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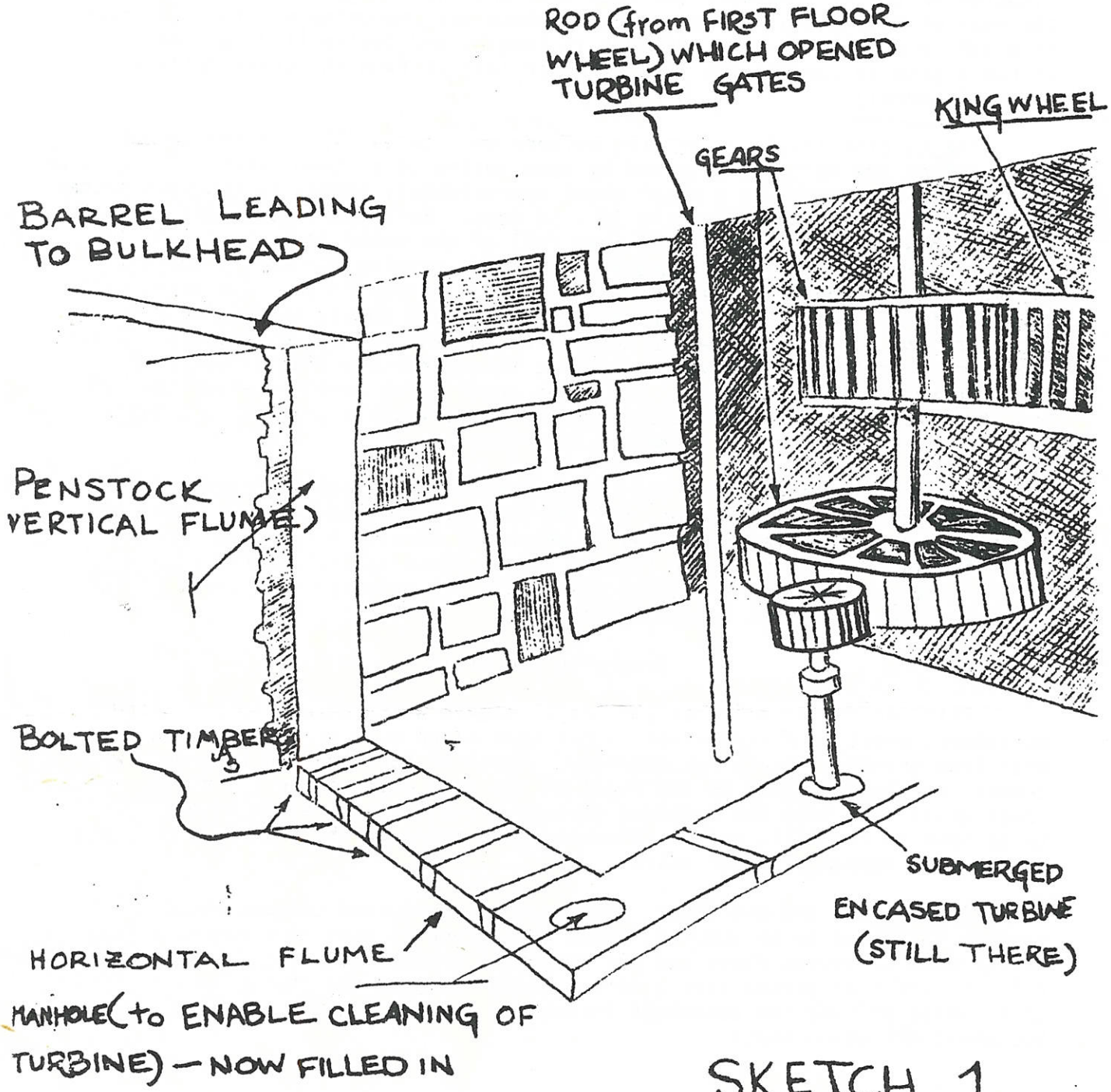
THE OLD MILL (1847 - 1920)

Upper Robert H. Treman State Park, Enfield, NY

Built in 1847, this mill, which replaced an "overshot" mill, operated through use of turbine. The turbine (or water wheel) was powered by water drawn from the mill stream and the movement of the turbine was transmitted through a series of gears to the king-wheel (see sketch #1), thus providing power for the entire mill.



SKETCH 1

Buried at the rear of the mill approximately three (3) feet under the surface, the turbine is an extension of the three (3) inch iron shaft located behind the king-wheel, heading out from this turbine in an L shape is the old wooden flume which was joined by a similar flume (the Penstock) which came down the side of the rock wall. This flume, which was a completely enclosed rectangular board box, was made watertight by being bound together by bolted timbers.

A long wooden "barrel" led from the top of the penstock to a bulkhead situated on the hill between the rock wall and the bridge (over the creek at the rear of this mill). This wooden bulkhead was approximately four (4) feet in width, eight (8) to ten (10) feet in length, and twelve (12) feet deep. It had a gate to control the flow of water into it from the creek falls via a race (channel).

The turbine itself is encased between two, three (3) foot square metal sheets which are vertically joined by some twelve to sixteen gates. The turbine within this encasement is a metal wheel approximately twelve to fourteen inches in diameter and has approximately 12 - 16 cups. Sufficient power was generated to turn this wheel by the 35 - 40 feet fall of the water from the top of the bulkhead through the flume to the wheel. After turning the wheel, the water flowed on out through another raceway to return to the creek. The small (1") iron rod to the left of the turbine shaft went to a wheel, behind the mill stones on the first floor, which controlled the turbine casement gates. These gates could be opened to a varying degree to control the flow of water and thus the speed of the turbine. The water power which turned the turbine and its shaft was then transferred through the three visible gears to the large (approximately ten foot in diameter) king-wheel.

Thus power was provided for the entire milling process including (1) the movement of the mill stones, (2) the operation of the sheller, and (3) operation of the "elevators" (many of which are missing now) which moved the grain from a lower to a higher floor. All of these apparatus were connected to the power by engaging secondary gears into the primary power shaft which runs from the king-wheel to the third floor.

Preparing the Grain

This particular mill has three mill stones which were used for grinding buckwheat, wheat, and stock-feel (e.g.: corn mixed with oats of the bran left over from grinding wheat) respectively. Wheat or buckwheat to be ground was dumped into hoppers just to the right of the main entrance to the mill. This rough grain went into the basement through a small chute, similar to many still to be seen in the Mill, and was elevated from there to the third floor through chutes with cuppem conveyor belts.

Arriving on the top floor, buckwheat was conducted through chutes to a small millstone to be scoured. From this stone it went to a hopper and was chuted down to second floor and put through a breaker (two rigid washing machine-li rollers) and then passed over a screen which conveyed the shucks to a disposal chute while sifting the buckwheat through to a chute leading to the first floor buckwheat millstone hopper.

Wheat was secured by a separate scouring machine on third floor and then chuted direct to the wheat millstone hopper on the first floor.

Grinding feed for stock involved following a somewhat different procedure. Corn was manually shucked on the second floor and then fed into the sheller (on right front of the mill stone platform). Power to operate this sheller came from the king-wheel and was transferred from the drum-wheel, on the first floor primary shaft, by a belt to the sheller shaft. The belt was tense or slackened by means of a winch.

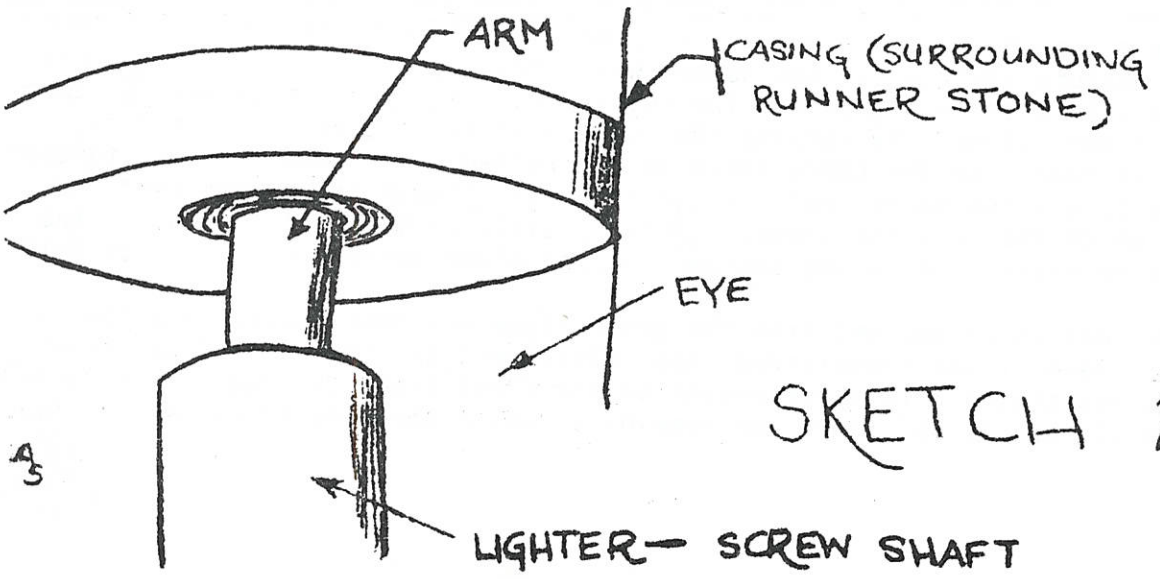
From the sheller, the corn was chuted to the mixer (located in the basement) where it was mixed with oats and/or bran, etc. The mixture was then elevated to the second floor where the cobs were separated out by filtering the grain through a screen barrel, which retained the cobs. The grain was then chuted to the hopper above the feed stone on the first floor.

The Mill Stones

Each mill stone is housed in a circular wooden box called the Curb and is fed from the top through an inverted pyramid-like structure called the Hopper. Each mill stone itself is actually composed of two stones, the Red Stone and the Runner Stone. The latter is the moving grind stone and is held in true balance by means of an arm (in the "eye" of the runner stone) which is notched into the lighter screw (see sketch #2) shaft and thus anchored at true balance.

Each mill stone is geared into the king-wheel by manually lowering a suspended gear in the basement to the level of the king-wheel. Lowering the gear to this level meshed it with the king-wheel; and then thus engaged this gear also engages the shaft of each mill stone's Lighter-Screw (the gear encircles the Lighter-Screw, which at the level of the king-wheel, juts out to grip the gear). Each lighter-screw is in turn attached to the Runner Stone (see sketch #2) and thus power is transferred from the king-wheel through the aforementioned gear to the mill stone.

Occasionally both stones had to be "dressed" and this was done primarily by use of the Diamond Point "plane" which is presently kept on the mill stone platform. The stones were grooved all the way from the outer edge and were beveled inward toward the center to provide a greater distance between the two stones at the point where the coarse grain from the hopper was admitted.



SKETCH 2

To get at the stones for the purpose of dressing, it was necessary to remove the Curb in which the stones were housed and then to remove the Runner Stone. The portable wooden crane (see sketch #3, pg. 5) was used to do this latter job. A three foot screw was placed on the crane arm and two iron band bales were attached to this screw by means of a bolt through the bales and the lower end of the screw. These bales were then bolted one into each side of the runner Stone. Then the screw was raised by means of a lever which twisted the screw up through the housing which supported it on the Crane Arm. When the Runner Stone was sufficiently raised, the Crane was pushed to the side and the stone flipped over and dropped off by removing the bolts which entered the runner stone from the bales.

Grinding the Grain

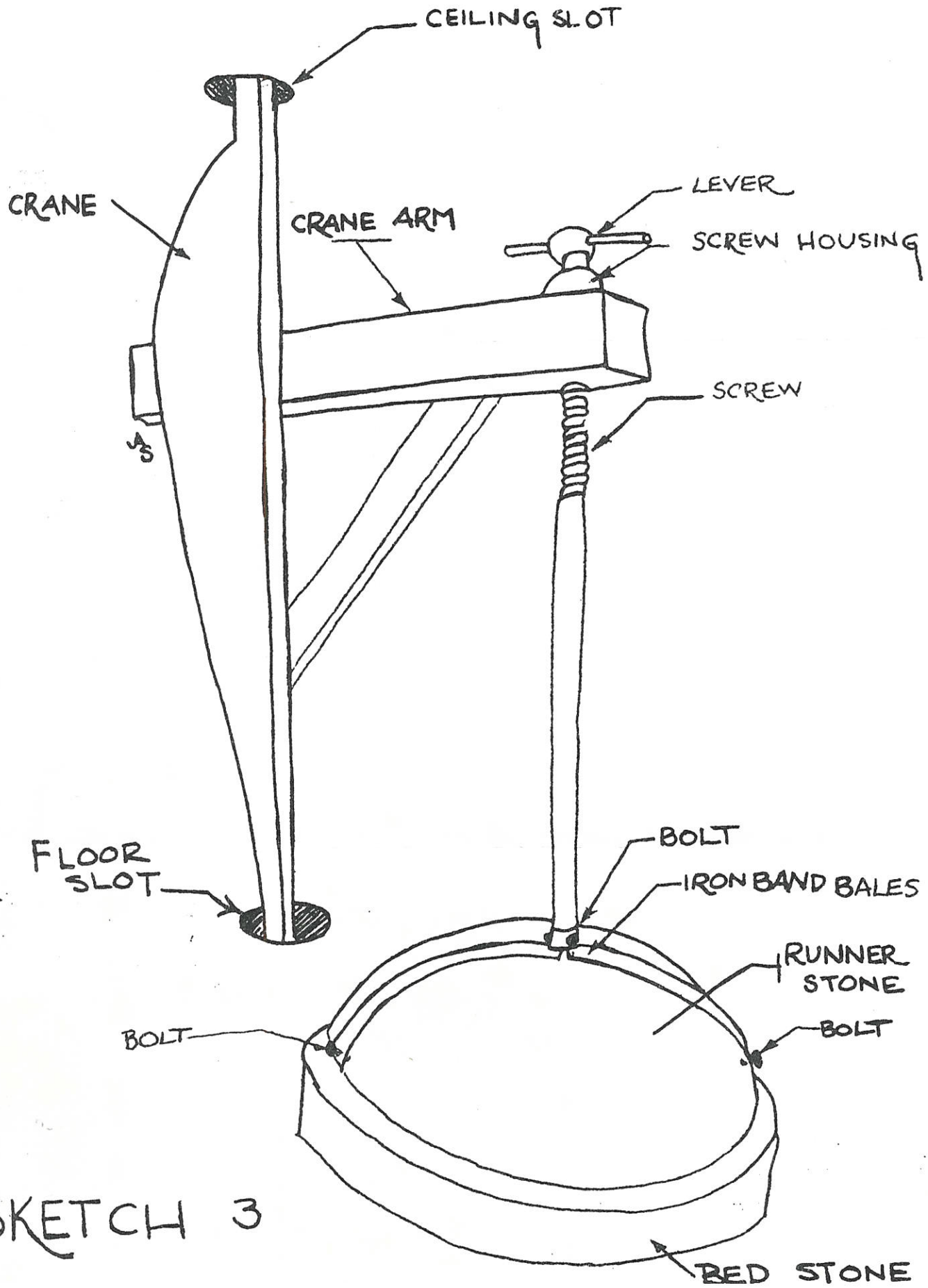
Having prepared the grain and chuted it to the hopper above the appropriate mill stone, it remains to grind and grade it. The fineness, courseness to which the grain was ground was determined by the distance between the runner and bed stones. The desired distance was established by means of the small wheel next to each millstone. This wheel raised and lowered the Lighter-Screw and thus likewise affected the runner stone as the two are connected.

In grinding buckwheat and wheat, grain flowed from the hopper directly into the eye of the runner stone to the bed stone level. This flow can be regulated by means of the T-shaped wooden bar on the hopper frame. Screws in the end of this bar raised and lowered the hopper feed "barrel" above the bed stone and the amount of this opening determined the flow.

Once grain reached the bes stone level, it commenced to be ground as the grain was ground finer and finer it gravitated toward the edge of the stone through the grooves provided. Emerging from the stones, the grain (now flour) was chuted to the basement and then elevated (through cupped-chutes) to the third floor. From here it was immediately chuted down into Bolts on the second floor. These bolts were wire mesh containers (screen barrels) similar to the ones now located on the second floor. These containers were composed of sections of different courseness and thus the flour brought up from the stones was sifted through into different chutes depending on the fineness of the flour. These chutes returned the different grades of flour (and the coarse, by-product bran) to the first floor for bagging as the finished product.

The procedure followed was again, somewhat different for the stock feed. The feed mixture admitted to the hopper went from there into a shaker instead of directly into the mill stone. The shaker rests against a cage which turned with the runner stone. By varying the contact of the shaker with the cage, the flow of feed into the stone could be controlled. The feed flow was further regulated by a slide board (pull out or push in) through the hopper over the "barrel" which fed into the shaker. These additional means of regulating the feed were necessary due to the coarser not so clean texture of the stock feed.

The feed which emerged from the grind stone was then chuted into the basement. Here it was transferred into "elevators" to the second floor from whence it was chuted into the conveyor on the first floor ceiling. This conveyor had seven (7) spouts (of which two remain) at which the feed sacks were filled.


CEILING SLOT
CRANE
CRANE ARM
LEVER
SCREW HOUSING
SCREW
JS
FLOOR SLOT
BOLT
IRON BAND BALES
RUNNER STONE
BOLT
BOLT
BED STONE

SKETCH 3