What is a lime kiln?
A lime kiln is a stone furnace used to render limestone into quicklime. Cedar was used in Bermuda to fire the kilns since it was plentiful and it burned hot enough to do the job.

What is quicklime and why was it important?
Quicklime (or calcium oxide) is a white crumbly compound created by heating limestone (calcium carbonate) above 1,472ºF for around 5-hours to drive the carbon dioxide from the stone. In Bermuda, a typical large batch of limestone could take three to five days to render down to quicklime. When ground into powder, quicklime serves as a rudimentary form of cement, so when mixed with sand and water it forms mortar which is critical in masonry. Powder lime or quicklime was also important in the white-washing of Bermuda roofs. Before the importation of 'bulk-lime' and the introduction of Portland cement in the 1860's it was necessary for Bermuda to produce its own supply of quicklime. Hence the need for lime kilns. The main ingredient of today's cement is also quicklime, but clay (+/or silica sand); iron ore and bauxite are also added to extract silicon, iron and aluminium respectively.

What were the designs of Bermuda lime kilns?
There were two types of lime kilns in Bermuda. The most common, and oldest type was a simple cylindrical hole, typically up to 15-feet deep, and six to eight feet in diameter, dug out from the stone earth. These rudimentary kilns were often made close to building sites so that masons had a ready supply of quicklime to make their mortar mix. Today we can see the remains of these kilns throughout Bermuda.

With the advent of commercial quarries in the early 1800's some kilns were constructed from hard-stone measuring up to 30-feet square, with the furnace lined with fireproof yellow brick. There were entry points for fuel (cedar), air, and the introduction of limestone. There were also two outlets, one from which the produced quicklime was extracted, and the other to allow carbon dioxide to escape from the heated limestone. These kilns were used commercially to produce large amounts of quicklime which were then bagged and then marketed to the building industry, and the retail market too for roof lime wash.

How were the kilns used to produce quicklime?
Cedar was lit inside the kiln to attain a temperature of around 1,500F. Limestone, crushed into fairly small pieces, was then be baked inside the kiln. Baking time depended on the quantity of limestone being rendered. Small batches might take only 5-hours, whilst very large ones could take three to four days. Once the limestone had rendered down to quicklime, it was then raked out of the kiln and set aside for cooling. The cooled quicklime was then manually pressed into powder. The process of "raking the lime" and then pressing it into powder was dangerous as quicklime, being very caustic, can burn the skin, eyes, damage the lungs and fumes can perforate the nasal

lining. The powder was then be used by masons to make their mortar. If the quicklime needed to be stored it would be bagged to stop it from reacting with the carbon dioxide in the air and reverting back to limestone.

What's the history behind the Lime Kiln located in Ferry Point Park?
This particular kiln dates back to the 1820's when built by the British War Department to support the restoration and expansion of the fortifications around the east end. Many Bermudians learned their skills in masonry and carpentry from the various experts brought to the Island. Last used in 1993 by Orville Bascome, whose family will be participating in the project, this special historic site has many stories for all to study and learn from.

Why did the use of lime kilns die out?
Thanks to technological advancements, by 1860 Portland cements and very affordable 'bulk lime' was being mass produced and exported from Britain and other parts of Europe too. Profits from operating lime kilns were therefore getting squeezed, and with that more young men were not willing to accept the risks and hazards inherent with making quicklime. The use of lime kilns in Bermuda therefore phased out between 1860 and the mid 1900's. The lime kiln we see in Ferry Reach Park remained in use up to the early 1960's and was probably the last operating kiln in Bermuda.

One should also keep in mind that between 1946-53 almost all of the cedar trees were lost in a blight. This blight brought about a 95% decline in cedar growth, so it was easy to see that there was now an end to a long-term, sustainable supply of cheap & abundant fuel for the lime kilns. By 1953 the only source of fuel for the remaining kilns were dead cedar trees, and this stock was depleting at a rapid rate. In addition, the feasibility of importing coke or charcoal to fuel the lime kilns was negligible since their cost was not much different from the expense of importing bulk lime. From the mid 1950's onward Cedar became increasingly more prized commercially as a material to build fine furniture, and living trees became protected from indiscriminate felling.

The St. George's Foundation (SGF), Registered Bermuda Charity #454, was founded in 1997 with the goal of bringing Bermuda's history to life with in the UNESCO World Heritage Site.

*The Mission of the SGF is "**to support Bermuda's UNESCO World Heritage Site through collaboration, education and awareness."***

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