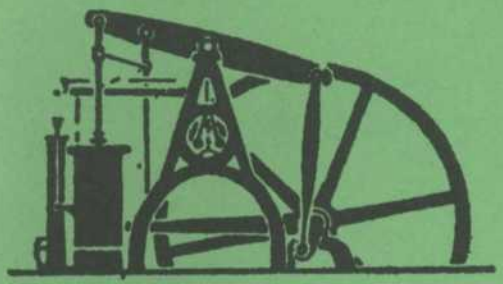

SUSSEX INDUSTRIAL HISTORY

No. 10

1980

BURTON MILL
CLAYTON WINDMILLS
BUILDING MATERIALS FOR BRIGHTON
HORSEBRIDGE WATERMILL

PRICE £1.00

SUSSEX INDUSTRIAL ARCHAEOLOGY SOCIETY

Founded, as the Sussex Industrial Archaeology Study Group in 1967

Cover Picture
Burton Mill

The Annual Subscription to the Society is £3.00, payable on 1st April. Life Membership is available for a single payment of 15 times the current annual subscription. Annual and Life Membership includes the annual issue of 'Sussex Industrial History' and the quarterly 'Newsletter'.

The Society is registered as a Charity, registration no. 267159.

SUSSEX INDUSTRIAL HISTORY

Journal of the Sussex Industrial Archaeology Society

No. 10 1980

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EDITORIAL

This is the tenth issue of Sussex Industrial History and the thirteenth year since the foundation of the Sussex Industrial Archeological Society. Over these years a great deal of valuable research, recording, preservation and restoration work has been carried out by the Society, much of which has been reported in the 'History'; the work is almost entirely voluntary and, although partially financed by Members' subscriptions, reliance must be placed on contributions from various industrial or other organisations. The Officers and Committee of the Society are very appreciative and very grateful for such assistance. Although the country is passing through a difficult period and the Society cannot do all that it would wish, due to lack of funds and lack of Members' time, it is nevertheless maintaining a good and useful programme of activities.

The question is sometimes asked - What purpose does the Society serve. At least one famous personage has been quoted as saying 'History is bunk' but informed opinion by no means agrees with this; it is accepted that a study of past events and the lives and activities of past industrialists and engineers can provide important pointers for the present and future. The industrial history of this country, dating back to Roman times and even earlier, has had a profound effect on the topography of the country, on the lives of the people in it and, indeed, on its relations with other countries of the world. The work of industrial archaeologists, by their preservation and restoration projects, makes possible the study of this aspect of history as well as bringing it to the notice of the general public.

Until the present century change was slow with practice almost invariably ahead of theory; now theory usually precedes practice with a consequent speeding up of development leading to the modern catch-phrase 'If it works it's out of date.' Much equipment and many processes become historic in as little as ten or twenty years so that industrial archaeologists must be continually on the watch to recognise and preserve significant and representative items and, particularly, to obtain records and even tape recordings from the engineers, technicians and craftsmen concerned. The scope is enormous.

Published by the Sussex Industrial Archaeology Society.

BURTON MILL, PETWORTH (1)

By Dr. T. P. Hudson.

Burton Mill stands at the north end of a large artificial lake called Mill Pond,(2) at NGR SU 979180, 1 mile (1.6 km) east of the Chichester - Petworth road and 2½ miles (4 km) south of Petworth. The building, illustrated on the cover, served first for milling grain and later for generating electricity, and was preceded on the same site by an iron forge. Burton House, to the estate of which the mill belonged until the mid 20th century, is ¾ mile (1.2 km) to the south-west. A second lake above Mill Pond, called Chingford, Chilford, or Gilford Pond in the late 18th and early 19th centuries, (3) is also artificial, but seems to have been created as a landscape feature, perhaps c. 1740 when landscaping work was apparently being carried out in Burton Park. (4) The present mill building is of four storeys in brick and stone, and seems to date from the late 18th century. It is built into the dam of the lower lake in such a way that its third storey opens onto the road that runs along it; the ground floor is some 13 ft (4 m) below. The mill originally had two overshot wheels, one on each side.

A mill was recorded at Burton in 'Domesday Book' (1086), (5) but its site was probably much closer to Burton House and the 'lost' village of Burton nearby than that of the present mill, and doubtless lies under the upper lake. The miller of Burton who was presented to the Rotherbridge hundred view of frankpledge in 1548 for making excessive profit (6) presumably had his mill on the same site, though it appears that the village had already declined considerably by then. (7)

Nothing is known for certain of a mill on the site of the present one before the early 17th century. There was possibly one there before the lower lake was created, for though much of Burton Park, including nearly all of the two lakes, lay in Barlavington parish, the oddly-shaped Burton parish curved round to the north-east in order in include Burton Mill and land immediately north and west of it; the implication is that when the parish boundary was made, perhaps long before the 17th century, the area already contained something important.(8) Possibly it was the site of the fulling mill mentioned at Burton manor in 1555 in an inquisition post mortem of the estates of Sir William Goring, lord of Burton (the corn mill mentioned in the same document was probably identical with the one recorded seven years earlier). (9)

In 1653 a traveller passing through Burton described an hour spent at the 'Iron Mills' there which belonged to a later Sir William Goring, watching 'those hot swarthy Vulcans, sweating, puffing, hammering and drawing out those rusty Sowes into Barrs, by rumbling, noysing, Bedlam-water-Mills'. (10) It is certain that this forge occupied the same site as the present Burton Mill, since the mill pond was called Hammer Pond in 1819,(11) and an area to the north-east was called Hammer Moor until the 20th century. (12) Moreover iron cinder has been found below the mill.(13) The choice of the site, so far from any smelting furnace, must, as Straker pointed out, have been on account of the exceptionally abundant supply of water.(14) We do not know when the forge was established, though it was not mentioned in lists of Sussex ironworks made in 1548-9 and in the 1570s.(15) The late 16th and early 17th century, however, was a period of growth in the Wealden iron industry.(16) The forge was still in existence in 1664 'in hope of encouragement',(17) but no later references have been found. It does not appear, for instance, in an admittedly incomplete list of ironworks in England and Wales which was drawn up in 1717.(18)

Budgen's map of Sussex of 1724 shows a watermill at Burton captioned 'Engine to Raise Water', presumably for supplying Burton House.(19) It seems unlikely, however, that this occupied the site of Burton Mill, which is a long way from the house; in fact the map shows it south and slightly west of the house, perhaps on suggested site of the 'Domesday Book' mill. At the present day a ram pump on the north-east side of the upper lake still draws water from it.(20) It is not clear why the 1724 'engine' was needed, for it would have been much easier to obtain a water supply by tapping the springs which feed the lakes; in the early 20th century, indeed, water was brought from springs c. 500 yards up the hill.(21)

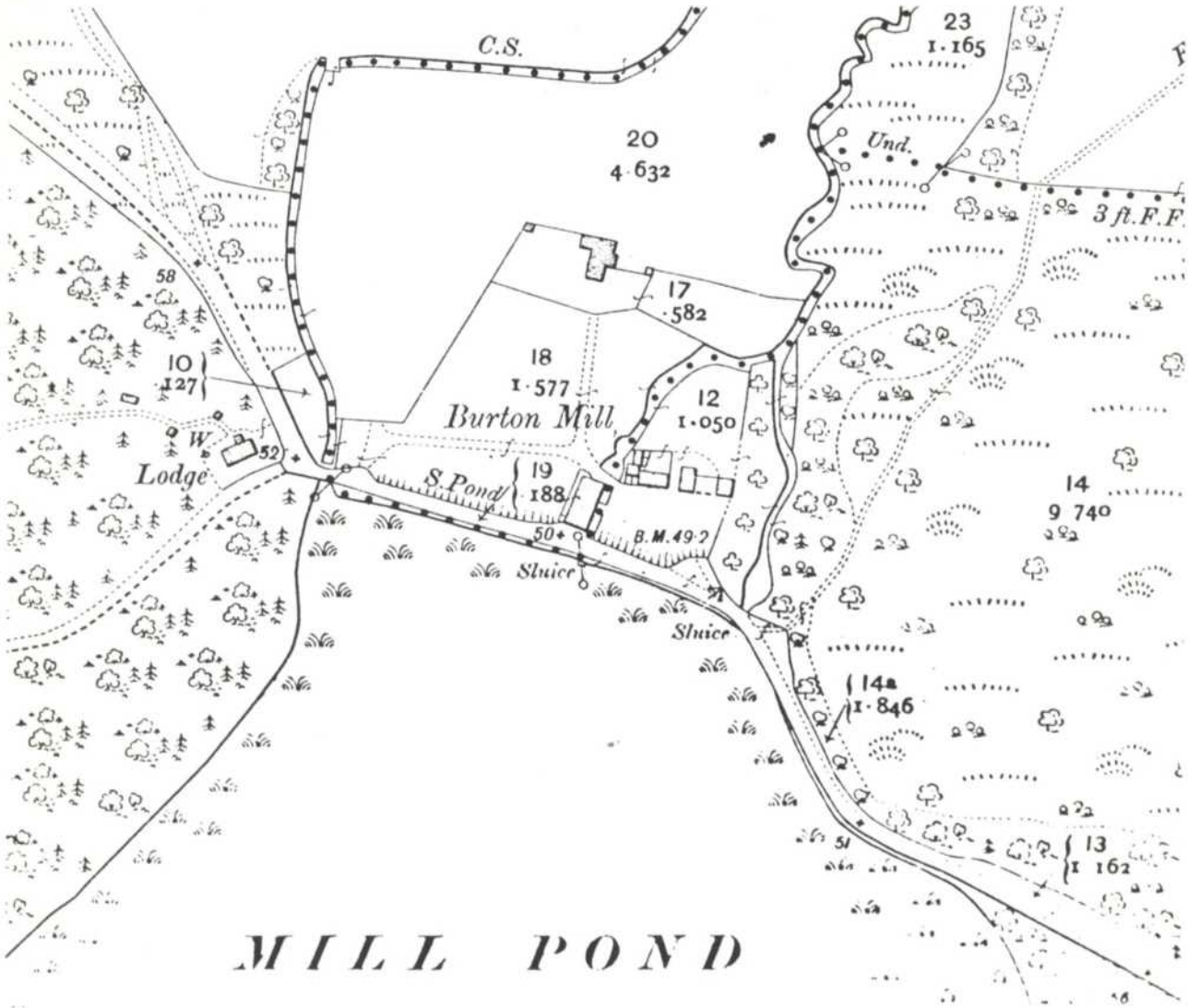


Fig. 1 Burton Mill in the early 20th century, from Ordnance Survey Map 25", Sussex XXXV.8(1912 ed.) Burton Mill House lies north of the mill building. The dotted line represents the boundary between Burton and Barlavington parishes.

The present Burton Mill is first recorded in the Land Tax return of 1780, when it was occupied by Messrs. Linfield and Co., evidently a partnership between John Linfield and John Ibberson or Ibbetson.(22) In 1791 William Linfield, perhaps John's son, made over his share to Ibbetson,(23)

who continued as sole tenant until 1810. From 1785 the partners also held 'part of Lodge farm', and from 1792 Ibbetson had the whole farm.(24) In 1801, at the time when preparations were being made against Napoleon's projected invasion, he claimed to be able to supply 14 sacks of flour daily if wheat were provided.(25) Thomas Dendy was tenant between 1811 and 1814.(26) Between 1816 (27) and some time in the 1870s the mill was held successively by Joseph and Richard Welch, possibly father and son. Joseph was aged 60 in 1841.(28) By 1851 Richard, then aged 30, had succeeded. In that year he also farmed 185 a., employing 10 men;(29) twenty years later the farm comprised 160 a. (30)

By c.1879 the mill was in the hands of a Mr. Harris, who also milled for a time at Gibbons Mill near Billingshurst. As a consumptive he had to quit milling on medical advice and died while still young.(31) In 1887 P. and H. Challen were recorded as millers, and in 1891 Henry Challen alone. (32) The next, (33) and apparently the last, miller was John Slade, who had previously milled at Benson and Ewelme in Oxfordshire, and who was at Burton by 1892.(34) In the following year, when the Burton House estate was offered for sale, he was farming 58 a. The sale particulars of that date describe the mill as having four pairs of stones; the farm buildings adjoined it on the north-east, and the miller's house lay away to the north.(35) After Slade left the mill c. 1900 flour milling seems to have ceased. No millers are recorded in Kelly's Directories after that date, and by 1905 Burton Mill Farm was being let separately.(36) Moreover, none of the people whose reminiscences of the mill were collected on tape by the West Sussex County Record Office in 1978 could recall flour-milling there in the inter-war period. About 1930, however, Messrs. Penfold of Arundel carried out major refitting work on the bin floor, installing new screw feed distributors and bins for several types of grain.(37) The explanation seems to be that Major J. S. Courtauld, the then owner, was intending to revive milling at Burton on a large scale but never did.

About 1900 Sir Douglas Hall, who had bought the Burton House estate in or soon after 1894, had replaced the east wheel of the mill by a turbine to supply electricity to the house, just as was to be done shortly afterwards at Rudyard Kipling's house, Batemans, at Burwash in East Sussex. About 1929 Major Courtauld replaced the west wheel by another turbine, but the mill ceased to supply electricity after the house was connected to the National Grid in 1933 or 1934. During Major Courtauld's time (1920-42) the mill was also used for crushing cattle-cake and for sawing timber for use on the estate, chiefly as firewood or for fencing, gateposts and the like. In the 1960s the last private owner, Mr. A. V. Kennedy, continued to use the 1929 turbine for sawing firewood in winter; the operation was carried out by his gardener and chauffeur, the third floor of the mill being then used as the garage.

In 1962 or 1963 part of the mill dam collapsed, closing the road along it and allowing some water to escape. The County Council as highway authority repaired the road, but claimed that Mr. Kennedy was liable for the cost. After a court case which the Council won, the two parties came to an agreement in 1966 whereby Mr. Kennedy conveyed to the Council the mill, mill pond, and embankment, but retained the use of the mill for life.(38) In 1976 he vacated, and the County Council, which had been using the third floor for storing boats, approached the Sussex Industrial Archaeology Society to see if it was interested in restoring any part of the mill, which is a grade III listed building. The Society expressed interest, and in 1978 Mrs. Anne Mills, a S.I.A.S. member,

took a 40-year lease of the building with the intention of restarting milling. Restoration work has been going on ever since, and it is hoped that the mill will be grinding corn again by summer of 1980.

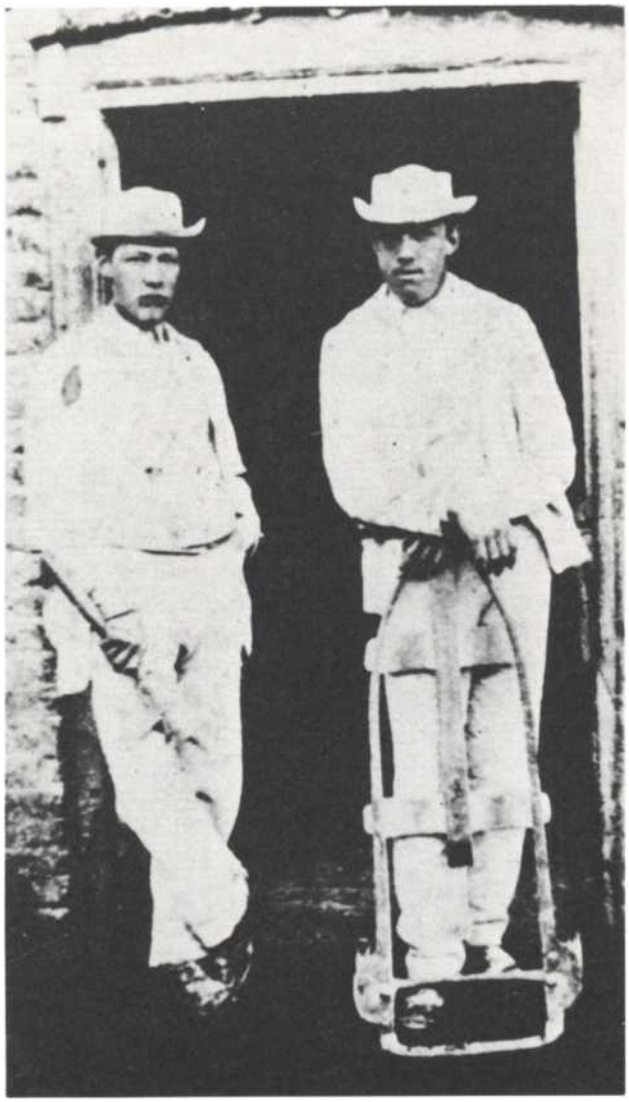


Fig. 2 Mr. Harris, miller (left), and an assistant, at Burton Mill c. 1879. Both men wear the correct miller's hat; and Harris holds the 'mill bill' for dressing stones, with its long handle or 'thrift'. (Photograph in the possession of Mr. Edward Ayling)

Technical Appendix — A. G. Allnutt

The water turbine which replaced the east wheel around the turn of the century was used to drive a dynamo which lit Burton House through a 220 volt overhead D.C. line carried on posts through the park. Turbine speed was intended to be kept constant by a governor manufactured in 1879 by W. F. Fruen of Minneapolis. The centrifugal governor, having insufficient power to open or close the turbine vanes, was used to engage gear wheels which enabled vane adjustment to be done by the turbine itself through the belt drive to the governor and shafting to the turbine vanes. This arrangement inevitably caused excessive hunting so that the house lights grew brighter and brighter and then dimmer and dimmer, nearly driving the inhabitants distracted according to a lady who experienced it.

After the First World War a bank of accumulators giving 220 volts was installed in Burton House and these were charged each day. In 1933 or 1934 the house was connected to the grid system and the plant gradually became derelict. The turbine casing is still to be seen, it was set vertically and of the reaction type. It drove the horizontal shafting in the mill through wooden toothed bevel wheels which are still visible, as is the speed control shafting and gearing.

In 1929 a horizontal-axis inward-flow reaction turbine by W. Dell was installed in the position of the west wheel. It was connected to the existing horizontal shafting which was extended to drive a circular saw and also a cattle-cake crusher. (The crusher has disappeared and the saw will be re-erected at the Chalk Pits Museum, Amberley. The turbine worked under a head of 20 ft with a drowned tail pipe and should theoretically deliver about 9-10 h.p. (It runs at about 650 rpm no load.) The bearings for the new shafting were elaborate, having screw adjustment for allignment both horizontally and vertically and being free to accommodate slight changes of slope of the shafting. (Wooden supports tend to move) This turbine has now been restored to working order by the Sussex Industrial Archaeology Society and Naval working parties from H.M.S. Daedalus. When the County Council was repairing the road along the dam in the mid 1960s clay was tipped in the lake against the dam which was sheet piled in the vicinity of the west turbine intake, thus preserving the use of the turbine.

The stones to be used for milling are a pair of 3 ft 6 in diameter French burr stones complete with free-standing cast iron hursting (cast at Leiston, Suffolk), which Mrs. Mills found near Cardiff. These are now set up and have been driven on trial by the turbine which will also be used to drive a smutter and possibly the grain elevator. Mrs. Mills will use part of the bin floor, access to it being through the part of the mill within her lease. The wooden friction winches, screw feeds, etc. will be provided with descriptive notices so that their mode of working can be followed, the floor and trap doors having been made safe by Tom Evans and Timothy Muddle.

(1) This article owes much to the help of Mr. Alan Allnutt, and Mr. Alan Readman of the West Sussex Record Office. I am grateful to Lord Egremont for access to the Petworth House Archives.

(2) A. Young, General View of the Agriculture of Sussex, 1813, (Reprinted 1970), p.394; Ordnance Survey Map 6", Sussex XXXV (1880 ed.).

(3) Young, loc. cit; J. Dallaway and E. Cartwright, History of Western Sussex, vol. 2, part 1 (1819) p.249; West Sussex Record Office, TD/W 9.

(4) Gentleman's Magazine, vol. 27 (1757), pp. 198-9; cf. Sussex Archaeological Collections, vol. 52,p.44. The two lakes, which total c. 50 a. (20 ha), are fed by three streams. The two western ones descend through Duncton parish and join above the upper lake. At least three mill sites are known in Duncton, two of which in the early 19th century powered a fulling mill and a paper mill: O.S. Map 6", Sussex XXXV (1880 ed.); Lord Leconfield, Sutton and Duncton Manors (1956), map 2; W.S.R.O., PHA 3208; Young, op. cit., p.436; Sussex Notes and Queries, vol. 13, p. 172. The eastern stream rises on Barlavington Down and flows by way of Crouch Farm into the lower lake. It was presumably this stream which powered the mills in Barlavington mentioned in 'Domesday Book' and later, though their site or sites are unknown; Victoria County History, Sussex, vol.1 (1905), p. 424; W.S.R.O. Add. MS. 1928, f. 158; ibid. Ep. I/25/2 (Burton glebe terrier, 1635); ibid. Ep. I/29 Barlavington 10, 12(probate inventories of two millers, 1661 and 1676).

(5) V.C.H. Sussex, vol. 1, p. 425

(6) W.S.R.O., PHA 6677, rot. 9 v.

(7) Only 11 inhabitants were assessed to the 1524 subsidy, at least 7 of whom lived at Burton House, and five years later the living of Burton church was united to that of Coates, presumably because of depopulation: The Lay Subsidy Rolls for Sussex, 1524-5 (Sussex Record Scoiety, vol. 56), p. 39; The White Act Book (S.R.S. vol. 52), p. 44.

(8) O. S. Map 6", Sussex XXXV (1880 ed.).

(9) W.S.R.O., Add. MS. 1928, f. 124. The document actually describes two fulling and two corn mills, but the reference is presumably to two wheels or two pairs of stones in each case.

(10) Lieutenant Hammond, A Relation of a Short Survey of the Western Counties, Camden Society, 3rd series, vol. 52 (1936), p.38.

(11) Dallaway and Cartwright, History of Western Sussex, vol. 2, part 1(1819) p.249.

(12) O.S. Map 25", Sussex XXXV. 8 (1912 ed.); cf. W.S.R.O. TD/W 24.

(13) E. Straker, Wealden Iron (1931), p.430; Wealden Iron (Bulletin of the Wealden Iron Research Group), vol. 7, p.16.

(14) Straker, loc. cit.

(15) Historical Manuscripts Commission, Salisbury, vol. 13, pp. 19-24; Sussex Notes and Queries, vol. 7, pp. 97-103; English Historical Review, vol. 48 (1933), pp. 91-9.

(16) V.C.H. Sussex, vol. 2 (1907), p. 247.

(17) Suss. Arch. Coll. vol. 32, p. 23.

(18) Transactions of the Newcomen Society, vol. 9 (1928-9), pp. 12-35.

(19) H. Margary, ed. 250 Years of Mapmaking in Sussex, (1970), pl.5; Straker, loc. cit.

(20) Information from Mr. A. G. Allnutt.

21) W.S.R.O., MP 77, f. 39 (Letter, 1931, from Capt. F. Holland to Lady Maxse). It is possible that the caption on Budgen's map was misplaced, and that it refers to Coultershaw Mill some 1 mile (1.6 km) north-west, which supplied water to Petworth House and town; but if so it predates the earliest record of that supply by 58 years: Sussex Industrial History, vol.9, pp. 16, 21.

(22) W.S.R.O., QDE/2/1. The name John Linfield occurs in the 1786 return.

(23) Sussex Weekly Advertiser, 20 June 1791 (from H.E.S. Simmons'notes on Sussex watermills, of which a copy is in Brighton Reference Library. I am very grateful to the Brighton Area Librarian, Mr. E. Watkins, for supplying photocopies of Simmons' notes.)

(24) W.S.R.O., QDE/2/1.

(25) East Sussex Record Office, LCG/3/EW 1, f. 88 v.

(26) W.S.R.O., QDE/2/1; cf. Sussex Weekly Advertiser, 14 February 1814; Sussex Weekly Advertiser, 1 January 1816 (from Simmons' notes).

(27) W.S.R.O., QDE/2/1.

(28) Ibid. MF 493, f. 2 (1841 census); cf. ibid. TD/W 24 (tithe map).

(29) Ibid. MF 53, f. 92 v. (1851 census). Kelly's Directories of Sussex, however, (under Barlavington), continue to name Joseph Welch as miller there until 1855, evidently in error.

(30) W.S.R.O., MF 411, f. 14 (1871 census).

(31) Information via Mr. Paul Adorian, of The Mill House, Gibbons Mill, from Mr. Edward Ayling, formerly of Terwick Mill near Midhurst. Mr. Harris was the first husband of Mr. Ayling's grandmother. Kelly's Directory of Sussex (1882 ed.) still however records Richard Welch as miller.

(32) Ibid. (1887, 1891 eds.)

(33) The details of the mill's history since the 1890s derive unless otherwise stated from tape recordings of various people who remembered it, which were made by the West Sussex Record Office in the autumn of 1978. The work was done by Miss Alison Macauley with the help of Mr. Alan Allnutt, and with a grant from the West Sussex County Council. The tapes, which are available for study at the Record Office, are as follows: OH 35 (Miss E. Slade, daughter of John Slade, miller c. 1892-c. 1900); OH 36 (Mr. Peter Upton, son of Mr. T. H. Upton, agent to Major J. S. Courtauld, owner of the Burton House estate); OH 38 (Mr. C. Russell, of Easebourne); OH 39 (Mr. P. R. Pesterfield, employed at Burton Mill, 1963-8); OH 40 (Mr. George Cargill, of Petworth); OH 46 (Mr. W. Ford, water-bailiff at Burton Mill from 1976); OH 52 (Miss J. Courtauld, daughter of Major Courtauld).

(34) Cf. The Miller, 4 December 1893 (from Simmons' notes).

(35) W.S.R.O., SP 565.

(36) Kelly's Directory of Sussex (1905, 1922 eds.). In the 1930s the head gamekeeper of the Burton House estate lived at Burton Mill House, ibid. (1930, 1938 eds.).

(37) Cf. inscription on roof beam, visible in 1977.

(38) West Sussex C. C. deeds of Burton Mill.

CLAYTON WINDMILLS, (JACK AND JILL)

1 - History (Duncton Post Mill, Jill Post Mill and Jack Tower Mill O.S. Ref. TQ304134)

By Martin Brunnarius

Three windmills are known to have stood on the rising down above Clayton Village: the original Duncton post mill, Jill post mill and the tower mill known as Jack. (Members will know that Jill is the subject of restoration work involving the combined efforts of an SIAS group, the Mid Sussex District Council and E. Hole and Son of Burgess Hill).

In September 1765 an indenture (1) was made between Viscount Montague and Edward Oram of Clayton which read;

> "Lease all that part of ground near to Duncton Gate on which a windmill has been lately erected by the son of the said Viscount and contained in the whole by five rods every way for a term of 99 years."

Mr. Oram's mill came to be known as Dungate or Duncton mill and is first shown on Yeakell and Gardner's map of 1780. A sale notice in 1816 (2) described this as; "a substantial built post mill carrying 2 pairs of stones." She was brought into the wind by hand using a tailpole and talthur as is Nutley post mill today.

Sadly no illustration of this mill survives and although it is popularly believed that John Constable painted her, none of his windmill works carried out during visits to Brighton in the 1820s appears to represent this mill.

She was undoubtably equipped with common sweeps in her early days, these being covered to a greater or lesser degree with canvas according to the strength of the wind. This again can be seen at Nutley. These sweeps may well have been modernised later, with the coming of spring-shuttered sweeps in the late 18th century(3) and Cubitt's patent shuttered sweeps in the early 19th century which used a counterweight system.(4)

Jack and Jill in 1905. The round house of Duncton Mill next to Jack's tower.

Unlike Nutley however, Duncton mill had a single-storey brick round-house surrounding the trestle timbers. This was left standing when the mill was taken down about 1866 and still stands next to the tower of Jack. Millers included Edward Oram 1767-1787(5), John Geere 1809(5), Thomas Hicks 1810(5), and John Hamlin 1816(5). Later came Mr. James Mitchell who is shown on the Tithe Award Map of Clayton for 1838(6) as tenant miller. The mill ground was owned by William John Campion. Kelly's Directory(7) and the census returns(8) show Mr. Mitchell until 1870 initially as 'farmer-miller'. His account book for 1849(9) shows the type of work and charges typical of the time. He used a form of shorthand which, after much decoding and cross reference, revealed that his customers were charged at varying rates and discounts according to means and quantity, but typically:-

For Product Supplied and Ground:-

1st Grade Flour	3-Bushel Bag	Bushel	½ stone
1st Grade Flour	£1:12:0	10:8d	1:2d
2nd -do-	£1: 8:0	9:4d	1:1d
3rds -do-	£1: 5:0		
Barley		3:9d	
Oats		3:4d.	4½d
Peas		4:9d	

For Grinding Customers Own Produce:

	Bushel
Wheat	8d.
Barley	4½d
Oats	6d

Other miscellaneous items included:

	Bushel
Potatoes	3/-d

1 Pig @ 3/8d/lb - £2:10:5d
Crock of Lard 25lb - 11/4d.
(1 bushel = 64lb wheat, 56lb Barley and 42lb Oats) (10)

Amongst his casual customers during the year the names of S. Medhurst and Lashmar appear, both of whom figure in the history of the second post mill to stand on the hill.

At this time Mr. Mitchell was working at a good turn-over and felt the need to expand his business. Mr. John Young Lashmar had been working the Brighton post mill, which was to become Jill, at Clayton. She had stood for 30 years or so to the east of Dyke Road(11) on a site which is today occupied by part of Russell Crescent and immediately above Belmont railway tunnel. This mill was the most southerly of 3 post mills on the road as shown in an engraving dated 1847.(12) Earlier a Mr. Nash had painted a scene in 1839(13) which showed the eastern portal of Belmont tunnel under construction, with the top of Mr. Lashmar's mill showing over the hill above. This was just before the completion of the Shoreham line out of Brighton which pre-dated the through line from London. These illustrations show the mill here to have had a roof-mounted fan similar to that seen at Icklesham mill today.

Brighton was expanding rapidly with the coming of the railways and building work progressed back from the sea, taking away Mr. Lashmar's wind. The mill was no doubt idle before being removed to allow Russell Crescent to be built. The last plan of the area to show her was dated 1850(14) and the first to omit her, dated 1853(15). At some time during this period Mr. Mitchell purchased Mr. Lashmar's mill and had her brought up to Clayton(11) where she was re-erected to the west of the old Duncton post mill.(28)

Evidence which has come to light during research on the mills and investigation at the site indicates that Samuel Medhurst especially renowned for his work on post mills, was almost certainly responsible for the re-erection and modernising of Mr. Mitchell's new mill.

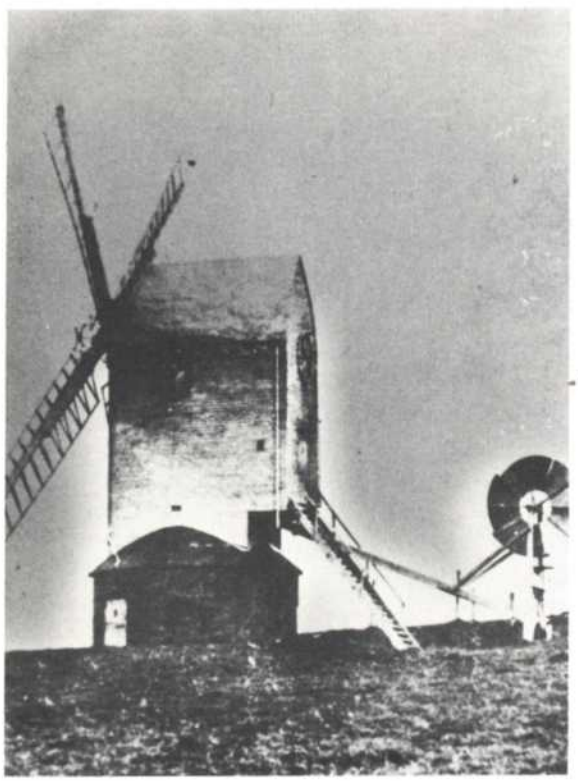
In 1915(16) an old shepherd could still remember the removal. He was able to recollect that the mill was brought up, using horses at first, which resulted in an inconsistant pull and broken tackling. Sussex oxen were then substituted on account of their strong steady pull. The whole was

drawn on a huge trolley/sledge. The oxen were yoked up in pairs to hauling lines connected to a massive draw bar. It seems that the timber and iron support was positioned beneath the mill and jacking applied to the mill and trestle to take the weight off the brick piers. These would no doubt have been knocked away to allow the sledge with the mill mounted on it to be dragged away.

The 5-mile journey would have been arduous although a gently sloping route was no doubt found once the problem of getting off the Dyke Road Ridge in one piece had been overcome.(17) This method was used a number of times as mentioned in Musgrave's Brighton.(18) The well known water colour in the Brighton Museum and Art Gallery shows one such removal in 1797.(19) (Not however, as is often suggested, that of Jill.)

At Clayton the down had been excavated to allow the new two-storey brick roundhouse to be built in the centre of flat unmade ground approximately 90 ft in diameter. This was to allow the passage of a large tailpole-mounted fan. The slope of the ground is such that on the eastern side the hill was cut to a depth of 10 ft or so.

In retrospect the re-erection of the post mill at Clayton was perhaps the 'prototype' of remarkably similar work carried out by Medhurst when he rebuilt Cross-in-Hand post mill after its removal from Framfield in 1855. This had also been equipped with a top fan which Medhurst took down and replaced with his own tail-pole-mounted arrangement. (described below)



Jill Post Mill c 1907

Mr. Mitchell's 'new' post mill, later to be called Jill, was worked in conjunction with Duncton which was obviously left standing. The new mill would otherwise have been erected on the higher and more favourable site of the older one.

As she then stood she was a large three-floor head-and-tail mill equipped with two pairs of overdrift stones; a pair of peaks in the head for grinding such as barley or oats and a pair of French burrs in the tail for producing wheat-meal. A belt, driven by a skew-gear-meshed layshaft across the back of the brake wheel, drove a flour dresser. This type of drive is typical of Medhurst's work elsewhere.

She was winded by the Sussex Tailpole Fantackle and powered by four patent sweeps. These were controlled by a conventional weightwheel and chain on the back of the mill. Here again details of the striking gear used are of the Medhurst pattern.

James Mitchell ran both post mills until 1866. Two years after the lease expired on Duncton mill, it was taken down and Jack, the tower mill, was built. He (undoubtably considered as male in this context) is a large tower mill, over 44 ft from the ground to the curb upon which the cap rotated, 13 ft inside diameter at the top of the tower and 22 ft 8 in at the base. Winded by a 5-blade fan and equipped with large patent sweeps, the mill worked 3 pairs of underdrift stones plus dressing and cleaning machinery. The tower was erected next to the roundhouse of Duncton mill and a communicating door provided so that the additional space could be used for storage.

The work of fitting out the tower is understood to have been carried out by William Cooper, the Henfield millwright. He is also said to have incorporated the large Duncton brakewheel which did not take lightly to the additional load imposed on it.(20)

Brothers Joseph and Charles Hammond (21) followed James Mitchell (last shown in 1870). Charles had Jack fitted out with additional modern machinery including a large oat crusher and a roller mill.(20) He was of an inventive nature and had an eye to the efficiency of his mill and business. With this in mind he devised a means of regulating the speed on the mill by applying a large centrifugal governor to the control gear of the sweeps. He patented the mechanism in 1873. This shows the system as fitted in the cap of Jack.

C. E. Hammond continued here with various millers in his employ until his death in 1903 (brother Joseph had gone to work the post mill at Hurstmonceux in 1878). After this time Mr. Wood of Hammonds water mill took the business on but only continued for 3 or 4 years.(22) The two mills then became idle and, in 1908, Jill suffered damage to her fantackle.(23) Although repaired, she did not work again. Jack suffered similarly in 1909 when gales blew the fan off and damaged the sweeps.(23)

From 1908 the mills were occupied for residential purposes only. First, Jack was rented as a summer residence in 1908, 9 and 10 by E. A. Martin, an archaeologist and author,(24) one of his greatest fears was that a sweep would break off and damage the adjacent roundhouse roof. Fortunately when this did happen during his absence it fell harmlessly to one side. Next to come were Captain and Mrs. Walter Anson. They arrived in 1911 and made an unusual home in the granary buildings. Shortly after this they had the machinery stripped out and the remains of the sweeps taken down. All that remains is the windshaft and the upright shaft which took the drive down into the mill.

Jack stood thus until 1973 when Universal Pictures Ltd., approached Mr. Henry Longhurst with a view to using the mills as a setting for part of a film. They paid £3000 to have a set of basic sweep frames put up by E. Hole and Son of Burgess Hill. The two windmills had been taken on by Mr. & Mrs. Longhurst in 1953, five years after Mrs. Anson's death.

The Late Mr. Longhurst had a great affection for the mills and with the aid of the then Cuckfield Rural District Council and the present Mid-Sussex District Council kept them maintained as far as possible.

Jill had completely lost her fantackle early in her retirement and was loaded with chalk to prevent her swinging about. She stood almost intact, with all four sweeps, until 1948 when a side girt broke, this was girded up with an additional timber in 1949 by a builder from Hurstpierpoint.

After the council became involved E. Hole and Son were employed to shore up the breast with steel joists and replace the rotten sweeps and stocks. These were attended to once again in 1970 by a builder from Hove.

It is now intended to bring Jill to a working condition once more after over 60 years of retirement.

Hammond's Patent Sweep Governor

In May 1873 Charles Edwin Hammond, of Clayton windmills, took out a patent on a novel centrifugal governing mechanism designed to control the speed of a windmill.(25)

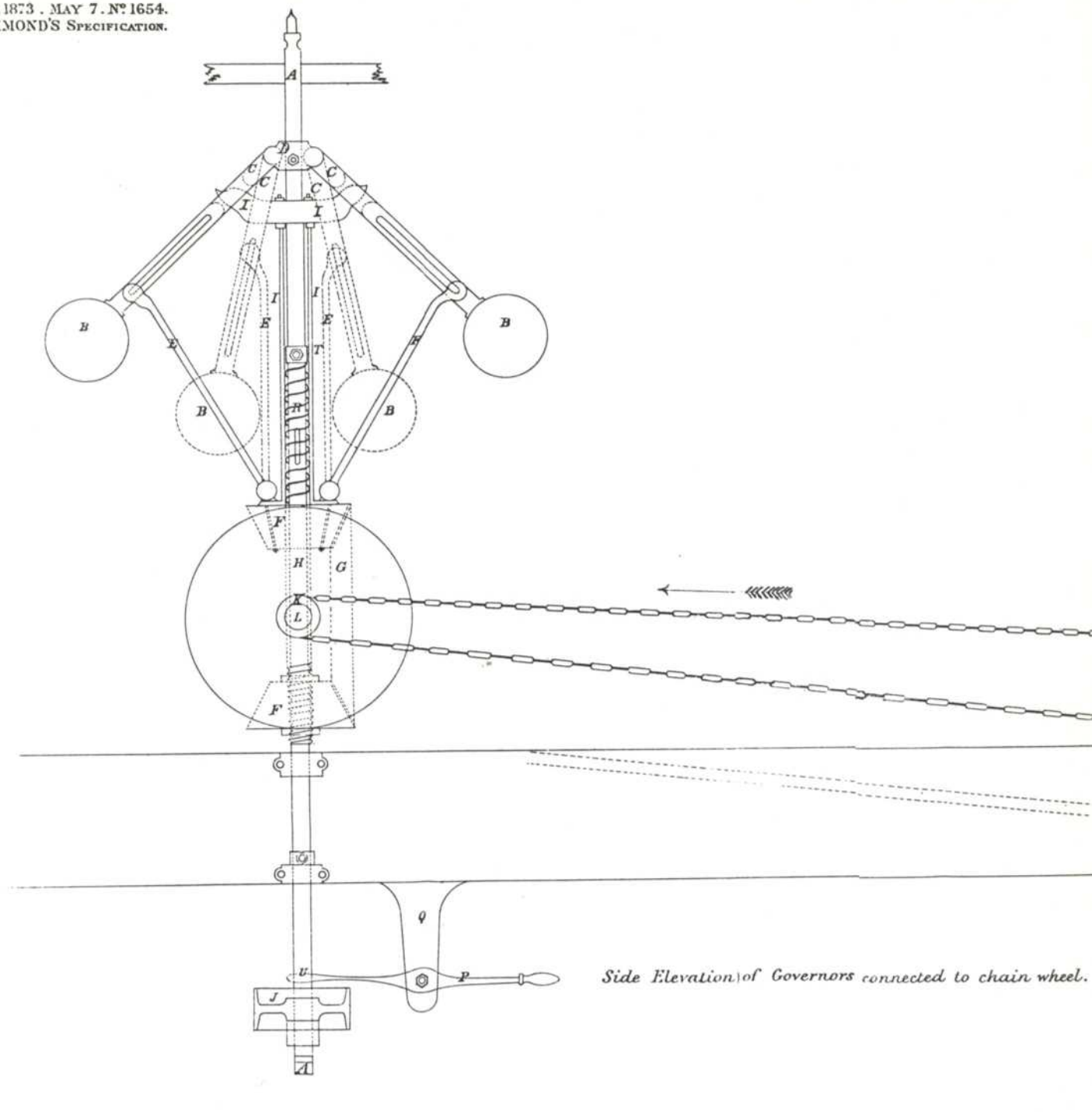
The first of these was fitted into the cap of Jack, the tower mill at Clayton, and the second, in the back of the bin floor at Hurstmonceux post mill in which the Hammonds had an interest. The mechanism remains at the latter and is unique in windmills today.

This, as the accompanying patent drawing shows, is basically a large centrifugal governor similar in action to the type used to control the tentering of the millstones themselves. A belt from the windshaft drove a cone friction clutch system which conveyed its action to the existing striking gear.

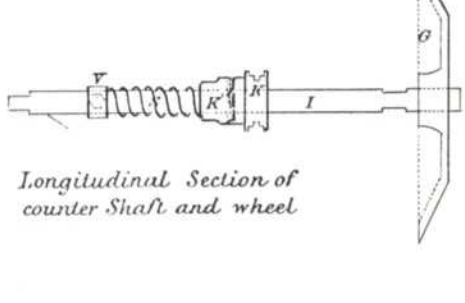
This could in fact only be applied to Cubitt's patent sweep control and was intended as an additional refinement to be readily incorporated. Cubitt's method controlled the sweeps by relying on a counterweight load operating the shutters in response to a change in wind pressure via a series of levers and rods. The drawback with this was that power was lost unnecessarily when a sudden gust of wind occured and the sweep speed would vary especially if the work load within the mill changed. In this latter case the miller would be required to alter the weight setting to compensate.

Mr. Hammond's governor was intended to override the Cubitt gear whenever the sweep speed varied from a predetermined norm whatever the wind or load conditions. Refering to the drawing, two opposed iron cones 'F' were fitted to a keyed sleeve. These were, according to sweep speed, raised or lowered by the centrifugal weight levers 'E'. In turn the small cones drove a larger iron cone backwards or forwards and via a light shackle chain and pulley, immediately pulled the Cubitt's weight wheel 'M' into the 'open' or 'closed' shutter position. As may be seen, the existing weight and chain were retained, acting on groove 'N'. This was used to provide the initial setting and controlled the mill entirely at the idle position in the governor's action. A torque limiter 'K' was provided to prevent the existing striking gear being strained as the sweep speed increased.

Mr. Hammond's mechanism was used in both mills for a considerable time and was in working order at Hurstmonceux mill when grinding by wind ceased there in 1892. The concept seems very sound as the speed at which the windmill worked was quite critical especially if, as in the case of Jack, the later rolling equipment was installed. The wind however, never blows to order and the sort of conditions required to keep the sweep governor usefully employed would only have occured for limited times. Periods of near still air often prevail even on the downs.



Side Elevation of Governors connected to chain wheel.



Longitudinal Section of counter Shaft and wheel

The filed drawing is not colored

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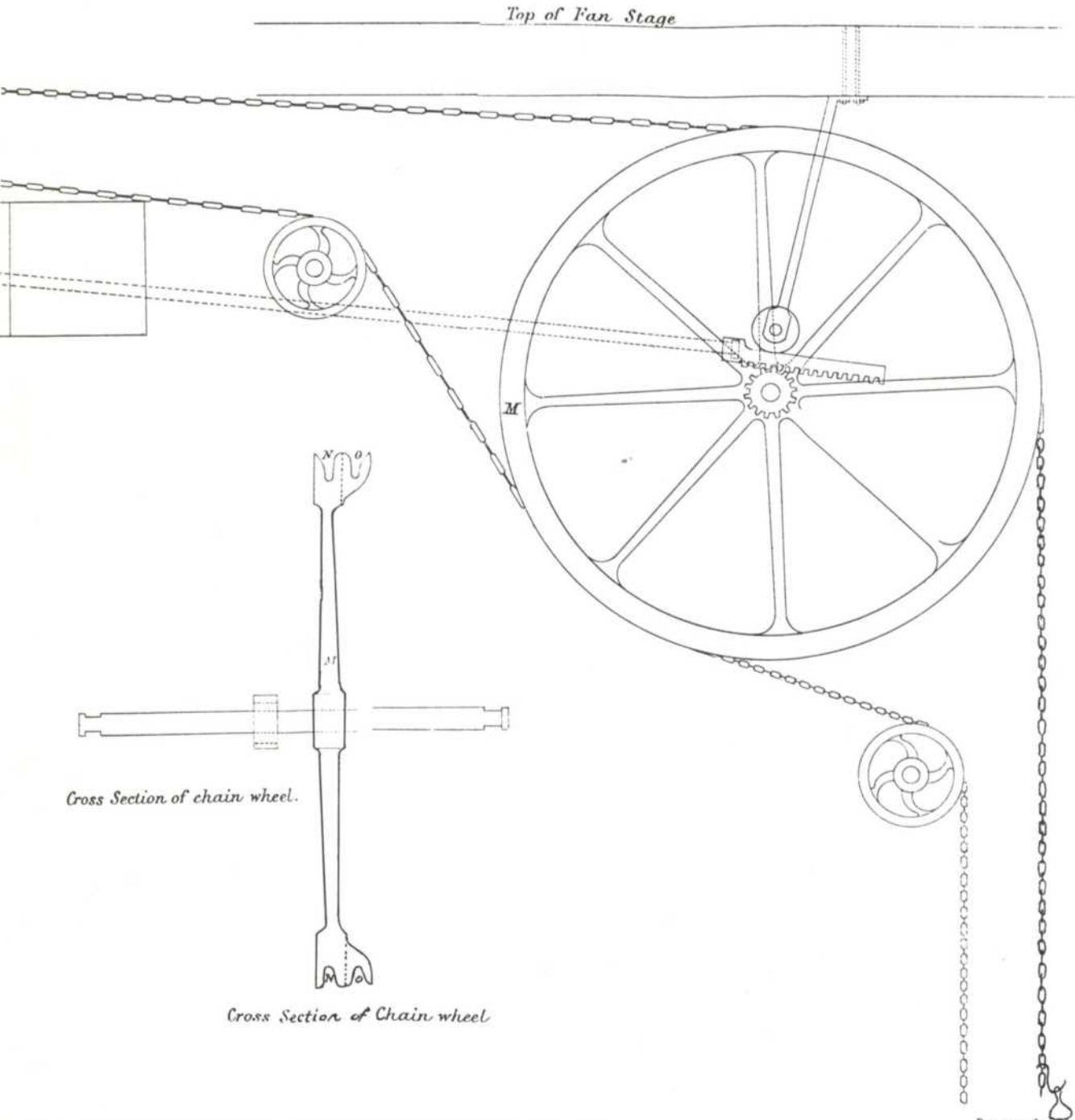


Drawn on Stone by [illegible]

William Spottiswoode
Majesty 1873

The Sussex Tailpole Fantackle

Towards the end of restoration work on the Jill post mill it is intended that she be re-equipped with a replica of her original fantackle. When complete this will be the only working example of the traditional winding gear as fitted to many Sussex post mills during the 19th century.

Whilst not unique to the county, the tailpole fantackle came to be regarded as a Sussex feature, favoured by many millers and millwrights. The fitting of these in East Sussex is attributed to Samuel Medhurst, the famous Lewes millwright whose name is always linked with functional engineering and the most up to date mill practice of the day.(26)

The arrangement as may be seen at Argos Hill and Cross-in-Hand is basically a simple timber frame carrying a winding fan set a right angles to the plane of the sweeps, and supported by two large cast iron driving wheels. The whole assembly could have been constructed away from the mill and, with the addition of diagonal bracing, easily fitted to the outer end of the tailpole. This, coupled with the fact that the wheels bore not only the entire weight of the tackle but half that of the tailpole itself, was of great practical advantage when modernising an old mill. The sectional drawing of Jill (centre pages) shows the type of tackle to be fitted. The 10 ft 9 in fan is placed 15 ft 3 in above the ground giving an overall height of over 20 ft 7ins.

Any side wind would set the fan in motion. This, via bevelgear and spurgear reductions drove 2 horizontal worm shafts through right-angle bends. The left and right hand worm pinions engage with respective gear rings on each winding wheel. These wheels, 9 ft 5 ins in diameter weigh approximately 5 cwt. each. They communicated the fan's action to a hard-core track and support about 1 ton apiece. Even carrying this sort of load the winding wheels were known to skid in a heavy side gust. This was the main criticism, levelled by supporters of the East Anglian step-mounted fan which was closer in but certainly could not have been as sensitive in bringing the mill round to face the wind correctly. The extant Sussex fanstages were placed at a radius of approximately 39 ft and the steps provided with their own truck-wheels. The gearing is such that through bevel, spur and worm gear reductions, over 3,000 revolutions of the fan are required to turn the whole mill through 360°

All the castings, including the gears are of iron and well executed. They have stood the passage of time and were undoubtably the work of John Every whose Phoenix Iron Works(27) stood on the banks of the Ouse. Medhurst machinery cast by Every, is still to be found in a great many wind and watermills.

The bearings are of brass, some fitted into capped horn brackets (hand finished), others, split and double flanged served as thrust and radial bushing.

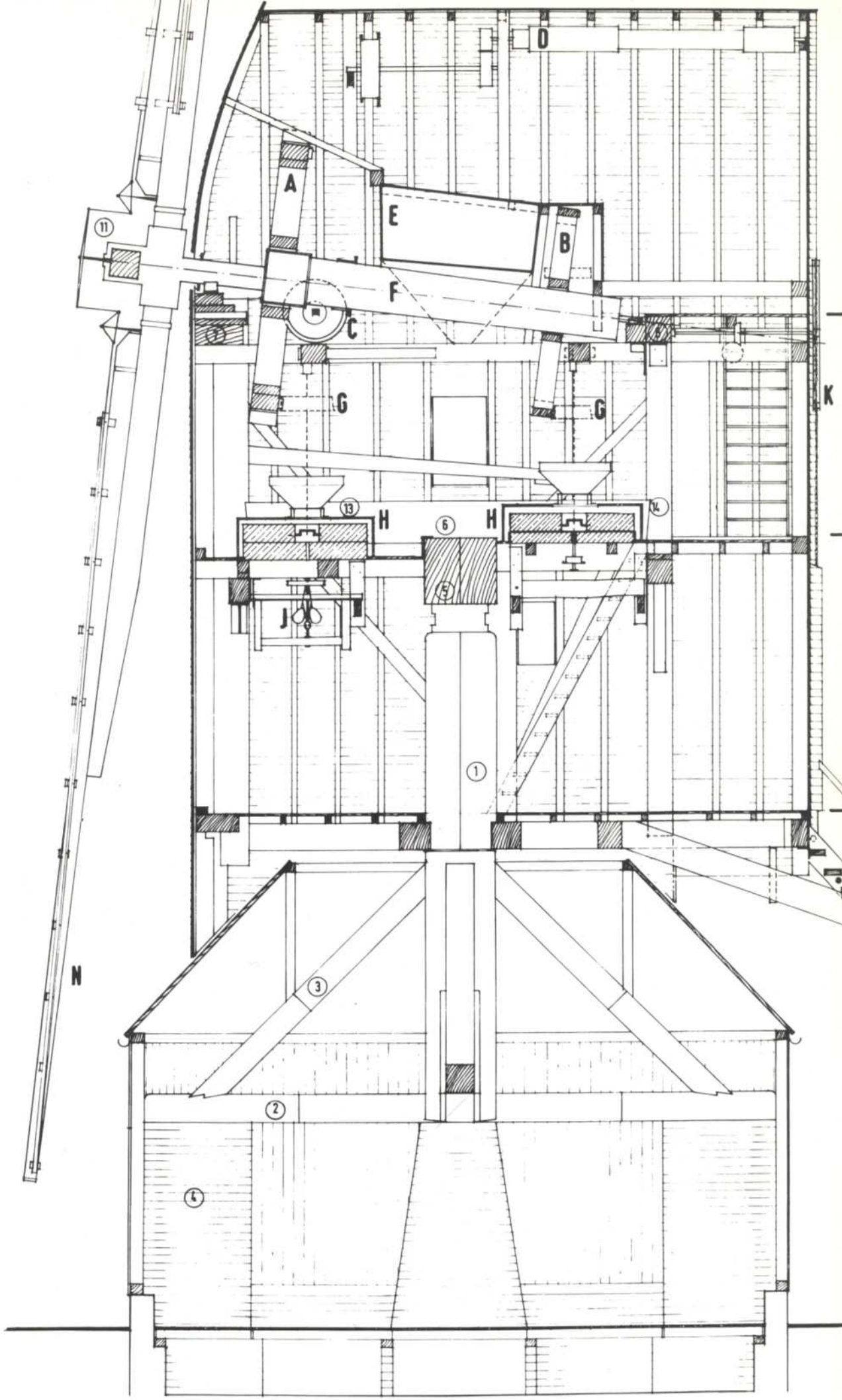
Notably, the timber work is simply constructed with the minimum amount of jointing. This held with large bolts plus two transverse tie rods. The lower of these passes through each of the thrust brackets for the worm shafts as well as the frame. Thus ensuring that the driving loads were taken by the whole of the base. The mill engineer was utilising timber by this time rather than designing for it. In fact one notable example of this type of fantackle fitted to a West Sussex post mill appears to have been entirely constructed with iron.

The 'new' fantackle for Jill will be based on that of Cross-in-Hand. If, as is suspected, Medhurst fitted Jill's original arrangement and later used it as a pattern for Cross-in-Hand, then this part of the project will be an unusually appropriate exercise in Industrial Archaeology and a tribute to a fine Sussex millwright.

References

Particular acknowledgement is made to the dedicated work of the late H.E.S. Simmons whose notes formed the basis for research here.

1. Gurney Wilson Notebooks. Lent by W.R. Hammond in 1915. Hove Central Library
2. Sussex Weekly Advertiser 16/9/1816
3. Andrew Meikle 1772
4. William Cubitt 1807
5. Notice in the Sussex Weekly Advertiser 22/10/1787 ditto 20/11/1809, 16/4/1810, 16/9/1816
6. W. S. R. O. TD/E 72
7. 1845. 1851, 1855, 1866, 1870
8. 1851
9. Kindly lent by Mrs. Longhurst
10. Average weights used by millers
11. Traditionally taken to be Jill. The only post mill to be moved from Dyke Road; not otherwise accounted for. There was also a link between the Mitchells and the Lashmars, not yet defined.
12. Handbook to Brighton 1847, see Old English Watermills by R.T. Hopkins 1933, p.221
13. Brighton Museum and Art Gallery
14. SB 912 1850 Brighton Reference Library
15. SB 912 1855 -do-
16. The Saturday Review 16/10/1915 p.375
17. Mr. F. W. Gregory favours a route down Dyke Road Drive and into Preston Park
18. F. G. S. Bramwell p.221



SECTION. JILL WINDMILL CLAYTON SCALE 1·50

BIN FLOOR

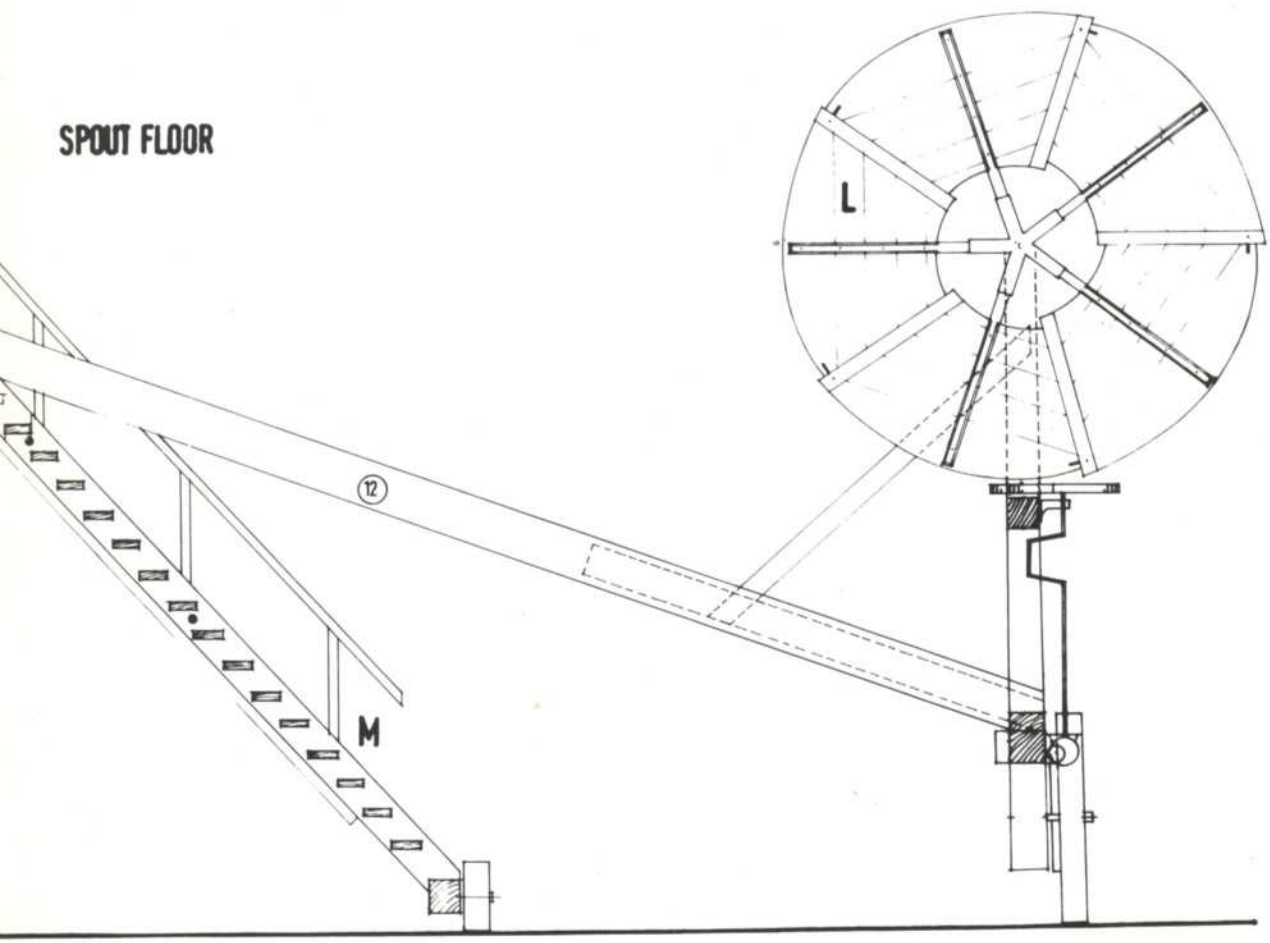
STONE FLOOR

SPOUT FLOOR

ROUND HOUSE

A Brake Wheel
B Tail Wheel
C Auxiliary Drive
D Sack Hoist
E Bins
F Windshaft
G Stone Nut
H Stones
J Tentering Gear
K Shutter Control. Wheel
L Fan Tail
M Access Stair
N Sweeps

Numbers in circles refer to text.



18.

19. Brighton Museum and Art Gallery. This shows a mill being dragged by 86 oxen from Regency Square to a site above Preston Village.

20. Gurney Wilson Collection from an old miller called Mobsby

21. First shown in 1874. Both mills and Duncton roundhouse shown on the 1st 6" O.S. 1873. Hammond's Patent May 1873

22. Wood and Son shown in Kelly's 1905 only

23. Letter from E.A. Martin. Sussex County Magazine Vol. X p.219

24. Life in a Sussex Windmill. E. A. Martin, Allen & Donaldson 1921

25. Patent No. 1654

26. First set up in Western Road, Lewes in 1824 and continued until 1870 when his son Boaz took over.

27. Established in 1832

28. The inscription:- Rebuilt in 1852 has recently been found within the mill

CLAYTON WINDMILLS, (JACK AND JILL)

2 - Restoration

By J. S. F. Blackwell.

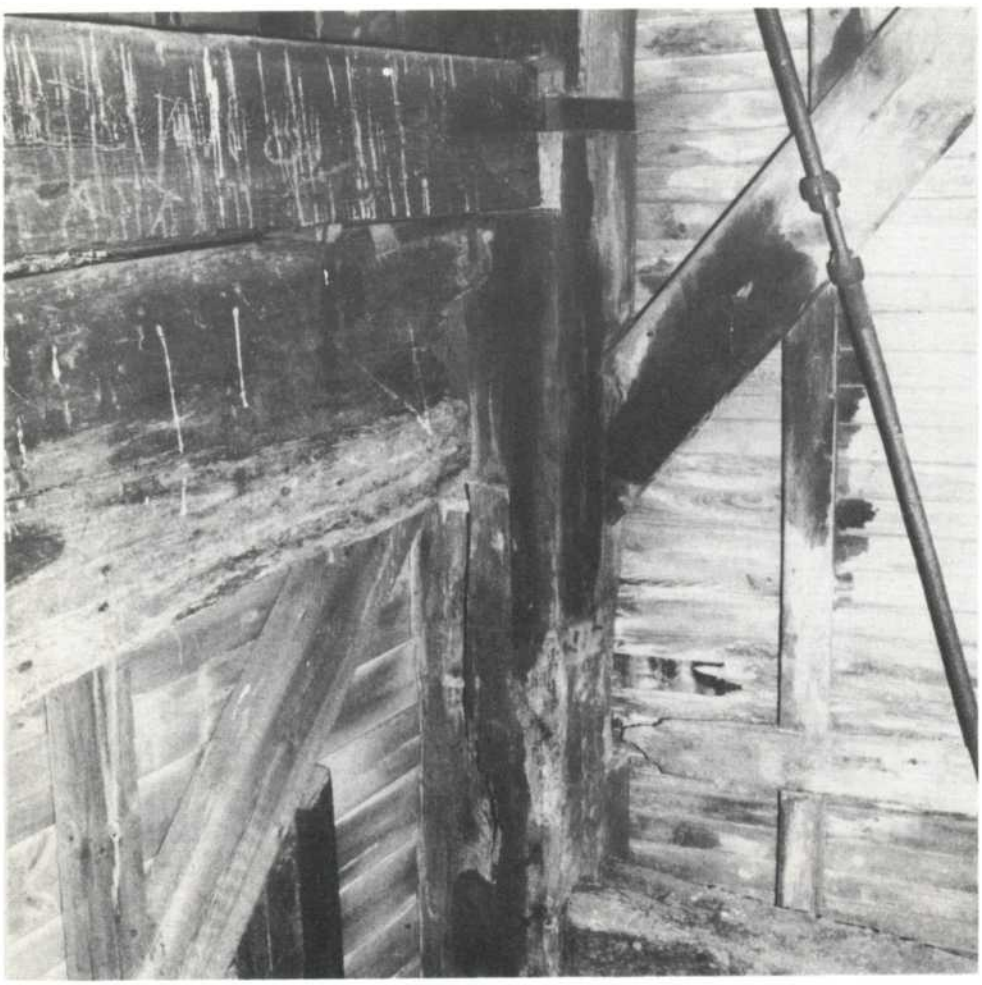
The following is a personal view of the formation and first year's activities of the Jack and Jill Preservation Society of which the author is the Vice Chairman.

In 1958 Mr. Henry Longhurst, owner of Jack and Jill windmills, entered into an agreement with the then Cuckfield Rural District Council, whereby he conveyed the ownership of Jill Mill and a circle of ground, 36 ft in diameter, upon which it stood. In 1966 a similar agreement was reached concerning Jack Mill.(1) The council then became responsible for the maintenance of both Mills.

In the winter of 1977/8 a thorough inspection and report on the fabric of the mills was made by Mr. A. D. Chamberlain, C. Eng., M.I.C.E., the District Engineer of the Mid-Sussex District Council, successor to the old Cuckfield R. D. C. He realised that major repairs were urgently required and that neither the District Council nor the County Council, from whom a small annual maintenance grant was received, would have the necessary finance to undertake such a project. During the course of the next few months he evolved the idea of a Preservation Society which would raise money to enable the work to be undertaken professionally and conceived the plan that the best way of preservation was by complete restoration to working order of Jill Mill. A meeting was called in May 1978 between officers of the Mid-Sussex D. C., County Coucillors, Parish coucillors from Hassocks and Keymer and representatives of the Sussex Industrial Archaeology Society. Representatives of the latter were Frank Gregory, a man of very extensive windmill knowledge and a callaborator in many restoration projects, Phillip Spells, an architectural Assistant, and writer, and subsequently another member, Martin Brunnarius, Sussex windmill historian and engineer. At this meeting it was agreed to produce a survey report to see if it was possible to restore Jill, using a mixture of volunteer and professional labour, so that she would grind again.

Before quoting from this report a few notes of the construction of the mills may be useful, the numbers in brackets refer to the position of the member or piece of equipment in the sectional drawing of Jill Mill, measured and drawn by Phillip Spells, on the centre pages.

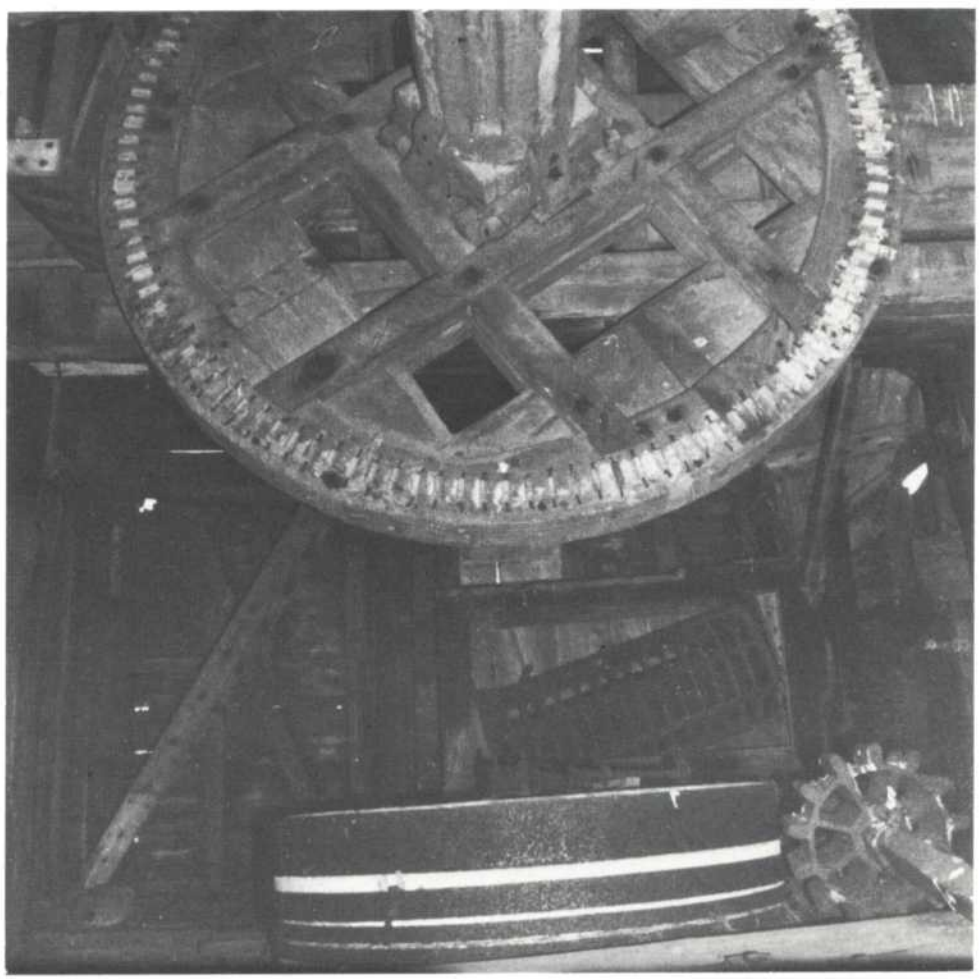
Jill is a wooden post mill which from its name consists of a large wooden post (1) 770 mm(30 in) in dia and 5.5 m (18 ft) high. This post is supported in an upright position by a timber trestle consisting of two interlocking triangles the bases of which are called crosstrees (2) and the sides which are tenoned into the post, quarter bars.(3) The trestle frame is supported on four brick piers;(4) the whole of the above assembly is enclosed in a timber building known as a roundhouse. At the top of the upright post is pivoted, by means of a casting and pintle, a massive beam, the crown tree(5) 770 mm(30 in) by 770 mm(30 in) in section and 3.6 m(11 ft 9 in) long spanning the entire width of the mill. On each end of the crown tree rest the side girts(6), large timbers which run from the front to the rear of the mill and from these side girts the body of the mill is either supported or hung. The side girts are tenoned into mortises on each of the four corner posts. The box of the body is completed by beams which support the windshaft (F), the breast beam (7) at the front and tail beam (8) at the rear. The remainder of the body is squared together by beams and covered on the exterior with weatherboarding. Two more beams running from front to back and known as sheer beams stabilise the mill around the post. The stocks are fastened to the windshaft (F) and to these are fastened the sails (N) or sweeps as they are known



Decayed Corner Post and Side Girt.
(note temporary side girt at top)

in Sussex. When working, the sweeps were fitted with Cubitt's patent shutters which, by an ingenious arrangement of rods and cranks (11) were operated by a rod passing through the windshaft which in turn was worked from a chain wheel (K) at the rear of the mill. This opened or closed the shutters to suit the wind conditions. The entrance to the mill is by steps at the rear, wheels are attached at the base of these steps to allow the whole of the body to be turned about the centre post to catch the wind. In early post mills the body of the mill was turned by means of a tailpole (12) but as mills became larger a fantail carriage assembly (L) was necessary. This consisted of a five-bladed fan mounted on a wheeled wooden framework which ran on a circular track. When the wind direction changed the fan rotated and by a series of rods and gears transmitted its motion to the driving wheels and hence turned the body of the mill.

The interior arrangements were:- Top floor; the Bin floor where the grain was stored before grinding after being raised from the roundhouse by means of a sack hoist (D) the sacks passing through flaps in each floor, Second floor: the Stone floor, where there were the two pairs of stones - Derbyshire Peaks(13) at the breast for grinding oats and French Burrs (14) at the tail for grinding flour. Both pairs were over driven from cogged wheels attached to the wind-shaft known as the brake (A) and tail (B) wheels. On this floor was also a



View towards Tail of Mill on Stone Floor

flour dresser used for grading the flour. Third floor:- the Spout floor, where the ground corn was bagged or binned by means of canvas chutes running

from the underside of the stones. Above one's head is the tentering gear(J) used to regulate the gap between the bottom fixed stone and the upper runner stone.

Jack, a tower mill, is constructed on a different principle. At the top of a tapering brick tower is mounted a revolvable cap. This cap carries the windshaft and is rotated into the wind my means of a fan mounted on the cap itself and connected by rods and gears to a gear train on the top of the tower. Jack is, however, devoid of any internal machinery.

The report which was produced has been the blueprint in planning the restoration work and is worth quoting in detail.

Structure: The east side girt's tenon has rotted as has the south-east corner post into which it was originally morticed; this has caused the breast of the mill to tilt forward and it is now supported on a steel framework. One sheer beam has split and would also need replacing. It has not been possible to inspect the ends of the crown tree as these are covered by weather boarding. The other main structural timbers appear to be sound. This repair would need to be undertaken by professional millwrights.

Sweeps: To enable these eventually to turn it is recommended that all four be equipped with half their original number of patent shutters, and a sail rod each, capable of being permanently fixed or removable during winter inactivity, and connected to strking gear most of which remains loose in the mill. Note that the existing stocks, which it has not been possible to inspect, would need to be drilled to take the striking rod - not an easy task in situ.

Brake and Tail Wheels: The wheels themselves are in good order as is the brake mechanism but would need to be recogged as the brake wheel has been completely stripped of cogs in some hair-raising incident in Jill's past.

Internal Furnishings: Most of the floor joists and floorboarding are missing and would need replacing. The tail stones of French Burr are in place but the breast stones of Derbyshire peak are at present in the driveway of Mr. Longhurst's property and would need to be recovered, hoisted, and levelled in position.

Repair or make:- Sack hoist and associated machinery; stone cases; horses and hoppers; meal bins and chutes; refurbish flour dresser. The tentering gear for both stones is incomplete and while woodwork can be remade consideration must be given to obtaining the metalwork from other windmill sources or having it fabricated.

Round House: This timber building is in fair condition although the floor and sleeper walls are missing. By building a 300 mm(12 in) high wall around the circumference and replacing the rotten sole plate, one could utilise the tongued and grooved vertical boarding of the round house as only the bottom 225 mm(9 in) or so has rotted away. This would be an initial project for skilled volunteers.

Tail-pole and Fan-tail Carriage: Both the tail-pole and fantail carriage are missing but could be reconstructed to the same designs at either Croos-in-Hand or Argos Hill mills. The rodding, gearing and suitable wheels would need to be obtained, possibly from agricultural implements. The steps require repairing or remaking and setts for the steps and fantail carriage to run on must be obtained and laid.

Tail and Sides of Mill: The tail of the mill which is of cantilever construction is in a tumbledown state and would require rebuilding to bin floor level.

The east side of the mill is similar with rotten studding and bracing. These would require professional assistance.

The whole of the body of the mill requires weather boarding with 50% lapped boards and traditionally painted with lead paint (one coat primer, 2 coats undercoat and one of gloss finish) which could be undertaken by volunteers providing safety scaffolding was erected.

As a general point it is felt that restoration should be done where possible using traditional materials and any steelwork necessary should be encased. Serious consideration must be given to securing the mill during the winter gales and against vandals.

When the above is completed no reason is seen, providing no further serious structural defects are discovered, why grinding could not be undertaken.

Final Layout of Site: It is suggested that irrespective of whether grinding is obtainable that the internal appearance of this mill be as if the miller had 'gone to lunch' at the turn of the century. This would involve obtaining such items as stone dressing implements, miller's desk, ledgers, dummy sacks, etc. The round house to be utilised as 'sales' area electrically lit.

It is suggested that the area surrounding the mill be covered with quarry waste, a 'farm cart' to be displayed, the grass banks to be retained. Two points of access were considered, the present one, and direct from the existing car stand and it is thought that from the visual, safety and security point of view that the present entrance, with a new main gate for vehicular access and a wicket gate for pedestrians would be best. The two 'open' sides of the site must be made as vandal proof as possible and a concrete post chain link fence 'embedded' in the hedge, trimmed down to say chest height is suggested. Car parking area to be levelled and covered with quarry waste. Trees to be cut back to suit the sails if they turn. Obviously such moves would, - as would the later suggestion regarding Jack - require close consultation with Mr. Longhurst.

Jack: Externally it should be possible to recreate the mill's original appearance with a dummy fantail and weight box for the striking mechanism. A brief inspection of the cap, at present jammed, indicates that this could be freed and turned to enable the sails to be pointing in the same direction as Jill's. Provision must be made for designing a mechanism which will enable the sails to be periodically turned, to prevent sagging, instead of the present method of unclamping by millwrights. Repairs to a leak round the cap finial to be put in hand as a matter of urgency.

The sails are to be removed (at the same time as Jill's) for repainting by volunteers. On both mills consideration could be given to vantage points for photographers.

It is suggested that this mill might be adapted to be a museum devoted to Sussex Mills and Millers. Access to this mill by the public is not easy, particularly as the round house to Duncton Gate Mill and the granary are in private ownership, but a brick path or embedded pieces of mill stone is suggested as leading up to and around the mill.

With these encouraging reports it was decided to turn the ad-hoc committee into a steering committee to draw up a constitution for a Preservation Society and to launch an appeal for £25,000. A public meeting was called in September 1978 which drew enthusiastic support and raised £660. With District and County Council grants this figure was swelled by the end of the year to something over £5000 and with prospect of more we could begin work in earnest.

On a beautiful day in January 1979 volunteers removed the sweeps from Jill, slowly lowering each one to the ground to be stored awaiting re-shuttering. It was found that one sail frame was beyond repair.

A contract was let to E. Hole and Son, the Burgess Hill millwrights, to replace the decayed side girt, and south east corner post and also to replace the split sheer beam of Jill, to provide new stairs and tail-pole and generally square up and level the main frame members for the sum of £7,165 plus VAT. Volunteers undertook to carry out the following work during the summer of 1979, and local and national firms were approached to assist with the supply of free or discounted materials,

(1) Replacement of round house floor.
(2) Painting of weather-boarding.
(3) Construction of stone cases and hoppers.
(4) Reinstatement of fantail track.
(5) Installation of surface water drainage system.
(6) Renovation of the wire dresser.

There tasks are progressing well in the hands of small groups of volunteer members who have given up many hours of leisure time.

The first major problem was the discovery that one quarter of the core of the crown tree was extensively rotten, and had to be cut out and replaced with good timber and then metal plated on both sides.

After just one year of existance the Society has raised locally the sum of £10,000 including an anonymous donation of £2000 towards restoration of the sweeps, and £6,000 from the Department of the Environment in the form of an historic buildings grant. "The Society" says the official letter, "appears to have very much the right idea about repairing the mill and has taken the best professional advice. The project would seem to be a most worthy one." Encouraging words and if you wish to support this worthwhile project (membership as December 1979 is £1 per annum) details can be obtained from the Hon. Secretary: Mrs. J. M. Capewell, 105, Dale Avenue, Hassocks.

Note: Since this article was written it has come to light, following the death of Mr. Henry Longhurst, that due to a legal misunderstanding the ownership of Jack Mill was not conveyed to the District Council. Negotiations with Mr. Longhurst's solicitors has resulted in the Preservation Society acquiring much more land around Jill Mill and retaining the right of access to Jack on nine occasions each year.

THE SOURCES AND SUPPLIES OF BUILDING MATERIALS FOR BRIGHTON c1770 to 1810

By Dr. Sue Farrant

By the 1770s Brighton was Britain's premier seaside resort and the intensity of building activity within the town (bounded by East, North and West Streets) was changing the town's appearance. Not only were old houses replaced but the density of buildings rose very considerably due to the increasing residential population and demand for seasonal accommodation. From the early 1780s the town's new suburbs, which were mainly built as terraces and squares, spread over the surrounding farmland. By 1810 they straggled eastwards as far as Rock Gardens, north to Oxford Street and westwards, to the parish boundary with Hove.(1)

Very little is known about the appearance of the town and the construction of buildings before the later eighteenth century, partly because of rebuilding. Documentary evidence is also slight. It can only be inferred from references in wills and inventories made between 1660 and 1740 that at least some houses of that period were originally hall houses, but that by the early 1700s the internal layout was arranged within of two storeys with garrets.(2) The importation of pantiles and 'brickstones' in the 1670s and 1680s suggests that some houses had pantiled facades and bricks were used.(3) It has been suggested that houses built in this period were timber framed and that possibly two or three houses of pre-1750 origins might still survive in the 'old town'.(4) Flint from the fields, pebbles, sand and gravel from the beach were the most obvious local building materials. Lime was made from local chalk. Wood was imported either by beaching vessels on the foreshore or via Shoreham Harbour.(5) Probably some was carted from the Sussex Weald as in the later 1700s. Bricks were made in the south-western corner of the parish in the early 1720s for the present Stanmer House, but there is no evidence of a brickmaker supplying the town.(6)

The first evidence of building construction in Brighton is a building account for enlarging a house on the Steine east of East Street in 1766, in which brick, oak, Caen stone and Riga deal were used. In the same decade Dr. Relhan described the town's houses as built of flint with brick architraves and quoins, but he is only describing the facades.(8)

Brick was obviously an important building material by the mid 1770s because of the use described above but from the 1770s the use of brick for the entire house was considered worthy of note in advertisements of houses for sale; flint was not. In that decade a brickworks owned by Thomas Scutt at Wick in Hove was using the local clay to supply Brighton with bricks.(9) By August 1790 Richard Kent, a Brighton builder, had been in partnership with Scutt at Wick, the partnership was disolved in that month but both men continued their own brickyards.(10) Both Scutt's land and the south-western side of the parish of Brighton are on the Sussex coastal plain and were overlain with deposits suited to brickmaking. Stanmer House (Stanmer Park) and Russell Square are just two examples of the distinctive honey coloured product.

The most common facade facing materials in the late 1700s and early 1800s were beach pebbles or dressed flints and mathematical tiles. Mathematical tiles were most common on terraced houses in the new suburbs, especially to the east, and this is evident today. Their popularity is ascribed to a tax on bricks from 1784 but probably also due to lower construction costs due to labour savings as they were in common use before then.(11)

Both costs of building and the origins of the materials used even as late as the early 1800s require further investigation. Timber such as deal from Scandinavia and oak were imported via Shoreham throughout this period. By 1790 slates were also imported, from south-west of England and from Wales.(12) Mathematical tiles were probably produced locally, certainly roof tiles were made at Wick and in the Weald.(13) Field flints must have been collected by local farmers for sale to builders and were used for the sides and rears of better quality houses and for non-domestic buildings. Acquisition of beach material was regulated from c 1780 by the Town Commissioners in order to conserve the beach.(14)

Between c 1770 and 1820 many towns in Britain expanded rapidly and most of the building was undertaken by 'small builders' and allied craftsmen. Some, such as Richard Kent in Brighton, purchased land and built to sell.

The majority of Brighton builders built on behalf of people developing new land or redeveloping in the old town. The typically small scale of the businesses in Brighton helps to explain why evidence of sources of materials, costs of construction and of plots are fragmentary and margins of profit are unknown. Few builders kept proper accounts as they either built to an agreed value which might be in a building covenant or built on their own land and paid for labour and goods with cash, or by subcontracting tasks for an agreed sum.(15) Certain activities required accounts, such as supplying building materials.

One set of supply accounts has survived from c1808 to 1811 for Thomas Budgen, who was declared bankrupt in 1811 with liabilities of over £2500.(16) They offer some evidence of the activities of builders in Brighton during a period of very rapid expansion. Budgen had a range of activities associated with the building trade and ran a pub. Other builders let houses, ran coal-yards or sold building materials. Budgen is of particular interest because he ran a brickyard for which poorly kept accounts survive for 1808 to 1810. On being declared bankrupt late in 1811 Budgen had to produce a balance sheet and hand over his accounts to the assignees of the estate. On the completion of the process of bankruptcy the records were passed to the Court of Chancery via the Commission of Bankruptcy, a subsidiary which originally heard the case and decided who should be the assignees.

Budgen rented a brickyard from Mr. Attree at Wick. In December 1811 he owed £100 in rent and Attree inventoried and then sold his assets at the yard for £117. The stock included 70,000 bricks and tiles, two sand sheds, ashes, manure, straw, a pug mill, 50 tile boards and 90 brick boards.(17) The contents of the White Swan in High Street (off St. James Street) in Brighton were sold by the landlord for unpaid rents and taxes and fetched £140 though Budgen valued them at £350. The title of his freehold plot in Devonshire Place was sold with the agreement of his creditors in April 1812, having been valued at £250. His thirtysixth share of the Brighton Union Building Club which amounted to £45.77 pence was a cash asset.(18) The total value of these assets when realized was about £550, although he valued them as worth £750. Budgen had bookdebts owing to him as well as claims from creditors. His problems appear to be the consequence of failing to generate sufficient income from his building, brickmaking and carting activities to pay for the work which other craftsmen did for him and for the repayments of money lent for building projects.

The claims of creditors suggest that Budgen borrowed £530 from a relative (presumably his father) who was a brickmaker in Ramsgate (Kent) in order to set up business in Brighton. Nine creditors lent sums on mortgages but a further twenty claimants were owed money for work on buildings which Budgen had subcontracted to them, to some he also owed for carting and stabling his horses. These claimants did submit detailed accounts and not all were successful in proving their claims.

The brick accounts from 1808 to 1811 are discontinuous and erratically laid out. The wages of his brickmakers for 1808-1809 survive and provide one of the few examples of labour costs located so far. Brickmakers were paid by the day and wages for a six-day week ranged from 50 pence to 90 pence depending on skill. Turnover of employees was high and the workforce fluctuated in size from 5 to 17, activity being highest in the winter of 1808-9. Budgen made clamp and kiln bricks and tiles. He used his own carts to gather raw materials and fuel. He collected 'mould' (waste) from the town, sand and chalk from unspecified locations, harbour clay from Shoreham, ashes from the town and barracks, straw from a local merchant, faggots from Falmer

and coal from the local coal merchants.(19) His output was supplemented by purchasing from other producers.

Accounts of sales for 1808 to 1810 survive; in them he noted the customer, the consignment with cost of carriage included and the destination.(20) The information helps to establish the period of construction of some of Brighton's streets and the cost of bricks but not the total number used in any building. Clamp bricks were cheaper and provided in greater quantities than kiln bricks. Dudney, who was building at Richmond and Albion Places in 1808, purchased 26 consignments of clamp bricks, of between 700 and 3 000 bricks and 11 consignments of kiln bricks of around 600 to 1 500 a load, and paid £15.55. John Cheesman, building in Rock Gardens, purchased 12 900 clamp bricks for £3.85 between March and June 1808. In June James Liffen purchased 41 000 clamp bricks and 1600 kiln bricks for building on the Level and at Richmond Place, for which he paid £1.70. Kiln bricks cost considerably more than clamp bricks and less were used.

Budgen's other carrying activities reveal the sources of other building materials. He carried deals, clapboard, oak plank, lead, slates and building stone from Shoreham. Sand was a frequent consignment but the source was not stated. Clinker from scavenging the town was used by at least one builder. Wood was purchased from the Sussex Weald; Budgen hauled from various places including oak from Ditchling, Buxted and Washington, elm from Washington and ash from Munton. His other activities included pulling coal brigs onto the beach at Brighton. Unfortunately the accounts do not specify whether he employed carters or not. His book customers owed between £4 and £40, but he also claimed to have other outstanding credits. His case was not wound up until 1814 when he was still active as a builder.(22)

The sources and supplies of building materials for towns in the later eighteenth and early nineteenth centuries were affected by a variety of factors including the level of building activity, relative costs of materials and of labour, changes in transport networks, costs of fuel for kilns, and the availability of funds to invest in building. In Brighton's case the rapid growth of the town during the later eighteenth and early nineteenth centuries arose from its success as a resort and this generated demand for 'town houses' which were built as terraces for several reasons. Not only were terraced houses quicker and cheaper to build than detached ones but they were also well suited to the long narrow plots of land which the owners of farmland were selling. The distinctive street pattern of the eastern and northern part of the new 'suburbs' which were developed during this period shows the influence of the fossilised open field system on which the streets were built. Even on the west side of the town, terraces were built although the area was enclosed before development occurred because they enabled developers to build to a high density.

The rapid growth of the town demanded an inflow of building materials and labour. The lack of local timber meant that imports from the Weald and via Shoreham were vital. The presence of clay suitable for brick and tile making and chalk for lime and the opportunity to import coal by beaching vessels or via Shoreham harbour helped to develop local manufacture but other building materials, such as mathematical tiles and slate, were imported. The availability of imported materials played a very significant role in determining the appearance of the town and may have helped to ensure that development was not impeded by shortages of materials.

Brighton's growth occurred when urban development accelerated throughout England and when the costs of building materials were rising due to demand, to the disruption of trade by the Napoleonic Wars and to increased taxation of the materials. But in this town there was the additional factor of the extent to which the function of the town increased the cost of accommodation and contributed to influencing the size and costs of the houses and so the types of materials used.

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14. Town Commissioners, conservation of beach as part of responsibilities 1779 Act
15. Hove Area Library, BRA 1727 building lease for Cavendish Street 1803 minimum value £50, grey boulder front, red or white quoins
16. PRO C217/68 and 69 business papers of Tho.Budgen, builder, bankrupt
17. J.Howell builder and lodging house proprietor death SWA 26.3.1804 W. Izard coalmerchant SWA 30.1.1804
18. PRO C217 inventory of brickyard, 68/6 White Swan
19. PRO C217 68/4-5
20. PRO C217 69/2
21. Ibid.
22. Brighton Area Library. Rate Book 1814

HORSEBRIDGE WATERMILL

By E. W. Holden

In December 1965 excavations by JCB adjacent to and roughly parallel with the south-east side of McDougall's mill building at Horsebridge, in the parish of Hellingly, were in progress when a large piece of buried timber was

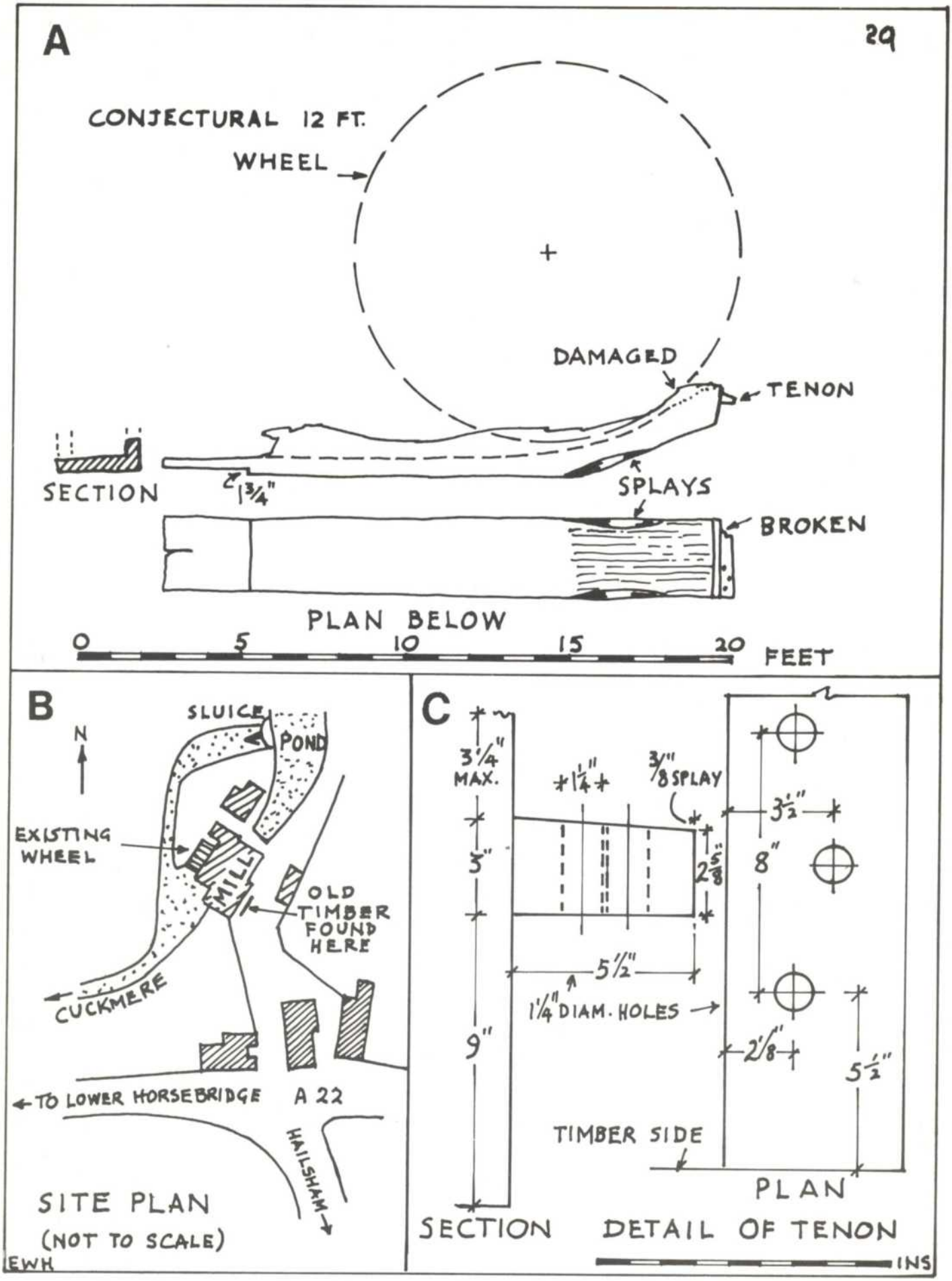
encountered. This was lifted in one piece and placed on its side close to a nearby fence. The wet clay subsoil being unstable the trench was quickly refilled. From information given by the mill foreman the timber when found was lying with the trough uppermost at a depth of about $6\frac{1}{2}$ feet from the surface (which would be at about the same level as the present mill pond), but whether this was the highest or lowest part of the timber - a matter of some $2\frac{1}{2}$ ft - could not be determined.

My attention was drawn to this object by Mr. S. Salvage of Hailsham who thought it might be part of a dug-out canoe. However, after inspection it was clear that the timber was not part of a boat, but rather a trough or chute of some unknown use. The timber was spongy, waterlogged, and seemed to be of some antiquity. Its condition and appearance was little different from dug-out canoes excavated in 1964 alongside the River Arun at Hardham, West Sussex, which are thought to be Saxon, at least, if not earlier in date.(1) It is unlikely that the Horsebridge timber is so early and it shows the impossibility of attempting to date timber by appearance only. Nonetheless, a medieval origin for the timber cannot be excluded, though of course it may be later. The species of timber was not determined and the object itself has since disappeared.

The size, shape and details of the timber were recorded and filed, enquiries at the time failing to provide answers as to its function. More recently, however, excavations by Owen Bedwin and David Crossley, independently, have produced medieval and post-medieval timbers in situ associated with a watermill and iron-making or iron-working sites. At least one of these had a wooden tail-race to which the excavated timber bore a resemblance. A note now seems to be appropriate. McDougall's ceased using water power from the Cuckmere River a long time ago and they vacated the premises at Horsebridge in recent years, the mill structure now being used as a precision engineering works.(2) The 16 ft diameter disused low-breast iron wheel still existing on the north-west side of the building probably dates to the latter part of the nineteenth century.(3)

Description of the Timber : The timber was in one piece, c 17ft 6 in long, 2 ft $5\frac{1}{2}$ in wide and came from a tree trunk of some $2\frac{1}{2}$ - 3 ft diameter. One face had been hollowed from the solid leaving a flat bottom 6-7 in thick, with 4 in upstanding sides, so as to form a trough. A tree with a natural bend had been selected so that one end was shaped to curve upwards. The upstand along one side was almost entirely missing, while the other was partly rotted away, the maximum remaining height being 12 inches. The underside of the trough was flat and the arrises at the higher end had been splayed. This end had been damaged by the JCB, but most of a tenon remained in which were three $1\frac{1}{4}$ in diameter holes, presumably for dowels, all nearer one side than the other (Fig.C). The shape of the timber and the situation of the tenon demonstrates that the angle between the main timber and whatever the tenon fitted into - presumably a lateral member containing a mortise hole - was greater than a right-angle. The other end of the timber had been halved below to a depth of $1\frac{3}{4}$ in as if for a lapped joint to a further length of flat trough. There were no dowel holes in this halving, so securing the two lengths might have been by jointing the upstands together. Generally, the timber was well squared and some adze marks could be seen.

Discussion: The timber discovered on the opposite side of the building to the existing wheel seems to be the tail-race of a watermill that operated on the site at some unknown time before the present mill. The timber could have remained in situ when the earlier mill became defunct, but there is no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8"
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5½"
1¼" DIAM. HOLES
9"
2⅛"
5½"
TIMBER SIDE
PLAN
SECTION
DETAIL OF TENON
INS

guarantee that it has not been moved from elsewhere, nor that it is at its original level. The wood has every appearance to great age, but at what date it was in use before the middle of the nineteenth century cannot be inferred from the evidence. Simmons records that there was a mill on the site in 1724, but this is of no help in establishing the date of an earlier mill, except that it was earlier that 1724.(4)

It was difficult to record the curved end of the timber exactly as it was abutting a fence, but the longitudinal section (Fig.A) is reasonably accurate and suggests use with a wheel about twelve feet in diameter.

There are references to a mill, presumably a watermill, in Hellingly in 1255, 1312 and 1329, which has been thought by some to be the mill three-quarters of a mile north of McDougall's mill, one quarter-mile north-east of Hellingly church.(5) Horsebridge, however, is in the parish of Hellingly, so there is no certainty that the claim is correct. A point in favour of the more northerly mill being the one referred to is that in 1279 Horsebridge was known as Horsbregg and thus a mill in this hamlet of Hellingly of the 13th or 14th century would probably be noted as at Horsbregg rather than at Hellingly.(6)

Three photographs of the timber, not good enough for publication have been deposited with the Society's records at Hove Reference Library.

References

1. The writer drew the dug-outs for Worthing Museum and thus became acquainted with some of the characteristics of ancient waterlogged timber.
2. I am indebted to Mr. L.C. Cole, of Cole Engineering Company Ltd., for recent access to the site.
3. Information from Mr. F.W. Gregory who has read the draft of the note and has made helpful comments.
4. H.E.S. Simmons' Collection (Sussex Mills) at Brighton Ref. Library, per F.W.G.
5. Sussex County Magazine, 3 (1929), 418; ibid., 4(1930), 168; Sussex Archaeological Collections, 5 (1852), 159; ibid., 66 (1925), 21-2.
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BOOK REVIEWS

The Windmills of Sussex
By Martin Brunnarius. 211 pp £8.95. Phillimore & Co. Ltd., Shopwyke Hall, Chichester.

In the Windmills of Sussex by Martin Brunnarius, one of our members, we have the definitive work on the mills, with their millers and millwrights who constructed and maintained them, a book which many people have long awaited.

Mr. Brunnarius has put a vast amount of work into his researches and hopefully has avoided perpetrating popular errors which certain earlier writers put into print. He has made full use of the late H.E.S. Simmons' records gathered over 40 years (These are now in the Science Museum, but Brighton Reference Library has a copy of Sussex items) and in its way this volume is also a memorial to Mr. Simmons.

Martin Brunnarius tells us also of the mechanical side of the windmill, not previously attempted in a book on Sussex mills. This is helped with clear diagrams and good photographs.

There are just over 200 illustrations some showing mills well back in last century and unfortunately no longer with us and present day mill restoration is also featured.

The men who built the mills and the millers who ran them are dealt with at length, and we read of Sydney Ashdown who operated Cross-in-Hand Mill till 1969, Archibald Dallaway - a one man rebuild of Punnetts Town Mill, and the traditional millwrights including Cooper of Henfield, Holloway of Shoreham, Neves of Heathfield, the Medhursts of Lewes and E. Hole of Burgess Hill - still at work and at present engaged on Jill at Clayton.

An excellent book and a 'must' for all windmillians and those interested in local history.

F. W. Gregory.

Woodcolliers and Charcoal Burning

By Lyn Armstrong. Coach Publishing House Ltd., Horsham, and The Weald and Downland Open Air Museum, Singleton. 95 pp. Obtainable at £2 from The Chalk Pits Museum shop or at £2.50 including postage from the publishers.

The book contains a surprising amount of information collected by its author during her detailed research on the subject. The introduction gives a review of the historical background of charcoal burning in England from the earliest days up to the 18th century; the main uses being as a fuel for the production and forging of iron and, after c 1300, for the manufacture of gunpowder. This is followed by two chapters on The Charcoal Burner's Life and Hut Building. Owing to the need for constant attention, day and night, to the burning kiln it was necessary for the burner to live practically next door to the kiln and the use of temporary huts was essential in an industry carried on in the depths of the forests. Illustrations of huts from different parts of the country are given together with descriptions of their construction. An attempt has also been made to estimate the relative affluence (or otherwise) of charcoal burners in the 16th and 17th centuries from the wills and inventories left by some of them. A few may have been able to employ other men to assist them. It is interesting to learn that Croydon was a great centre for charcoal burning in the 16th century, largely for supplying the house-holders of London and the local smithies. As a result it became notorious for its smoke, dirt and the toughness of its inhabitants.

Nearly half the booklet is taken up with a description of the kilns, their construction and operation. A long extract from a paper by John Evelyn in 1662 is complemented by the recollections of old retired charcoal burners at the present day. This chapter is very well illustrated with photographs of kilns in many parts of Britain as well as some in Europe and Africa, drawings of kilns and burners' tools by a retired burner, and some engravings from Evelyn's book 'Sylva' and from other sources showing European kilns. Evelyn states that charcoal was generally of three sorts; for iron production, for gunpowder manufacture, and for domestic use in London and at the Court.

An attempt is made to assess the yield and value from a kiln. This proves to be a very difficult matter and the main conclusion is that there was a wide variation between different regions and different periods. Short chapters follow on Modern Methods and the Uses of Charcoal and its By-products. The first mention of metal retorts for burning appears to be by Arthur Young in 1808 of an installation at Northchapel near Petworth and two drawings show a retort at the gunpowder factory at Faversham, Kent, at the end of the 18th century. A description of the erection and operation of a modern portable metal kiln, with drawings and photographs, is also given. Among the uses of charcoal at the present day its employment as a filter is second only to its use in various matalurgical processes and an Appendix by Dr. H. Frost, explains the way in which it works as a filter.

The book is very good value for the great wealth of information, both textual and illustrative, on a subject that was vitally important to the economy of Britain for many centuries.

In a book of this sort, as all measurements must, perforce be given in Imperial Units and the old currency it would be helpful to readers of our young and future generations, who may be unfamiliar with the old units, to have included simple convertion tables.

A. J. Haselfoot.

Quilt Winders and Pod Shavers
By Hugh Barty-King. 208pp £8.95. Macdonald & James, Paulton House, 8, Sheperdess Walk, London, N1 7LW.

Although cricket has probably given rise to a more extensive literature than that of any other sport this book by Hugh Barty-King appears to have been the first to have embodied extensive research into the history of the tools used and the expert craftsmen who made the tools - the 'quilt winders' who made the core of the ball and the 'pod shavers' who fashion the willow to form the blade of the bat.

The first two chapters go back to the 16th century seeking the origins of the game in such pastimes known variously as Cat and Dog, Tip Cat, Cat in the Hole, Trap and Ball and shows how they developed into Stoneyhurst cricket and eventually into the modern game. The next two chapters describe the many family concerns engaged during the 19th century in making bats and balls; many names are almost forgotten but others such as Wisden and Lilleywhite still flourish. The two final chapters bring the story up to date; although mechanical devices have speeded up the manufacturing process it is still necessary to employ highly skilled craftsmen; even wind-tunnel tests have been used to investigate the effect of shine! Finally some words of warning are given against the use of plastic bats or other modern innovations that might completely alter the game of cricket. Appendices give lists of about 60 ball makers and over 100 bat makers mentioned in the text, a chronology covering 1568 to 1978 and a bibliography of about 60 books or articles relating to the history of cricket. The book is well illustrated with many photographs of craftsmen at their work, with copies of advertisements issued by early firms concerned and with extracts from various expense accounts; it is clearly the result of much competent and painstaking research.

The bat and ball industry has been, and still is, largely centred around East Sussex and West Kent so that the book should be of particular interest to members of the Sussex Industrial Archaeology Society (of which the author was previously a Member); it is, howver, also strongly recommended not only to all lovers of cricket but to any readers interested in industrial and social history.

E. O. Taylor

FIELD PROJECTS

Ifield Mill TQ(245365)

Work on the mill, fully described in S.I.H. Nos. 8 and 9, is now almost complete and ready for handing over to the Crawley Museum Society who hope to open it to the public on a limited scale during the present summer. As well as displaying the mill machinery it is intended to display various items of local history. The project was entered for the Shell Inland Waterways scheme and the Society was very pleased to receive an award of £500 which was presented on 11th November, 1979.

Coultershaw Bridge Water Pump(SU 972194)

Work is continuing satisfactorily although difficulties with the alignment mentioned in SIH No.9 have slowed progress.

Burton Mill (SU 980180)

The hursting and stones brought from Cardiff as mentioned in SIH No.9 have been installed and trial grinding has begun. An award of £250 from the Shell Inland Waterways Scheme has been received and the photograph shows this being presented by Mr. J. Haselfoot to Mrs. Ann Mills who has been instrumental in organising the restoration and who will operate the mill. Mr. A. G. Allnutt, on the left of the photograph has also been very active in the restoration work.

Cobb's Water Mill (TQ 274189)

The mill contains, in addition to the corn grinding equipment by Cooper's of Henfield, a Tangye gas engine and gas producer. Last used in 1966, the equipment is showing signs of neglect and a weekend working party has cleaned, greased, de-rusted and painted it. Measurements, sketches and other records have been made with a view to the preparation of a detailed account record and possible restoration at a future date.

Clayton Windmills: Jack and Jill (TQ 304134)

Work is actively being carried out on these mills as more fully described earlier in this issue of the Journal.

Brickmaking Survey

This survey, mentioned in SIH No.9 is continuing and it is hoped to publish a full report of its findings in the next issue of this Journal.

A few copies of SIH No. 8 and SIH No.9 are available at £1,including postage, on application to the General Secretary. Xerox copies of earlier issues can be similarly obtained at £1.50 (incl. postage); individual articles can be obtained at a cost depending on the length of the article.

Index of Research Articles in Issues 1 - 9

No.			Author
1.		The Ashburnham Estate Brickworks, 1840-1968	Kim C. Leslie
		The Upper Ouse Navigation, 1790-1868	D.F. Gibbs and J. H. Farrant
2.	1971	Dolphin Motors of Shoreham	M. Worthington Williams
		Lime Kilns in Central Sussex	Margaret Holt
3.	1971/2	Population Change in an East Sussex Town, Lewes, 1660-1800	James P. Huzel
		Kingston Malthouse, 1844-1971	Adrian Barritt
4.	1972	A Field Guide: Brief notes on each of 205 Sussex sites of Industrial Archaeological interest	John Hoare and John Upton
5.	1972/3	East Sussex Milestones: A Survey	Brian Austen and John Upton
		The West Brighton Estate: A Study in Victorian Urban Expansion	William F. Pickering
		A Bridge for Littlehampton, 1821-1822	J. H. Farrant
6.	1973/4	Civil Engineering In Sussex Around 1800, and the Career of Cater Rand	J. H. Farrant
		Railway Architecture in Sussex	John Hoare
		Shoreham and Ford: A History of Two Sussex Airfields	John A. Bagley
7.	1976	Railway Development in the Midhurst Area	F. H. Smith
		History of Park Watermill, Burwash	M. Beswick
		Restoration of Park Watermill (Bateman's)	A. J. Haselfoot
		Old Weights and Measures	Wilfrid Beswick
		East Sussex Milestones	Brian Austen and John Upton
		The Remarkable Cistern at Rye	Ralph Wood
		Tokens of Sussex	Jim Newmark
		Goldstone Pumping Station, Brighton	Jonathan Minns
8.	1978	Muntham Well, Findon	T. P. Hudson
		The Old Bridges at Newhaven	A. J. Haselfoot
		A Water-driven Estate-water Pumping Plant at Buckhurst Park, Withyham	Haywards Heath District Scouts' Camp, 1976
		Reconstruction of Ifield Mill: Part I - Historical Background	J.Gibson-Hill and E. W. Henbery
		Shipowning at Newhaven in the Later 19th century	J. H. Farrant
		A Note on Early Iron Making in Sussex	W. R. Beswick
9.	1979	Reconstruction of Ifield Mill: Part II - Restoration	J.Gibson-Hill and E. W. Henbery
		Iron Making Origins and Their Early Impact on the English Weald	W. R. Beswick
		Petworth Water Supply	J. E. Taylor, P. A. Jerome and A. G. Allnutt
		From Ox-cart to Steam Engine	M. Beswick
		The Hurst Green Foundry	A. J. Haselfoot
		The Chalk Pits Museum, Amberley	A. J. Haselfoot

Index of Research Articles in Issues 1-8

A few copies of the above issues are available from the Hon. General Secretary, price £1.00, including postage. Copies are also available in the Reference Sections of the chief Sussex Public Libraries.

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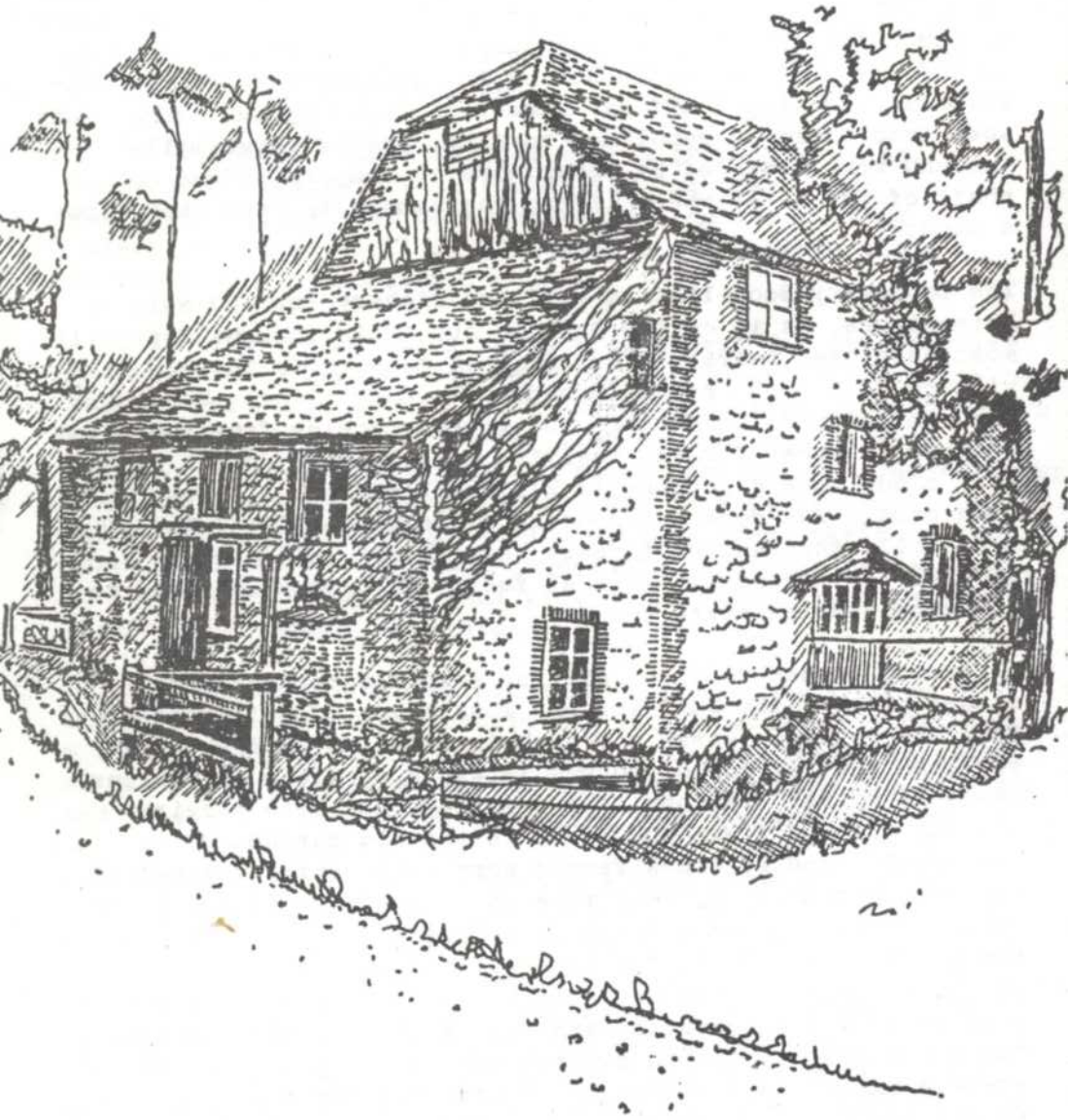


A SHORT HISTORY OF BURTON MILL AND ITS RESTORATION

The mill building as we see it now has been a flour mill since about 1780 - according to records and there are two date stones in the walls outside. It was built on the foundations of an iron forge. A visitor to Burton in ~~1653~~ watched "hot swarthy 163
Vulcans, sweating, puffing, hammering, drawing out those rusty sows into barrs by rumbling, noysing, Bedlam water mills". The Vulcans were assisted by water powered hammers. Cams on the shaft of the water wheel lifted the hammer to drop many times a minute.

The Doomesday Book lists a mill and fishery for 280 eels at Botechitone, as it called Burton, but it is thought that mill must have been nearer to Burton Park mansion in the old lost village of Burton, probably under the upper lake. Undoubtedly the dam was made to harness the streams coming from the Downs to provide power for the thriving iron industry which made many a nobleman's fortune in Elizabethan times. However, much damage was done by opposing sides in the Civil War. Eventually the Wealden forests were almost laid bare to provide the necessary charcoal fuel. The industry moved to the coal bearing north country.

So Burton turned to flour milling with a water wheel on either side of the building and four pairs of mill stones. When the country feared a French invasion in 1801 the mill returned that it could produce 14 sacks of flour (1.75 tons) every 24 hours. Various tenant millers met with varying fortune, ground flour and lived in the old farmhouse (to the north), and at times farmed some land, until the end of the 19th century. By this time cheap grain was flooding in from America and being ground with steam driven rollers at the ports. In 1894 Burton Park Estate was up for sale, having belonged to the Catholic Biddulph family for the best part of two centuries and before that to the Gorings. The new owners installed a water turbine in place of the eastern water wheel to supply electricity for the "big house" now St. Michael's School. After the mains grid arrived in the 1930's the mill became an estate saw mill.

In the 1960's the dam started to collapse and take the road with it and West Sussex County Council acquired the mill and pond. In 1978 the mill was let to me for flour milling, provided I repaired it.

The West Sussex County Council made a grant under their Historic Buildings Grants Scheme and the Coast and Countryside Committee contributed towards the cost of materials. Also Shell UK Ltd. made a grant under their Restoration Awards Scheme.

At that time the interior was gutted except for the shafting and western turbine, repaired by Sussex Industrial Archaeology Society and sailors from H.M.S. Daedalus. The building had to be shored up and rotten wooden floors concreted to keep out vermin. I had found a pair of French Burr mill stones together with the gearing and iron hurst frame in a disused mill in Wales. They were dismantled and brought here: their great asset being that they stood independently of the frame work of the old building and thus vibration, which might have caused much damage, is minimal.

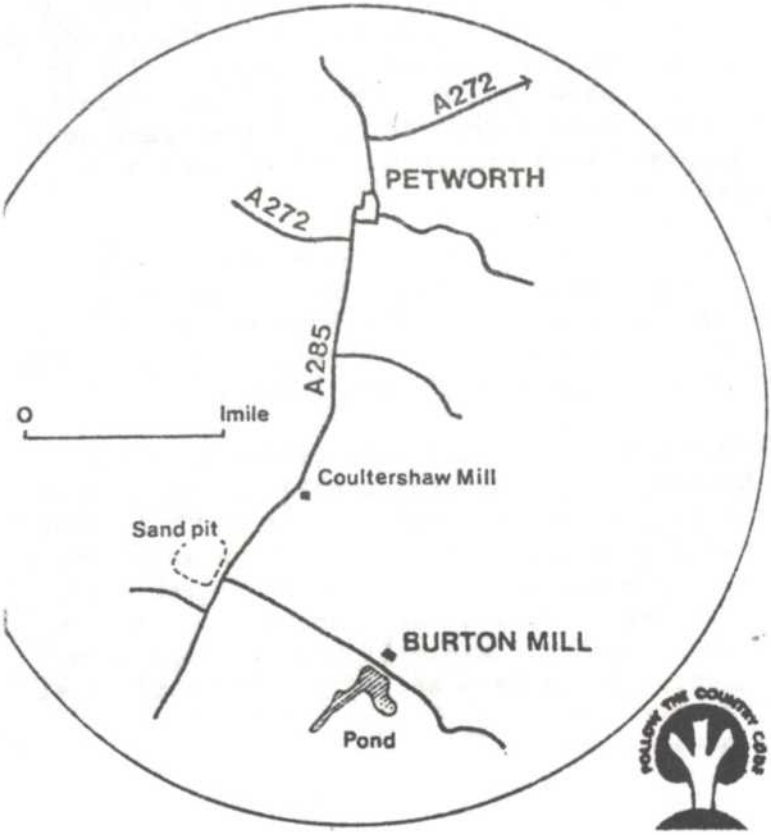
Mr. Charles Muddle of Ashington Mill, who comes from an old Sussex milling family, rebuilt the mill stones and hurst frame. He also planned and installed the machinery as well as carrying out repairs - with a little help from his family and friends. Volunteers have given many Sundays of work.

Mr. Muddle's father who has taken a keen interest in the restoration of Burton, bought Ashington Mill at the turn of the century. (It is just off the main London-Worthing Road.) This mill also had four pairs of stones, but one water wheel, later supplemented by a diesel engine. Sadly it was burnt down about six years ago. It has been rebuilt as a modern mill but much learnt from their old mill has been put into Burton and its machinery has been set to run at traditional speeds.

Burton Pond - Local Nature Reserve

The nature reserve was established in 1978. It is jointly managed by West Sussex County Council and the Sussex Trust for Nature Conservation. The area covers Welchs and Crouch Commons, New Piece Wood and the Pond itself which covers 30 acres. There is a public footpath leading from the Mill through New Piece Wood and the Pond can be viewed from the road.

Visitors are welcome to use the public rights of way in the area but please keep to the Country Code and leave the wild flowers for others to enjoy.



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