

The importance of the historical field tents at Otterburn Mill, Northumberland

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24 November 2022

Introduction

The field tents at Otterburn Mill are a remarkable relic of the woollen textile industry in this country, an industry that from the late medieval era to the twentieth century was an important contributor to local and national economies.

Tenters were a critical part of the 'finishing' of 'woollen cloth', an initial process of which involved fulling (milling) the woven web from the weaving loom to thicken it, and thereby make it functional. Fulling notably shrank and distorted the cloth. Tenters were required to stretch, dry, and straighten it before other finishing practices (outlined below), that made the textile comfortable, nice to handle and commercial.

Tenters were also used to ensure that the cloth met commercial and statutory length and breadth specifications. Minimal stretching of fulled cloth to meet these requirements was perfectly acceptable, but some manufacturers took this to excess covertly, particularly with a badly woven or poorly fulled web. Overstretching damaged the cloth, a potentially fraudulent practice that exercised trade guilds, monarchs, and parliaments from the medieval period. The first statutory control of cloth manufacture (specifically cloth width, which would indirectly involve tenting of some sort) was in 1197. Statutes continued until the 19th century. In 1483, an Act explicitly addressed the issue of tenter misuse and imposed strict long-standing controls.

Plainly, tenters have a very long heritage, up to the 1950s at least. Otterburn Mill believes that their tenters are the last remaining set in this country (and indeed, perhaps Europe). This note discusses this claim in the light of a desire by the mill to address the deterioration of the tenters.

This report briefly:

- summarises the role of tenting in the historical woollen industry,
- outlines tenter design, and their longevity in the landscape,
- seeks to identify other examples of tenters still extant – physical structures or associated groundworks,
- uses historical mapping and photographs to determine the former location of tenters at the mill,
- forms a view of the uniqueness of the tenters still standing at the mill.

Manufacture of woollen cloth

The manufacture of woollen textiles is complex. It varied geographically and throughout the many centuries of the trade in this country. This note will assume readers have little knowledge of the woollen industry and will refrain from detail.

There were two types of woollen textile, 'woollen cloth' and 'worsted' (this is an oversimplification but will suffice). The manufacture of these two types shared some common processes, but there were also some very important differences. Worsted was a tightly woven, smooth, fine cloth with often an accentuated pattern and an evident weave for aesthetic purposes. Fine clothing was a common use. It was not (normally) fulled or tented and will not be discussed further.

Tentering was an essential part of the manufacture of 'woollen cloth'. The web from the weaving loom had a quite loose warp and weft of yarn spun from fine 'carded' (untangled) wool. To make the cloth functional and commercial it required finishing - essential processes that transformed the low tensile strength, thin woven web into a commercially useful textile. Fulling produced a denser, consolidated 'felted' cloth providing warmth, strength, and a degree of water resistance. Historically, fulling was a prolonged, rather violent, wet process. The design of the fulling stocks¹ – large wooden hammers applied to the cloth placed in various fluid concoctions – produced mechanical compression, agitation and rolling of the piece for many hours to drive the yarns together. This process also generated heat, an important component. The cloth was thickened, and consequently shrank unevenly. It needed tenting to prepare it for an important part of finishing – the raising of the nap (projecting wool fibres) and shearing to produce a good 'handle' and pleasing to the eye. During this 'dressing' process, the cloth may have to be returned to the tenters several times.

Outdoor tenting was bedevilled by poor drying weather, leading to the growing use in the factory system of indoor heated tenters from the early 19th century, and expensive and complex indoor 'stenters' that mechanised drying and stretching cloth. However, outdoor tenters persisted in the trade, providing an economical adjunct to the indoor systems in good drying weather, and for small enterprises unwilling to invest in expensive indoor drying. Field tenters continued to be used for large pieces such as blankets into the mid-20th century.

Design

Tenters comprised two lengthy horizontal wooden beams set apart vertically, each with embedded tenterhooks to attach the cloth 'selvages' (cloth borders). The lower and upper beams were supported by wooden or iron vertical posts. In a few northern districts, stone posts were used. Changes in the vertical separation of the two horizontal sets of tenterhooks could be achieved by displacing and clamping one of the beams, usually the lower, thereby stretching the cloth width uniformly to the all-important specified dimension (without damaging the cloth). Some tenters also had a facility to stretch the cloth longitudinally employing a winch attached to a vertical beam with tenterhooks to grip the end of the cloth.

Tenter rows ('seams') could extend many tens of yards to accommodate the full length of a piece, their height determined by local manufacturing specialities such as narrow or broad cloths. To accommodate blankets, tenters could be 12 feet (3.7 metres) high.

Tenters at Otterburn Mill

Otterburn Mill had a small drying room, adjacent to a Cornish boiler. Many mills had heated 'dry-houses' - long, narrow buildings to accommodate full cloth lengths on tenters. Otterburn Mill's room was not to this design and was probably used for drying wool, and short pieces of cloth. In 1988, the Historic England listing for the mill² stated:

¹ From the early 19th century, 'rotary milling' machines were also used, hence the alternative term 'milled' for fulled cloth.

² Historic England Listing, 'Otterburn Mill', <https://historicengland.org.uk/listing/the-list/list-entry/1156242?section=official-list-entry>.

'The drying house has a perforated iron floor and, below the roof, rows of racks. Cloth was hung from the racks and heat percolated up through the floor from the furnaces.'

It is unlikely that indoor tenters were used in such a small room.

Mills with heated indoor drying facilities frequently had access to field tenters, and Otterburn Mill was no exception. The existing Otterburn tenters are Grade II listed by Historic England. The listing³ states:

'25/39 Tenters c.40 yards south-east of Otterburn Mill GV II. Tenters for drying cloth. Early C19. Wood and iron. Two rows of tenters, each c. 40 yards long. The row to right is c.7 ft. high and consists of regularly-spaced iron posts with holes all the way up. Along the top of these a fixed wooden rail with tenterhooks all along. Lower down a second, adjustable rail also with tenterhooks. The row to left is similar but only c.4 ft. high. Included for industrial-archaeological interest'

Figures 1-3 show the condition of the tenters in September 2017, before the flooding in August 2019 and February 2020.



Figure 1. Tenters at Otterburn Mill showing the two seams for different cloth widths.

³ Historic England Listing, 'Tenters 40 Yards South-East of Otterburn Mill', <https://historicengland.org.uk/listing/the-list/list-entry/1156260?section=official-list-entry>.



Figure 2. Note the holes in the iron posts to adjust cloth widths. The original pins and retaining chains are missing .



Figure 3. Damage and missing sections to parts of the two seams in 2017. There has been further damage due to recent flooding.

Iron tenter-posts first emerged in the early 19th century and were frequently used in indoor heated tenter dry-houses ('stoves'), but also used in field tenters. The iron posts at Otterburn are probably

19th century. They are not marked with a maker's name. Tenter beams containing the tenterhooks were usually oak. The remaining beams still retain most of the tenterhooks. The lower bar is adjustable for cloth width, but only a small number of the original chains and pins for the fixing holes remain.

Plainly, the tenters have been weathered and slowly deteriorated. Some of the lower beams have fallen completely or detached at one end. But in general, given their age, in 2017 they were in reasonable condition. The decline has accelerated recently.

History of tenters at Otterburn Mill

There is very little information on the history of tenters at the mill. Any facility to felt woollen cloth (the mill has fulling stocks) would require access to tenters.

In the mid-19th and early 20th centuries, some Ordnance Survey (OS) large scale maps marked tenters. Reviewing the available maps for the Otterburn area may show tenter locations at or close to the mill.

The earliest map inspected was the 1839 tithe map of the area⁴ (technically not an OS map). The Tithe Award map shows the mill as a 'Walk Mill'⁵ on land occupied by William Henderson north of the mill race, and by William Waddell to the south. Tenters are not shown, nor do local fields have tenter-related names (such as Tenter Close, Tenter Hey etc.).⁶ This is not surprising as tithe maps were surveyed only for the specific purposes of delineating field boundaries, ownership, occupiers etc.; general landscape features were not shown.

The earliest representation of tenters at the mill is on the 6 inches to 1 mile 'First Edition' OS map (1:10560), surveyed in 1863. Depicted on this map, in the field across the road from the mill, is a field boundary (now removed, but two trees remain to show the line). Parallel to the boundary and very close to it immediately south, is a short single line (Figure 4, upper). This is a field tenter; (it was common for single tenters in fields to be erected close to boundaries). No tenters are shown on the mill site. Neither the 1896 revision of the 6 inches map nor the 1896 25 inches to 1 mile (1:2500) show tenters.

On a 6 inches map surveyed in 1921, the 1863 field boundary and tenter across the road are not depicted, but on the mill site, south of extensions to the main building and detached smaller structures, there is certainly one, and probably two tenters evident⁷. These tenters appear to be at the same location as the tenters remaining today (Figure 4, lower) and may indeed be the same structures, implying they were erected before 1921.

⁴ An Act of 1836 required tithes, previously supplied as goods, to be replaced by cash. Tithe maps and associated documents identified the owner, occupier, acreage, field name etc. for various enclosures. The map covering Otterburn is ref. IR 29/25/170.

⁵ A 'walk mill' is a fulling mill. In the early manufacture of woollen cloth, prior to the use of fulling stocks, woven cloth in tubs was 'walked' by feet in various concoctions to thicken it.

⁶ Mr Waddell occupied three fields south of the mill extending across the river. They were named 'Mill Farm Ancient Land'.

⁷ On these maps (and some other later OS maps), field boundary and tenter symbols are the same, a simple line, although boundary symbols can curve. Tenters are always straight. This can lead to confusion if boundaries are also straight. On the maps of Lancashire and Yorkshire, which are earlier, tenters are shown with a unique symbol, and are explicitly labelled as 'Tenters'.



Figure 4. Upper: tenter (arrow) alongside a field boundary, 1863. Lower: tenters in 1921 (arrow) south of an extension to the original mill, at or very close to the site of the tenters remaining today. Maps are 6-inches to 1 mile OS. Reproduced with the permission of the [National Library of Scotland](https://www.nls.uk/). Used under the Creative Commons Attribution (CC-BY) licence.

Figure 5 is taken from a postcard produced before 1918.⁸ There are tenters adjacent to the flood bank, with the mill race just the other side of the defence. These tenters are no longer present.

⁸ The declared inland postal rate on the card is ½d. The rate was increased to 1d on 3 June 1918, suggesting that the photograph was taken before 1918. 'The Great Britain Philatelic Society, Postcard Rates 1870-1968', <https://www.gbps.org.uk/information/rates/inland/postcards.php>. The photograph is dated as c.1890 by Beryl Charlton in 'The Story of Redesdale', pp. 61-3, published by Northumberland County Council and Otterburn Mill, 2007.



Figure 5. Pre-1918 photograph of tents adjacent to flood defences. This tenter site may be that shown in Figure 6.



Figure 6. Cloth being mounted on tents at Otterburn. The date is unknown, probably post-WW2.

Tenter remains in the UK

Are there any other field tenters remaining *in situ* in this country? A review was undertaken by the author of First-Edition 6 inches to 1 mile OS maps of the woollen cloth-making districts of east Lancashire and the West Riding of Yorkshire (surveyed 1842-54). The West Riding was one of the

principal areas for the manufacture of woollen cloth in mills, and the domestic system. The OS surveyors marked and noted individual seams of tenters on the maps.

Of 383 original tenter enclosures reviewed (each of which could contain a single or multiple tenter seams), 72 per cent have been destroyed by the later built environment. In the remainder, only 12 sites show aerial evidence of former tenter use, principally 'tenter-banks'. These are the remains of groundworks to provide level platforms (occasionally revetted) on hill contours, or long, linear parallel mounds on level ground, to elevate individual seams of tenters into the breeze.⁹ On soft ground, erosion either side of the racks from workers' footfall also formed tenter-banks.

Remarkably, there were no structural remains of wooden/iron tenters in this important, very active woollen cloth-making area, that originally contained thousands of tenter seams. A few of the rare stone support posts were noted, largely in the Saddleworth/Marsden areas. An outstanding set is at Wall Hill near Dobcross, erected about 1840 (Figure 7). Figure 8 shows another set of stone tenter posts in Marsden alongside a large mill. Stone posts are rare and were very uncommon historically, confined largely to this small area around the two towns. Conventional iron/wooden posts would have found other uses elsewhere when tenters were disposed of, but stone posts had few alternative uses, except perhaps in walling. Many were simply abandoned and remain *in situ*.



Figure 7. Isolated and remarkable stone tenter posts, Wall Hill, Dobcross, Greater Manchester. Probably erected by flannel manufacturers Robert Greaves, Joseph and Robert Cooper about 1840.

⁹ The Otterburn tenters are not on tenter-banks.



Figure 8. Stone tenter posts at Marsden, West Yorkshire, probably early 19th century. They are sited in an urban setting outside a large mill. Note the slots for adjustable tenterhook beams.

These are not representative of the vast majority of tenters that were constructed from wood/iron, none of which survived in this survey area. The other areas of the country were not subject to such a lengthy survey but contact with local history societies and other groups knowledgeable about the historical woollen history in their area failed to identify any standing field tenters.

The Helmshore Mills Textile Museum in Lancashire has retained a short section of their *indoor* tenters with fulled cloth attached (Figure 9). A few museums do have displays showing tenterhooks with a short piece of cloth attached, but they are not in any structural or industrial context.



Figure 9. A section of an indoor tenter at Helmshore Mills Textile Museum, Lancashire, owned by Lancashire County Council. The mills also had field tenters, now gone, sited on an adjacent hill.

Conclusions

It is concluded that in this country, there are no largely intact field tents still standing in their historical setting, except at Otterburn. Even the remnants of destroyed or decayed tents are extremely rare.

The Otterburn Mill field tents are a unique relic of a fundamental process essential to the manufacture of woollen cloth, a trade that had a profound impact on the historical prosperity of this country.

Additional information

The author's website 'Field Tents - Stretching and Drying Woollen Cloth in Historical Manufacture' at <https://tents.org/> provides more information on the long history of tents.