



Limestone, an important [important] and valuable Manitowoc County resource.

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LIMESTONE, AN IMPORANT AND VALUABLE

MANITOWOC COUNTY RESOURCE.

by HOWARD KANETZKE
REINHART WESSING
and OTHERS

GLACIAL INFLUENCE ON MANITOWOC COUNTY

Much of Wisconsin has a great glacial influence, and Manitowoc county is by no means least in this regard. "Manitowoc County Outdoors," a publication of Conservation Education, Inc. of Manitowoc County and the Soil and Water Commission of this region, has this to say about these influences:

"Topography and types of soil in Manitowoc County are essentially a result of the last two substages of the Wisconsin stage of glaciation. Four distinct ice sheet advances are known to have occurred during the Wisconsin Stage. Each is considered a substage.

Each substage brought in glacial debris called "drift" and pushed or deposited it to form hills, valleys, depressions, and plains. The Cary drift came during the third substage. The Valders drift came during the fourth substage, which ended approximately 11,000 years ago.

The parent materials of our soils originated from the glacial drift and through the years have been developed by soil forming processes. Our soils owe much of their fertility and variability directly or indirectly to the mixing and transportation of vast quantities of debris by glaciers.

The Valders Drift

The Valders ice sheet over-rode the Cary deposits in all of Manitowoc County, except the southwestern part of the county. The Valders drift is also calcareous (limy) but is pink to red in color. It is generally heavier textured, and contains much clay. The Valders "red drift" also moved in from Canada, and derived its red color from the iron compounds in the soil. About 65 per cent of the soils in Manitowoc county were developed from the "red drift" and generally are the better agricultural soils throughout the county.

Niagara Limestone Bedrock

All of Manitowoc County is underlain by the Niagara limestone formation. This dolomitic limestone is generally well buried by lacustrine (glacial lake) clays in the eastern part of the county, and by coarser glacial drift in the western part.

Many large quarries were developed in areas where the Niagara limestone outcropped at the ground surface. Some of the quarries are no longer in operation, but their lime kilns still remain at the old quarry sites. (e.g. at Quarry and Grimms) A few quarries still operate and have greatly expanded their production. They have also developed new products and markets for limestone.

During the glacial periods, the upper surfaces of the Niagara limestone formation were ground and incorporated with other materials being moved by the ice sheet. This later developed into soils that were inherently rich in lime." (End of quote).

**General Characteristics of
Limestones and Dolomites**

A publication of the Wisconsin Geological and Natural History Survey authored by W. O. Hotchkiss and Edward Steidtmann, states in a book published in 1924 entitled, "Limestones and Marls of Wisconsin," (pp. 6-7) "Limestones and dolomites are stratified rocks whose chief mineral constituents are calcite and dolomite, calcite being the chief mineral component of the former, and dolomite the latter. Calcite is a soft, usually white or grayish mineral which is vigorously decomposed by weak muriatic acid or even by strong vinegar. One of the decompositon products is the colorless, odorless carbon dioxide gas whose escape causes a brisk bubbling or effervescence. This strong discharge of gas when the rock is treated with weak muriatic acid distinguishes calcite from dolomite. Dol-

mite shows only a very feeble evolution of carbon dioxide gas when treated with muriatic acid.

Limestones, when pure calcium consist of about 44 per cent carbon dioxide, and 56 per cent lime. As a rule they contain admixtures of sandy and earthy matter, such as quartz, opaline, silica, slight amounts either as a constituent of calcite or in the mineral dolomite. If more than 4 per cent of magnesia is present, it usually is possible to find distinct crystals of dolomite. Some recently deposited limestones, however, have as much as 10 per cent magnesia, but show no dolomite. Just how much magnesia a limestone may contain and still be a limestone is a matter of opinion. Limestones containing a few per cent of magnesia are very common. Mixtures of calcite and dolomite intermediate between limestone and dolomite are exceptional. Dolomites or dolomites with only a little calcite are also very common, but dolomites with a notably greater amount of magnesia than a normal dolomite are uncommon. Dolomites, when pure, consist of about 47.9 per cent carbon dioxide, 30.4 per cent calcium, and 21.7 per cent magnesia. They have the same impurities as limestone.

A simple means of distinguishing limestone from dolomite is by noting the effect of a mixture of one part of muriatic acid, such as one can get from any drug store, with ten parts of water on samples of each. Limestone bubbles vigorously, due to the release of carbon dioxide, dolomite either feebly or not at all.

The above named authors describe the Manitowoc County area thus: (pp. 63-64)

General Geology

All of this county is underlain by the Niagara dolomite. Most of the surface of the eastern part of Manitowoc County is a level, monotonous plain. Here the

Niagara dolomite is mostly buried under lake clays. Hummocky ridges of coarse glacial debris cover most of the Niagara dolomite beds of the towns of Schleswig, Eaton, Rockland, and Maple Grove.

Niagara Dolomite

Large quarries are operated by the Western Lime and Cement Company at Grimms and Quarry, the Allwood Lime Company (1913) north of Manitowoc, in the NW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 36, Township 20 Range 23 east, the Rockwell Lime Company (1907) in the NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 35, of Township 20, range 23 east.

LIME, ONE OF WISCONSIN'S OLDEST INDUSTRIES

by Howard Kanetzke

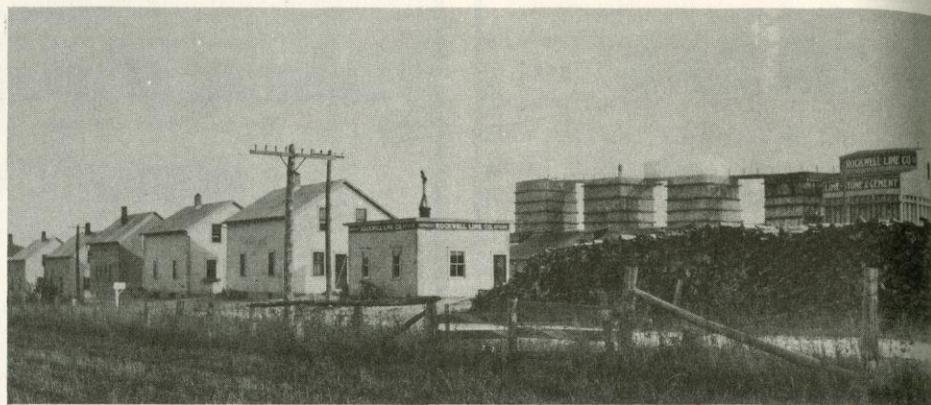
NOTE: Published in Autumn 1969 issue of WISCONSIN TRAILS, with whose permission we are privileged to publish this article.

Lime is the oldest chemical produced by man. Stone Age men manufactured it; Egyptians plastered their pyramids with it; Aztecs and Incas raised their stone temples with it. Lime production is one of Wisconsin's oldest industries, too, though the colorful way of life that went with it has all but vanished from our landscape.

Few people realize that at the turn of the century Wisconsin ranked third in the nation in the manufacture of the lime needed by housewives, farmers, and businessmen. Though we remained an important lime producer through the roaring twenties, by 1940 scarcely 1 per cent of the nation's lime came from state kilns. And while Wisconsin's lime industry is worth more than three million dollars today, it is no longer the giant of past decades.

Lime is made from limestone, a rock composed of calcium, carbon, and oxygen. When limestone is heated, the carbon escapes in the form of carbon dioxide gas, leaving pure lime. In Wisconsin, most deposits of limestone contain varying amounts of magnesium in addition to the other three elements. When the concentration of magnesium is high, as it is in Door County and along Lake Michigan, the limestone is called dolomite. These magnesium limestones yield lime which contains magnesium and which has slightly different properties from pure calcium lime.

No one knows when or where the first lime was manufactured here. Early settlers, however, were pleased to discover that limestone made up fully



Rockwell Lime Company houses, office and kilns - 1930

one-third of the bedrock of the region. It was found throughout the southern and eastern parts of the state and in places along the Mississippi River. To make lime for mortar, plaster, and fertilizer, the settlers simply piled heaps of wood and limestone together and ignited the wood. The heat drove off the carbon dioxide, leaving pure lime. After the blaze died down, the wood ashes were carefully brushed from the fresh lime. This was probably the method used by early French householders at Green Bay, for in September of 1822, a visiting teacher and writer, Albert Ellis, described houses in the village as being "uniformly whitewashed with lime."

While lime-burning operations were modest during territorial days, the industry expanded as the population grew, for there were many uses for both limestone and lime. Untreated stone was crushed and used for building highway and railroad beds, and in a few places the stone was quarried for building purposes. Lime, too, primarily from eastern Wisconsin kilns, found a ready market. Farmers bought it to whitewash barns and sheds, to use for sanitary purposes, and to "sweeten" the land before plowing. They had discovered that lime not only neutralized acid soil, but also improved the physical condition of heavy soils and supplied minerals for crops.

Builders, too, purchased large quantities of Wisconsin lime, for before portland cement came into popular use, lime mortar was used to lay brick and stone walls. And when the exterior walls were completed, finishing crews coated the interior walls with smooth plaster made from lime, fine sand, water, and hair. Pure lime, they knew, produced plaster which spread easily, did not crack in drying, and cured to a smooth, fresh white surface. Housewives took pride in gleaming white walls and ceilings, and claimed that lime plaster gave a home a pleasant "new" smell.

Lime kilns were an infrequent sight in the western regions because of a lack of suitable limestone, but even here lime was produced for local needs. Prairie du Chien, Platteville, Limestone Hollow, Black Earth, Mazomanie, and Madison were among the towns that had lime kilns in operation.

Wisconsin's most extensive lime-producing operations, however, developed near Lake Michigan where the underlying bedrock, Niagara Dolomite, proved to be an excellent, all-purpose stone. Lime kilns sprouted like mushrooms. J. A. Horlick opened a quarry at Racine in 1853 and was soon producing 400,000 barrels of lime annually. The Pellon Lime Company of Pewaukee produced 12,000 barrels weekly for shipment to Chicago and Des Moines. And between 1854 and 1877, a Door County kiln sent a boatload of lime each week to ports on the Great Lakes.

Quarries opened in Calumet County near Hayton in 1865 by George Nicholson were typical of those supplying lime to farmers and builders. Nicholson operated two quarries, building four large, square, stone kilns near each one. To feed the kilns with limestone, crews of workmen drilled rows of holes about five inches across vertically into the rock roughly two feet back from the cliff face. Each hole was filled with black powder which ignited with enough force to open long, straight cracks in the rock. Then the holes were refilled, this time with heavy charges of dynamite.

At blasting time, cries of "Fire! Fire!" rang out across the quarry, warning workers to take cover. Moments after the fuses were lit, the quarry walls echoed thundering dynamite blasts as stone was pried loose and came crashing to the crater floor below. Not all the limestone fell into the quarry though; housewives often reported hearing small stones clatter on their shingled roofs after a blast, and once a large rock crashed

Lime is Dug in Quarry Not Far From Manitowoc

Farmers Benefited by Production; Some Shipped Elsewhere

by Robert Brown

This article originally published in Manitowoc Herald-Times, January 9, 1948.

"There's the only source of pure dolomite in the world," Michael Brisch, president of the Rockwell Lime company, asserted as he stood near the edge of the vast 50-foot deep hole which has been blasted and hacked out of the bedrock near highway 141, about five miles northwest of Manitowoc.

From this yawning excavation comes the lime — calcium-magnesium oxide — which is shipped all over the world for a variety of uses and is also sold to farmers right here in Manitowoc county for agricultural purposes. The digging has been going on for 43 years and has pushed back the walls of the hole until it embraces close to 10 acres.

From the highway the excavation isn't visible but the old kilns, built of the pit's gray stone, are a landmark, resembling a row of huge silos at that distance. They are the physical signs of an industry which sprung from a farmer's discovery that rock strata underlying his fields contained a substance of nourishment to his crops, which also had deodorant properties useful in barns.

Digging commenced, at first probably with pick and shovel. As the hole grew deeper and broader explosives were brought into use and the kilns were built on adjoining ground. Tracks were laid on the floor of the pit and up the steep slope to the kilns. Cars of crushed stone were hauled up the hill by sweating, straining mules.

Boost Production

Eventually the property was acquired by other interests who are still in the



Rockwell Lime Company

process of remodeling and rejuvenating the plant and equipment. They have taken advantage of increasing use of lime in industry and agriculture and are turning out about 22,000 tons for the former and more than 5,000 tons for the latter, annually. Production of both types will go up when the installation of new equipment is complete, Brisch declared.

Lime for agriculture is the simpler to prepare and sells for \$3.30 a ton, according to Brisch, who pointed out that other soil fertilizers cost much more. It's produced by first reducing large chunks of rock to gravel then pulverizing the latter.

The first step is accomplished by dumping the rock, which has been blasted from the walls of the excavation with dynamite, into a crusher. There, pieces from a few inches to two or three feet in diameter are cracked open like eggshells and pounded to bits in a maximum of four or five minutes for the largest. A five-ton "jaw," power-driven, does the work.

Hammer Flays Stone

The crushed stone then goes through a hopper which screens out over-size pieces. After it's hauled in a small railroad car up the slope to ground level by a power-driven windlass, the gravel is

poured onto a conveyor belt and is carried into the "hammer mill." There, six manganese-steel hammers, each a foot long and about three inches square, flay the living daylights out of the stone.

The hammers are turned by a 125 horsepower motor revolving at 1,800 times per minute. This terrific pounding quickly converts the stone to powder and also wears away the hammers. In a week's time, according to Brisch, a steel hammer can have nearly a half-inch of metal ground off, so a number of them are always under repair, being built up by arc-welding in the company shop.

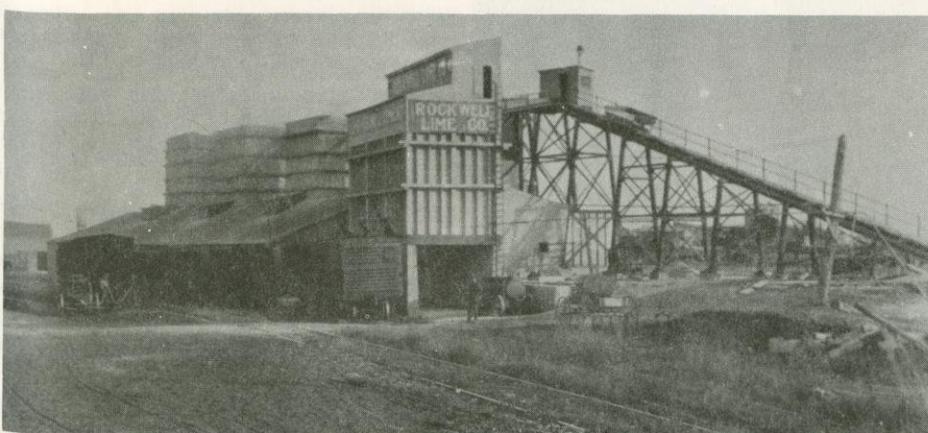
The hammer mill turns out 25 to 30 tons of "ag stone" a day. Farmers use it in three ways, Brisch said, as a soil neutralizer with manure, as a non-skid on slippery ground and in the barn and as a deodorant. In soil preparation it is valuable for its calcium and magnesium. The Manitowoc county dolomite is considered almost a pure form because of its high magnesium content, 45 per cent, highest in the world, according to Brisch.

Other Uses for Lime

Farmers in this county use 25 to 30 thousand tons of lime a year, Brisch estimated. Of this, his plant furnishes over 5,000 tons. As the company remodels it will be able to handle many more orders than at present, he added.

Other lime products are produced from contents of the kilns, huge cylindrical furnaces with stone and mortar walls two to three feet thick. Rockwell Lime has four of the old wood-burning type and one, new kiln, smaller with an automatic oil burner. Eventually all will be of the latter type, Brisch explained.

"Burnt" or quick lime, a pure calcium oxide, is prepared by roasting dolomite in the kilns. In this process carbon dioxide is driven from the natural calcium carbonate when the rock is heated to 2,100 degrees. The rock loses half its weight in this baking and resultant substance is easily powdered. Rockwell kilns produce



Rockwell Lime Company - 1926

about 60 tons a day, operating a full 24 hours.

Principal use for this lime is in the manufacture of mortar and plaster products. Much of it is shipped to Chicago where another company headed by Brisch further prepares it for industrial use. Rockwell, however, has customers in many important manufacturing centers in this country and abroad.

Supply Unlimited

Some of the company's customers employ the pure oxide of lime for a little-known purpose, that of buffing and polishing small surfaces, particularly electroplated metal. Because of its physical structure this lime has a fine corrosive action on surfaces against which it is rubbed and produces a high polish. It is used on ball bearings, watch parts and casings and chrome and nickel plating. In some instances it is even employed instead of jewelers' rouge.

How much longer will the Rockwell company be able to continue chipping away the rock that has been providing material for nearly a half-century? Isn't the dolomite supply nearly exhausted? There's practically no limit to the formation in the foreseeable future, according to Brisch.

"Geologists estimate the rock formation at 250 feet thick and since we also have room for further expansion of the sides of the pit, we'll probably be working here for some years to come," the company head declared.

Rockwell Lime Firm Takes Over Allwood

NOTE: This article originally published in Manitowoc Herald-Times July 19, 1949

President Brisch Says Plants Will be Consolidated

\$45,000 Transaction Provides Rockwell with 55 Acres Land

The Rockwell Lime company of Rockwood has taken over the Allwood Lime company properties and business and the plant will be consolidated and enlarged.

Announcement of the purchase of the Allwood company, whose plant adjoins the Rockwell properties at Rockwood six miles north of the city on highway 141, was made today by Michael Brisch, president of the Rockwell company. Papers filed in the office of the register of deeds indicates the Allwood property transfer of approximately 55 acres at Rockwood represents \$45,000.

The Rockwell plant was founded in 1906 by the late Michael Brisch, Sr., father of the present head of the company. The Allwood company was organized in 1913.

Most of the product of the Rockwell company for years has found its outlet in the Chicago area, where the Brisch family has large construction interests, including the Brisch Brick company. Consolidation of the two Rockwood plants will give the Rockwell company approximately 80 acres.

To Expand Rockwell Site

President Brisch announced that it is planned to move most of the Allwood plant and equipment to an enlarged Rockwell plant. Engineers are now drawing plans for the enlargement of the parent plant.

Associated with President Brisch in the Rockwell company are four brothers, Thomas, secretary, Carl, treasurer, John and Joseph Brisch, directors. All are residents of Chicago, where the main offices of the company are located.

The Rockwood company produces chemical lime and construction material.

Employees of the Allwood company will be absorbed by the Rockwell company.

Founded in 1913

The Allwood company was founded in 1913 by Miss Mary E. Squires and Dr. Jessie Carpenter of Chicago, both deceased. It engaged in the business of manufacturing polishing lime and neutralizing lime and also a milk of magnesia lime, for use in creameries and butter factories for the control of acidity in milk.

Also developed by the founders was hydrate for use by masons. The polishing lime, used in lump form, also found a ready market.

Present officers of the company, who are now retiring, are President William Tills, who was with the Allwood company for 38 years and Atty. Charles E. Brady, secretary and treasurer, affiliated with the company for 36 years.

The Allwood company maintained offices at 901 York Street in this city.



Rockwood Quarry about 1950.

Rockwell Lime Company Adds New Facilities

NOTE: This article originally published in Manitowoc Herald-Times April 14, 1953.

Expanded facilities have been completed at the plant of the Rockwell Lime Company, seven miles northwest of the city, including a new rotary kiln for production of uniform, high quality quicklime.

Acquisition of holdings of the Allwood Lime Company in 1951 assured the company of an ample supply of stone to justify the expansion program, just completed.

Stone from the quarry is crushed, elevated to the surface and mechanically sized before being fed into the kiln. In

through the porch steps of a company house. Gray smoke from the explosion rose to mingle with the heavy black clouds spewing from the mouths of the nearby kilns. On quiet, windless days, the grit flung from the lime ovens hung in the air only a short time before settling on the countryside. Homemakers in neighboring houses saved their laundry for days when the wind carried smoke away from clotheslines, and youngsters were stationed in the yard to report changes in the wind. But in spite of these precautions, most housewives despaired of ever again hanging white curtains or glancing through sparkling windowpanes.

As shouts of "All clear" rang out, workers in blue bibbed overalls began to load chunks of limestone onto low-bedded drays or carts even before the rock dust had settled. Horses and donkeys pulled the dumpcarts up a wooden trestle to the top of the furnaces where it was put through a crusher and then dumped directly into the mouths of the kilns.

The average plant in early Wisconsin had three to five kilns. They were built of limestone and were well lined with firebricks. Typical kilns were square and stood thirty to fifty feet high with walls up to six feet thick. The central shaft into which the crushed limestone was poured, measured five to eight feet in diameter. At the base of the kiln was an opening through which the finished lime could be removed. Lime kilns operated around the clock, month upon month, and were shut down only for relining when fire walls chipped, cracked, and came loose.

The simplest kilns were called "mixed-feed" kilns. First cordwood was dumped down the shaft and set afire. Then alternate layers of limestone and fuel were added. The heat from each layer of wood converted the stone above it to lime. This method was efficient, but the lime collected from the bottom of the oven was mixed with wood ashes. To combat this problem, separate fireboxes were built low in the sides of the kiln. These kept the burning wood away from the limestone, but allowed the heat to reach it. Tamarack and cedar were favored fuels, for they seemed to burn at just the right temperature. Lime heated for too long or at too high a temperature was an inferior product with a yellowish hue and was known as "dead-burned" lime.

Stone dropped into the top of the kiln moved downward as lime was drawn out the bottom. Chunks of limestone near the top of the furnace were preheated by carbon dioxide escaping in the billows of smoke. Temperatures rose as the lime-

stone moved down through the kiln and approached the fireboxes. There, the intense heat converted it to lime. The time required for a piece of rock to travel through a kiln varied from a few hours to several days, depending upon how often lime was removed.

At times, the hot stone stuck to the lining wall of the kiln. When this happened, the fires were allowed to die down. As the kiln cooled, the stone contracted and loosened from the walls. Then workers slipped long iron rods through small openings in the kiln walls. Poking and prying with these heavy rods, workers were able to free the stone and allow it to continue on its way to the base of the kiln.

When it was time to draw lime at Hayton, metal barrows were pushed into position beneath the trapdoor at the bottom of the kiln. Using long-handled iron shovels, workmen filled the barrows and wheeled them aside to cool. Hot lime is almost transparent and glows with a brilliant light. At night, the men were bathed in this "limelight." Generally, lime retained the approximate size and shape of the original piece of rock. Some stones, however, were reduced to powder.

After cooling several hours, the lime was packed in barrels or loaded in bulk into boxcars. Lime reacts violently with water, producing intense heat, and several early accounts tell of fires caused by rainwater leaking into boxcars filled with lime. So to prevent fires, controlled amounts of water were added to lime in a hydrator before shipment. Thus stabilized, the lime could be handled and stored with safety.

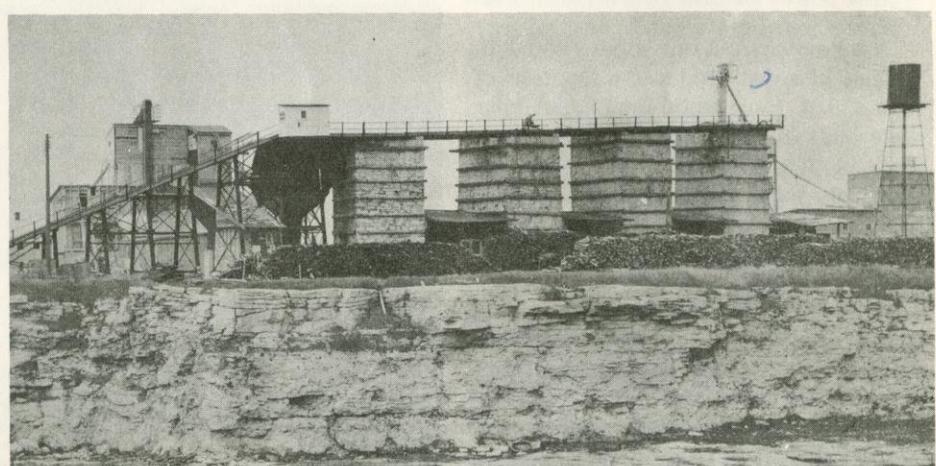
Because of all the men needed to run a lime manufacturing operation, small communities generally grew up around a kiln site. Workers were needed in the quarry and at each kiln. Others cut wood to fuel the kilns. Coopers built wooden

barrels to ship the lime, and more men were needed in the hydrator shed where water was added to the lime. At Hayton, as many as thirty-five men were employed at a time. Single men lived in a company-built boardinghouse. Those with families rented houses from the company for \$4 per month. About seventeen houses lined the three streets. Each family had a barn and a garden, and most owned a horse and buggy, a cow, a couple of pigs, and some chickens. In the summer women collected wash water in rain barrels; in the winter they melted snow.

Although everyone worked hard, there was time for relaxation, too. Some of the Hayton men started a band and played everything from square dances to waltzes. Casino and euchre were popular card games. In summer, everybody turned out when the Lime Kiln Bluffers played a baseball game.

But times have changed. Once highly prized because of its magnesium content, Wisconsin lime is no longer as marketable as in the past. Chemical firms have replaced farmers and builders as the chief users of lime, and they prefer varieties without magnesium. As a result, Wisconsin has not produced enough lime to satisfy even its own needs since 1930.

Today the kilns that were once the scene of so much activity are deserted. The handsome stone towers at places like Hayton, High Cliff, and Grafton are silent. Even the quarries that fed them are disappearing, as cities use them to dump tons of waste. But if you drive the back roads of eastern Wisconsin, you may still find a row of crumbling kilns standing in knee-high grass and telling of the day when Wisconsin made lime for the whole nation.



Rockwell Lime Company - Old plant - wood fired about 1930.

WISCONSIN LIME TODAY

by Reinhart Wessing

Note: Published in Autumn 1969 issue of WISCONSIN TRAILS, with whose permission we are privileged to publish this article.

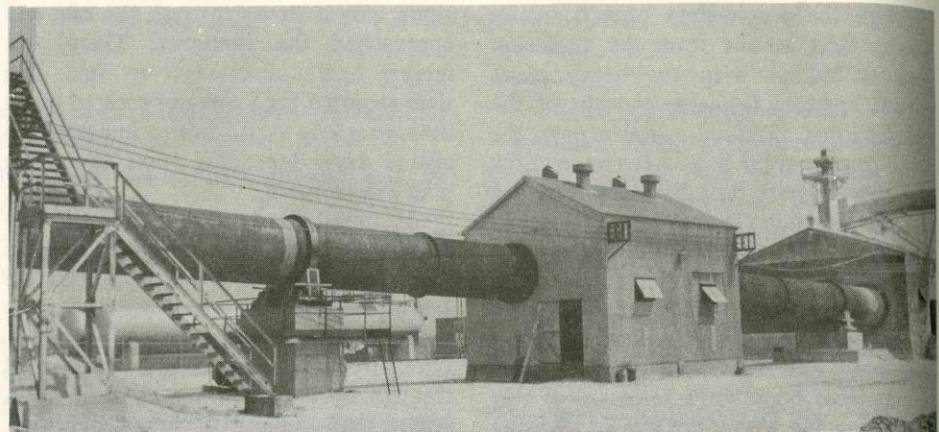
The Stone Age men who first made lime could hardly have known that their descendants would use the chemical to make such things as steel, glass, and mortar for skyscrapers, antifreeze for cars, and mountains of paper for business and mass communications systems. But if it weren't for these twentieth-century uses of lime, Wisconsin's lime kilns all would be out of business. As it is, of the fifty or so plants operating at the turn of the century, only three are still turning out lime today.

It was the Great Depression of the twenties and thirties that sealed the doom of most of Wisconsin's lime kilns. At that time, lime was used primarily in the building trades, and when hard times hit, construction — and the demand for lime — dropped drastically. Today, however, lime is no longer just a building material or fertilizer. It is a basic industrial chemical, and plays a role in the complicated reactions that lead to countless new products. With whole new fields of use being discovered, more lime — about fifteen million tons — is produced today than ever before. And three-fourths of all this lime is used as a chemical in the manufacturing industries.

Wisconsin's largest surviving lime producer is the Rockwell Lime Company, located near the town of Rockwood in Manitowoc County. With the state's only rotary kiln, Rockwell turns out one hundred tons of lime per day. The only other remaining firm — the Western Lime and Cement Company of Milwaukee — operates two plants with older-type, shaft kilns, one at Eden in Fond du Lac County and another at Knowles in Dodge County.

Rockwell started out about 1900 with a single kiln that produced a few tons of lime a day. Four wood-fired, shaft kilns were built in 1908, but by 1948 it was difficult to get enough wood to fire the kilns, so they were converted to gas. Shortly afterward, the company bought out a neighboring firm and installed a modern, gas-fired, rotary kiln.

Except for the kiln, lime production hasn't changed much over the years. Dynamite blasts still echo in the firm's quarry. Then the large chunks of limestone are hauled to two crushers and ground and screened until they measure 1½ inches by ¼ inch. These small pieces are then stored in silos until they're fed



Rockwell Lime Company's new kiln - 1955.

into the rotary kiln.

The heart of the lime plant is the kiln, a cylinder 150 feet long by 6 feet 4 inches in diameter which rests on its side at a slight pitch. A gas flame is drawn through the kiln by suction fans, which exhaust through a funnel-shaped dust collector to prevent air pollution. Inside the slowly revolving kiln, the temperature rises to 2,100 degrees. This scorching heat burns off so much carbon dioxide and water as the limestone chips travel slowly downhill the full length of the kiln that only one pound of lime is recovered for every two pounds of stone added to the kiln. When the chips emerge from the discharge or "fire" end of the kiln, they have been converted to white-hot lumps of lime.

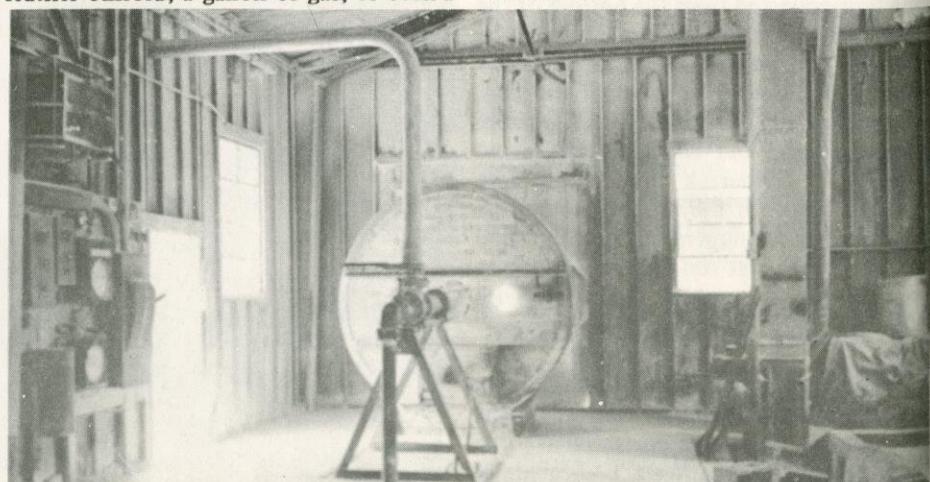
As in the old-time operations, these lumps are stabilized in a hydrator by adding controlled amounts of water. Next they are ground into a powder. And finally, packed in bags or shipped in bulk tank cars, the Rockwell Lime Company's lime is ready for market in twenty states, Europe, Africa, and South America.

The next time you encounter a ball bearing, a piece of glass, a sheet of paper, an insecticide, a can of paint or varnish, a leather billfold, a gallon of gas, or even a

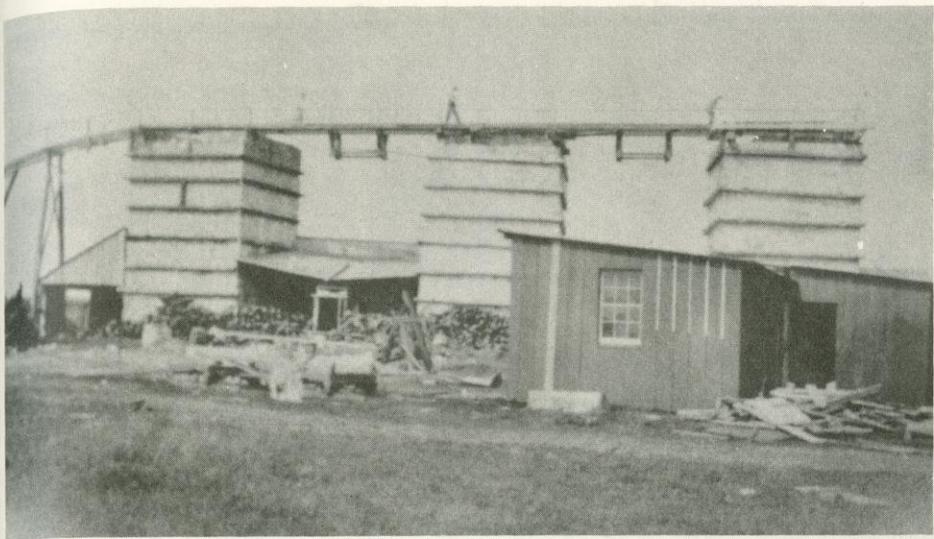
pound of butter, think of lime, for lime is used in the manufacture of each of these products. Most lime is consumed by metallurgical industries for smelting and refining copper and zinc, for treating gold, silver, and aluminum ores, and for manufacturing steel. Large amounts are also used by paper plants, for lime is an important ingredient in one type of liquid which reduces wood chips to pulp.

You couldn't even take a drink of water from a glass if it weren't for lime. Commercial glass contains 10 per cent lime, and it is this portion that makes it insoluble in water. With too little lime, the glass would just melt away. Lime is used in water purification and waste treatment plants, too, where it helps to prevent stream pollution. Smaller quantities are required by the leather and dairy industries, where it is used to tan leather and is added to cream to reduce its acidity before the cream is churned into butter.

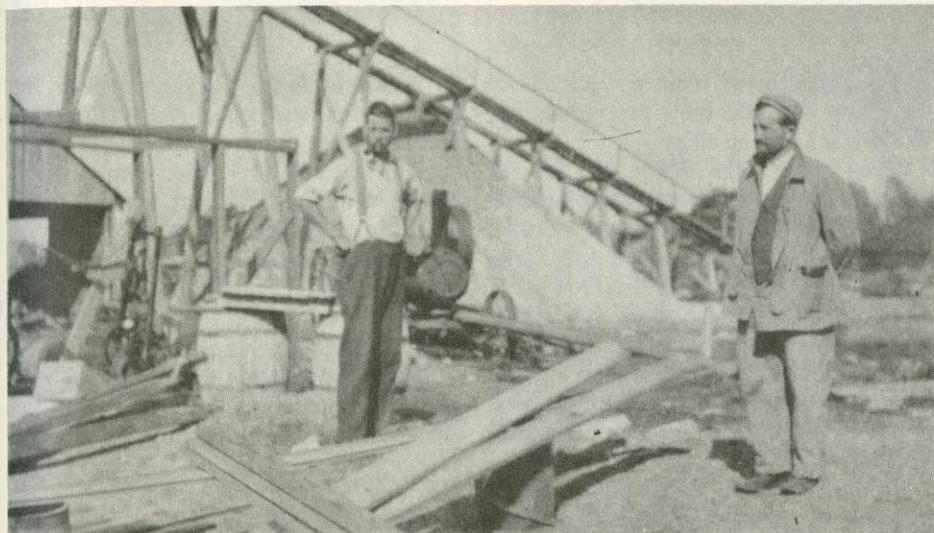
With new uses for lime being developed every day, the time may come when Wisconsin's particular brand of magnesium-containing lime will be in demand again, and abandoned quarries and kilns across the state will come to life once more.



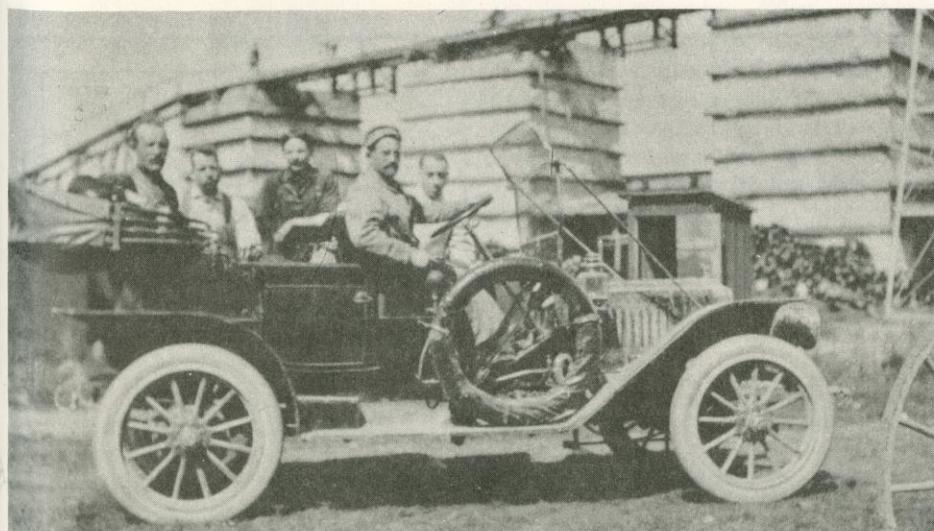
Firing end of new kiln - Rockwell Lime Co.



Rockwell Lime Co. - 3 kilns, 1915.



Superintendent John Brisch at right.



From left to right — John Brisch, Vice President, Joe Koehly, Superintendent, unidentified gentleman, E. P. Bostler, Secretary - next to driver. President Tom Brisch, driver. 1916.

addition to producing stone for manufacture of limestone chips suitable for asphalt quicklime this process makes available large quantities of Grade A agricultural limestone, barn lime, road construction, private driveways and similar applications.

Larger sizes of stone for concrete aggregate and base course construction are also available. All stone is stored in a battery of silos to facilitate loading of trucks and railroad cars.

First Rotary Kiln in State

The new kiln, 150 feet long and six feet four inches in diameter, is the first rotary kiln in the state and represents the newest in lime burning practice. The kiln is lined with refractory brick to withstand temperatures which reach 2,800 degrees Fahrenheit. Propane gas heats the kiln. The gas is stored in two 30,000 gallon tanks located near the discharge end of the kiln. Uniformity of gas as a fuel insures freedom of the product from contamination by ash which accompanies use of coal or wood as fuel.

Limestone is fed to the kiln continuously by a mechanical feeder and as the kiln revolves, the stone moves forward at a uniform rate and is finally discharged at the other end. Here it is picked up by a series of elevators and conveyors for transportation to three storage tanks. These storage tanks are located adjacent to the company's railroad sidings so that bulk loading to railroad cars, and incidentally to trucks, can be made rapidly.

Other conveyors provide transportation of kiln products to the processing plant where pulverized quicklime and hydrated lime are made. These products are packed in bags for shipment or local sale.

Hikes Production Rate

The new facilities increase the production rate of the Rockwell Lime Company, which is headed by Michael Brisch of this city, to four times its original output. Lime is important in its chemical application to the paper, leather, steel, paint and textile industries and its wide use in connection with construction for mortar and plaster, and as a soil conditioner and neutralizer in agriculture and for household work.

Mr. Brisch said the expanded facilities at Rockwood will fill a need for lime of high quality in the Wisconsin area. Pulp and paper mills, water treatment plants and farmers are now assured of adequate lime requirements.

The new plant was designed by Atherton and Evans of Annville, Pa., specialists in the field of lime plant design.

Local contractors who had work at the plant were the Kasper Construction Company, Hamann Construction Company, Schuette Construction Company, F.J. Kerscher Company and the F. Radandt Sons Company.

NOTE: See also the March 1970 issue of the Manitowoc County Historical Society Newsletter, Vol. IV, No. 2, the following articles: Grimms, Manitowoc Community with an Interesting History, by Leonora Kadow, and History of Quarry, Wisconsin by Mrs. N. Schuh.

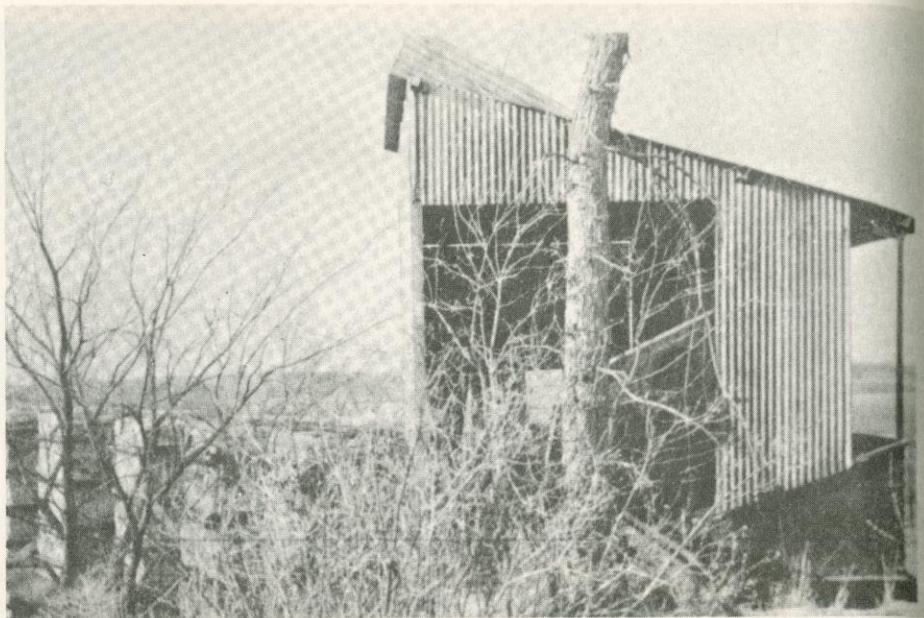
**EARLY MANITOWOC
COUNTY HISTORY**
by
John Harmon
Episode 579

Excerpt from the Manitowoc Herald Times

Just about everything went wrong the day the Western Lime & Cement Co. lime kilns burned in July of 1928 at Grimms.

Just when it appeared that Manager Jowarsky and his men might have the blazing fire under control, a water pipe leading to the seven kilns ruptured and became unusable. A stream of water sprayed in the opposite direction of the fire.

Fire fighters from Brillion and Reedsville were ordered by telephone and the two units made great haste to the fire scene. But then when neighboring firemen arrived it was learned that there was not enough fire hose to reach from the small pond on the Henry Grimm farm to the scene of the blaze. Firemen did the next best thing — they hauled water from individual wells at Grimms. But it was a slow process at best and the raging flames did not slow down until they had consumed the entire frame structure about the seven large kilns.



Building through which railroad cars loaded with lime stone were run on way to kilns at Grimms.

Photo by John Oncken, Channel 5, WFRV-TV

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Two Manitowoc women were among the many who did their part in winning World War I for the allies.

They were Miss Mary E. Squires, chemist, geologist, inventor and business woman, and Dr. Jessie Drew Carpenter, associated in the management and operation of the Allwood Lime Co. at Manitowoc. Both resided at the Squires home located on North Eighth Street.

Miss Squires found and developed a lime used in steel ball finishing, metal polishing and in the finishing of surgical instruments.

It was important to the United States because it had been imported from Germany and the flow of the material had stopped with the outbreak of the war.

A patent for a signaling device for automobiles was given Robert Cizek of Francis Creek in the early spring of 1928.

The headlight-type lamp globe attached to the left front fender of any automobile and showed on-coming motorists which direction the auto machine driver desired to turn. The driver signaled with a button on the dash board which direction he wanted to turn.

Cizek, who was a truck farmer, cheese-maker, taxidermist and town board member, predicted the gadget would sell like hot cakes in a lumber camp on a cold morning.

"One day all automobiles will be equipped with one of my patented gadgets," he predicted.

**MANITOWOC COUNTY
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