

Millstones and Their Varied Usage

BY PAUL B. FLORY

The average person when thinking of "Millstones" associates their use with the grinding of corn, wheat and other farm cereals. In this conclusion they are probably eighty to ninety per cent correct.

One of the objects of this paper is to acquaint the average layman with the varied uses of stones for purposes other than grinding of grain.

As such a large percentage of stones was used in the milling of grain, it is fitting and proper that we deal first with that phase of milling. Furthermore, as the writer was born and reared at a grist and flour mill and is presently engaged in the industry of wheat flour milling, he is better qualified to write on that subject than the others.

We will, however, endeavor to pass on what we have been able to learn about the other types of "stone" mills. By the way, we find in consulting several dictionaries a "mill" defined as "a machine for grinding and reducing a substance to smaller particles."

In a paper read before this society in May of this year we described the methods of cutting millstones from rocks and bowlders in the Cocalico area of Lancaster County. These stones, known as Cocalico Millstones enjoyed wide distribution in Pennsylvania, and nearby states, and a number were exported to Canada.

These Cocalico millstones, because of their pebbly texture, were used mainly for grinding grain for feed purposes, although by careful dressing they could be used in the grinding of wheat for flour. However, for this latter purpose the French buhrs were preferred.

For the different uses, the stones, whether Cocalico or French buhrs, had to be "dressed" accordingly.

It is interesting to note that the terminology used in the layout and "dressing" of these stones was that used in common parlance of the farmers and housewives.

The two major divisions of stones were called "furrows" and "lands" which obviously were farming terms, then the terms "bosom," "waist" and "skirt" were synonymous with women's dress. Thus the expression, "Dressing the millstones," originated.

The former divisions applied to:

1. The "Furrows," the grooves or channels starting at the eye or center of the stone and terminating at the "skirt" or rim.
2. The "Lands" constituted the areas of stone between the "furrows."

The "housewife" terms:

1. "Bosom," roughly that one-third of the diameter of the stone, nearest the "eye."
2. "Waist," the middle third of the diameter of the stone.
3. "Skirt," the outer third or rim of the stone.

The function of the "furrows" was threefold:

1. Affording an inlet between the stones, and distributing and forwarding the material over the face of the stone and facilitating discharge.
2. Preliminary cutting or grinding.
3. Ventilation.

The centrifugal motion of the runner stone tended of itself to draw in air at the eye along with the wheat or other stock, and to forward the stock to skirt and ventilate as well.

If the furrows were allowed to become shallow by reason of the wearing away of the "land" surfaces, the tendency was to grind "hot" and glaze the grinding surfaces, thus greatly retarding the efficiency of the stones and causing undue loss by evaporation. The depth of the "furrows" at the "bosom" was naturally deepest, tapering to the "waist," and in case of wheat grinding, to a "feather edge" at the outside of the "skirt."

The function of the "lands," or flat surfaces of the stones, was the actual grinding into finer meal the materials which the furrows cut and delivered to them. In all stones the final and

finest grinding was done on the "skirt" area of the stones. As noted in the foregoing descriptions, the "furrows" and "lands" did the actual grinding; the other terms used and described above designate the different areas of the "furrows" and "lands."

It would be nigh impossible to describe the hundreds, if not thousands, of types of "dressings" used on Millstones. These dressings varied from the "sickle" dressings to all the angles and subdivisions of angles possible to be drawn on a four-foot circle.

Naturally, some dressings were vastly superior to others; in some instances by changing the cutting or "dressing" on a pair



Dressing the Millstone, by the late Benjamin Eby Flory

of stones the grinding capacity could be increased as much as fifty to one hundred per cent.

It can readily be surmised then that there may have existed many hotly contested theories as to the best methods of stone dressing.

From all available sources of information it seems that despite the various "drafts" and angles of the "furrows," the concensus of opinion agreed that one "furrow" to each inch of diameter

of the stone was correct. Thus a thirty-six-inch stone should have thirty-six furrows; a forty-eight-inch stone, forty-eight furrows, etc., etc.

The actual cutting or "dressing" was done with thin sharp double-edged steel chisels for cutting out the "furrows," and double faced two-pound "facing hammers" to remove the glaze from the "furrows" and "lands". These facing hammers, or "bush hammers" as they were sometimes called, had from twenty-four to thirty-six teeth at each end. The two earliest types of millstones used in Lancaster County were described in detail in a paper read before this Society on May 5, 1951, so we will make no further description of either the Indian mortars or the Spanish-type millstones which were used on the earliest Lancaster County farms, but will attempt to describe some of the other types of stone mills.

Phosphate Rock Grinders

These were stones of special construction, the area around the "eye" being about two feet in diameter, of one-piece coarse sandstone or Cocalico construction, while the grinding surface from the "waist" to the "skirt" was of a special corundum exported from the Grecian Archipelago.

The center area, or "bosom," had several deep "furrows" to do the initial breaking and feed it to the corundum section where the natural abrasive action did a very effective job of reducing the phosphate rock to the fineness necessary to be run through a grain drill with a fertilizer attachment, which was the usual method of applying phosphate fertilizer to the soil.

The fertilizer grinders at the Martic Forge Collection are forty-two inches in diameter and about seven inches thick. They were acquired from A. B. Hess, then proprietor of the Lancaster Chemical Company on the Manheim Pike, North Lancaster.

These stones were the first (other than conventional grain buhrs) to be acquired for the Martic Forge Collection. It was the acquisition of these stones that "sparked" the writer's interest in a Millstone Collection, with special interest in stones used for diverse purposes.

Stones have long since been supplanted by steel crushers and grinders in the fertilizer industry.

Flint Grinders

These were used to grind flint stone which first went through a burning and transforming process in kilns, similar to the type used in burning limestone to convert it to lime.

From the mouth of the kiln the burned flint was shoveled directly into a Spanish-type mill. This consisted of a large circular granite basin stone, about six feet in diameter, in which two granite stones, about thirty-six inches in diameter and twenty-inches thick, revolved in an upright position, i.e., on their edges; these were known as "chaser stones" and by the colored help as "Buck and Berry"; "Buck" perpetually chasing "Berry" but never able to catch her because they were securely attached at opposite ends of a short horizontal shaft driven from the centre of the basin stone.

After an intricate refining process the finished product was shipped to Philadelphia or Baltimore, where it was used in the making of early American China.

The granite flint mill at the Martic Forge Collection was obtained from what had been the Whitford Flint Mill on Broad Creek, in Harford County, Maryland. The site of the flint mill is now inundated by waters of the Conowingo dam.

As far as known this type of mill is no longer used in the United States today for this purpose.

Oat Hullers

There were undoubtedly many sizes and types of stones used as oat hullers in the early days of the colonies and directly after the Revolution as "oatmeal" was one of the main cereal foods to be manufactured.

Not being familiar with the various types, I must confine myself to a description of the only pair seen and now a part of the Millstone Collection at Martic Forge.

This pair of stones, acquired from the W. F. Russel Estate, near Pomeroy, Sadsbury Township, Chester County, Pa., were imported from England about 1740. They are of a very hard close-grained sandstone, forty-eight inches in diameter.

Removing the hull from the oats required a very simple "dressing" on the stones. In fact, the "bed" stone had no furrows at all—simply a level surface, roughened with a single-pointed pick; the runner stone had but four very shallow furrows run from

the eye to edge of "skirt" to propel or roll the oats over the surface of the stones thereby loosening and removing the hull from the kernel of the oat berry and after going through the stones the product was run over a fan and separator to remove the hull or chaff from the "groats" as the finished product was called.



English Oat Hullers, Imported from England about 1740; used to make oatmeal for Washington's Army at Valley Forge, 1777-1778. From the W. F. Russell Estate, Chester County, Pa.

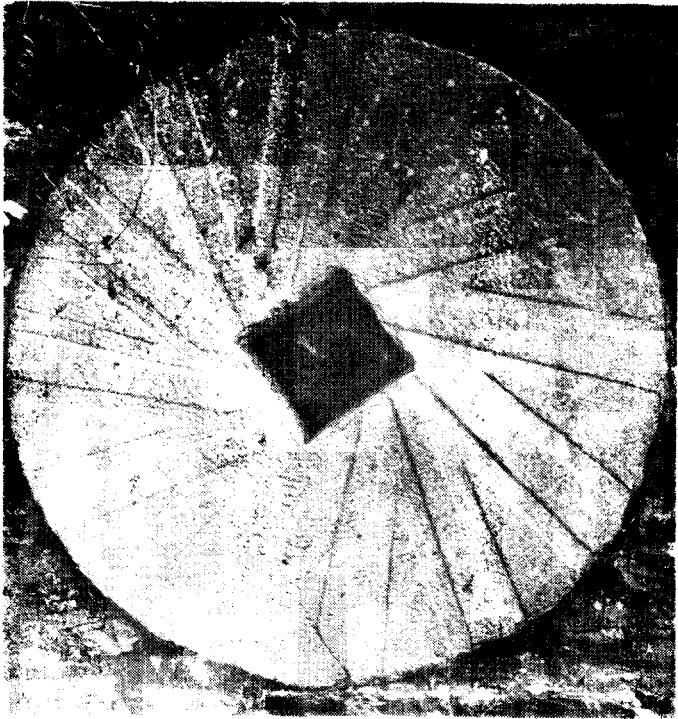
History records that this mill ground the grain and feed for the men and horses of Washington's Army at Valley Forge in the historic winter of 1777-1778.

Cork Stones

The stones used to grind cork are known as Derby Peak Stones; they are exported from Grindleford, Derbyshire, Scotland, and are of close-grained sandstone texture.

The furrows are cut deep at the bosom, tapering to about one-eighth inch at the skirt. The eye of the runner stone is

necessarily large so as to permit the broken pieces of cork to enter between the stones where it is granulated or pulverized. There has not been, as yet, any method discovered to granulate and pulverize cork which is superior or equal to the stone method. Therefore, stones are used almost exclusively for this purpose according to the latest information available to the writer.



A Typical Cocalico Bed Stone, dressed for grinding cob corn.

The above description of cork stones was procured from the only source known to the writer. These stones were obtained through the courtesy of the Armstrong Cork Company of Lancaster, Pa., for the Martie Forge Collection.

Buckwheat Stones

Because of the unusual construction and composition of the buckwheat grains, it required very light stones to do the work of

grinding the grain. In fact, it had more of a "hulling" process. The stones were usually about three feet in diameter and about five or six inches thick.

The "dressing" was entirely different from the conventional wheat or corn stones. A very unique dressing is found on a pair of stones obtained from the former McCrabb Mill on Fishing Creek, Drumore Township (now at the Martic Forge Collection). The best way to describe this dressing is that it is boxlike or in squares. Another pair of buckwheat stones of flint composition, found at Frey's Mill, near Alinda, Spring Township, Perry County, have a very beautiful scroll-like dressing.

Buckwheat stones were quite widely used in the early days of Lancaster County, especially in the southern section. Their use has long since become extinct.

Clover Seed Hullers

These consisted of two stones, one convex and the other concave, because of the light weight of the material to be processed. These stones were of the under-runner type, i.e., the lower stone revolved while the upper stone remained stationary. To further facilitate the passage of the clover between the stones, the runner stone had coarse spirals from the "eye" to the "waist"; at the "skirt" of the stone were many corrugations which rolled or hulled the tiny seeds from the clover heads. The eye of the upper stone was necessarily much larger than a grain stone, usually from fifteen to eighteen inches in diameter.

The author was never able to locate any stone clover seed hullers in Lancaster County. The pair in the Martic Forge Collection was located near Newport, in Perry County, Pa., from the estate of Jim Crow, who had collected two pairs. The other pair was obtained by the Landis Valley Museum. Both pairs are of red sandstone and present a very pleasing appearance. They are forty-five inches in diameter.

Steel separators have entirely supplanted the stone clover seed hullers.

Tannery Stones

Tannery Stones were in the group of single stones, i.e., they worked "solo."

Most persons, when seeing a tannery stone, are apt to think it a big stone cog wheel for that is what it resembles; having large cog-like corrugations cut on the outside circumference.

When in use these heavy stones were run in an upright position over the dry tan bark, which was spread on a corduroy-like flooring where the bark was broken into fine pieces for use in the tanning vats.

Tannery stones varied in size from three to five feet in diameter, and from one foot to eighteen inches in thickness.

The use of tannery stones became extinct over one hundred years ago.

The tannery stone at the Martic Forge Collection was found near a spring, lying in a clearing near Schoeneck. The oldest resident in the vicinity said it had been lying there all of his lifetime. But its history is unknown.

Distillery and Hemp Stones

In early Lancaster County history distilleries were very numerous. Before the start of the dairy industry and the fattening of steers on county farms, many farmers utilized their corn crop by setting up a still and converting their corn into whiskey. To prepare the corn for fermenting it had to be ground or crushed.

Distillery stones as used on farms were cone-shaped, usually about thirty inches high and thirty inches at the base of the stone, tapering to about twelve inches at the top.

A hole about six inches in diameter was cut in the center of the stone, from base to top, for insertion of an oak shaft, which extended through the stone and was mortised to an upright shaft, which could revolve in a socket set in the center of a stone circle with a coping around the edges. This stone base was usually masoned; although there may have been a few single stone basins, i.e., a basin cut from a single rock.

The distillery stone was run on its side with the base on outside of the basin and was revolved by horses, mules or oxen.

Hemp stones were very similar to distillery stones and were operated on the same principle. However, instead of having a stone bed, a flooring of oak planking was used as the crushing

floor. The object was to break the reed or stalk of the hemp plant, so that the coarse linen-like fiber could be "shaken" or separated from the reed or stalk.

One of the hemp stones in the Martie Forge Collection was found at the location of what had been Eckman's Mill, on Mill Creek, near Lyndon, a few miles south of Lancaster. One of the distillery stones in the collection was obtained at the original Bausman farm, west of Millersville, in Manor Township. It is initialed, presumably by the maker, and bears date of 1752.



A Set of Dye Stones, used to grind native herbs and berries for dye.
From Juniata County, Pa.

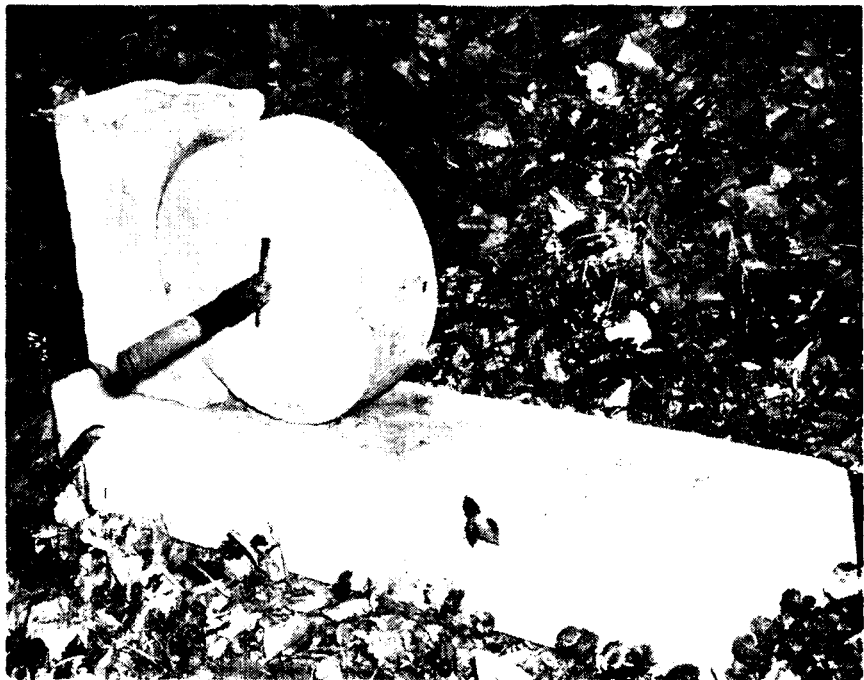
Dye Stones

A set of dye stones in good preservation presents a very artistic and beautiful appearance, because of the pitcher-like shape of the base stone.

The runner stone was usually hand-operated which would indicate that the stones are not very large. The runner stones

ranged from twelve inches to eighteen inches in diameter, and from four to six inches in thickness.

These stones were usually smooth-faced and depended on the revolving action and weight of the runner stone to crush the plants or berries from which the dye was to be extracted. The "juice" or dye ran out the protruding spout of the basin-like base stone into crocks or other vessels. The sides of the basin stone were as high as the runner stone.



A Set of Stones used to wet-grind clay for the potter's use; over 150 years old. (Large stone, on which they are placed, is in no way associated with the grinders.)

Although there may have been some dye stones used in conjunction with the early woolen mills in Lancaster County the writer was never able to locate any, and those seen in museums were from other counties. The one at the Martic Forge Collection was found at the site of a former woolen mill in Juniata County, Pa.

In addition to the stones already described, there were "pony stones" used as secondary grinders in some flour mills; cider stones, used in the process of cider making. Pottery stones, used to wet grind clay, for potters' use; large six- to seven-foot stones, ten to twelve inches thick, used in foundries to polish castings.

The stones listed in the preceding paragraph are represented at the Martie Forge Collection.

Some stones for other purposes, not as yet represented but which we hope to acquire, are cocoa stones used still for grinding cocoa beans; gypsum stones, used to grind gypsum or "land lime" (use now extinct); large oil stones, formerly used to crush the seed of flax in the process of making linseed oil; graphite grinders, formerly used to grind graphite rock, paint pigment, etc. Also stones for grinding various spices.

We have enjoyed collecting from Lancaster and nearby counties the various stones described on the preceding pages, but we have kept the best until the last.

The "Stone" of which I shall now write was "found" by the writer before he had conceived the idea of collecting "millstones." This "Stone" or "Rock" is referred to many, many times in the "Book of Books," and is so wonderful and beautiful that the vocabulary of man cannot adequately describe all the attributes. The writer discovered this "Stone" as the "Rock of his Salvation," made it his "sure foundation," and has established it as the "Chief Corner Stone" of his life. Best of all, he has found it to be a "Living Stone" which brings Peace, Joy and Happiness into his life every day, and shall continue to do so throughout all eternity.

This "Stone" is not to be rejected nor regarded lightly by any man. The Word of God speaks of the "grinding" power of this "Stone" in no uncertain fashion.

Referring to those who reject this "Stone" it says, "On whomsoever it shall fall it will 'grind' him to powder."

Yes! We refer to the "Wonderful," "Beautiful" Son of God, of whom it is written, "Wherefore God also hath highly exalted Him and given Him a name which is above every name, that at the name of Jesus every knee should bow, and that every tongue should confess that Jesus Christ is Lord, to the glory of God the Father."