

DURNGATE MILL, WINCHESTER

By J. REYNOLDS, C. BURRELL AND D. BIGNELL

WHEN Durngate Mill was demolished in the winter of 1966, a link with the past was broken. A mill had stood on this site for at least 700 years, and the old building had been a familiar landmark to generations of citizens.

When it became known that efforts to preserve the mill had failed, a survey was carried out by members of the Winchester Model and Engineering Society with the object of recording the building and its surviving machinery by means of measured drawings and photographs (figs. 19-22 and pl. IX). It was also hoped to collect together as much information as possible on the history of the mill. Particular attention was to be paid to its later history, and many interesting details were obtained from local people who had been connected with Durngate at the beginning of the present century. The story is still far from complete, but the documentary sources survive although the building has gone, and it is hoped that the gaps will eventually be filled.

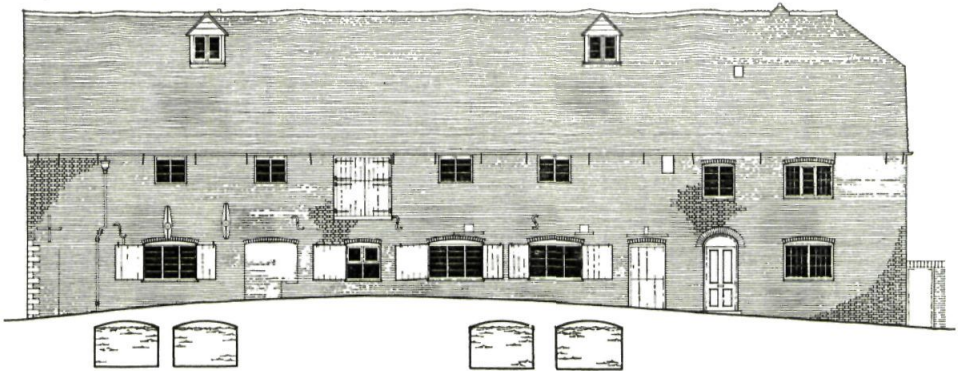
The rivers of Hampshire are remarkable for their constant flow, which shows little seasonal variation. The water wells up from the chalk, which acts as a vast reservoir, while the natural fall of the valleys produces swift-flowing streams. These conditions were ideal for the establishment of water mills, and Saxon Charters of the reign of King Edgar indicate that three or four mills existed in Winchester by A.D. 959. The date when the first mill was erected at Durngate is not known. The name does not appear in the survey known as the *Winchester Domesday*, compiled between 1110 and 1148, nor in the first surviving Winchester pipe roll of 1208. It may well have been in existence by then and is possibly grouped, in that document, with Barton Mill.

Durngate Mill is first named in a lease of 1213, when it commanded the considerable rent of seven pounds per annum. It took its name from a postern gate in the North East corner of the city wall. The miller was Edward Alwele – and it is pleasant to suppose that this may be Edward ‘of the wheel’.

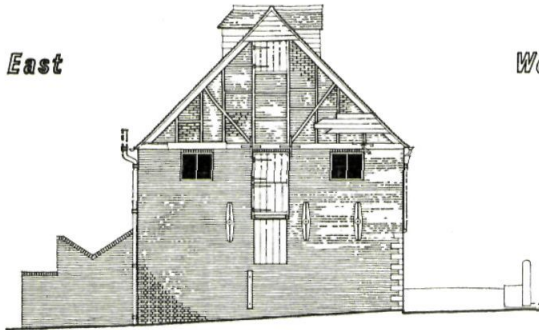
With one exception the mills of Winchester belonged to the Bishop. They were either worked by servants of the religious houses, or, as with Durngate, farmed out to wealthy citizens at substantial rents. The Bishop derived a considerable revenue from the mills of the city, in both rents and ‘Aquagium’ – a tax levied by ancient custom for the use of the river. Throughout the medieval period Durngate seems to have been consistently prosperous, and in fact the richest of Winchester’s great mills. Others suffered setbacks through pestilence and Civil War, several fell into disuse and were remembered as sites ‘where the mill once stood’. Durngate, however, survived the wars of Henry III’s reign and was affected only slightly by the Black Death of 1349. In the mid-15th century it was let together with Segrin’s (which survives as Wharf Mill) to one John Arnould, on a twenty-four year lease at a rent of forty marks per annum.

Durngate’s prosperity was no doubt due, partly, to its commanding position at the North East corner of the city, where it took first pull at the water flowing down the Itchen valley. Mill sites once established were jealously guarded, and legal battles were continually being waged over water supply. At Durngate the maintenance of the bridges carrying the road across the river also caused much wrangling over the years between Bishop and citizens.

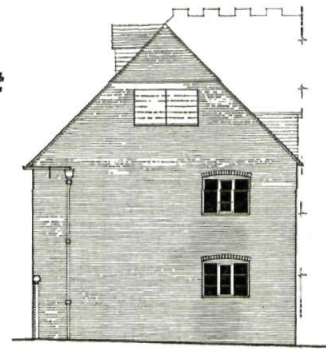
North - Upstream



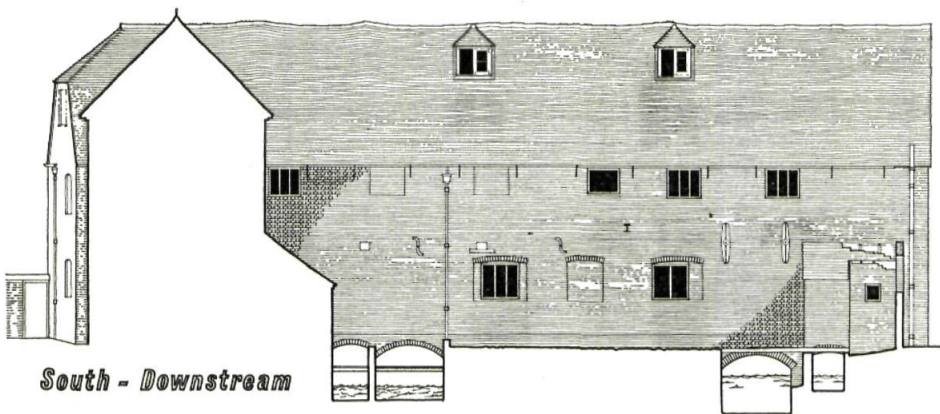
East



West



South - Downstream



DURNGATE MILL

Elevations

WINCHESTER

Fig. 19

Feet

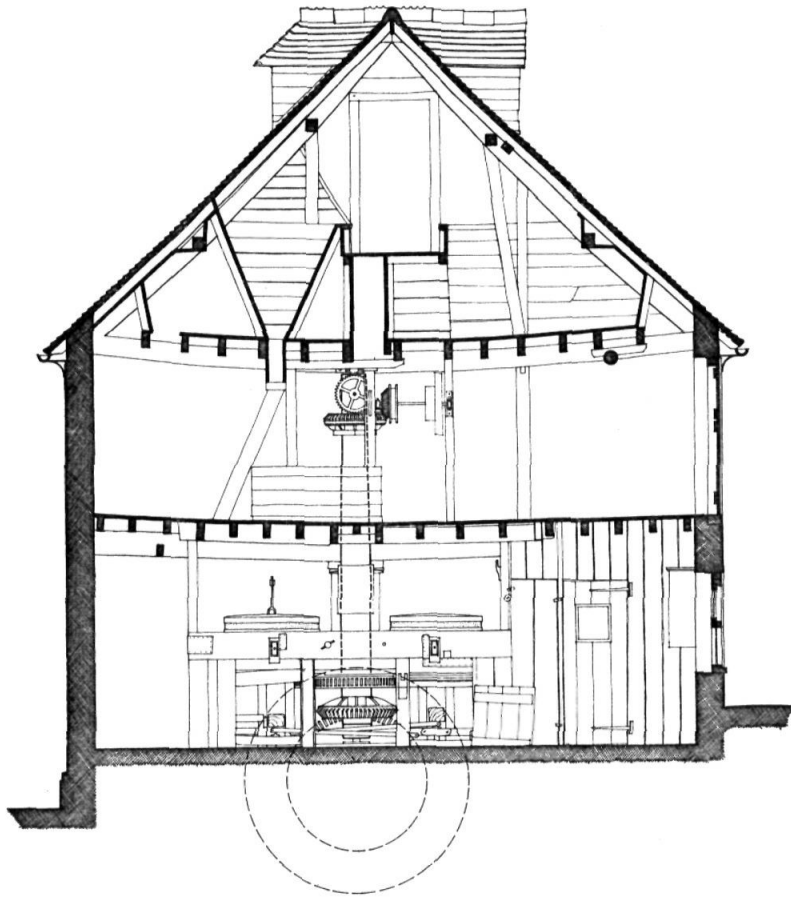
By the early 16th century a fulling mill had been established in addition to the corn mill. It was let to Stephen Bramdean at a rent of five pounds per annum, together with 'a garden in the Milland in the Soke outside of Durngate' and 'the weir called Fishbed next the city wall'. In 1631 the property was described as 'all those fulling and water mills commonly known by the name of Durngate Mills'. It is possible that the fulling mill occupied the site of the present Willow Tree Inn. At this date the lease was held jointly by three citizens, one of whom, John Chase, earned the gratitude of future generations by his services to the Cathedral Library. As Clerk to the Dean and Chapter he devoted himself to the recovery of documents scattered by the raids of Parliamentary forces during the Civil War.

The mill remained in the ownership of the Bishop throughout the 17th and 18th centuries. In 1660 it was leased to the Harris family by Bishop Duppa, and another famous name was linked briefly with Durngate in the late 18th century, when Edward Austen, brother of Jane, became joint tenant of the mill.

Throughout the years certain phrases recur in the leases. The tenant was allowed two loads of beech per year from the Bishop's woods 'for the making of coggs, floats and wrungs'. 'Grete timber', if required, might be had 'by assignment' from the same source. The wording refers to those parts of the wooden machinery most frequently requiring replacement – the hardwood teeth of gear wheels, the floats of the wheel itself, and possibly the staves of lantern pinions.

By the beginning of the present century the mill had passed out of the possession of the Bishop, and was leased by the Barrow Simmonds family to Mr. Craite of St. John's parish. Mr. Hasler was employed as miller, a post he held until his death towards the end of the 1914-18 war. One of Mr. Hasler's grand-daughters spent her childhood at the mill during this period, and has many memories of the day to day life of the miller. Mr. Hasler dressed his own stones, and the backs of his hands bore the blue scars associated with that craft. Formerly travelling stone dressers had generally been employed, but with the decline of the country mill it was not uncommon for millers to do this work themselves. Retail trade was carried on from the miller's desk beside the hursting, and it was here that housewives would come to buy 'a pint of flour'. Throughout the centuries eels had provided a profitable sideline for the miller, and the elaborate eel trap has survived the demolition of the mill. It was set 'on winter nights, with a full moon, after rough weather'. The eels would be raked in off the grating to await collection in the morning by a local fishmonger, who despatched them in skips to Billingsgate. In former times the 'drowning' of the water meadows had been an important duty of the miller, and in a hard winter Mr. Hasler would still be asked to lower his hatches and flood the Winnall 'moors' for skating. When Sanger's circus visited Winchester, the miller was troubled by elephants. They were brought down to water beside the mill, and soon discovered that they could reach the barley meal tub inside the entrance door. These raids became an annual event, and Mr. Hasler learnt to keep the door closed when the circus was in town.

In 1919 Durngate was leased to the Southern Counties Agricultural Trading Society. A turbine was installed, and the machinery extensively modernised. New stones were delivered by steam waggon and the old ones broken up and used to repair the roadway. By the end of the 1939-45 war Durngate, like many other watermills, had



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Cross Section.

Feet 

Fig. 20

ceased to produce flour, and was concerned solely with the preparation of animal feeding stuffs.

When grinding came to an end in 1946 most of the secondary machinery was removed, but the building continued in use as a store for a few more years, until its final closure in 1951. The last foreman was Mr. Tom Eades, who lived in the mill house.

The mill appeared to date from the latter part of the 18th century and the mill house from a slightly later period. This was borne out by the discovery, during demolition, of early 19th century newspapers which had been used to line the bedroom walls. Few traces remained of earlier structures, though there can be little doubt that the mill occupied the medieval site. It is commonly found that such sites continued in use from generation to generation. Over the years the river would be channelled and weirs built up to serve wheels of increasing efficiency, and these changes tended to outlast the fabric of the actual building, which was constantly threatened. The river banks provided poor ground for foundations. Timber piles rotted in the water-logged soil, and there was the ever-present risk of flood damage. The vibration of the machinery tended to weaken the structure, while stored grain imposed heavy intermittent loading on the upper floors. In addition there was a constant risk of fire due to overheating machinery. It is not surprising, therefore, that the working life of a mill did not generally exceed two hundred years – and it would seem that Durngate approached this span.

Few buildings have made more efficient use of enclosed space than the traditional mill, and Durngate was in many respects a typical example. Mill house and mill formed a single rectangular unit, covered by a long pitched roof of plain tiles. This handsome functional building had been extended, during the late 19th century, to provide new accommodation for the miller, and this gaunt Victorian addition still stands.

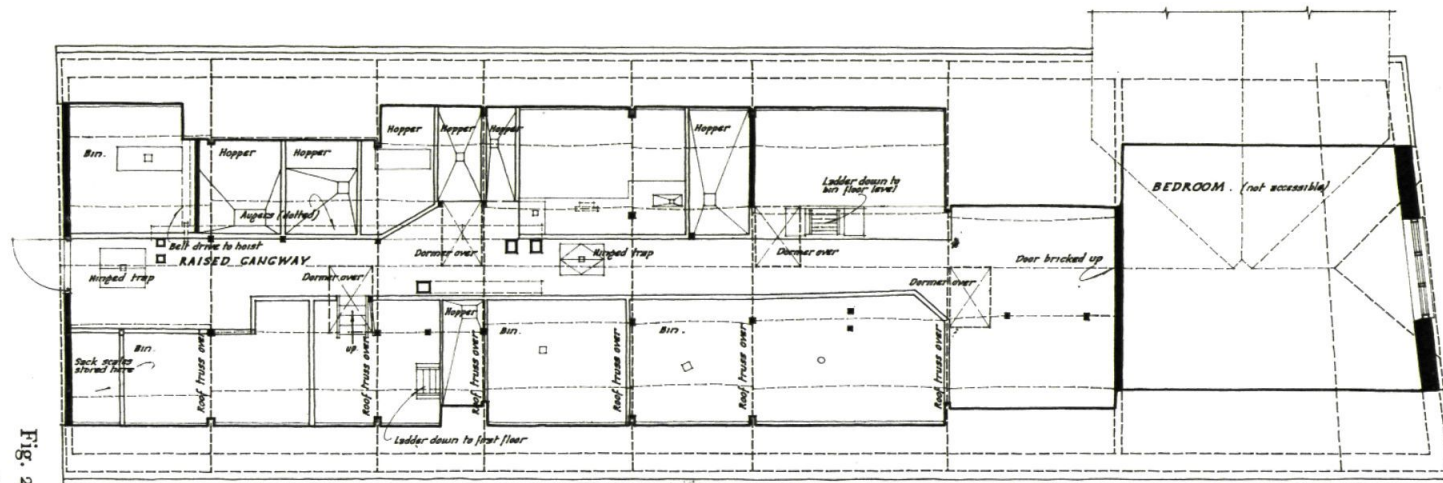
The mill straddles the main stream of the River Itchen, which here flows from North to South. The river divided immediately above the mill, forming two separate races which passed below the floor to unite again at the southern end of the garden. Each branch sub-divided within the building to form a head race and by-pass, each with its own sluice gate operated by rack and pinion gearing. The miller could thus adjust his hatches without stepping outside the door. The sound of running water could be heard in every corner of the mill – and on the ground floor it was necessary to raise one's voice to be heard above the roar of the race. The public roadway spanned the river immediately outside the North wall, the rise of the bridge allowing wagons to be loaded easily from the double doors at first floor level. The windows of both mill and mill house looked directly onto the street, and were protected by wooden shutters, held open during the day by wrought iron turn-buckles. The external walls of the mill were built in English bond – while Flemish bond had been employed for the house. The casement windows were spanned by plain segmental brick arches. The house retained its original rectangular leaded glazing set in iron frames. Some pains had been taken to add a touch of refinement to the house by a carefully executed gauged brick arch over the front door, and the panelled door itself contrasted with the more humble ledged and braced stable door to the mill. The ends of the floor beams were carried through the full thickness of the wall, and rested on thin stone pads, the end grain being protected from the weather by lead cover flashings. The brickwork had been tied in, during the life of the mill, by a variety of iron straps. Several massive tie-plates of cast

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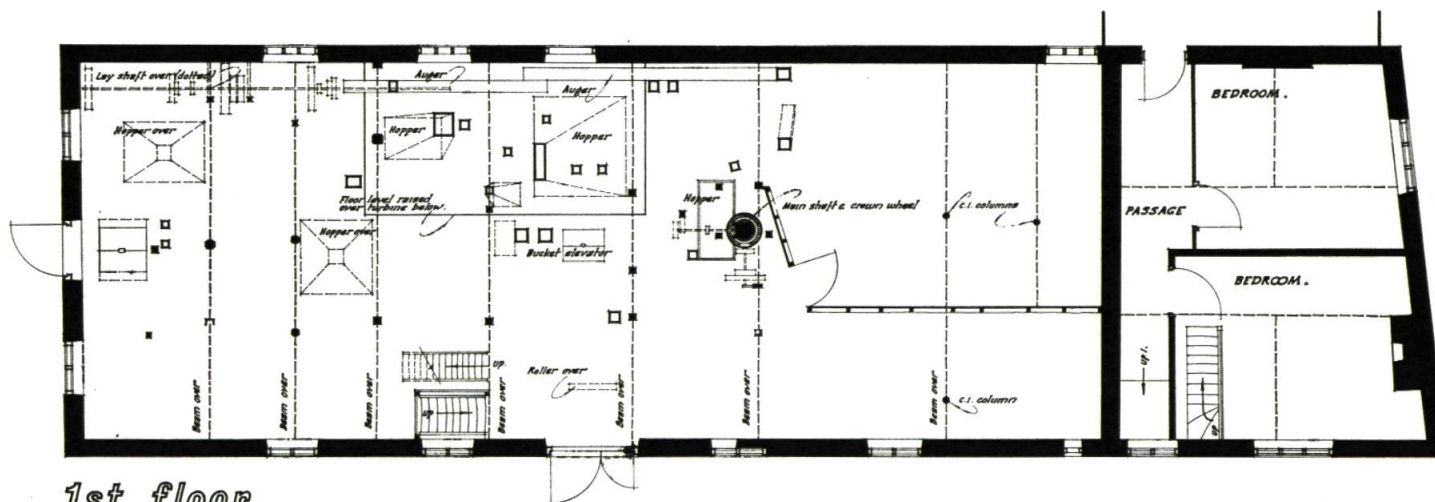
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Floor Plans

Feet 0 10 20



2nd floor



1st floor

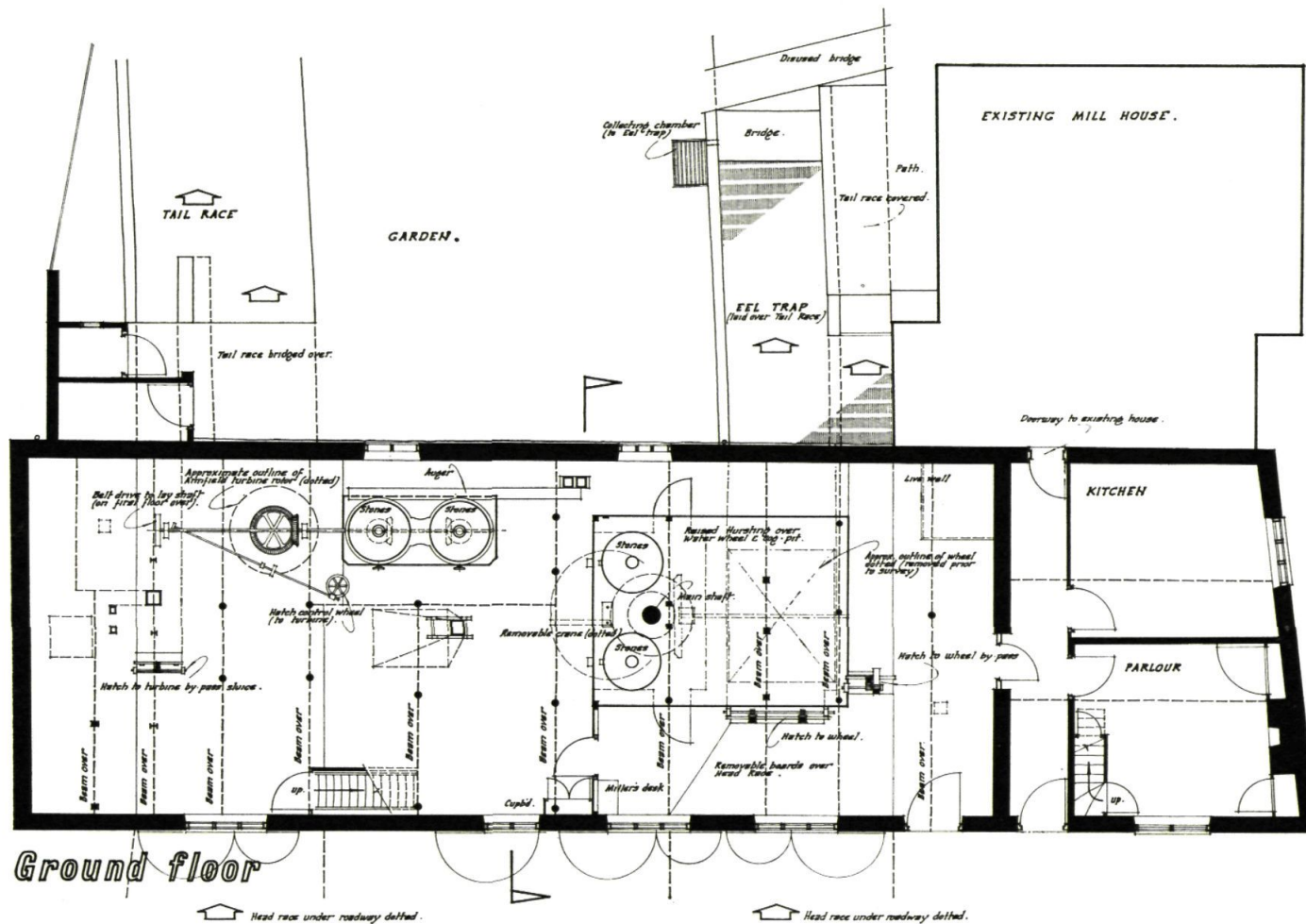


Fig. 22

iron bore the words 'P. C. Jewell, City Foundry, Winchester'. These were associated not with tie rods (as might have been expected), but with heavy double floor beams of softwood. Intermediate support for roof and floor beams was provided by a variety of posts and struts, evidently inserted at different dates. They included some carefully chamfered posts which appeared to be original, and a few elegant cast iron columns of early 19th century type. The mill was of two storeys with a bin floor above occupying the whole length of the roof space and lighted by dormer windows. The roof was double framed with heavy oak trusses supporting two tiers of purlins. The joists of the bin floor spanned between the tie beams, and these had sagged alarmingly under the weight of stored grain, causing general deformation of the roof. It had eventually been necessary, in about 1916, to take drastic action and most of the common rafters had been renewed. The whole roof had been fired and re-battened, and the tiles re-hung on galvanised pegs.

The ground floor of the mill had once contained two water wheels, each driving two pairs of stones. The wheel nearer the mill house had survived until a recent date, but had finally been broken up and taken out to allow free passage for water through the race. It had been of iron construction, and the axle remained *in situ*, together with the complete assembly of gears and the massive main shaft of pine. This machinery was of typical late 19th century design, and much of it had been cast locally in Jewell's foundry. The pit wheel was of cast iron, built up from sections bolted together, and having a bevelled rim through which the shouldered hardwood teeth were mortised. These engaged with a cast iron wallower at the foot of the main vertical shaft. Set on the shaft immediately above the wallower was the great spur wheel, of iron with hardwood teeth, and this in turn engaged with two small iron pinions, or stone nuts, which drove the runner stones. The cog-pit, and the upper part of the water wheel beside it, were enclosed by a hursting consisting partly of brickwork and partly of timber framing. The top of this enclosure formed a platform raised about 4 feet 6 inches above floor level, in which the bed-stones were set. In most mills the stones were carried at first floor level, and the unusual arrangement here left little headroom above the vats. To facilitate the removal of the stones for dressing, a crane in the form of a gallows could be mounted between the hursting and the floor joists overhead. It would appear that the level of the 'stone-floor' at Durngate may well have represented the old first floor of an earlier building. The shell of the mill had probably been re-built around existing machinery, and the old floor level retained when iron gearing was installed in the 19th century. This sequence of events would explain an arrangement which seemed, at first sight, to be unnecessarily awkward. Tenterring (the precise vertical adjustment of the runner stones), was effected by iron levers which crossed the front of the hursting diagonally and lifted the ends of the timber bridge-trees. A photograph of the interior of the mill, taken some time before the survey, showed a centrifugal governor mounted on top of the hursting, but no evidence remained to suggest that this had been linked to the tenterring gear. The lower part of the first wheel was contained in a punt-shaped wooden trough suspended on iron rods from the beams of the hursting. Any water which found its way into the pit below was drained off by a pipe leading to the tail-race.

The vertical shaft rose through the pit floor to terminate at a bearing bolted to one of the tie beams of the roof. Near its top was fixed the crown-wheel, an iron gear wheel

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with bevelled rim and hardwood teeth. From the crown-wheel two separate drives had formerly transmitted power to secondary machinery installed on the first floor. With the exception of augurs and elevators, this machinery had been removed when the mill ceased operation.

The second water wheel, with all its associated machinery, had been removed at some time in the past, presumably in 1919 when a turbine was installed in its place. This entailed considerable alterations to the building. The race was deepened and re-formed with a chamber below floor level to accommodate the turbine, and a section of the first floor above was raised to provide working room above the new stones. Mr. H. P. M. Jewell, grandson of P. C. Jewell, had worked the mill at that time, and he recalled that in digging out the bed of the race some massive 15-inch square baulks of timber had been exposed – surely some of the 'Grete timber' from an earlier building. The turbine installation had survived more or less intact. The rotor was mounted on a vertical spindle which terminated just above floor level, power being transmitted to a horizontal drive shaft through bevel gearing. Two pairs of stones were mounted at breast height on a dumb-bell shaped frame of cast iron, and driven by gearing which retained the traditional hardwood teeth. Tentering was effected by two hand-wheels projecting from the side of the frame – and a third hand-wheel controlled the inlet vanes. This machinery was made by Armfields of Ringwood, a Hampshire firm responsible for much pioneering work in the field of water turbines and hydro-electric engineering. Turbines were more efficient than water-wheels, and there is no doubt that they prolonged the working life of many Hampshire mills. The turbine at Durngate was not withdrawn when the mill was demolished, but the pit was filled in with rubble.

Associated with the turbine was a considerable length of lay-shafting fixed on brackets along the South wall of the mill at first floor level. This had supplied power, through belting, to machinery since removed. One corner of the first floor had been divided off by a partition of studs and boarding. This room had contained in Mr. Hasler's time, the 'silks', used for grading the flour, but no trace of this machinery remained. Beside the main shaft stood a wooden hopper through which grain had been fed to the stones below, and a complicated system of hoppers and chutes survived to connect the bins in the roof to the turbine installation on the ground floor.

A ladder from the first floor led to a cramped landing under the rafters at bin floor level, and from here a second ladder rose to a long central gangway running from end to end of the roof, some 3 feet above the tie beams. This catwalk gave access to the bins on either side of the roof space, and was served by two sets of trap doors through which sacks had been hoisted from the floors below. Each trap was closed by two flaps, which opened upwards on leather hinges and closed under their own weight after the sack had passed through. The hoisting gear had been removed to make way for a more modern system employing bucket elevators and augurs working in wooden troughs. The rafters had been ceiled in with boarding up to the level of the tops of the bins. Above this the roof was open to the tiles, which had been torched with lime mortar. In one of the bins a fine set of 19th century wrought iron sack scales by Wedderburns of Southampton was found. These are happily now preserved, together with other relics of the mill, at the Winchester City Museum.

The eel trap, which has survived the destruction of the building, consists of an

expanse of slotted iron grating laid over the tail-race at water level, on the down stream side of the mill. Eels travelling down with the current were forced up on to the trap by means of sloping gratings within the building. From the trap they were raked through a pipe into a small brick chamber beside the race. During the demolition a further tank, supplied with running water through lead pipes from the race, was discovered below the floor of the mill. This tank was reached by an iron ladder through a trap door in the floor.

One interesting result of the survey was the close connection revealed between the mill and the City Foundry, which stood in Lower Brook Street. Much of the machinery had, in fact, been cast only a few hundred yards away from its final home and it is perhaps significant that a small provincial foundry was capable of producing sophisticated castings of this nature. The firm was founded about the middle of the last century by Philip Charles Jewell, whose initials appear on much cast iron work in the city. Prior to its closure in 1908, the foundry undertook general engineering work, including the repair of the beam engines at Garnier Road Pumping Station and the manufacture of axles and axle boxes for the Great Western Railway.

Durngate Mill was a typical example of the final development of the traditional English water mill. These buildings and their machinery had evolved over a period of centuries to perform a particular function. In many towns and villages the mill – or at any rate the mill site – was as old as the Parish Church. It had ground corn since time immemorial, and would continue to serve future generations. But for a number of reasons this established order has come to an end. The process of low milling, by which the grain was reduced to flour in a single passage through the stones had always been customary in England. But during the closing years of the 19th century the insistent public demand for 'pure' white flour led to the importation of continental milling techniques, and in particular the roller mill. Wheat was being imported in ever-increasing quantities, and this grain was harder than the home-grown variety, and less suitable for grinding between stones. Large steam-powered mills became established at the ports, and the industry inevitably began to gravitate to these centres. The growing consumption of water affected the flow of many small rivers, and when expensive repairs to water-wheels became necessary millers tended to install internal combustion engines as more reliable sources of power.

In a few decades the working water mill has become little more than a memory. In studying these buildings one feels a sense of contact with the past. Even when the mill is comparatively new, one is aware of the immense age of the site. At Durngate corn had been ground for at least seven centuries. It is hoped that this brief survey will preserve some record of a mill which served the city for so many years.

ACKNOWLEDGEMENTS

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Grateful thanks are also due to the Curator and staff of the Winchester City Museums, to Doctor E. Course of Southampton University, to Mr. H. Jewell, and to fellow members of the Model and Engineering Society who assisted in the survey.