Wool and Water

– an enduring partnership in Exmoor and the surrounding area.

By DWLCT Academic Associate Lindy Head

Lindy runs a wool company on behalf of the Exmoor Horn Sheep Breeders' Society –

www.exmoorhornwool.co.uk

An overview

In this modern era, we are familiar with the concept of electric power generated by water. Our predecessors were no less ingenious when they used waterpower more directly as the energy source in industrial processes such as milling, metal working, wool processing and paper production. Even the most forward-looking current plans for wave power have their precursor in tide mills. A leat, which is a Westcountry term for a mill stream, is a man-made water channel diverting water (usually from a river), which enables a factory or mill owner to easily control the volume and rate of flow of water to machinery. At a more rudimentary level, earth-bank leats are still used in field systems to control seasonal flow of irrigation and mediaeval farmers knew of the benefits to grass growth in flooding water meadows every spring. There is evidence that Dulverton Leat was used to irrigate the area now forming the caravan park with some of the caravan pitches still prone to becoming muddy.

Coupled with water as a source of power is of course the use of water for transport. Exmoor and the surrounding area was served by the ports of Dunster (until it silted up in the fifteenth century), Minehead and Bridgwater to the north and Exeter to the south, were all involved in woollen trading to the near continent. In Tudor times, Exeter was the third most important city in England after London and Norwich, and it has the oldest surviving ship canal in England, built in the fifteenth century so that cargoes could be loaded directly on to ships in Exeter rather than on the coast at Topsham.

It may be useful to remind ourselves of some of the occupations connected with the industry in the past that have now almost fallen out of use:- a clothier is a person or company making cloth; a draper is a wholesaler or retailer of cloth (mainly for clothing); a mercer is a dealer in fabrics especially the finer ones, and a haberdasher is a seller of small items for dressmaking such as scissors, ribbon, buttons etc.

Some occupation-related surnames are: - Walker (worker in the scouring process); Fuller (worker in the fulling process); Tucker (a Westcountry term for a Fuller); Weaver, and Dyer.

Wool and prosperity

In the UK, the wool industry is a very old one. The wealth of many abbeys was based on wool. In late mediaeval times, there was an expansion in the number of merchants trading in the export of wool to mainland Europe. The increased wealth gave rise to the foundation of prosperous towns with magnificent churches, including those in Tiverton and Cullompton. St. Peter's church in Tiverton records the achievements of John Greenway[1], which are carved in the Greenway Chapel and church porch, built in 1517. He exported cloth to France, the Netherlands and Spain in several craft, depicted variously as a ship with three large sails and seven oarsmen; another as a boat having one large and two small sails and a helmsman; and yet another as more barge-like with five oarsmen. In the church of St. Andrew at Cullompton, an early fifteenth century chapel funded by John Lane[2], a cloth merchant, has emblems including ships, and the angels in the aisle hold other symbols of his trade such as cloth shears and teasel frames. And in Dulverton in 1532, the church had a chapel dedicated to St. Blaize, the patron saint of wool-combers. As always, the real money was made by the middlemen (traders and merchants) not by those growing and processing the wool. The merchants tended to live in towns surrounding the moor rather than on the moor itself and one can still see evidence of this in the difference between housing stock surviving from this period on and off the moor. Most of old Dulverton and Exford for example is made up of small workmen's cottages, but travel a short distance to say Bampton, Wiveliscombe or Tiverton and you can see from the housing stock that there was more money about in these places. It was only when the Victorians 'discovered' Exmoor that larger more substantial houses started to be built in significant numbers on Exmoor.

Spinning and Weaving

Photograph 1

Prior to mediaeval times, spinning was done in the grease in the homesteads and farmhouses of Exmoor and the hinterland of Exeter by women and children, using the easily transportable distaff and spindle.

In the 12th century, the invention of the Great Wheel as a spinning machine (at which the spinner stood), enabled those with enough space to be more productive.

Weaving took place in the villages such as Brushford (where in 1621 a man's will showed that he owned a loom and in 1626 another owned two looms), and Exebridge (where there was a weaver's shop)[3] as well as Exeter itself. This system of spinners and weavers as out-workers persisted from late mediaeval times until its decline in the early 18th century and then its disappearance under the increased pressure of mechanisation as part of the Industrial Revolution later that century.

Even as late as 1705, the work of spinning was to be provided for poor people in South Molton, subsequent to which the Bluecoat Charity School was founded, the name referring to the colour of their uniform.

A wooden-framed weaving loom had warp (vertical) threads and weft (horizontal) threads delivered by a shuttle. This would have made an open-textured, loose weave cloth, called kersey, perhaps a bit rough, similar to Harris

Tweed nowadays. If a higher quality cloth was required it went through a fulling process where the fibres of the cloth were consolidated and meshed in order to transform it into a thicker, smoother finished product which would fetch a far better price. Fulling had been the first part of cloth making to become mechanised, with two mills being established in 1185 by the Knights Templar in Yorkshire and Gloucestershire.

Fulling

In the fulling mill the first stage in the process was to 'scour' the cloth in a bath of hot water, soap and soda by trampling on it, (hence the surname Walker) to remove the sheep's natural grease. At a later stage the take-up of dye would be inhibited if the grease (lanolin) were not removed. Then, as nowadays during scouring, the temperature of the water is critical to starting this process. Next, the cloth was squeezed, and following on from this, pounded (in troughs) beneath large water-driven mallets called fulling-stocks, the process being repeated several times with the contents of the troughs changing each time. The first trough usually contained human urine to soften and clean, and a subsequent trough might contain fullers earth, a form of dry powdered clay, to absorb dark stains and more grease. Together, the urine, clay and pounding would soften, clean and thicken the fibres of the cloth, which could then be rinsed. Such was the size of the industry that in places of low population (such as Dulverton) urine began to have value to processors and poor people could actually sell their urine to the fulling mill to supplement their income, leading to the origins of the rather derogatory epithets of being 'piss poor' or, even worse, 'not having a pot to piss in'.

Fulling stocks were held within a large wooden frame. They consisted of a heavy wooden arm pivoted at the upper end, allowing it to swing downwards in an arc onto the cloth, with a stock like a mallet on the bottom end. The cloth sat in a trough with a curved backboard, and this, combined with a stepped[6] rather than a purely blunt end of the mallet, meant that the cloth could turn gradually, thus ensuring evenly spread beating and avoiding excessive wear in any one place that would have resulted in a damaging hole in the bolt of cloth. Fulling stocks were usually set in pairs, the force for lifting them being delivered by cam shafts attached to gearing driven by the power of the water wheel. The immense skill of the fuller (or tucker as he was sometimes known in the West Country) was to judge the incoming variables of water quality, temperature and cloth characteristics and decide how much beating was needed to give the desired quality of end-product.

Drying and Finishing

After fulling (and perhaps dyeing – see below), the cloth would have shrunk considerably, so it was stretched and dried on a tentering frame to ensure that the cloth was evenly tensioned to given dimensions. The tentering frame had the appearance of a long length of post-and-rail fencing in that it consisted of upright posts joined together by a fixed top rail. The bottom parallel rail could be moved up or down according to the width of the bolt of cloth being dried. Every three or four inches there were L-shaped iron tenterhooks pointed at both ends[7], the top ones being pointed upwards and the bottom ones being pointed downwards. The frames, or racks, were often in a field adjoining the fulling mill, giving rise to names such as "Rack Lane" in Exeter. In Dunster there were tenter frames on Grabbist Hill and on the side of the castle tor[8], whilst in Dulverton, where tenterhooks may still occasionally be found on the ground, they were at Weir Cleeve atop the hill facing west[9].

Kersey was a narrow cloth, and broadcloth became more common especially after the invention of the weaver's flying shuttle by John Kay in 1733. In order to standardise measurements and thus facilitate export, a 1601 Act classified "Dunsters, Bridgwaters and Tauntons" as cloth between 12 and 13 yards long and 1¾ yards wide, weighing 30 pounds[10]. The role of mediaeval alnagers, whose duty was to inspect cloth at fulling mills, apply lead seals (without which the cloth could not be sold) and collect a fee, was updated during Elizabethan times as types of cloth diversified, and was finally abolished in 1699.

Following on from drying, the cloth had its nap raised using an array of teazel heads on a wooden board. Teazels are tall herbaceous biennial plants (Dipsacus Sativus rather than the wild teasel Dipsacus Fullonum) and have stiff-headed spiny flowers with tiny hooks at the end of each bristle, which, when dried, raise the nap without tearing the fabric as metal would do. It was then the expert job of the shearer to trim the nap to make a smooth cloth using very sharp shears, which could weigh up to 31 pounds. Trimming was usually done over a curved table surface.

Dyeing

Dyeing was often done immediately after the fulling process (before drying) but some dyeing of finished cloth clearly took place away from the fulling mill. Although woad (Isatis tinctoria), a very widely used dye plant giving blue, was grown in Somerset, Lincolnshire and East Anglia, there was not nearly enough of it to meet demand in the dyeing of wool, so imports came from Bordeaux, Bayonne and Portugal, via Minehead and Bridgwater to dyers in Taunton[11]. These imports came in "pipes", barrels of half a tun. During the seventeenth century indigo was introduced into England by the Dutch East India Company, and by the end of the nineteenth century that was in its turn supplanted by the newly discovered synthetic indigo[12.] Woad being a leafy, bulky plant was better transported in a more compact form, which started by crushing the leaves under huge stone rollers pulled by heavy horses. The pulpy, mustard-smelling mass was then balled by men known as "waddies" and dried on racks. When dry, the balls were crushed to a powder and fermented in a heap until they became a blue clay-like powder which was the packed into barrels. Although indigo was cheaper and gave brighter, clearer blues it was not as colour fast as woad, and so woad was used in a recipe to dye police uniforms until 1932. Until chemical substitutes were found, both woad and indigo suffered from the undesirable side-effect of being highly odiferous processes since they used fermented urine. Woad, in conjunction with other plants such as weld (Reseda luteola), which gives a yellow, gave a range of colours including several greens such as Saxon, Lincoln or Kendal, depending on which was used as the top or bottom dye. Woad also yields other colours such as pink when the exhaust (i.e. that which remains when the blue has been used up) is used with the mordant alum.

Madder (Rubia tinctorum) roots, which give a red dye, were also imported via Bridgwater for the same Taunton merchant, and the discovery of the chemically fixative properties of alum in the late 16th century expanded the available colour palette, especially when deposits of alum were discovered on the coast of Yorkshire.

Change and innovation

The greatest age of innovation for textiles started in the 18th century with the patenting of the flying shuttle for weaving by John Kay in 1733. James Hargreaves invented the spinning Jenny in 1764, a machine which was unsuitable for people to have in their own homes, hence the move to workshops and factories. Richard Arkwright set up his pioneering water-powered cotton spinning mill in Cromford, Derbyshire in 1770. Although the mechanisation process started in the cotton industry, its principles were quickly copied in the wool industry, the only difference being that fleeces had to be scoured before spinning to prevent the machinery clogging up with grease. When Samuel Crompton devised the spinning mule in 1779, which could operate with 1,000 spindles, progress was unstoppable and the development of coal fired steam power enabled economies of scale not possible from water-power alone. All of this hastened the relocation of the industry to the north of England where there were ready supplies from nearby coal fields, higher population to provide a labour force and sheep rearing country similar to that found on Exmoor to provide the wool.

Local wool processing

- **In Dulverton**

There are early references to the cloth trade in Dulverton. Robert le Fuller and William le Comber appear in the Exmoor Forest court records of 1270 and a Dulverton Fuller in the 1320s.
As far as we know Dulverton's first fulling mill, owned by the Sydenham family who had bought Dulverton Manor[4] in 1568, is recorded as operational in 1638, and by 1654 there were three of them. In 1799 there were nine waterwheels on the leat: four at Town Mills; two at Tangier Mill; two at the woollen factory and one at a Blade Mill.[5]

During the 17th and 18th centuries, the occupations of wool-comber, weaver, clothier, merchant or mercer are recorded. This does not include farmers or husbandmen who may have had dealings with the wool trade as a minor part of their income. George Peppin of Dulverton, described as a mercer, was well-off enough to buy Slade Farm from Humphrey Sydenham in 1677and the families became related by marriage. Their descendants George and Frederick Peppin emigrated from Old Shute Farm in March 1858, and bought Wanganella Sheep Station, New South Wales. They imported some Saxon Merino rams in 1860 and are famous for the establishment of the Australian Merino breed, with the genetics of their heavily woolled sire "Emperor" now shared around the world. Britain's increasingly urban population in the 19th century, with the consequent high demand for meat, led to a divergence of production, with Australia concentrating on wool since it could travel better.

Though the wool trades in Dulverton were in gradual decline by the mid 18th century, it still supplied coarse woollen cloth and blankets to Tiverton and Crediton, both of which had easier access to Exeter. Tangier Mill was 'in hand' in 1771 by the death of Joan Hill. It was still in existence in 1820 but it was demolished to make way for the building now known as Dulverton Laundry which was built in about 1825 on the same footprint as Tangier. It was purpose built as a silk and crape mill for the Smith brothers of Hackney, London. It had just one waterwheel producing 10 horsepower to drive newly developed 'power looms'[13] and was weaving silk and making lace by 1840. In 1832 Dulverton was listed in the Edinburgh Encyclopaedia as being a prominent blanket manufacturing town alongside Witney & Leeds, though it is likely that the information was already out-of-date by the time of publication.

- **In Exeter**

Exe Island, in the heart of the city of Exeter was a bustling place packed with mills, fulling stocks, cloth drying sheds and racks. The skilled trades were controlled by the Guild of Weavers, Fullers and Shearmen whose chapel, now Tuckers Hall in Exeter, was built in 1471.

Photograph 2

- **In South Molton**

In the 12th century South Molton is recorded as having three water powered fulling mills, one of five locations in Devon. Despite having better transport links than Dulverton, and being in a more productive, prosperous, farming area at the southern edge of Exmoor, South Molton was not immune to changing times in the wool industry. In 1800, the partnership of Bawden, Cresswell and Bawden opened the first mechanised factory in South Molton. It produced serges for export. Bawden is still a familiar Exmoor name. By 1822/3, South Molton was described as manufacturing not only serges, but longells (an 18" wide type of upholstery fabric), baize, flannels and druggetts. Unfortunately, a new lace and woollen factory which opened in 1824 was destroyed by a fire seen 20 miles away – it was rebuilt in 1828. In 1844 there were three local woollen manufacturers, by 1851 this had reduced to two. In 1866, the Higher and Lower Mole Mills were sold and many jobs were lost before final closure in 1886. The Lower Mill became a corn mill in 1890, and the Higher was taken over by the South Molton Shirt and Collar Company which continued operational until 1950.

- **In Dunster**

The story of wool and water in Dunster completes the Exmoor triangle of Dulverton, South Molton and Dunster. Dunster is on the River Avill and was in its heyday a prosperous woollen town. Two grain mills are listed in the Domesday Survey of 1086 and the first fulling mill belonging to Dunster Manor was recorded in 1279. A further three fulling mills, built before the 15th century, are mentioned as located along the Mill Stream at the bottom of West Street.[15] Two workshops and two fulling mills built by John Burnoll in 1682 were reported in 1830 to be ruined and in a state of decay respectively.[16] George Luttrell, who owned Dunster Castle and became the MP for Minehead in 1584 paid for improvements to Minehead Harbour to facilitate the import of fleece from Ireland.

Photograph 3

In 1609 he commissioned the building of Dunster Yarn Market, a substantial timber-framed octagonal building which offered shelter to traders and their wares and became famous for its trading success. However, Tudor and Stuart prosperity could not last without taking advantage of the changes in wool industry technology, which Dunster's clothiers did not. In comparison, the mills of the nearby Fox family at Wellington invested in new more efficient machinery. Thomas Fox bought land and water rights in 1797 to establish Coldharbour Mill at Uffculme as a spinning mill. Eventually there were mills or factories at Cullompton, Culmstock and Chipping Camden as well.[17] The factory in Wellington specialised in flannel (and still does) and that in Cullompton was operational from 1890 to as late as 1977. During World War 1, Fox Bros produced 8,000 miles of khaki cloth for uniforms, and 70,000 pairs of puttees a week.

Modern times

After WW2, there was a decline in the use of natural fibres, wool amongst them, in favour of synthetic fibres, which meant that clothes and furnishings became cheaper and more convenient in use. This downward trend accelerated from the 1970s onwards until recently when a new awareness of the environmental threats of microfibres, and of carbon footprints, has meant there are signs that wool as a fibre may enjoy a revival in fortunes albeit in more artisan niche uses.

South Molton re-established its connection with wool in 1973. When British Wool (then known as the British Wool Marketing Board) was set up in 1950, its depot for the area was at Wheddon Cross, but it later moved to South Molton where vehicular access was considerably easier.

John Arbon's worsted spinning mill using vintage machinery, established early in the new millennium, is one of a very few artisan mills in the country. It specialises in eclectic mixes of natural fibres for high end brands.

In Dunster, the castle, now owned by the National Trust, still dominates the landscape at one end of the High Street, with Dunster Yarn Market at the other end. Its economy now centres around tourism, and its working watermill with double overshot wheel is in occasional action as an attraction. On some summer Sundays the Yarn Market returns to its original purpose when Exmoor Horn Wool sells its products there, accompanied by sheep shearing demonstrations.

References

[1] T. Gray, *Devon's Fifty Best Churches*, (Mint Press 2011), 179

[2] Ibid

[3] www.englandspastforeveryone.org.uk, *Dulverton and the Cloth Trade*,University of London

[4] E. Green, *Notes on the History of Dulverton*, Proc. Som. Arch Nat. Hist Soc 29(2) 1883, 75

[5] With thanks to Peter Romain, Dulverton

[6] Reference photographs / diagrams: Tuckershall.org.uk, Calderdale.gov.uk

[7] www.witheridge-historical-archive.co.uk Tentering

[8] B Woodger*, A History of Dunster*, (Matador 2014), 127

[9] With thanks to Peter Romain

[10] TNA, E122/28/5, referred to by H.C.Maxwell-Lyte, *A History of Dunster* (London, 1909), 300

[11] P. Ashford, *Som. Arch. And Natural Hist., Agricultural History Review Vol 58*, *no 1,2010,* 167

[12] Jill Goodwin, *A Dyer's Manual*, (Pelham Books 1982) 77,78

[13] With thanks to Peter Romain, Dulverton

[14] B. Woodger, *A History of Dunster*, 125, citing Lyte

[15] Ibid, citing James Savage, *History of the Hundred of Carhampton,* (Bristol: Wm. Strong 1830) 392

[16] P. Bayer*, Cullompton & Culm Valley Cloth Trade,* Exmoor Magazine Winter 2015

[17] Oral information, with thanks to Tim Charlton, Dulverton

[18] Oral information, with thanks to Mrs Jan Ross, Dulverton

Photograph 1. Tracy Miles demonstrating spinning at Dunster Yarn Market 2018 on a replica mediaeval Great Wheel built by Trevor Miles. (Lindy Head)

Photograph 2. Escutcheon of the Guild of Weavers, Tuckers and Shearrmen showing the tools of their trades (Lindy Head)

Photograph 3. Dunster Yarn Market