

# Lime kilns on the South Wexford Coast

An information sheet compiled, produced and distributed by Jim Hurley, SWC Promotions. Email: swc@eircom.net. Telephone: (053) 912 9671. Update of October 2006.

**Ground limestone.** Ground limestone is limestone rock finely ground to a coarse powder by powerful crushing machines. Some 1.1 million tonnes of ground limestone is applied on Irish farmland each year.

**Lime kilns.** In the past, people did not have powerful crushing machines to grind limestone rock to dust. Instead, they 'burned' the rock and used the 'ash'. The place where the limestone rock was 'burnt' was called a lime kiln. The 1841 Ordnance Survey sheets show fifteen lime kilns at Hook Head alone. The kiln at Tintern Abbey has been restored and is freely accessible to the public.



Kilns in south Wexford were built of rock and were lined with large fire-bricks of Old Red Sandstone that would not burn. The shape of the 'oven' or 'pot' was like a wine glass or funnel; round and wide on top and narrowing to a point below. There was an opening at the bottom of the pot called the 'eye'. The eye was located at the bottom of what looked like a large stone fireplace. Kilns were usually built on sloping ground to allow ease of access to both the top of the pot and the eye.

**Firing the kiln.** The pot was filled from above with Gorse bushes and drift wood on the bottom followed by layers of rock and coal. Culm, a type of fine anthracite



was imported from Wales for use in larger kilns. The kiln was fired or set alight through the eye. The eye also acted as a flue allowing a flow of air to be sucked in as the contents of the pot burned.

**Chemical reaction.** The skilled operator would ensure that the limestone rock reached a temperature of 825-900° Celsius. At that temperature, the rock would calcinate or decompose thermally going through the following chemical reaction rather than 'burning':  $\text{CaCO}_3$  (calcium carbonate or limestone)  $\rightarrow$   $\text{CaO}$  (calcium oxide or quicklime) +  $\text{CO}_2$  (carbon dioxide gas). After burning for about four days the quicklime was raked from the kiln and water was added to it. In a violent reaction, slaked lime was formed and a large amount of heat given off:  $\text{CaO}$  (calcium oxide or quicklime) +  $\text{H}_2\text{O}$  (water)  $\leftrightarrow$   $\text{Ca}(\text{OH})_2$  (calcium hydroxide, hydrated lime or slaked lime) + 63.7kJ/mol of CaO. If the kiln burned at too high a temperature the quicklime would not slake properly; on the other hand, if the temperature was too low the rock would not calcinate. To facilitate continuous production, there are examples of double kilns at Saintkierans and Clonmines.

**Uses of lime.** Lime was a very important material in rural living. It was used on agricultural land, as a mortar in building, for lime-washing house walls (whitewash) to



make them waterproof and a decoration to brighten and disinfect the interiors, to prevent foot rot in livestock, as a medicine, as a bleach, for disinfecting animal carcasses and animal houses, to kill germs in toilet buckets and to aid decomposition in cesspits, as a slug and snail repellent and ant killer, to protect stored potatoes from frost, to disinfect wells, etc.

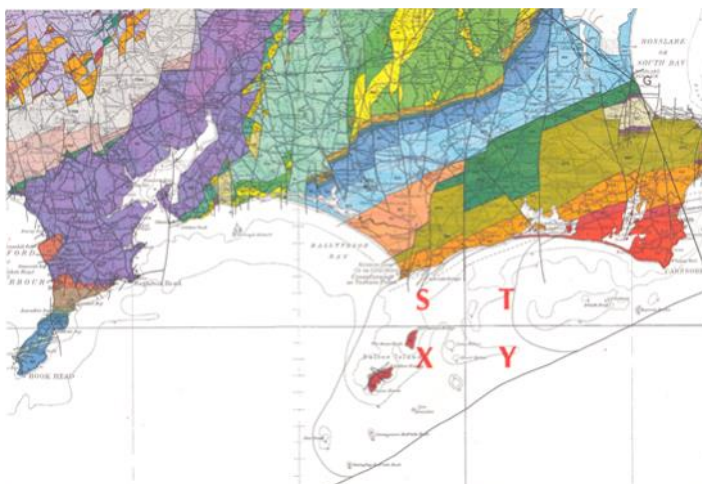
**Benefits of agricultural lime.** Surface soil tends to become more acid over time. Agricultural lime is added to the soil to neutralise the acid. It also conditions the soil by improving soil structure, and by allowing micro-organisms and earthworms to thrive. It aids soil chemistry by releasing nitrogen and by freeing the nutrients necessary for healthy plant growth.

**Quarrying.** Limestone rock was quarried extensively in the past for making lime. The rock was formed during the Carboniferous Period (354-298 million years ago). In 1822, William Conybeare, an English geologist, gave this geological period its descriptive name 'carboniferous' because of the carbon-rich deposits laid down during it. Coal is the most notable of these carbon deposits. On the South Wexford Coast, rocks formed during the Carboniferous Period occur extensively offshore. Onshore they have been eroded with the passage of time and are now confined to two locations: Hook Head and the Duncormick-Wexford Outlier.



**Outlier:** An outlier is a limited area of younger rocks surrounded by older rocks. The Duncormick-Wexford Outlier is an elongated band of Carboniferous Period rocks measuring 30 kilometres long by 4 kilometres wide. The band runs on a southwest to northeast axis from Ballyteige Lough to Wexford Harbour along the Rosslare Fault.

**Geology of the South Wexford Coast.**



Limekiln of the seashore at Churchtown, Hook Head.



The hearth is located on sloping ground on the sea side.



The pot is lined with blocks of Old Red Sandstone.



Ramp for loading limestone into the pot.



Double kilns at Saintkierans.