OLIVE MILLS IN KONAVLE

The mill consists of one or two millstones, a stone basin – *koruna* – in the centre of which is an iron plate on which a square oak beam rotates vertically. The upper part of the oak beam, often pointed, is inserted into a part of oak or mulberry wood attached to the house beam. Through the lower part of the oak beam and the millstones runs a long pine beam, to which an iron bracket is attached that passes through the upper part of the oak beam and additionally secures the millstones. At the end of the pine beam is an iron handle to which a horse or ox is harnessed. In the example of the mill from the Rector's Palace in Pridvorje, around the central stone basin, with the millstones, there is another circular basin, which is presumed to have been used for draining oil from the stone basin.

A water-powered mill and a mill driven by hand or animals had a central basin with one or two millstones mounted on a vertical oak beam. Instead of the long pine beam traditionally used for driving the mill, the upper part of the vertical beam held a large horizontal oak wheel with 95 notched wooden teeth made from hard shrub wood. These teeth engaged with a cylindrical iron cage mounted on the top of a vertical iron rod, which was fixed at the top into a beam and passed through a hole in the stone floor into a paddle wheel below the mill floor. This paddle wheel, fitted with 12 to 15 blades, was secured to the vertical rod by a long iron shaft and three iron rings. When water from the millrace turned the paddle wheel, the vertical rod rotated, which then turned the oak wheel and, in turn, the millstones. By the mid-19th century, three olive mills had been built along the Ljuta River in Konavle.

The press could stand freely on wooden supports in an open space, in which case it was known as an open-air mill, or it could be built into the wall of a house, then referred to as a stone mill. While presses varied slightly in details and names, their function was the same. The main parts were made of wood, iron, or brass, and included a large winding screw, a thick threaded rod at the top of which the screw turned, and a horizontal beam that pressed down on wooden supports, a round plate, or in another version, on the upper plate. This then pressed onto layers of olive mash placed on the lower plate. The press was tightened using a wooden lever inserted into a vertical post with a hollow handle, beneath which was a small wedge. The lever was usually turned by three workers, alternating sides, which lowered the screw and caused the beam to press down on the olive mash. Oil would then drain into a collection basin, while water flowed out through a specially sloped outlet.

OLIVE MILLS IN ŽUPA DUBROVAČKA

In Župa Dubrovačka, olive mills were either located in separate, larger rooms specifically built for milling, or more commonly, in auxiliary farm spaces such as storerooms or sheds. Inside the storeroom, there was also an oven used to heat water in a kettle, which was needed during the pressing of olives with a traditional screw press. A drawing of the mill belonging to the Miloslavić family in Buići shows a central stone basin made of shaped stones with slanted sides. A vertical square wooden beam served as the central post, tapering slightly toward the top and ending in a ceiling beam. This post was secured into both the ceiling and the floor using iron fittings. A wooden lever passed through the lower part of the vertical post and the centre of the millstone. It was narrower in the middle and much wider at the end, allowing it to be turned. Alongside the main post, an iron rod ran through the lever, fixed at the top and passing at the bottom next to an iron plate that secured the lever and the millstone. On the opposite side of the millstone, a wooden brace made of smaller beams was attached to keep the millstone stable. At the thick end of the lever, there was a large iron spike used for attaching a horse.

Olives were also ground using water power, as evidenced by the mill of Ivo Duper on the Vrelo River in Mlini. The mill was located in a shed situated between an auxiliary farm building and a residential house. The central stone basin with a millstone was built from dressed stone, and it was connected via a vertical wooden post to a large horizontal wooden ceiling wheel with teeth that engaged with a gear mechanism—a steel cylinder with twelve pegs mounted on a separate iron shaft connected to a paddle wheel in the millrace beneath the mill. The horizontal wheel with teeth, the gear mechanism, and the central beam were all embedded into the mill's support structure. The central beam was mounted at the bottom of the stone basin with a steel pin to allow it to rotate. A horizontal steel rod passed through the lower part of the central beam and the centre of the millstone. This rod was connected on either side by crossbars to another horizontal steel rod that ran through the upper part of the central beam.

The traditional press for olives, as well as for wine, was made of wood. It consisted of two base logs into which two wooden vertical screws were inserted, each with carved threads. Each screw had a nut with three handles, and there were two horizontal beams supporting a floor made of hewn wooden planks with a circular depression and a groove for drainage. Around the edge of the depression, a vertical slatted basket was placed and wrapped tightly with a thick rope. Olive paste was poured into the basket and pressed down with a round wooden plate and two small beams. A crossbeam with two forked ends was placed over the top, which could be lowered by tightening the screw nuts. This beam pressed the plate and the beams to squeeze out the oil. In the mill of the Ivo Duper family, there was a press with iron screws and a winding mechanism that was tightened using a lever. All other parts were identical to those found in traditional wooden presses.

OLIVE MILLS IN DUBROVAČKO PRIMORJE

In Dubrovačko Primorje, olive mills were built as separate structures, either detached from the house, as an extension of it, or underneath it. They typically consisted of the mill itself, a storage area, a screw press, a winding mechanism, and an oven for heating water. The work was done by mill workers—usually three or six men—under the supervision of a foreman. In years of plentiful harvests, milling was done even at night, and dinner would be prepared for the workers. The mill contained a round stone basin, a base, and slanted side slabs, with a vertical wooden beam connected to a millstone. The mill was originally turned by human power, but in the 20 th century, a mule or horse, harnessed to a horizontal wooden arm, would rotate the millstone. Olives were poured into the mill using large round baskets, and later metal buckets that held a standard unit called a *quarter*. Twelve quarters were poured into the mill at once. The oil that collected in the mill was called *first oil.* The crushed olive paste was transferred in wooden containers to the pressing area, where it was packed into filter mats. The storage area was usually a separate, roofed space next to the mill where olives were kept in lime-washed concrete compartments. In mills shared by multiple families, each had its own compartment. Family-only mills might not have had a separate storage area, but only a compartment within the main building. Olives were mostly gathered in small baskets and packed into cloth or coarse wool sacks, transported by mule to the mill, and left to soften and ripen before being milled. After milling, the paste was packed into mats and pressed. Instead of a metal screw press, a wooden press was sometimes used. This consisted of two vertical wooden screws with a horizontal beam between them, and a handle turned by three men. Under the pressing beam were wooden blocks and a round plate, placed on top of sacks filled with olive paste. The metal screw press stood on two or four iron rods. At its top was a thick iron beam through which the screw passed, connecting to the upper part of the pressing mechanism. Two men would lower the press manually to ensure even pressure on the mats. A long wooden lever was inserted into the centre of the mechanism and turned by hand to tighten the press in one direction, then returned to its starting position after each turn. Further tightening was done with another wooden lever, wound with rope or cable, which was wrapped around a vertical winding shaft. This lever was sometimes called a *rudder* and was secured into the press with a wedge. Some presses had a metal sleeve in the centre where the lever was inserted. In models with a built- in mechanism, the lever would return to its starting position after tightening. In others, it had to be manually repositioned. The winding shaft was a vertical beam secured between the ceiling and floor, rotated with small pins and used to tighten the lever. The lower part of the press pressed down on a movable horizontal beam with forked ends. Below this were wooden blocks, and then a round wooden base, under which twelve filter mats were stacked. The first round of pressing was called *the first force.* The second round, called *the second force,* involved unfolding the mats and pouring boiling water over them from a wooden jug. Water was drawn from wells, cisterns, or natural pools and heated in a wall-mounted kettle, usuall located in the corner of the room and fitted with a chimney or vent. In more modern mills, water was piped to a tap above the kettle. The oil, running from the press spout, passed through a filter made of woven plant fibres or metal mesh and collected in a stone or concrete basin, or a wooden container set into the floor beneath the press. While the oil remained on top, the water—called *sediment water*—drained through a pipe into a trench outside the mill. Some mills had two trenches, where remaining oil would settle and be collected for lubricating equipment or making soap, while the dirty water flowed away. In some places, a settling basin was used for this purpose. The oil collected below the press was scooped out with a wooden ladle into 10-litre containers and then poured either into leather skins for transport or into stone or wooden jars for home use. Immediately after pressing olives for others, the mill owner would take a fee—called *a milling charge*—using a special one- to two-litre measuring container.