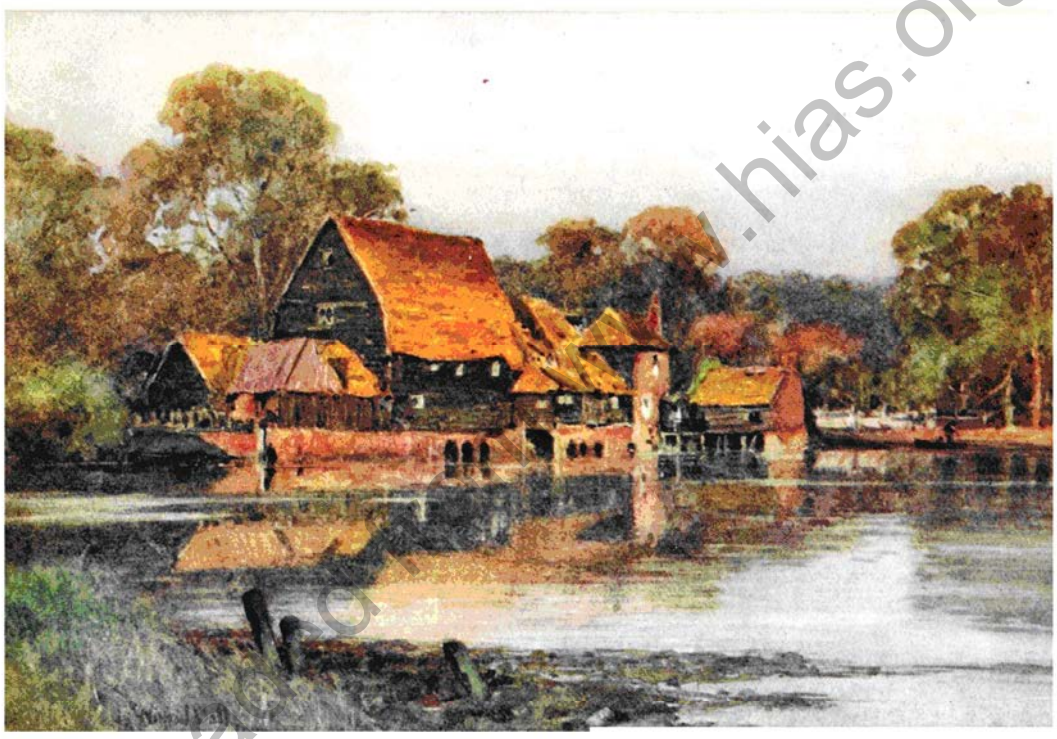
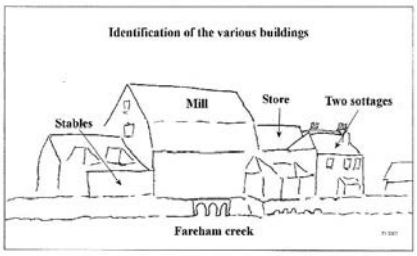
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Hampshire Industrial Archaeology Society

Journal





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No. 17

2009

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Front cover picture:
Cams Tide Mill, Fareham. Painting of the Mill, *circa* 1800.

Back cover pictures:
UPPER; *The Restoration of Winchester City Mill.* Replacing wooden teeth in the great spur wheel.
LOWER; *Crossing borders – Fareham Chimney Pots.* Detail of the banding on the top of a pot.

Hampshire Industrial Archaeology Society

(formerly Southampton University Industrial Archaeology Group)

Journal No. 17, 2009

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Editorial

Welcome to Issue **17** of our *Journal.* Once again the *Journal* has articles on a variety of Hampshire subjects.

We start with two articles on flour mills. Tony Yoward has researched Cams Tide Mill, Fareham, a mill which no longer exists, whilst Bob Goodwin tells about the restoration of Winchester City Mill which, after seventy five years as a Youth Hostel, has been restored to working order by the National Trust, and has now produced flour for five years. Jeff Pain details the story of the development of Southampton as a port at the start of the twentieth century. Ian Sturton updates a Victorian view of life on board one of the first turret battleships of the Portsmouth battle fleet. Fareham was, for a long time, famous for its brickworks. Alan Green tells us about another Fareham industry, that of making chimney pots, of which, more survive in Chichester and out of County than in Fareham, and the rest of Hampshire. As a tailpiece, Roger Hedge muses on waste tips, those mines of artefacts beloved of both IA and mainstream Archaeology.

Martin Gregory
March 2009

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Edited and produced by Martin Gregory

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The Contributors

Alan H. J. Green

Alan Green is by profession a chartered civil engineer, but since entering semi-retirement he has fulfilled a long ambition, that of writing and lecturing on his passions for local history and the art and architecture of Georgian Britain. He is a member of the Georgian Group (whom he represents on the Chichester Conservation Area Advisory Committee), the Bath Preservation Trust, Chichester Local History Society and Sussex Industrial Archaeology Society. He has written three books*; St John's Chapel & the New Town Chichester*, *The History of Chichester's Canal.* and *The Building of Georgian Chichester*.

Bob Goodwin

Bob Goodwin has been employed by The National Trust at Winchester City Mill for 7 years, having previously worked for 33 years in electronics research. He and his wife have worked as volunteer millers in Lurdgashall Mill at The Weald and Downland Open Air Museum near Chichester for about 20 years and it is hardly surprising that the milling operation at Winchester closely mirrors that at this museum. Bob is helping Winchester City Mill celebrate 5 years of milling in 2009 and he is especially pleased to have recruited 8 volunteer millers, and a similar number of assistant millers, in that time.

Roger Hedge

Roger Hedge graduated from Imperial College in Chemical Engineering. He spent his working life in commercial R&D in a variety of industries. He was Southern Region Secretary, for 12 years, of the CEI / Engineering Council. As well as IA, he is active in Experimental Archaeology, being Chairman of the Friends of Butser Ancient Farm, as well as being a past Chairman of HIAS. He is an Affiliate of the Institute for Archaeologists, based on many courses and field trips, plus his research expertise applied to Experimental Archaeology. He completed Tony Hamlin's unfinished Monograph on the *Origins of Tin*.

Jeff Pain

Jeff Pain has been a member of the Hampshire IA group since its early days in the 1960s. He was born in Southampton and, apart from wartime, has always lived and worked in the area. Educated at Taunton's School, he followed his father into the shipping world, being employed in Freight, Passenger and Ship Agency work. After the reorganisation of shipping, he spent twenty years or so with Pirelli, first at Southampton and, when that closed, at Eastleigh. His main interest has always been in transport covering ships, railways and aircraft, with road interest limited to trams and buses.

Ian Sturton

Ian Sturton has been an enthusiastic investigator of post-1860 warships and warship designs for many years, publishing and illustrating articles in a number of journals. He has retired recently from Winchester College Science School.

Tony Yoward

Tony Yoward grew up in Swindon and moved to Emsworth in 1952 to manage, and later own, the Pharmacy. He is now retired. He always had an interest in Industrial Archaeology, especially canals, and has served on the AIA committee. In 1970, he moved into the converted Slipper Mill building and his interest in mills took off. He has published a 'Glossary of 3500 mill terms' and is the Archivist for the Hampshire Mills Group. He has been a member of the SPAB Mills Committee, Chairman of SUIAG and was one of the founding trustees for the Mills Archive, a website for British Mills.

Acknowledgements

My thanks are due to all who have contributed to this edition of the *Journal*. Acknowledgements and thanks for the provision of illustrations are made as follows:

Alan Godfrey Maps, (Fig. 22); Alan Green, (Figs. 49-53 & back cover, lower); Martin Gregory, (Fig. 43); Roger Hedge, (Fig. 54); The National Trust, (Figs. 11-21 & back cover, upper); Jeff Pain & Penny Phillips, (Figs. 23-40); Ian Sturton, (Figs. 41, 42, 44-48); Tony Yoward, (Figs. 1-10 & front cover).

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Cams Tide Mill, Fareham

Tony Yoward

As you approach Fareham from Portsmouth on the old road and reach the railway viaduct, Fareham Creek is on your left and you pass the site of the Cams Tide Mill. This creek is where the River Wallington enters the upper water of Portsmouth Harbour. There is nothing to tell you where the mill was except for a small plaque on the road bridge over the river, bearing the inscription*: 'Below this road two mills harnessed sea power to grind corn for Fareham and elsewhere, for 900 years from pre-conquest days to the Great War'.*



Figure 1. Site of the mill pond for Cams Tide Mill

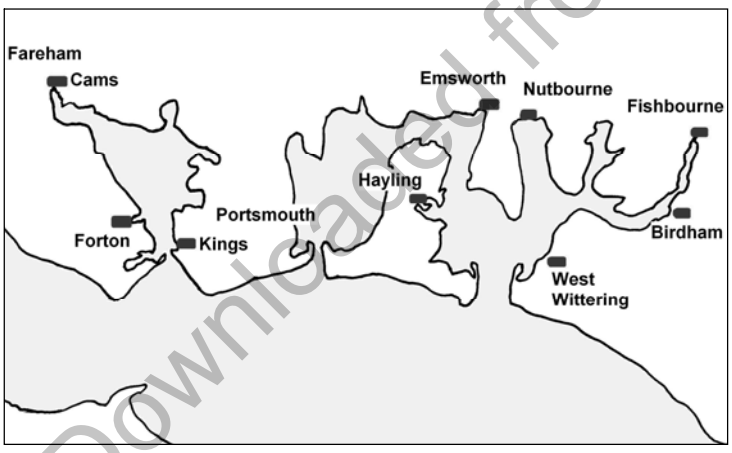


Figure 2. Sites of tide mills in the Portsmouth area

The Portsmouth road cuts across the head of this inlet, on a causeway with tidal-gates swinging inwards, through which the tide flowed into a large natural reservoir; the water being used to work the old mill already known as the 'Tyde or Sea Mill' [1]. This large sheet of water has been reclaimed and is now a traffic roundabout, dual carriageway and a supermarket (Figure 1).

From the eleventh century onwards tide mills were built as attempts were made to harness the power of the sea. Sea walls or causeways were built across suitable tidal rivers or small inlets thus impounding water and enabling a mill to work as the tide receded. The flood tide was allowed to run upstream unhindered, through the tidal or sluice gates which closed gently as the tide turned at high water, without having any human intervention. This provided the head of water that the mill could use. When the tide below the mill had dropped sufficiently, the retained water was allowed to escape through the mill race to power the mill which was usually driven by undershot wheels set below the floor of the mill.

However storms and high tides were a constant threat and tide mills could be easily damaged or completely inundated. At high water springs, the tide would be lapping at the floorboards; at low water the whole of the wheel might be exposed above the muddy water.

The wide tidal range, around the British Coast, has enabled tide mills to be built in many parts of the country, especially were there was a large population to feed and insufficient sites for more water mills to be built. Figure 2 shows locations of tide mills around the Portsmouth area.

Unsocial working hours are nothing new, the miller's day at a tide mill was regulated by the tides, but he was assured of power for two periods, each of three or four hours duration, so he could be milling at midday and twelve hours later at midnight and, as tides are approximately an hour later each day, his working hours moved on. These irregular, but predictable, shifts were reckoned no hardship in a coastal community, where men's lives were geared to the phases of the moon and not to the sun.

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The early history of Cams Tide Mill is fragmentary. There was a claim under assignment of lease for two water corn mills in Fareham, County of Southampton, held under a lease from the Bishop of Winton in Elizabethan times [2]. The *Victoria County History* states that there were two mills at Fareham in the 17th century, the 'Tyde or Sea Mill' and Wallington Mill rented at £4 in money and five quarters of wheat [3]. Shaw in the *Proceedings of the Hampshire Field Club* says the tide mill had been built before 1620 [4].



Figure 3. Cams Mill alongside the old Portsmouth road c 1900.

Cams Tide Mill was a timber construction, with a brick miller's house adjoining. It is first mentioned in a document of 1648. The tidal mill pond was constructed by building a causeway across the tidal inlet to enclose an area of water to enable it to be used to power the mill after the tide had fallen. In the case of Cams mill it also had a supply of fresh water to boost the pond level, from the Wallington Brook which flowed into the mill pond at its northern end.

In the year 1737 Edward Goodeve and his wife Mary were the millers at Fareham Tide & Wallington Wind Mill and `between them they worked these mills' for another 20 years [5]. Edward Goodeve died in 1757 leaving Mary a widow with seven sons: Edward, James, Joseph, Benjamin, John, William and Pike Sheppard. The youngest son was only six at the time, and Edward in his will left everything to his wife [6]. Mary Goodeve then took over as the miller [7]. This was not unusual especially if there were sons who were able to take on the milling.

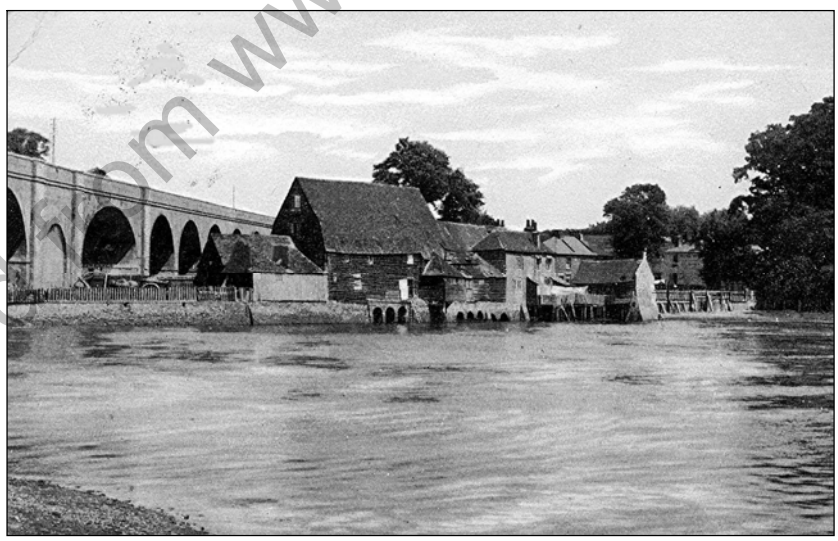


Figure 4. Cams tide mill c 1900. The railway viaduct runs behind.

Twenty years later, in 1777, Mary gave up as miller, but died three years later and the three eldest sons took over. Seven years later [8], the youngest son, Sheppard Goodeve, is listed as the miller.

In 1792 a James Godwin, a miller of Fareham, insured the utensils and stock in his water corn mill 'situate as aforesaid, timber and tyled, £1 200'. Also, the house and offices adjoining in North Fareham, in the tenure of Jno. Carpenter, £150 [9].



Figure 5. The same view in 2007

In 1810 the trustees of the Titchfield and Cosham Turnpike Road wished to widen the causeway and to erect a wooden

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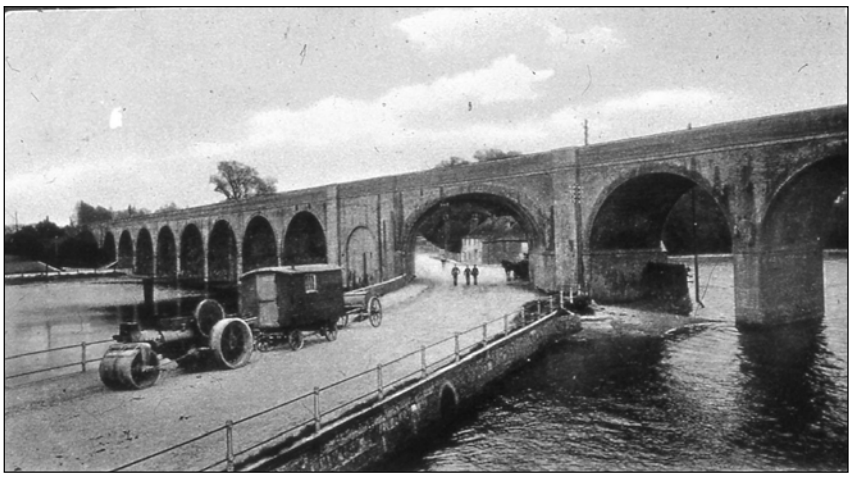


Figure 6. A view through the viaduct to the mill beyond. The roller and living van are on the causeway, with the mill pond at the left and the harbour on the right.

bridge parallel to the present bridge at Fareham mill. 'The bridge to be of oak and the ends to rest on the two brick pillars, now building' (Addendum 2). By 1830 James Godwin is occupying and leasing East Cams mill according to the *Hampshire Chronicle* of the 22nd of February.

Fareham Tide Corn Mill is to let in 1844 [10] and the Clarks are the next millers there. Richard and Henry Clark are at East Cams Mill and West Street Mill [11] in 1842, but by 1852 it is Henry & Son at the Tide Mill and 26 years later, in 1878, a Henry Clark is milling there. Cams Tide Mill was part of Fareham town but became a little isolated when the railway viaduct was constructed in 1848. However, it would still have been a main supplier of flour to the town.

In 1883, the *Miller* journal of the 2nd July, advertises that Fareham tidal mill, with five pairs of stones, is to let, stating that, for a description of the mill and terms apply to the agent, Cams Hall, Fareham. A miller, Mr. Barnes, bought the mill in 1895 [12] and continued milling there for a few more years but, by 1914, the mill buildings, which were chiefly 17th century and mostly of wooden construction, with an early 18th century house attached, were falling into disrepair.

In 1915, Mrs Ramsey, of the Cams Hall Estate, said she would be willing to purchase the mill with a view to its repair and preservation and give or lease it at a peppercorn rent it to a Society who would look after it. The SPAB was one of the societies to which the mill was offered, and as a result a very detailed report was made by William Weir in 1915 (Addendum 1). Nothing further was done and the mill continued to deteriorate and by 1920 the roof had gone along with most of the upper structures. In 1923 the mill was dismantled with only the arches on which it stood remaining.

An article in the *Hampshire County Magazine* in 1967 that claimed the mill was sold and eventually shipped, 'stone by stone', to the United States, where it is said to have been re-erected in its original form, but this is untrue. However, that is not quite the end of the story. In 1993 Cams Hall was in a very dilapidated state. The estate was purchased, the hall was totally restored and Cams Hall Estate, of about 220 acres, is now a business park and golf course. The developer wished to build a replica of the tide mill, incorporating a restaurant, near the original site, but owing to many objections, the application was withdrawn. So, there is no tide mill or replica, only a small plaque to remind us of the mill's history and of the many centuries of milling there.

Addendum 1 (William Weir's report, 12th May 1915)

In accordance with your request I visited this old Mill on the 8th inst. when I was kindly met by Mrs. Ramsey who has a lease of Cams Hall estate adjoining.

The Mill has not been used for some years and the buildings are falling into disrepair. Mrs. Ramsey, who thinks of purchasing the Cams Hall estate, would be willing to help towards the cost of purchasing the Mill with a view to its repair and preservation.

The Mill is situated on the main road to Havant, on a narrow strip of ground between the roadway and the Creek adjoining the Cams Hall estate. The water passes under the mill and the roadway, with the tides, in a series of culverts and is regulated with sluice gates for the working of the Mill. A considerable portion of land on the other side of the roadway is occupied by the head of the Creek and belongs to the Mill.

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Mrs. Ramsey is most anxious that the buildings should-be repaired and saved from destruction, but is afraid it will not be possible to obtain the necessary funds in the neighbourhood. She mentioned about £400 as the purchase price.



Figure 7. The derelict mill, c 1920, soon after Mr. Weir's report, from the Portsmouth Road side.



Figure 8. The derelict mill, c 1920, from the harbour.

The mill, which dates from about the middle of the 17th century, is an Interesting and beautiful building. The main portion is about 50 feet in length and 22 feet in width. It is constructed of timber, weather boarded, and has a high mansard roof covered with hand-made tiles. Beyond there is a lower building about 60 feet in length with the roof springing from the same level as the main building but of flatter pitch. The portion at the end consists of a two storey cottage, built of brickwork, and the remainder is of timber weather boarded in a similar manner to the main building. It appears to have contained the grinding stones and other machinery of the mill. The machinery unfortunately has been removed with the exception of the water wheel, underneath, and its main upright shaft and pulley gear on the first floor. At the other end of the main building is a low timber building fitted up as a stable.

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The main building consists of a ground and upper floor and two additional floors in the roof space. The timbers are of oak with the exception of the roof which is of deal. The ground floor is level with the roadway and the timbers of the walls are supported on a foundation of brickwork about one foot in height.

The state of the oak timbers is fairly good. The weatherboarding, which is of deal, tarred externally, is in good repair.

The roof timbers, although slight, are sound. The tiles which are local handmade, appear sound and securely fixed with pegs on rent fir laths. In portions of the lower slope of the mansard roof some of the tiles are displaced but not to a serious extent.

The portion between the main building and the cottage is also constructed of oak, excepting the roof timbers which are of deal. It consists of a ground and upper floor with a loft in the roof space. The timbers and the

weather boarding appear to be sound and in good repair, but the roof tiles are slipping off owing to the decay of the pegs with which they are fixed.

The cottage, which is occupied by a workman and his family, is in rather bad repair, and a portion of the back wall is bulging outwards in a dangerous manner. The walls otherwise are sound and only require slight repairs.

The most serious trouble appears to be the flooding of the cottage and the portion of the adjoining mill, every "spring" tide. Slight settlements have occurred but they do not appear sufficient to account for the flooding and it would appear that the height of the water must have increased if the house was not flooded until recently. Means may be found to obviate the trouble or, failing which, the floor level could be raised sufficiently over the portions affected. The approximate cost of the necessary work of repair would probably amount to £100.

Addendum 2 (The Titchfield and Cosham Turnpike Road, 1810)

To Carpenters and Builders

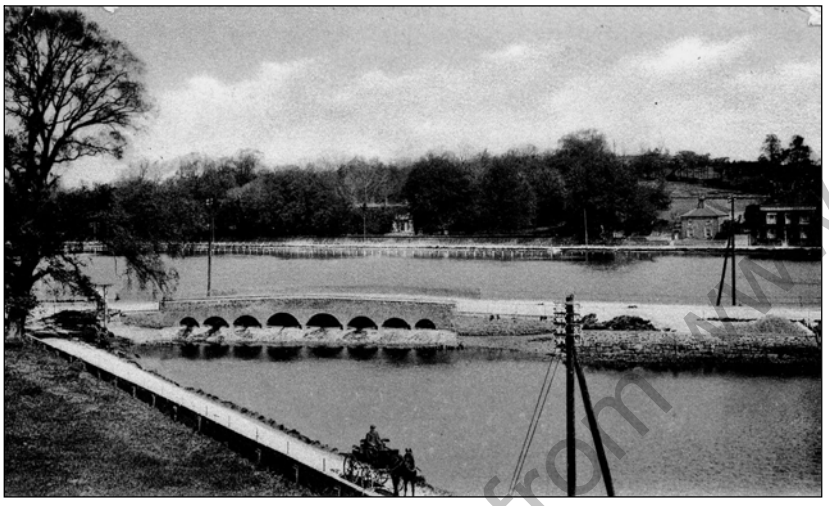


Figure 9. The causeway bridge, c 1900. The photographer's carriage awaits on the road into Fareham alongside the mill pond.

It having been determined by the Trustees of the said Road, to widen the causeway and to erect a wood bridge parallel to the present bridge at Fareham mill; persons willing to contract for erecting such bridge are requested to attend, with sealed tenders at the Red Lion Inn, Fareham, on Monday, the 27th day of August inst. at eleven o'clock in the forenoon, when the said will be taken in consideration by the said Trustees; and it is intended that no tenders will be received after the above hour.

The bridge is to be of oak and the ends to rest on the two brick pillars, now building. Length of bridge 65 feet -- Width 25 feet -- 14 piles, 8 feet long, 10 inches by 12 inches, to be framed into 8 green beech sills, 14 feet long, 12 inches by 8 inches -- Four cap-pieces, to be 34 ft long, 10 inches by 12 inches -- the joists to be 9 inches by 4½ inches, and 14 inches distance from each other -- the planking to be 2½ inches thick - and the rails to be 5½ inches by 4 inches.

A plan and specification will be ready for inspection on Thursday 23rd inst. when further particulars may be known on application to Mr Maidman, solicitor, Fareham, or to Mr Dosswell, civil engineer, Southampton.

Materials for building

Persons willing to contract for the purchase of the materials of the house at Porchester, lately occupied by Mrs Irons, which is intended to be taken down, for the purpose of widening the road, are requested to attend, with sealed tenders, at the place and time above-mentioned. The house to be pulled down immediately by the person whose tender shall be accepted.

Post and rail fencing

Persons willing to contract for supplying and putting up hewn oak posts and cleft rail fencing to various parts of the said road, but principally at Catisfield, to the extent, in the whole, of about four miles and a half, are requested to send sealed tenders (free of postage) to Mr. Maidman, on or before the 27th inst. The posts to be more than 11 inches distance - 5½ inches in length - and 6 inches by 8 inches at the top -- rails to be 3½ inches at the water edge, each end to pass quite through the posts and to be pinned at each mortice.

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The prices to be stated separately at per rod for posts and two rails, and for posts and three rails.

By order of the trustees: W. W. Maidman, clerk and treasurer,
Fareham. August 17th 1810.

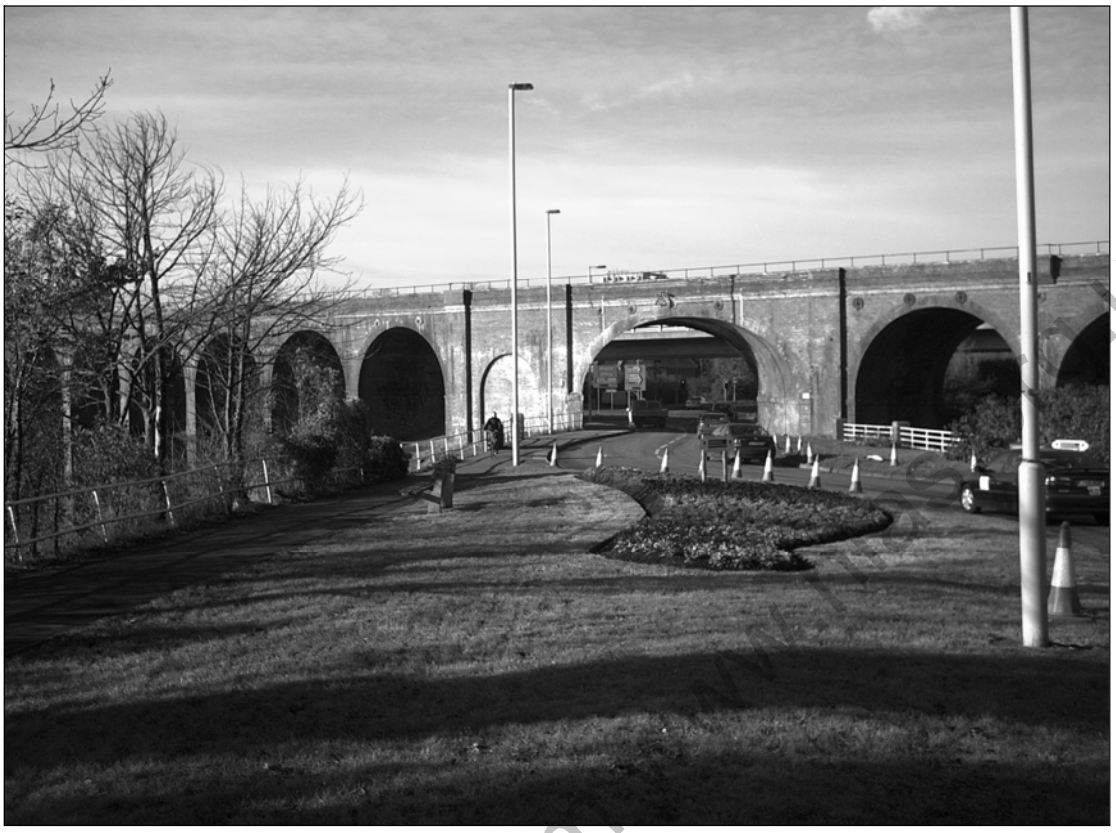


Figure 10. The site in 2008. The mill stood where there is now grass and the flower bed. The road forms part of a roundabout and the road flyover can be seen through the arches of the railway viaduct.

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2. Cal. of proceedings in Chancery, *'Temp Elizabeth'*, L1, 11, No. 47
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4. Shaw, A.K., *Windmills and Watermills in Hampshire*, Proceedings of the Hampshire Field Club, vol. **21**, pp107-9, 126-133, 1958
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6. Lawson, C.J., Shrewsbury, a Goodeve descendant
7. Lawson, C.J., Shrewsbury, a Goodeve descendant
8. Lawson, C.J., Shrewsbury, a Goodeve descendant
9. Sun Fire Insurance Policy No. 605725, vol. **391**, 4 Oct 1792
10. *Hampshire Telegraph*, p 1, 12 Oct 1844
11. This mill was at the bottom of West Street.
12. *Hampshire Chronicle*, 4 May 1895

The Restoration of Winchester City Mill

Bob Goodwin

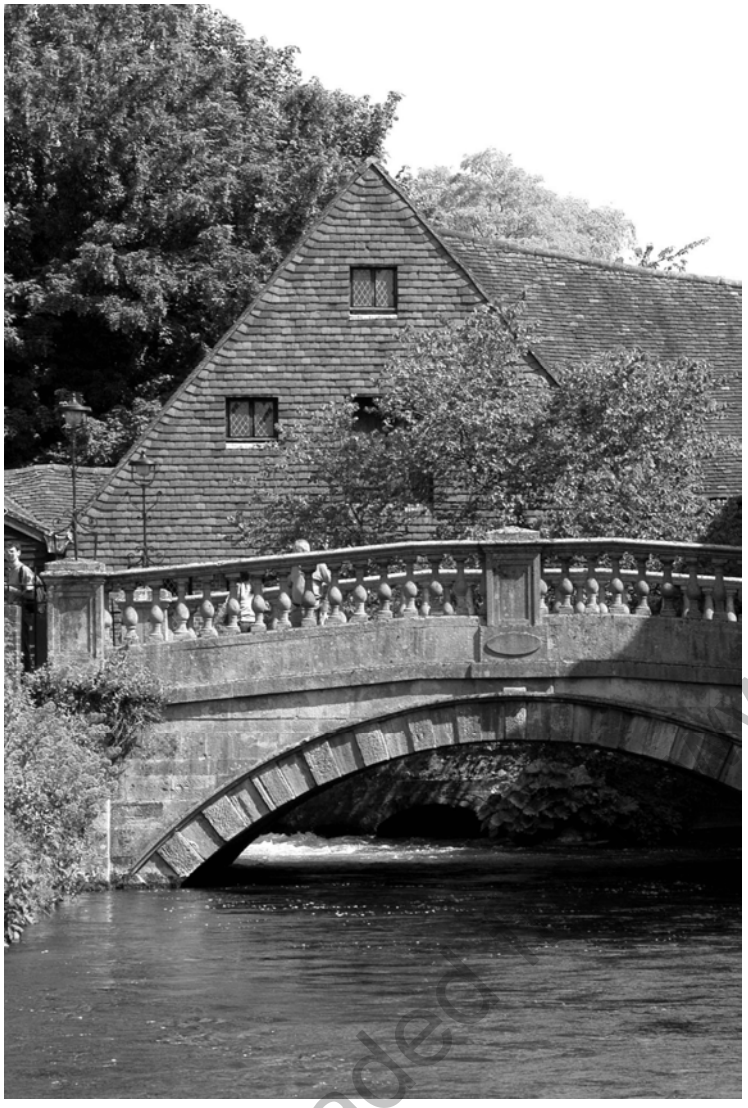


Figure 11. Winchester City Mill spanning the river Itchen, seen through City bridge.

Background

Winchester City Mill, owned and run by The National Trust, has been milling flour, thanks to a dedicated team of volunteers, for 5 years. Over 25 000 people visit the mill each year and milling demonstrations are given on most Saturday and Sunday afternoons between March and December. Milling is also offered at other times for visiting groups. The mill is built across the River Itchen at the eastern end of Winchester's main street close to King Alfred's statue.

The present machinery in the mill is very simple but sufficient to demonstrate traditional flour grinding to visitors. A simple, wooden undershot waterwheel (approximately 3 m diameter by 1.6 m wide) with 24 straight paddles (floats) draws power from the flow of the river. It is surmised that the all-year reliability of this classic chalk river meant there was little incentive to improve the efficiency of the wheel which is little more than 20%. A single pair of millstones is driven from the waterwheel via a classic gear train of pit wheel, wallower, great spur wheel and stonenut. The overall gear ratio is approximately 8:1 and, depending on the state of the river, it is usual to set the runner stone turning at about 60 revolutions per minute. The pit wheel has a cast iron frame with 66 oak teeth which unfortunately dip into water each revolution providing a natural form of lubrication but significantly reducing their likely life. The great spur wheel has 96 teeth made from hornbeam set into an iron rim. The hornbeam teeth are regularly lubricated with tallow for meshing with the cast iron stonenut. The wallower is also cast in iron.

Brief History

The present mill sits on or very close to a site used for milling in Saxon times and, following the Norman Conquest, the Domesday survey of 1086 records a mill (usually referred to as Eastgate mill) paying a rent of 48/- (£2.40) per annum. to the nuns of Wherwell Abbey. The mill appears to have been the most valuable in Hampshire – the average mill rent for the county being 10/4d (52p) per annum.

Competition from new mills built by the Norman bishops in Winchester and unfavourable trading conditions as the city declined in importance, left Eastgate mill derelict in the fifteenth century and it was still derelict when seized by Henry VIII at the Dissolution of the Monasteries in 1539. When Mary Tudor was married in Winchester Cathedral in 1554, she gave the mill with other land to the City and the current name 'City Mill' dates from this time.

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Eventually the new owners found a tenant, James Cook, willing to restore the mill and the present building dates from this re-building of 1743 /1744 although some roof timbers date from the fifteenth century and a recent suggestion is that the building form may have changed little during the re-build.

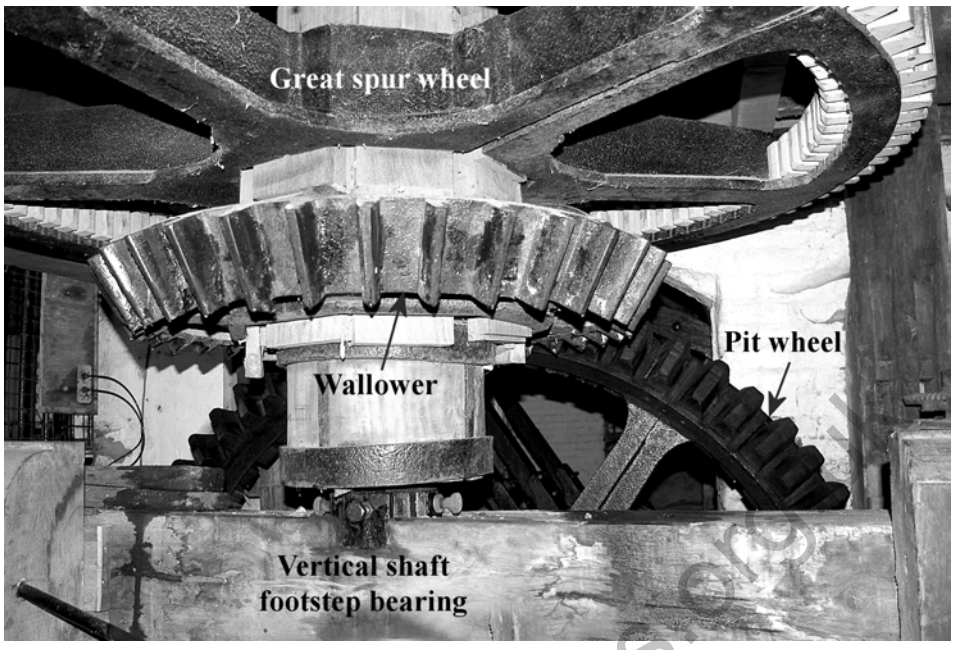


Figure 12. The layout of the restored gearing of the mill

Flour milling resumed in the eighteenth century and continued for perhaps 150 years until the mill became a casualty of the Victorian milling revolution, with the switch to roller plant and the creation of larger units often at ports where grain could be imported. There does not seem to have been any attempt to introduce roller milling at the City Mill but, interestingly, it was considered as a possible site for Winchester's first electricity power station in 1893. Even then it was realised that the power available was much too small.

After serving as a laundry during World War 1 the mill fell derelict and was threatened with demolition before a group of benefactors bought it and gave it to the National Trust in 1928. Many remember it as a popular YHA hostel which opened in 1931 and closed as recently as 2005.

Restoration of the Milling Machinery

The National Trust first became interested in restoring the mill to working order in the early 1980s but only the remains of an undershot waterwheel were in situ. The wheel was thought to have been rebuilt in the 1950s as a feature for the hostellers. A decade passed before Dorethea Restorations Ltd. was contracted to recreate the machinery using gears rescued from Durngate Mill in Winchester. Durngate Mill was 400 m upstream of City Mill and was demolished in late 1966. The salvaged pit wheel was cast by Jewell's City Foundry, located in the centre of Winchester where the Brooks shopping centre now stands. The waterwheel was re-built early in the contract and was turned for visitors whenever possible, as the restoration progressed.

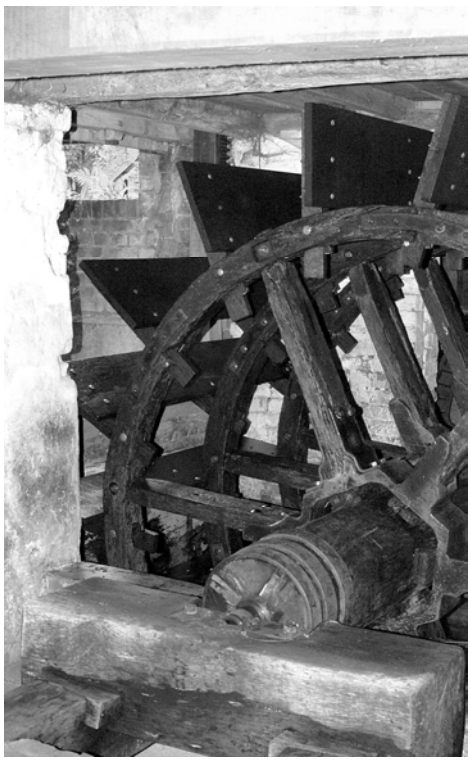


Figure13. The 'first' restored water wheel (1999)

Two French Burr stones, previously at Abbotstone mill near Alresford, were obtained from the Science Museum's reserve collection at Wroughton in Wiltshire. These arrived at the mill in 1997 together with other components such as the stonenut assembly. By the beginning of the twenty-first century visitors could watch the waterwheel and gear train turning although rot had quickly invaded the waterwheel and lost 'floats' were an all too common problem.

A first attempt at milling in 2002 proved disappointing and indicated a number of problems including movement of the bridge supporting the vertical shaft and consequent jamming of the gears.

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Figure 14. Old (left) and new (right) footstep bearings for the vertical shaft.



Figure 15. The author samples the first flour produced in 2004.

Figure 16. The restored stone furniture of 1999 for the pair of stones from *Abbotstone*.

There being no bin-floor, a small box for c 100 kg of grain was constructed above the stones with a single feed to the hopper.

Plans for milling flour were put on hold whilst remedial work was carried out but it became clear that a fresh look at the integrity of the machinery was needed and Ian Clark of Ian Clark Restoration carried out a survey with this brief in May 2003. Ian's report highlighted numerous issues to address before flour milling could be contemplated.

Return to Milling 2004

Ian Clark was engaged to complete the restoration of the machinery later in 2003 and worked throughout the winter to correct the most significant faults identified in his report. At the same time it was recognised that the stones had not been adequately dressed in the early phases of the project and Martin Watts was brought in to dress both stones.

After intensive work during the winter of 2003 / 2004 the mill was operated successfully for the first time in March 2004 after a gap of at least 90 years. An official launch was performed on 12th March by Professor Khalid Aziz, Deputy Lord Lieutenant of Hampshire. Among others present were the Bishop and Dean of Winchester, The Mayor of Winchester, National Trust regional managers and the press. The first public milling followed a week later on 19th March.

A number of milling days were organised throughout the 2004 season and important progress was made in recruiting and training a team of volunteer millers and building a market for the wholemeal flour produced.



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Rebuilding the Waterwheel 2005

Although successful milling demonstrations were given throughout 2004, the waterwheel was by this time in a very poor condition and could not be relied upon for future milling.

Fortunately a legacy became available from a National Trust member in Plymouth and, with additional funding from the Winchester Association of National Trust Members which had generously funded much of the restoration so far, it was possible to rebuild the waterwheel using the existing iron-work and shaft. Ian Clark was project manager again and executed the work.

It was not possible to source elm for the rebuild so instead European oak was substituted. The components of the wheel arrived on site already cut to shape and were assembled in situ within the wheel pit during February 2005. The rebuilt wheel has a diameter of 3 m, a width of 1.6 m and is fitted with 24 floats. It gave renewed confidence to the millers for their demonstrations through the 2005 season. Additional volunteers developed a pattern of milling over two weekends a month with additional sessions on bank holidays.

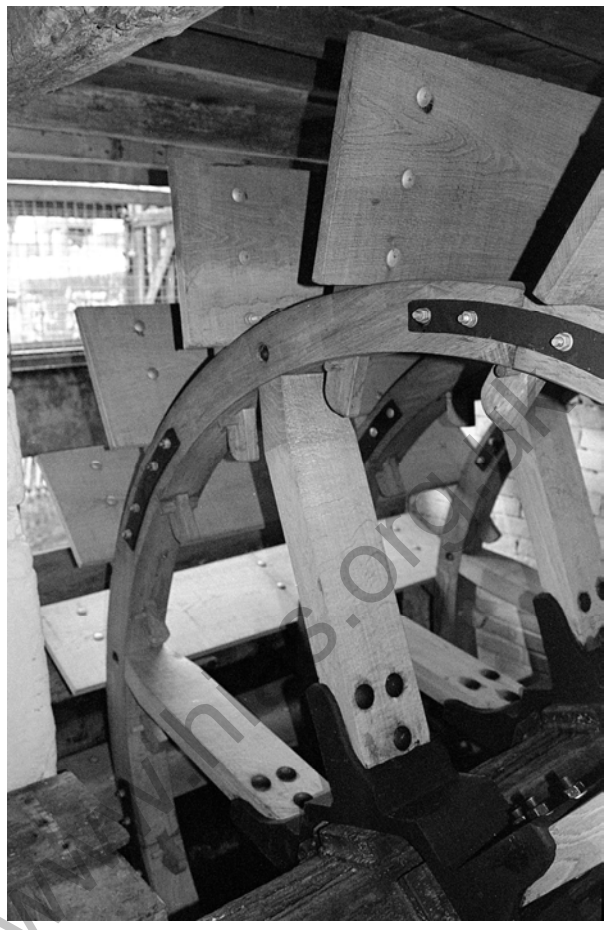


Figure 17. The rebuilt wheel takes shape

New Millstones – August 2007

The millstones salvaged from Abbotstone mill were badly pitted, possibly due to exposure to the weather at some point in their long life. When dressing the stones, Martin Watts deduced from the maker's plate on the runner stone (Hughes, Dover Road, London - works number 3198) that this stone dated from the early 1860s. The diameter of the stones (which were not quite a matching pair) was 44" (1.12m). Even the most optimistic working miller would only claim 50 – 80 years life from French Burr stones, indicating that the stones had been little used for much of their life.

A decision was made to commission new stones from a specialist manufacturer, Hans Titulaer, Plasmolen, Holland. These are made from a composite material incorporating basalt and quartz which, it is hoped, will give a similar performance and service life as the traditional French stones.

The new stones arrived in August 2007 and it took Ian Clark and Adrian Thompson about 10 days to remove the old stones (now in National Trust storage) and install the new ones. This task was made simpler by having the stones cast to the same size as the old ones and by the fact that the traditional pattern of dressing had been cast into the milling surfaces during manufacture. Even so it



Figure 18. They are the correct size.

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Figure 19. The new bed stone is lowered onto the floor.

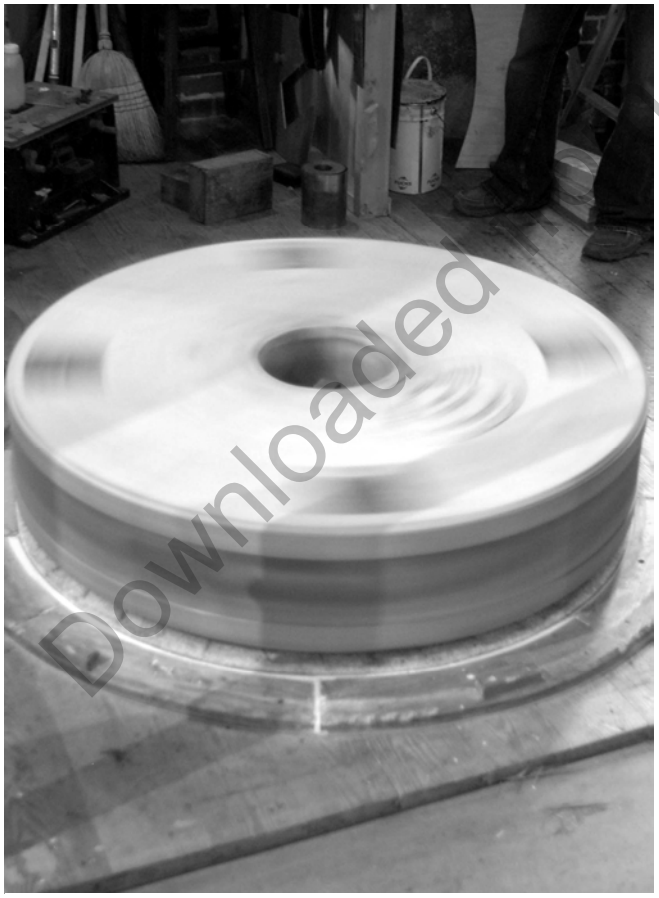


Figure 20. The new runner stone spins freely during balancing of the new set of stones.

was very educational to see how the heavy stones were manoeuvred into position and to witness the precision needed to level the bed stone and balance the runner stone.

The first public demonstrations of the new stones took place on 18th August 2007 and it was immediately noticed that the rate of flour production had increased. It also proved easier to mill flour of a consistent quality.

Milling took place almost every Saturday and Sunday afternoon during the 2008 season and additional weekday milling sessions were frequently necessary for visiting groups or to meet the demand for wholemeal flour. Over 10 tonnes of flour were produced and sold in the season including regular supplies to local bakers.

On-going Restoration

In addition to the major tasks already described above both the pit wheel and great spur wheel teeth have been renewed in the last five years – the former with oak and the latter with hornbeam. The footstep bearing at the bottom of the vertical shaft also failed before milling commenced and a new bearing had to be cast as a replacement - the main vertical shaft being lifted to achieve this.

The present weed screen, upstream of the waterwheel, is inadequate. It poses a serious risk to the water wheel in a river which can carry a lot of debris after heavy rain. Work continues to design a replacement.

Future plans include a demonstration of electricity generation using the flow through the by-pass channel – once the site of a second waterwheel and its associated sluices. A grant has also been obtained to improve the visitor's view of the water wheel and gear train.

Conclusions

Work prior to the first milling in 2004 and, perhaps more importantly the tasks carried out since have been both expensive and demanding but hopefully will ensure that regular milling demonstrations can continue at Winchester City Mill well into the twenty-first century.

Experience has shown the necessity of having a skilled and highly motivated engineer such as Ian Clark, who also has excellent project management

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skills, involved in the restoration throughout. Equally, generous sources of funding are needed and, in this project, the Winchester Association of National Trust Members deserves special recognition for their constant support.

Finally, it is one thing to restore a mill but quite another to run milling demonstrations every weekend throughout a ten month season and this is only possible thanks to the eight volunteer millers and their assistants who give their time freely and enthusiastically to keeping alive traditional flour milling in the heart of Winchester.

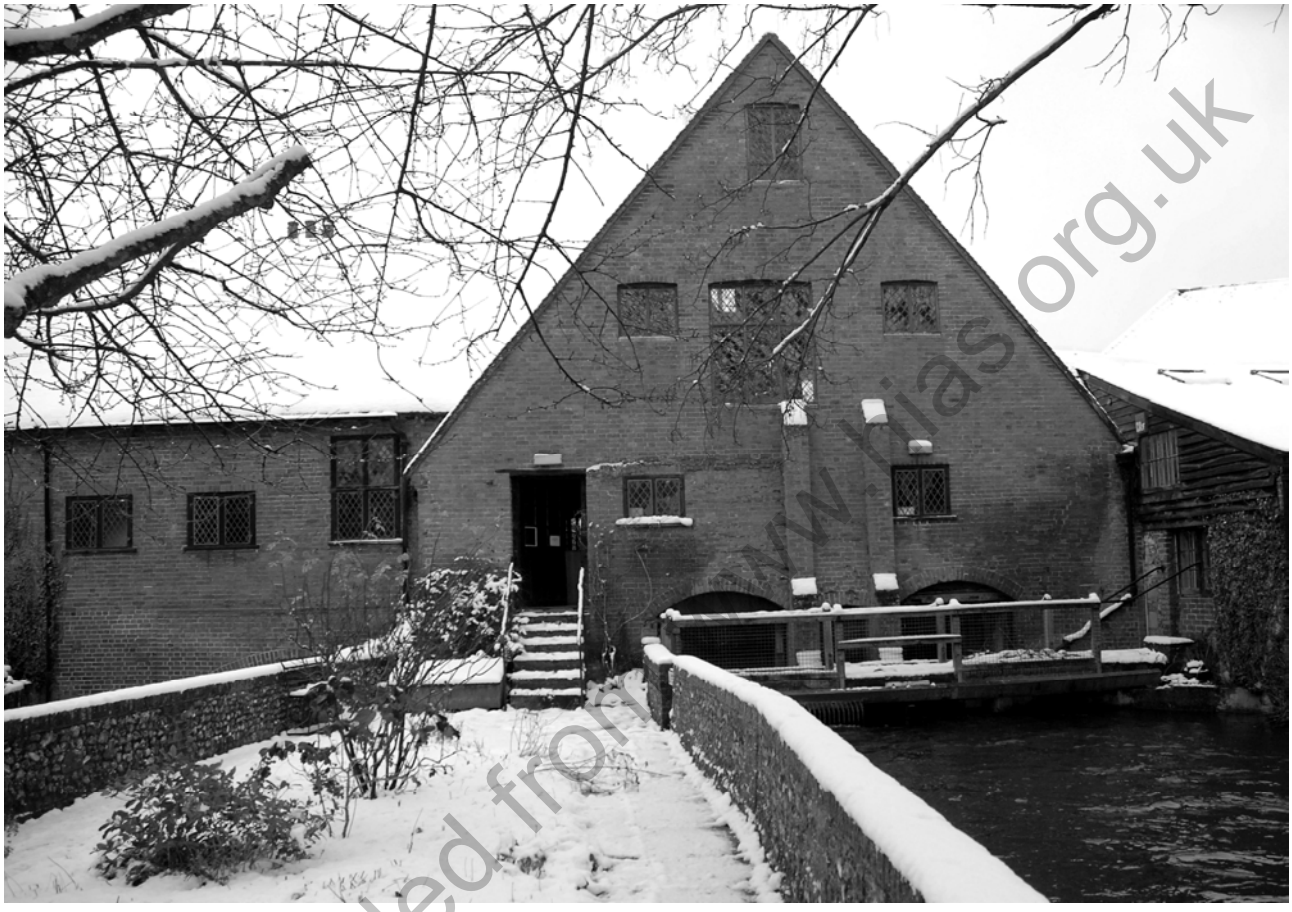


Figure 21. Winchester City Mill under snow in February 2009. North elevation showing the weed screen and the channels under the mill. The water wheel is fed through the left hand arch of the channel on the right. The spillway is out of sight on the extreme left.

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