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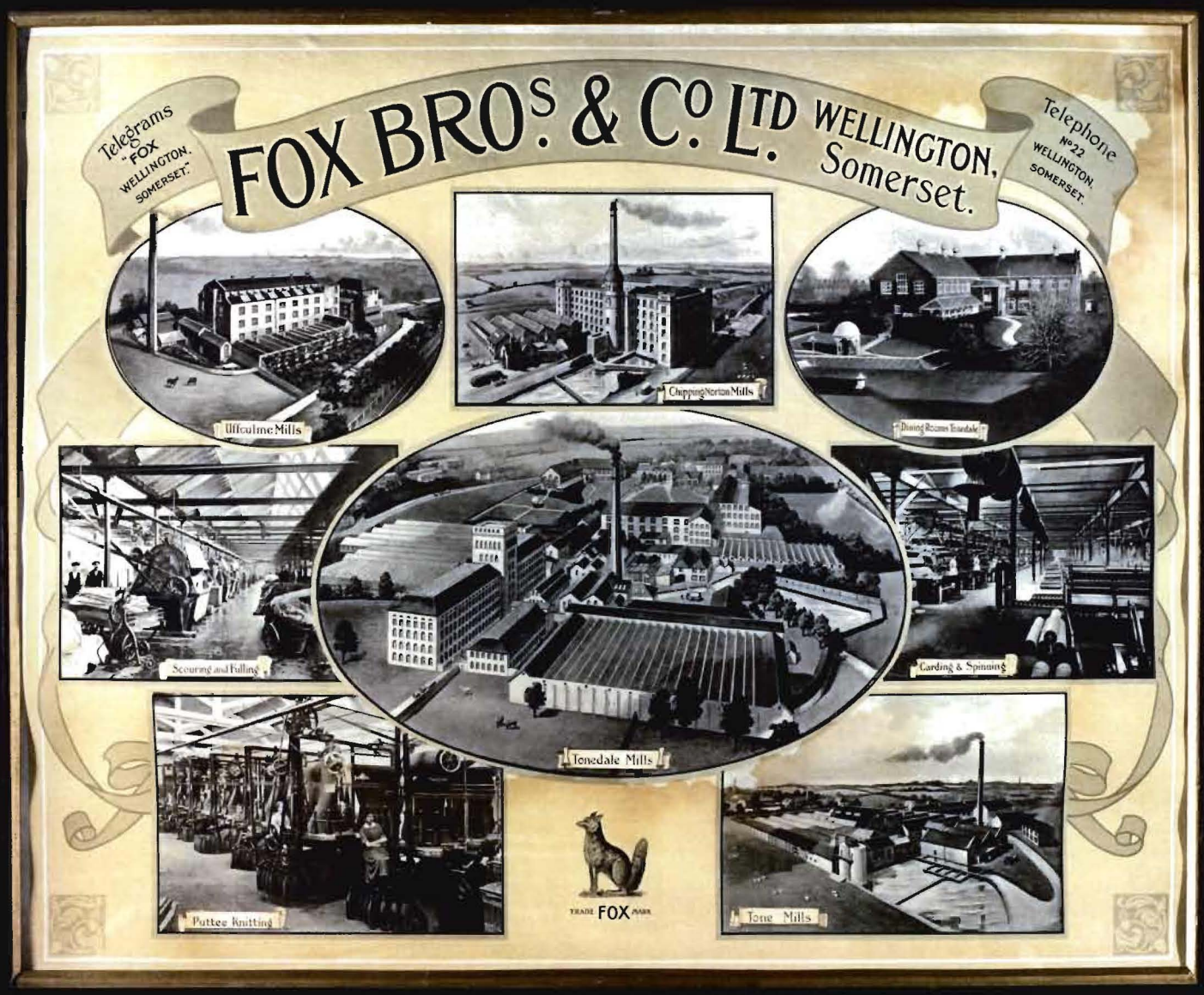
TONE WORKS, WELLINGTON, SOMERSET

SURVEY AND ANALYSIS OF BUILDINGS, POWER SYSTEMS AND MACHINERY

VOLUME TWO: APPENDICES

Lucy Jessop



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SURVEY AND ANALYSIS OF BUILDINGS, POWER SYSTEMS AND MACHINERY

VOLUME 2: APPENDICES

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CONTENTS

Cover Image:

Framed print showing the largest mills of Fox Brothers and Co. Ltd., c1920. Tone Works is shown at its greatest extent in the lower right image. All the sites in the print are in the South and South-West, but the firm also managed mills in other regions.

(Courtesy of Fox Brothers and Co archive: AA95/06574)

APPENDIX 1 – THE ORIGINS AND EARLY HISTORY OF FOX BROTHERS & CO.

Thomas Fox (1747 – 1821) was born in Wadebridge, Somerset, the son of the Quaker merchant Edward Fox and his wife Anna Were. Anna was the daughter of Thomas Were, a Quaker woollen manufacturer[1], who operated from premises in South Street, Wellington, known as Trade Court. Thomas Fox joined this long-established business in 1768, at which date it was mostly controlled by his uncles Robert, Thomas, Nicholas, and William Were. The Weres' business was a family one: an indenture of 1751 states that Thomas Were was the nephew and heir at law of 'Peter Were Decessd the antient maker of the WRE Marke', and that the present business was carried on by him and his two sons Thomas and Robert, uncles of Thomas Fox.[2] In 1772, Fox and his cousin Stephen Matravers were admitted as partners but Fox soon became the partner most responsible for the running of the business.[3] The business name varied throughout the second half of the 18th century: it was known as 'Thos Robt Were & Co' in 1747 and Thos Were & Sons in 1763.[4] The Fox name is not associated with the business until the death of Thomas Fox's last surviving uncle.

In 1783, Thomas Fox married a fellow Quaker, Sarah Smith (daughter of Thomas Smith, banker, of Stamford Hill, London); their principal marital home was a substantial brick house constructed in 1782-83 in South Street in the vicinity of the Weres' business premises in Trade Court.[5] From early in his involvement with the family manufactory, Thomas ran a separate business from the counting house in Trade Court: this was Fox's private bank, founded in 1787. It is possible that Fox's banking activities were inspired by those of Thomas Smith, Fox's father-in-law. It continued as a private bank, issuing its own bank notes, until its absorption by Lloyds in 1921.[6]

The Were family business was best known for its production of serge, a range of cloths with a diagonal twill weave that were manufactured mainly from worsted, sometimes combined with wool, but could also be made with other fibres including silk. The surviving Were pattern book of 1773 displays an array of serges, druggetts, germans, and flannels, as well as some fine silks and ribbons, although it is not clear whether the latter were manufactured or traded by the company.[7] They traded mostly with merchants in Rotterdam, Amsterdam, and London: Holland, Belgium, Germany, Italy, and Flanders were their major markets.[8] The preparation of the raw fibre, spinning, and weaving were carried out by outworkers; the completed textiles would be collected together at Trade Court, where they would be dyed, pressed, and dispatched.[9] Fulling activities were carried out away from Trade Court: the Weres owned two fulling mills, one at Tone Bridge which they leased by 1750 and one at Uffculme which they bought in 1764.[10]

In 1788, Fox diversified the business into the production of 'Long Ells'; these were lengths of fine white cloth which the East India Company would buy, dye (either scarlet or blue), then export, using them as payment in China for tea.[11] Fox had enabled indigo dyeing at Wellington by 1784, when an indigo vat (and indigo valued at £736) first appeared in the company accounts.[12] In 1794, his output of Long Ells was three hundred 'pieces' a week; this had doubled within five years and it was estimated in 1804 that Fox manufactured a ninth of all Long Ells purchased by the Company.[13] Fox continued to promote newer and more fashionable types of cloth; he was particularly concerned to

diversify into flannel in the first decade of the 19th century, which became a highly popular product.

In the early 1780s, Fox had expressed an interest in the steam engine installed by James Watt at a Cornish mine for Fox's brother Edward, but it was not until the end of the decade that he started considering powered production in earnest. Trade Court was quickly dismissed as a suitable location for a powered factory, due to the lack of water supply. Nicholas Were, his senior partner and uncle, was also much against the new technology. However, in 1790 Fox was inquiring about the feasibility of using horse-power at Trade Court and buying powered scribbling, carding, and spinning equipment; this resulted in a horse wheel (situated in a new shed, 150 feet long) which was completed by January 1791.[14] The first machines arrived slowly during that year and in September 1791 horse-powered production finally began.[15]

After effectively running Weres' for many years, Thomas Fox gained sole control of the company in 1796 following the deaths of Stephen Matravers in 1795 and Nicholas Were in 1796. That year he renamed the business with the name of Fox and introduced a new cloth mark, FOX.[16] By 1798, he had installed more machinery at Trade Court so as to keep up with increasing orders, but expansion was on his mind: he bought Coldharbour Mill, a grist mill outside Uffculme, in 1797-98 and Town Mills, a flour mill half a mile north of Wellington, in 1799.[17] Coldharbour was intended as a water-powered yarn spinning factory, although Fox soon decided to expand operations there. The death of his mother-in-law in 1799 allowed greater investment than previously envisaged: Fox decided that he required a three-storey building to enable the positioning of one scribbler, two carders (single or double), four billies (two on each side of the 'creeper') and twelve jennies on each floor. The water wheel was to be placed 'nearly at one end so as at any time to add to it another building of like dimensions'.[18] In 1801 he started converting Town Mills to wool; this site became known as Tonedale and the new water-powered factory was finished in 1803.[19]

In the first decade of the 19th century, the trade in Long Ells became increasingly unsteady: this cloth was generally exported, and the imposition of export taxation in 1804 (which was repealed the following year) rocked its manufacturers. Fox, in searching for diversification in 1805, hit upon flannel as the way forward, a high-quality, soft-handle woollen cloth.[20] From 1803, his sons joined the business, running it during his periods of illness; Thomas Fox junior was made partner in 1809, subsequently joined by his five brothers. By this time, the family were established in Tonedale House, a new home commissioned by Fox in 1807.[21] By 1820, Thomas Fox had relinquished much of his management of the business into the hands of his sons and the company was known as 'Thos. Fox & Sons'; Thomas Fox died at Tonedale House on 29 April 1821.

The business continued in the hands of Thomas Fox's descendents and was gradually consolidated at Tonedale and at the fulling site of Tone, now known as Tone Works. From 1826, the company was renamed 'Fox Brothers', in 1849 'Fox Brothers & Co.' and in 1896 'Fox Brothers & Co. Ltd.'.[22] Much of Fox's original factory at Tonedale suffered from a fire in 1821; it was rebuilt and reopened in 1823.[23] The South Street premises of the Weres were finally sold in 1857.[24] Both sites were consistently added to and improved throughout the 19th century, as was Coldharbour, but Tonedale received the majority of investment and development. Further factories were built at Cullompton, Wiveliscombe and Culmstock[25]; W. Bliss and Son's was bought in 1916-17.[26]

The company suffered the usual gains and reverses seen by the textile industry as a whole. With their growing government contracts, Fox Brothers & Co. Ltd. supplied textiles, and their patented puttees, to the War Office, thus outfitting many service uniforms during the Boer War, WWI, and WWII (see Appendix 2 for the history of the firm's involvement in the production of khaki cloth for uniforms). Such booms were countered in the 20th century by the economic slumps of the 1920s and the low productivity of the early 1940s. F. H. Fox reported that the first really successful year after WWII was 1947-48, when the results were 'Very satisfactory'.[27] The continued economic pressures on the textile industry in the second half of the 20th century resulted in the gradual contraction and reorganisation of the business. Fox Brothers and Co. weathered the decline of traditional textile industries relatively well, out-living hundreds of other firms, until the link between the company and the Fox family was severed in 2000. However, the current business, Fox Brothers & Co., continues to operate close to Tonedale, producing textiles in the tradition and manner of this historic company.

ENDNOTES

1 Hubert Fox, *Quaker Homespun: The Life of Thomas Fox of Wellington Serge Maker and Banker 1747 – 1821* (London, 1958), 10.

2 Fox Brothers & Co. archives, seen courtesy of Jack Hudson at Fox Brothers & Co., Wellington (FB & Co hereafter): *The acct of Sundr. Sorts of Pieces made by me Thomas Were*, 1737 - late 1760s (MB TW hereafter: see Appendix 2), 114-116. This section is reproduced as Appendix B in Joseph Hoyland Fox, *The Woollen Manufacture at Wellington, Somerset* (London, 1914), 65-69.

3 Fox 1958, 15.

4 MB TW, 65, and on a letter loose in this volume.

5 FB & Co., memorandum book of Thomas Fox, 1783 to mid-19th century (MB TF hereafter: see Appendix 2), 1-3, 10-28; Somerset Record and Archive Service (SARS hereafter) A/BBN/23: sundry papers relating to the sale of the 'Trade House', Wellington, 1853, 1857, & n.d.

6 Fox 1958, 73, 77.

7 Fox Brothers and Co. (FB & Co): Pattern Book, 1773.

8 MB TW, 23; Fox 1914, 94-95.

9 Fox 1958, 14.

10 MB TF, 57-59.

11 Fox 1958, 47-49, 70; Fox Brothers & Co. Ltd, *175th Anniversary Letter from Fox Brothers & Company Limited* (1947), 8, states that the trade in Long Ells commenced in 1783.

12 Fox 1914, 49.

13 Fox 1958, 69, 100.

14 Fox 1958, 50-53.

15 Fox 1958, 55.

16 Fox 1958, 70; FB & Co: Invoice Book, 1785-1798, entry for 9 Nov 1796.

17 MB TF, 57-58. Town Mills appear as 1799, not 1800 as Hubert Fox states, whilst the Tone Fulling Mill was already a Were property of long standing and thus was not bought by Thomas Fox: Fox 1958, 72, 78, 92.

18 Fox 1958, 81.

19 Fox 1958, 92; FB & Co: Letter book, 1801 – 1802, see letters to Henry Leake, 13 June, 9 & 19 Nov 1801; FB & Co: Ledger 'U' 1798-1801, 234: payments to Henry Leake (millwright, Tiverton), 1800-1802.

20 Fox 1958, 106-108.

21 Fox 1958, 117.

22 Joseph Hoyland Fox, *The Woollen Manufacture at Wellington, Somerset* (London, 1914), 57, 60.

23 John Hagen & Michael Fox, *More than two hundred years - Wellington and the Foxes* (Wellington, 2000), 16.

24 SARS A/BBN/23: sundry papers relating to the sale of the 'Trade House', Wellington, 1853, 1857, & n.d.

25 Fox 1914, 59.

26 FB & Co: Typescript by F. H. Fox, *Fox Brothers & Co. Ltd.: Fifty Years' History 1883-1933*, 42.

27 FB & Co: Typescript by F. H. Fox, *Fox Brothers & Co. Ltd.: Fifty Years' History 1883-1933*, results for 1947-1948.

APPENDIX 2: EXTRACTS FROM THE FOX BROTHERS & CO ARCHIVE AND PUBLISHED SOURCES

All archival material referred to here was viewed at Fox Brothers & Co., Wellington, by kind permission of the Managing Director Jack Hudson. This material forms part of the archive collection catalogued by the Royal Commission on Historical Manuscripts (HMC) in 1988, a copy of which catalogue can be found at the National Registry of Archives (NRA) at the National Archives, Kew (as NRA 30948). The HMC catalogue represents the records as they were arranged at Tonedale in 1988: they have since been moved and partially dispersed, no longer respecting the arrangement seen by the HMC. Where identified in the HMC catalogue, each archive item has been given its appropriate number, prefaced by its NRA reference. No page numbers have been stated for unpaginated or unfoliated documents but the date can be used to locate the entry within each document. An attempt has been made to present the information quoted here in chronological order.

Key to references

Primary sources (Fox Brothers and Co)

Fox, F.H.	Fox Brothers and Co: undated typescript by F. H. Fox, Fox Brothers & Co. Ltd.: Fifty Years' History 1883-1933
LB 1777-79	Letter book, Nov 1777 – Feb 1779. NRA 30948/4 (vi).
LB 1801-02	Letter book, 1801 – 1802. NRA 30948/7 (vii).
LM	List of machinery, 1887 – 1953, bought for all factories, and often the date at which a machine was scrapped or sold. It includes a supplementary typescript book of machinery written off in 1949. Not listed in NRA 30948.
L 'U'	Ledger 'U', 1798-1801. NRA 30948/9 (vi).
MB TW	Memorandum book of Thomas Were, 1737 onwards. NRA 30948/23 (v).
MB TF	Memorandum book of Thomas Fox, 1771 – 1814 (with later additions). NRA 30948/3 (iii).
MB 1876-96	Memorandum book covering the period 1876-1896, kept by a member of the Fox family. NRA 30948/2 (ii).
PLL	Profit and loss ledger, 1866-1904. NRA 20948/10 (ii).

Primary sources (Somerset Archive and Record Service)

SARS D\U\wel/24/1/3/641	Building Control Plan of the new Power House, 1921.

References to Tone Works buildings

This includes details of expenditure on power and machinery, although these are itemised separately in later sections of this appendix.

1752:

Accounts and information on the 'Mill at Tone', detailing a visit made to Thomas Were by John Fowler of Hatch Beauchamp, millwright. Either a renovation or new building was to be constructed there.

> Note the Watter fall is from head to foot but 16 Inches and from the Top of ye Mump (marked on Joseph Belletts side) to ye water was when Simon Farrant measured it – 3 feet and 8 Inches – and belive it will be Needfull to make the Ware Cross the River but 2 feet only under ye Top of ye marked oller mump – that will make ye Watter head 1 foot 8 Inches and ye 16 Inches before 1— 4'...Totall 3 feet fall (MB TW, 136)
>
> Timbers to Cutt By John Fowler Cutt & Keep always in readiness of oak –
>
> Shanks – is what ye felt are one 9 feet Long of very good sound Timber and 3 Inches Thick – 10 Inches & ½ broad.
>
> of oak – Keys: for the Shanks 4 feet and halfe Long: 3 Inches Thick five Inches broad at one end & 3 Inches at ye other.
>
> of oak Mill feett: ye Curlier if sound ye better 4 feet Long – and 8 Inches thick one the Top Head End - & 6 Inches & ½ Thick ye under toe End and if can be 2 feet & ½ broad at the thick head End – the other End – one foot & 3 Inches belive may do – See the foot which belive is most Tapered one one side.
>
> For Inside of ye Mill Ash or beach Board pricks Inch and quarter.
>
> Crooked beach Board to Line Jemies: pricks Inch: 10 Inches Broad.
>
> Ash Rolers – 2 foot 2 Inches Long & 9 Inches by Six.
>
> Braces of ash or Elm – if can be Leave a Tipets of 6 Inches one one End – 5 and ½ feet Long and 10 Inches Broad and five Inches thick.
>
> Tippitts of ash – one foot Long: 6 Inches wide 3 Inches & halfe deep. Keep 3 or 4 dozen beforehand Dry.
>
> Crooked oke for Gimmeys: 6 and ½ foot Long & 6 Inches Thick.
>
> A Coppy of Jno fowlers fresh Instruction for mill Feet – that they must be 3 foot 10 Inches Long and one End two feet & halfe broad and 14 Inches ye other End. Eight Inches thick ye broad End and 6 Inches & halfe thick ye Narrow End (LB TW, 136)

1759:

'Mill Timber – 1759'. The same John Fowler directed that elm for the:

> ...allar Boards of y^e^ Wheele must be: 14 or 15 Inches wide: and one Inch &: ¼ Thick when cutt = ffor Length by y^e^ wheele. and for y^e^ Eyeis of y^e^ Mill: pcies of oak: 18 Inch Long: 13 Inch Wide: 15 Inch Thick and Some Crooked Board ab^t^. 5 feet Long: & 8: or 10: Inch over and pricks Inch Thick to Line y^e^ Ginnies of ash or oak (LB TW, 137)

> John fowler Telling of setting up a New Mill for parson Clarke said – ye Setting up Two New Stocks for Cutting timber & all was worth £8, and making ye Wheell Shutes and other Things belive abt £5. (LB TW, 137)

1765:

17 July 1765: account of timbers, mostly oak or elm, wanted 'for our New fulling Mill at Tone Bridge'.

> Mill By Thos Rositer...those Crosd we have Timber ready for.
> one peice of oak for ye head Selve 13 feet Long – 12 by 14 Inches X
> 4 peces of oke – 15 feet Long 12 Inches Square Each for Selves
> 2 peces of oke 7 feet Long 12 Inches Square Each X
> 2 peces of oke 4 feet ½ Long. 12 Inches Square Each (fender post) X
> 4 peces of oke 7 feet ½ Long: 5 by 12 Inches: 2 of them Crooked X
> one ps of oke 13 feet Long – 10 by 12 Inches – A Tail Selve X
> 4 peces of oke – 4 ffet Long. 8 by 10 Inches Each (Spikeing ppost) X
> 10 peces of oke 5 foot & ½ Long: 8 by 10 Inches Each. Ditto poost X
> 5 peces of Elm – 13 feet Long: 8 by 10 Inches Each. Ground Selves
> 120 feet of 2 Inch oke plank – 13 feet Long – wheell Sistern. X
> 200 feet of ye same – 10 foot Long - Mill head & Taile. X
> 6 Quarters for ye wheell 6 feet & helfe Long: to be Sweept four foot and 2 Inches Sweept.
> 3 oke peces for arms – 9 foot Long: 4 by 10 Inches Each for ye Wheell. X
> 1 ps of oak for ye Sharp – 11 feet Long X
> 6 ps of oke 6 feet & ½ Long for Jemes
> 4 ps of oke: 5 foot Long: 5 by 22 Inches Each: Side Lears.
> 2 ps of oke: 4 foot Long – 7 by 22 Inches Each for Spurs. (LB TW, 261)

1868:

2 payments for an 'Addition to Tone Dry House' costing £282:13:01 & an 'Addition to Tone Dye House' of £586:06:08, as well as £110:11:02 on 'Sundry Addition at Tone' (PLL, 102).

1869:

Payment for an 'Addition to Dye House' of £261:13:08 and a 'New Cistern at Tone' of £22:09:01 (PLL, 103).

1870:

£256:19:09 was spent on a 'New Burling House (at Tone)' and £169:11:06 on a 'New Boiler House (Tone)' (PLL, 104).

1871:

£915:14:09 was spent on a 'New Cut at Tone', £435:11:04 on a 'New Chimney at Tone offering Economiser', £189:18:11 on an 'Addition to Dye House' & £116:09:05 on an 'Addition to Grease Works' (PLL, 105).

1873:

£18:15:06 was spent on the addition to the Grease Works, £22:06:11 on the new Tone boiler house and £77:19:09 on an 'Addition to Smiths Shop at Tone' (PLL, 107).

1874:

£121:16:09 was spent on the 'Boiler Houses' at Tone, and £171:00:02 on the addition to the Dye House (PLL, 108).

1875:

£136:14:06 was spent on the 'New Boiler House at Tone' (PLL, 109).

1877:

£381:15:09 was spent on an 'Addition to Tone Mill' (PLL, 111).

1878:

£29:10:02 was spent on a 'Racking Shed at Tone' (PLL, 112).

1879:

£145:03:02 was spent on a 'New Racking Shed at Tone' (PLL, 113).

1880:

£586:16:08 was spent on a 'New Shed (for Washers) Tone' (PLL, 114).

1881:

£126:04:02 was spent on an 'Addition to Mill'; £208:09:11 on a 'New Sulphur House'; £213:05:09 on an addition to Dye House; and £320:02:05 on the 'New Grease Works' (PLL, 115).

1882:

£1098:06:03 and £204:11:06 was spent on the 'New Grease Works Tone', as well as smaller works making additions to the mill, a shed by the Burling House, and one in Rack Field (PLL, 116-117).

1883:

£272:11:10 was spent on a new shed in Rack Field; £353:07:01 on a shed addition to the mill; £334:07:07 on a new Boiler House; and £80:12:03 on the new Grease Works (PLL, 118).

> New boiler-house erected at Tone on the site of the old Greaseworks and new mill-house begun. (Fox, F.H., 10)

1884:

Payments were made for £1160:03:05 on the 'Boiler House Tone', £203:13:11 on 'Carpenters Shop' and £113:01:04 on 'New Bridge Tone' (PLL, 119).

> The foundations of this [the Boiler House] were laid on the site of the old Grease Works which were removed in 1882. The river wall built. The other buildings prevented the completion of the work. The shifting of the Boilers & the subsequent enlargement of the Dye House was left to 1884/5. It was decided to shift the oldest of the Tonedale Boilers to Tone & put in the new Galloway at Tonedale which would enable us to work there at 70 Ur pressure instead of 51. (MB 1876-96)

1885-86:

Payments were made in 1885 of £71 on the new boiler house and £2003:09:01 on 'Addition Dyehouse Tone' (PLL, 120).

> Boiler House Completed, working splendidly. The Economiser put in served our whole boiler for a great part of the year. (MB 1876-96)

1886:

Payments of £117:09:06 were made for an addition to the Dye House & £103:10:10 for a 'New Engine House' (PLL, 235).

1888:

Payments were made of £312:19:04 for a 'White Room' & £75:19:10 for 'New Filter Pits' at Tone (PLL, 237).

1889:

A further £77:19:08 was spent on the white room (PLL, 238).

1892:

£1628:04:03 was spent on 'New Filtration Buildings & Tanks' and £958:08:04 on 'New Reservoir at Tone' (PLL, 241).

1893:

£936:07:01 was spent on 'New Filtration Tanks'; £62:17 on a new soap pit & well for the Grease Works; £259:05:08 on the 'New Reservoir Tone'; and £1973:04:02 on the 'Fulling Shed Tone' (PLL, 242).

1893-94:

A new fulling mill was built at Tone Works. The cost of new buildings included £1991 for the Mill House at Tone; £259 for a new reservoir; £178 for water mains & a cistern; and £60 on shafting & steam pipes (MB 1876-96).

> Have begun the new Mill House – will be a splendid place when finished but will take some time. (MB 1876-96)

> New Millhouse begun at Tone covering the old yard and roadway and the site of two cottages. The ground level was raised as a protection against floods and for better drainage... Tone Works first lighted with electricity. (Fox, F.H., 18-19)

1894-95:

Tone made a loss of £144 this year; £2309 was spent on the New Mill House, £538 on machinery for 'Washing, Milling, Cleaning', and £1674 on shafting and Engine at Tone (MB 1876-96). A different ledger stated that £2305:07 was spent on the Tone Fulling Shed in 1894 (PLL, 243).

> This dep. has been much handicapped by the shifting...the new Mill House which had to be carried out without stopping the work. The portion of the shed that is completed is a grand place. The machinery is better organised & with a vastly superior light we hope to get our goods better finished. (MB 1876-96)

1895-96:

Tone showed a profit of £321 this year. Tone's new Mill House cost £1150, with £355 on machinery for milling, washing, & stretching, £167 for shafting and a further £169 was spent on electricity for Tone (MB 1876-96 and PLL, 244).

> At last the new shed has been practically finished & is a vast improvement...A system of packing has been organised to a certain extent & the work generally has been better done the result of better accomodation *[sic]*, machinery light &c. (MB 1876-96)

1913-14:

> New Milling Shed erected at Tone, known as 'The Crystal Palace'. This arose out of the considerable business that we were doing in Turkey through The Anglo-Syrian Co. for heavily milled khaki and greys. (Fox, F. H., 32)

1919-22:

For details of the new Power House constructed at Tone in these years, see the section on the Tone Power System. Its plan is illustrated in a Building Control Plan of the new Power House at Tone, dated 1921, which shows that the new building incorporated the old Carpenters' Shop (SARS D\U\wel/24/1/3/641). The decision to build a new power complex was taken in 1919-20:

> Being very short of power at Tone, our boilers there being low pressure and worn out, we adopted a new power scheme at an estimated cost of £30,000. (Fox, F.H, 45)

1930-31:

> What was known as the 'Crystal Palace' at Tone fitted up for finishing pure whites. (Fox, F.H., 52)

References to Tone Works machinery

May 1877:

> Commenced putting in the New Vat No. 4 at Tone. (MB 1876-96)

February 1881:

> Tone Milling Stocks. A visit from Leeming Webster of Dewsbury has proved to us that our stocks are very old & of an entirely obsolete pattern. We order a couple of new ones as models of what are being used now. This serves to explain why the Fully has always borne off the palm on the stock in one milling both as liquid finish & lime. (MB 1876-96)

March 1881:

> Tone Milling Stocks. The new stocks do not work so very much better as we had expected. In fact the old stocks that have been thoroughly repaired seem to work quite as well. (MB 1876-96)

1887:

Purchase of 14 milling machines (5 thrown out in 1930, 2 in 1932 & 1 in 1933) for £520 – supplier not named (LM, 37).

1888:

Purchase of 2 more milling machines for £122 (LM, 37).

1889:

Purchase of 2 more milling machines (£97), a drying machine, and a fan (scrapped in 1936) for £465 (LM, 37).

1890:

Purchase of a further milling machine for £59 (LM, 37).

1893:

Purchase of a further milling machine for £44 (LM, 37).

1894-95:

The company spent £538 on machinery for 'Washing, Milling, Cleaning' at Tone (MB 1876-96) and in 1895 purchased a further milling machine for £62 (LM, 38).

1895-96:

They spent £355 on machinery for milling, washing, & stretching for Tone (MB 1876-96), which included 2 milling machines for £100 in 1896 (LM, 38).

1897:

Purchase of 1 drying machine & fan for £719, thrown out in 1936 (LM, 38).

1898:

Purchase of a water-softening plant or cast iron tanks from Mather for £902 (LM, 38).

1900:

Purchase of a fulling machine (thrown out 1926) for £101 (LM, 38).

1901:

Purchase of 6 washers for £303:12:01 and 2 Steaming & Pressing Machines (1 thrown out 1926) for £685:15 (LM, 38).

1902:

Purchase of 3 washers for £90:05:04 (LM, 39).

1903:

Purchase of 3 washers for £80, 2 fulling machines for £171:08:05 (thrown out 1926) and tentering & drying machines for £700:18:03 (LM, 39).

1904:

Purchase of 1 fulling machine for £138, thrown out 1926 (LM, 39).

1905:

Purchase of 1 fulling machine for £107:14:06, thrown out 1929 (LM, 39).

1909:

Purchase of 1 washer for £78:01:08 and 2 fulling machines for £158:07:05 (LM, 39).

1910:

Purchase of 1 full-width washing machine from Tomlinson for £160; 1 pattern fulling machine from Tomlinson (thrown out 1926) for £40; 1 tandem fulling machine from Tomlinson (thrown out 1926) for £207:13:08; a washing machine from Whiteley for £95:07:01; a Wire Raising Gig from Tomlinson for £109:12:08; and a tandem fulling machine from Bates for £107:17:02 (sold 1930) (LM, 39).

1913-14:

Purchase and installation of a Water Softening Plant from Lassen & ?Hfort £2134:09:01 (LM, 40).

1914:

Purchase of a 72' Cylinder Drying Machine from Riley for £335:01:09 (LM, 40).

1915:

Purchase of 6 fulling machines for £568:10:04 and 1 washing machine 6 ft wide for £100:00:02 (LM, 40).

1917:

Purchase of a Bailey Wet & Dry Blowing Machine, sold 1925-6, for £175 (LM, 40).

1918:

Purchase of a treble Crabbing Machine by Riley, £109:05:01 (LM, 40).

1919:

Purchase of a Scouring Machine from Bailey for £194:14:04 (LM, 40).

1921:

Purchase of a '6' Chain Pump from Croager, £95:04:10 (LM, 40).

1921-22:

Purchase of a 'Moser' Raising Machine from Bliss Mill for £120 (LM, 40).

1924-25:

Purchase of 12 Draft Boards (Milling Machines), £91:16:02 (LM, 40).

1925-26:

Purchase of a Raising Machine from Bliss, £407:06:03 (LM, 40).

1926-27:

Purchase of a Garside measuring clock for £6:10 (LM, 37) and a Sellers' 4-cylinder shearing machine for £307:10 (LM, 22). This may be the machine transferred to Tone in 1930 (LM, 21).

1927-28:

United Water Softeners supplied a 'Water Softening Plant' for £2502:10:08 & 2 more Garside clocks were bought, priced as above (LM, 37).

1928-29:

Purchase of a Tentering Machine from Krantz for £3332:02:03 (LM, 37). This replaced nine men (Fox, F.H., 51)

1929-30:

Purchase of a Fulling Machine from Hemmer for £212:03 (LM, 37).

1930-31:

Purchase of one second-hand Baileys 'Crabbing Machine' for £292:04:02, 3 Hemmer Fulling Machines for £761:07:04, and a 'Pattern Fulling M/C' (transferred to Tone in 1944, and probably that still in situ) from Hemmer for £86 (LM, 36 B).

1931-32:

Purchase of 2 milling & scouring machines from Bailey for £318:12:10 (LM, 36 B) and of a '4 Cylinder Cropping M/C' by Sellers (£380:09:11), probably for Tonedale for packing serges (LM, 18).

1932-33:

Purchase of a Tandem Squeezing Machine from Bailey, £107:16:07, and a Measuring Clock from Garside, £5:17 (written off 1949) (LM, 36 B).

1933-34:

3 more Garside Measuring Clocks £17:11 (1 written off 1949); 1 'Triumph Milling & Scouring M/C' from Mitchell for £192:18:02 (LM, 36 B); and a 'Blowing & Steaming Machine' from Bailey for £562:05:04, probably for Tonedale for packing serges (LM, 18).

1934-35:

Purchase of a Garside measuring clock for £5:17 and a water tank from Bishop for £91:07:10 (LM, 36 B).

1935-36:

Purchase of a Carbonizing Machine from Whiteley, costing £2086:08:08 (LM, 38).

1936-37:

Purchase of a Full Width Scouring Machine from Sellers, £395:17:01; alterations to the Krantz Tentering Machine by Whiteley, £529:05:08 (LM, 38); and purchase of another blowing & steaming machine from Bailey for £590:11:01 (also probably for Tonedale for packing serges) (LM, 18).

1937-38:

Purchase of one pair of Stretching Rollers from Bailey, £59:12:06 (LM, 38).

1938-39:

Purchase of a second-hand Spooner drying unit, £95:18:06; 4 Garside measuring clocks, £25:07; and an exhausting unit for the Carbonising Plant from Whiteley, £339:01:11 (LM, 38).

1939-40:

Fox's bought another '4 Cylinder Cropping Machine' from Sellers for £459:13:05, also probably for Tonedale for packing serges (LM, 19).

1940:

Purchase of 1 Garside measuring clock, £6:06:09 (LM, 39).

1945-46:

Purchase of a 'Brushing & Steaming Machine' from Bailey for £231:18:05 (also probably for Tonedale for packing serges) (LM, 18).

1947:

Purchase of 1 scouring & milling machine from Mitchell, £652:12 (LM, 39).

1948:

Purchase of 3 measuring Garside clocks (£36) and of another in 1949 for £14:15 (LM, 39).

1950:

Purchase of 1 Velocity Scouring Machine from Asquith, £574:00:07 (LM, 39).

1952:

Purchase of 1 Velocity Scouring Machine from Asquith, £651:10:07 and 2 Garside clocks £37 (LM, 39).

1955:

Purchase of 1 Velocity Scouring Machine from Asquith, £714:06:03 (LM, 39).

References to Tone Works water supply

1871:
£915:14:09 was spent on a 'New Cut at Tone'. (PLL, 105)

February 1881:

> Purification of the river. We have been improving our apparatus of late & have resolved that for the present we will throw everything on to the meadows to be filtered. We have decided to run a drain across the river that will lath *[sic]* all the mill house refuse to the second level of drains in the meadow. (MB 1876-96)

February 1881:

> Draining of Moors Tone. Owing to the intention to put in some new filter beds for the Tone refuse we saw it would be needful to carry a drain for the further corner of the moors at a lower level than we could obtain by a straight cut to the river. We accordingly determined to carry a drain to the foot of the first weir... (MB 1876-96)

1885-86:

> Pollution of River Tone...Careful examination proved the river to be far worse than we had ever dreamed...It seems that the Weir causes all soap...to froth into foam balls which float slowly down...We decided (1) To take steps to turn all the sources of pollution in the Tone Factory into the filtring system (2) To quadruple that system... (MB 1876-96)

1888-89: in the spring,

> Tone was visited by a most serious flood & much damage was done in a very short time notably to whites. This is the highest flood on record. (MB 1876-96)

> This was the year of the record flood at Tone when half the width of the main road was washed away down to the river-bed. The Works were isolated for a time as the water was some three feet deep. There was a dreadful mess to clear up afterwards. (Fox, F.H., 13)

1891-92:

> This year was the year of our great river pollution case. We had an action brought against us by Mr. Sanford for general pollution of the river and poisoning certain cattle on a certain date. Our case was weakened to start with by one of the Directors in his anxiety over the social side of the question writing and admitting without investigation an accident at the Greaseworks on the date in question, which turned out to be totally inaccurate, and for the same social reason we were a divided camp throughout the case. We were advised that we should probably lose owing to prejudice in such cases but that we must fight on principle or we should have no peace in the future. The case was trued

> without a jury and lasted ten days. All the expert evidence was in our favour, plaintiffs admitted that they had failed and then to everyone's astonishment the Judge delivered judgment against us, granting an injunction but refusing damages. The Judge also laid down that we had a prescriptive right to pollute the river as against private riparian owners, which was to the good, but he declined to define the amount of the pollution. This trial cost us about £8,000 but we felt that it was money well spent in the nature of insurance, that we had legal rights as users now established by law and that no-one would be in a hurry to tackle us again. We also realised that we were not doing what we could and should to purify our effluent and had been far too cheeseparing in the way of expense. From that day to this we have not had any real difficulty with riparian owners or public bodies. (Fox, F.H., 17)

1892-93:

£1628:04:03 was spent on 'New Filtration Buildings & Tanks' and £958:08:04 on 'New Reservoir at Tone' (PLL, 241).

> Arising out of the trial we started a new system of proper settling tanks for our effluent at Tone. (Fox, F.H., 18)

1893-94:

The company spent £259 on a new reservoir at Tone and £178 on water mains & a cistern (MB 1876-96).

1898:

Purchase of a water-softening plant or cast iron tanks from Mather for £902 (LM, 38).

1913-14:

Purchase and installation of a Water Softening Plant from Lassen & ?Hfort for £2134:09:01 (LM, 40).

1927-28:

> Permutit softening plant installed at Tone at a cost of £1,200 and the soft water brought from Tone to Tonedale for wool scouring. (Fox, F.H., 51)

References to Tone Works power system

1884:

> The shifting of the Boilers & the subsequent enlargement of the Dye House was left to 1884/5. It was decided to shift the oldest of the Tonedale Boilers to Tone & put in the new Galloway at Tonedale which would enable us to work there at 70 Ur pressure instead of 51. (MB 1876-96)

1885-86:

> Boiler House Completed, working splendidly. The Economiser put in served our whole boiler for a great part of the year. (MB 1876-96)

1887:

Expenditure this year included a 'Water Wheel & Governor' for £150; 2 condensing engines for £183 (gone) & £340 (sold 1925); an economiser for £895:13:01 (thrown out 1926); and 6 steam boilers for £471 (4 sold 1924, 2 scrapped 1951) (LM, 36).

1893-94:

They spent £60 on shafting & steam pipes for Tone (MB 1876-96).

1894-95:

The company paid £1674 for shafting and an engine for Tone (MB 1876-96). This was the '21 x 48 Condensing Engine', scrapped 1943, which was bought for £587 in 1895 (LM, 36).

1895-96:

They spent £167 on shafting and a further £169 on electricity for Tone (MB 1876-96).

1915:

Purchase of a motor with starter, control panel & regulator cable for £396:19; and of more shafting that year for £48:19:09 (LM, 36).

1919:

Purchase of 3 'Patent Furnaces' from Crossthwaite for £328:02 (thrown out 1925) and '6 Hotchkins Circulators' for £378:10 (thrown out also in 1925) (LM, 36).

1920-21:

Purchases included '1. 60 Generating Set' from Gilman, £1260, and 'Expenses re New Power Scheme' of £400 (LM, 36).

1921-22:

Purchases this year included 2 22HP motors (£708:10), 1 36HP motor (£334:11) and 1 62HP motor (£937:10) from an unnamed supplier. They also bought 1 120HP motor (£1186), 2 22HP motors (£746:10), 2 11HP motors (£356:10) & 2 62HP motors (£1875), and 10 control panels £802:01 & a switchboard £528, all from Mather & Platt. From Bellis's, they bought 1 engine & generator for

£3970:09:10, an economiser from Green for £3347:10:09 and 3 Lancashire Boilers from Beeley for £7226:13:09. The expense of reconstructing the power system was £350, carried out by Brownlee (LM, 36).

1923-24:

Purchase of 4 motors & panels from Westcott for £354:15:01 and a further £400 on 'Reconstruction Expenses' (LM, 36 A).

1924-25:

Purchase of a selection of small HP motors, starting panels & slide rails from Verity's (LM, 36 A).

1928-29:

Purchase of 3 motors & control panels for the tentering machine (£391:06) from Mather & Platt (LM, 36 A).

1930-31:

Fox's bought several small HP motors & panels from Verity's; similar purchases were made throughout 1930s & 40s, such as the £229:13:06 30BHP motor & starter of 1936-7 (LM, 36 A).

1949:

Purchase of a steam engine & generating set from Bellis & Morcom, for £5614 (LM, 55).

References to Fire Insurance Policies

Where estimated years are given for Sun Fire policies, they represent the dates covered in the appropriate volume of policies at the Guildhall Library (who kindly provided this information) (MB TF, 68-72, 79-83, 91-95, 126-195).

1808:

Sun Fire Policy 810569 (29 September, no year but early C19th) for 'Dwelling house Tonedale'. Basic house valued at £1900, contents at £1600. Total: £2700 (MB TF, 68-70).

1813 or 1814:

Sun Fire Policy (25 March) for Coldharbour Mills & premises, Uffculme: £1400 'on the Great Millhouse'; £300 for the waterwheel; £1200 for all the machines & engines; £300 for stock, etc. Total: £4350 (MB TF, 68-70).

1813 or 1814:

Sun Fire Policy 894610 (25 March, no year but early C19th) for 'Tending Shop & Serge Chambers': £1000 for tending shops; £8000 for stock; £500 for looms & warehouse; £3000 for stock & utensils within. Total: £12500 (MB TF, 68-70).

1817 or 1818:

Sun Fire Policy 945368 (24 June, no year but early C19th) for 'Large & Small Mills at Tonedale': 1400 for large mill house; £1000 for machinery, engines & spinning machines; £700 for little mill house N°. 2; £300 for engines, spinning machines, &c there; £300 for 'New warehouse & workshops near'. Total: £4500. This policy was annulled & substituted with 977241 (MB TF, 68-70).

1817 or 1818:

Sun Fire Policy 932910 (29 September, no year but early C19th) for 'Old trade premises': £700 for house & offices; £150 for warehouse & rooms over; £500 for 'Long Warehouses'; £170 for stables & coach house; £150 for dyehouse & wash house; £350 for 'Long Building'. Total: £2100. Later cancelled and 996950 substituted (MB TF, 68-70).

1817 or 1818:

Sun Fire Policy 932911 (29 September, no year but early C19th) for 'Stock in Old Trade premises': held in all the above places but specifying 'In two Dyehouses & Washhouse'. Total: £800 (MB TF, 68-70).

1817 or 1818:

Sun Fire Policy 945701 (24 June, no year but early C19th) for Mills &c at Tone: £450 for 'Water Fulling Mill-house & rooms adjoining'; £500 for 'Water Wheel going Gear, Gig Mills &c'); £500 for stock & moveable utensils; £200 for dwelling house; £350 for drying house; £500 for stock & utensils in drying house; £100 for 3 cottages & a stable. Total: £2600 (MB TF, 70).

1818 or 1819:

Sun Fire Policy 952361 (25 March, no year but early C19th) for 'Mills &c at Tone': £300 for water fulling mill; £500 for water wheel, gig mill & machinery; £150 for stock & utensils; £150 for burling shops; £350 for stock, utensils & spinning machines; £200 for dwelling house adjoining; £500 for stock & utensils. Total: £2600 (MB TF, 71).

1819 or 1820:

Sun Fire Policy 967061 (25 March, no year but early C19th) for 'Tending Shops Wool Warehouses & Serge Chambers': specifies many different places – includes 'one building, brick stone & slated, with a perpendicular metal pipe inclosed in Brick Work'; a Warehouse no. 5 on 's^{d}. plan'. Total: £12500 (MB TF, 71-79).

1820 or 1821:

Sun Fire Policy 977241 (25 March, no year but early C19th) for 'Large Mill at Tonedale & New Warehouse &c': £2500 for 'Large Mill house comprising N°. 1 & 2 on former plan now united & call'd N°. 1'; £500 for millwright's work, water wheel & standing & going Geer; £1500 for all machinery; £500 for stock. Total: £5000. Also continues with 'New warehouse & workshops near £300' and £100 of stock & machinery (MB TF, 71-79).

1822:

Sun Fire Policy 986986 (payable 25 December 1822) for 'Large Mill at Tonedale N1.1 & Building N2': £2200 for 'Large Mill house N1 & 1'. Total: £5200. Building N°. 2: £300. Total: £400 (MB TF, 71-79).

1822:

Sun Fire policy 990705 (25 March 1822) for the Mill &c at Tone: £250 for water fulling mill house, £350 for water wheel, going geer & gig mill; £350 for 'Air drying house'. Total: £1900, substituted by policy 1124329 (MB TF, 79).

1822 or 1823:

Sun Fire Policy 996950, the substitute for 932910.

1830 or 1831:

Sun Fire policy 1124329 for 'Tone Fulling Mills', valuations as follows. 'Water Fulling Mill House &c.' (£250); 'Water wheel Geers & Machinery' (£350); 'Stock &c. therein' (£100); 'Burling Shops & Cottage' (£150); stock &c therein (£100); Dwelling House (£100); Air Drying House (£250); stock therein (£200): total £1500. Also 3 cottages and a stable valued at £100. Policy thereafter included in policy 1512981 (MB TF, 83).

1846:

Sun Fire policy 1512981 (25 March 1846) for Tonedale and Tone. The valuation of the 'Tone Fulling Mills with Ware room over – Dwelling House Burling Shops & Dye House' was £700; the stock & utensils therein £1100. This is the first reference to the Dye House (MB TF, 126).

1866:

Sun Fire policy 2122015 for Tonedale and Tone (22 May 1866). The valuation of 'Tone Fulling Mill, dwelling house, Dye House & Burling Shops' was £1500, 'Millwright work therein' £300; 'Machinery therein' £200; 'Dye Stuffs therein' £1000; and the 'Stock of wool & goods therein' £10500. Total: £13500 (MBTF, 141).

1870:

Sun Fire policy 2268084 for Tonedale and Tone (Lady Day (25 March) 1870). The 'Tone Fulling Mill, Dwelling House, Dye-House & Burling Shops' were valued at £1500, the 'Mill-Wright's Work therein' at £300, the stock at £200, 'Dyeing Materials' at £3000 and further stock at £1100, totalling £15000. The stock in the 'Drying Shed' was valued at a further £200 (MBTF, 147).

1873:

Mutual Fire Insurance Corporation policy 2981 (11 June 1873) for Tone Fulling Mill included a £400 Tenter Store containing £300 of machinery (MBTF, 154).

1874:

Sun Fire policy 2499412 (1874), valued Tone at £6000. Much of this was for the stock & the dye materials, but included £1500 for the fulling mill & dye house (MBTF, 155).

1874:

Mutual policy 5150 (1874) valuation has the fulling mill (£1500), dye materials & stock at £3000, with the tenter store at £400, and machinery in it £300 – total: £9000 (MBTF, 157).

1875:

Mutual policy (5711) of 1875 valued the buildings at £2000 (MBTF, 160).

1880:

Mutual policy (either 17994 or 19994) of 1880, valued Tone Fulling Mill at £2500, with a £500 steam engine specified (MBTF, 172).

Deeds

1814:

List of writings, including headings of deeds of Fox property. This includes the deeds for Town Mills, the site of Tonedale (released in 1799 from George Hutchings to Thomas Fox) (MB TF, 57). It also lists deeds for Tone Mills (including 1750 lease to Robert & Thomas Were of Tone Meadow, a 1760 release to TW Were of 'a small Island in the River Tone' and an agreement of 1760 respecting the 'Watercourse, by Rackfield', a 1777 conveyance of all the Tone property by all Were partners for the benefit of 'surviving copartners', and the 1797 reconveyance by Joseph Ball, the son of the oldest trustee, of the premises of Tone to Thomas Fox, the surviving partner (MB TF, 57). The early deeds for Coldharbour Mill are also mentioned, bought by Thomas Fox in 1798 (MB TF, 58), as are those for the fulling mill at Uffculme: a lease & release to Thomas Were the elder (and his sons Robert, Thomas & Nicholas) in 1764 (MB TF, 58-59). The deeds of the Town Mills Estate are also listed (also known as Holways & Voiseys, together with Tone Meadow now included in the 12 Acre Meadow & Mons Meadow), bought by Thomas Fox in 1802-3 (MB TF, 59-60). Those of Trade House & premises in South Street, Wellington, are also given, released to Thomas Were in 1723 (MB TF, 62).

1837:

Inventory of writings dated 1837, all very much as above (MB TF, 98-117), including Town Mills (MB TF, 103), Tone Mills (MB TF, 104), Coldharbour (MB TF, 105), & Town Mills estate (MB TF, 106-7). Later deeds are listed, up to the 1870s.
A further inventory of late 19th century deeds can be found in MB TF, 232-248.

Selected other references

Khaki

1883-84:

> 'History of Khakee Serge'. (See my letter from London of 13/11/83 kept my private memor.) The Duke of Cambridge instituted an Commission at the instance of Parliament in 1881 & 2 to decide on the best colour for invisibility. This was the result of the Zulu & Boer Wars. Col. Abel...spear headed the Commission. The colours were tested under various atmospheric conditions... against the sky line & various backgrounds. Devon Grey came out best & second to it Cruckman's Drab. The former was chosen by the Committee on account of the Fading nature of the Drab. We were at once asked to prepare samples in various weights which we did on a far too extensive scale...Meanwhile the Grey was blown upon. The Duke would not hear of the substitution of this for the glorious British Scarlet. the troops would look like convicts etc. etc. Averse to any change he was obliged to agree to trying the Drab which the Marquis of Hartington backed by Parliament insisted on.
>
> Six months or near were spent by ourselves & other manufacturers in trying to produce a first Drab or Khakee. We tried endless experiments but one only (the one we called F) answered the text of exposure to sunlight. This colour was in fact the fastest that they tested. Preference was given to a duller colour supplied to them by Farnam. It was considered more sightly whilst its fading properties were nearly so good as ours.
>
> They then ordered a sample piece of us dyed to Farnam's shade. It was wanted heavier...& good in quality. We made it of a fine E^{x} called E^{xx}...Our shade did not match Farnam's but was happily preferred & the pattern piece was thus chosen.

The writer visited the Dep^{t}. in November 1883 when he was told that they preferred D for its superiority under the test of exposure. He offered to dye part of the contract in each way but this was declined after consultation at Horse Guards.

> We thus were given a good order which was increased later on. At first we had immense difficulties...the process adopted being most complicated...Most of the goods were badly stained & had to be dyed in the existing 9176 contract. No two deliveries matched in shade. The authorities at Pimlico however were most lenient & we soon found the way of dyeing satisfactorily.
>
> They are taking this opportunity of changing the mode of clothing the troops. They dress them entirely in Serge. Give them a waistcoat with sleeves which they can use for dirty work & which is covered by the tunic which is thus preserved whilst the dirty waistcoat is hidden. Further warmth is given by suitable underclothing. Thus in hot weather & tropical climates they enable them to wear a most cool dress for they can take off the waistcoat & under vest. (We took an order for Waistcoat Serge dyed the same shade as the 10325 – made of a lower quality about the weight of 634`). The Heavy Tunic is discarded by this altration *[sic]* & serge trousers substituted for the thick Tartan.

> Two or three foreign battalions are to be clothed in this Khakee & 2 or 3 at ?home who have applied for it. They will thus give the colour & the uniform a thorough test for wear & fading.
>
> Uncle Charlie in a later visit in Jun. 1884 heard that they were pleased with our goods except that they faded too much. They then feared that the whole thing would end in smoke as most of the authorities were dead against the altration. (MB 1876-96)

1900-1:

> The Government were having so much trouble with the piece-dyed khakis owing to great variety of shade that they asked us to experiment with a mixture. After various trials we produced the present shade, which was approved and sealed. It was a difficult shade to match and for some time we had a great advantage in contracts. The Yorkshire criticism of the shade was that 'if we had raked Hell we could not have found a worse colour.' (Fox, F.H., 24)

The making of puttees at Tonedale

1893-94:

Fox's spent £146 on weaving machinery, incl. a 'Circular Machine' for Tonedale (MB 1876-96).

1894:

The company bought a stockingette machine (£133) (LM, 1).

1894-95:

> We succeeded in making a very good Puttee on the circular machine for the War Office & have had a first order for 5000 pr. This should be very profitable if they continue to order as we have the monopoly. (MB 1876-96)

> The War Office being dissatisfied with the woven serge puttee they were buying asked us to experiment. We offered them a knitted puttee made on the discarded circular loom which delighted them and they promptly ordered 5,000 pair. This was the beginning of the knitted puttee and since that day we have delivered nearly 8,000,000 pair to Government Departments alone. (Fox, F.H., 19)

The company had general problems this year with the circular loom, with the exception of puttees 'which we hope will repay us for our trouble & money' (MB 1876-96).

1895:

Purchase of another stockingette machine (£165) (LM, 1).

1897-98:

67,000 pairs of puttees were ordered by the War Office (Fox, F.H, 23)

1898-99:

A Puttee department was built 'on to Tonedale House' (Fox, F.H., 23)

1899:

Purchase of four more stockingette machines (totalling £415) (LM, 2).

1900:

Purchase of another stockingette machine (£131:19:11) (LM, 2).

1901:

Purchase of five more stockingette machines (£641:04:01, 1 broken up in 1908/9 & all possibly scrapped in 1949) (LM, 2).

1908-09:

> Having produced a knitted puttee for the War Office we set to work to make a shaped one to fit the leg without any turns. For a long time we failed to get the right shape but one day on unwinding a puttee that had been wound for a long time on a dummy leg with enough tension to avoid turns we found it had moulded itself and this gave us the required shape. Puttees being made in a cylindrical form, by cutting the piece open with a template the shape required the whole width could be cut up without any waste. This puttee was patented. The drawback to this method was that the edges were raw and liable to fray. Our next improvement was to produce a shaped puttee with fast or unfrayable edges. We found by experiment that by winding a straight puttee under tension on a metal former and blowing steam through the shape was absolutely set. We therefore bought a straight bar knitting machine in which we could knit each strip separately with a fast edge. These strips were subsequently cut into lengths and moulded by steam on metal formers. This puttee was also patented and advertised as 'F.I.P. (Fox's Improved Puttee).' Twice we had to fight for our patent in the law courts and won on both occasions. Astrackans were the defendant in one case and plaintiff in the other. (Fox, F.H., 30)

1914-15:

At the outbreak of war, the entire production concentrated on government contracts providing fabrics for uniforms; the company also imported about 80 Belgian weavers and spinners to help.

> All our puttee machinery was run day and night, and later on Mr. Hancock, our Weaving Shed Foreman, invented a clever plan of inserting knives in the loom to cut every other weft thread and so leave a thin place in every puttee width in the piece. These cut threads milled on to the warp threads and prevented the warp from fraying out after the pieces were cut into strips. We had some eighty looms fitted up with knives and eventually worked up to 70,000 pair per week of puttees of all sorts, representing 35,000 yards 56' wide. Over a hundred women at home with sewing machines were employed taping the puttees and a 'Puttee Brigade' of children with small carts fetched and carried to and from the Warehouse every day. (Fox, F.H., 34)

> Our sales for the year amounted to £747,0563 including £129,000 worth of puttees, our previous record for a year being £403,405, and we ended the year with £500,000 worth of orders on our books. The value of our wool stock had risen to £57,000 plus £53,000 worth in the North. (Fox, F.H., 41)

Early references to Tonedale Mills

All engines & pumps supplied to Tonedale from 1887 to 1953 are listed in LM, 27-31.

1800 – 1802:

Various payments to Henry Leake, millwright, totalling £1175:11:09 between Oct 1800 and Nov 1802 for various visits to Tone area, repairs at Coldharbour, and designing then supplying a 'water wheel & mill gear' for Town Mills, later known as Tonedale, for £600 (L'U', 234).

1801:

Letter from Jos. Nutting on behalf of Thomas Fox to Robert Young (10 June 1801):

> I am in immediate want of about 150 sacks of good Coal for burning bricks; & should be obliged if thou wouldst procure carriage for that Quantity at the usual rate; they are to be delivered at Town Mills about half a Mile from the Towne. With due regard...For Tho^{s}. Fox Jos: Nutting (LB 1801-02)

1801:

Letter from Thomas Fox to Henry Leake, millwright, Tiverton (13 June 1801):

> I request thy riding over here the first time thou comes to Coldharbour to examine a spot on which I intend soon to build a Mill. (LB 1801-02)

1801:

Letter from Thomas Fox to Henry Leake, Tiverton (9 Nov 1801):

> In reply to thine of 7th. I whish thee to send me the plan & Estimate of the water wheel & Gear very first Opp^{t}. as I should like to have a few days to consider it previous to thy comming here – N.B. I do not apprehend thy Theodolite will be wanted the water Course has been carefully levelled by another person who only differs about ½ Inch from Josiah (LB 1801-02)

1801:

Another letter to Leake on 12 Nov 1801 mentions receiving the estimate, which Fox called 'so much overstrained that its quite beyond my Conception', and asked for more detail on the major parts of expenditure and a reduction (LB 1801-02).

1801:

Letter from Thomas Fox to Henry Leake, Tiverton (16 Nov 1801):

> I certainly shd. wish my work at the New Mill to be done in the best manner. I am quite disposed to pay for it accordingly but thy estimate is so far beyond the bounds of reasonable profit that I cannot think of complying with it & tho' with much reluctance – I must of necessity endeavour to get it done by some other Person (LB 1801-02)

1801-02:

Letter from Thomas Fox to Henry Leake, Tiverton (19 Nov 1801): Leake failed to bring down the price, and Fox did not like the idea of day work and does not understand why he has not been given the breakdown of the estimate. On 4 Dec 1801, Fox sent Leake £200 on account, and another on 1 Jan 1802 (as well as stating that he had not yet received any of the worsted frames he had ordered from Leake). They had arrived by 5 March 1802, when he paid Leake £129:06:00, but expressed doubts as to whether they'd work properly: 'the Rollers in the preparing frames appear to cut the wool very much'. On 19 April 1802, Fox objected to some sums appearing on Leake's account, as there was work to be done to complete the gear at Coldharbour but was still sending £180 on account (LB 1801-02).

1895-96:

Tonedale was lit by electric light this year, power by the gas plant. (MB 1876-96)

General references

1778:

Letter from Thomas Fox to Marsh Reeve & Co., London (Wellington, 25 August 1778), introducing the Weres' "best Services in the various articles of our Woollen Manufactory' and listing types of cloth they can supply, including 'German or Cloth Serges', 'Druggetts', 'Superfine Druggetts or Marlborough Cloths', 'mix'd Serges' and 'Serge Drappers'. The cloths were priced differently if white (the cheapest), dyed in the piece (the moderate price), or dyed in the wool (most expensive).

> The Superfine Druggetts is an Article but newly introduc'd in this Country & we are convinc'd would give great satisfaction, our Common Druggetts are the best of their kind, our mixd Druggetts & German Serges Exelent. (LB 1777-79)

APPENDIX 3 – GAZETTEER OF FINISHING WORKS MACHINERY

The gazetteer is a photographic record of the textile machinery that was *in situ* in May 2007. The position of each machine is shown on the attached Plan of the Finishing Works. The descriptions indicate the general type of machine, its maker when known, its construction, an estimate of its date range and the means by which it was driven from the line shafting. Most of the machines have similar functional and structural features, leading to some repetition in the descriptions. Any unusual features are noted, but no attempt is made to describe the machines in detail. In some cases the exact function is not known. All the machines show evidence of ongoing maintenance and some have been adapted to perform a particular function. It is unlikely that any have been retained in their original condition since the shed was built in 1893-5, most having been replaced at different times in the mid-20th century, although it is possible that some of the cast-iron frames and other heavy parts of the earlier machines have been re-used.

No 1.
Open-width scouring machine, mid- to late 20th century, by Sellers and Co. Ltd., Huddersfield. All-metal construction, with a combination of wooden and metal rollers. This was a specialised machine, used to help remove the rigs (creases) from the cloth, in which the pieces were scoured as a flat open sheet. Belt-driven from the south line shaft by a fast-and-loose pulley. [DP043819]

No 2.
Scouring machine, mid-20th century with later alterations, maker unknown. Wooden panels on a cast-iron frame, and wooden rollers. Used for conventional 'rope' scouring of sewn-up pieces. Fast-and-loose pulley drive. [DP043820]

No 3.
Scouring machine, mid-20th century with later alterations, maker unknown. Similar construction and details to 2, but upper half of cast-iron frame of different design. Wooden guard rail dated 24-9-80. [DP043823]

No 4.
Scouring machine, early to mid-20th century with later alterations, by James Bailey, Slaithwaite, Yorkshire. Similar to 2 and 3. Cast-iron frame is of a different design, its form suggesting a slightly earlier date. Fast-and-loose pulley drive. [DP043825]

No 5.
Combined milling and scouring machine, mid-20th century, by John Mitchell & Sons, Brockholes, Huddersfield. Cast-iron frame with wooden panels, but with less alteration to the wooden parts than some of the other machines. Comprises heavy milling rollers with a wooden feed mechanism to agitate the cloth. Belt driven by a clutch pulley. [DP043829]

No 6.
Combined milling and scouring machine, mid-20th century with later alterations, by John Mitchell & Sons Ltd., Brockholes. Wooden construction on a cast-iron frame. Patent on name plate (409869) refers to a 1934 system for controlling milling rollers. [DP043834]

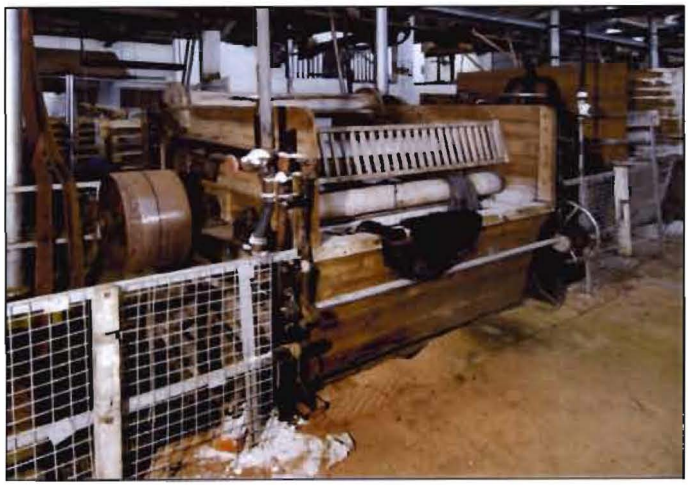
No 7.
Combined milling and scouring machine, mid-20th century, similar to machines 5 and 6 but partly dismantled. John Mitchell and Sons, Brockholes, Huddersfield. Clutch pulley drive. [DP043840]

No 8.
Combined milling and scouring machine, mid-20th century, similar to 5, 6 and 7, and partly dismantled. [DP043841]

No 9.
Scouring machine, mid-20th century with later alterations, maker unknown. Wooden construction on a cast-iron frame. Fast-and-loose pulley drive. [DP043843]

No 10.
Scouring machine, mid-20th century with later alterations, some recent. Maker unknown. Wooden construction on a similar cast-iron frame to machine 9. Fast-and-loose pulley drive. [DP043847]

No 11.
Scouring machine, mid-20th century with later alterations, some recent. Maker unknown. Wider than machines 9 and 10, but otherwise similar construction and details. [DP043846]



No 12.
Scouring machine, mid-20th century with recent alterations, maker unknown. Similar to machines 9 and 10. [DP043848]

No 13.
Scouring or milling machine (exact function not known), mid-20th century with later alterations, maker James Bailey, Slaithwaite, Huddersfield. Wooden construction with cast-iron frame. Driven by a clutch pulley from the primary line shaft against the north wall. The wooden rollers are of similar width but smaller diameter than those of the scouring machines in the south row, suggesting a different function. [DP043851]

No 14.
Scouring or milling machine (exact function not known), mid-20th century with later alterations, maker not known. Similar size and construction to 13, but driven by a fast-and-loose pulley. [DP043853]

No 15.
Scouring or milling machine (exact function not known), mid-20th century with alterations. Similar size, construction and features to 14. [DP043854]

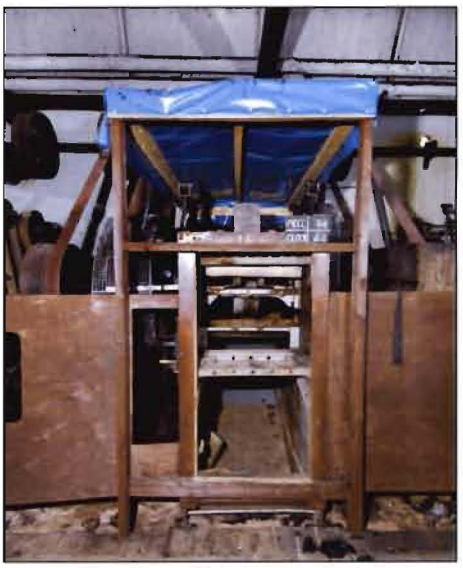
No 16.
Scouring or milling machine distinguished by unusually large main rollers, mid-20th century, wooden construction on cast-iron frame. Made by James Bailey, Slaithwaite, Yorkshire. Fast-and-loose pulley drive. [DP043855]

No 17.
Similar to machine 16, with heavy wooden rollers, but with a large wooden cowling linked to a rooftop ventilator (only example of this in the Finishing Shed, but others in the Dye Works). Mid-20th century with later alterations, maker not known. This machine was used for milling. [DP043858]

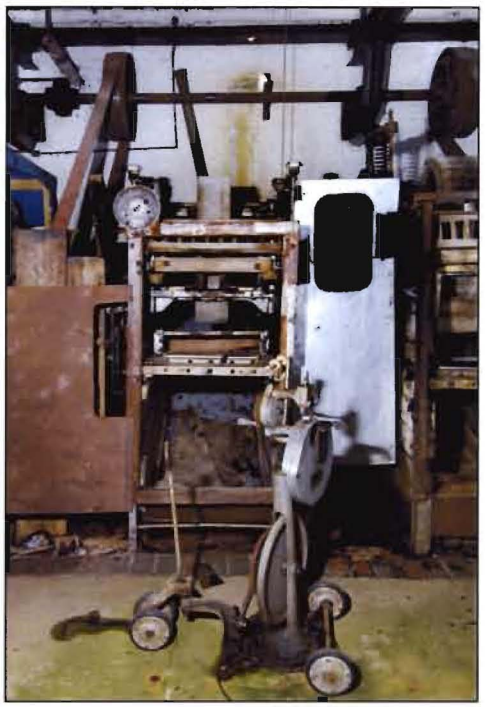
Nos 18-20.
Group of milling machines, mid-20th century, all very similar with wooden construction on cast-iron frames, maker not known. Each machine has adjustable milling rollers fed by a wooden spout mechanism. Driven by a clutch pulley. [DP043860]

No 21.
Milling machine, early or mid-20th century, solid cast-iron sides with wooden base, made by Hemmer of Aachen, Germany. Similar internal features to 18-20. Driven by a fast-and-loose pulley. [DP043869]

No 22.
Milling machine, mid-20th century, slightly larger than 18-21, maker not known, wooden construction on a cast-iron frame. Similar internal features to the other machines. A metal plate has a patent number (578599) referring to a 1946 patent for using chemicals to stiffen flannels. Driven by a clutch pulley. [DP043872]



No 23.
Milling machine, mid-20th century, wooden construction on a cast-iron frame, maker not known. Driven by a clutch pulley. [DP043873]



No 24.
Milling machine, mid-20th century with later alterations, wooden construction with a cast-iron frame, made by Leeming Webster and Sons, Dewsbury. Similar internal features to other machines. Driven by a clutch pulley. [DP043874]

Nos 25-28.
Group of similar milling machines, mid-20th century with later alterations, maker not known, wooden construction on cast-iron frames, driven by clutch pulleys. [DP043875]

No 29.
Milling machine, mid-20th century, maker not known. Similar features to others but slightly longer in plan. Driven by a clutch pulley. [DP043884]

Nos 30-31.
Milling machines, mid-20th century, maker not known, wooden construction on a cast-iron frame. Driven by a clutch pulley. [DP043886]

No 32.
Milling machine, early or mid-20th century, by Hemmer of Aachen. Solid cast-iron sides (similar to 21). Driven by a clutch pulley. [DP043891]

No 33.
Milling machine, early or mid-20th century, by Hemmer of Aachen. Similar to 32 but partially dismantled. [DP043892]

No 34.
Milling machine, early or mid-20th century, by Hemmer of Aachen. Similar to 32, mostly intact. Fast-and-loose pulley drive. [DP043893]

No 35.
Small milling machine, early or mid-20th century, by Hemmer of Aachen, solid cast-iron sides. Used for making patterns or samples for checking by customers before the main production run. [DP043895]

No 36.
Milling machine, early or mid-20th century, maker unknown, wooden construction on a cast-iron frame. Driven by a fast-and-loose pulley. [DP043897]

No 37.
Milling machine, similar date and features to 36. [DP043899]

Nos 38-39.
Equipment for handling cloth pieces and stitching into ropes and bags prior to scouring or milling. 38 comprises a narrow wooden bench with a small sewing machine mounted at one end; 39 is a tall cast-iron frame with wooden rollers. Similar equipment is shown in use in Figure 19 of the main report. [DP043901]

Nos 40-41.
Rotary shearing machines, mid- or late 20th century, by Sellers and Co. of Huddersfield, all iron and steel construction, mostly intact and in-use until c2000. 40 is a flat-bed machine, used for cutting one face of the cloth, and 41 is a hollow-bed machine which cut both faces simultaneously. Belt-driven from electric motors mounted in the roof via short sections of line shafting. Spare helical cutting rollers are stored nearby. The machines are located in a segregated room built in the late 1990s. [DP043910]

Nos 42-43.
A pair of large overhead stretching frames which were used for unravelling and flattening the cloth pieces after scouring or milling. 43 is shown in use in Fig 62 of the main report. Maker not known, presumably Fox Brothers. Mid-20th century? The tightly-wound cloth was flattened as it was drawn along the frame by rollers at the east end; it was then folded onto a trolley by additional rollers on a pivoting frame. Originally belt-driven from an extension of the south line shaft. [DP043915]

Nos 44-45.
Cloth stitching and bagging equipment, similar to 38 and 39. [DP043918]

No 46.
Teazle gig, mid-20th century, maker not known. The teazles are mounted in rectangular frames attached to a large drum, driven by a nearby electric motor. A separate frame in front of the machine supported rollers for handling the cloth. See also Figure 63 of the main report. [DP043919]

Nos 47-49.
Autoclave, electrical control panel and cloth-stretching frame, late 20th century, maker not known. [DP043922]

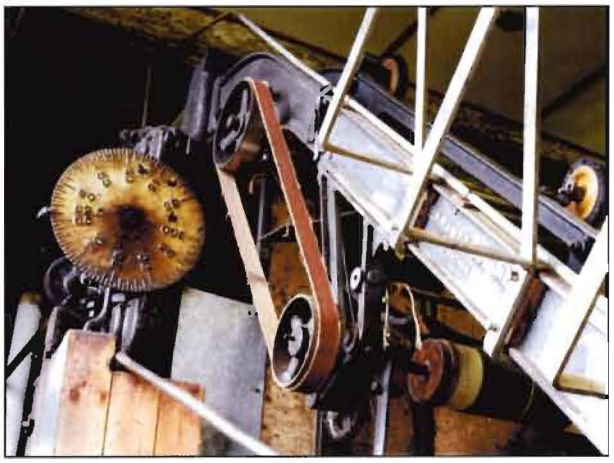
No 50.
Machine for de-rigging or setting milled cloth, early or mid-20th century. Used perforated steam-heated rollers. [DP043923]

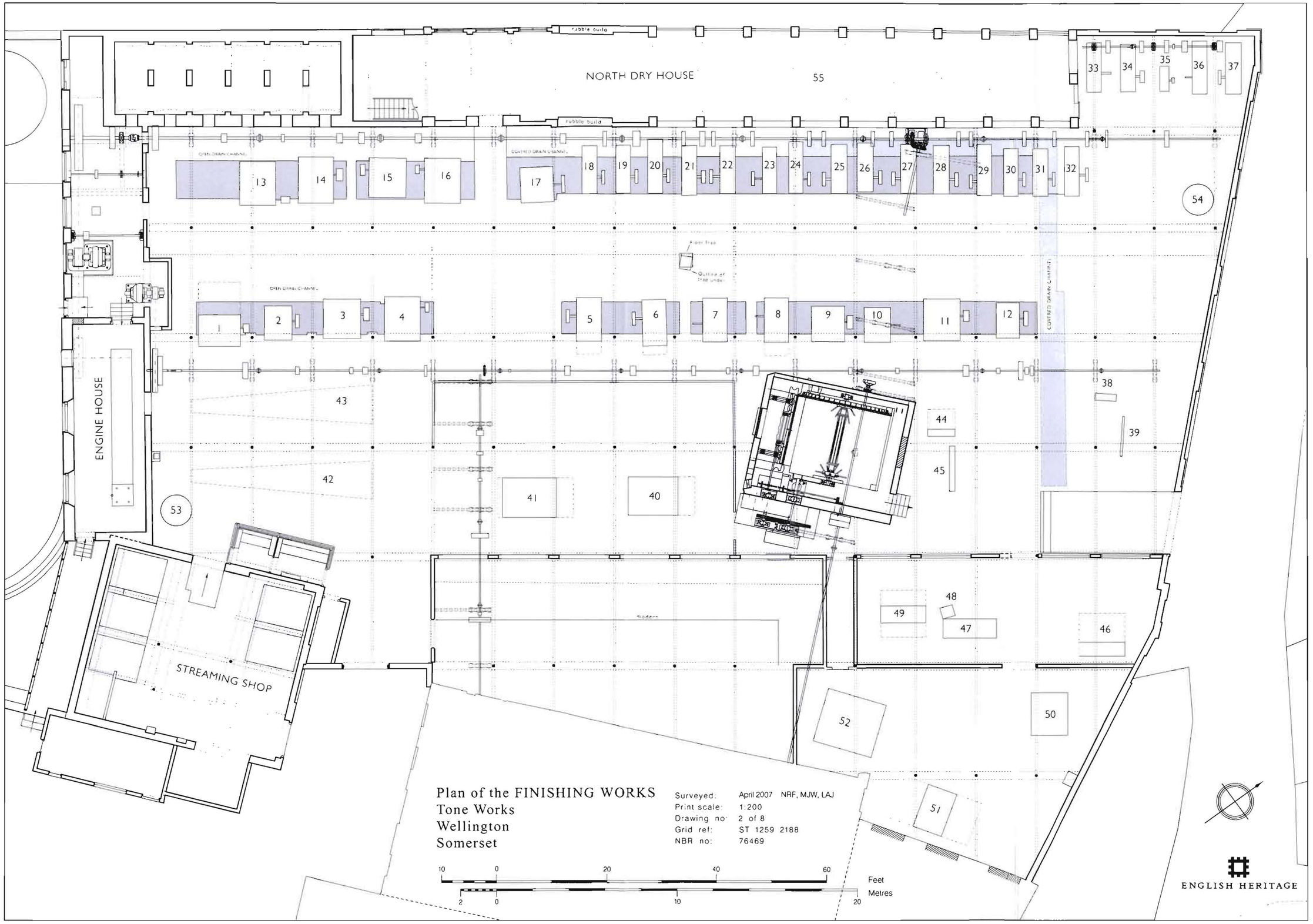
No 51.
Machine for de-rigging or setting milled cloth, late-20th century. Used perforated steam-heated rollers. [DP043925]

No 52.
Wire-raising gig, mid-20th century. Maker not known. Belt-driven from the wheel chamber main shaft, via a fast-and-loose pulley. [DP043926]

No 53-54.
Centrifuges, DC powered, by Thomas Broadbent and Sons, Huddersfield, mid-20th century. Iron and steel construction, with a DC motor beneath the floor. [DP043900]

No 55.
Tentering Machine, made by Krantz, early 20th century (1927-8). Occupies the ground and former first-floor of the eastern half of the North Drying Shed. System of rollers and conveyors feeds cloth pieces through a large gas-heated chamber. Driven by floor-mounted electric motors. [AA96/00675]




NORTH DRY HOUSE
55
rubble build
rubble build
OPEN DRAIN CHANNEL
COVERED DRAIN CHANNEL
COVERED DRAIN CHANNEL
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ENGINE HOUSE
STREAMING SHOP
Plan of the FINISHING WORKS
Tone Works
Wellington
Somerset
Surveyed: April 2007 NRF, MJW, LAJ
Print scale: 1:200
Drawing no: 2 of 8
Grid ref: ST 1259 2188
NBR no: 76469
10 0 20 40 60 Feet
2 0 10 20 Metres
ENGLISH HERITAGE