

HENRY HICKS – A MAN OF WIDE HORIZONS

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Introduction

We first encountered Henry Hicks in the GSIA Journal for 2002, in which some of his industrial activities and family background were explored. In the present article, we follow the redevelopment and modernisation of Churchend Mill, one of Hicks' cloth mills in the village of Eastington, a process that brought him into contact with a number of notable individuals and companies from the Midlands, the North and the West of England.

There is often something of a misconception that during the early days of the county's industrial development, individual manufacturers were usually ignorant of technological developments taking place in the wider world and were largely dependent on what was offered locally in terms of expertise, services and machinery. Thus, the perception is that, for instance, owners of woollen cloth mills relied almost exclusively on local iron founders, engineers, millwrights and machine makers to meet their needs. This was doubtless true when it came to day-to-day operations, when perhaps, a local millwright or blacksmith might be needed urgently to undertake a repair. However, it did not necessarily extend to situations where a major development or mill refit was being contemplated.

Clearly, the personal circumstances and wealth of an individual mill owner had a bearing on this, although an enterprising spirit was also something of a requirement, especially when it came to installing what his peers might have considered to be expensive, untried and unnecessary technology. In this respect, a well travelled and well connected, wealthy family background was a clear advantage. Horizons could then be extended beyond the immediate locality, allowing access to developments taking place in other parts of Britain and beyond. Such was the situation in the case of Henry Hicks - landowner, mill owner, major cloth manufacturer, and lord of the manor of Eastington.

Like many wealthy clothiers of the period, the Hicks family had definite pretensions and a desire to be viewed as a member of the well-pedigreed, land-owning aristocracy. It was not uncommon for individuals made wealthy through industry and commerce to attempt to 'buy' their way into this segment of society and there is evidence to suggest that, despite his family background, this is the route that Henry Hicks took. His little empire was built up largely through family connections and wealth, and through a process of systematically buying up much of the parish, he and his family soon came to dominate much of the social and industrial life of Eastington. By the early part of the 19th century, there was little in the village that was outside the direct or indirect influence of the Hicks family. Hicks bought land, farms, houses, cottages and mills in and around the village. In 1806, he even bought (from the Stephens family, lords of the manor for many years) their estate and with it, the manorial rights. Having achieved this, c1815, he built a substantial new family home (The Leaze, now Eastington Park) and surrounded it with a landscaped estate, from where he controlled his mills and other business activities.

However, there is something of a suspicion that, like some other wealthy local clothiers, his social aspirations may at times have taken precedence over matters of business. In later years, as the local woollen cloth trade began to hit troubled times, many were criticised for failing to concentrate adequately on their businesses, preferring to:

“spend their time and money on consorting with the country gentry... . Gloucestershire clothiers had not divested themselves of their yeoman predilections – imperviousness kept them ignorant of railways and steam driven machinery in the cloth factories of the north of England” (1).

Hicks’s one son, John Phillimore Hicks, certainly seems to have been this way inclined. His diaries show a distinct reluctance to concentrate on business matters, and social affairs appear to dominate his life. Only occasionally do they refer to a day grudgingly spent in the family business. There are also references to heated arguments with his father over various matters such as the introduction of newly invented machinery (such as new brushing machines) into the family’s mills. Perhaps John was uneasy about seeing part of his inheritance being spent on what he may have viewed as such mundane and unnecessary items. At one point, Henry dispatched John to Yorkshire, to visit various cloth mills and to report on the introduction of new machinery. One wonders with how much enthusiasm he undertook this task, and the nature of the report back to his father.

Henry Hicks himself seems to have had a somewhat different view of the business that he had built up and although he certainly seems to have spent his fair share of time ‘consorting with the country gentry’, at this stage in his career, he still maintained a close contact with the business and was both willing and able to investigate modern developments taking place in the cloth manufacturing process (although in later years, he largely relinquished this contact, handing over day-to-day control to a manager, Charles Hooper).

During the early formative years of his business, Hicks appears to have kept himself well informed and was not adverse to trying new things. For instance, he was well ahead of his local rivals when it came to trying out new sources of wool, the mainstay of the local industry. For instance, Australian wool first appeared in London in 1803, and became available commercially in 1807. For some years, the Bath Clothiers Committee had regularly held trials of various types and sources of wool, getting it manufactured by a number of selected clothiers in Gloucestershire and Wiltshire. Hicks was one of them. Even by the 1820s, when Australian wools finally began to make an impact in the West, he was one of only two local cloth manufacturers who knew anything of them (the other was Donald Maclean of Stanley Mills) (2). Clearly, at this time, Hicks seems to have been a man of drive and enthusiasm, one who was bent on building up his commercial enterprises and social standing.

Thus, Hicks developed and ran his little fiefdom along these lines, creating for himself a role as master over much of the local population, although unlike many of his peers, also keeping himself abreast of developments taking place beyond the locale. This awareness also extended to family matters as we shall see a little later. Some idea of Hicks’ awareness of on-going developments in mill technology can be gauged from the way in which he systematically modernised one of his Eastington cloth mills, Churchend Mill. This process was to bring him into contact with some of the most enterprising and important individuals and companies active in British industry during the early part of the 19th century, a period when technology was making great strides in many directions, perhaps no more so than in the increasing mechanisation of cloth making and the application of steam power. It also extended to the development of new more advanced water power technology, so beloved of mill owners throughout the Stroud woollen manufacturing district.

In the following sections, we follow some of the modernisations undertaken and innovations embraced as Churchend Mill was transformed from a small water-powered corn and fulling mill, to what was at the time (albeit, on a modest scale) a state-of-the-art cloth manufactory.

The processes involved in, and the contacts made during the course of this process provide interesting insights into how a conventional Stroud water-powered mill of the period could develop, as well as throwing light onto working practices of the day. The actual process took place over the course of a number of years.

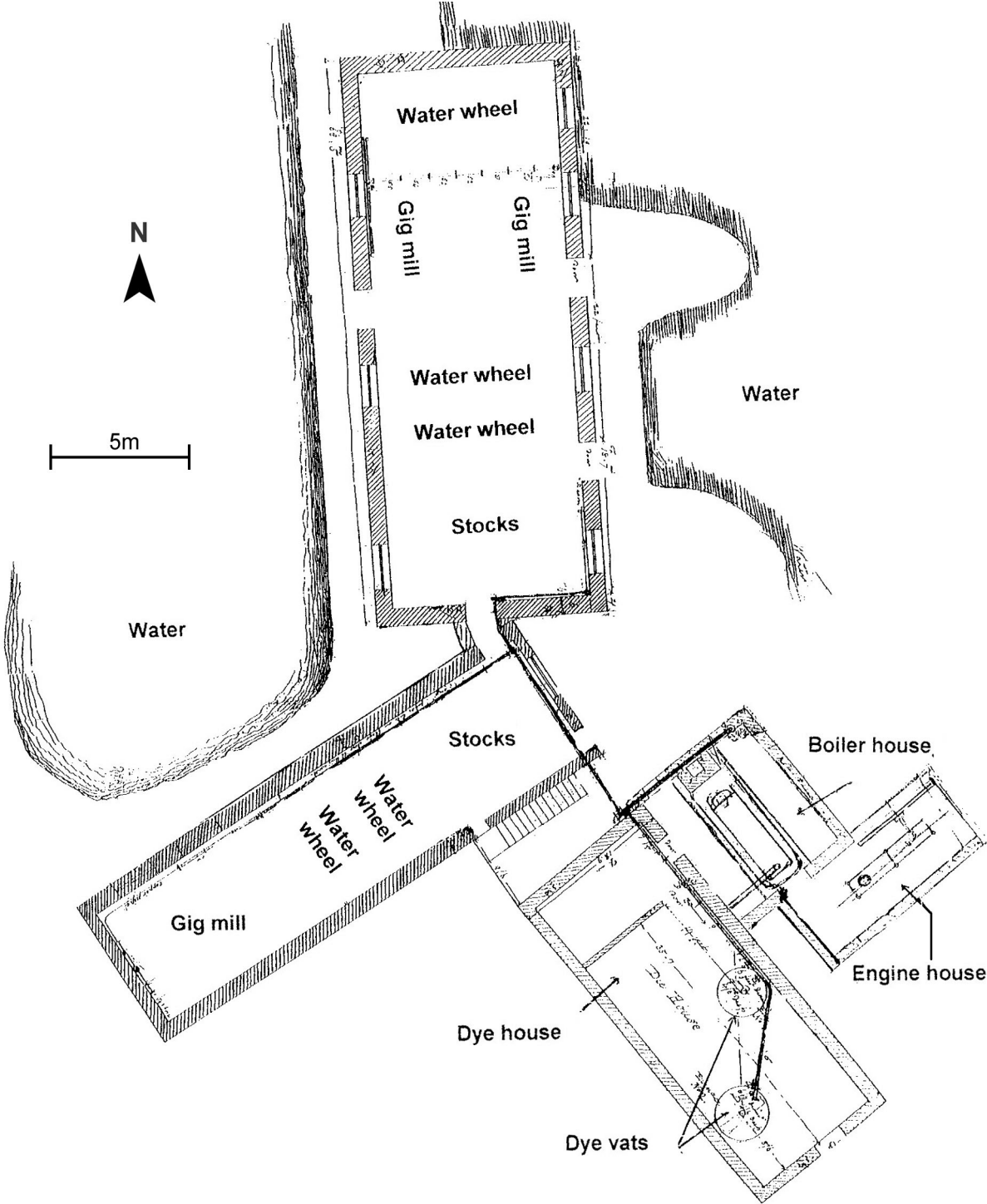


Fig. 1 Extract from Haden’s plan of the Churchend Mill site showing the three main blocks. Redrawn from drawings in B&W portfolio Pf 474. The dye house is on the right.

Modernisation begins

Churchend Mill first came into Hicks’s hands in 1799 when he bought it from the locally resident Ellis family. Within a few years, the existing mill had been substantially rebuilt and

enlarged. References to corn milling disappear from this point. This initial phase appears to have been completed by 1806 if not earlier, although further alterations were doubtless made in the following years. The new layout came to comprise three new main blocks, laid out in a fairly jumbled fashion, typical of so many other mills in and around the Stroud valleys. This often resulted from being hemmed in by existing landscape elements such as water courses, roads and various topographical features. The mill's largest block was now around 69 ft x 24 ft (1ft = 0.305m). This was linked rather awkwardly to the second (described as older and narrower - 60ft x 16 ft) at an angle of 45°. The third block was attached to the side of this block at 90° (Figure 1). Various other structures were also scattered around the site, including a wooden building used for drying teazle 'handles', used in the mill's gig mills for raising the nap of the cloth produced. In later years, additional piecemeal additions further packed the site.

Frequently, little is known about who actually designed and carried out such building works; often, it may simply have been a local millwright and/or builder. However, in this case, usefully, site plans produced by Boulton & Watt describe the rebuilt Churchend Mill as 'Mill by Mr Hewes' (noted by Kingsley, Ref. 3), an individual of some importance in this saga. This does not necessarily imply that Hewes was the actual builder, but may refer to what was often termed 'millwork' – power supply and transmission, and mill machinery. The actual builder may have been a Mr Blackwell of Brimscombe, responsible for rebuilding the neighbouring mill (Millend) for Hicks between 1816 and 1818 (4). The stone for Millend Mill was sourced from the Brimscombe quarry.

But, returning to Mr Hewes - the oddly-named Thomas Cheek Hewes was a well-known millwright and textile machine maker who first set up his business in Manchester in 1797. From here, he supplied a range of textile machinery, installed Boulton & Watt steam engines, and developed and manufactured water wheels and allied equipment (5). In particular, he is linked to the introduction of the suspension water wheel (where metal rods act as the arms of the water wheel - in a similar manner to a bicycle wheel). This was one of the most far-reaching innovations to be made in the area of water power. One of his most important early commissions was the construction and installation (c.1811) of two of the first large iron suspension wheels, in Strutts mill at Belper (6). It remains unclear as to who the wheels' actual designer was – both Strutt and Hewes have been credited with this. However, it was certainly the latter who was responsible for the widespread application of lightweight iron suspension wheels with rim gearing. By the 1820s, Hewes was active in mills and manufactories throughout much of the country, including Gloucestershire. And it was probably in connection with the rebuilding of Churchend Mill prior to 1806, that he and Henry Hicks first came into contact with each other.

Unfortunately, we do not know what Hewes's precise role was in the mill's rebuild, although on balance, it seems likely that he may have been responsible for the modifications and improvements made to the mill's water supply and the installation of new water wheels, possibly extending to the internal gearing and power transmission systems. Certainly, as more machinery was installed in the mill, so the power requirements continued to increase. In addition, at times, the mill suffered from a lack of water, stopping production until sufficient had been impounded so as to allow the resumption of operations. There are references to mill workers standing idle during the intervening period (7). So, there were probably two good reasons for Hicks to bring in this notable engineer, namely to increase the power to the mill, but also to smooth out the sometimes irregular water supply. Thus, the existing mill leats were improved and a new completely artificial channel dug, regulated upstream by a new weir built (of slag blocks) on the Frome. The layout of the mill and its various watercourses are shown in Figure 2. At the completion of the improvements made to the water system, two of the mill's

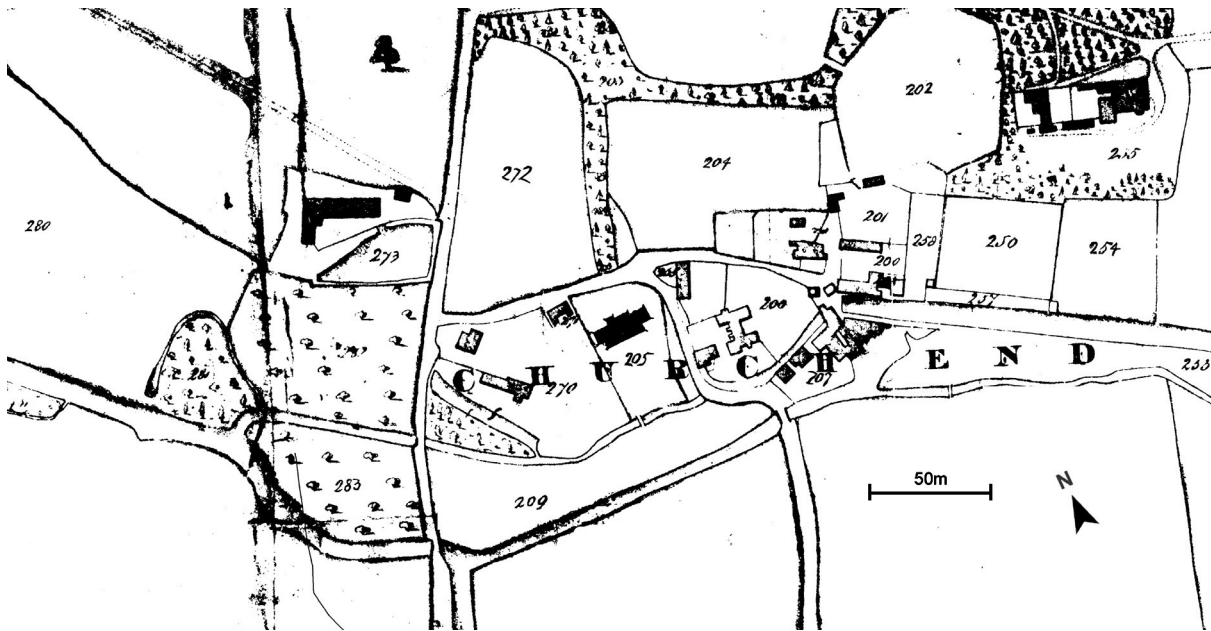


Fig. 2 Extract from of the Eastington Tithe Map of 1839 showing the diverse nature of the Churchend Mill site. The mill is in the centre and the Hicks family residence to the top right.

main blocks housed at least five water wheels, driving different pieces of equipment. The larger of the two blocks contained three wheels. One appears to have powered two gig mills, with two others each driving a set of fulling stocks. In the second block were two wheels, one powering a set of stocks and the other a further gig mill. In the corner of the building, the Boulton & Watt drawings (8) also noted the presence of a small pump worked by one of the water wheels, used to raise water 9 or 10 feet above the mill floor.

Given the fall of water in this area, the water wheels would have almost certainly been breastshot. However, at this date, they were probably of conventional construction, as the Churchend refit pre-dates the installation of the suspension wheels at Belper by a few years.

Proposals for steam heating

Chronologically, the next important stage in Churchend's redevelopment was Hicks's consideration of introducing a heating system based on the use of steam. It appears that the first mill to be heated with steam was a cotton works in Speyside in 1799 (9) and within a few years, Boulton & Watt were offering such systems. Their first successful commission was carried out in 1802, and was followed by a number of other orders for warehouses, mills, theatres and private residences (further details are given in B&W Mss Pf 1334 Ref. 8). However, Boulton & Watt later moved away from manufacturing heating systems in general, with G & J Haden of Trowbridge moving to the fore in this field. Indeed, between 1820 and 1855, around 1500 warm air heaters of various designs were manufactured at their St George's Works for a wide spectrum of clients (10). There were strong commercial and personal links between the Hadens and Boulton & Watt.

The initial examination for Churchend Mill appears to have come in 1816 when Boulton & Watt were contacted and asked to prepare a scheme for heating at least one of the site's main blocks with steam. A site visit was presumably arranged and their travelling agent, George Haden (junior), despatched to prepare suitable drawings. These show runs of pipes running through all three floors of one of the mill's main blocks (the 68 x 24 ft building) possibly even

extending into the attic space. Haden's notes comment that on the first floor, the pipes could be suspended from the existing beams or housed in a recess but could not be run at certain points because of the presence of machinery. He also noted that the horizontal pipes should dip a little in the direction of the arrows (shown on the drawings). By this means, all condensed steam collected once again in the boiler. This avoided cold water being left in the system. If not drained, when steam was re-admitted, the pipes could crack, resulting in an explosion. The proposed system was fitted with siphons and air cocks to ease draining and bleeding.

It is not clear if the Churchend scheme actually proceeded at this date as there is no mention of a boiler (necessary for the supply of steam) at the site, and it seems likely that it was not until the steam engine and boiler house were added a few years later that the proposal was finally acted upon. The system was presumably intended to supply space heating to the mill, but it may have also been intended for cloth drying. The Boulton & Watt papers (dated 13 June 1821 Ref. 8) include correspondence with Hicks & Sons about 'smoke burning and drying cloth by steam'. When the engine installation was carried out in 1822, the proposed steam heating system was extended also to heat the mill's dye vats (see below).

Steam arrives

When it came time to investigate the installation of steam power at Churchend, Hicks had little hesitation in returning to Boulton & Watt, having previously bought a 10 hp independent engine from them in 1818 to power Bonds Mills, nearby in Stonehouse. Plans for installation of a second independent engine (of 14 hp) were being made for Hicks's other Eastington mill at Millend, this undergoing a substantial rebuild at around the same time. Boulton & Watt's usual practice was to dispatch a travelling agent to survey the site and prepare drawings in readiness for the erection of the engine. This brought Hicks into contact with George Haden Jnr (he had already met him in 1816 above), a son of George Haden Snr, founder (in 1816) of the well-known Trowbridge foundry, millwright, engineering and heating company of G & J

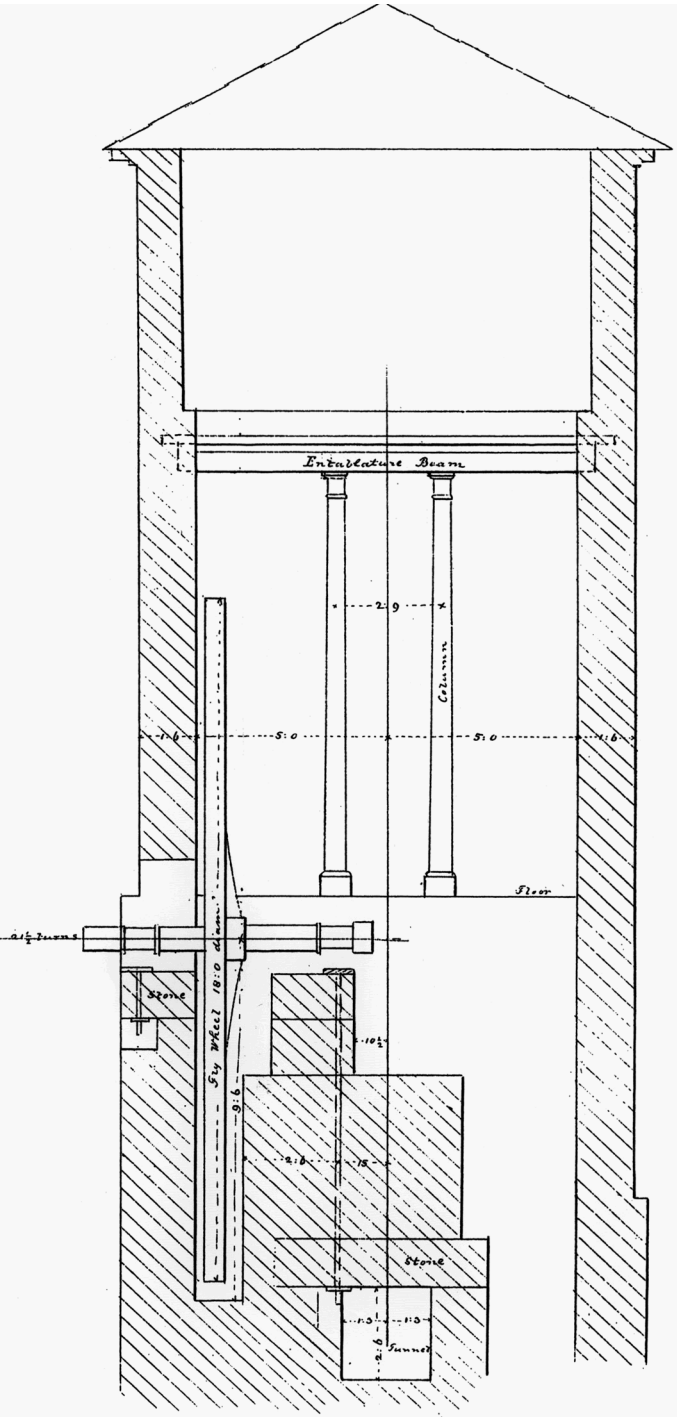


Fig. 3 Detail of the Boulton & Watt section of the new engine house. From B&W Portfolio Bf 474.

Haden. George Haden Snr. had had a long history with Boulton & Watt, as from 1809 he had worked as their travelling agent and engineer, erecting and commissioning Boulton & Watt steam engines in different parts of the country. Usefully, George Snr. had three sons, either articulated to, or apprenticed to, Boulton & Watt (8,10). On completion of their apprenticeships, all three also became agents for the company. George Jnr, was one such son, and it appears that it was he that was sent by Boulton & Watt to Churchend Mill in 1822 to prepare the necessary plans and drawings in readiness for the installation of the new engine.

The plans prepared by Haden are fairly typical for the period. Although they include a number of notes and sketches, by today's standards, the engineering details are remarkably rudimentary. However, his plans provide what is probably the only surviving documentary evidence for the mill's layout both before and after the installation of steam power. They provide a general layout of much of the site and some of the water courses, with sketches and dimensions of the main buildings. The proposed locations for the new engine and boiler houses are also shown. Although, inevitably, each mill site was different in detail, both the engine and boiler and their respective buildings seem to have adopted what was standard practice for the time. Overall, many useful details can be gleaned from Haden's drawings (Figure 1).

- ***The boiler***

The boiler was 16 ft long and stood nearly 9 ft high from the firing floor, beneath which was a sizeable ash pit. The main tube running lengthways through the boiler was roughly rectangular (2 ft square) and flue gases were exhausted from the end of the boiler via a square brick-built chimney. The boiler house itself was rectangular and attached to the side of the existing dye house. From here, steam was supplied to the steam engine housed in a second new building adjacent to the boiler house. The boiler house was roughly 14 ft wide, 18 ft long and 20 ft high inside. It is not clear if it was built from stone or brick.

- ***The steam engine***

The engine was a typical single cylinder beam engine, rated at 24 hp. The iron flywheel was 18 ft in diameter and was carried on a 7½ inch diameter shaft. The axle height was slightly below floor level, with over half of the flywheel set into a deep, narrow slot, much like the pit wheel in a traditional water mill. The axle's main bearings were supported on substantial blocks of stone. Long iron bolts of around 6 ft in length passed through the blocks, holding the bearings in place. Stone blocks were also used to support the base of the cylinder, which was held down in a similar fashion using iron rods or bolts nearly 12 ft in length. The air pump (around 5 ft tall) and the condenser were mounted in the space between the supporting structure for the cylinder and the stone platform that supported the pair of slender iron columns with decorated capitals that carried the entablature beam and upper structures such as the parallel motion linkage. The engine house was of the usual Boulton & Watt design, being tall and narrow (Figure 3); inside, it was only 10 ft wide. The walls were 1ft 6 inches thick and built from local brick.

Unfortunately, the Boulton & Watt drawings do not show by what means the drive from the engine was taken into the mill's two powered blocks. Although the engine was located some way from the narrower of the two, it was at least parallel to it. This would have allowed the use of an iron shaft from the engine, probably taking the drive through 90° via bevel gears somewhere outside the building. The drive to the second building would have been a bit more problematic, as this was attached to the first building at roughly 45°. But doubtless, a similar arrangement was used. It appears that shafting must have run across the yard behind the two buildings although this must remain conjectural.

At the time of the Churchend engine's order, despite the installation of a handful of engines during the preceding decade (notably Edward Sheppard's Uley cloth mill in 1805, W & P Playne's mill in 1814, and William Purnell's tinplate rolling works at Framilode) steam engines remained something of a rarity in much of Gloucestershire. The fact that by the 1820s, Hicks had been responsible for ordering no less than three of this small total underlines his confidence in the technology. By 1826, he had even added a fourth engine to his third newly-built Eastington mill (Meadow Mill). With each new installation, the horse power of the engines increased progressively (Table 1) (3,4). Figures 4 and 5 show some of the mill buildings in its final days.

Table 1 Boulton & Watt engines bought by Hicks				
Location	Date of order	Cylinder diameter and stroke (ft. In.)	Horse power	Engine type
Bonds Mill	1818	19.75" x 2' 6"	10	Independent
Millend Mill	1821*	3'	14	Independent
Churchend Mill	1822	5'	24	Beam
Meadow Mill	Nov 1826	5'	30	Beam

(Notes: * Initial consideration of an engine for Millend may have been 1816 (Tann, Ref. 9, p30) or possibly 1818; B&W drawings of 1818 show a sketch of an attached engine house. The order date for the engine came later in 1821 (3). The mill is generally considered to have been completed c1818). Sources for Table: (Ref. 8) B&W portfolios 959/order book DX 9; 979/GM 8; 474/WT 10; and 500/US 10).

Steam heating revisited and heating of the dye vats

It seems likely that the concept of heating the mill with steam was revisited as part of the installation of the mill's steam engine in 1822. It may be that the opportunity was taken to extend the original scheme for heating one building to all three main blocks. Haden's drawings clearly show runs of pipework passing into the two blocks that housed machinery and water wheels, but now, also into the dye house, set at 90° to the older (and narrower) of the mill's two main buildings.

Dyeing of woollen cloth was a highly skilled occupation, one that not all manufacturers were able to master successfully. Techniques and recipes were frequently arrived at after years of experience and experimentation and were guarded jealously. It was commonly put about that the quality of the dyeing was a result of the local water supplies. However, this myth may have been encouraged by local dyers, intent on protecting their secrets, particularly of scarlet dyeing, a colour that the Stroud area was rightly famous for. Rudder realised that this success lay not in the water but the techniques used:

The beauty of their colours is very great, to the perfection of which the Froom water has been erroneously supposed to contribute, for it is most assuredly owing to the skill of the artist (11)

If a particular manufacturer was unable or unwilling to dye his own cloth, it was not uncommon for it to be sent out for dyeing by a third party, perhaps another manufacturer or a specialist dyer. Hicks dyed his cloth on site in a dedicated die (sic) house. The quality and finish of his cloth was regarded highly, so clearly his dyers had mastered the skills and techniques necessary to achieve a high quality, consistent finish. During the early years of the 19th century, the purchase of specialist dyestuffs formed significant outgoings in the company's books. For instance, on 12th December 1814, Messrs H Hicks & Sons were invoiced by J Hawker & Co

(of Stroud) for 400 lbs of cochineal at 40/- per lb...£800. Likewise, on 29th December of the same year, an invoice was placed with Ames's, Gadd and Wait (of Bristol) for 6 Hhds (Hogsheads) of chipt logwood - at 19/- per cwt...£40-14-1. In other words, a lot of money! Hicks' cloth may have been of good quality, but it was certainly expensive. Occasionally, for whatever reason, he provided scarlet cloth for the local church without charge. At other times, presumably when he was feeling less magnanimous, he made sure it was paid for. For instance, the church wardens' accounts for 1832 show expenditure of £8-10-0 for crimson cloth supplied by Hicks Brothers.

We are fortunate that George Haden's notes provide a few details of the processes involved in dyeing at Churchend. He notes that:

They have a small fire under the furnace all night – start work at 4 or 5 in the morning. Begin to prepare the liquor which may take till 8. They then dye cloth till about 3 in the afternoon, when the boiler is emptied. Dye 5 pieces of 40 yards each day. With the fire under they make the liquor boil in 1½ hours.

Hicks' dye house contained two vats, each around 6 ft in diameter and 4ft 6 inches deep. Each sat above its own furnace (roughly 4 ft tall) that was presumably heated with coal. The 1822 reworking of the mill included proposals to replace these furnaces with a new heating system, supplied with steam from the new boiler house. Haden noted that in order to minimise heat loss, *those pipes not wanted to give out heat should be well coated with straw rope and plaster.*

Hicks and Dr Jenner

So, there is no doubt that Henry Hicks had a number of influential colleagues and contacts in the industrial world, but his circle of friends extended beyond this. Perhaps one of the most notable was Berkeley resident Dr Edward Jenner of smallpox fame. As everyone knows, Jenner was the country doctor who pioneered vaccination, having discovered in 1796 that inoculation with cowpox provided immunity to smallpox. An epidemic of smallpox had swept through Gloucestershire in 1788 and Jenner was one of the doctors involved with the outbreak. It was he who noticed that people previously infected with cowpox, escaped the ravages of smallpox. He noted that even when entire families succumbed to smallpox, cowpox victims remained unaffected and healthy. In 1796 Jenner carried out his first inoculation experiment and within a short period, it became apparent how effective the vaccination treatment was.

Jenner and Hicks were friends. Hicks was clearly confident enough in Jenner's work to let him loose on two of his children, along with a clutch of his servants and mill workers (one wonders how enthusiastic the latter actually were!). In 1798, Jenner recalled (12):

Having been requested by my friend, Mr. Henry Hicks, of Eastington, in this county, to inoculate two of his children, and at the same time some of his servants and the people employed in his manufactory, matter was taken from the arm of this body for the purpose. The numbers inoculated were eighteen. They all took the infection, and either on the fifth or sixth day a vesicle was perceptible on the punctured part. Some of them began to feel a little unwell on the eighth day, but the greater number on the ninth. Their illness, as in the former cases described, was of short duration, and not sufficient to interrupt, but at very short intervals, the children from their amusements, or the servants and manufacturers from following their ordinary business.

Three of the children whose employment in the manufactory was in some degree laborious had an inflammation on their arms beyond the common boundary about the eleventh or twelfth day,

when the feverish symptoms, which before were nearly gone off, again returned, accompanied with increase of axillary tumour. In these cases (clearly perceiving that the symptoms were governed by the state of the arms) I applied on the inoculated pustules, and renewed the application three or four times within an hour, a pledget of lint, previously soaked in aqua lythargyri acetati, and covered the hot efflorescence surrounding them with cloths dipped in cold water. The next day I found this simple mode of treatment had succeeded perfectly.

So one assumes that all the guinea pigs came through the treatment safely!

Finale

Henry Hicks was an interesting character – a man whose family background was in the landed aristocracy, yet with his feet firmly on the ground when it came to business matters. In some ways, he clung to the old ideals and was both remote from, but paternalistic towards, his mill workers. And yet his horizons and interests spread far beyond the village of Eastington, with important links and contacts with some very notable individuals and organisations both within the industrial world and beyond.

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Fig. 4 A photograph (c1900) looking from Millend Mill towards Churchend Mill. On the extreme right is part of the maltings kiln of Millend Mill. The adjacent house survived until the late 1980s. The tall chimneys beyond belonged to Hone's bakery, demolished at some point around the middle of the 20th century. A few vestiges of both house and bakery survive.



Fig. 5 A photograph taken in the grounds of Eastington school, adjacent to Churchend Mill. The event is the annual crowning of the May Queen. Perhaps ironically, many of the youngsters in the picture, like their predecessors, would have simply moved next door to work in the mill. However, at the time of the photograph (c.1910) the mill appears to be semi-derelict.