

savage harvester to an arrow-straight Italian water-carrier. About the middle of October the Indians of northern California beat the acorns from the trees with long poles, and carry them home in deep conical baskets. The squaws remove the hulls by holding an acorn on a stone and giving it a slight tap with a stone pestle. The nuts are then dried and beaten to powder in a hollow of a rock. The flour is soaked a few hours in a large hollow scooped in the sand. The water draining off carries away the bitterness. It is then cooked into a kind of mush in baskets by means of hot stones, or baked into bread in an underground oven. (Cont. N. A. Ethnol. III, 421.) If the harvest is of seeds rather than of acorns, they must be winnowed. This is done in a shallow bowl tray of the closest twined basketry, which the good woman has not failed to decorate with geometric patterns, following that incomparable artistic instinct which is the heritage of all the people who breathe the air from the Pacific Ocean. Further inland among the Ute tribes a hot stone is trundled around in this tray to partially roast the seed as well as to consume the chaff.

If the harvest of seeds or acorns is not immediately needed, it is stored in close granaries or in open-work baskets. (Plate VII, Figs. 53 and 54.)

The miller's apparatus is the most intricate in the evolutionary series short of the quern, and consists of five parts, the mat or tray at the bottom (Plate VII, 52*a*), the mortar-stone (52*b*), the hopper (52*c*) the pestle (Fig. 56 and 52*d*), and the grass-root broom for sweeping up the grist (52*d*). This affair is quite widespread, including the territory of two classes of basket-weavers, those that twine and those that coil their work. (See paper on basketry, Sm. Rep. 1884, II.)

The basket-tray plays the part of the cloth under the hand-mill to receive the grist when the hopper and stone are not glued together.

The bowl-shaped basket hoppers vary slightly in size and much in adornment. But Ray's specimen is 10 inches wide at the top and has an opening  $3\frac{1}{2}$  inches in the bottom. (Plate VII, Fig. 55, also Fig. 52*c*.) The weaving of this specimen is very intricate. The warp is of osier radiated. Commencing at the lower edge the weft proceeds as follows: Two rows of plain twined osier; four rows of three-ply twine, commencing with two strands of osier and one of brown bast, and ending with three of brown. The greater part of the body is made of brown and black bast twined in two-ply, but the white color is produced by overlaying either of these two colors with a strip of grass leaf which the weaver knows how to reveal or conceal on the outer portion. The geometric figures are in black, brown, and grass color. The margin is very curiously wrought, as follows: The ends of the warp osiers are bent downward and plaited into an eight-ply braid and the ends cut off on the inside. As the braid passes each warp osier it is plaited in and one cut off. This braid forms a margin at an angle of 45 degrees. Under the cut ends, a hoop of willow is bound. This hopper is used as follows: A large shallow basket is

placed on the ground, and a flat stone placed on the basket. The hopper rests on the stone to hold acorns, manzanita, berries, etc., in place. The margin is held in the left hand while with the right the pestle is brought to bear upon the acorns or grain. In more southern portions of California the basket is glued to the stone with pitch. A full outfit consists of one hopper, one stone pestle, one large shallow basket, and a smooth flat stone from 12 to 18 inches in diameter. A larger hopper, more plainly ornamented, measures 18 inches in diameter at top, with an opening at the bottom of 6 inches diameter. In the two-ply and three-ply twine, in the deft handling of grass lining, the strengthening rods and plaited margin, this specimen resembles the last, excepting the black color. Here we have only the osier, brown and grass color. Mr. Livingston Stone collected two very similar specimens from the McCloud River Indians living in the vicinity of the Hupas, and Mr. Powers others from the Tule River country. These last are similar in form, but the stitch of the basket is entirely different, being the very beautiful coiled stitch of the Yuroks and other tribes of central and southern California. (Smithsonian An. Rep. 1884, Pt. II, pl. XIX.)

A basket forming part of the outfit of the acorn grinder is 21 inches in diameter and 6 inches deep. It is closely woven by twining in brown and grass color, forming a trefoil pattern.

The rudest pestles are formed by knocking off the edges of a piece of hard rock with a flint hammer-stone. These may be ground down to symmetrical form upon a flat sandstone kept constantly wet. (Fig. 56.)

Mr. Powers tells us that bread or mush is made from the acorns of the chestnut oak (*Quercus densiflora*), which are first slightly scorched and then pounded up in stone mortars. (Plate VII, 52.) The meal thus prepared is wet with water and the mixture poured into little sand pools scooped in the river beach, around which a fire is made until the stuff is cooked, when the outside sand is brushed off and the bread is ready to be eaten. (Powers Cont. III, 50.)

The Hupa cook their mush in a basket pot not unlike a "dinner-pot" in shape. (Fig. 57.) Smooth, clean boulders are heated and dropped into the mush, which is stirred with a strong mush-stick or paddle. (Fig. 58.)

Frying-pans of *lapis ollaris* are also used in cooking cakes. These are carelessly rectangular in shape, say about 10 inches long, half as wide, and an inch thick. In addition to these are many small baking dishes of *lapis ollaris*, like the so-called individual pans in which civilized cakes are baked. This form should be especially noticed. The Hupa Indians use them for cooking a kind of bread made of acorn-meal. (Wheeler VII, 102.) Among the so-called paint dishes in archaeological collections are many of soapstone and other soft material not at all suited to rubbing up paint. We have here a much more rational explanation of the proper function.