

MILLSTONE MAKING IN ANGLESEY

by GORDON TUCKER

The sources of supply and the making of millstones, especially those of monolithic type (as opposed to those fabricated from small pieces of stone cemented together), have received little study, especially in comparison with the vast attention paid to the mills in which they were used. My recent general survey of the subject [1] seems to have aroused a good deal of interest, as did my earlier article on the millstone quarries at Penallt, near Monmouth.[2] These quarries at Penallt produced what were known as 'Welsh stones', made from the old red sandstone/quartz conglomerate, or 'pudding stone', which outcrops there. As similar stones were made in Anglesey, it was decided to make a study of the Anglesey millstone industry.

Roberts,[3] writing on the mills of Anglesey, has just one paragraph on millstones :

'... it is noteworthy that from Benllech to Penmon were to be found the best millstone quarries in Britain and the one at Bwlch-gwyn near Benllech was probably the best known. The Rev.Nicholas Owen of Llandyfrydog in a Supplement to the *Mona Antiqua* informs us that from these quarries millstones were exported as far as the Baltic States. Again, one item in the records kept by the keeper of the Royal Mills, Dublin, in the year 1314 was a millstone worth 28/9d imported from Mathafarn (Benllech presumably)..'

The claim of 'the best millstone quarries in Britain' may be rather sweeping, but it is clear that Anglesey millstones were widely known.

It is believed that the distribution of millstone quarries in Anglesey was rather less dispersed than Roberts suggests. The sandstone with quartz pebbles, or conglomerate, from which millstones were made, outcrops in only quite small patches, mostly concentrated in the few square miles to the west of Benllech on the mid-eastern side of the island. It is here that the three quarries that I have been able to find and investigate are situated. (See Fig.1). It is true that in Ref.1 I refer to the making of millstones in the Penmon area (see map of Fig.1) in the 17th century, and Eames [4] quotes Lewis Morris as saying in 1748 that 'at Penmon there are several quarries of millstones of the grit kind of which great quantities are shipped off there.' However, as far as I could discover there is only a very small outcrop of conglomerate at Penmon (at SH 637810), and it is so overgrown with gorse, heather, etc. that it proved impracticable to determine whether millstones had been made there. That this rock had been quarried at least for other purposes may be adduced from the fact that some of the old Priory buildings at Penmon seem to have been constructed with it. Superficially it appears to be the same as the conglomerate occurring at the known millstone quarries, although it is about 10 miles distant from them and quite isolated.

In dealing with the sparse references to the millstone quarries, difficulties arise over their names. One reference [5] refers to 'the large [millstone] quarries of Ynys, Llyn Cadarn'; yet a modern work [6] indicates millstone quarries at Ynys and Llyn Cadarn over a mile apart, this location of Ynys appearing to be the Bwlch-gwyn mentioned by Roberts, quoted earlier. On the 1st-edition one-inch O.S. maps, Pen'rallt Millstone Quarries and Tan'rallt Millstone Quarries are marked, the former being at the location marked Brynteg on the modern 1:50,000 O.S. map and marked Rhos Fawr on the 1-inch O.S. map of c 1900; the latter marking is a few hundred yards south of the quarry near Cors Goch and Llyn Cadarn. Rhos Fawr quarry is mentioned by Hagerty [7] as the source of millstones exported to Scandinavia over a long period. To avoid further confusion, the three millstone quarries to be discussed here will be defined as follows :-

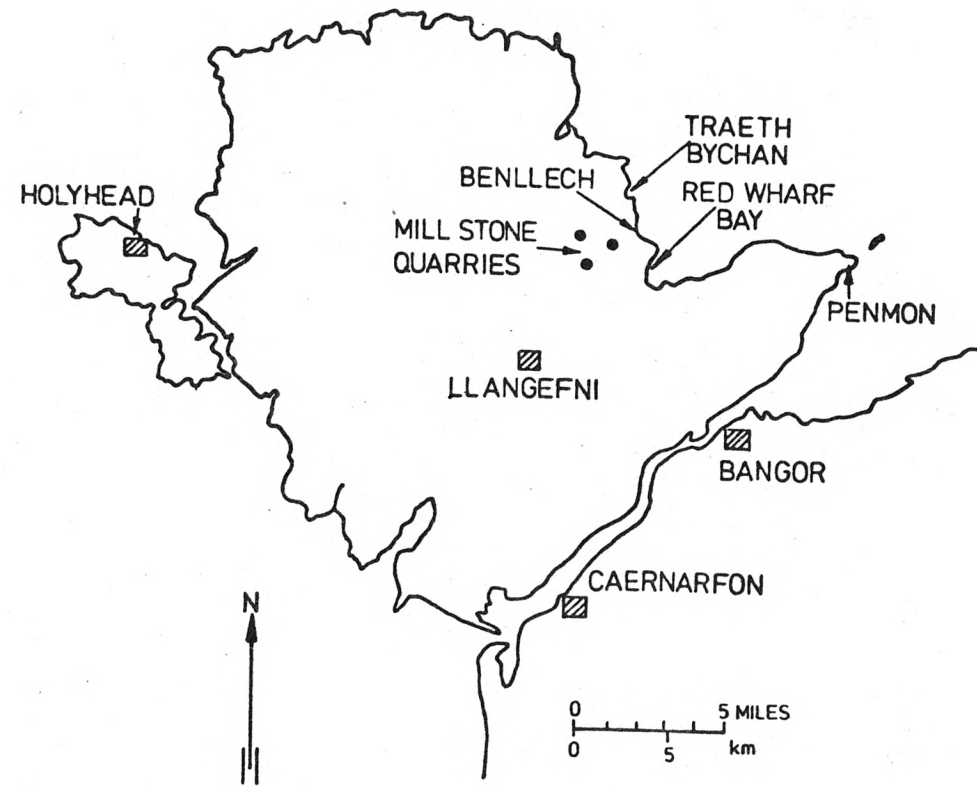


Fig.1. Map of Anglesey showing location of millstone quarries

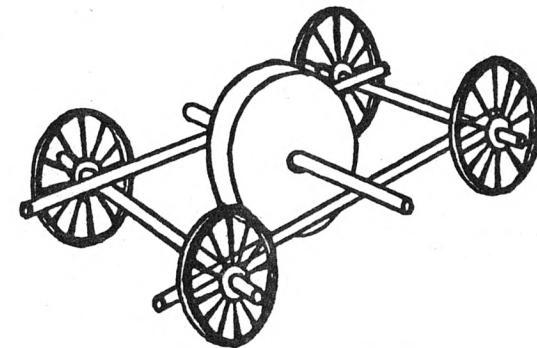


Fig.2. Method of transport of millstones

Pen'rallt: SH 493828, in parish of Llanfairmathafarneithaf.

Cors Goch: SH 494810, in parish of Llanddyfnan.

Bwlch Gwyn: SH 507-510 easting/819-820 northing, in parish of Llanddyfnan.

Pen'rallt is alias Rhos Fawr. Cors Goch is alias Llyn Cadarn or Tan'rallt. Bwlch Gwyn is alias Ynys.

THE QUARRIES

The quarry at Pen'rallt shows the most extensive hollowing. The excavated part measures about 150 yards x 30 yards, and has a rim of rock more-or-less all round it. On the eastern edge of the quarry there are the ruins of a stone building, of external dimensions about 15 feet x 12 feet. Still lying in the quarry are 12 finished millstones, all with circular holes (or 'eyes'); three of them are flat on both faces, while the remainder are convex on one face. The dimensions of nine which could be measured are given in the table. The range of diameters from 48 inches to 61 inches is notable. Indeed, the range of dimensions generally is surprising. There is another stone, only roughly shaped and evidently unfinished, which appears to be still attached to the parent rock-mass. None of these stones had iron bands. However, lying at the northern end of the quarry is a very badly weathered stone of 52 inches diameter with a rusted iron band around it; possibly an old stone dumped there. One of the stones was propped up on smaller pieces of stone presumably to facilitate the finishing process.

It is rather a puzzle why so many finished millstones should be lying in the quarry. As they did not have iron bands round them, they may have been rejected as faulty in some way before banding; or they may have proved unsaleable at the final run-down of the industry. In any case, this is a feature of old millstone quarries generally; the quarries at Penallt (Monmouthshire), [8] the Peak District (Derbys/Yorks border), [9] and Craigmaddie Muir (Stirlingshire, Scotland) [10] are examples.

TABLE

Analysis of stone sizes at Pen'rallt Quarry

Diameter (inches)	No. of flat faces	Diameter of hole (in.)	Thickness at edge (in.)	Thickness at centre (in.)
48	1	10	10	14
49	1	9	9	13
51	2	9	12	12
51	1	9	10	?
52	1	10	10	12
53	1	13	11	14
55	1	9	10	?
56	2	10	12	12
61	2	9	12	12

The quarry at Cors Goch is in an isolated outcrop of conglomerate standing out from the rather flat heath around it. This outcrop is only about 50 yards wide, and roughly circular, and there appears to have been much less excavation than at the Pen'rallt quarry. On the northern edge are the ruins of a stone building very much the same as that at Pen'rallt. There are no finished millstones to be seen, although there is so much overgrowth of gorse and heather that it cannot be inferred that there are none in existence there. There is one unfinished millstone, 56 inches diameter, with no hole yet cut. There is also part of an unfinished millstone still attached to the parent rock on the rock face of one side of the quarry; a circular groove about 2 feet deep has been cut in the rock to define the edge of

the millstone, and the upper face has been roughly dressed, but what should be the other face is still partially attached to the main rock. A large part of the stone has broken away, presumably during the undercutting operation.

The quarry at Bwlch Gwyn is based on a long narrow outcrop of conglomerate about 300 yards x 100 yards, and the quarrying seems to have been mainly along the edge. The place has been 'tidied up' to make it into a caravan site, but there are still two finished but broken, and two unfinished, millstones to be seen. One of the finished stones was measured; it is 55 inches diameter with a circular hole of 8 inches diameter, 10½ inches thick at the edge and 14 inches in the centre.

No claim can be made that all the sources of millstones in Anglesey have been found. Millstone quarries are generally small, taking the form of shallow hollows in the top of a hillock-shaped outcrop. They would be hardly detectable from a distance even if not completely overgrown. Making a comparison with the other source of Welsh stones at Penallt in Monmouthshire, there are there some eight old millstone-quarrying areas, but some are so difficult to find and recognise that at least two of my correspondents failed to find them even though given six-figure grid references!

METHODS

We were fortunate in being able to have a talk with Mr.R.W.Morris of Pen-llyn, near the quarry at Cors Goch, followed by very useful correspondence. He is old enough to remember very clearly how the millstones were made when he was a boy, and stated that the work went on up to about 1910. He is certain that the millstones were made by shaping while still attached to the parent rock: 'they picked around the rock to the right size and depth'. He said that suitable pieces were not first broken off and then cut to shape. When the stones were finished, iron bands were fitted around them. There was a smithy for repairing tools and making iron bands, etc. There was no crane at the quarry. The stones were hauled away on a four-wheeled frame wagon as shown in Fig.2. (This sketch was made on the basis of Mr.Morris's oral description, then corrected after he had commented on it.) The wagon was drawn by four horses; arrangements for steering and haulage are not included in the diagram as they were not discussed. The immediate destination in Mr.Morris's day was Benllech station on the Anglesey Central Railway. This branch was opened in 1909 (and finally closed completely in 1950), [11] and evidently the carriage of millstones by this railway was short-lived. Probably, before the railway came the stones were shipped from Red Wharf Bay.

Mr.Jones of 'Gernant', near the Pen'rallt quarry, who has lived there all his life - and his father before him - said the millstones used to be taken (inter alia) to Barmouth, where his grandmother had lived in her early days.

The sketch of Fig.3 has been based on an old photograph found in the Anglesey Archives Office. [12] Nothing is known of its date and origin except that it shows a millstone quarry 'at Traeth Bychan'. No other reference to a millstone quarry as far north in Anglesey as this has so far been found, the one-inch geological map of c 1900 does not show any sandstone/conglomerate at a position to correspond to that in the photograph, and it is not impossible that it is actually one of the quarries described in this article. It is clearly a quarry of the same type, i.e. worked on an outcrop of conglomerate. Several things in the picture are noteworthy. The frame wagon is clearly of the type described by Mr.R.W.Morris in relation to the Cors Goch quarry and outlined in Fig.2. That the millstone was carried vertically as he said, on a pole or beam, is confirmed by the millstone just in front of the wagon with a pole through its eye. The iron bands which Mr.Morris said were fitted to the stones are seen on the stones in the bottom right-hand corner. Four workmen are seen, two of whom are wielding picks. The second man from the left is standing on a piece of rock which appears to have been detached from the parent rock before shaping into a millstone. The large millstone in the centre is curious; it is apparently at the upper extremity of size, and has its edge finished and fitted with an iron band before the back has been dressed. Perhaps the fitting of an iron band at a very early stage helped to prevent shattering or cracking of the stone as it was handled and picked. Even so, the stone seems too thin where it is standing on the ground to make a millstone of common type.

PEOPLE

A limited amount of information about the millstone industry may be obtained from the manuscript census enumerations of 1841, 51, 61 and 71. [13] In statistical terms they show 6 millstone makers in 1841, 2 in 1851, 3 in 1861, and none in 1871. (N.B. The returns for all likely parishes have been searched.) This would indicate that the peak of the industry had been passed by 1841. Doubtless, competition from French burr stones had by then become very serious.

In personal terms, we see the Parry family involved as millstone makers over three generations. Owen Parry of Tyddyn Tytodion (probably the house shown by that name on the 1st edition one-inch O.S. map about 600 yards south of Pen'rallt) was 50 in 1841, 62 in 1851, [14] and absent (probably dead) in 1861. John Parry of Ty Coch (probably the house of that name about 200 yards further south) was 25 in 1841, absent in 1851, and 49 in 1861. His son, aged 19 in 1861, lived with his father and was also a millstone maker. Thomas Parry, aged 30 in 1841, was probably another son of Owen Parry, but his residence Cae'r gaseg has not yet been located, and he does not appear in later returns. The Parrys all lived in the parish of Llanfairmathafarneithaf and almost certainly worked the Pen'rallt millstone quarry. My local informant, Mr. R.W. Morris, told me that it was a Robert Parry who was working the quarry in 1910. It seems very probable that the Parrys worked this quarry for a century or more.

Henry Williams of Pen'rallt (aged 30 in 1841) was a millstone maker in 1841 and 1851 but not thereafter. He too must have worked at the Pen'rallt quarries.

The only entry which suggests working at the Cors Goch millstone quarry is John Hughes of Pen-y-llyn, aged 53 in 1861; he does not appear in any other return. His house is probably the 'Pen-llyn' near Cors Goch quarry where our informant Mr. R.W. Morris (referred to elsewhere) now lives. In this case the parish is Llanddyfnan.

Operation of the Bwlch Gwyn millstone quarry is indicated by William Thomas of Bwlch Gwyn, aged 50, in the 1841 return for Llanddyfnan parish and by William Lewis of Bryn-y-felin, aged 25, in the 1841 return for Llanfairmathafarneithaf parish. Lewis's residence is about a quarter of a mile north-east of Bwlch Gwyn, so it is reasonable to suppose he worked there. There are no entries of millstone makers in the vicinity of Bwlch Gwyn in subsequent returns, so it is possible that this was the first of the three quarries to be abandoned.

Obviously these small numbers of millstone makers must represent only the masters or foremen. In most of the parishes, the enumerations show large numbers of quarrymen; the majority are entered as slate quarrymen, and were no doubt workers at the Caernarvonshire slate quarries who were spending the week-end at home in Anglesey (N.B. the censuses were taken on a Sunday). But of those not shown as specifically concerned with slate, some might well have been workers at the millstone quarries. It is just possible that a study of the church and chapel registers would throw some light on this matter, but my experience in trying this source in Monmouthshire suggests it would not be worth the effort.

The working of the millstone quarries in Anglesey in the later part of the 19th century was probably, and in the early 20th century was certainly, on an intermittent basis. Mr. Morris thinks that only about two stones a year were produced at the Cors Goch quarry in the period just before 1910.

DISCUSSION AND CONCLUSIONS

The main features of millstone making that have been observed at the Anglesey quarries are

1. The millstone was sometimes, and possibly even usually, cut into shape before being detached from the parent rock.
2. The millstone was completed (except for the cutting of furrows - a task presumably left to the millwright or miller) at the quarry.
3. Iron bands were fitted to the millstone at the quarry, and most, if not all, millstones had such bands.
4. The stones were cut to a variety of dimensions.
5. There is no indication of the use of cranes at the quarries and the stones must have been lifted by manpower (the typical weight was 15 cwt or 0.75 ton).



Fig.3. Sketch made from old photograph of millstone quarry in Anglesey

Roger Tucker

6. Transport from the quarry was by horse-drawn frame wagon with the millstone carried upright on a pole through its eye.
7. A single stone building was provided at each quarry and used as a smithy.

It is useful to try to compare these features with what is known of the practice at other millstone quarries. Unfortunately little has been recorded of such practice.

There are records of feature (1) at Barnacarry in Argyllshire, Scotland [15] and Craigmaddie Muir in Stirlingshire, Scotland.[16] Against this is the fact that I have observed no sign of it at Penallt (Monmouthshire) or in the Peak District. It was, however, a common practice in the German millstone quarries and mines near Cologne,[17] though not in those in Thuringia.[18]

Feature (2) seems to have been universal; I know of no case where pieces of rock were transported to be made into millstones elsewhere. (This applies only to monolithic millstones, of course; French burr millstones were made in factories from pieces imported in the rough from France.)

Feature (3) is probably a variable practice. The fitting of iron bands to prevent shattering is obviously sensible, but I have come across no case of it with Penallt millstones, although quite common with Peak stones. At Trefin Mill in Pembrokeshire the runner stone had an iron band, but the bedstone did not; there is some logic in this, as only the runner is subject to centrifugal forces and other forces due to motion; both stones were of conglomerate, but the geographical origin was not known. In quarries in Thuringia in Germany, where the stone was a form of quartz porphyry, iron bands were fitted.[19] It must be remembered that many millstones (i.e. among those not intended for corn mills) were to be used as edge-runners, and for these iron bands would be unsuitable; either bare stone or complete iron casings would be used. For example, a large proportion of Penallt millstones were used in cyder mills, and for crushing apples the bare stones were invariably used.

Feature (4) is normal, and is found at most millstone quarries.

For feature (5), I have no data for other quarries.

For feature (6), practice must have been very variable. At Penallt there is ample evidence that stones were rolled down narrow gully paths to the riverside, whence transport was usually by barge. Some transport by cart is recorded, but no information on the type of vehicle is available. Evidence is rather vague for the Peak District according to Radley.[20] Definite evidence of the use of a frame wagon rather like those used in Anglesey is available for the German quarries, photographs showing them clearly, but with the millstones laid flat [21] - not carried upright as was reputedly the case in Anglesey.

For feature (7), I have no evidence at other quarries. At some of the large ones (e.g. in the Peak District) one would also expect covered workshops to be provided for the finishing of the stones; this was certainly done in Germany.[22] (The provision of a smithy and a dressing workshop was, of course, normal practice in even quite small slate quarries.)

There is also a negative side to the conclusions; no evidence was found in Anglesey of the practice reported from both Penallt and the Peak District of dressing the face of the stone with cross grooves, the bottom of the grooves marking the level to which the rest of the face must be reduced.[23] My informant Mr.R.W.Morris (previously quoted) was asked specifically about this, and said he had never seen it done.

ACKNOWLEDGEMENTS

Thanks are due primarily to Mr.R.W.Morris who gave me such useful information from personal recollection. The unfailing courtesy of the many people questioned is worthy of record. The staff at the County Library at Llangefni were very courteous and helpful. I am particularly indebted to Mrs.V.Bradford of the Anglesey Archives Office for help during my visit, and for undertaking searches for me subsequently. As usual, my wife Mary managed to discover evidence that I would probably have overlooked. I am grateful to my son Roger for making the sketch in Fig.3.

REFERENCES

1. D.G.Tucker, 'Millstones, Quarries, and Millstone Makers', Post-Med.Archaeol., 11 (1977), 1-21 plus Plates I-XIV.
2. D.G.Tucker, 'Millstone Making at Penallt, Mon.', Ind.Archaeol., 8 (1971), 229-239.
3. R.O.Roberts, 'The Mills of Anglesey', Trans.Anglesey Antiq.Soc., (1958), 1-15. (This appears to be the only information on millstones in the whole series of annual volumes of Trans., which have been published since 1920.)
4. A.Eames, 'Ships and Seamen of Anglesey', Llangefni (1973), 99-101, quoting Lewis Morris, Plans of Harbours, Bays and Roads in St.George's and Bristol Channels (1748). Morris also states that millstones were shipped from Red Wharf, presumably from the quarries described in this article.
5. The Geology of Anglesey, Mem.Geol.Survey GB (1919), 860.
6. M.Richards (ed), An Atlas of Anglesey, Llangefni (1972), 88.
7. S.Hagerty, '600 Years of an Anglesey Mill', Country Life (22 June 1972), 1606-7.
8. See ref.1.
9. See ref.2.
10. Stirlingshire Vol.2, RCAHM Scotland (1963), 443-4.
11. As ref.6, pp.98-99
12. Gwynedd Archives Service: Anglesey Archives ref.WSH/3/66.
13. Microfilm copies are held in the Anglesey Archives Office in Llangefni.
14. Inconsistencies over age (and other matters) in census enumerations are discussed fully in R.M. and G.A.Benwell, 'Interpreting the Census Returns for Rural Anglesey and Llyn', Trans.Anglesey Antiq.Soc. (1973), 111-136.
15. Argyll Vol.2, Lorn, RCAHM Scotland (1975), 277.
16. L.Alcock, 'The Auld Wives' Lifts', Antiquity, 51 (1977), 117-123, espec.p.118.
17. J.K.Major, personal communication.
18. H.Gleisberg, 'Millstone Quarries', Trans.4th Symp., The Int.Molin.Soc., (1977), 177-180.
19. Ibid.
20. J.Radley, 'Peak Millstones and Hallamshire Grindstones', Trans.Newcomen Soc., 36 (1963-4), 165-173.
21. Gleisberg, loc.cit.
22. Ibid.
23. See ref.1, espec. Plates IX and X therein.