

what appears to be a large face intersecting the prism edges at  $90^\circ$ . A careful examination shows that this large terminal plane is striated, the faces of the striations belonging to the form  $(\bar{1}02)$ . (See fig. 2.) All the crystals measured are twinned and show faces of the two constituent individuals.

The polar elements derived from the measurements are as follows:

$$p_0 = 1.0512; q_0 = 0.9501; e = 0.45071; \mu = 63^\circ 13'$$

corresponding to the axial ratios,

$$a : b : c :: 1.0125 : 1 : 1.0643; \beta = 63^\circ 13'.$$

In table 1 are indicated the forms observed and the polar angles  $\phi$  and  $\rho$  measured and calculated for the elements indicated above. The number of faces observed for each form on the four crystals measured is shown in the second column.

ETHNOLOGY.—*A prehistoric stone mortar from southern Arizona.*<sup>1</sup> J. WALTER FEWKES, Bureau of American Ethnology.

Prehistoric buildings in the Gila Valley differ from those of southern Colorado and New Mexico in materials employed, form, and details in construction and arrangement of sacred and other rooms. There are less pronounced differences in ceramics, implements, and household utensils of the two areas. The acquisition of a fine, characteristic stone mortar from near Casa Grande has led me to describe it and incidentally to refer to a feature in this object not shared with mortars from the true Pueblo area.

A short time ago I obtained from Mr. John Miller, one of my workmen at the Casa Grande ruin in 1907, a stone mortar of more than ordinary interest on account of its artistic character. This object was found 5 miles south of the Picacho reservoir, Arizona, where there are traces of ancient settlements. It is made of a light-colored volcanic stone of circular shape and has a flat base with a cavity or depression on the opposite face. The

<sup>1</sup> Published by permission of the Secretary of the Smithsonian Institution.

remarkable feature is a rattlesnake sculptured in high relief on the margin (fig. 1).

The body of this animal almost completely surrounds the mortar, the anterior end of the body being coiled, and the tail ending in four rattles and a button. The head projects from the coiled part of the body and is flat above, indented with three pits, two of which were intended for eyes. The body is covered with a cross hatching of incised lines representing scales, and the mouth is a horizontal slit. From the top of the nose to the opposite rim the diameter measures  $4\frac{1}{4}$  inches and the depth of the cavity three-fourths of an inch.

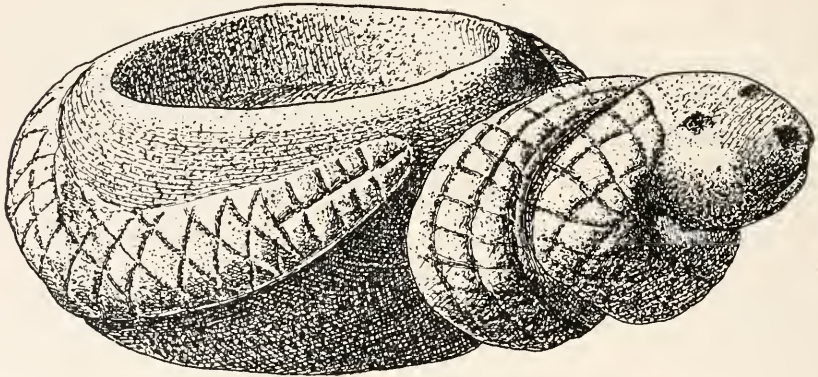


Fig. 1. Snake mortar. Diameter  $4\frac{1}{2}$  inches.

The above specimen is now in the Museum of the American Indian, Heye Foundation, New York City.

Mortars made of stone carved in animal forms are not rare in the Gila Valley, although outside of this area they are, so far as known, rarely found in numbers. There are many known examples of mortars of round, oblong shapes, sometimes with prolongations on the larger axes, representing conventionalized organs, but in others the intended form is so realistic that the animal can be roughly identified.

One of the best of these was found in Compound B of the Casa Grande group and figured as an idol in my report<sup>2</sup> on that ruin.

<sup>2</sup> Twenty-eighth Annual Report of the Bureau of American Ethnology, plate 47.

Others in form of frogs and turtles may be seen in local collections or figured in descriptions of Gila Valley antiquities. I recall two mortars with serpentine bodies cut on their margins, neither of which is as well made as the specimen above described. Mortars from this region in the form of other animals are also known. A mortar from the San Pedro Valley resembling a horned quadruped is figured in my paper on Prehistoric Ruins of the Gila Valley,<sup>3</sup> and there is in the Museum of the University of Arizona a specimen similar to the last mentioned. Mr. Warren K. Moorehead<sup>4</sup> figures a mortar resembling a turtle or some reptile. In all these the depression or cavity of the mortar is situated on the back of the animal, whereas in the snake mortars, the snake surrounds or embraces the mortar.

It will be noticed that these specimens have a depression or cavity which has led to their identification as mortars. In this respect they differ from paint palettes, likewise prehistoric, found in numbers in the Gila region. The stones upon which paint is ordinarily ground among the Pueblos are flat, undecorated slabs, without cavities, or generally only shallow depressions. Similar palettes from the Gila are made with more care and their margins are commonly bands decorated with incised geometrical designs or even, in one or two known instances, with figures of snakes or other animals. They are ordinarily rectangular in form, but other shapes also occur, such as circles and ovals. A figure of one of these tablets or palettes in the shape of a bird was obtained from Pueblo Viejo on the Upper Gila, and published in my account of Two Summers' Work in Pueblo Ruins.<sup>5</sup> A typical hitherto undescribed rectangular paint palette which was plowed up by a farmer on the north side of the Gila, 6 miles from Florence, Arizona, is shown herewith (fig. 2). This is a thin slab of rock with a marginal frame covered with incised crosshatched lines recalling the conventional way of representing scales of a snake. This specimen, like the snake mortar, is

<sup>3</sup> Smithsonian Miscellaneous Collections, Quarterly Review, 5, fig. 75a.

<sup>4</sup> The Stone Age in North America, 2, fig. 416.

<sup>5</sup> Twenty-second Annual Report of the Bureau of American Ethnology; also Preliminary Report in Smithsonian Miscellaneous Collections, 1896.

also in the Museum of the American Indian, Heye Foundation. Similar paint palettes with modifications in decorations are widely distributed; those from the mound-builders sometimes bear incised figures of serpents in their surfaces. As a paint palette admits of few variations in form it is not strange that similar shapes occur likewise among Pueblos and mound-builders,<sup>6</sup> and, especially in predynastic times, in Egypt<sup>7</sup> (fig. 3).

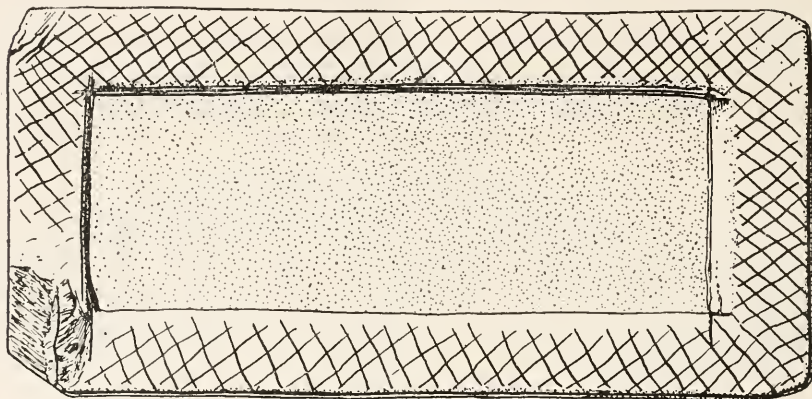


Fig. 2. Paint palette. Size  $2\frac{1}{4}$  by  $4\frac{1}{2}$  inches.

Everything used by a primitive people in their ceremonies has, from that fact, a magic power and the stones upon which pigments are ground by the Pueblos partake in a measure of this power. The symbolic figures that decorate paint palettes no doubt increase, in their opinion, the efficacy of the pigment. A similarity in the way these palettes are regarded in the Old and the New World is a good instance of thought convergence.

A few objects of stone supposed to be pestles or paint grinders, possibly used with these pigment palettes, are known from the Gila. One of these from Casa Grande has the form of a "coiled serpent,"<sup>8</sup> a highly suggestive fact taken in connection with a snake-decorated mortar.

<sup>6</sup> HOLMES, W. H., *Certain notched or scalloped stone tablets of the mound builders*. Amer. Anthropol., 8, No. 1, fig. 9. Jan.-March, 1906.

<sup>7</sup> BATES, ORIC. *Ancient Egyptian fishing*. Harvard African Studies, No. 1.

<sup>8</sup> Twenty-eighth Annual Report of the Bureau of American Ethnology, pl. 48, fig. 1.

The custom of decorating mortars and paint grinders with animal figures points to Mexican rather than Pueblo customs and kinship. The serpent as an element in sculpture is especially Mexican, although figures of the rattlesnake occur on pipes and stone or shell objects throughout the mound-builders and Pueblo areas; while painting of the same on pottery, and as pictographs ascribed to prehistoric times, are no less frequent. The cult of the Plumed Snake or, as some prefer to call it, the Horned Snake, occurs so constantly in Indian mythology and ritual that this

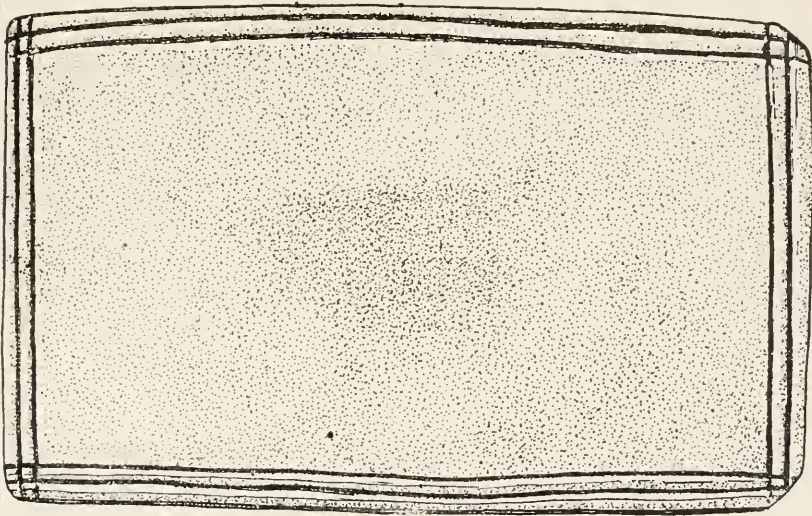


Fig. 3. Egyptian slate palette. Size  $3\frac{1}{2}$  by  $5\frac{1}{2}$  inches.

being is frequently represented on ceremonial paraphernalia; but there are, so far as I know, few if any mortars of prehistoric Indians of North America with sculptured figures that artistically excel the snake mortar above figured. The snake-entwined mortar is another evidence that the prehistoric culture of the Gila had a close relationship to that of the aborigines of northern Mexico.

