Digging for Cheese

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I remember as a small boy, the excitement of the first lunar landings. NASA had managed to propel a tin can full of people to the moon and back using less computer power than an average modern mobile phone. This "small step for a man" was not only a "giant leap for mankind", but analysis of the rock samples collected enabled scientists to dispel an age-old myth. The moon, it turned out, was not made of cheese! This, of course, came as no surprise to geologists. Cheese, being of sedimentary origin, could not possibly have formed in the water-free, lifeless lunar environment.

Here on earth, cheese is normally found in association with limestone rocks, Wensleydale and Gloucester are among the best known examples. The West of England is particularly well blessed with cheese, with two of the largest outcrops occurring in the Mendip hills, these being at Cheddar and in the area immediately west of Frome. Cheese has been extensively quarried in Cheddar since the iron-age leaving the huge excavation now known as Cheddar Gorge as an impressive monument to the cheese quarrying industry. Now silent apart from the wind and the birds, it is difficult to imagine that this was once the workplace of hundreds of "cheesemen" and the source of around sixty million tons of Cheddar cheese.

The other, less well known source of Mendip cheese was the area west of Frome around Whatley, Mells and Leigh-on-Mendip. The large workforce who worked the quarries included a number of French immigrants whose experience of Brie borehole drilling was invaluable. It was from this French connection that Frome received its name. "Frome" being derived from "fromage", (French for cheese). All known deposits have now been worked out and the parent carboniferous limestones are now worked on a large scale. The only permanent reminder of the cheese quarrying industry in this area is the Frome cheese show, which is now in its 128th year.

Early cheesemen were aware that the Cheddar deposit was a finite resource and would eventually become exhausted. A great deal of effort was devoted to finding a sustainable substitute and it was eventually discovered that cheese could be produced from grass. The process makes use of cows, which eat the grass, producing milk. The milk is then allowed to rot in controlled conditions, producing a slurry. The aqueous component of the slurry is separated, and the retentate is stored at ground-rock temperature (often in caves to mimic natural geological conditions). The resultant material becomes cheese after a period of hardening and maturation. Cheese produced in this manner is virtually indistinguishable from quarried cheese. Most modern cheeses are produced by this process.

Cheese quarrying probably peaked around the seventeenth century, and slowly declined until around 1840, after which, few (if any) quarries remained working. As the quarries became exhausted, many were abandoned and the cheese barons switched to the production of cheese from grass. Other cheese barons were quick to respond to the growing demand for road-metal and limestone aggregates which occurred around the same time as the demise of cheese quarrying. They converted their quarries to limestone production and many of these quarries are still working today.

Although there is undoubtedly plenty of cheese left in the Mendip hills, there are now no working quarries. Cheese can still occasionally be found in stalagmitic forms in Mendip caves, sometimes in the form of straw stalactites, (probably the original "cheese straws"). Formations are now protected by law and must not be removed or defaced. Cave-cheese would have been a magnet for hungry prehistoric animals. Banwell stalactite cave for example still contains fine examples of stalagmitic cheese, whereas the nearby Banwell bone cave was almost completely stripped of cheese by hyenas and brown bears. Many animals became lost or suffered falls underground in their quest for cheese, and the bones of these unfortunate creatures can still be found throughout the cave. Shallow surface-deposits of cheese are occasionally found by farmers who have right of ownership by ancient charter, to any cheese found on their land. These deposits are usually quickly quarried away for home consumption, and the news only reaches the cheese geologists long after the event!

While most of the evidence of cheese quarrying has now been obliterated, one may still occasionally find artefacts and snippets of cheese quarrying history. Pubs in the Somerset levels often adorn their walls with what they claim to be "peat cutting" tools. These are more often than not, the very tools that the cheesemen of Cheddar would have used all those years ago. A few phrases in our spoken language also reflect this bygone industry: To be "cheesed off" for example, now refers to being unhappy. This derives from the days when a cheese quarryman would be laid off for the day because of bad weather, and would therefore earn no pay. Another phrase worthy of note is "hard cheese", meaning "bad luck". This derived from the time when a quarryman would hit a harder patch of cheese in the quarry, and would have to work longer hours to extract it.

The phrase "as different as chalk and cheese" probably derives from one of the first skills that a cheeseman would have had to learn. It was essential (although not difficult) to tell the two apart in a cheese and limestone quarry.

(Limestone is often referred to as “chalk” by quarrymen; chalk is a variety of limestone). While both are high in calcium, nobody likes too much limestone in their sandwiches!

The geological origin of cheese is thought to be similar to that of coal; coal being the fossilised derivative of carboniferous forests. Cheese is of a far more recent geological origin, and would have been formed from the fossilisation of the Cretaceous grasslands. The grass would have decayed to a viscous fluid (as in the modern cheese making process) and flowed into hollows and fissures in the country rock, where it would have hardened and matured at the ideal storage temperature.

What of the future of the cheese quarrying industry now that all the known larger outcrops have been worked out? Extraction of the remaining deeper deposits would require large-scale overburden removal or shaft mining techniques. Extensive pumping operations would be necessary to extract sub-aquifer cheese, which would be prohibitively expensive and environmentally unacceptable. Now that cheese making from grass is so cost-effective, it is unlikely that cheese quarrying could ever again become economically competitive. Small scale cheese prospecting has resulted in periodic attempts to open small cheese workings, but planning applications are generally refused on environmental grounds or simply not taken seriously by the planning authorities.

Article written for his father Allan, by Antony Comer

MINEHEAD-GREENALEIGH FIELD TRIP

Field Trip led by Hugh Prudden, Somerset Geology Group

Devonian Hangman Sandstone, continental sandy beds, cut by NNW-SSE parallel joints as a result of wrenching.

Photograph taken by Bernard Newton

Details written by Hugh Prudden in -

Somerset Geology - A Good Rock Guide

http://mysite.wanadoo-members.co.uk/hughprudden/sgg.htm

Extracts from Somerset Geology - A Good Rock Guide -

CULVER CLIFF AND MINEHEAD SS 9647
1 km W of Minehead
Hangman Sandstone - tectonics
A somewhat rough but rewarding scramble over a rocky beach is required to examine the Middle Devonian Hangman Sandstone at Culver Cliff. The cliffs and fallen blocks show wave-formed ripples on bedding planes and climbing-ripple cross-lamination interpreted as shallow water deltaic near-shore sediments. There are tight and minor folds plus low-angle shears with striated slicken-sides and quartz-filled tension gashes beneath. These give a good idea of the compressive nature of the Variscan Orogeny. Some of the folds were probably formed by contemporary slumping of the sediments shortly after they were laid down

GREENALEIGH SS 9548
2.5 km NW of Minehead
Hangman Sandstone - tectonics - head - arcuate shingle ridge
Perhaps one of Somerset’s best kept secrets! The small cove has good exposures of the Hangman Sandstone Group and provides a window on the sedimentary and structural features of the Devonian rocks of west Somerset. Features include cleaved slates, massive sandstones, folds and faults including strong indications of the NNW-SSE strike-slip faulting and jointing which is prevalent over much of SW England. A relict periglacial slope is underlain by head banked against an old cliff line. There may be ancient beach pebbles below the head. An arcuate shingle ridge projects seaward with a small brackish marsh behind. This is a lovely unspoilt corner of Somerset with few visitors and is highly recommended.