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UNUSUAL MILLING STONE FROM BATTLE MOUNTAIN, NEVADA

by Don E. Crabtree

An unusual milling stone was found on the surface near Battle Mountain, Nevada by Mr. Ray Sims of that city. The milling stone has a distinctive form unlike the common mano used aboriginally to reduce seeds and other vegetable material. When I expressed a desire to analyze the design and study the functional wear pattern, Mr. Sims gave me the artifact to be donated to the Idaho State University Museum. Unfortunately, when I washed the soil from the artifact, I used a stiff nylon brush and only then did I notice that particles of turquoise were being removed with the dirt. However, when the artifact was dry, I noted it still retained numerous flecks of turquoise and minute pieces of red cinnabar firmly imbedded in the vesicules. Mercury mines are now being worked some twenty miles north of where the milling stone was found, and turquoise mines are in the near vicinity. However, neither turquoise nor red cinnabar (a mercury mineral compound) is found in this vicinity in basalt.

The milling stone is 22 cm. in length, 9 cm. wide, and 4 cm. thick. The dorsal side is not worn like the ventral side and shows a natural filling of vesicules with what appear to be olivine, calcite, and other crystalline minerals. The igneous rock appears to be considerably denser than the common extrusive basalt.

The milling stone has been carefully shaped by an unknown technique. There is no evidence of a pecked surface. The sides are

convex and the top is slightly rounded. The ends on the ventral side are curved toward the dorsal side and have rounded corners. The ventral side is quite flat. A dull functional polish is present on the ventral side, and the polish is even more pronounced on each convex end. The dorsal face and sides have acquired a sheen, probably the result of constant contact of the worker's hands.

When I examined the stone with a 15X triple hand lens, I noted forty or fifty flecks of turquoise still imbedded in the vesicules. One turquoise flake shows a high polish, probably the result of contact with the rubbing stone or board. The innermost deposits within the vesicules were cinnabar, indicating that the milling stone was first used to grind red pigment, then turquoise. The metate or rubbing board used with this stone was probably of special design to conform with the hand milling stone, but we do not have this for verification.

The finding of two colorful mineral pigments in the working surface of the milling stone definitely designates this specially-designed implement as one used by a maker of paints or powders. There is little doubt that colors like the sky blue of turquoise and the beautiful red of cinnabar would be held in great value by artists of the past and present. Recently, Professor Francois Bordes and I discussed my conclusions about this artifact being used as a milling stone for grinding minerals for making paint and he agreed that this was a logical deduction. He told of his father-in-law, a well-known European artist, always grinding his own pigments from mineral compounds and then blending them to his own liking.

Colors compared with duffin

Colors compounded from different mineral salts do not fade and are more enduring. Paints derived from ground minerals remain bright through the years, while those painted from organic materials generally fade and lose color distinction. It is common knowledge that many of the old art masterpieces now in collections and museums were created with paints derived from colorful mineral compounds.

We can only postulate the functional employment of such paints made by prehistoric man made from turquoise and cinnabar, but we do have some ethnographic accounts of crushing minerals for paints. We do have evidence which indicates that he used hematite for cosmetic purposes - such as adorning himself for battle and ceremonials; and the practical use of this mineral to protect his body from sunburn. This subject is covered quite extensively by Sydney H. Ball, B.A.E. Bulletin 128, Anthropological Paper No. 13 (1941). Crushed and powdered minerals were also used for means of divination, votive offerings to the Gods, medicinal use, and for abrasives (Ball 1941:4-6). Ball (1941:4) states:

Pigments.--Hematite, malachite, and azurite were not only widely used as pendants and in other ways in the mass but, when crushed, as pigments. The latter two furnished the Pueblo people their favorite colors--green and blue. Among the Navaho crushed turquoise was used to paint certain ceremonial objects (Pogue, 1915, p. 103). The green used to dye the wool of Chilkat blankets was derived from copper ores. The British Columbia Indians also used malachite as a pigment. The Pawnees and Mandans heated selenite and from the powder made a whitening used in tanning buckskin. The Navaho medicine men used gypsum as chalk in drawing and the Pueblos merely powdered, or burnt and mixed it with water

as whitewash. Calcined gypsum powder was used by the Omahas to clean, whiten, and dry the sinews binding feathers to their arrows. The Aztecs used chimaltzatl (selenite) to whiten their paintings (Clavigero, 1807, pp. 16-17). The California Indians procured body paint from a "vermillion cave," the outcrop of the New Almaden mercury mine. Cinnabar was also used by the Aztecs, the Mayas, and the Peruvian Indians. The beautiful pale green brochantite of the Corocoro copper deposit, Bolivia, was used by the local Indians as a source of green pigment before the Spanish arrived (Berton, 1936). The Indians used the brilliant red hewettite (a hydrous calcium vanadate) to make pictographs on the sandstone cliffs of Emery County, Utah. Within one-half mile are commercial vanadium deposits. Black pigments were produced from lignite (Pueblos, from manganese dioxide (Pueblos and Californians), from coal (Haidas), from graphite (New York, New England, and Alaska Indians and Eskimo), from sphalerite ore (Pueblos), from micaceous hematite (Yukon Indians), or from galena (Apache-Yumas). The latter also used calcite and magnesite as white pigments. The Oubeways, on the other hand, used iron sulphate derived from decomposing pyrite as a black dye. The Seri, inhabiting Tiburon Island, Sonoro, used dumortierite as a blue face paint (Kroeber, 1931, p. 27). The Pueblos used jarosite in addition to yellow ochre for yellows and browns (Cosgrove, 1932).

Further, analysis of the blacks and reds of some of man's earliest paintings in Southern Europe shows that they were derived from the oxides of manganese and iron. Even today, special techniques are

used in paint manufacture to finely grind and mix mineral pigments and oils to produce paints similar to those used by prehistoric men.

The design of the aboriginal milling tool shows that it was used in a rocking motion to crush the large particles and then a dragging motion back and forth to further powder the pigment mineral. Both ends of the underside of the stone have assumed a use polish from the gentle dragging of the material to the center of the milling board or stone, which, unfortunately, was not found. Hopefully, one day such an object will be located which matches the Battle Mountain hand stone.

One can form several significant conclusions from the specialized Battle Mountain milling stone. Archaeologically, hand stones, whether they be percussors used for flintworking, pestles, manos, rubbing stones, and others of questionable implied function, have been noted and then cast aside as being non-diagnostic. It would be advisable to examine each one carefully with a microscope, for it is possible that they could contribute considerable information regarding extinct cultures. The Battle Mountain milling stone has certainly made me aware of future evaluation of the materials imbedded in the cavities, cracks, and fissures for a more accurate typology of these hand stones. Microscopic examination of these substances imbedded in the milling stones can be of great value to determine the actual use of such objects.

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- Andrews, E. Wyllys IV & Irwin Rovner
1973 "Archaeological Evidence on Social Stratification and Commerce in the Northern Maya Lowlands. Two Masons' Tool Kits from Muna and Dzibilchaltun, Yucatan," Middle American Research Institute, Publication 31:81-102, Tulane University.

BIBLIOGRAPHY

- Ball, Sydney H.
1941 "Mining of Gems by American Indians," B.A.E. Bulletin 128, Anthropological Paper No. 13.

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Fig. 1

Top (left) and bottom (right) views of Battle Mountain
hand stone used for grinding cinnabar and turquoise.
Length 22 cm. (ISUM Cat. no. 210256)