



# LIME KILN CHRONICLES

Newsletter of the Friends of the Cowell Lime Works Historic District  
University of California, Santa Cruz

## *Lime History Featured in New Exhibition*

The Friends are pleased to be one of the sponsors of the exhibition “Crystals, Caves & Kilns,” on display at the Santa Cruz Museum of Natural History through February 22. The exhibit explores the natural and cultural history of limestone and marble in the Felton – Santa Cruz area.

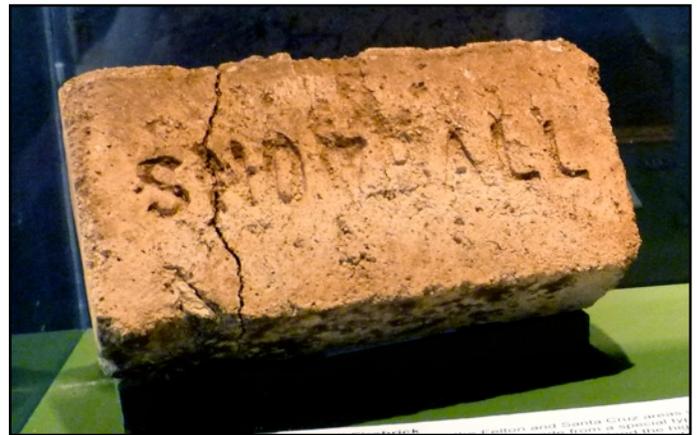
Calcium carbonate (in the form of marble, limestone, and the mineral calcite) has had far reaching affects on the natural environment and human history of this region. Our caves preserve animals and geologic features found nowhere else. Lime and cement, both derived from local marble, were major industries here for over a century.



Curiously, many of our parks and open-space areas trace their history to 19th century lime companies, as dramatically illustrated through an interactive map.

Today, our relationship to limerock is as close as the kitchen sink. Much of the Felton and Santa Cruz water supply percolates through limestone landscapes, known as *karst*. Even activities as mundane as putting on leather shoes, eating an apple or riding in a car have links to lime.

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A Snowball firebrick in the “Crystals, Caves & Kilns” exhibition.

## *These Snowballs Never Melt*

By Frank Perry

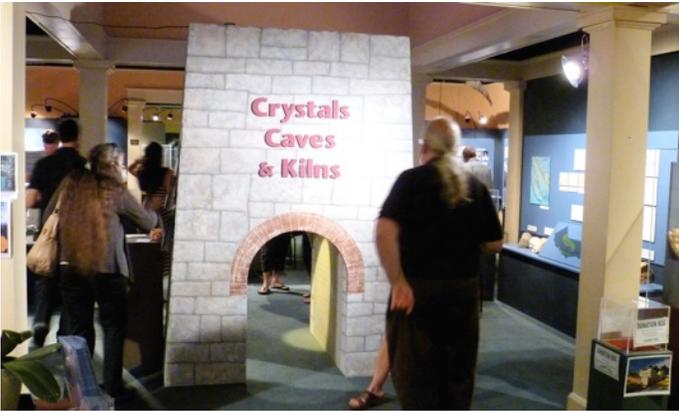
When I give tours of the Cowell Lime Works, I always enjoy showing people one of the firebricks from the kilns and asking if they can read the letters pressed into the craggy, yellow-ocher surface. They are surprised that the letters spell “SNOWBALL”—a incongruous word on something that must withstand 2,000°F temperatures. They are amazed to learn that these bricks came all the way from northern England by way of Cape Horn.

The bricks say “SNOWBALL” because they were made at the Snowball brick company, founded in the middle nineteenth century by James Snowball.

Snowball bricks had a reputation for high quality. A study reported in the *Journal of the American Ceramics Society* in 1920 found that they had the highest melting point of all the imported bricks tested. By then, however, American-made bricks had largely replaced imports.

I recently corresponded with Steve Snowball, a relative of the famous brickmaker, who has been researching the family history. He generously shared

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Children enjoy this lime kiln crawl-through box, modeled loosely on the District's continuous kiln, built in 1861.

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Three UCSC departments contributed to the displays. The Historic District contributed several artifacts not usually on exhibit, including a 12-foot-long shovel used for removing ashes from the lime kilns. The Department of Earth and Planetary Sciences loaned calcite specimens, many of them local. Finally, some of the historic photos are from Special Collections in the McHenry Library. There are also some never-before-seen historic photos.

Mary Harpin, Historic District volunteer and UCSC history major, hosts a companion video that features photos taken by George Silva in the 1920s which show the upper quarry. Titled "Along the Rincon Road," the video is part of the exhibit and is



Scene from the video.

also on the Friends website ([limeworks.ucsc.edu](http://limeworks.ucsc.edu)). Other exhibit videos tell about White Moon Cave and the 8,000-acre CEMEX Redwoods.

The Museum is at 1305 East Cliff Drive and is open Tuesday through Saturday, 10 to 5. There is a small admission charge. Call 831-420-6115 for more information.

The exhibition was made possible with support from the Friends, the San Lorenzo Valley Water District, the Santa Cruz Museum of Natural History, and the San Lorenzo Valley Museum in Boulder Creek. The latter will host the exhibition next Spring.

## Hay Barn Project Underway

Earlier this year, the University selected the architectural firm of Fernau & Hartman for the Hay Barn rehabilitation project. Located in Berkeley, the firm has a long history of successful restoration and re-use projects involving historic buildings. Richard Fernau was with UCSC's first graduating class, and the campus's rich history captured his interest even back then.

The first step has been to prepare a Detailed Project Program or DPP. All the key parties have been meeting to make decisions about utilities, parking, landscaping, traffic flow, and assignment of square footage for various uses. This project is unusual for the campus in that it must take place within an existing building footprint. Because it is in a historic district, the remodeling must remain sensitive to the historic character of the structure and site. Work on schematic drawings will commence this fall, with construction set to start next summer.

As planned from the beginning, the Center for Agroecology and Sustainable Food Systems or CASFS (aka "The Farm") will be the primary user. There will be space for offices, meetings, classes, and other types of activities and gatherings. It will also serve as a staging area for visiting elementary school children coming to tour the Life Lab. At the north end will be an area for CSA pick-up. CSA (short for Community Shared Agriculture) is a program where customers arrange in advance to pick up a pre-set quantity of seasonal vegetables, fruit, or other farm goods each week.

According to Professor Daniel Press, CASFS Executive Director, there will be plenty of wall space in the barn for displays, including artifacts from the campus's lime-making and ranching periods.



Building committee members examine the barn interior. Some of the original timbers and siding will be re-used.

## Students Dig Into History

Last spring's archaeological excavation gave UCSC anthropology students valuable experience right in their own "backyard." Kudos to Project Director Pat Paramoure and to her teaching assistants, Christina Powell and Andrew Woodhead. This wonderful program provided the students with some excellent grounding in archaeological field techniques.

Among the interesting discoveries were three brands of firebricks not previously known from this site: GARTCRAIG, GARNKIRK, and GARTCOSH. The students also located and documented the floor under



Students excavate a trench in front of a kiln. (Photo by Mary Gerbic)

the arch of the continuous kiln and discovered faint numbers written on the kiln face—perhaps recording the number of barrels of lime. We are still not sure.

Thanks again to the many people whose donations made this project possible. To read more, visit the Friends website.



The Kalkar Quarry, presumably in the early 1940s (from the *California Journal of Mines & Geology*, January, 1943).

## Our Quarry Neighbor

By Hal Hyde

The last commercial quarry operation in the immediate campus area was the Kalkar quarry, located near the north end of Spring Street. It operated into the early 1970s. Today, the site includes Rockridge Lane, Rockridge Court, and Quarry Lane—location of some of the most desirable, modern single-family homes near the campus.

This quarry was never owned by Cowell, but the limerock is similar to the rock found on campus, and the quarry's history often intertwined with the Cowell operations.

Fred "Kalkar" Johnson purchased the quarry in 1925 and was a good personal friend and contemporary of George Cardiff, the resident Cowell manager. I knew both of them through the local Santa Cruz Rotary Club. I also knew Cardiff through our involvement with the Boy Scouts. (I worked closely with George Cardiff and Ed Thayer, the Cowell Foundation lands property manager, as the University began to physically occupy the campus.)

Because of the dust, truck traffic, and noise from machinery, the quarry was not a very good neighbor. Worst was the regularly scheduled blasting, always at the hour of noon. The unnerving explosions shattered the face in the quarry to free rock for processing. Reportedly, dynamite or TNT was used.

Sometimes some small rocks hailed down on Coolidge Drive close to its intersection with Hagar Drive, and I complained to Mr. Johnson. Fortunately, we had little traffic during the campus early building phase. When the first students arrived in the fall of 1965, I arranged for the campus police to hold-up traffic during the scheduled

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The **Lime Kiln Chronicles** is published twice each year (April 1 and October 1) by the Friends of the Cowell Lime Works Historic District



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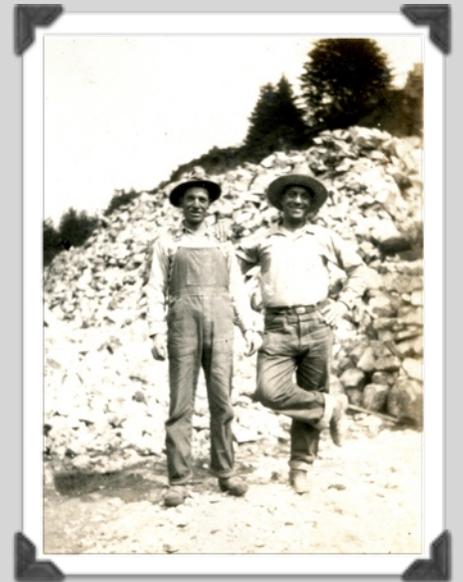
## Quarries, Kilns, and More

Recently, Barbara Wagner of Oregon generously shared some of her memories and family photos of the Cowell Ranch (now UCSC). Barbara's father, George Silva, was born in Watsonville in 1902 and started working for Cowell as a quarryman in about 1924. What is now known as the upper quarry at UCSC was then called the Rincon Quarry. It supplied the rock for Cowell's lime kilns at Rincon (located on Highway 9 at what is today the south edge of Henry Cowell Redwoods State Park).

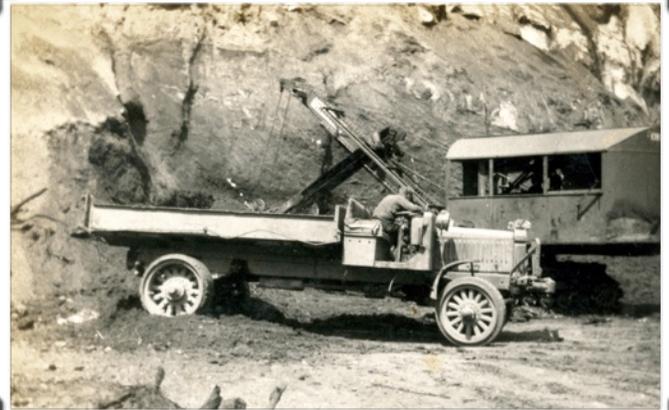
Unlike almost everybody else who worked for the Cowell Lime and Cement Company, Mr. Silva took photos. His images capture the lime-making operations during the transition from horses and wagons to trucks and scoop shovels. He purposely set out to document the quarrying, hauling, and lime-making process, and the resulting images are a gold mine for historical researchers. His photographs answer some important questions about just how things worked, though they also raise some new ones.

We present a small sampling of the photos here, with deep gratitude to Barbara Wagner for sharing them. Others appear in the "Crystals, Caves and Kilns" exhibition and in the "Along the Rincon Road" video on our website.

Horses and carts being used to haul rock to a dump truck at the Rincon quarry, 1920s. This image beautifully captures the gradual shift towards mechanization. The truck is a 40-horsepower Mack "Bulldog."



Workers at the Rincon Quarry, 1920s.



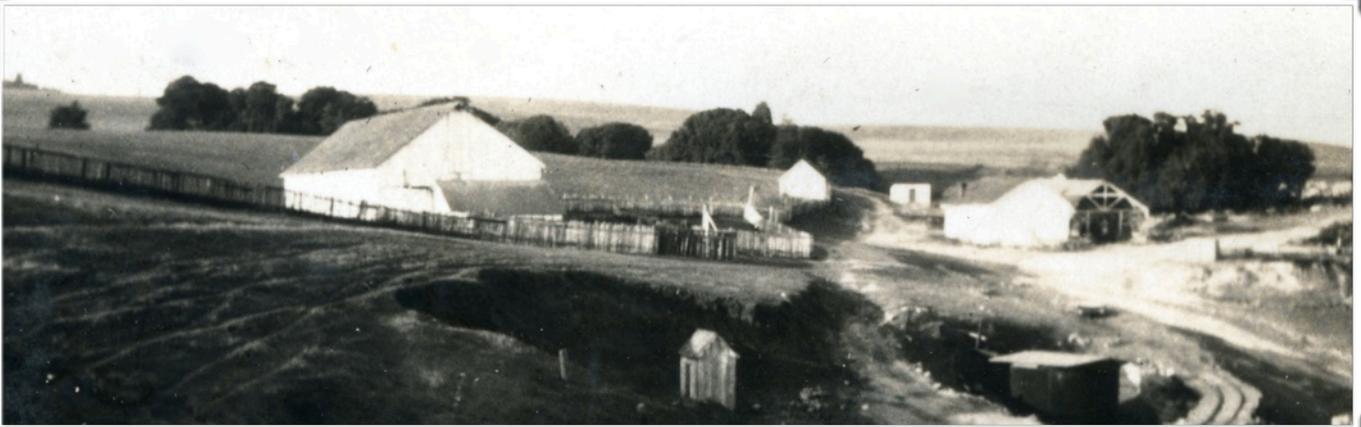
Scoop shovel and truck at the Rincon Quarry, 1920s. The shovel appears to be removing soil and other overburden that came down in a landslide.



One of Harry Cowell's bison. Barn G, silo, and Carriage House in distance.



George Silva poses at the Rincon Kilns with a Ford Model T Runabout, 1930.



Hay barn (left) and blacksmith shop, 1920s. Worker cabin and powder magazine in distance. Foreground: outhouse, oil tank and tramway to kilns.



Silo and tractor beside Barn G. Note Carriage House in background.



Harvesting hay on the Cowell Ranch

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some of what he has discovered about James Snowball and his brick business.

The plant was located at the confluence of the River Derwent and the River Tyne near the community of Swalwell, about two miles west of Gateshead. (Gateshead is across the river from Newcastle.) The numerous coal mines in the Newcastle region famously fueled Britain's industrial revolution. (Hence the expression, "Like carrying coals to Newcastle"—meaning a pointless activity.) Coincidentally, fire clay found between the layers of coal was ideal for making furnace and kiln bricks. Brick-lined furnaces, fueled by coal, smelted the iron for railroads, factories, and machinery. The Snowball company not only established a thriving home trade, according to Steve, but also exported bricks to Russia, France, Belgium, and California. Recently, UCSC provided a Snowball brick for a brick museum in Japan, where they also imported them.

Steve writes, "The story of the Snowball fire bricks starts with James Snowball (1818-1879), my 2nd great grand uncle, who was the second eldest son of George and Mary Snowball of Harlow Hill, Northumberland." George Snowball was a carpenter, and initially young James followed in this same trade. "His first work was to erect a magnificent pulpit at St. Mary's Church, Gateshead's medieval parish church, which was unfortunately gutted by fire in 1979 but today still forms the Gateshead Tourist Information Centre. He did not, however, remain long at that occupation and, taking a shop, he commenced business as a provision dealer, which he followed for twelve years."

In 1843 James married Jane Allport, and at that time his occupation was listed as "grocer." Sadly, Jane died just two months later. The following year he married



Scene at the Snowball brick factory. (Courtesy Steve Snowball)

**FRESH SNOWBALLS**

**ALWAYS ON HAND.**

**THE KIND THAT DO NOT MELT.**

Also Cowen, T. Carr, M. T., and other brands of English Fire Brick. Brown Baisley (Scotch Fire Brick). T. Carr (English Fire Tiles).

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"ANALYSES OF PIG IRON," published by S. R. Church. Price \$5.00 per copy post-paid to United States and Canada. Price post-paid to foreign countries, 24 shillings.

**AGENT FOR GAUTIER'S CELEBRATED CRUCIBLES AND RETORTS.**

1901 advertisement

Hannah Laidler, and they eventually had five children. The Snowball family continued to reside in Gateshead where, by 1853, James had acquired a brick factory. "By 1861, the census return for England and Wales shows the family at 25 High West Street, Gateshead, where James is shown as a fire brick manufacturer and employer of 15 men," says Steve.

Eventually James expanded his business, acquiring several collieries (where coal is mined), manufacturing clay pipes for sewer lines, and erecting the brickyard near Swalwell. "The industry thrived," explained Steve, "and by 1890, under the ownership of George Harrison Snowball, James's son, the Stourbridge works had 8 kilns, each of them capable of holding 15,000 bricks. [Stourbridge is a section of Gateshead.] The brick machines could produce 50,000 bricks per week. The Swalwell site continued to produce firebricks until 1925."

"Following the death of his wife, Hannah, in December 1859, James took an active interest in local politics and public affairs, especially in the municipal government of Gateshead Borough. He was elected in 1865 as a member of the Town Council for the South Ward and continued, uninterrupted, as representative for the ward until November 1878, when he was appointed an alderman."

Just last year, Steve Snowball visited the Gateshead-Swalwell area for the first time. James Snowball and his family still have quite a connection in the town. "At a local Gateshead Church, St. Cuthbert's in Bensham, stands a large memorial to James and his second wife, Hannah, and their children. Its base is made of (what else?) Snowball bricks!"

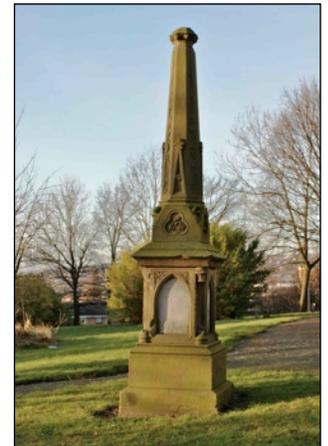


Photo by Steve Snowball

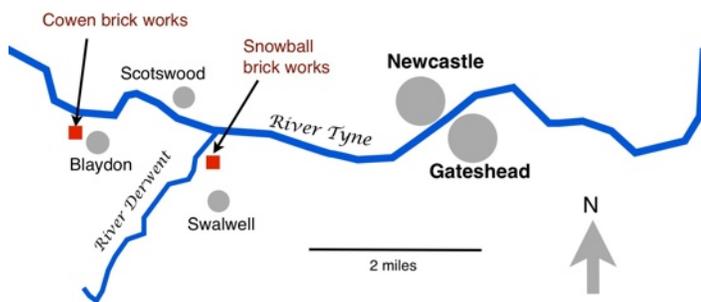
Nothing remains of the brick works. The whole industrial region is now paved with shopping centers, parking lots, hotels, and busy highways. If you explore the site on Google Maps, look for the Newcastle-Gateshead Marriott Hotel. The brick works was immediately to the north. "The Marriott Hotel was,



Site of the Snowball brick yard across the River Derwent. Photo taken in 2012 by Steve Snowball.

ironically, where we stayed for our visit," says Steve.

The story of the Snowball and other brick companies of the northern England area would be fruitful territory for historical research. Despite their impact on the development of Great Britain, Europe, and the United States, surprisingly little has been written about them. Steve has yet even to find a portrait of James Snowball, but is continuing his research. "James' brother, William was also a notable person in Gateshead, establishing England's first true department store, Snowball & Sons in Gateshead High Street," he says. "I haven't managed to secure a photo of him either. Both were multi-millionaires by today's standards."



Location of the Snowball brick works near Swalwell on the River Tyne. The Cowen brick works was located at Blaydon, less than two miles to the west. Across the River Tyne was the Thomas Carr & Sons brick works at Scotswood. COWEN and T CARR bricks also line the interior of the lime kilns of the Cowell Lime Works Historic District.

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blast times. About this time I believe the quarry began to use ammonium nitrate for its blasting, which was not nearly as loud, yet worked well in loosening the rock.

The finished products in the last years of operation were additive grits to poultry feed, popularly known as Chicken Grit or Pigeon Grit. It was compounded with a base of small edible pebbles (ground 4 to 10 mesh) of limerock, to which a modern product adds trace amounts of other ingredients such as oyster shell, charcoal, salt, zinc oxide, ferrous carbonate, copper oxide, cobalt carbonate, and calcium periodate. It was sold through farm supply and feed store channels. There were 19 specialty mixes for birds, from canaries to ostriches. The mixtures provided a necessary ingredient of roughage for poultry to have in their crops as part of their digestive process. The limerock was particularly important for egg laying hens who used the calcium in building strong eggshells. As many as 400,000 hundred-pound sacks were produced and sold each year.

Fred Johnson died in 1964, and the Johnson family eventually decided that the demand for housing sites close to the campus outweighed the hard work of mining, problems of regulation, and unhappy neighbors.

Readers curious about the site may wish to visit the small park and pond accessed from a path off Quarry Lane. The serene setting, with chirping blackbirds and ducks paddling among the tules, belies the area's industrial past.

(Author Hal Hyde was UCSC's first Vice Chancellor for Business and Finance and has been a member of the Friends since its founding.)



Buildings at the Kalkar Quarry, probably early 1940s. Officially, it was called the Pacific Limestone Products Company, but its poultry grit was sold under the brand name Kalkar. (Photo from the *California Journal of Mines and Geology*, January, 1943)



East cabins, 1920s. This detail from a photo by George Silva is the only known early-day photograph to show all five cabins. The photo reveals many interesting details: the small animal pens, the very tall stove pipes, and an addition to the middle cabin. The roses and peach trees of later years appear to have been not yet planted. Behind the cabins is a cow pasture and what is now known as Barn H (used for shipping and receiving by the University).

Friends of the Cowell Lime Works Historic District  
Mail Stop PP&C  
University of California  
Santa Cruz, CA 95064