

Millstones, Quarries, and Millstone-Makers

By D. G. TUCKER

SUMMARY: The various types of millstone (monolithic and fabricated, face-grinders and edge-runners) are discussed, together with sizes and shapes, manufacture, dress, criteria of quality, etc. A list of known millstone quarry areas and individual quarries is given, covering Great Britain, with references to historical sources; and tables are presented giving the names, addresses, and dates of about 70 British firms which manufactured French-burr millstones in the 19th and early 20th centuries, together with a note of the location of some surviving identified examples of their work.

MILLSTONES

There are numerous books and articles about windmills and watermills but little is ever said about the millstones. Very few articles have been devoted to them, and none has been found which gives a general coverage. Yet the millstones were the whole point of the mill's existence; it was to drive them that the mill was built. The mill depended on the satisfactory working of the millstones and therefore on their quality.

This article is based on some years of intermittent study in the field and using published and unpublished information. It cannot claim to be comprehensive, but it does provide more information than has been published hitherto, and it is hoped that it will stimulate further research.

One of the greatest difficulties in the study of millstones is that of terminology. 'Millstones' and 'grindstones' must be allowed to a large extent to be synonymous, yet seem to have developed somewhat different usages. The Concise Oxford Dictionary gives:

millstone: one of pair of circular stones for grinding corn,
grindstone: thick revolving stone disk for grinding, sharpening and polishing.

This distinction is helpful and I would like to have been able to confine this paper to millstones according to the above definition, which implies that 'millstones' are face-grinders, while 'grindstones' are edge-runners, crushers, or whetstones. To do so entirely, however, has been found to be impossible as the distinction is made imperfectly in the literature. This is not surprising; the stones used in cider-mills, bark-mills, gunpowder mills, etc. are rather naturally referred to as millstones, and

many references to millstones relate to edge-runners rather than face-grinders. It has been assumed that references to grindstones do not mean millstones, and these have been excluded, unless there are indications otherwise.

Geographically, this paper covers Great Britain. Here the use of millstones goes back well over a thousand years, possibly nearly two thousand. There are references to Roman millstones, but whether they were water driven this author is not qualified to say. Water-powered corn-mills were certainly numerous through most of the medieval period, and several thousand were mentioned in the Domesday survey. Probably until the 18th century millstones were always monolithic, cut from the quarry and shaped in one piece. A few millstone quarries were mentioned in the Domesday Survey.¹ As the number of water corn-mills increased, to some tens of thousands in the 19th century, augmented from the later medieval period by numerous windmills, the technology of milling also advanced and the requirements for millstones became more stringent. Thus, although stone from local quarries was often used for coarse work such as fodder grinding, there grew up a recognition of certain quarries, or quarrying areas, as providing especially good millstones, and stones from these quarries were transported long distances, often several hundred miles. Probably the most famous area was that near Hathersage in the Peak District:² 'Peak stones' were used for primary grinding right into the 20th century. Stones from eastern Monmouthshire were also famous,³ usually known as 'Welsh stones'.

During the 18th century it came to be recognized that finer flour could be produced by the use of stones imported from the Continent. Some of these were monolithic stones from near Cologne, known as 'cullin' stones, but far more important were the 'French burrs', usually imported in small pieces from quarries at La Ferté-sous-Jouarre, near Paris.⁴ These were fabricated in Britain into millstones by cementing a suitable assembly of pieces of stone together and binding them with iron hoops or bands. The making of French burr millstones became a specialized trade, and as it was unrelated to the quarries, small (and occasionally large) firms set up in business as Millstone Makers in the towns. Such firms would generally deal also in Peak and Welsh stones. Sometimes the trade was taken up by established Millwrights as a specialized part of their more general business; sometimes specialized Millstone Makers later broadened their business into general millwrighting and mill furnishing. When the specialized Millstone Makers first started appearing has proved difficult to ascertain; there are few adequate trades directories for the 18th century and very early 19th century. The earliest record known to the author is of Robert Hilton at Liverpool in 1821, although several firms claimed to have been established well before that; there were many by the 1830's, and the trade still persisted up to the Second World War. It is certain from published comments in the very early years of the 19th century⁵ that French burr millstones, made in the way described above,

¹ R. Bennett and J. Elton, *Watermills and Windmills (History of Cornmilling, Vol. 2)*, (1899); (reprinted Wakefield, 1973), p. 128.

² J. Radley, 'Peak Millstones and Hallamshire Grindstones', *Trans. Newcomen Soc.*, 36 (1963-4), pp. 165-173.

³ D. G. Tucker, 'Millstone Making at Penallt, Monmouthshire', *Indust. Archaeol.*, 8 (1971), pp. 229-239.

⁴ A. Rollett, 'Mémoire sur la Meunerie . . .', (Paris 1847), quoted by J. S. Buckland in *Millnotes*, 1 (1970), pp. 11-12, also 'The Geology of the Burr-Stone', *The Miller*, 3 (1877), pp. 70-71 and 120.

⁵ e. g. C. Heath, *Historical and Descriptive Accounts of . . . Tintern Abbey*, (Monmouth, 1803).

were used quite widely before the end of the 18th century, but I have no note of a maker's name for that early period.

Until the use of roller milling gradually displaced stone grinding of flour in the later part of the 19th and early part of the 20th centuries, typical country mills would generally have at least one pair of monolithic stones and one pair of French burrs; larger mills would have several of each. The monolithic stones would be used for grinding fodder, including beans and peas; the French burrs were for wheat. If a mill had several pairs of French burrs and no monolithic stones, it might well also have, or be associated with, a bakery and thus clearly be a commercial flour mill; but most country mills served a farm, farming estate or farming community and thus had the fodder-grinding requirement for which monolithic stones were adequate. Some small farm-mills (e.g. Home Farm, Dulas, Herefordshire) which had only one pair of stones used French burrs; but this was probably unusual.

The dating of millstones, although very important from the viewpoint of archaeology, is extremely difficult unless they carry a maker's name. Many of the specialized millstone makers of the 19th century did label the French burr stones, either with small cast-iron plates set in the plaster backing or by lettering cast on an iron eye-ring, but the majority did not. When the maker's name is known, and especially if his address is given (for many moved their works from time to time), approximate dating is often easy. One or two firms actually put dates on their name-plates. It is extremely unusual for a monolithic stone to be labelled. It should be noted, however, that monolithic stones used for face-grinding were sometimes fitted with iron bands, like French burrs, presumably to prevent shattering; therefore, when stones can be inspected only from the edge, the presence of bands cannot safely be taken to indicate that they are French burrs.

Towards the end of the 19th century, composition millstones began to appear. They frequently carried the maker's name, but even when not so labelled, they can usually be readily distinguished from monolithic stones by their colour and texture, being black or dark grey if made from slag, and brown to black if made from emery; but some were made from granulated French burr and had something of the appearance of Peak stones.⁶ Composition stones usually had iron bands too.

It is reasonable to ask what were the qualities of a rock that made it suitable for use in millstones; it is difficult to find a clear answer. One obvious quality was its ability to stay in one piece and not shatter under the strain of milling. For monolithic stones this meant that a piece of rock about 4 ft. square and 1 ft. thick must be free from structural defect or weakness. That suitable pieces of rock were not readily found no doubt accounts for so many abandoned, usually unfinished, millstones in most millstone quarries. Hardness was another obvious quality required in face

⁶ Dr. George Parker of Wells has kindly given me a letter sent to him by Mr. S. Scrivens, a former employe of Barrons of Gloucester. The part relevant to this discussion is as follows:

The main types of millstone made by Barrons consisted of the following:-

Granulated French Burr Stone—yellow in colour

Granulated Rock Emery—brown in colour

Basic Slag—black in colour

You could have a combination of emery and slag for general animal feeds or French Burr for human feeds.

All of these were bonded together with a mix of calcined magnesite cement and diluted magnesium chloride

... The last stones made by me at Barrons were in 1969. All our equipment was then transferred to The Magnesite Syndicate, Millwall Docks, London.'

grinders. Such stones, whether monolithic or fabricated, were dressed with recognized patterns of 'lands' and 'furrows', and the lands were 'cracked' by being cut with fine grooves like the teeth of a file, a dozen or more to the inch and sloped at about 45° to the furrows.⁷ It was evidently necessary that these patterns should wear away only slowly. A rather subtler requirement was probably that the stone must take a good cutting edge between land and furrow, since the grinding of grain involved a cutting action (as in scissors or shears) quite as much as rubbing; it was in this respect that rock containing small quartz pebbles was found so suitable, for they were extremely hard and took a cutting edge well. Peak and Welsh stones were in this category. French burr could have pebbles in it too, and in any case, it tended to have cavities which equally provided cutting edges. Granites, lava, and limestone were used locally but were generally less successful for face grinding.

For edge-runner stones the requirements were somewhat different in that cutting was not involved, really only crushing or pulping. Strength was still clearly important, but hardness less so. Thus although many cider mills were made in Welsh conglomerate (old red sandstone with quartz pebbles), and many millstones for grinding minerals in Peak millstone grit, the best known material for this class of millstone was the yellow sandstone found just to the south of Newcastle-upon-Tyne.⁸

Composition stones were used for both face- and edge-grinding. When such stones were used for face-grinding of grain, the conventional land-and-furrow pattern of dress was often replaced by the 'sickle dress', as illustrated by the stone in Plate I, and shown diagrammatically in Fig. 1(d).

Sizes and shapes of millstones are hard to generalize. Most corn-mills of the 19th century used stones about 4 ft. diameter (range perhaps 3 ft. 6 in. to 4 ft. 6 in.) and initially about 1 ft. thick. Monolithic stones were often used until only about 3 in. thick. The lower stone of a pair, or bedstone, would usually be cylindrical, flat on both faces, with a square hole of about 9 in. side for the iron casting that carried the bearing of the shaft that carried and drove the upper or runner stone. This runner stone would generally have a circular hole or 'eye' of about 9 in. diameter with notches for the ends of the shaped bar, called a 'rynd' or 'rhind', that both supported the stone on the shaft and transmitted the drive. The upper face of the runner stone was usually slightly convex, whether monolithic or fabricated. Earlier stones might be larger or smaller, up to perhaps 7 ft. and down to 2 ft. 6 in., and mushroom shapes have been described by Radley (*op. cit.*); they can still be seen in abandoned stones at the quarries at Hathersage, and one such stone is shown in Plate II.

Edge-runners are typically the same size as face-grinding stones, but naturally show greater variation as befits the greater variation in their use. While edge runners are usually cylindrical, so that they run upright, cider-mill stones are sometimes tapered which makes them run more easily round a circular track of small diameter (see Plate III). The central holes are of variable shape and size, but cider-mill stones seem generally to have square holes of perhaps 9 in. diameter. Indeed, in the Penallt

⁷ W. Fairburn, *Treatise on Mills and Millwork*, part 2, (1865), pp. 153-4; J. Russell, in R. Wailes, *The English Windmill*, (1954), pp. 206-211; and J. Russell, 'Millstones in Wind and Water Mills', *Trans. Newcomen Soc.* 23 (1944), pp. 55-64.

⁸ J. C. Bruce, *Handbook to Newcastle-on-Tyne*, (1863), p. 271.

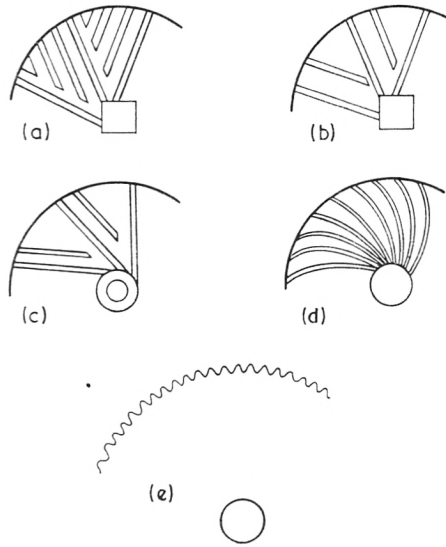


FIG. 1
Millstone Dress.

- (a) Standard dress for French burr-stones; 9, 10 or 11 segments.
 (b) Simplified dress found on a Peakstone at Dulcote Mill, near Wells, Somerset.
 (c) Simplified dress found on a Welsh stone at Llandewi Rhydderch Mill, Gwent.
 (d) Sickle dress on a Barron's composition stone at Wells.
 (e) Serrate-edge on a tannery stone.

area of Gwent, where Welsh stones seem principally to have been made, it is very difficult to distinguish face-grinders from cider-mill runners among the stones abandoned in the quarries, for the latter probably started with cylindrical edges, whether or not they acquired the tapered form with use.

Edge-runners usually ran in a stone 'chase', generally but not always made in two or three pieces; chases are of interest in their own right and a short discussion, with photographs, is available elsewhere.⁹

Reference has been made already to the way in which French burr stones were fabricated by the professional millstone-makers, using small pieces of imported stone cemented together, and banded with iron. The make-up of stones was very variable, however, and it is hard to define any standard system. Sometimes it was possible to assemble a stone from regular-shaped segments, and an example is shown in Fig. 2(d); this stone, at Sutton's Mill, Cranham, Gloucestershire, was made by Gardner of Gloucester, and is particularly interesting because the segments are not quite regular and a faulty patch in one segment has been filled by a small square piece. The type of pattern shown in Fig. 2(a) appears to be a fairly standard one in the West Country, but the author has found no maker's plates associated with it; the drawing represents stones at Keward Mill near Wells, Somerset, and Panta Mill, near Tintern,

⁹ D. G. Tucker, 'Millstone Making in Gloucestershire', *Glos. Soc. Ind. Arch. J.*, (1973), pp. 6-16.

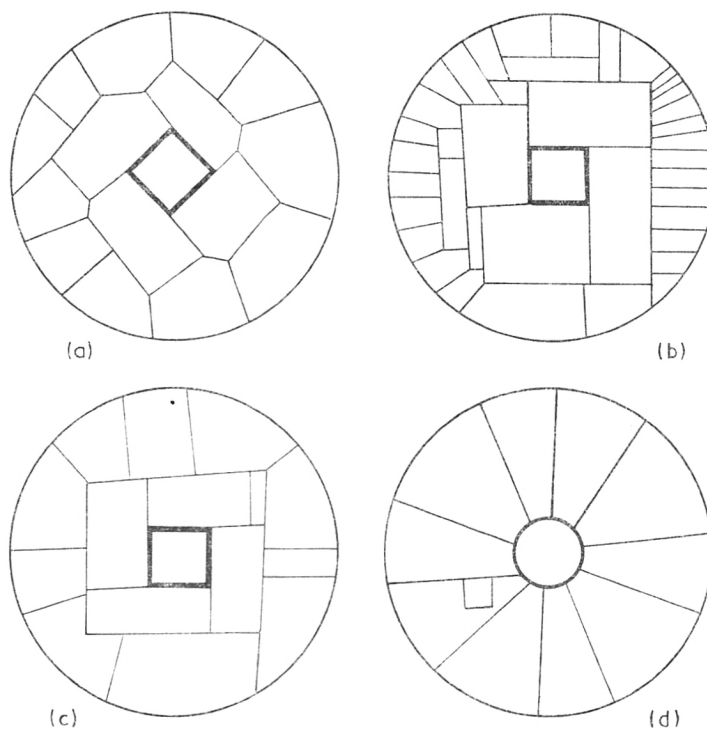


FIG. 2

Constructional patterns of French burr-stones.

- (a) Keward and Panta Mills.
- (b) Fladbury Mill.
- (c) Sarehole Mill.
- (d) Sutton's Mill, Cranham.

Gwent, and several stones at Pontynys Mill, Longtown, Herefordshire, are very similar. The pattern of Fig. 2(c) is closely related and occurs in stones at Sarehole Mill, Birmingham. The pattern of Fig. 2(b) which involves so many small pieces is probably very unusual; I know of no occurrence other than at Fladbury Mill, Worcestershire. The burr-stone pieces provided a working thickness of six inches or so, the remainder being a plaster-of-Paris backing—this material was also used to cement the pieces together.

Occasionally the central part of the millstone was made of a piece of gritstone or conglomerate extending to about one-half of the overall diameter, with burrs making up the outer parts; no doubt this made a stone that was both cheaper and stronger; an example is at Old Bridge of Urr Mill, Kirkcudbrightshire.

The texture of French burr is clearly shown in Plate IV.

Runner stones in corn-mills were, as has been said above, not only driven by the rynd, but supported by it, and consequently it was necessary to ensure that the runner was perfectly balanced so that the small gap between the bedstone and the runner

was constant all round the stones. There were sophisticated balancing devices available, that introduced by Clark and Dunham being fully described by Fairburn,¹⁰ but the majority of stones were balanced in a much simpler way, by attaching some heavy metal in a suitable place in the plaster backing. An example where some lead has been poured into a hole knocked in the plaster is shown in Plate V; another where a weight from a lever-arm weighing machine has been used is shown in Plate VI; both were found at Pontynys Mill, Herefordshire.

Reference has already been made to the 'dress' of millstones. Part of the dress was the cutting of furrows, and a procedure for laying these out accurately was described in Fairburn's treatise. The resulting pattern was as shown in Fig. 1(a); Fairburn specified eleven segments to the pattern, but nine appears to be much commoner, and sometimes ten. As many as fourteen were apparently sometimes used.¹¹ The dress of most of the stones studied was rather irregular, with the segments not identical. The system with four furrows to a segment seems to have been universal in French burrs (which were used for flour) and also used in some monolithic stones. Generally, monolithic stones (which came to be used after around 1800 only for fodder or preliminary milling) had a simplified dress with only two furrows to the segment, and two examples are shown in Fig. 1(b) and (c). The sickle dress used on composition stones,¹² shown in Fig. 1(d), has already been mentioned. In all cases, runner- and bed-stones were dressed alike, with one edge of each furrow sharpened to a cutting edge, so that as the runner rotated above the bed-stone, the sharp edges of the furrows operated as scissors to cut the grain.

Edge-runners used for grinding minerals and wood, bark, etc. had no requirement for dress. However, in bark mills used in tanneries, the edges were given serrations or teeth, as shown in the example in Plate VII, and in Fig. 1(e).

MILLSTONE QUARRIES

Listed in Appendix 1 are all the millstone quarries or quarry areas which the author has discovered or found reference to. Some are very large and important, others are very minor affairs. In almost all cases the millstones made were monolithic, and it is interesting to speculate as to how they were made, for there is little evidence. In some cases it seems the millstone was roughly shaped out of the natural rock before being detached from it; more usually a suitable block of stone was first detached (or found lying by the outcrop) and shaped on the spot. The evidence seems to indicate that even the final shaping was done at the quarry. For this purpose the block might be supported on pieces of stone to raise it above the ground; an example is shown in Plate VIII. Roughly shaped millstones with crosses cut on their faces have been found both in Wales and the Peak District—see Plates IX and X—and this suggests that it may have been a common practice for the master millstone-

¹⁰ Fairburn, *op. cit.*, pp. 169-170.

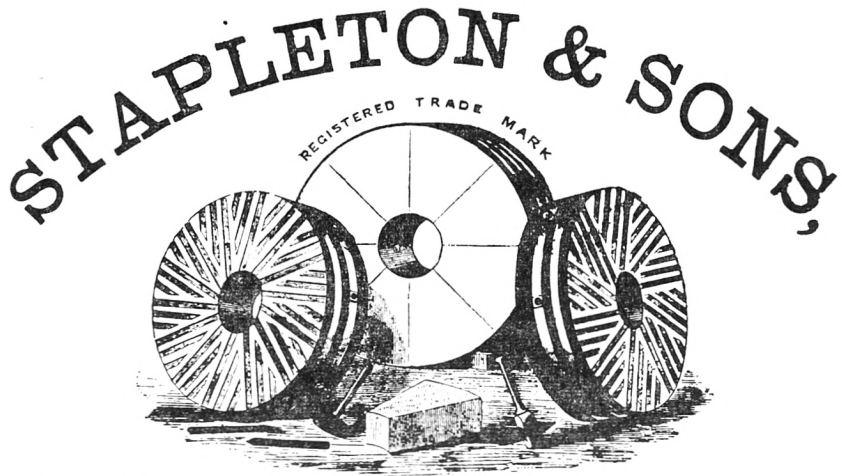
¹¹ W. R. Voller, *Modern Flour Milling*, (Gloucester, 1897), pp. 388-9. Millstone dress had been a subject of much controversy in earlier years, as instanced by many letters and articles in early volumes of *The Miller*, first published in 1875.

¹² The sickle or curved dress was probably little used before composition stones became common, but it was claimed to have been introduced as early as 1858; see anonymous article, 'Millstone Dress', *The Miller*, 2 (1876), pp. 252-3 and 298-9.

mason to cut a level cross to guide a less-experienced man in levelling the main part of the face.

The large number of unfinished stones found in so many quarries suggests that flaws in the rock were often discovered only after shaping had been started. But there are also many apparently finished and sound stones lying at many of the quarries. Perhaps these were made as the demand for monolithic millstones fell off, and never found customers.

Millstones were moved from the quarries to the nearest means of transport (the river Wye at Penallt, presumably a wagon-road in the Peak District) either by rolling or by sledge; deep gully-paths are found by the quarries. At Penallt, many millstones



FRENCH MILL STONE MANUFACTURERS,

IMPORTERS OF

FRENCH BURRS, DERBYSHIRE PEAK, COLOGNE AND OTHER

MILL STONES,

WARRANTED MILL BILLS, CHISELS AND PICKS, IRON PROOFING STAFFS, &c.

IMPROVED MILL STONES,

FOR GRINDING COPROLITE, CEMENT, AND OTHER HARD SUBSTANCES.

Authorized Agents for the Patent Mill Stone Balance & Needle Lubricator.

BLUE ANCHOR YARD, ROYAL MINT STREET, LONDON, E.
NO TRAVELLERS.

FIG. 3(a)

(a) Stapleton and Sons, from Kelly's London Directory, 1869.

FIGS. 3a-d

Advertisements of millstone-makers in trades directories.

are to be found in the river, and it is to be presumed that either they were accidentally dropped into the river during the process of loading them on to barges, or they were deliberately dumped because they were damaged during the run down from the quarry. One case came into a different category: an outsize set of stones for a very large cider-mill ordered from France was dumped because the order was cancelled at the last moment and there was no English customer for them. This must, however, have been very untypical.

MILLSTONE MAKERS

Listed in Appendix 2 are all the millstone-makers (i.e. manufacturers of French burr millstones) of the 19th and 20th centuries to which the author can find reference, with addresses and dates as far as known. The principal sources of this information are the various trades directories published from the late 18th century onwards. Well over 100 directories have been consulted, but the coverage has been patchy, depending largely on which volumes have been available in the Birmingham and Bristol Public Libraries and the Library of the University of Birmingham. At the British Library many volumes of *The Miller*, which started publication only in 1875, have been searched and its advertisements have proved very useful for this late period. Although this list cannot be complete, it probably includes most of the firms in the business. Firms which made only monolithic millstones have been excluded.

Since the direct inspection of the products of the firms may be important, the location of specimens known to the author are shown in Appendix 3.

Something of the development of firms through family relationships, amalgamations and purchase is apparent from Appendix 2, but little is at present known of the history of the firms and the size of their business, except for Gardners of Gloucester, who have been recorded elsewhere.¹³ Something of the nature of the business of the various firms is indicated in advertisements, of which examples are shown in Fig. 3. Gardners started as plain millstone-makers, but progressed on expansion into general mill-wrighting and mill furnishing. Most firms seem to have been general mill furnishers and even manufacturers of a wide range of mill machinery in addition to being millstone makers, although Stapletons of London and Childs of Leeds and Hull were probably among the few firms which remained specialized millstone makers throughout.

One firm where the developments were too complicated to show clearly in the tables was that started by Bryan Corcoran in London. At some time before 1875 he had been joined by a Mr. Witt and the firm became Corcoran, Witt and Co. He had a son, also Bryan, who had joined the trade, and in 1875 we find the intriguing announcement¹⁴ by the father:

N.B. I beg to call attention to my above address . . . and also that I am no longer connected with my late firm of Bryan Corcoran, Witt, & Co., now solely conducted by Mr. Witt, nor with a similar business carried on by my son.

¹³ D. G. Tucker, 'Millstone Making in Gloucestershire', *Glos. Soc. Ind. Arch. J.*, (1973), pp. 6-16.

¹⁴ Advertisement, *The Miller*, 1 (1875) (Supp. 1 March 1875), p. 12.

ESTABLISHED OVER 50 YEARS.

W. J. & T. CHILD

MANUFACTURERS OF

FRENCH & PEAK

MILLSTONES

W. J. & T. CHILD beg to announce to their numerous friends and customers that they have purchased the old-established business and taken the DERBYSHIRE PEAK MILLSTONE QUARRIES of MR. WILLIAM HATTERSLEY, of Bubnell, Baslow, who has retired through ill-health, and are now working them with their own.

CROSS MILL STREET, LEEDS
ENGLISH STREET, HULL.
 Burbage Quarries, near **SHEFFIELD**

All communications to be addressed to LEEDS. Telegraphic Address, "MILLSTONE, LEEDS."

FIG. 3(b)

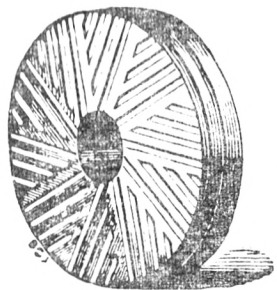
(b) W. J. & T. Child, from Kelly's London Directory, 1890.

So in 1875 the firm had become three firms. However, we find no more advertisements for the father's firm, and by 1895 Corcoran junior's firm was the only survivor.

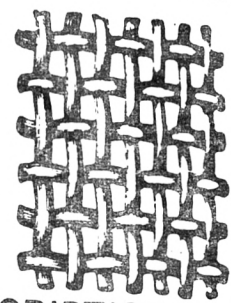
The size of the millstone-making activities of the various firms, and, indeed, the size of the industry, are very hard to assess. In 1870 William Gardner used in his advertisement a drawing of his works showing at least twelve men at work making millstones,¹⁵ in 1875 J. Hughes and Son similarly showed about thirty-six men.¹⁶ The only reliable figures for cost that have been found are in repeated advertisements in *The Miller* from 1878 to 1895 by Bryan Corcoran junior, where the price of a French burr stone ranges from £15 for a 3 ft. 6 in. stone of cheapest quality and style to £40 for a 4 ft. 6 in. stone of best quality and style. One might hazard a guess that there would have been perhaps 30,000–40,000 pairs of French burr stones

¹⁵ Kelly's Gloucester Directory for 1870.

¹⁶ Advertisement, *The Miller*, 1 (1875), p. 300.



BRYAN CORCORAN,
Millstone Builder,
WIRE WEAVER, MACHINE MANUFACTURER,
AND GENERAL MILL FURNISHER.



PERFORATED METAL. WOVEN WIRE OF ALL DESCRIPTIONS.

Agent for several Foreign Manufacturers.

SPECIALITIES IN DRYING KILNS, MALT MACHINERY, IMPLEMENTS, &c.

Works :—Back Church Lane.

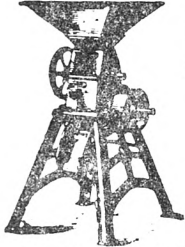
Parcel Department :—Basement of the Corn Exchange

B. CORCORAN, 31, MARK LANE, LONDON, E.C.

FIG. 3(c)

(c) B. Corcoran, from Kelly's London Directory, 1890.

Postal and Telegraphic Address:
DUCKERING, LINCOLN.



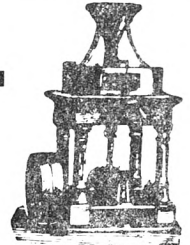
The **Lincoln Mill** will Kibble Crush, or even Grind to a soft Meal if required, which latter after being put through Dresser as opposite is fit for consumption.



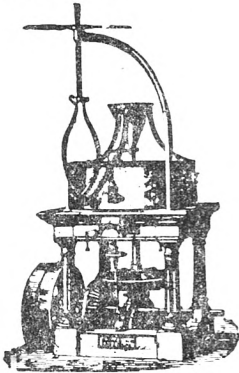
Flour Dressing Machine to work with Mill as opposite.



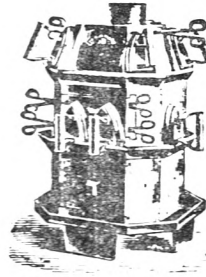
Millstones in French Burr, Derbyshire Grey, and Adamas



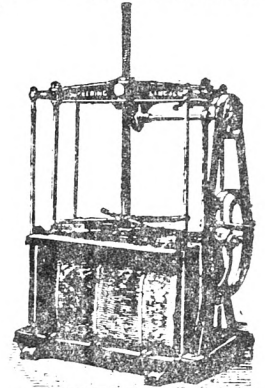
Iron-framed Single Grinding Mill, for all kinds of Grain, with French or Peak Stones as required. Sizes, 12in. to 24 in. Dia.



Iron-framed Grinding Mills for all kinds of Grain; made in sizes from 30 inches to 64 inches.



Beard's Patent Laundry Stove, "THE CHALLENGE," unequalled for durability and efficiency every way.



"The Lincoln" Improved Hand Trusser, simple, strong, and cheap.

Send for Catalogues and Price Lists. Free on Application.

[81]

FIG. 3(d)

(d) Duckering, from Kelly's Hull Directory, 1892.

in use in Britain at the peak of stone flour milling in the middle of the 19th century, and that the annual production was then perhaps 3,000–4,000 pairs. The production of monolithic stones would have been very much higher, because large quantities were exported, and because when used as edge-runners in industry their life might well have been short. In fact, a figure of 100,000 stones a year was quoted for the Newcastle-upon-Tyne industry in 1863.¹⁷

Like so many other industries of the period, millstone-making imposed a serious health hazard on its workers. The inhalation of stone dust led to respiratory troubles, and it was said that 'a hard-working man, who works continuously at this trade, rarely reaches the age of 45'.¹⁸

The makers plates or labels which a few of the firms attached to their millstones have already been referred to. A small selection of these is shown in Plates XI–XIV.

¹⁷ Bruce, *op. cit.*

¹⁸ *The Miller*, 1 (1875), pp. 4 and 107.

APPENDIX I

KNOWN MILLSTONE QUARRIES OR AREAS

ENGLAND

Draycott, Somerset

Dolomitic conglomerate; use for corn-milling not certain. Specimen from tannery (with serrated edges) at Fairland, Cheddar, ST 460 530. Quarries at approximately ST 48 51 described by F. S. Wallis, *Proc. Bristol Naturalists' Soc.*, 32 (1973), 275-280.

Forest of Dean, Glos.

Sandstone and sandstone/quartz conglomerate. Reputed Roman millstones and more recent millstone making: see C. Hart, *Industrial History of Dean*, (1971), 297-9. Millstones mentioned by David Mushet in evidence, see *Report of Commissioners, Children's Employment (Mines)*, Appendix to First Report of Commissioners (Mines), Part II, (London, 1842), 25.

Winslow, Bucks

Conglomerate millstones said to have been made here in Middle Ages, (see H. S. L. Dewar, *Proc. Dorset N.H. & Arch. Soc.*, 82 (1961), 120).

Peak District, Derbyshire/Yorkshire Border

Vast numbers of millstones made from millstone grit in quarries extending over a large area including Stanage Edge, Hathersage, Burbage, Padley, within grid lines SK 23 to 29 easting and 72 to 85 northing, approximately. Many finished and unfinished specimens in quarries. Best account is J. Radley, 'Peak Millstones and Hallamshire Grindstones', *Trans. Newcomen Soc.*, 36 (1963-4), 165-173.

Slater's Directory of Derbyshire, 1850, gives David Cooper at Hathersage and Green and Outram at Padley Bridge as millstone makers. R. Hunt's *Mineral Statistics*, Part 2, (1858), gives Robert Outram making 320 pairs of millstones (800 tons) per year, Wm. Hattersley making 150 pairs, J. A. Shuttleworth making 150 pairs and Thos. Marples making 60 pairs, average price £7 per pair, all at Burbage Moor. Kelly's Directory of London for 1890 and 1900 shows W. J. & T. Child at Burbage.

Areas outside the concentrated region referred to above were also worked for millstones. The Lower Kinderscout Grit provided millstones in quarries near Cluther Rocks (SK 074 878), according to *The Geology of the Country around Chapel en le Frith*, Mem. Geol. Survey GB, (1971), 354. The Ashover Grit was used for millstones at Robin Quarry (SK 342 616) near Ashover, and the Crawshaw Sandstone at Stone Edge (SK 34 67), according to *The Geology of the Country around Chesterfield, Matlock and Mansfield*, Mem. Geol. Survey GB, (1967), 71.

For continuation into 20th century, see the annual *Directory of Quarries*, published by the *Quarry Managers' J.*, from 1927; several firms still included 'millstones' among their products up to World War 2.

Penhill, near Leyburn, Yorks.

Millstone grit, quarry at SE 036 857. R. Hunt (op. cit.) states that millstones were made here, but gives no details.

Collier Law, near Stanhope, Co. Durham

Millstone grit, quarry probably at 'Millstone Rigg', NZ 005 420. R. Hunt (op. cit.) states main millstone makers were Garfoot and Burrow, price £8-£11 per pair of stones in 1858. This

quarry also listed by F. Atkinson, *Industrial Archaeology of North-East England*, (1974), 302, who states two 5 ft. specimens can be seen there.

Carr Crags, near Newbiggin-in-Teesdale

Quarry at NY 918 316 according to F. Atkinson (op. cit.), p. 294, who says several incomplete specimens can be seen here.

Gateshead, Co. Durham

A considerable series of quarries provided stone for the famous Newcastle grindstone industry, which included 'millstones' (presumably edge-runners). See J. Rickerby, 'The Newcastle grindstone industry', *Quarry & Surveyors' & Contractors' J.*, 27 (1922), 11-16. Windynook Quarries centred on NZ 277 606, Eighton Banks Quarries around NZ 277 583, Gateshead Fell Quarries around NZ 265 605.

Underbarrow, Westmorland

Quarry at SD 484 924 providing limestone runners for gunpowder mills, 5 ft. diameter specimen in the quarry, according to M. Davies-Shiel and J. D. Marshall, *Industrial Archaeology of the Lake Counties*, (1969), 264.

Lazonby, Cumberland

Quarry at NY 5240 provided sandstone face-grinders for use in local mills at least (N. Jones of Little Salkeld Mill, personal communication).

Over Kellet, near Carnforth, Lancashire

Quarry working in 18th century providing millstones 'equal in goodness to those got upon Rumblesmoor in Yorkshire, or to those of Derbyshire, . . . sold for eight, nine or ten pounds the pair. This Quarry does not only supply the Country about it, and several Mills on the western Coasts of England, but a great many are thence exported to Ireland, the Isle of Man, &c.'—according to *John Lucas's History of Warton Parish, compiled 1710-1740*, ed. J. R. Ford and J. A. Fuller-Maitland, (Kendal, 1931), 145.

WALES

Penallt, Gwent, and surrounding area

The main source of 'Welsh stones' in old red sandstone/quartz conglomerate. Numerous small and some large quarries (e.g. SO 503 092, 508 086, 515 095, 525 062, 525 105, 530 100, 532 087) described in D. G. Tucker, 'Millstone Making at Penallt, Mon.', *Ind. Arch.*, 8 (1971), 229-239. Some known millstone-makers in this area were Samuel Morris, 1680 (Nat. Lib. Wales, Mynde MSS, catalogue p. 135); George Young, 1682 (Gwent C.R.O., D309.1); Thomas Young, 1740 (Gwent C.R.O., D309.4); Thomas Hudson (Slater's Directory for Mon. 1850; Morris's Directory for Glos, 1876); Noah Hudson (Kelly's Directory for Mon. 1891 and other years). See discussion in D. G. Tucker, *Glos. Ind. Arch. Soc. J.*, (1973), 11-12.

Near *Bridgend*, Glamorgan

A 'silica Burr, excellent for millstones, many made preferable to French Burrs' occurs at boundary of limestone zone about 1½ miles NE of Bridgend, according to W. Davies (Diaries, No. XXIII, date about 1811, Nat. Lib. Wales MS 1762).

Near *Llanbedrgoch*, Anglesey

Quarry around SH 51 82 has old millstones lying around (M. Rix, personal communication). Another specific reference is to quarries at Ynys nearby (SH 50 82): 'The carboniferous sandstones have been much used for making millstones, especially at the large quarries of Ynys, Llyn Cadarn. The industry has declined, owing to the decrease in the number of mills at work.' (*The Geology of*

Anglesey, Mem. Geol. Survey GB, (1919), 860.) There are many quarries in this district, which includes Rhos Fawr, quoted by S. Hagerty, *Country Life*, (22 June 1972) 1606-7, as the source of millstones exported to Scandinavia over a long period. The millstones were made from thin bands of sandstone/quartz conglomerate according to A. G. Ramsey, *The Geology of North Wales*, Mem. Geol. Survey GB, (1881), 257.

Penmon and Fedw-fawr, Anglesey

Quarries in these two places (SH 6380 and 6081 respectively) provided millstones which were the subject of dispute in 1639 (Wynn of Gwydir Paper 1646, Nat. Lib. Wales).

Conway, Caernarvonshire

A quarry very near the town provided stones reckoned to be as good as French burrs and 'capable of being employed in most cases where those imported from France have been in use', according to A. Rees, *Cyclopaedia*, 1819-20, reprint (Newton Abbot, 1972), Vol. 3, 484-5. Operator Mr. Bowes, landlord Mr. Sneyd of Staffordshire. Approx grid. ref. SH 78 77.

ISLE OF MAN

Specific quarries not identified, but 'before the growth of competitive milling local granites (glacial erratics might also be used) were fashioned into millstones', according to T. A. Bawden *et al*, *Industrial Archaeology of the Isle of Man*, (1972), 50.

SCOTLAND

Glenstocking, Kirkcudbrightshire

Quarry at NX 864 527 'widely famed beyond Galloway for the quality of its [granite] millstones. In 1796 Glenstocking was said to produce 15-20 sets of stones per annum, valued at £3 each, even exporting them to Ireland', according to I. Donnachie, *Industrial Archaeology of Galloway*, (1971), 111. The quarry 'continued in use until the turn of the present century', (*ibid*, p. 226). This is presumably the millstone quarry in the parish of Colvend referred to in *Encyc. Britan.*, 8th edn., Vol. 13, (1857), 99.

Kaim Hill, Ayrshire

Quarries 2 miles SE of Fairlie, in millstone grit. Given as Kame Hill by R. Hunt (*op. cit.*, 1858), who stated that millstones were made here, but did not name the operators. Kaim Hill itself has grid reference NS 22 53.

Kintyre, Argyllshire

Minor millstone quarries at Ugadale, NR 782 288; Rhonadale, NR 786 393; Skipness, NR 883 581; and Port na Cathrach, Isle of Gigha, NR 629 483; according to *Argyll Vol. 1*, *Kintyre*, RCAHM Scotland, (1971), 209.

Barnacarry, Argyllshire

Old quarry at NM 81 22 with several partially-detached specimens in Old Red Sandstone with pebbles up to 15 cm. diameter, according to *Argyll Vol. 2*, *Lorn*, RCAHM Scotland, (1975), 277.

Craigmaddie Muir, Stirlingshire, (near Milngavie, Dunbartonshire)

Quarries along line NS 578 763-581 762 and at NS 587 765 with many abandoned unfinished millstones in lava, according to *Stirlingshire Vol. 2*, RCAHM Scotland, (1963), 443-4.

Spittal, Stirlingshire, (near Gartmore)

Minor millstone quarry in conglomerate at NS 507 973 (*ibid*).

Abbey Craig, near Stirling

Basalt made millstones, built in same manner as French Burrs, which were found very satisfactory by James Brownhill and Alexander Ball when tried at Alloa Mills at beginning of 19th century; subsequent quantity production. See A. Rees, *Cyclopaedia*, (1819-20), Grid ref. possibly approx. NS 81 95.

Benheath, Perthshire

R. Hunt (*op. cit.*, 1858) said that millstones in Old Red Sandstone were made here by James Mailler. Approx. grid ref. NN 90 07.

Quarrywood Hill, Elgin, Morayshire

R. Hunt (*op. cit.*, 1858) said that millstones were made here. Approx. grid ref. NJ 19 63.

Gardenstown, Banffshire

R. Hunt (*op. cit.*, 1858) said that millstones in Old Red Sandstone were made here. Approx. grid ref. NJ 80 64.

APPENDIX 2

LIST OF MILLSTONE MAKERS

<i>Name</i>	<i>Address</i>	<i>Years</i>
BAKER, John	LONDON Brook Yard, Pickle Herring, Borough	c. 1840 not 1854 on
CARR, James Wm. & Co.	35 Queen Victoria St.	c. 1900 not 1890 nor 1910 on
CHILD, W. J. & T.	69 Lant St., Borough (Left London; HQ in Leeds)	c. 1854 1860s-1920s)
CLARKE & DUNHAM	48 Mark Lane	c. 1855-70 not 1890 on ?
COOMBE & Co.	30 Mark Lane	c. 1854
CORCORAN, B. & Co.	36 Mark Lane 48 Mark Lane	c. 1869
CORCORAN, WITT, & Co. (‘late Bryan Corcoran & Co.’ ‘established over a century’)	26, 27 & 28 Market Bdgs., Mark Lane 19 Mark Lane and Wharf Road, Millwall	c. 1875 c. 1885-90
CORCORAN, Bryan	55 Mark Lane	c. 1875
CORCORAN, Bryan, junior (Ltd. after c. 1900)	34 Mark Lane 31 Mark Lane (Works, back Church Lane)	c. 1875-85 c. 1885-1930
DELL, William Rawbonn	72 Mark Lane and Norway Place, Commercial Rd. East	c. 1869
do. & Son	26 Mark Lane and do. 57 Mark Lane 30 Mark Lane	c. 1890-1910 c. 1920-30 c. 1939

<i>Name</i>	<i>Address</i>	<i>Years</i>
DUNHAM, William	48 Mark Lane	c. 1869
GARNER, Wm. & Sons	Oak Wharf, West Ferry Rd. & Undershore, Northfleet	c. 1900
	72 Mark Lane	c. 1910
	57 Mark Lane and New Corn Exchange; works 2A Church Row, Limehouse, & Northfleet	c. 1920-30
	Silex Works, Glengall Rd., Millwall	c. 1939
HENLEY, George	York Rd., Stepney	c. 1869
HUGHES, J. & Sons	1 Grey Terr., Gt. Dover St., Borough	c. 1854
	Gt. Dover St. and 29 Mark Lane	c. 1861
	216 Gt. Dover St. and 27 Swan St., Borough	c. 1869
	Office and warehouse 21 Mark Lane	
	217 Gt. Dover St.	from 1875
	27 Swan St., Borough	c. 1890-1910
	57 Mark Lane	c. 1920
	New Corn Exchange	c. 1930
		not 1939 on
HUGHES, Mrs. S.	8 Gt. Dover St., Borough	c. 1840
LUCKINS, George	32 Bridgehouse Pl., Newington Cswy	c. 1854
		not 1869 on
PORTER, F. & Co.	Surrey Dock Wharf	c. 1890-1900
		not 1910 on
PORTER, William	21 Pitt St., Old Kent Rd.	c. 1869
REID, Peter & Son	In Glasgow until c. 1910	
	57 Mark Lane	c. 1920
	New Corn Exchange	c. 1930
		not 1939 on
SHAW, Frederick Francis	253 Blackfriars Rd.	c. 1854
STAPLETON, Thomas & Sons	Blue Anchor Yd., Royal Mint St.	c. 1869
WEEKS & LUCKINS	32 Bridgehouse Place, Borough	c. 1840
WHITMEE, John & Co.	101/3 St. John St., Clerkenwell; Canal Rd., Kings Cross; and 18 Fenchurch Buildings	c. 1869
	172 St. John St.	c. 1890
		not 1900 on
WHITMORE & BINYON	78 Gracechurch St. (but main address, Wickham Market, Suff.)	c. 1869
	28 Mark Lane (and do.)	c. 1875
	64 Mark Lane	c. 1890-1900
		not 1910 on
	BIRMINGHAM	
ANDREWS, Thomas	15 Norfolk St.	1849
	28 Norfolk St.	1850
	14½ Norfolk St.	1852-3
	do. and Long Acre, Nechells	1861
		not 1865 on
COOPER, George	80 Lawley St.	c. 1872
HANDLEY, George	6 Castle St.	c. 1852
HANDLEY, Richard Guy	97 Moor St. (private res. 58 Park St.)	c. 1861-2
	Castle St. and Moor St.	c. 1866-76
	38-40 Lower Pershore St. (res. 9 Pershore Rd.)	c. 1881
	156 Pershore St. (res. 76 Balsall Heath Rd.)	c. 1886-90

<i>Name</i>	<i>Address</i>	<i>Years</i>
McCARDIE & THOMPSON (late R. G. Handley)	152-6 Pershore St. Lion Millstone Wks., Bagot St.	1892-4 1895-6
PICKIN, John	27 Coleshill St. (as jobbing smith) do. (as millstone manufr., etc.) also at 27 Jamaica Row (General merchant and manufr. of mangles, but no millstones)	c. 1835-43 c. 1872 c. 1881 on)
SAVERY, Thomas Ackers	Worcester Wharf 32 Broad St. 30a Broad St. (res. Icknield Port Rd.) 31 Broad St. and Icknield Port Rd. Steam Mills	1849-50 1852-3 c. 1861 c. 1865
THOMPSON, Edwin E. & Co.	Entered without trade at 53 Ladywood Rd. Lion Millstone Wks., Bagot St.	1881 1898 into 1900s
BRISTOL		
ATTACK, John Smith	Grove	c. 1830
BRACEY, Walter J. (successor to Monks)	Hockley's Lane, Fishponds	1903 not 1904 on
BUSH, William (Successor to Attack)	1 Little King St. 29 Welsh Back	1835 1840
BUSHNELL, Robert	17 Temple Back 4 Little King St. 146 Temple St.	c. 1850 c. 1850-61 c. 1869
LEACH, William	Grove Avenue	c. 1840
MONKS, Nelson Oliver	Mitchell's Lane, Victoria St. Hockley's Lane, Fishponds	c. 1897 c. 1900
PHILLIPS, W. & Co.	34 Back	c. 1835
SMITH, S. A.	63 Victoria St.	c. 1889
VINING, Thomas, junior	Little King St.	c. 1840
WHITTAKER, W. (successor to Bushnell)	146 Temple St.	c. 1875-6
LIVERPOOL		
COTTON & DAVIES	22 Cheapside	c. 1844
DAVIES & SNEADE (Established 1817—as Cotton & Davies?)	18-30 Charters St.	c. 1890-95
HILTON, Robert	7 and 53 Fleet St.	c. 1821 not in 1774
KAY & HILTON (Established 1814)	14 Fleet St. Bank Hall Bridge	c. 1844-71 c. 1877
MURRAY & BROWN	29 Brasenose Rd., Kirkdale 8 Lydia Anne St.	c. 1895 c. 1844
GLOUCESTER		
BARRON, W. S. & Son	Sweetbriar St. and Ladybellegate St. (previously only millwrights) (Advert 1919 included 'Dreadnought Composition Millstones'; London directory entries included 'millstones in burr or composition') Bristol Rd.	c. 1919-39 c. 1937-69

<i>Name</i>	<i>Address</i>	<i>Years</i>
FRANCILLON, John G.	Docks Llanthony Rd.	1852 1858-61
GARDNER, William (successor to Francillon)	Llanthony Rd. Southgate St.	1861-78 1879-94
GARDNER, William & Sons	Bristol Rd.	1894-1930s
	WORCESTER	
JACKSON, John	The Butts	c. 1850
MARSTON, William	Bath Rd.	c. 1850
WARD, William	Hylton St. Clements	c. 1850
	EXETER	
HUXHAM & BROWN	?	?
	IPSWICH	
TINSLEY, W. & Co.	Commercial Rd.	c. 1895
	LEICESTER	
BIRD, William	Humberstone Gate	c. 1850
	NEWARK	
INGLEDEW, George	Millgate	c. 1850
	LINCOLN	
DUCKERING, Charles	Waterside and Rosemary Lane	c. 1892
	RETFORD	
HOPKINSON, C.	Beehive Works	c. 1875
	LEEDS	
SAVERY, James	5 Wade Lane	c. 1853
SEDGEWICK & VARLEY	?	?
	LEEDS, HULL, & SHEFFIELD	
CHILD, W. J. & T.	13 Maris St., Leeds (also 69 Lant St., London Cross Mill St., Leeds; English St., Hull; and Burbage Quarries, nr. Sheffield St. James St., Hull Whitkirk, Leeds; Burbage, Yawncliff, and Old Edge Quarries, nr. Sheffield	1853 1854 } c. 1890-1900 1892 } c. 1910-20 } not 1930 on
	STOKE-ON-TRENT	
JAMIESON, Wm.	Mowcop	c. 1872-88
	NEWCASTLE-ON-TYNE	
MOUNTAIN	?	?
	EDINBURGH	
MASON, Robert	2 Salamander St., Leith	c. 1852
SMITH, Joseph & Son	219 High St.	c. 1852
SMITH, Son & Co.	219 High St.	c. 1889

<i>Name</i>	<i>Address</i>	<i>Years</i>
STEVENSON, Henry	'French-Burr, Millstone & Firebrick Works', Duke St., Leith	c. 1852
	GLASGOW	
DONALD, John & Son	42 Cadogan St.	c. 1889
LAING, R. G.	29 Waterloo St.	c. 1889
REID, John	165 Main St., Anderston	c. 1852
(Established 1839. Importer and manufr. of French Burr, Kaimhill, & Derby Peak Millstones')	3 Havelock St., Finnieston	c. 1889
REID, Peter	40 Hyde Park St., Anderston	c. 1885
(1885: 'brother of the late John Reid')	28 Hyde Park St.	c. 1889
REID, Peter & Son	310 Stobcross St.	c. 1910
('Established 1834')	In London, 1920 on	

APPENDIX 3

LOCATION OF SOME SPECIMENS OF NAMED MILLSTONES

(Makers' names in the same order as in Appendix 2)

Clarke & Dunham	Bibury Mill, Glos., dated 1859 ¹ Cholstrey Mill, nr. Leominster ²
Coombe & Co.	High Salvington Windmill, Worthing ¹
Corcoran	Lacey Green Mill, Bucks ¹ (Stone numbered 2478, 'Corcoran, Manufac- turer, Mark Lane, London')
Dell	Clifford Chambers Mill, nr. Stratford-upon-Avon ⁵
Garner	Polegate Mill, nr. Eastbourne ¹ (label shows 57 Mark Lane)
Hughes	Meopham Mill, Surrey ¹ Great Chishill Mill, Cambs ¹
Handley	Ixworth Windmill, Suffolk, grid ref. TL 931 694 ^A (stone numbered 4190) Mildenhall Mill, Worcs, grid ref. SO 853 607 ^A Townsend Mill, Bromsgrove, grid ref. SO 967 721 ^A Rowden Mill, Herefs, grid ref. SO 629 566 ² Bucton Mill, Herefs, grid ref. SO 384 733 ² Wilton Windmill, Grafton, Wilts ³
Savery, T. A.	Rock Mills, Leamington Spa ⁵
Smith, S. A.	Kilcott Mill, nr. Wotton-under-Edge, Glos ⁴
Whittaker	Portbury Mill, nr. Portishead ³
Davies & Sneade	Bysbie Mill, Galloway, grid ref. NX 476 366 ⁶ Waterloo Mill, nr. Leominster ²
Kay & Hilton	Histon Mill, nr. Stafford ^A ('Kay & Hilton, Fleet Street, Liverpool, 1854') Avoncroft Museum, Bromsgrove ^A (do., 1871) Avoncroft Museum ^A ('Kay & Hilton, Bank Hall Bridge, Liverpool, 1877')
Barron	Kellaway's Mill, Chippenham ¹ Garboldisham Mill, Norfolk ¹ Skenfrith Mill, Gwent ^A Milton Cottage, Wells, Som ^A

Gardner	Sutton's Mill, Cranham, Glos ⁴ Flaxley Mill, Glos ⁷ Lower Mill, Orcop, grid ref. SO 476 264 ² New Mills, Ledbury, grid ref. SO 701 386 ² Lidstone Mill, nr. Chipping Norton, Oxford ⁴ Skenfrith Mill, Gwent ⁴
Huxham & Brown	Rawridge Mills, Sth. Devon ⁸
Sedgewick & Varley	Cesters Over Mill, nr. Rugby ⁵
Child	Monks Mill, Galloway, grid ref. NX 963 662 ⁶ (with date 1851) In South Africa ⁹
Mountain	Tocketts Mill, Cleveland ¹⁰
Reid, Peter	Corsewall Mill, Galloway, grid ref. NX 020 702 ⁶

Sources of information indicated above

⁴ Author

¹ H. M. Hoather, Whetstone, London N20; personal communication

² Mrs. Jennifer McCulloch, Bromyard; p.c.

³ M. Watts, Bath; p.c.

⁴ R. Day, Keynsham; p.c.

⁵ T. Booth, Halesowen; p.c.

⁶ I. Donnachie, *Industrial Archaeology of Galloway*, (1971)

⁷ B. V. Cave, *Glos. Soc. for Ind. Arch. J.*, (1974), 21

⁸ R. E. Wilson and J. Marr, *Millnotes*, 6 (1974), 95

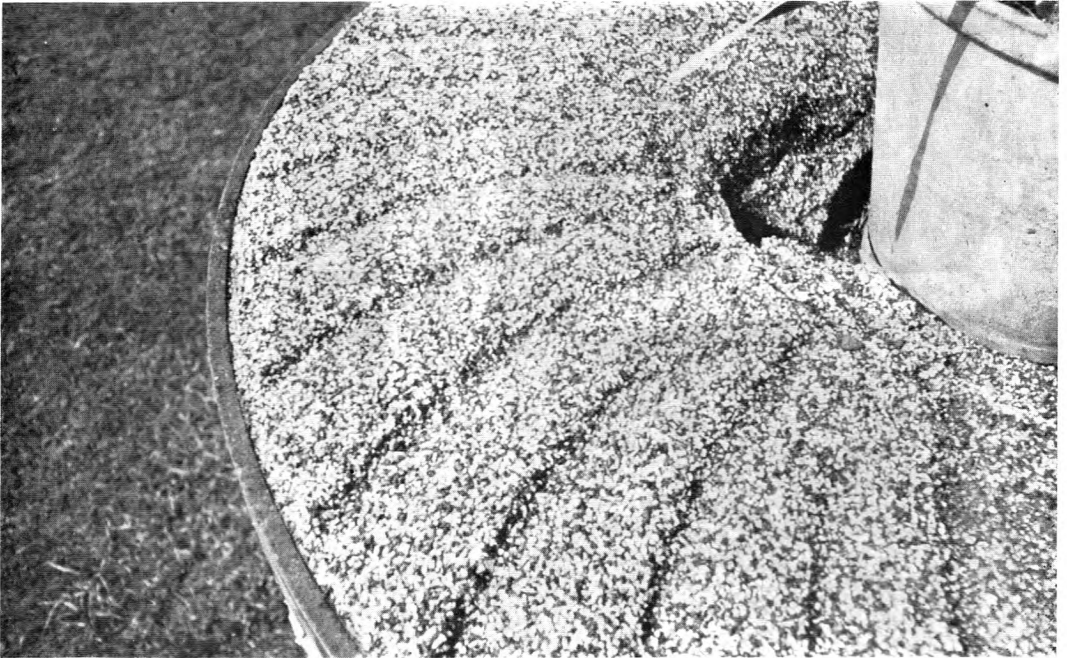
⁹ J. Walton, *Trans. 3rd Symp. Int. Molin. Soc.*, (1973), 82

¹⁰ J. K. Harrison, *Assoc. for Ind. Arch. Bull.*, 3.2 (Aug. 1976), 1

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PLATE I



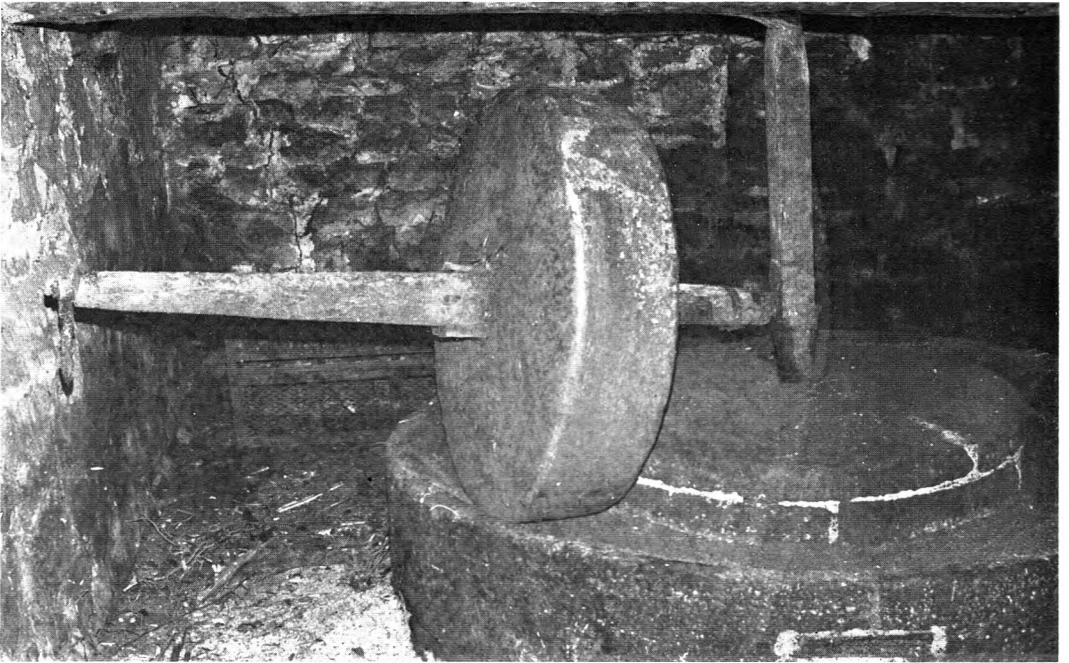
Composition stone by Barron of Gloucester, showing "sickle" dress. (Location: a private garden in Wells, Somerset.)

PLATE II



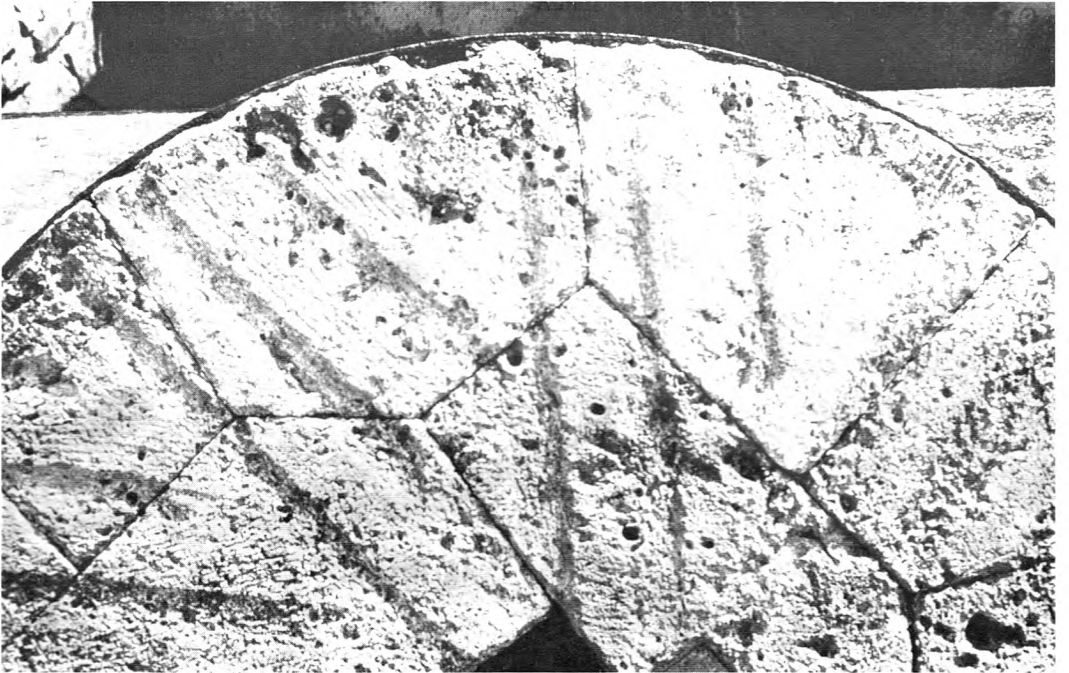
Mushroom-shaped stone at quarry site near Hathersage, grid-reference SK 248 803: 6ft diameter, 22in thick in centre, 10in thick at edge.

PLATE III



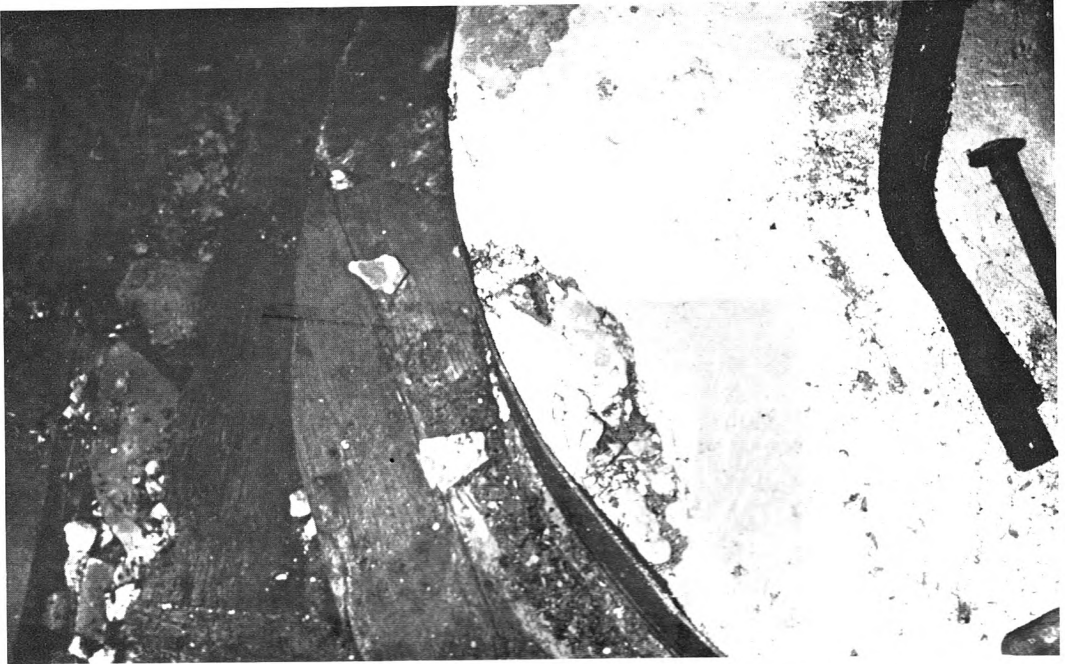
Cider-mill at Penallt, Gwent.

PLATE IV



Close-up of part of a French-burr stone at Keward Mill, near Wells, Somerset, showing texture as well as system of fitting small pieces of stone together. (From a transparency by Dr. George Parker of Wells.)

PLATE V



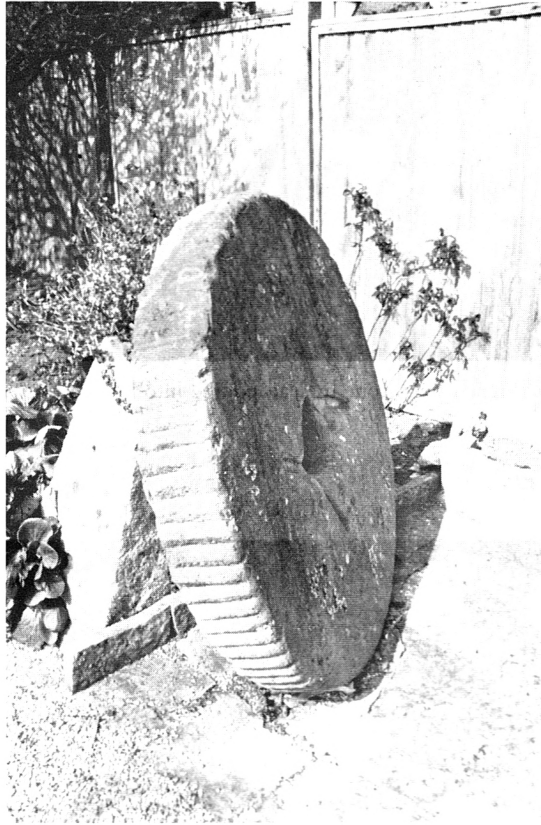
Balancing of French-burr stone by lead poured into hole in plaster backing.

PLATE VI



Balancing of French-burr stone by weight fixed in plaster backing.

PLATE VII



Serrate-edge runner stone for bark mill at tannery, 55in diameter, teeth $\frac{3}{4}$ in deep. (Location: a private garden in Wells, Somerset.) One face of stone flat, one convex, 1 1/2in thick at centre, 8in thick at edge.

Made of a sandstone/quartz conglomerate, possibly from Penallt.

PLATE VIII



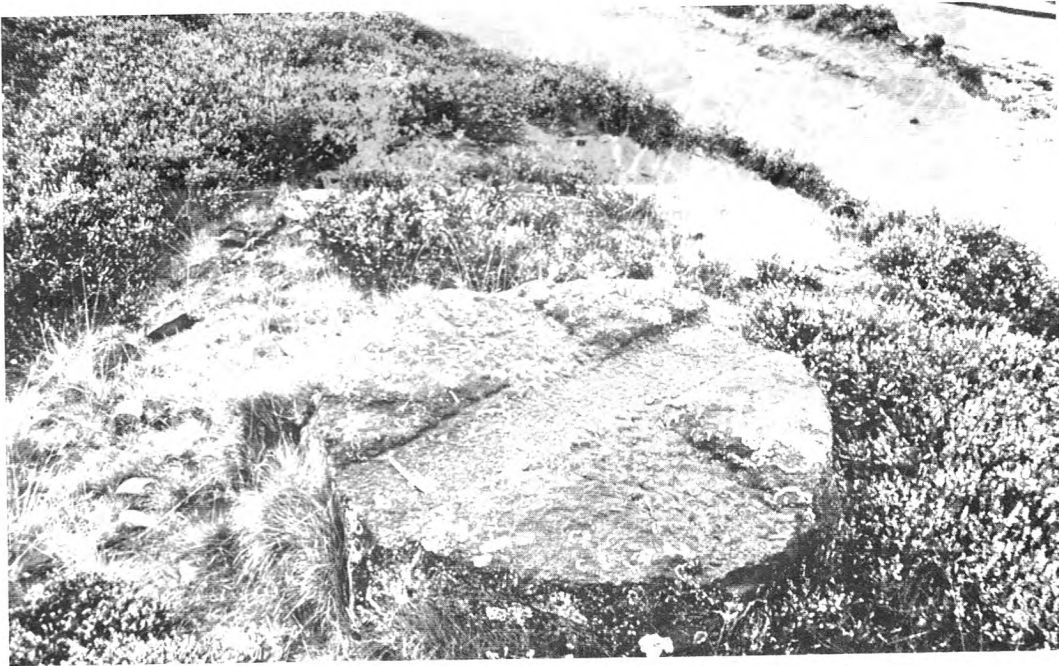
Conglomerate (Welsh) millstone, supported on piece of stone to raise it above the ground for finishing.
Abandoned specimen at Penallt, Gwent.

PLATE IX



Unfinished Welsh stone at Penallt, Gwent, with level cross cut on otherwise rough face.

PLATE X



Unfinished Peak stone at Millstone Edge, near Hathersage, with level cross cut on otherwise rough face.

PLATE XI



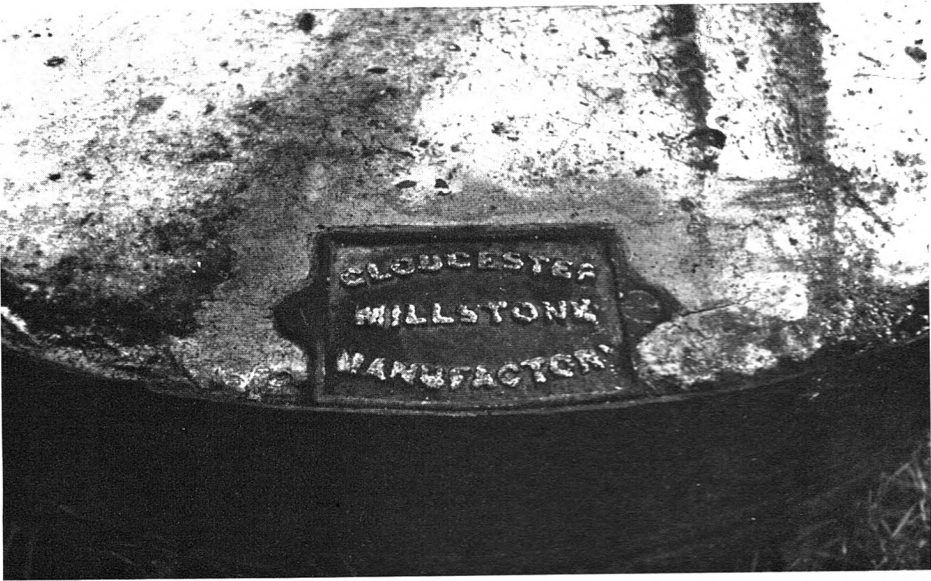
Maker's plate: Kay and Hilton.

PLATE XII



Maker's Plate: Barron.

PLATE XIII



Maker's plate: Gardner.

PLATE XIV



Maker's name on eye casting: Gardner.