THE MIDLAND WIND AND WATER MILLS GROUP

(affiliated to the Society for the
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This Journal is published by the Midland Wind and Water Mills Group, which is concerned with the study of the history and technology of mills, and, in principle, with their preservation and restoration. Its area is the region loosely defined as the Midlands, especially the central counties of Staffordshire, Worcestershire and Warwickshire.

The Group, which functions as an autonomous society, holds monthly indoor meetings, with talks and discussions, during the winter, and arranges several tours to mills during the spring and summer. Members periodically receive a Newsletter and the Journal, and can purchase other publications at preferential prices.

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Wind and Water Mills, although the journal of the Midland Wind and Water Mills Group and therefore naturally concerned with the mills of the Midlands, is not intended to be narrowly parochial. Interesting and important articles relating to mill matters in other parts of Britain and the world will be included whenever available. In general, articles by members will have priority, but submissions by others will be willingly considered.

D.T.N.B.
A.C.

Cover illustration:

Blackford Mill, Henley-in-Arden, see page 38.

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continued inside rear cover

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CONTENTS

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MILLS AND MILLING IN MEDIEVAL ENGLAND

by RICHARD HOLT

Historians have traditionally said that the watermill is essentially a medieval device, in that although it was invented in the classical period, it was only during the middle ages that it was adopted with enthusiasm. Increasingly that view needs to be modified, in that whatever its origins, the watermill now appears to have been much more widely used during the late Roman Empire than used to be thought, and in western Europe it is likely that many regions experienced no break in the continuity of use of the mill. The situation in this country is less clear. There were mills in Britain around the year 400; the earliest reference to an English mill is from about 760. Had the mill continued in use, or had it been re-introduced from the continent ? Until archaeology provides evidence of mechanical milling in the sixth or seventh centuries, we should assume the latter.

Whilst so little is as yet known about its earlier history, by the end of the Anglo-Saxon period the watermill was well established, so that when Domesday Book was compiled in 1086 it was shown to be a common feature of the English countryside. A total of 5,624 mills was recorded - and that was not a complete total, as Domesday Book only poorly recorded, if at all, those parts of England north of the Humber. Probably there were more than 6,000 watermills in eleventh century England. Yet these mills were unevenly distributed. Some counties had many more than others, and there seems to have been a tailing-off into the south-west, so that Devon had only around 90 and Cornwall had just six, which suggests that milling was only just spreading into that area. Many villages had concentrations of several mills, whilst others had none at all, so all in all, despite the large number of mills, there must have been many people in 1086 who in practice had no access to one. Some regions did not have the rivers or streams that were necessary, and perhaps there were other unknown factors. In many parts of England, then, many people (or more specifically many women) still ground their grain by hand.

It is a feature of the nature of the documentation that we have that it is very difficult to say anything at all about the technology of these early mills. We know who owned them, we are told what they were worth, and we can usually work out where they were. We do not have any information on how they worked. The earliest historical evidence for that comes from after 1200, and although archaeological evidence should - and eventually will - tell us a lot of what we want to know, as yet so few mill sites have been excavated that the questions remain unanswered.

There are indications, though, that whilst many of the mills listed in Domesday Book were vertical mills (of the type described in the first century B.C. by Vitruvius, with a vertically-set wheel turning on a horizontal axle) a substantial minority at least were of the horizontal variety (that is, with the wheel lying horizontally). This was a type of mill that from the Ancient World onwards co-existed with the vertical mill; in modern times it has always been associated with what have been seen as backward societies, being found during the

present century in places such as the Orkneys and Shetlands, Crete, Turkey and rural Russia. There is a tendency to dismiss it as being inefficient, but that is to miss the point of it entirely. This is a very simple construction. The wheel is connected directly with the top stone by means, usually, of a wooden shaft, so this is a mill that uses no gearing and need use no iron - unlike the vertical mill which always in the middle ages had the stone spindle or fusil and the rynd of the millstone made of iron, and of course had to have gearing to turn the direction of motion through 90 degrees. The vertical mill had to be built and repaired by a professional millwright and by a smith; the horizontal mill was, in modern times certainly, a do-it-yourself device, made and repaired by the peasants who used them. As far as they were concerned, the low cost of the horizontal mill was far more important than any question of its efficient use of the water supply.

What reason is there to suppose that the horizontal mill was common in eleventh century England ? The ninth century mill excavated at Tamworth was of horizontal type; the other known Anglo-saxon mill, at Old Windsor, was vertical. More convincing is the indication that the Domesday Book is indeed describing two different sorts of mill. Annual mill rents vary enormously, from several pounds down to a shilling or even less, but the bulk of the mills fall into two fairly distinct bands, with one cluster around the 5/- to 10/- level, and another one between 1/- and 2/-. There is no indication that these are anything but economic rents. If a mill was worth to its owner five, ten, or even fifty times as much as another, it was clearly in large part because it did correspondingly more work. It was bigger, it was more efficient. The least valuable mills, often found in groups and particularly on the smaller streams, by this reasoning seem most likely to have been of the horizontal type.

As indicated earlier, we know who owned these eleventh century mills. That is because they were seigneurial perquisites: they belonged to the lord of the manor, and that is why they are in Domesday Book, which records the things of value that made up the lord's income - the land, the fisheries, the woods, the mills. And although current research is indicating that for a while around 1200 the control that lords exercised over their mills was in some cases slipping away to the peasant millers, it remains true by-and-large that mills continued to be owned, throughout the middle ages, by lords of manors. It was the lords, too, who of course built the mills, and milling was the lord's monopoly. If he had a mill, the courts would back his legal right to force his unfree tenants (though not his free ones) to use it. This essential feature of medieval milling needs to be stressed: we may see the watermill as an interesting, labour-saving device; to most medieval peasants, however, it was an instrument of oppression. If they wanted bread they had to use the lord's mill, and pay the toll the miller demanded - often one-sixtenth of the grain, but perhaps more - and in any case far more than he would have been able to take had there been a free market in milling. The peasant could not even use a hand-mill at home, or at least not legally. Often we hear of fines levied in the manor court on tenants who did grind that way; more often we hear of fines levied on tenants who took their grain to a mill in a neighbouring manor where they had obviously been able to negotiate a better deal.

On occasion, bad feeling over compulsory suit of the lord's mill, as the practice was called, flared up into something far more serious. In 1300 the Abbot of Cirencester had the hand mills of various people of Cirencester confiscated; the Abbot of St. Albans did the same thing thirty years later, and to emphasize his victory in what had been a long dispute he had the millstones smashed and his parlour at the Abbey paved with the fragments. Fifty years on, in

1381, St Albans rose during the Peasants' Revolt, and one of the first acts of the people was to hack up this floor, and take their broken millstones back again. It would be unwise, though, to make too much of such episodes, as some historians have done. St. Albans and Cirencester were hardly typical medieval communities, both being towns which were kept firmly under the control of powerful ecclesiastical lords. In such a context it is all too probable that the dispute over milling became a more bitter one than was usual elsewhere.

Reference has already been made to the records of manorial courts, which often provide useful information concerning mills and milling. Indeed, as the mill was an important property of the manor, we find it mentioned in most sorts of manorial documentation, and perhaps most usefully in the annual accounts. Vast numbers of these accounts survive and sometimes by good fortune there exists a good long run of accounts for a manor, with information on every year, or most years, over a long period.

The accounts record income and expenditure and thus enable an estimate to be made of the annual value of each mill. The income from a mill was in one of two forms, depending on how the mill was operated. Before 1250 or so lords usually had the mill in direct management. They put in a miller who received a wage, and their income was the tollcorn received - in which case the account will record quantities of whatever grains have been ground. More usually, though, and certainly after 1300, mills were leased for a cash rent for a fixed number of years to the millers who worked them: nearly always this rent was entered separately from the main total of rents in the account, it being such an important item.

Under expenses are sometimes to be found the wages of the miller, if he was an employee; often, however, this item is missing, an indication that he was working for a proportion, perhaps, of the tollcorn. There is unlikely to be any mention of the miller if the mill was rented out. More importantly, a section of each account deals with repairs, and usually mill repairs are detailed separately from those for other buildings. Very rarely, there are details of expenditure on a new mill. It is this evidence (coming from a type of documentation that begins only after 1200, and in most cases only after 1250) that shows that now, 200 years after Domesday Book, the English manorial mill was a vertical mill. Practically every account includes references to new cogs and rungs being bought or made and fitted; often we read of repairs to the exterior and interior wheels, or to the cogwheel. This work was done by carpenters who, though never described as mill-wrights obviously were expert mill-wrights, even if they did other things as well. The carpenters spent a great deal of time sawing boards, and fitting them with hundreds, sometimes thousands, of nails, so it seems that the mill buildings were usually of clapboard construction. The roofs were usually thatched, and occasionally tiled.

Although the mill mechanisms were almost entirely made of wood, water-wheels and cogwheels were often strengthened with large nails and with iron bands - sometimes even with chains. Parts of the mill that seem always to have been of iron were the rynd that held the millstone and the fusil or spindle that drove the stones. (The axle from the water-wheel was always of wood.) The ironwork was done on the spot by a smith - presumably the local blacksmith. There was a fracture problem with the fusils, which required attention sometimes every year. They broke and had to be welded, but this must have been unsatisfactory as quite often they were completely renewed. Normally, when a new millstone had to be fitted, the opportunity was taken to fit a brand-new fusil of new iron.

Medieval mills had only one set of millstones: if greater

capacity was required, then a second waterwheel and a second mechanism were installed, even if the new mill was to be under the same roof as the old. The obvious assumption is that medieval millwrights were not cabable of constructing the extra gearing necessary to run two sets of stones off one wheel, or were indeed unaware that they could do so. It is more likely, though, that these multiple mills were preferred for the very good reason that a breakdown still left half of the milling capacity unimpaired. Because millers did not have to pay their rent under such circumstances, manorial accounts often refer to periods when the mill was not working. Furthermore, with two separate mechanisms it would have been possible to stop one mechanism at a time for maintenance, and particularly for the regular lubrication that must have been needed. Local coroners' records frequently contain cases of men or boys killed whilst greasing mill mechanisms, and obviously doing it while the mill was running, so this must have been recognized as a dangerous practice.

Amongst the parts of the mill requiring greasing would have been the bearings. Descriptions of mill repairs, or even of the building of new mills, seem to make no direct reference to bearings, although the large pieces of brass that were occasionally purchased were probably intended for that purpose. Frequent reference is made to wooden axles being fitted with bands of iron, and these may have been intended mainly to run on bearings. Most bearings were almost certainly of stone, of the sort that was found in 1985 at the fourteenth century mill at Bordesley Abbey, and like those still used in England in the nineteenth century.

The evidence of manorial documentation is that water mills continued to be built on new sites up until 1250 or 1300. There obviously remained a great deal of available water power, but this still did not mean that everyone had access to a water mill. Some parts of the country have very little water; some, like the Fens, have just too much, and it is not fast-flowing. Thus it was that the twelfth century saw the introduction of two alternatives to the water mill, the earlier being probably the horse mill. Mills powered by oxen or donkeys were commonly used in the Ancient World; horses could not then be used for this work as the horse collar had not been invented. This became known in Europe after about 1000, and in England around 1100. Before then all heavy hauling was done by oxen; after about 1100 there are references to horses pulling carts, and then to horses ploughing. The horse mill then, became a possible practical alternative to hand-milling after 1100, and the first reference to one, in County Durham, comes from 1183. How common they were at this time is far from clear, although there is widespread if sparse evidence of them during the thirteenth century. Some were obviously complex and profitable devices, whilst others may have been very simple. Horse mills remained in use throughout the middle ages, and there is reason to suspect that they were in fact far more common than most of the evidence would suggest, especially in larger towns where there were often no restrictions on milling. Urban bakers and brewers, who needed to use a lot of flour and a lot of crushed malt, would have found it advantageous to have their own horse mills: they apparently did so in Wisbech during the thirteenth century, and probably also in Gloucester during the fifteenth century. Other such instances will very likely come to light.

It was the windmill that was the inspired alternative to the watermill, and one of the satisfying features of the windmill is that it is becoming possible to say a good deal about its origins and early development. It was invented about 1180 perhaps in England, or in northern France, or in Flanders. In all three places it was making its appearance during the last twenty years of the twelfth century,

although the chronology of its introduction remains somewhat uncertain, as some of the quoted references to early windmills are of dubious origins. Of the English references, the earliest reliable one is to the windmill at Weedley in the East Riding of Yorkshire in 1185; there was one at Dunwich in Suffolk by 1190, and another in Suffolk at Bury St. Edmunds probably in 1191. Other early windmills are found in Essex in 1203, Sussex in 1204, Hampshire in 1210, Bedfordshire in 1212. There were three more in Essex and four in Norfolk by 1222. All were on the eastern side of the country, a fact which perhaps points to the introduction of the windmill from Flanders. It seems not to have reached the Somerset Levels - another region like the Fens where windmills would be important - until the 1230s or 1240s at the earliest.

A fascinating insight into the extent of the adoption of the windmill during its first century can be derived from an examination of the Hundred Rolls of 1279. Conceived by the administration of Edward I apparently as a comprehensive update of Domesday Book, surveys were made of each village in each county, although now fragments of the returns for only a few counties survive. It is those for the counties of Oxfordshire and Cambridgeshire which are most nearly complete, and which provide the greatest potential for study. By giving an overall regional picture, like Domesday Book of 200 years previously, the Hundred Rolls enable a straight comparison to be made with 1086, and amongst the many possibilities of this exercise is an illustration of the extent to which windpower had been exploited by 1279. The results are impressive. In the eleven of Oxfordshire's thirteen hundreds for which a comparison is possible, there were recorded in Domesday Book 171 mills, and in 1279 only 141 watermills. New ones had been built, but many of the low-rented mills had disappeared. There were in addition two horse mills and four windmills. In Cambridgeshire eight of the fifteen hundreds are adequately covered in the Hundred Rolls, and there the total of mills in 1086 had been 53. By 1279 this figure had fallen to 31 water mills (again, there had been a tendency for the smaller ones to disappear) but there were now as many as 52 windmills.

It needs to be stressed, furthermore, that this survey did not cover the Fenland areas of Cambridgeshire, where there had been no mills recorded in 1086. Other sources, however, as we should expect confirm that there too the windmill had been adopted on a massive scale. On ten fenland manors of the Bishopric of Ely and of the Abbey of Ramsey thirteen windmills and two horse mills had been built by 1280, and in most of these cases by 1250. The Hundred rolls for neighbouring Huntingdonshire demonstrate that that county had also witnessed the triumph of the windmill, and early manorial documentation from Norfolk and Suffolk extends (though surely does not yet complete) the picture. Whilst the windmill at first made little impact on the undulating, well-watered midland and western counties, for whole areas of lowland England where the terrain discouraged the watermill, powered milling was a revolution of the thirteenth century, with great strides clearly having been made by the 1270s.

All of these mills were post mills, and those few medieval illustrations that show windmills indicate them to have been small, and similar in design to the seventeenth century mill at Bourn in Cambridgeshire. Like the water mills these post mills seem to have had only one set of stones. Their mechanism was basically the same as that of the water mill, and indeed if a manorial account does not specify which sort of mill was being repaired, it is only details of work carried out on the mill-pond or the water-wheel that indicates a water mill, or references to sails being mended and canvas purchased that show it was a windmill. What makes it difficult to say anything very

definite about the construction of any of these mills is the lack of specific detail in the documentation: even a mill-building account is likely to consist mainly of a large sum of money paid for timber, another for iron, and another for the wages of the carpenters and the smiths, plus the purchase of two millstones. Perhaps at best there will be a few helpful details such as payments to labourers for packing and ramming clay and hardcore around the post of the mill, to fix it firmly in the ground, and sometimes the wage-bill incurred in constructing a large artificial mound on which the windmill was placed. Obviously done when natural high spots were not available, it was clearly felt that the cost of building a mound was justified by the increased windpower available to the mill.

A continuing exercise of the present mills project is to identify as many manors as possible, all over the country, where it is possible to be sure of the number of mills throughout the middle ages, from 1086 to about 1500. This, it is anticipated, will be at least 100 manors and so should be a large enough sample to show fluctuations in the total number of mills during the period. Initial findings are that mill numbers not surprisingly broadly followed the population level. The population of England was growing during the early medieval period and it peaked during the fourteenth century. The Black Death of 1349 killed perhaps one third of the population, but the downturn had begun before that: there were complex demographic forces at work, of which epidemic disease was only one, so that the population continued to fall certainly until 1450 or so and then stagnated, with a slight upturn occurring possibly by 1500.

After 1350 the number of mills followed the population downwards. What happened was that on most manors there were fewer people to use the mill, and thus a correspondingly reduced income for the miller, and so the rent that the lord could charge for the mill went down. What put the mill out of business was when it became necessary to do major repairs, either because the mill was getting old, or because of a natural disaster. Water mills might be damaged by flash-floods, and windmills in particular were prone to damage through being frequently blown down. It was at such times, when a lot of money had to be spent, that the lord would question whether the mill was in fact economically viable. Consequently there was a gradual falling-off in mill numbers up until about 1400. The decline seems then to have accelerated no doubt because by that time the cost of repairs was rising significantly. Labour costs were going up, and rents were not. So the number of mills can be seen to decline right up until the end of the fifteenth century, until there are, it seems, signs at last of some expansion around 1500.

Whilst of course it was for the purpose of grinding corn that most mills existed, there were even so many water mills employed in certain industrial processes. On occasion references may be found to metal-working mills, though the evidence for them is so sparse that they clearly did not exist in any numbers. Only after 1500, it seems, did they become a significant factor in the metal industries. The great majority by far of the medieval industrial mills were fulling mills.

A continental invention, the first references to English fulling mills come from 1185 and are to be found in the same document that contains the first reference to a windmill, which is a survey of the lands of the Knights Templars. One fulling mill was in Yorkshire, at Newsham, and one in the Cotswolds at Temple Guiting. But the fulling mill was obviously adopted with even greater enthusiasm than was the windmill, because a large number were built by or around 1200, and there are signs of consequent major changes in some areas. In

Gloucester, to take one example, as part of the large cloth industry of the town there had been a number of fullers working during the 1180s, who had had their own street - the Vicus fullonum, or Walkers Lane. They were gone by 1200; at any rate there are no more references at all to the fullers in medieval Gloucester. Their trade had been spirited away by the new Cotswold fulling mills, and the long process of the mechanization of cloth manufacturing had begun.

It is difficult to tell just how many fulling mills there were, because their distribution was uneven. Some areas seem to have been almost without them. In those eight Cambridgeshire hundreds in 1279 there were only two fulling mills, and again only two in the thirteen Oxfordshire hundreds in the same year. Other regions in the west and north had far more fulling mills, with as many as four or even six to be found in some manors. Such concentrations may reflect the amounts of cloth that were being made locally, but availability of water power was also a factor, as was the eagerness of lords either to invest in new fulling mills or to lease their water rights. Many of the mills must actually have been built by the fullers who operated them, and who thus rented only the sites and the water rights. Certainly the low level of some of the recorded rents paid to manorial lords for fulling mills - often as low as a shilling or even less - indicates that to have been so.

The apparent slow rate of growth in the number of fulling mills up until around 1400 accelerated during the fifteenth century, a change which was clearly associated with the falling demand for corn mills, although it would be wrong to over-simplify the relationship between these two movements. The vacant sites previously occupied by corn mills became available for other uses, and sometimes it is possible to identify cases of lords having transformed a former cornmill into a fulling mill, obviously in the hope that it would prove to be more profitable. Such a course of action was followed by the Bishop of Ely who had a mill at Great Shelford in Cambridgeshire that was not prospering. In 1387 he had it demolished and replaced with a new cornmill and a fulling mill, each with a separate mechanism and a separate water wheel, but both in one building. The combined operation was let to one man, and as the rent stayed up for the next century, it was now a viable enterprise. In some years, though, the Bishop had to pay out almost as much for maintenance as he received in rent, in marked contrast to the years before 1350 when it could be expected that maintenance and repairs would average only perhaps one-fifth of the rental income from a mill.

In concluding, it is necessary to consider the importance of the mill in medieval England. From a technological point of veiw the watermill and windmill, along with the sailing ship, stand out as being the only mechanisms known to medieval man that did not rely on muscle-power; even the clock was only a device for storing energy, and derived its motion from the man who wound it up. In an economic sense, however, it must be accepted that the medieval mill was really of only marginal importance to contempories. The fact that peasants were keen to carry on hand-milling suggests that it was more profitable to them to spend time milling at home, instead of hanging about at the mill waiting for their flour, which would come, of course, lacking not only the one-sixteenth or more that had been taken in toll but also that further proportion that had been stolen by the miller. When the windmill brought powered milling for the first time to many people in eastern England it is unlikely that they welcomed it. The Abbot of Ramsey built a new windmill at Broughton in Huntingdonshire in 1252 and informed his tenants there, and in four neighbouring manors, that they must do suit of this mill - that is, they must use it, and only it. The Abbot had built the mill for his own benefit, not for theirs,

and we should be aware that the enormous enthusiasm for the windmill during the thirteenth century was not the peasants´ enthusiasm for a new, labour-saving machine, but rather was the lords´ enthusiasm for a new source of income. Within the total income of an estate, however, mills were unlikely to have contributed on average as much as ten per çent of the whole, and usually it would have been considerably less than that.

Even the technological significance of the mill was limited. The windmill was a genuine medieval innovation, and there was some further development when the tower mill was introduced in the decades before 1500. The water mill, on the other hand, was the same vertical mill that the Romans had used, and was made of the same materials in the same way in 1500 as it had been 300 years earlier. The evidence of manorial accounts makes that very clear. The horizontal mill, it is true, had disappeared by 1200, but that was not a technical development so much as a social development, being probably the result of as yet only dimly-perceived changes in the control and profitability of milling.

Having said this, the mill retains its fascination, and rightly so, for it was a universal feature of medieval life, and through studying it we gain new and specific insights into the world of the middle ages. When Geoffrey Chaucer came to people his fictional pilgrimage to Canterbury with characters representative of fourteenth century society, he chose the miller as a figure particularly suitable for parody. In the humorous depiction as a deed well done of the robbery and humiliation of that swaggering thief the miller of Trumpington, we may read the standard contemporary view of the miller and his mill; yet by the miller´s inclusion in the party of story-telling pilgrims we may also assume that a fourteenth century audience could conceive of him only as an inevitable and indeed necessary element in English society, his mill as much a part of everyday life as the ale-house and the church.

Select Bibliography

The medieval English mill still awaits its historian. All too often those who have written about milling in the middle ages have had little basic understanding of the period, so that there is no equivalent, for instance, of L.A.Moritz, Grain-Mills and Flour in Classical Antiquity (Oxford 1958).
The single most useful volume is now Terry S.Reynolds, Stronger Than a Hundred Men: A History of the Vertical Water Wheel (Baltimore and London 1983), which for the medieval period provides a competent if unimaginative review of hitherto published work. The bibliography in particular should prove invaluable. For windmills there is no equivalent book. Indeed R.Bennett and J.Elton, History of Corn Milling (4 vols., London and Liverpool 1898-1904) remains the only overall treatment of many aspects of mills and milling, and their treatment, although sensitive, was often superficial.

There are many useful short papers that contribute to our knowledge of the subject, of which the following are the most notable:
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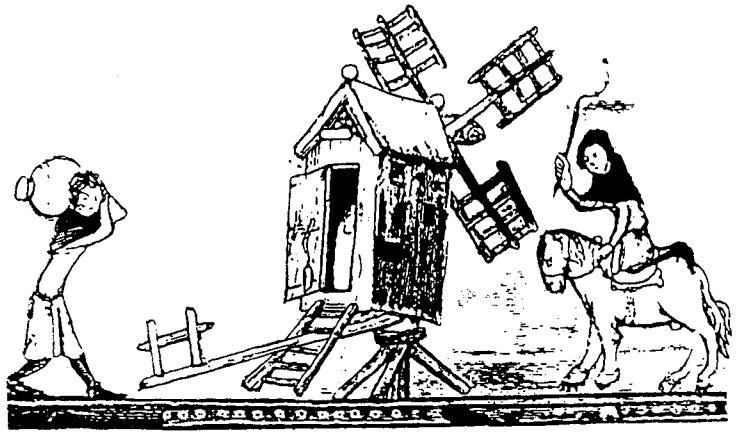
Medieval Framlingham: Select Documents 1270-1524, ed. J. Ridgard, (Suffolk Records Society 27: 1985) contains several detailed accounts of repairs made to windmills and of the building of a new windmill at Saxtead in 1286. One of these thirteenth century mills was described as having six sails. (pp. 22,27-8,53,60-1.)

The author wishes to express his gratitude to the Leverhulme Trust for their generous support of his research into medieval English mills.



WATERMILLS AND WATER-POWERED WORKS ON THE RIVER STOUR, WORCESTERSHIRE AND STAFFORDSHIRE

PART 5 SMESTOW BROOK

by S.M. & M.V. COOKSLEY

INTRODUCTION

In the article which covered the middle section of the River Stour [1] most of the side tributaries were dealt with in sequence moving northwards, however, the largest of these, the Smestow Brook, was left for this later article.

The aim of this series of articles is to establish the location, nature and history of water-powered sites and not to be a comprehensive survey of their industrial development. It is hoped that these surveys will provide a basis for a more detailed study.

Although a considerable number of mill sites have been included in this article the authors acknowledge that other water mills may have existed.

AREA

The area covered by this survey lies within the county of Staffordshire and involves several parishes. The valley of the Smestow lies approximately north-south. The Smestow rises on the outskirts of Wolverhampton and joins the Stour at Stourton in the parish of Kinver. The ground level rises from about 180 feet above sea level in Stourton to 300 feet in Wolverhampton. The side brooks fall more rapidly in to the main valley from heights of up to 400 feet. The area drained is approximately nine miles north-south and seven miles east-west. The whole area lies just to the west of the Black Country conurbation. Map 1 shows this area and the location of the mills numbered as in the gazeteer.

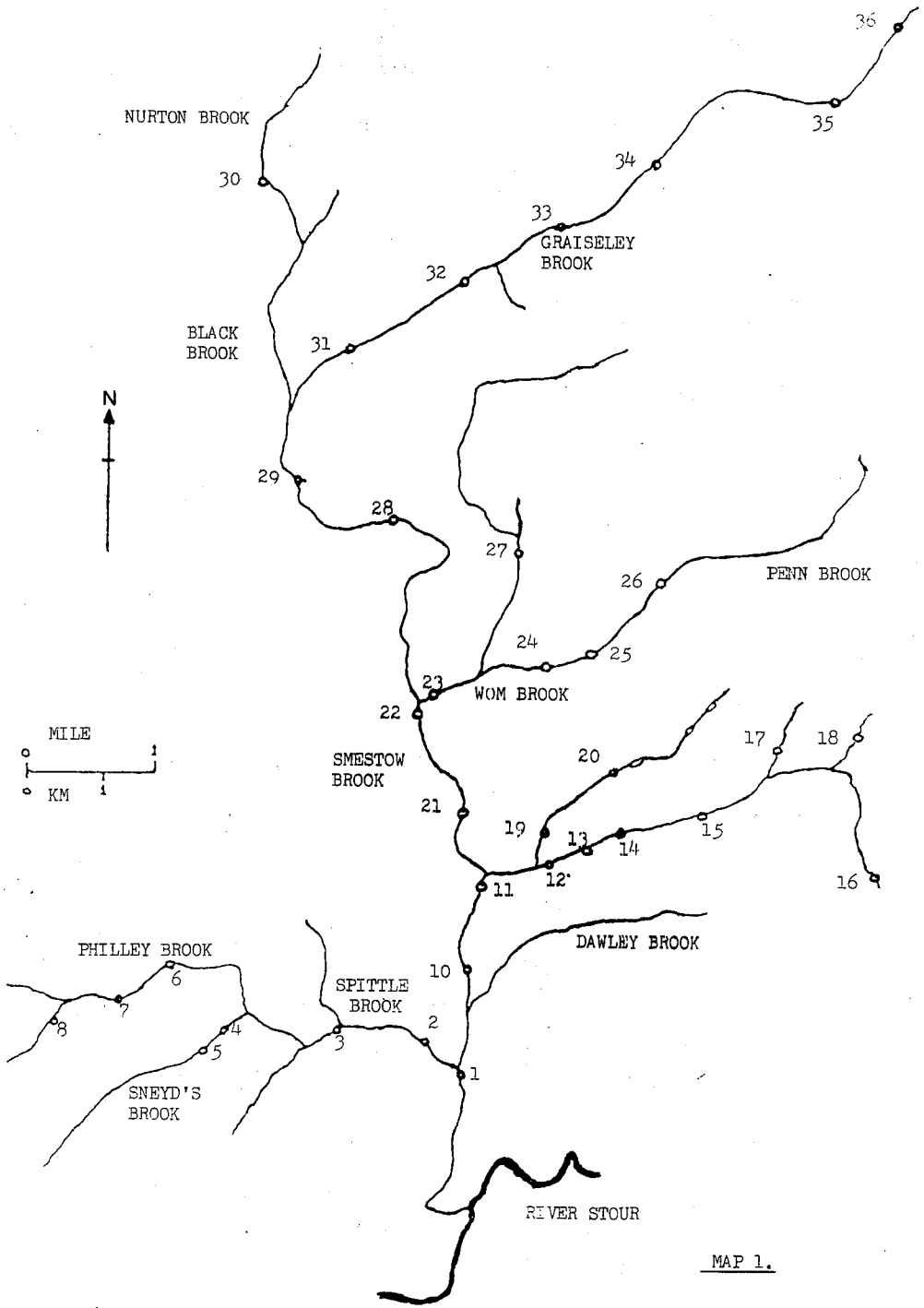
REFERENCES

This area is rather poorly served by surviving archives. The recent Victoria County History volume 20 for Staffordshire covers this area and has many useful references. There are some references to the involvement of the iron industry but very little on other uses for the mills. Many of the mills are on property of landed gentry and some of their records are available. This dispersion of information makes the work of correlating details of the mills time consuming. Parish records are often useful but the problem with this is that the river system covers several parishes.

In more recent times industrial archaeologists have visited the area and recorded their findings. [2]

INDUSTRY

Corn milling has been carried out from the Domesday Survey until modern times. There are indications that for a period in the 16th and 17th centuries some fulling mills were operated in connection with the woollen industry. The other main recorded industrial use of the mills in this area was in the iron industry. [3] The earliest



MAP 1.

references were to furnaces operated by Dud Dudley where he claimed to use coal instead of charcoal. These were Hascod, Himley and Gornalwood. The iron from these furnaces was made into bars at forges such as Greensforge, Swindon and Heath. This enterprise appears to have been shortlived and the Foley family acquired several of the businesses as occurred throughout the Stour valley. The furnace sites of Dud Dudley ceased to be furnaces but continued as scythe-grinding mills. This specialisation did not last long and the surviving mills were used as corn mills.

By 1669 Phillip Foley operated Grange Furnace and forges at Hubballs Mill, Greensforge, Swindon and Heath. Foley control was gradually relinquished and only Grange Furnace played any part in the Foley-backed Ironworks in Partnership in 1692. [4]

Ironworking continued at Gothersley and Heath mills until the late 19th century and in to the 20th century at Swindon.

Several sites were rebuilt as corn mills and there are considerable remains, both of buildings and machinery, still in existence.

GAZETEER

The sites are listed proceeding northwards from the confluence with the River Stour. Each tributary is dealt with as it enters the Smestow. Mill sites for which names are not available are given in brackets.

The mills which have been identified are as follows:

1. Gothersley Mill
2. Checkhill Walk Mill
3. Spittlebrook Mill
4. Hoo Farm Mill
5. Morfe Hall Farm Mill
6. Mere Mill
7. Lutley Mill
8. Philleybrook Mill
9. Toys Farm Mill
10. Greensforge
11. Hollow Mill
12. (Lower Wallheath)
13. (Upper Wallheath)
14. Holbeache Mill
15. (Oak Mill)
16. Hunts Mill
17. Hascod Furnace
18. Gornalwood Furnace
19. (Hinksford Farm Mill)
20. Himley Mill
21. Swindon Forge
22. Smestow Mill
23. Heath Mill
24. Ham Mill
25. Wombourne Mill
26. Wodehouse Mill
27. Orton Mill
28. Trysull Mill
29. Seisdon Mill
30. Great Moor Mill
31. Furnace Grange
32. Perton Mill
33. Wightwick Mill
34. Compton Mill
35. Dunstall Mill
36. Goss Brook Mills

1. Gothersley Mill (SO 836869)

The first definite reference to the mill is in 1685 as a blade mill. It was a slitting mill by 1740. The Homphrey family operated the mill until the end of the century. In 1798 Stourton Mill was converted to rolling and the slitting machinery was transferred to Gothersley.

The lease was taken by John Hodgetts who was killed after a few months. His widow continued to run the the mill and her accounts covering the period 1799 to 1810 have survived.

The mill was advertised and let to Foster and Bradley.

After various operators in the 19th century the works was closed about 1890 and offered for sale in 1891. [5]

Today the site is very overgrown. There is a weir over which the river falls several feet. On the east side of this is a brick arch over a dry bed which may have been the tail race. Beside this is a tree-covered waste heap. From the canal there is an overgrown track leading towards the works which would have been the main access for iron and manufactured goods.

2. Checkhill Walk Mill (SO 856877)

A blade mill, formerly held by Francis Penn or Edward Meeke (or both), was surrendered by Richard Bate to the use of Humphrey Jorden. In 1636 Jorden held two blade mills, probably at Checkhill.

Francis Bennett, scythegrinder, died in 1666 and was followed by his widow. About 1670 William Bennett was at the mill.

Thomas Wannerton leased a house and two blade mills from Phillip Foley for 21 years in 1683 and was still there in 1689.

However by 1698 it was a fulling mill operated by John Heath. During the 1730s John Insall was at the mill. The next reference was to Thomas Arnott in 1789. Soon after this the mill was converted to a corn mill.

The miller George Burges died in 1824 and was succeeded by his son George who was there until the 1860s.

Milling ceased in the early 1880s. By 1913 the mill was used to drive farm machinery. Later it was used to supply electricity to the farm until the mid 1930s. There is a small 18th century building with some machinery which is adjacent to the dam of a considerable mill pool, which is marked on the 1887 6 inch O.S. map as Old Mill Pool. The mill itself is not marked. [6]

The existing building is quite small, being approximately 20 ft. by 12 ft.. The external overshot water wheel was 4 ft. wide and 9 ft. 8 in. in diameter, constructed of iron arms and rims but with wooden buckets. The wooden shaft originally drove two pairs of stones by a spur gear but later a flat pit wheel drove a pinion on a layshaft with an iron pulley. This operated a line shaft with pulleys. A pair of c. 2 ft. 6 in. diameter 'portable' millstones was one of the machines driven by these pulleys. There are still remains of this system.

3. Spittlebrook Mill (SO 845873)

The mill is sometimes called Allsop Mill after the family who ran the mill in the late 19th and early 20th century.

This mill is just in Enville parish whereas the mill house is in Kinver. It was probably a fulling mill held by Roger Higgs in 1516 since between 1679 and 1728 the mill was known as Higgs Mill. In 1580 Richard Lee granted the mill to Thomas Leigh who seems to have converted it to a blade mill but in the next century it was again a fulling mill. In the 19th century it was a corn mill. This was bought by Lord Stamford in 1849 and rebuilt. The mill worked until about 1920 and the machinery was removed in 1967. [7] The remaining mill building is a five bayed, three storey, brick structure with a cupola. The internal water wheel was made of iron and was overshot. The wheel was 10 ft. in diameter and 4 ft. wide. This drove three pairs of stones. The arrangement of the hoists is interesting and might have allowed the unloading of carts backed into the basement of the mill. The site of the pool is a depression in a meadow.

4. Hoo Farm Mill (SO 878832)

In 1845 and 1850 James Parrish, farmer and miller, was at this mill. The mill pool was shown on the 1887 O.S. 6 inch map, but the mill itself was not.

By 1982 there were only traces of a building at the northern corner of a pool near the house. [7]

5. Morfe Hall Farm Mill (SO 877829)

There was probably a mill here in 1507 and certainly in 1609.
In 1698 and 1730 Edward Hawkes was at the mill and in 1760 it was known as Hawkes Mill.
A pool was shown on the 1887 6 inch O.S. map, but no mill.
The only remains is a tree-filled depression south of the house. [7]

6. Mere Mill (SO 822886)

This was probably Morfe Mill in 1222.
In 1321 Philip Lutley had a mill on the boundary between Lutley and Morfe manors. The widow of Henry Morfe claimed from Philip dower in two mills.

In the fourteenth century Sir Fulk Birmingham, Lord of Morfe, made leases of Aylewyne's Mill to the Lords of Lutley.

In 1356 the mill was ruinous but was working again in 1403.

Lutley Manor held a corn and fulling mill in 1442. Eleanor Strangeways leased a mill called Aldwyns and Walkmill Pool in 1496 to Stephen Toy. In 1570 Humphrey Toy was at the mill, and that family continued until the mill was sold in 1778 to a W.A.Moseley. About that time the mill was known as Toys Mill. By 1841 it was called Mere Mill.

The three storey brick mill ceased to work about 1935. In 1936 the miller was William Dorrell. It is still standing.

The iron wheel is overshot, 11 ft. by 3 ft. 8 in. wide. It has eight iron arms but the shaft, sole boards, shrouds and buckets are wooden as are the upright shaft, crown wheel and counter shaft for the sack hoist. [7] The upright shaft is eight sided on the lower floor and sixteen sided on the middle floor. the mill has two pairs of stones, a pair of peaks and a pair of burrs. The building itself is well maintained but the surroundings are overgrown and the pool across the road is dry.

7. Lutley Mill (SO 818882)

This is an obvious mill site with the remains of watercourses but no mill for at least 170 years.

8. Philleybrook Mill (SO 812881)

There was a corn mill at Philleybrook Farm in 1632. By 1727 this was ownned by Joseph Amphlett whose family still held it in 1840.

The owner in 1848 was Walter Moseley who sold it in 1849 to Lord Stamford and the mill was probably dismantled soon afterwards. [7]

9. Toys Farm Mill (Est. SO 805875)

This mill was at Toys Farm previously known as Hay House. In 1638 John Toy assigned a moiety of a corn mill to his son Edward. By

1704 the other part was held by Henry Wollaston of Four Ashs Hall. By 1712 he held all the mill when he settled two corn mills under one roof on his second son.

In 1746 it was known as Lutley or Lower Mills. By 1797 there was only one mill.

The mill was sold to J.A.Grove in 1829 and was still working in 1845. [7]

10. Greens Forge (SO 861887)

By 1602 there was a newly built hammer mill which had replaced a corn mill. Dud Dudley lived there in the 1620s.

The mill was in the hands of the Foley family and the lease passed from Thomas to Phillip in 1669. It was probably still occupied by Dud Dudley who was working there in 1674.
Philip Foley leased the mill to Sir Clement Clarke and John Forth in in 1675. The next year it was leased to Henry Cornish, John Langworth, and Thomas Seargant. In 1681 the mill was leased to John Wheeler.

By 1708 the forge had been pulled down and there were two blade mills. Before 1733 a blade mill had been converted to a corn mill. There was still a corn mill and a blade mill in 1816 and possibly 1841. [8]

The mill was rebuilt in the late 19th century and was in use until about 1925. A fine red brick building remains. There are attractive cast iron window frames and the window cills are of sandstone. The size of the wheelpit suggests that the wheel was 14 ft. in diameter and 12 ft. 6 in. wide, operating with approximately 5 ft. head of water. The whole stream at this point could be diverted over this large wheel. There had been four pairs of stones.

11. Hollow Mill (SO 865899)

There was a mill on the west bank of the Smestow at Hinksford in 1678. In 1721 it was grinding timber for dye stuffs.

By 1779 it was a forge which it still was in 1816. In 1851 it was a corn mill which was disused by the 20th century. On the 1887 6 inch O.S. map this is shown as Hinksford Mill (corn). The mill was situated near a cutting through the rock cliff through which cutting ran the mill leat. The mill has not survived and Hollow Mill Farm is now a riding school. [8]

12. (Lower Wallheath Mill) (Est. SO 868898)

This is shown on a map of 1775. [9]

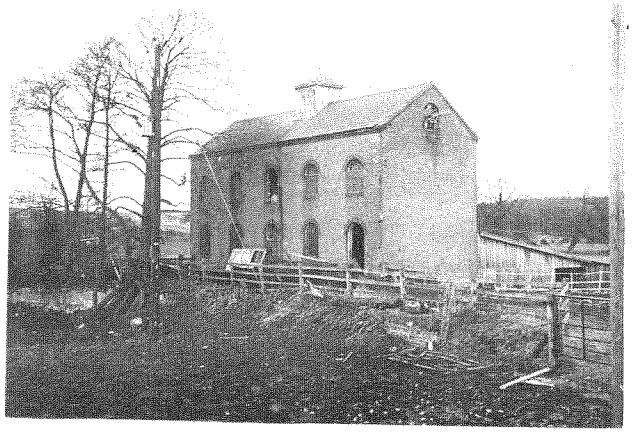
13. (Upper Wallheath Mill) (Est. SO 879904)

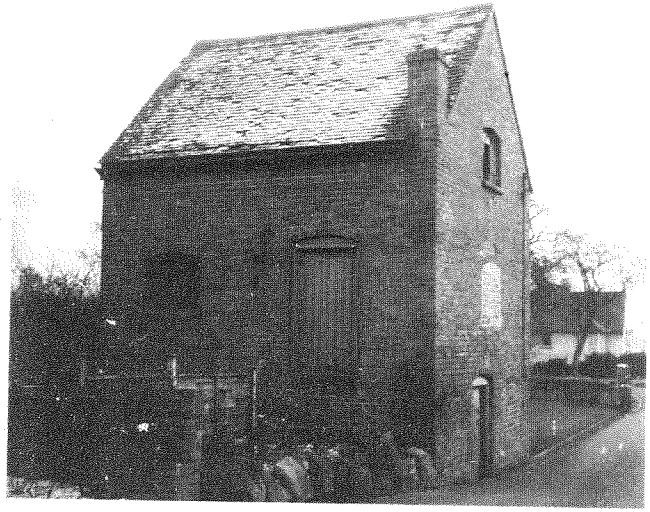
A mill at this location was also shown on a map of 1775. [9] The 6 inch O.S. map (1888) shows Wallheath Forge here by a pool with a leat which indicates the strong possibility of water power being used.

14. Holbeache Mill (SO 885905)

Hubballs Mill is featured in Philip Foley's accounts in 1669 when it was a forge which produced Osmund iron. Philip Foley still held the forge in 1678. [10] The site may be associated with Holbeache Mill which was a corn mill at least until 1888 when David Phillips was miller. The mill was in existence in 1965 but has since been demolished. It was a three storey structure of red brick measuring approximately 17 ft. by 24 ft. There had been an external wheel

SPITTLEBROOK MILL
1975

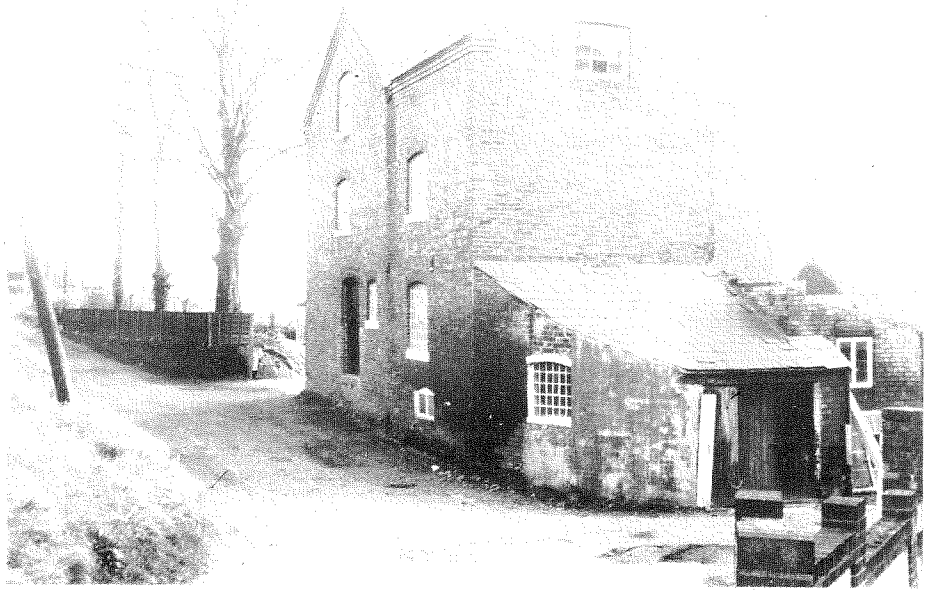




SEISDON MILL
1965

HIMLEY MILL
1965

CHECKHILL MILL 1972



WIGHTWICK MILL 1967

running two pairs of stones. The mill pond was drained by 1925.

15. (Oak Mill) (Est. SO 892907)

This was also shown on Yates map of 1775. [9]

16. Hunts Mill (SO 914899)

There are now the remains of a red brick mill building at this site. This is in poor condition. A corn mill was shown on the 6 inch O.S. for 1887 but no pond indicated. [11]

17. Hascod Furnace (Poss. SO 902909)

This is one of the furnaces at which Dud Dudley claimed to have smelted iron using coal.

It was demised in 1626 by Edward Lord Dudley to John Smallmore, who assigned the lease to Francis Heath in 1631.

The site was identified by Mr Gale as Askew Bridge on the Pesnett Railway. [12]

18. Gornalwood Furnace (Poss. SO 913906)

This furnace was demised by Edward Lord Dudley to Richard Hamnett in 1595. In 1607 Thos. Hickmans was at the furnace. John and Nicholas Guest took a lease on a former furnace, pool etc in 1648. [12]

19. Hinksford Farm Mill (Est. SO 869902)

This site to the north of Hinksford Farm was shown on a map of 1775. [9] By 1972 there were only the partial remains of a brick building which was claimed to have been part of the mill.

20. Himley Mill (SO 877911)

This was the site of some of Dud Dudley's smelting trials using coal.

Lord Dudley leased the furnace to Richard Foley in 1625 but by 1631 Lord Dudley held it again. The last reference to a furnace was in 1638. [3] The furnace site may have been close to Himley Hall (SO 889915) or near the later Himley Corn Mill.

Later in the 17th century Plot mentioned a blade mill at Himley. [13]

A corn mill is shown on the 6 inch O.S. map (1888). This ceased to work about 1900 when the miller was Mr. Cartwright. Machinery was still in place in 1914/18 war but was later removed. The interior water wheel had been about 5 ft. 6 in. wide and 13 ft. 6 in. in diameter and almost certainly overshot. The building was of red brick.

21. Swindon Forge (SO 826906)

At Swindon there was a fulling mill in 1303 and 1465. This was a corn mill by the mid 16th century. However by the 1620's this had been converted to a forge. A complication arises in 1647 when the Jorden family leased a corn mill to Thomas Foley who converted that mill to a forge. He bought it in 1668 and the next year passed it to his son Philip. The mill was included in three leases by Philip before

the end of the century.

By the 1730s Francis Homfray of Old Swinford was in charge. In 1756 and 1768 the forge was operated by his son Francis of Wollaston. The forge was leased to Francis and his sons Jeston and Francis in 1788, and in 1790 sold to the sons. Francis died in 1809 and the works was advertised for sale in 1811.

The works was owned and occupied by Thomas Homfray in 1816. Later it was run by P.Homfray and R.Shinton who dissolved their partnership in 1820. It was offered for sale by Mr. Hodgson in 1828 (with Gothersley).

The next reference was to George and Edward Thorneycroft in 1834. In 1852 there was a partnership of Eli Richards, Joseph Shaw and Richard Brown. Two years later Brown and Shaw died and the next year Richards was bankrupt. By 1859 J.Watkins was at the works followed by William Watkins and Company in 1862.

In 1866 the works was leased to E.P. and W.Baldwin who purchased the works in 1899. The site had 12 puddling furnaces and two mills in 1873.

The works was run by Richard Thomas and Baldwin in 1945. It closed in 1976 and was subsequently demolished and the land used for housing. [8]

22. Smestow Mill (SO 856916)

Smestow Mill in the parish of Wombourne was first referred to in 1816. In 1839 it was said to be recently repaired. [8]

The building exists and is now part of a Wildlife Park. The exterior breast shot water wheel is 14 ft. 6 in. in diameter and 7 ft. 3 in. wide, and is all of iron. Internally some machinery remains and the elaborate cast iron hursting for four pairs of stones. Some restoration is in progress though the water supply has been lost in the course of river improvements.

23. Heath Mill (SO 858923)

In the 16th and 17th centuries there were mills in the area but their location is problematical.

In 1601 the mill was sold by William Wollaston to Hugh Wrottesley.

About 1600 the mill was converted to a hammer mill.

By 1650 the forge was run by Thomas Foley who passed it to Philip Foley in 1669. He leased the works in 1675, 1676 and 1681.

Ironworking ceased in 1814. The mill was rebuilt by Sir John Wrottesley in 1827. Milling stopped about 1930. The building had four stories and was of red brick construction with a tiled roof. It was demolished in the late 1970's. The overshot wheel was 18 ft. 4 in. in diameter and 6 ft. 3 in. wide. [8] It was particularly heavily constructed of iron with an iron shaft of 1 ft. 9 in. diameter. An inscription on the wheel indicated that it was made by W.G.Massey, Newport, Shropshire. There had been four pairs of stones.

The site is now a housing estate and the brook has been straightened.

24. Ham Mill (SO 874928)

Ham Mill was probably a Domesday mill and one of two that existed in 1483.

In 1840 George Prior was miller there and he was still the miller in 1860. [8] On the 6 inch O.S. map of 1889 only the mill house was shown.

25. Wombourne Mill (SO 878929)

This was probably a Domesday mill and one of two that existed in Wombourne in 1483. There was a mill in this area in 1664. By 1758 this was a corn and blade mill, but in 1816 it was only a blade mill. In 1889 a pond was shown on the 6 inch O.S. map but no mill.

There are now no remains and the site was laid out as a park in the 1960's and 1970's. [8]

26. Wodehouse Mill (SO 885935)

There was a mill in this area called Ludes mill in 1458. The next reference was to a fulling mill in 1570. In 1672 a malthouse was converted from a corn mill.

There was a blade mill at Woodhouse in 1688 and in 1693 a blade mill and a corn mill.

A corn mill was burnt down in 1814. This was rebuilt in 1840. [8] This continued grinding corn for cattle feed until about 1976. The mill is attached to an early 18th century farm house. The wheel was an iron pitchback type, 17 ft. in diameter and 3 ft. 5 in. wide, with two sets of eight arms. It was supplied by G. and R. Turton of Kidderminster in 1840, and installed by John Bate, Millwright, Himley. It drove two pairs of French burrs by Kay and Hilton. In a small building behind the mill is an 8 ft. diameter by 2 ft. 8 in. wide overshot wheel which drove farm machinery, a pump and also generated electricity.

27. Orton Mill (Poss. SO 868952)

Soon after 1551 William Barnsley built a mill on land given by the lord of Orton and Wombourne. This was probably Hackley Mill, first mentioned in 1562, and held by Thomas Barnsley in the early 1600's. In 1648 the tenant surrendered the mill to Sir Walter Wrottesley. [8]

28. Trysull Mill (SO 851944)

There was a mill west of Trysull bridge in 1775.

The present mill was built in 1854 by Lord Wrottesley. The three storey building of red brick was operated by a breast shot wheel 17 ft. 6 in. in diameter by 6 ft. 2 in. wide which was made entirely of iron with eight arms. The water wheel was ordered by Lord Wrottesley in 1861 from George Turton of Kidderminster. It was designed to operate with a "sinking shut" with guide vanes to direct the water into the buckets. The sinking shut was later replaced by a conventional lifting shut but the guide vanes remain. There were three pairs of stones. [14]

The mill was sold to A.W.Summerton who was the last miller in 1929 from the Wrottesley estate. Corn had been milled but after the sale only animal feed. Water milling ceased in 1940 as a result of failure of the wheel bearings. Milling on alternative plant using electricity continued until 1954.

The conversion of the property to a dwelling house has recently been completed, [15] but the water wheel and main gearing have been retained.

29. Seisdon Mill (SO 839948)

This mill probably existed by the early 13th century and was

one of the mills attacked in riots in 1412. It was probably the mill north of Seiston Bridge in 1775. [14]

The mill was sold to the tenant by Lord Wrottesley in 1929. The last miller was Mr. Barton and the mill ceased to work about 1930. The mill was so small that grain had also to be stored in the mill house. The overshot wheel was about 6 ft. wide and drove two pairs of stones. It also drove an iron shaft which ran in a pipe under the road to operate a root pulper in the farm opposite.

There is a disused mill dating from the 19th century and a mill house nearby dated 1749. The mill is a small two storey brick building close to the river.

30. Great Moor Mill (SO 873984)

This mill in Pattingham was grinding animal feed from about 1914. The power was supplied by water diverted east from the Nurton Brook. [16] The mill was a red brick building on two floors dating from the early 19th century. The wheel was a remarkable 24 to 30 ft. in diameter and 2 ft. wide. It was a low breast shot type using 5 ft. head of water. Unusually, it was some fifty paces from the mill which ran by line shafting with gears and belts to operate two pairs of stones. No flour was ground after 1914 but animal feed was ground until 1945 when an electric mill was used. The last miller was Jack Moseley. In 1979 there were few traces remaining.

31. Grange Furnace (SO 851944)

This was a furnace as early as 1636 when it was held by Richard Foley. In 1669 Thomas passed it to Philip - at that time it was operated by Isaac Oakey. It featured in three leases before forming part of the Ironworks in Partnership in 1692. [4]

Later there was a corn mill on the site. This formed the end of a red brick farm building. The external wheel was overshot, 16 ft. in diameter and 2 ft. wide. It was of iron construction on a round iron shaft 1 ft. in diameter. This drove two pairs of burr stones. The last miller, Mr. Inett, also used the mill to drive a chaff cutter, pulper, electric generator and a saw bench. The mill stream was diverted in 1939 leaving the mill dry. The overshot wheel was about 6 ft. wide and drove two pairs of stones. It also drove an iron shaft which ran in a pipe under the road to operate a root pulper in the farm opposite.

There is a disused mill dating from the 19th century and a mill house nearby dated 1749. The mill is a small two storey brick building close to the river.

32. Perton Mill (SO 858977)

Ranulf had a mill at Perton on the Smestow in the mid 1190s. This descended with the Perton Estate until the early 19th century.

There is now a derelict red brick building at Perton Mill Farm apparently built or rebuilt in 1766, according to a date carved on the rafters. The building had three floors. The wheel house and the room over it were built later and were marked "T.LAW MARCH 1811". [16]

The water wheel was high breast shot, 14 ft. in diameter and 6 ft. wide. This drove three pairs of stones. The machinery was removed in 1965/6 but had not worked for over 40 years.

33. Wightwick Mill (SO 875985)

This mill was in the manor of Tettenhall until the 19th century.

In 1744 the mill passed from John Grove to Richard Fryer. His son John took over in 1774 followed by his nephew Richard in 1780 and his son John in 1828.

There were two sets of stones in 1744. By 1888 it was a steam mill. [16] The site is now part of Wightwick Mill Farm. There is a brick building in reasonable repair.

34. Compton Mill (SO 883990)

This mill was part of the manor of Tettenhall Regis from early times until the 19th century. Between 1709 and 1717 Richard Cresswell passed the mill to John Shelton. In 1743 there was a corn or blade mill. During the 18th century the mill was run by the Allen family.

In 1843 and 1892 the mill was part of the Pearson estate. By the 1860s it was occupied by the Bate family, millwrights. The mill was grinding corn in 1894 but was out of use by 1900.

In 1853 there was a house and a two storey mill with an overshot wheel and two set of stones. These had gone by 1980. [17]

35. Dunstall Mill (Est. SJ 902003)

This is shown on a map of 1774. [9]

The miller in 1864 was J.Gaunt. The mill was still in existence in 1889 when the 6 inch O.S. map indicates a mill pond with a weir at the mill. No leats were shown.

36. Goss Brook Mills (Est. SJ 915005)

This is also shown on a map of 1774. [9] The area had been built over by 1889 (6 inch O.S. map).

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MILLS OF THE UPPER ARROW VALLEY IN AND NEAR KINGTON, HEREFORDSHIRE

by GORDON TUCKER

The River Arrow which rises in the hills of southern Radnorshire and then flows through Kington to join the River Lugg (itself a tributary of the River Wye) just below Leominster, is essentially a Herefordshire river. Of its known or possible watermill sites, which number some three dozen, including those on its tributaries as well as its main stream, only three known sites and two of the possible sites are in Radnorshire; all of the remainder are in Herefordshire.

The present article covers the upper half of the Arrow system, shown in the map, Fig. 1, amounting in total length of stream to about 25 miles. This part of the area looks to Kington as its town. The parish of Kington is large, and of the 15 certain and six possible sites described in this article, no fewer than eight of the former and two of the latter are in that parish.

Naturally, most of the mills were corn mills as the area is basically agricultural, but there was a surprising variety of other kinds of water-powered activity:- a woollen mill, a water-pumping station, a foundry, which was succeeded by a water-powered laundry, a small hydro-electric generating station, an iron forge, and a tannery which may have used water power.

The mills of the Upper Arrow are here described in the form of a gazetteer. The numbering system corresponds with that on the map of Fig. 1, and works downstream, digressing at each confluence to number the mills on the tributary brook before progressing down the main stream. Mill sites which are possible but far from certain are numbered in a separate series with each number prefixed by P.

The list of sites is as follows:

1. Milton Mill
2. Hall's Mill
3. Park Stile Mill
4. Gladestry Mill
5. Hergest Mill
6. Woollen Mill
7. Arrow Mill
8. Weythell Mill
9. Floodgates Mill
10. Crooked Well Mill
11. Crooked Well Pumphouse
12. Kington Laundry, formerly Foundry
13. Bullock's Mill
14. Lords Mill
15. Forge Mill/Strangworth Forge

Possible mill-sites:-

P1. Newchurch
P2. Near Knowle Farm
P3. Lower Mill, Gladestry
P4. Tannery
P5. Lower Mill, Kington
P6. Hunton

I would like to thank the many people who have helped me with access to sites and buildings and with information, and particularly Mr.D.Hobden of Milton Mill, Mr.C.R.Lane of Park Stile Mill, Mr.W.I.Price of Kington, the directors of the Kington Laundry, members of the Kington Historical Society, and the staff of the

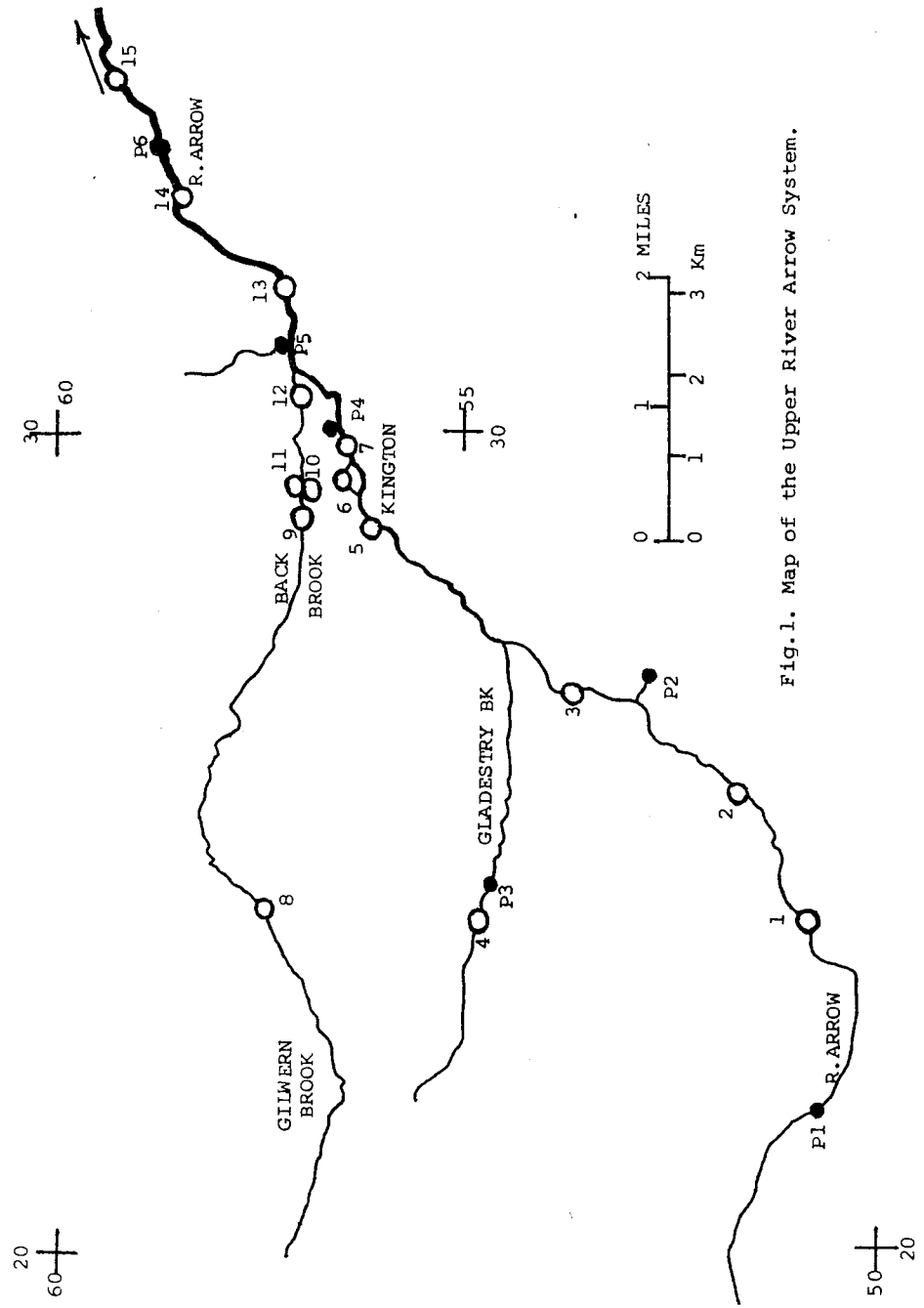


Fig.1. Map of the Upper River Arrow System.

Herefordshire County Record Office.

GAZETTEER

1. Milton Mill, parish of Michaelchurch-on Arrow, Radnorshire. SO 240509.

On R.Arrow. Now converted to a large house in two wings in L-formation, but retaining a very large proportion of its machinery. There were two water wheels in tandem in a long wheel-pit, but both were at the same level and drove two virtually separate mills. One overshot wheel is still in place in the first position, with its header box, but only the shrouds of the second wheel remain, loose in the pit. There seems little doubt that the first position, on the upper wing of the building, represents the later addition, and that the original mill was the lower wing. Three visits failed to find anyone at home, but a letter eventually led to a telephone call from the owner, Mr. David Hobden, who gave the following descriptive information.

The two wheels drove separate machinery. The upper, or later mill, has the most complete remains, with the pit wheel of iron with wooden teeth, iron wallower, all-iron great spur, iron stone nuts with wooden teeth, wooden upright shaft, wooden crown wheel with morticed spokes and iron band, horizontal shaft with fast and loose pulley, sack-hoist still remaining, but no dressing machines left. There were two pairs of millstones, one pair still in its wooden tun, but the other represented only by its Peak bedstone. The lower, or earlier mill, is represented only by its pit wheel (iron) and hursting, with tentering arrangement, for one pair of stones.

According to Davies [1] the mill was last in use about 1925 and was partly dismantled in 1940.

Taylor´s map of 1754 marks very clearly a mill at SO 247512, but does not show one at the actual site of the mill as now standing. Generally Taylor´s locations are remarkably accurate, but in this area he does seem to have got a little confused, and his indication does probably refer to Milton Mill. It was shown as MILTONS MILL on the 1st-edn. one-inch O.S. map, and by a mill symbol on Bryant 1835. The Tithe Map (Michaelchurch upon Arrow, 1845) shows MILTONS MILL, but the six-inch O.S. 1905 shows MILTON MILL. The leat is indicated as about 1000 yards long.

2) Hall´s Mill, parish of Huntington, Herefordshire. SO 254518.

On R. Arrow. A small mill built of rubble masonry, with three storeys and plan about 25ft. by 20 ft. Now roofed with corrugated iron. The upper floor has collapsed and the timbers are in bad condition. Almost all iron has been removed for scrap. The wheel was external, probably overshot, about 10ft. by 4ft. The wooden axle of 20in. diameter remains; the upright shaft has collapsed - it is octagonal, 12in. across opposite sides. Of the gearing, only the two stone nuts remain, together with their shafts, footstep bearings, bridge trees and tentering gear. There is one French burr bedstone in situ. A wooden pulley on a horizontal shaft remains in the roof, presumably the drive for the sack hoist.

According to Davies [2], the mill was still in use in 1940 for grinding cattle food on one pair of stones.

Taylor´s map of 1754 shows a mill very close to this site at SO 255513. As stated earlier, Taylor is not too reliable in this area, so this is probably good evidence that the mill we are describing was built before 1754. HALE´S MILL is shown on the 1st-edn. one-inch O.S.

map, and HALLS MILL on Bryant 1835. The Tithe Map (Huntington 1845) shows HALES MILL, with owners Robert Wilson and William Ferrier, and occupier James Morris. Hall´S MILL with 850-yard leat shown on 6-in.O.S. 1905.

3. Park Stile Mill, parish of Kington, Herefordshire. SO 267537.

On R. Arrow. The mill and mill-house stand in line as a single building, in very good condition, having been restored by the previous owner, Mrs.Dron [3], and well maintained by the present owner Mr.C.R.Lane. The mill is complete and workable except for some millstone furniture. One millstone has collapsed. Although the terminal pond has been much altered to make a fishery, the half-mile leat still caries water and can turn the wheel. The building is extended on the side of the mill remote from the house to provide a drying kiln, which still has its drying floor of iron kiln tiles.

The wheel is overshot, approximately 11ft. diameter by 4ft. wide. The pit wheel is about 8ft. diameter and the great spur about 7ft., both of iron apparently cast in one piece. All gearing is of iron, but the stone nuts have wooden teeth, as has the gear meshing with the crown wheel. There are three pairs of stones, all French burr; one runner has four rectangular balancing boxes. Tentering is by screwing up the bridge trees in the usual way. There is a boulter and sack hoist. The bin (i.e. third) floor is unlit by windows. The bottom floor of the mill is now incorporated into the house and the gearing is viewed through a glass panel and illuminated by special electric lights.

The site must have had a mill on it for centuries, because the parish boundary between Huntington and Kington passes along the fairly long tail race. This indicates that this was once the course of the river, which was diverted when the mill was built or enlarged at some remote time.

Taylor´s map of 1754 shows ELOEX´S MILL here, while Bryant 1835 shows LODGE MILL. The Tithe Map of Huntington (1845) merely shows ´mill´, but that for Kington (1845) shows PARK STILE MILL, with owner James Cheese and occupier Samuel Meek. The same name is shown on the 6-in. O.S. 1905, and is used by the present owner.

4. Gladestry Mill, parish of Gladestry, Radnorshire. SO 240548

On Gladestry Brook. There is now no sign of the mill building itself, although the leat remains clearly visible, although dry. What was probably the mill house remains as ´Mill Cottage´, much renovated. Davies [4] refers to this mill as destroyed long ago, ´for there is no sign of the watercourse to the mill.´ As we have already said, the leat is actually very obvious, and it must be questioned whether Davies was referring to the correct site; Oldham [5] refers to a ´Lower Mill´ at Gladestry, now disappeared, and it is possible that Davies had this in mind. Oldham states that a mill was known in Gladestry as early as the 14th century, and Davies gives references to a mill in 1608 and 1784.

Taylor 1754, Bryant 1835, and the 1st-edn. one-inch O.S. of c1830 do not show a mill at Gladestry, but the Tithe Awards (Gladestry 1839) show a ´mill´, owned by Thomas Wall and occupied by John Smith. ´Mill Cottage´ was shown on the 6-in. O.S. 1905. The farm opposite is named ´Llanfelin´ today (N.B. felin, mutated from ´melin´, is Welsh for ´mill´), and was named ´Llanyvellin´ on the Tithe map.

5. Hergest Mill, parish of Kington. SO 287562.

On R. Arrow, on its north-western side. Building still stands, with two storeys and an attic; stone-built with slated roof. There is a lower extension on the south-east with stone-built lower storey and weatherboarded upper storey. At the north-west end of the south-west wall is a small protrusion with a chimney - a drying kiln perhaps ? The wheel was external on the north-east side, with the water flowing on to it from the north-west. An iron wheel-axle of about six inches diameter, with iron hubs still in place, lies across the wheel pit, with its inner end now lying apparently on the sill of a window. An old wooden axle also lies across the pit further down, with one end also lying on another window sill - this might have been the upright shaft, or there might have been two wheels. The depth of the pit below the axle(s) was sufficient to suggest the wheel(s) would have been overshot. The present occupier of the very attractive mill-house was sure there was no machinery left inside the mill, but access could not be obtained, nor could an effective view inside be obtained through the boarded-up window openings.

The mill was shown by symbol on Taylor's map of 1754; it was shown as COURT MILL on Bryant 1835, but as HERGEST MILL on the 1st-edn. one-inch O.S. Shown on Tithe Map (Kington 1845) with plan as at present, and with a leat 1200 yards long starting immediately by Hergest Court. The Apportionments show the owner as the Earl of Oxford and the occupier as Walter Hall. The latter is quoted as 'Miller and cornfactor at Hergest-mill' by Parry in 1845 [6]. The mill was understood to have been part of Banks's Ridgebourne Estate.

6. Woollen Mill, parish of Kington. S.O. 294565.

On R. Arrow. The buildings are in two parts, both facing north. On the west is a stone-built house, converted from a mill; it had an under-shot wheel inside at the south-east corner and the tail-race can still be detected for some 20-30 yards, and then again further down on its 250-yard course to the river. The building on the east is weather-boarded timber. Behind it is a small brick cottage reputedly the manager's residence. The leat started at a weir in the river and was about 600 yards long. Most of it can still be traced easily; the final 100 yards or so came through what has been a park or recreation ground for about a century, and was crossed by paths on bridges - see Fig. 2. Although this section of the leat has been filled in, one of the bridges has been left in place in the path.

The mill was a weaving mill, although it may have included other processes too. It was shown by a mill symbol on Taylor's map of 1754, and as a FACTORY on Bryant 1835. In 1845, Parry [7] names it as CRABTREE MILL (N.B. the road is still named Crabtree Lane) with John Phillips as a flannel manufacturer. The Tithe Awards (Kington 1845) also give the name Crabtree Mill and the occupier as John Phillips, but also give the landowner as the Earl of Oxford.

More modern extensions to the buildings mentioned are almost certainly irrelevant to the woollen mill, and now serve as a coach garage. When the woollen mill ceased to work is not known, but the 1928 edition of the 25-in.O.S. showed it as a WOOLLEN FACTORY, so it was probably working then.

7. Arrow Mill, parish of Kington. SO 298564.

On R.Arrow. Often referred to as Arrow Lodge Mill. This is a large town mill of four storeys, floor plan about 75ft. by 22ft. with the long axis south to north. The south end stands over the leat and would once have had an internal undershot wheel. At a later date, the wheel was replaced by a turbine, the gearing for which is still in place,

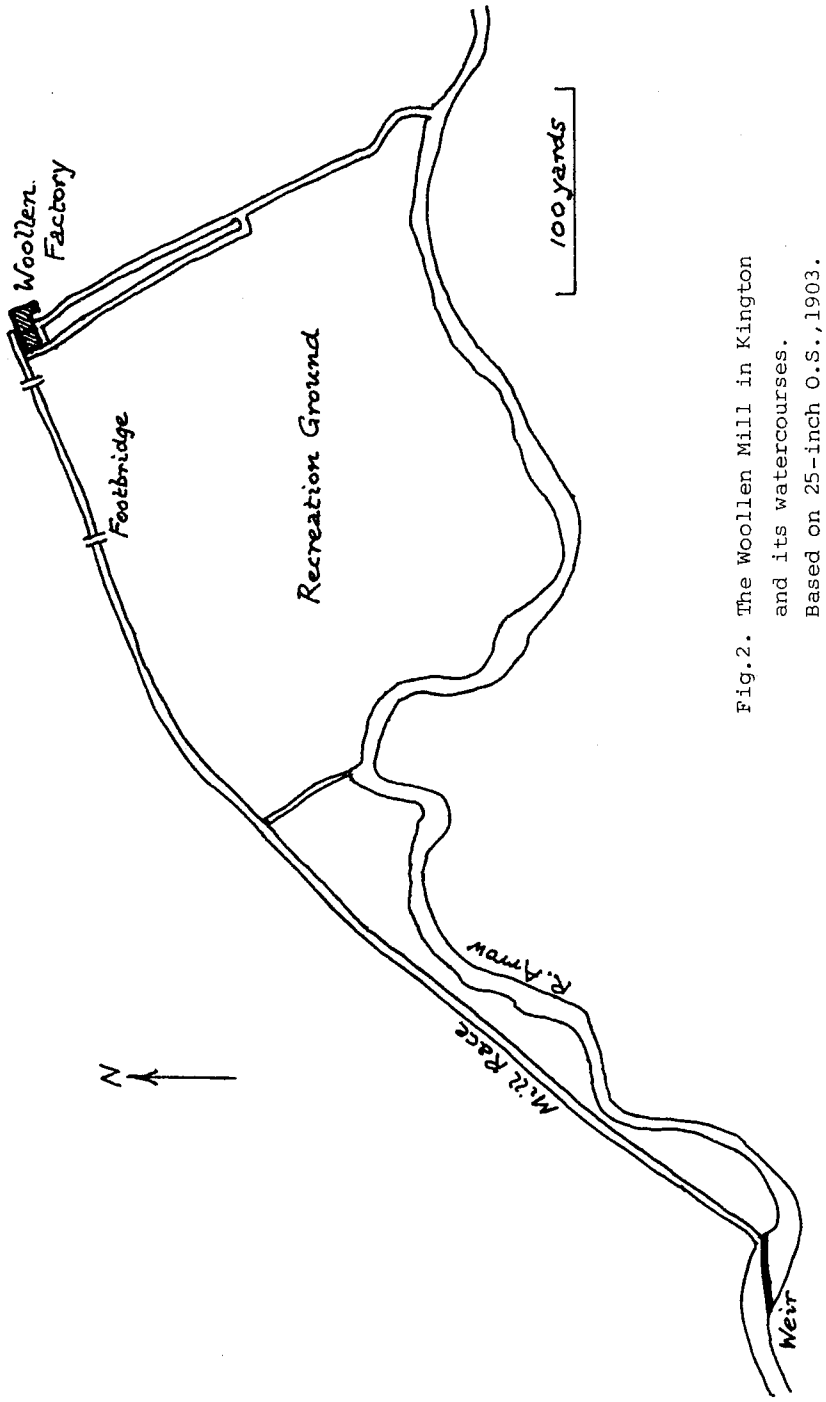


Fig.2. The Woollen Mill in Kington and its watercourses. Based on 25-inch O.S.,1903.

comprising an iron gear with wooden teeth at the top of the turbine shaft, meshing with a smaller iron bevel on a horizontal lay-shaft still carrying a large rod-spoked pulley. A man who joined the mill staff in 1947 said that the turbine was still driving four pairs of millstones then, and he believed they were all French burrs. He said that the tradition was that the mill was built in 1801. However, it is probable that it was built before then, for a member of the Turner family that has owned and run the mill continuously since 1801 has written [8] that it was purchased by James Turner in that year. It was James's son Thomas, who, returning from a long spell in business in London in 1834 developed the mill business from a local one to a large-scale regional flour business, with a bakery adjacent. He also worked Bullock's Mill (No.13) and his son worked Hergest Mill (No.5). It was probably also this Thomas who built the fine large building on the north side of the mill yard, for there is still an old board above the door with the following inscription:

C.Thomas Turner
Licensed Maltster

It would seem therefore that Thomas also built up a malting business.

The mill is still in use, electrically driven, preparing animal feedstuffs.

The mill is not shown on Taylor's map of 1754, so may well have been first established between that date and 1801. It is shown as ARROW MILL on Bryant 1835. The Tithe Map (Kington 1845) shows Mill with a leat of 150 yards, but the accompanying Apportionments refer to KINGTON MILL, owner and occupier Thomas Turner. The 25-in.O.S. 1903 shows ARROW LODGE MILL (CORN).

8. Weythel Mill, parish of Old Radnor and Burlingjobb, Radnorshire. SO 242575.

On Gilwern Brook. Completely derelict and devoid of machinery except for one wooden pulley. The west wall of the mill itself has gone, but on this side there still remains part of a small extension which was probably only a shed, but might have housed a kiln. The wheel was external on the eastern side and the leat came round the back of the mill (i.e. alongside the south wall) to reach it. The head was probably about 12ft. and the wheel high breast. The leat was about 100 yards long and the tail race about 70 yards.

The 1st-edn. one-inch O.S. of c.1830 shows MILL here, and it is shown, though not by name, on the Tithe Map for Old Radnor (1841); the Apportionments show the owner as Sir John Welsh and the occupier as John Jones. However, it is believed that at that time the mill was actually in the Township of Trewern and Gwaithla in the parish of Llanfihangel-nant-melan. The mill is marked as WEYTHEL MILL on the 6-in.O.S. 1904.

9. Floodgates Mill, parish of Kington. SO 290569.

On Gilwern Brook, here known as Back Brook. Mill building still stands, with mill house attached behind. It has three storeys and has been converted into a residence of sorts. Its use as a mill is well documented by maps, as will be seen below, but there is no evidence on any of them or on the ground of any leat. The mill stands immediately beside the stream, which may, therefore, have been pounded by a weir which has now (and probably long since) disappeared.

The mill is marked on Taylor's map of 1754, but unnamed. It is labelled FLOODGATES on Bryant 1835, and FLODGATES MILL on the Tithe

Map (Kington 1845), with the Apportionments giving the owner as Eliza Turner and the occupier as William Savery Serman. However, Parry [9] in 1845 gives the miller here as Mr.Jones. The 25-in.O.S. 1903 marks CORN MILL here.

Outside the mill, when visited in 1984, was an old and very worn -- also broken -- monolithic conglomerate millstone, but whether this had once worked in this mill is not known.

10. Crooked Well Mill, parish of Kington. SO 293570.

On Back Brook. There is now no sign of this mill except the weir and part of the leat. However, Taylor's map of 1754 shows a mill here, as does Bryant 1835. The Tithe Map (Kington 1845) shows the long leat and tail race to the north of the brook, and a building where the mill must have been, but does not label it as a mill. The Apportionments give the owner as Jane Hatton and the occupier as John James. Since Parry [10] in the same year (1845) as the Tithe Map gives John James as Miller at Crooked Well Mill, it seems fairly certain that the building was still a mill then.

My remaining information about the site comes from Mr.W.I.Price, retired Surveyor to the Kington Urban District Council, both in a letter and in a newspaper article [11]. About 80 yards to the east of the mill site is a spring called Crooked Well. See Fig.3. In 1835 two Kington men, James Pritchard and George Baynham, leased the land containing the spring and the mill from the owner, Dame Elizabeth Coffin Greenly of Titley Court. This appears to conflict with the Tithe Awards, and there may be some error over dates. Pritchard and Baynham installed a pump at the mill, to be driven by its water wheel, to pump the spring water through 2-in. iron pipes to a 700-gallon tank at Castle Hill, Kington, whence it was supplied by gravitation to the surrounding houses. In 1886 the Kington Water Company Ltd. was formed and purchased the plant and goodwill of the business and also the land, the former for £1050 and the latter for £50. They built a new pump-house (see No. 11 below) and probably immediately demolished the mill. The miller's house was left standing, and probably used by the company; it still stands, but is derelict. The Kington By-Pass road now passes over much of the site of the leat and the mill itself.

11. Crooked Well Pump-house, parish of Kington. SO 294570.

On Back Brook. This neat brick building still stands, and houses electric pumps for raising water from the Crooked Well spring to supply the town of Kington, which since 1960 has also had water from a borehole. The pump-house was built in 1886 by Kington Water Co. Ltd. and was then equipped with a water turbine built by Gilbert Gilkes and Gordon of Kendal, together with an auxiliary small steam engine to assist when the brook was low.

The company had a capital of £5000, R.W.Banks was Chairman, R.L. Bamford of Hereford was consulting engineer, and John Rogers was the local man in charge of the plant. The Town Council bought out the company for £4000 in 1920, and replaced the original turbine by a new one from the same makers in 1937. The original pumps and steam engine were taken out in 1952, and electrically-driven pumps installed in their place.

12. Kington Laundry, formerly Foundry, parish of Kington. SO 304570.

On Back Brook. The weir is still in the brook, in good condition, and giving a head of about 8ft. in the leat, which still carries water

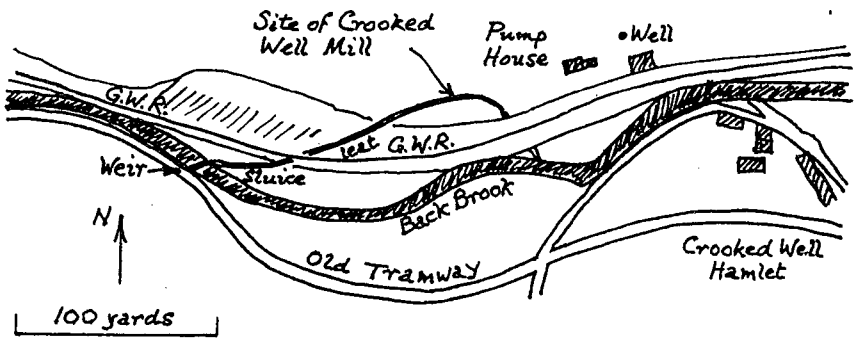


Fig.3. Map of Crooked Well Mill Sites, Kington.
Based on 25-inch O.S.,1903.

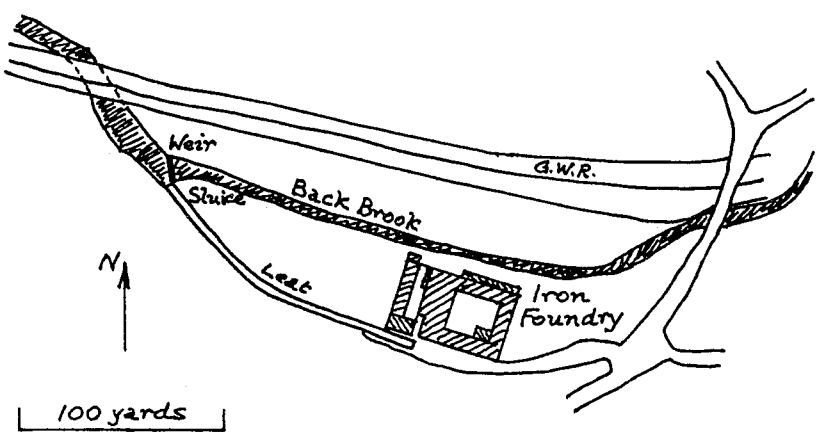


Fig.4. Map of Iron Foundry Site, Kington.
Based on 25-inch O.S.,1903.

which is used in the laundry works still functioning on the site. However, this water no longer provides power, since the works went over to mains electricity in 1947.

As a site using water power, it must be quite old, for it is shown as an unnamed water mill on Taylor's map of 1754. From 1820 to 1926 there was a foundry here, known as Meredith's Foundry, and the history of its origins is given by Parry [12] as follows:

> "In the year 1811, John Meredith, Esq., commenced making nails, and opened a smith's-shop, in a building near the Market-hall; and in 1815, he established a foundry, on a small scale, in an adjoining barn; this building was soon rendered too small, by the increasing demand for heavy castings. The spirited originator, therefore, determined upon erecting a more commodious edifice, of a quadrangular form, on a site of land which he purchased of the Earl of Oxford, contiguous to the railway near Sunset. A spacious building, over which vulcan and the genii of Arkwright and Watt seem to preside, for this purpose, and also show-rooms for manufactured goods, and an office for a clerk, who is constantly in attendance, were built in 1820."

Several points in the above quotation need comment. Sunset is the rather curious name of a part of Kington. The railway mentioned is the Kington Tramway, which was a horse-powered tramroad long ante-dating steam railways, which started at the stone quarries at Burlingjobb in Radnorshire and ran eastwards along the south bank of the Back Brook through Kington. Its path is still readily detected, and indeed there are still many of the old stone sleeper blocks in situ. The bulk of the 'quadrangular edifice' still stands, incorporated into the later laundry as described below. The mention of the 'genii of Arkwright and Watt' seems a clear indication that both water and steam power were used.

It was in 1926 that the present laundry firm was founded as the Kington Economy Laundry by J.H.Langston, whose daughters are still working directors. It was through their courtesy that I was able to obtain the story of the laundry. On its formation, the firm took over the old foundry and adapted it to its new use with the minimum of alteration and new building. Consequently the form of the foundry buildings can still be seen, with a fine ventilating tower of wood with louvres. One of the stanchions has a date of 1873 cast on it, suggesting that Merediths made some alteration to it at that date. The laundry firm put in three water turbines to utilise the power available in the leat: two, in the main turbine pit (which can still be inspected) drove a d.c. electrical generator, and one in a subsidiary channel drove another generator. Ther was also a steam engine coupled to a third generator. The electricity was used for driving machinery and for heating water. When mains electricity became available in 1947, the turbines went out of use, but they have not been removed. The water from the leat is now used only for washing.

The Tithe Map (Kington 1845) and the 25-in.O.S. 1903 both show the Foundry with weir and leat. The map in Fig.4 is based on the latter.

13. Bullock's Mill, parish of Lyonshall. SO 318572.

On R.Arrow. The mill has disappeared except for a few pieces of stonework. It was replaced some decades ago by a concrete-block building used as a small hydro-electric generating station supplying the Lyonshall Estate. The turbine has now been removed and the

building is derelict and empty except for some porcelain insulators remaining on one wall as a sort of symbol of its former use. The stone-built leat is still in good condition, with a good overflow weir; the head would have been about 8ft. The tail race is also stone-built.

A road sign-post on the B4355 to the north perpetuates the name of Bullock's Mill, which is the name shown on Taylor's map of 1754, on the 1st-edn. one-inch O.S. of c.1830, and on the Tithe Map. Curiously, however, Bryant's map of 1835 marks it as YATE MILL.

The 6-in.O.S. revision of 1927 (published in 1931) shows the mill as BULLOCK'S MILL (DISUSED) and the leat as 'Old Mill Race'. Evidently, therefore, the mill was out of use before 1927, but the hydro-electric station not yet built.

The Kington Historical Society has an old photograph labelled Bullocks Mill, which shows two buildings which might be the two shown on the 6-in.O.S. However, the water level in the stream in front of the buildings seems too high for the river below the weir, and the relationship with the railway seems wrong. So some doubt exists about its identification.

14. Lords Mill, parish of Lyonshall. SO 329584.

On R.Arrow. A building still stands in the right situation which has the appearance of a former mill, without having any positive identifiable features. It is of three storeys, the bottom one of stone, the middle one weatherboarded, and the top storey half-timbered. A small square flat piece of land behind the building may have been a terminal pond on the leat, and, if so, the wheel must have been undershot and the wheel-pit would have been on the north side of the building, where there are no windows in the bottom storey. There is now no sign of the leat, but the 6-in.O.S.1931 shows a footpath where the leat would have gone and more-or-less on the line of the leat shown on the Tithe Map.

Taylor's map of 1754 shows this mill as PETIRE MILL; on Bryant 1835 it is LORDS MILL; it is not named on the Tithe Map;it is marked as TITLEY MILL on the 6-in.O.S.1931 (revised 1927).

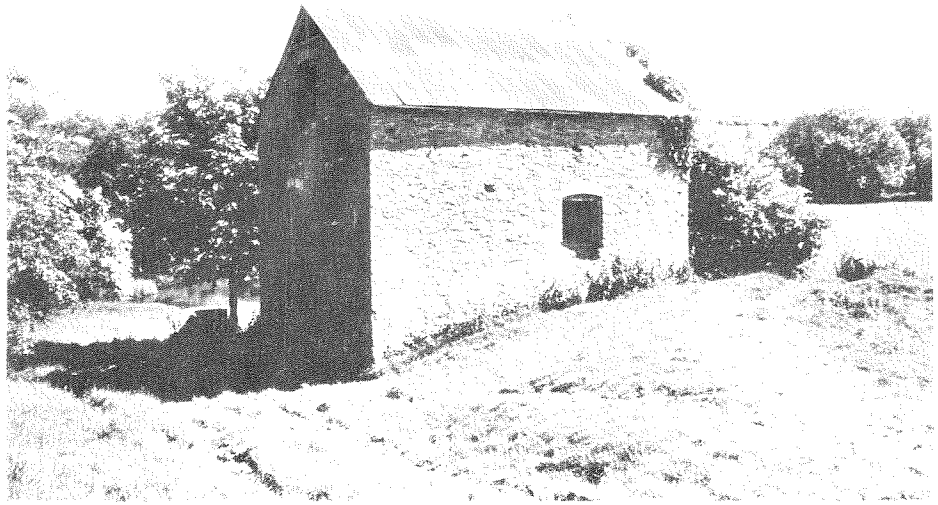
15. Forge Mill/Strangworth Forge, parish of Lyonshall. SO 343592.

On R.Arrow. In this case it seems best to give some history first. Taylor's map of 1754 marks FORGE with two forge symbols. The 1st-edn. one-inch O.S. of c.1830 shows STRANGWOOD FORGE, but on Bryant 1835 it has become FORGE MILL. The corn mill, presumably built on or near the site of the iron forge in order to use the water power, presumably built around 1830, worked until at least 1945, by then grinding only animal feedstuffs. There were two pairs of stones. The present building is a house converted from the mill using only basic parts of the mill building. The wheel was external on the west side, with a head of about 10ft. The leat remains as a tree-lined watercourse running acros fields, with a derelict small terminal pond and a surviving penstock. Five French-burr millstones in fair condition lean against the bank in the garden. There is a large lump (about 2 cu.ft.) of iron slag lying by the path.

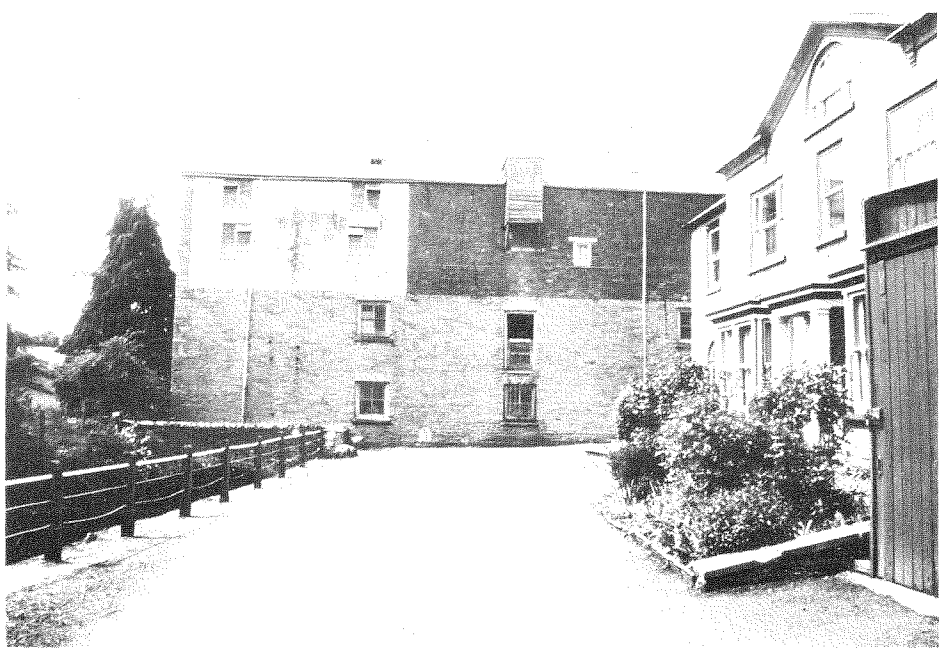
The name STRANGWORTH FORGE appears in documents c.1700; e.g. the will of Edward Bowen of Strangworth Forge, 1713. [13]

POSSIBLE MILL-SITES

Pl. Newchurch parish, Radnors. SO 2150.



HALL'S MILL



ARROW MILL

WEYTHELL MILL

CROOKED WELL PUMPHOUSE

On R.Arrow. Davies [14] says there was a reference to a mill in Newchurch in the 16th. century. There are suitable sites, but no remains are known.

P2. Near Knowle Farm, parish of Huntington, Herefords. SO 270527.

On small brook tributary to R.Arrow ? Mill shown here by Taylor 1754. Bryant 1835 showed one quite near at SO 267529. The Tithe Map (Huntington 1845) shows no sign of a mill here, nor does any later map. Inspection of the site shows it to have been just possible, but there are no signs of a mill.

P3. Lower Mill, parish of Gladestry, Radnors. SO 2454.

On Gladestry Brook. No remains are known, but reference to this mill given by Oldham.[15]

P4. Tannery, parish of Kington. SO 299565.

There is no doubt that there was a tannery here, for TAN YARD is shown on Bryant's map of 1835 and on the Tithe Map (Kington 1845). The tannery is shown between the small watercourse (which still exists as a dry stone-lined channel) and the river on the 25-in.O.S. 1903. The problem is whether it used water for power (e.g. for a bark mill). The small stream which flowed through the aforementioned channel would not have been large enough, and there is no indication of any other sort of channel.

P5. Lower Mill, parish of Kington. SO 311571.

On R.Arrow. There are no remains and it is not shown on modern maps. Taylor 1754 showed a mill symbol here, but Bryant 1835 did not. The Tithe Map (Kington 1845) marked LOWER MILL but showed no leat to it.

P6. Hunton Mill, parish of Lyonshall. SO 335588.

On R.Arrow. Shown on Taylor's map of 1754, but not on any later map. There seems now no trace of a former mill site, but there are signs of what might have been a leat across the fields.

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11. Leominster News, 1 April 1960.
12. As ref. 6, pp.45-6.
13. Kington Historical Society; the documents may now be in the Hereford County Record Office.
14. As ref.1, p.57.
15. As ref.5.

THE MACHINERY OF BLACKFORD MILL, HENLEY-IN-ARDEN

by D.T.N. BOOTH

Blackford Mill stands on the River Alne just south of the small town of Henley-in-Arden in Warwickshire. Although there have been mills in Henley since at least the 12th century, the first definite reference to a mill on this site is in 1608 when it was known as Hobdaye's Mill or Nethermill. The existing mill dates from the late eighteenth century and worked until the early 1950's when the river sluice gates were damaged [1]. These were subsequently removed leaving the wheel clear of water except in time of flood.

The mill is an attractive brick building with a central lucam and adjoins a fine timber-framed mill house. However, of greatest interest to the mill enthusiast is the mill machinery which was installed during the second half of the nineteenth century. The millwright was Robert Summers of Tanworth-in-Arden [2], only a few miles north-west of Henley-in-Arden, and fortunately many of the documents relating to this work have survived.

The waterwheel at Blackford Mill is sited externally, though housed in a brick wheelhouse. It was installed in 1853 by Robert Summers but is a typical product of George Turton, iron and brass founder at the Caldwall Foundry, Kidderminster [3]. The entry in the foundry order book is dated 22nd March 1853 and reads:-

Undershot water wheel 12ft. 10in. dia. to be cast in 6 parts for 36 wood starts 3 3/8 in. the longer side. Arms to be fastened to the middle of the segments. 3 naves 2ft. 1in. dia. inside with 2 pieces inside. 3 sets of arms.

The overall diameter of the wheel would have been about 15 ft. and it was 8ft. wide. The style of the castings and the wheel's construction are identical to many other such wheels, overshot and undershot, to be found in mills throughout the west midlands. George Turton supplied them 'off the shelf' in a wide variety of sizes to many millwrights. The circular naves were ideal for his much favoured cylindrical iron axles but were frequently used with wooden axles, as is thought to have been the case at Blackford Mill. As one would expect of a well-tried design, this waterwheel appears to have given satisfactory service without heavy maintenance costs.

In 1872 Robert Summers returned to Blackford Mill to prepare a report on the machinery for the owner, Mr.Thomas Chamberlain.

Report of the state of the Machinery in Blackford Mill near Henley-in-Arden in the occupation of Mr.John Lewis, June 17th, 1872.

Specification
The water wheel gudgeon requires putting in straight and turning the outside end.
The bushes in the bedstones require to be adjusted and repaired.
The spur wheel cogs to be trimmed and shouldered and then the 3 stone pinions will require to be new geared to fill up the cogs in the spur

wheel.
One new toe brass to one of the stone spindles.
The bedstone of the Barley Mill to be raised and adjusted .
The cylinder of the flour machine to be repaired and 2 1/2 sheets of new wire.
The hopper and shoe of the said machine to be leathered and the beater made fast and the bottom lids repaired.
The smutter to be put together and adjusted.

The aforesaid repairs will incur an expenditure of the sum of twelve pounds seventeen shillings.

Robert Summers
Tanworth, June 21st 1872

This report would suggest that the water wheel had a wooden axle which was beginning to weaken at its outer end. The machinery was convential spur gearing to three pairs of stones. Although the cogs were all of wood there is no indication of the materials or construction of the gears.

By 1879 Blackford Mill had a new owner, Sir C.H. Mills, and a new miller, William Hodges. Robert Summers was now called upon to estimate for major renovations.

I Robert Summers of Tanworth in the county of Warwick will hereby agree with Sir C.H. Mills for the undermentioned repairs and alterations of machinery necessary to be done at Blackford Mill, Henley-in-Arden now in the occupation of Mr. Wm. Hodges.
Specification
For alterations and improvements in the waterwheel as follows
For 108 new iron starts fitted and fixed in the present rings with 108 keys. Also 36 wrought iron bucket plates and 36 sole plates rivited together with angle iron the bucket plates to be made in a circular form so as the water will act with greater force upon the wheel. And also leave the tail water with greater ease. The bucket plates to be punched fitted and fixed to the iron starts with 324 bolts and nuts and the sole plates fitted and fixed to the present rings with 324 bolts and nuts. Also working key ways in the naves to hang the wheel. Also moving the present centres of the waterwheel so as the outside of the wheel revolves equidistant from the race. Also adjusting the machinery inside the mill to the same centres and adjusting the shut that conducts the water upon the wheel.
For a new cast iron water wheel shaft round in the middle with webbs cast on to strengthen and prevent the shaft from springing, with a journal turned on each end to revolve in the brasses and the said shaft planed on the webbs to receive the keys that hangs the water wheel upon the shaft. Also 12 wrought keys planed and fitted in and hanging the wheel.
For a new cast iron nave hung upon the shaft with 4 iron keys planed and fitted in to hang the present pit wheel upon the shaft.
For 2 new cast pillow plates with holding down bolts, nuts, cotters and plates to fix the pillow plates upon the masonry work. Also 2 cast pedestals planed, fitted and fixed upon the pillow plates with bolts and nuts. Also 2 brasses fitted in the pedestals, bored out and fitted to receive the journals of the shaft. Also 2 caps and lids to hold a supply of lubrication to keep the journals clean. Also an iron carriage fitted and fixed to the inside pillow plate with bolts and nuts. Also with a cast box with 4 set screws to adjust, support and receive the toe brass that supports the upright shaft to revolve in.
For turning up and gearing the spur wheel also trimming up 3 stone pinions.

For a new cast skeleton crown wheel turned and geared with wood and hung upon the upright shaft. Also 3 cast iron bevel pinions to work in the same turned pitched and trimmed bored and keyed upon the shafts one to drive the dressing machinery, one to drive the sack tackle and one to drive the mill from a portable steam engine.
For a new cast plate fitted and fixed to the timber under the garner flow with bolts and nuts. Also 3 iron hanging brackets fitted and fixed to the plate with bolts and nuts. Also 3 plummer blocks and brasses bored and fitted to carry the ends of the 3 shafts that revolve over the crown wheel. Also a plummer block with oil cup and brasses bored and fitted up to support the top end of the upright shaft with set pins and fixed with bolts and nuts.
For a new iron shaft collared and turned from end to end. Also one plummer block and brasses with bolts and nuts bored and fitted to the said shaft. Also a wall box to carry the shaft in the front wall of the mill. Also an iron pulley bored, turned, slotted and keyed upon the shaft outside the mill to receive the band from a portable steam engine.
For a new bolter with wood case and hard wood beales with iron shaft down the centre turned from end to end and 3 sets of iron arms to carry the reel bars with net. Also iron carriage and brasses fitted with set pins and swivel carriage to the middle bearing and sliding brass to the top bearing so as to remove the cloth with ease. Also a single flanged iron pulley turned, bored, slotted and keyed upon the shaft and feeding hopper and supplied with 3 of Blakemores cloths.
For part new wire to cylinder of flour machine. Also repairing the same. Also adjusting the old brasses and supplying new ones where requisite in the mill.
The whole of the before named work shall be done and erected at the mill in a strong substantial and most workmanlike manner to the entire satisfaction of my employer for the sum of £250 and take to the old materials.
No extra work whatever to be charged for unless named to be done in writing.

Robert Summers

Tanworth, May 24th 1879

In the light of subsequent events the last sentence of this specification, no doubt included at the insistence of Sir C.H. Mills, is highly significant. The specification shows that the old waterwheel axle had finally failed and apparently the wheel was not providing sufficient power for the machinery in use or proposed. The inclusion of a shaft to connect with a portable steam engine shows that it was not intended to rely solely on water power, though in the end this shaft was not fitted. A detailed estimate showing the individual costs of the items has also survived.

Detailed estimate of work for Blackford Mill.

	cwt	lbs			
To 36 buckets in 72 plates	32	0	0 at 12	19- 4-0	
Angle plates 1 1/4 lb per foot	3	2	0 "	2- 2-0	
Rivits		1	14 at 6d	1- 1-0	
108 starts	20	0	0 12/-	12- 0-0	
108 keys to hold starts in ring		2	25 3d	1- 0-3	
324 bolts to fix buckets 3d				4- 1-6	
324 bolts to fix back on angle plates	2	1/2		3- 7-6	42-15-9

Bending 36 bucket plates 1/6	2-14-0	
To punching 36 buckets and 36 sole plates 1/6	5- 8-0	
To punching & preparing 36 angle plates "	2-14-0	
Making pattern of the start	10-0	
Fitting in 108 starts at 2/-	10-16-0	
Fitting and putting on the buckets & riviting Angle plates	9- 0-0	
To taking off 18 segments, loading, unloading & loading again in the shop and unloading at the mill	2-14-0	
To clearing holes in 108 starts to receive pins & keys	1-16-0	35-12-0
		78- 7-9
To shifting centres of water wheel so as the wheel revolves equidistant from the race, and adjusting the machinery inside the mill to the same centres		5- 0-0
To gearing spur wheel		10-10-0
To altering 3 pinions		2 -2-0
To a 3in shaft 8ft 6in long 206 lbs		5- 3-0
To 2 3in plummer blocks, brasses, etc		4- 8-0
To 1 wall box		1-10-0
To 2 bolts to fix plummer box		2-0
To 2 set pins to shift plummer block sideways		2-0
To a new pinion 55/- and pulley 80/- & carriage over crown wheel or by it 70/-		10- 5-0
		39- 2-0
To new bolter		24- 0-0
To 3 clothes		4-10-0
		67-12-0
water wheel		78- 7-9
		145-19-9
adjusting the shut		4- 0-3
		150- 0-0
Crown wheel and 2 pinions & sack tackle shaft etc.		35- 0-0
Hanging brackets & frame to top of upright shaft		15- 0-0
water wheel shaft carriages & carriage to upright shaft and nave to pitwheel and hanging		50- 0-0
		250- 0-0

The bulk of this specification was very quickly agreed and Summers started work at the mill by early August 1879. Shortly afterwards the state of the old machinery (or his employers speedy acceptance of the estimate) prompted the following letter.

Tanworth, Hockley Heath
Nr. B'ham.
Aug. 15th 1879

Sir C. Mills Bt.MP.
Sir
I beg leave to inform you that I am the person appointed to do the repairs of the machinery at Blackford Mill now in the occupation of Mr. Hodges. I have commenced the work and have a good deal of it in hand and in taking the boarding down and the mill to pieces I find it in a very bad state much worse than I anticipated some more of it will

require to be new in fact the greater part ought to be. I am not writing by the request of Mr. Hodges but merely to let you know the state the mill is in. I know if it were possible for you to see it personally you would allow more to be done. Mr Hodges has ordered me to put some of the worst in and do it as near as I can as he says he is not justified in giving orders for what I know absolutely necessary. I should recommend iron where he has ordered wood and make the work in part as far as it was done with machinery more suited to the times. If a person in the millering trade is to get on the machinery must be good as the competition is so great one with bad or badly constructed machinery has no chance of getting on. If you will allow me to make a report of what I know is necessary to be done I shall be glad to do so and make the mill good and servicable.
I have had great experience in this branch of my trade which enables me to recommend what is necessary and nothing more.
I am a perfect stranger to Mr. Hodges who gave himself the trouble to ascertain my character before I had the order from him to do the work. I can say that I never had any dealings with a more shrewd and businesslike gentleman than Mr. Hodges. I know from experience such tenants as him are very scarce. I have no doubt he will very much improve the place and increase the value of the property. I consider him worth a landlord´s consideration in laying out a little extra money to improve the place. If it was thoroughly done which would be the cheapest as it would not require anything further done of any consequence for 50 years. I should be glad to know at your earliest convenience after you have considered it over as it stops the progress of the work to a certain extent till I know your decision.

Waiting your reply
I am sir
Your obediant servant
Robert Summers

It is difficult to imagine Sir C.H. Mills reaction to this letter, however he was obviously determined to have ´the best´ and allowed Summers to estimate for his ´improvements´.

Tanworth, Hockley Heath
Aug. 20th. 1879

W Hodges
Sir

I beg to say that I have gone roughly thro. the extras required at Blackford Mill and find they will be about £160 without the French stones and the pit wheel and wallow. If these are added it will then be about £67 extra making a total of

160
67
227 £ exclusive of

brickwork. I have included the 3 in. planking for the floor. It will be subject to the conditions of the former estimate.

Waiting your reply
I am sir
Your obedt. servt.
R. Summers

I Robert Summers of Tanworth in the County of Warwick will hereby agree with Sir C.H. Mills Bart for the undermentioned additional machinery necessary to be put in Blackford Mill, Henley-in-Arden now in the occupation of Mr. W.Hodges.
Specification of Additional Work

✓ For a circular iron plate about 14 inches wide with facings for the centre lifts and columns with two flanges one on each side about 4 inches deep to strengthen the plate fixed to the wall that parts the Mill from the water wheel with bolts and nuts.

✓ For 3 screws and rising tackle to take the stone pinions out of gear. Also 3 hand wheels and screws to adjust the runner stones and the screws in part to support the the circular plate as columns.

✓ For 8 cast columns to support the circular plate from the foundations in the floor and support the pans or cones that carry the bedstones.

✓ For 3 centre lifts fitted up with double sliding boxes turned, bored and slotted fitted up with set pins and bolted on to the circular plate to carry and adjust the toe of the stone spindles

✓ For 3 conical boxes bored, turned, fitted and keyed on the stone spindles and fitted in the stone pinions.

✓ For 3 cast bushes, brasses, wedges, screws, thumb screws, collars and rings turned, bored fitted up and put in the bed stones and 3 cast rings and 12 bolts and nuts to fix them.

✓ For 3 cast iron cones or pans fitted up with 21 set pins, nuts and lock nuts and supported by the columns from the circular plate and fixed to the Hurst beams with bolts and nuts.

✓ For 3 sets of centre irons fitted up with steel driving pins, plates, and dies and the drivers fitted on the hexagon tops of the stone spindles to drive and carry the runner stones.

For three toe brasses fitted turned and bored to the toe of the mill spindles.

For 2 new wrought stone spindles with steel necks, toes and pivots turned from end to end with hexagon tops for the drivers of the centre irons to go on.

For 3 wrought damsels with steel beaters turned from end to end and steeling and turning one stone spindle.

For 1 new pair of French burr stones faced and furrowed and putting the other old pair down with plates in the back to rest upon the set pins.

For a new cast bevil pit wheel in two parts and bolted together slotted and hung upon the water wheel shaft with iron keys planed. Also a wallow to work in the same hung upon the upright shaft.

For 3 sets of round stone cases, shoes, hoppers and hopper ladders and pulleys and feed screws.

For planking the stone floor with 3" deal planking where the stones go from the water wall to the beam near the sack hole.

The whole of the before named work shall be done in a strong substantial and most workmanlike manner to the entire satisfaction of my employer for the sum of two hundred and twenty seven pounds and take to the old materials, exclusive of brick and masonry work.

Robert Summers
August 23rd. 1879

The items thus ✓ in red ink are improvements on the old work and amounts to £100 15 0
The other is where the work is worn out and requires to be new and amounts to £126 5 0
£227 0 0

1	✓ circular plate	9-10-0
2	✓ screws & rising tackle	16-10-0
3	✓ columns	6-15-0
4	✓ centre lifts	10-10-0

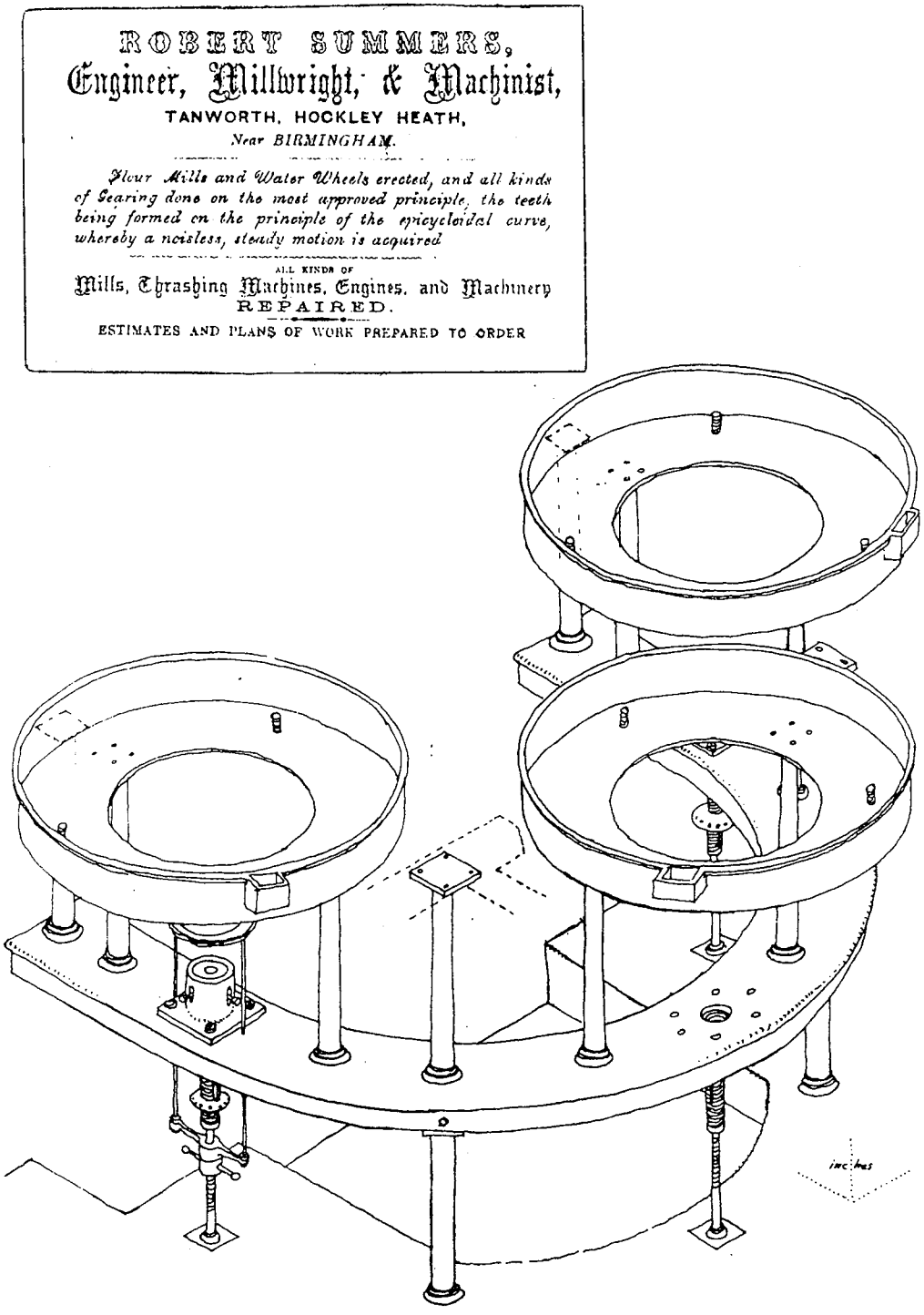
5	conical boxes	4-10-0
6	bushes	12- 0-0
7	cones or pans	24-10-0
8	centre irons	6-15-0
		91- 0-0
		9-15-0
		100-15-0
9	toe brasses	1- 2-6
10	2 new mill spindles & steeling one	11-10-0
11	stone cases & screws	26- 5-0
12	damsels	2- 5-0
13	French Stones and old ones	34- 0-0
14	Pit wheel etc	37- 0-0
15	planking	8- 0-0
		120- 2-6
		91- 0-0
		211- 2-6
		15-17-6
		£227- 0-0

Summers' eulogy about William Hodges' character had obviously paid dividends. As this estimate wa sent to Hodges it is presumed that he was acting as Sir C.H. Mills' agent. The whole package, including exras, was duly approved and the work continued.

By Christmas 1879 the new machinery was mainly in place and must have looked rather impressive in a small mill. The semi-circular plate with its cast columns and stone pans was very different from the usual practice. It was even a novelty for Robert Summers. Although he had mounted individual pairs of stones in pans on columns this complete framework for three pairs was unique to Blackford Mill. Summers did not have the opportunity to repeat the design in another mill before his death in 1890 so it has remained unique - without doubt part of its great appeal [4].

Summers himself must have been pleased with his work and it was obvious to him that the remaining old work, the wooden upright shaft, spur wheel and stone nuts detracted from the look of the job. He decided that as he had been so successful in his previous estimates he would put in one more to complete the renewal. A copy of his specification has survived but not the accompanying letter. It no doubt stressed the quality of his work to date, the depth of his experience and knowledge on milling matters and the excellence of William Hodges ! The specification was as follows:-

Specification and Estimate of additional new work proposed to be done and erected at Blackford Mill on the same and subject to the same conditions as specified in two former estimates for work which is now in progress and being erected for Sir C.H.Mills Bart by Robert Summers, Tanworth, Dec 27th 1879.
For a new cast iron upright shaft about 14ft. long and 11in. diameter turned from end to end cast with enlarged parts where the wallow wheel, spur wheel and crown wheel hang. The ends of the shaft to be bored out and slotted and two wrought gudgeons turned, fitted and keyed in and the shaft reduced at each end and two strong wrought iron hoops bored out and shrunk on the said ends of the shaft. The bottom gudgeon or toe that supports the shaft to be steeled where it revolves in the brass. Also a new toe brass to carry the same turned, bored and fitted to carry the said shaft. Also for a new cast skeleton spur



wheel turned and geared with wood. Also 3 iron stone pinions turned, pitched and trimmed to work in the same. Also working key beds upon the shaft and slotting the crown wheel, spur wheel and wallow wheel and iron keys planed and hanging the said wheels upon the upright shaft.
The before named work shall be done in a strong substantial and most workmanlike manner to the entire satisfaction of my employer for the sum of eighty pounds in addition to the aforesaid two previous estimates and take to the old work.

This time there was no immediate positive response from Sir C.H.Mills, perhaps because his estate was now being handled by professional agents, Messrs. Lawford, Waterhouse & Lawford Esqrs. of London. Summers wrote to them early in 1880.

Tanworth
Hockley Heath
Nr. B'ham.
Janry. 3rd 1880

Gentlemen,
I beg to say that I am in suspense about the work at Blackford Mill and thinking Mr.Hodges had heard definitely from you about the upright shaft, spur wheel etc. I went down to Blackford today to ascertain. Mr. Hodges was from home but Mrs. Hodges informed me that Mr. Hodges had heard nothing of it. I should be glad if you will either let Mr. Hodges or myself know at your earliest convenience as the progress of the work will now be stopped till I know definitely about it.
I hope to have a favourable reply as the mill will not be complete without it is done. If it was to be done at a future time it would cost a very considerable deal more money.

I am gentlemen
Your most obedt. servt.
Robert Summers.

One has to admire Summers' persistence and persuasiveness but it seems to have had little effect on Messrs. Lawford, Waterhouse and Lawford. No early reply was forthcoming and William Hodges must have become increasingly anxious about the length of time the mill was out of action. With another mill in Henley-in-Arden barely one mile upstream and situated conveniently at the north end of the main street, these must have been worrying days for the miller of Blackford Mill. Summers finally decided to take a chance, perhaps under great pressure from Hodges. He cast and fitted the new upright shaft, spur wheel and stone nuts in the hope that a favourable response would eventually come from Sir C.H.Mills. Previous submissions had been well-received and he must have felt confident of recovering the cost. Equally, it seems that he was unable to leave his new design 'incomplete'. One feels that he needed to complete this renewal of the machinery as a testament to his skill as a millwright. No favourable response ever came, the final letter arriving in July 1880.

Drapers Hall
28, Austin Friars E.C.
London.
July 17th 1880

Mr. R.Summers.
Sir,

We send herewith Sir Charles Mills' cheque for £307 the balance of the account for work done at Blackford Mill as per estimates. You will please send us a receipt for that amount in those terms.
With regard to the extras we have only to say that none of them were ordered by Sir Charles Mills or by us on his account and he therefore declines to pay the amount.

Your obedient servants
Lawford, Waterhouse & Lawford.

One may well doubt Robert Summers' business acumen but not the quality of his workmanship. His assertion that this machinery would work well for fifty years without major attention proved to be a considerable understatement. It was still in good order after seventy years use and only the changing needs of the community Blackford Mill served made its maintenance uneconomic. Since the mill ceased work in the early 1950's attitudes have changed again and there is every chance that Summers' fine machinery will turn again before too long.

Acknowledgment:-

The excellent set of drawings which accompany this article were made by Wilfred Foreman in 1980. Their clarity makes a written description of the machinery superfluous.

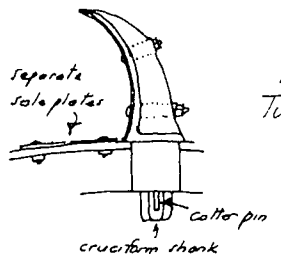
Notes and References:-

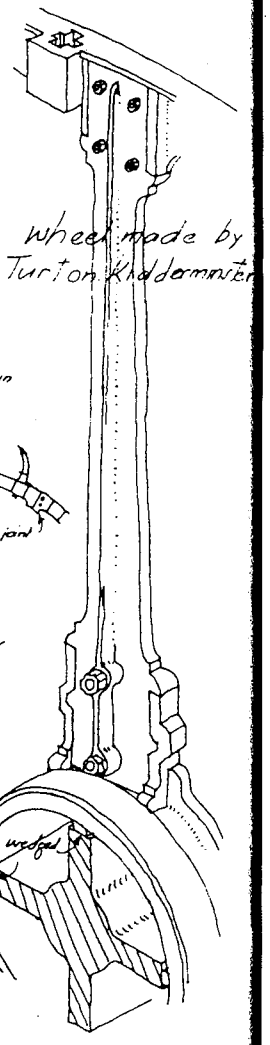
[1] For further details see D.T.N.Booth Warwickshire Watermills, 1978, p.20.
[2] An outline of this firm's history can be found in D.T.N. Booth, 'Robert Summers, millwright of Tanworth-in Arden, and the reconstruction of Wolverton Mill, Buckinghamshire, 1868-77', Wind and Water Mills, Number 2, 1981, pp.32-48
[3] An outline of this firm's activities can be found in D.T.N.Booth 'The Turtons of Kidderminster, iron founders, engineers, and millwrights.', Wind and Water Mills, Number 1, 1980, pp. 24-29
[4] Iron hurst frames are not uncommon in Warwickshire, or elsewhere, but nearly always have each pair of stones supported entirely separately. It is the use of the semi-circular plate to integrate the support system which makes this example unusual.

BLACKFORD MILL.
HENLEY IN ARDEN.

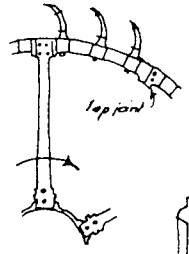
River Alne

grid ref SP 1155 2650



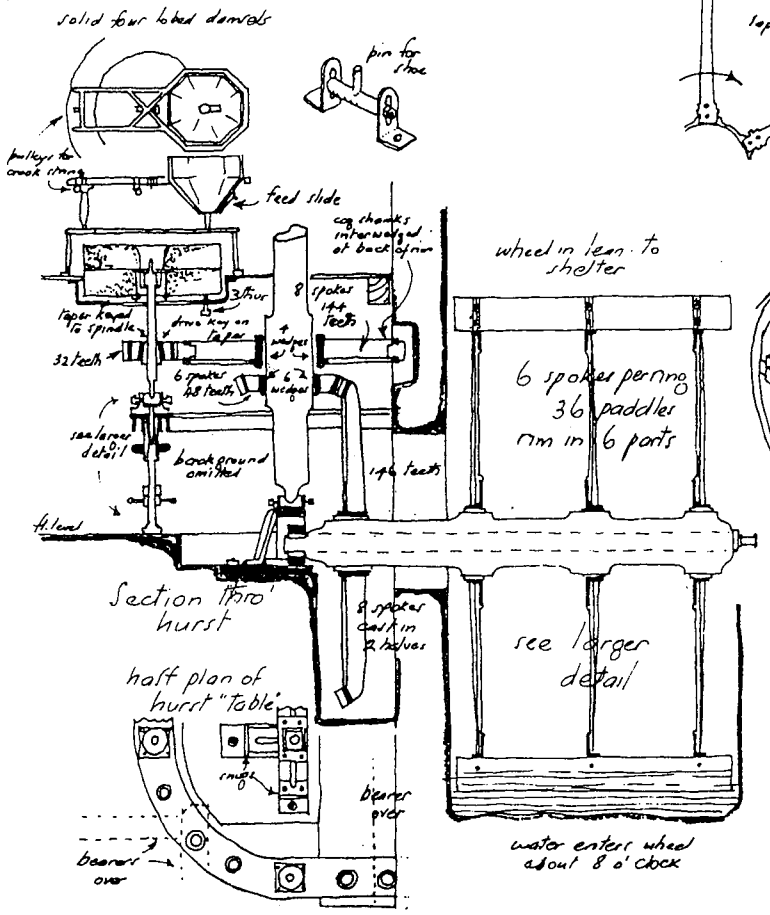


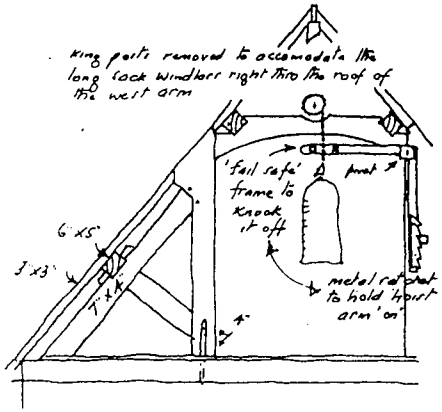
Wheel made by Turton Kiddermister

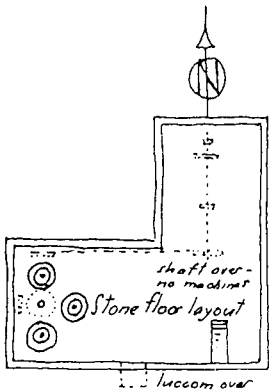


Scale – one quarter inch to one foot

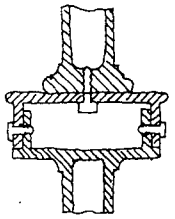
Details one inch to one foot

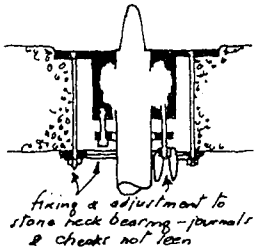


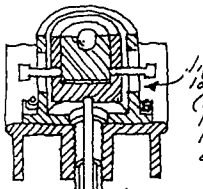


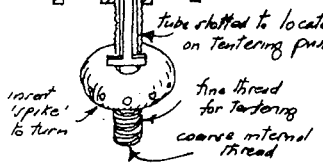


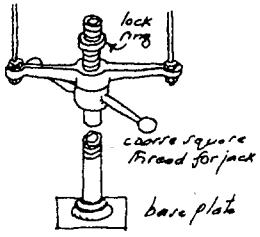
French burr stones –
R.G. Handley Moor St Birmingham
R. Summers Junior Tamworth

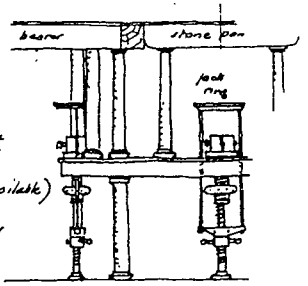












half elevation of hurst – spindle & nuts omitted

there is no indication how the column bases are secured to the floor

machinery made by
R. Summers. Tamworth

WHEATLEY WINDMILL

by WILF FOREMAN

When I first became involved at Wheatley I was faced with a partial ruin, with most of what had been above that level collapsed in decay on to the sack floor.

My task was to get enough information to produce a measured drawing of what had been. Perched in a window opening and using a long metal hook I slowly unravelled the pile, measured the relevant bits and then pitched them down to Len Cripps (the owner) with advice to "retain" or "dump".

Maybe you have seen the reslultant drawing, but what doesn't appear is what might be called the ephemera.

Around 1900 when the mill ceased working a dishevelled pair of sails remained with decay showing generally. For all that, when Rex Wailes surveyed what was left in 1935 he suggested a possible £100 to restore it all, which suggests that decay had not worsened much.

We really need to go back a generation or two and take a look at the mill and the family. A post mill stood on the site and took fire in 1767, another post mill stood nearby and took fire in 1860. A new masonry tower mill was built in 1784, financed by a five man consortium described in deeds as 'gents', and they leased it out. Great Grandpa Cripps bought the mill in the early 1800's and it has passed down through three generations.

Maybe milling was in the Cripps blood but so was music and those early millers were something a bit above rustic fiddlers. Other members of the family played instruments and sang - between them providing most of the local concert items. Grandma Cripps ran a little front-parlour sweet shop for the Sunday strollers on the Mill Lane cicuit, but her 'piece de resistance' was an apron with a hundred pockets and at local shindigs she she became a walking penny-a-go tombola stall. Many of us are hoarders, none more so than the Cripps, and the mill became a come-in-handy store. The musical activities added to the pile and I found abandoned a cornet (now restored), two clarinets and a flute. No violins as such but small parts which suggested repairs done and zinc templates of body shapes, parts of banjos too. There were piles of paper, solidly packed after years of water penetration and frustratingly impossible to separate; Dell's catologues, "The Miller", "The Strad" and no end of printed music. The old millers may have once provided church music for I found long narrow hand-bound hand-written books of hymn and psalm tunes, surely made to fit a formal tailcoat pocket.

An historic clip-on bicycle-assist petrol engine was an abandoned effort at driving a dynamo to light the mill, so were the parts of a dismantled Stirling cycle hot air engine, since rebuilt and working again. There were remains of a treadle lathe with lots of wood and bone off-turnings (it had stood on the bin floor), a shotgun rusted paper thin and so were the early bicycle parts, including bits of pennyfarthings, besides the piles of come-in-handy mill gear that didn't really belong - who needs at least a dozen un-matched maces/rhynds ? Oddly enough, only one stand-by stone, a burr; perhaps others had been sold off after milling ceased. The mill has two full

sets of burrs and no peaks. There is, by the way, a hand turned winnower which must once have played its part.

Possibly because there was once no garbage collection there were bottles galore, some very small, mostly non-alcoholic, and these attracted collectors; obviously we should have sold these for good money at the time. A delightful cast iron pestle and mortar may have been used in some way when ochre was processed at the mill; two ringed weights, one stone one iron, I decided had been the 'pull-off' weights on the brake arm and hoist.

Cap shapes still existed to show what the ogee profile was and the profile of the oak turned finial is sharply defined despite extreme lateral splitting.

Though there would seem to be a direct family link to the present day, in truth Len has only a very small boy's memories, exciting climbs up through the mill to view the scene rather than taking notice of the turning wheels, but he can talk (maybe from hearsay) about family characters with names like Obadiah and Hezekiah, and he did leave his mark. He was apprenticed to an electrical engineer and had been involved in early wireless, carefully storing each home-made set as it was superceded, with the resulting collection of bright emitter valves, hand wound coils and Dubilier codensers which older 'hams' will recall. Prompted by example, he also kept all his old bicycles.

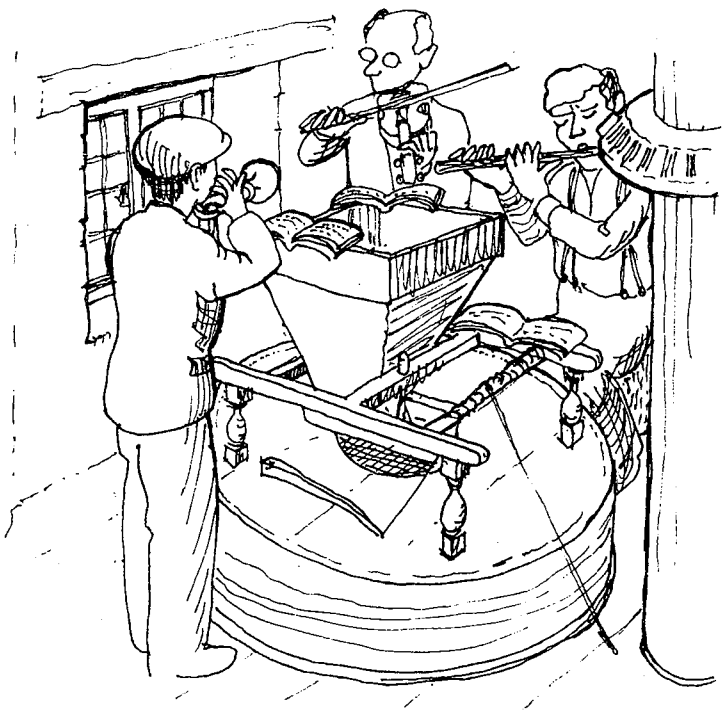
Len has leased the mill (a listed building) to the Restoration Society for 15 years. Lack of volunteer workers and lack of money means that progress is very slow. Local authority funding has ceased and we now operate on cash raised by a hard-working committee; at present we owe £1000 on two interest-free loans. Some £9000 has been spent so far, possibly £3000 of that was raised from several earlier sources - South Oxfordshire District Council, Council for the Preservation of Rural England, and Oxford Preservation Trust. That money spent and many long hours of labour and suddenly what was a derelict structure begins to look interesting to those who levy rates and taxes. We do pay V.A.T.; and what (spare the thought, Len) of death duties ?

As to actual progress, the hurst frame is secured and temporarily floored. We have built a completely new frame to the sack floor and have enough 1 in. elm in stock to lay three floors, and we have just started the dust floor frame. Masonry is a much bigger problem than brick; the tower is secured externally up to the top window sill level, but there is now a lot of work up to a finished level for the curb. All the woodwork above that we don't even begin to think about.

With all the successful restorations proceeding around the country we seem strangely isolated, though names in the visitors book show that a few interested parties have visited.

One problem of restoration is how well temporary holding work should be done. We started in 1977 and our 'temporary' roof needs replacing for the second time - in retrospect a waste of time and money.

North Leigh is in the news again (December '85) and there are thoughts about providing a shelter roof there against a full restoration: with no proper funds available to West Oxfordshire District Council how well should/could this be done ?



Publications: (continued)

Wind and Water Mills No. 5
Published July 1984
48 pages, 17 drawings and maps.
Contents: Fladbury Mill, Worcestershire.
Watermills and Water-powered Works on the River Stour, Part 2.
The Temple Farm Wheel, Temple Balsall.
The Dressing of Millstones: English Practice.
The Making and Dressing of French-Burr Stones.
The 'Norse' Watermills of Shetland.
Windmills in Mallorca.
Watermill Research and Development in Nepal.
£1.20 (inc. postage).

Wind and Water Mills No. 6
Published July 1985
48 pages, 8 photographs, 13 drawings and maps.
Contents: The Water Supply to Keele Hall, Staffordshire.
The 'Moulin de Billion', Morbihan, Brittany.
Watermills and Water-powered Works on the River Stour, Parts 3 & 4.
Hurcott Paper Mill.
The Rise and Fall of the Fulling Stocks.
Boulter at Wheatley Windmill (drawing).
£1.20 (inc. postage).

Wodehouse Mill, Wombourne near Wolverhampton
Set of three drawings by Wilf Foreman.
Each sheet 360mm x 257mm (B4 size)
£0.80 per set (inc. postage).

Staffordshire Windmills by Barry Job
Published 1985
76 pages, 35 photographs plus line drawings and sketches.
£1.75 (inc. postage).