultivation. Many faced south, to prevent strong winds from causing too rapid combustion. The kilns, varying in height from 10 to 20 feet, were often built with the same lime rock that was burned in the kiln and had a central opening at the base, a chimney shaft and pot. The base of the kiln looked like a cave, with its large opening of anywhere between 6 and 10 feet in height and 30 inches deep. The top of the opening contained a large stone lintel or arch. Within the larger opening at the base was a smaller aperture through which the air passed for combustion and from which the lime was removed. The cylindrical pot measured 8 to 12 feet or more, with its depth between 12 and 20 feet, and held a framework of iron bars placed crosswise to serve as grates (Long, 1972, 473).

Deadly gases were often given off during the process of a lime burn. Long (1972) contacted a lime burner who told of a vagrant who was found dead by asphyxiation near a burning kiln. Dr. Arthur D. Graeff describes in an article how, while out walking, he stopped a short distance from a kiln, became drowsy and collapsed. His dog, Fritz, somehow connecting the event with the kiln, dragged him from the site and stayed with him until he recovered (Graeff, 1949).

The wood-burning kiln was used before the advent of coal and continued in use until the nineteenth century. Found in many parts of the state, it was similar to its successor except for the combustion chamber and the labor involved in burning. The wood fire required constant monitoring and continuous attention day and night. Although it had many disadvantages, the use of wood as fuel introduced moisture and resulted in a better quality lime (Long, 1952, 476).

Stack burning was a cruder method of burning lime and was used by farmers who had ready access to stone but no kiln. The rock and wood was stacked in a field in a pit, covered with mud or clay, and then ignited. A hole at the top allowed gases to escape. Mixed in with the lime were the wood ashes, a good source of potash and equally beneficial to the soil.

It was not unusual for the kiln to be used for



Lime Kiln in Stouchsburg, Marion Township in an undated photo (*above*) and present-day (*below*).

other purposes, such as a storage shed, small animal pen or for ice storage. Ice stored in saw dust in a kiln was said to keep well for a year!

The area around the lime kiln was frequently a place of merriment and amusement. Anecdotes tell of corn roasts and the occasional chicken and potato dinner cooked over hot embers at the end of a long working day (Long, 1952, 481).

* * *

Indeed, the business of burning lime was long, hot, hard work. In 1952, Long recounted several charming stories of the life of the lime burners he interviewed, one of them being George Guilden, who farmed the Oley Valley below Pleasantville until 1949. Guilden gives the following description about the way the kilns were stacked.

First, the farmer would lay an eight-inch layer of limestone in the kiln. On top of this he would place three to four inches of cheap coal or peat, then alternate layers of limestone and coal, with the limestone layers becoming thinner and the coal layers thicker as the kiln was filled.

The entrance was packed with fresh mud to prevent too rapid a burn. Most kilns faced south

to be out of driving wind. Men became known for their ability to load the kiln successfully, as poor stacking technique could cause the kiln to not fire, requiring the stack to have to be rebuilt. The kiln was ignited and was left to burn for about a week. When the inside temperature reached 400 degrees, the limerock would break down into a fine white powder, at which point it was removed from the kiln and was available for spreading. Piles of lime about the size of a bushel might surround the kiln, and if exposed to rain would smoke and steam. At night a low burning glow could be seen from the piles. Mr. Guilden reported his wagon caught fire from the heat of the limestone!

Also in Long (1972) a Benjamin Hauer of Lebanon County tells of how he began burning lime at age 13 and continued until as late as 1951. He told of how lime burning was done between farm chores, usually after seeding time in spring until haymaking. After harvest, the kiln ran continuously from late fall until Christmas.

Frequently the burning of lime became a cooperative labor, with neighboring farmers digging and hauling stone and cutting and hauling wood. Lime was often bartered for another commodity of lesser value, such as wood or quarry rights. The average wage of a quarry worker in the early nineteenth century was fifty cents a day. The lime burner received more, usually 75 cents a day, but qualified for his pay with years of experience, guaranteeing the success of the burn.

Ray Walters from Lebanon County burned lime until 1925. He told of how two men quarried fifteen four-horse wagon loads of stones in two days. This was the amount required to fill the shaft and stack. After the stones were hauled they had to be "broken to about the size of a man's head" (Long, 1952, 481). Three men were assigned to "set up"

the kiln and stack and this took three days.

* * *

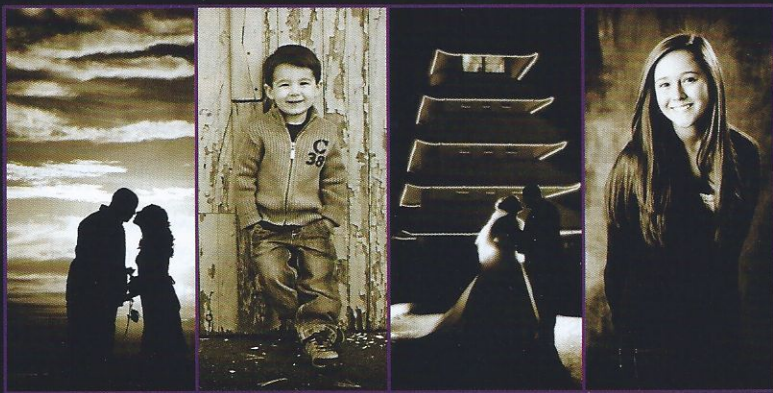
As production became more frequent, demand grew. The uses of lime were not only agricultural but also industrial and structural. Lime was used in the construction of many houses in German settled areas, for mortar and plaster, and as whitewash. The abundance of limestone became an important factor in the development of local iron industries: Limestone produces the cheapest flux, which is required in the production of iron (Long, 1952, 482).

By the middle of the nineteenth century long lines of kilns began to appear in some places and the burning of lime became a thriving business. You can still see the remains of a series of kilns that used to rim the quarry at the intersection of Rt. 222 and 724 across from the Shillington Square Shopping Center and Old Wyomissing Road. Another series can be spotted along the Schuylkill River at the foot of the Reading Regional Airport runway in Bern Township.

As commercial uses for lime grew, many farmers were approached and offered royalties for quarrying limestone on their land. "It was not all that uncommon during the past century when farm land was sold for the seller to reserve the right to allow him and his heirs the privilege to obtain limestone from the quarry hole or timber from the woodlot" (Long, 1952, 484).

* * *

Folk beliefs surrounding lime are frequent. In addition to being a magical farming agent, it was considered a panacea for many ills. Used in folk medicine as a preservative and antifungal agent, the Pennsylvania Folklife Society files cite an interesting story relating to the use of lime for the preservation of the body. Alexander Ander-



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son requested that he be buried in the Poor House graveyard alongside his child, and directed that his body be 'slaked with lime' in the coffin. Anderson's father-in-law produced the basket of lime, but before he could administer it some physicians present persuaded him that the lime would "preserve the body so much that it would keep it fit for the doctors use!" The father-in-law agreed to dispense with the lime (Fletcher, 1838, 355; 1950, 136).

Elsewhere in the annals of folk medicine are such suggestions as, "Steel a piece of lime and rub it on a wart" (Fogel 1915, 325) and "to keep the throat open spray it with water and slacked lime" (Brendle & Unger, 1935, 136). "If you plough the snow under when it is hot, it is as good as lime" and "slake lime with March snow. The membrane which forms on the water makes a good ointment" (Fogel, 1915, 271).

The use of kilns began to decline around 1890 with development of commercially made fertilizers and the kiln became an anachronism. Despite this, lime in its original form was still useful to farmers and builders in our area into the 20th century. My house consists of a slaked lime river sand plaster with no added Porter cement. The stucco produced from this gives it a soft breathable exterior that remains good.

Today the primary use of limestone is crushed rock for construction and building, mainly as aggregate and filler. The manufacture of cement is another major use. Production of quicklime, ground quicklime, slaked lime, milk of lime, and lime putty are detailed. Lime products have many uses, for example, in steel manufacture, asphalt paving and soil stabilization, chemical and food industries, building materials, environmental protection, and agriculture (Oates, 2010).

"Beyond the road, against the hill, is the

abandoned quarry, and there behind a screen of scarlet's foliage looms our talisman, the lime kiln." (Lichthenhaeler, 1939)

* * *

In 1956 Thomas Leidy wrote, "Slowly, ever since 1890, the kilns have been vanishing from the Berks County rural landscape." Many of the old kilns here have been bulldozed and pilfered for stone, but the watchful eye can oftentimes make out the remains of a site. It's hard to miss the beautifully restored lime kiln on Twin Valley Road at Kenny Corners. And next time you are passing by, look closely just north of the intersection of Rt. 662 and Covered Bridge Road in Yellow House, or south of Morgan Truck on Quarry Road in Morgantown.

"The limekilns which remain today stand as silent witnesses and reflect an historical message," wrote Long in *The Pennsylvania German Family Farm*.

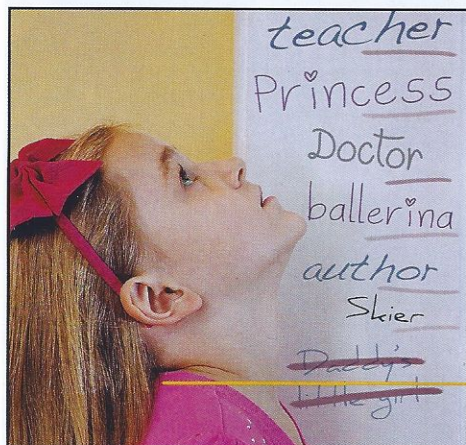
The message is one of early industry, the unique history of our region and the lives led in making it. Although many stories of lime harvesting, burning and spreading remain untold, the impact of lime and the lime kiln continues to be seen in our agricultural practices today.

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The History of Lime Kilns in Pennsylvania. Accessed online: November 29, 2014. [#v=](http://books.google.com/books?hl=en&lr=&id=LtY6AAAACAAJ&oi=fnd&pg=PA24&dq=the+history+of+lime+kilns+in+Pennsylvania&ots=Bi8lsYR)

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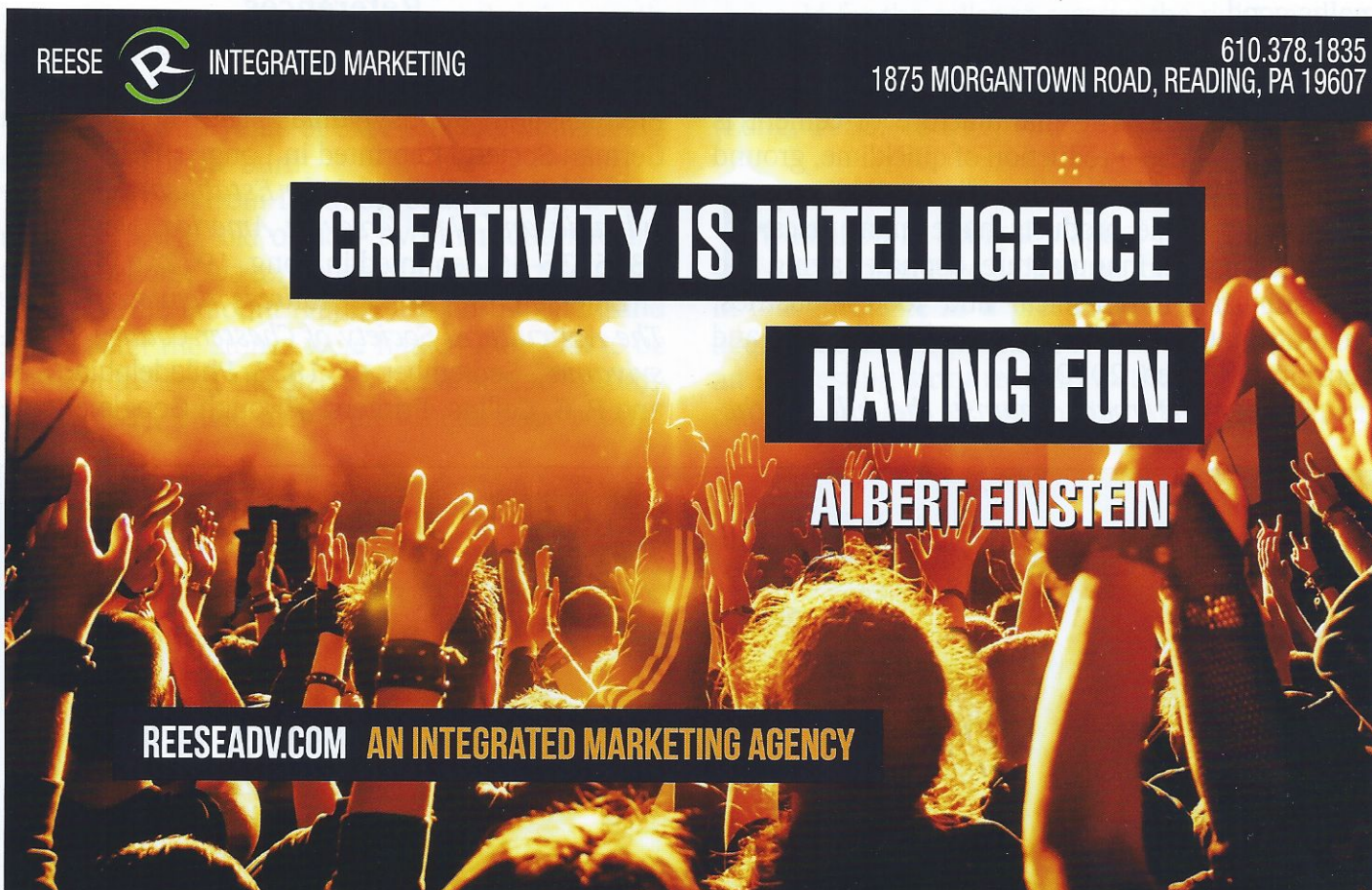
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Hilary Fraley grew up in Chester County and currently lives near Geigertown. She volunteers at the Henry Janssen Library and for the Historic Preservation Trust of Berks County.



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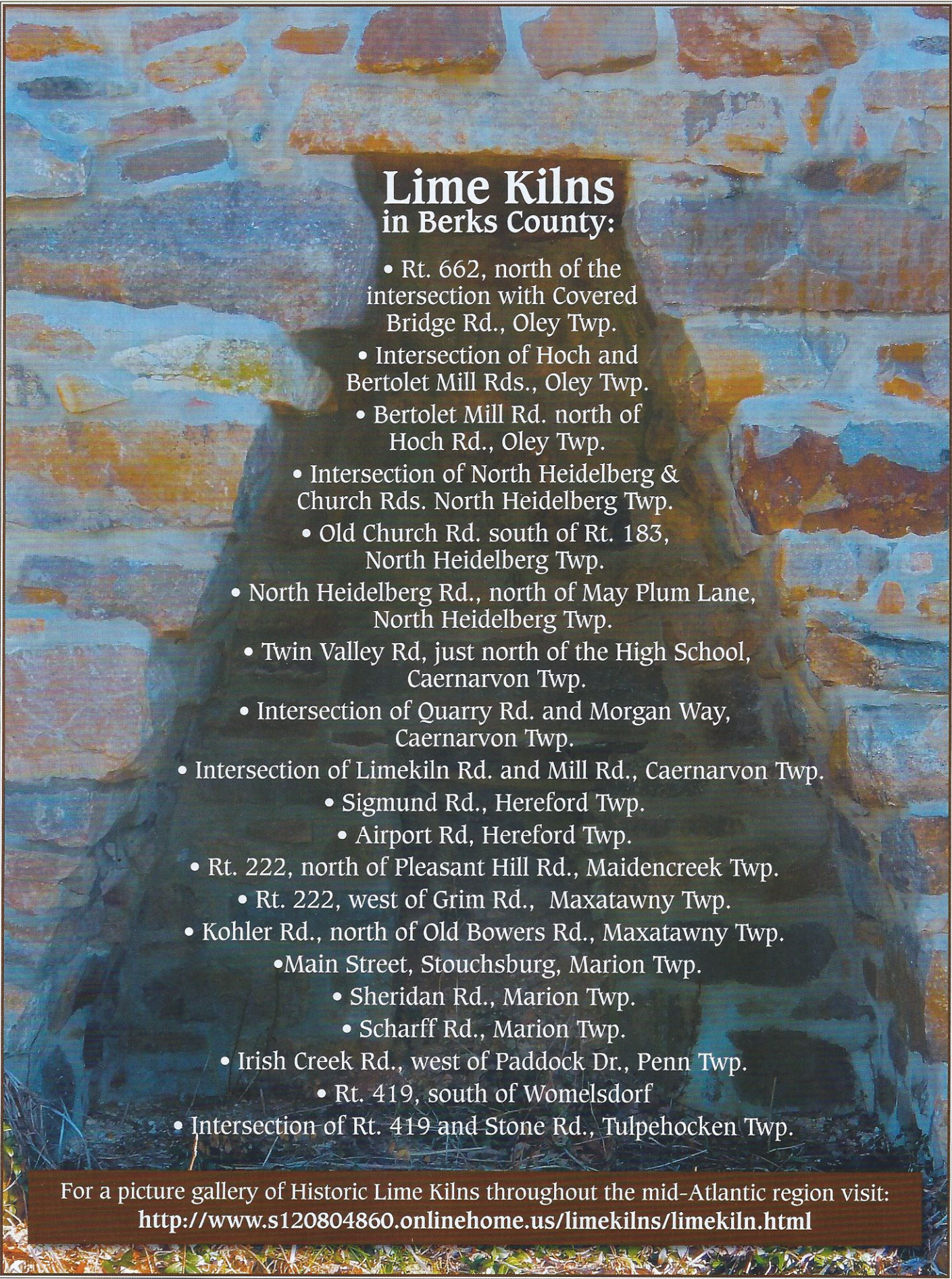
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- Intersection of Hoch and Bertolet Mill Rds., Oley Twp.
- Bertolet Mill Rd. north of Hoch Rd., Oley Twp.
- Intersection of North Heidelberg & Church Rds. North Heidelberg Twp.
- Old Church Rd. south of Rt. 183, North Heidelberg Twp.
- North Heidelberg Rd., north of May Plum Lane, North Heidelberg Twp.
- Twin Valley Rd, just north of the High School, Caernarvon Twp.
- Intersection of Quarry Rd. and Morgan Way, Caernarvon Twp.
- Intersection of Limekiln Rd. and Mill Rd., Caernarvon Twp.
 - Sigmund Rd., Hereford Twp.
 - Airport Rd, Hereford Twp.
- Rt. 222, north of Pleasant Hill Rd., Maiden creek Twp.
- Rt. 222, west of Grim Rd., Maxatawny Twp.
- Kohler Rd., north of Old Bowers Rd., Maxatawny Twp.
 - Main Street, Stouchsburg, Marion Twp.
 - Sheridan Rd., Marion Twp.
 - Scharff Rd., Marion Twp.
- Irish Creek Rd., west of Paddock Dr., Penn Twp.
 - Rt. 419, south of Womelsdorf
- Intersection of Rt. 419 and Stone Rd., Tulpehocken Twp.

For a picture gallery of Historic Lime Kilns throughout the mid-Atlantic region visit:
<http://www.s120804860.onlinehome.us/limekilns/limekiln.html>