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The Plateau will publish semi-popular papers resulting from original research on subjects relating to the plateau of Northern Arizona. Manuscripts should be typewritten, double spaced, and should not exceed 2000 words.

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PLATEAU

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"FOOLS NAMES LIKE FOOLS FACES—"

By HAROLD S. COLTON

CLIMBING to the top of the delicate spire of Milan Cathedral, I was astonished to see a well-dressed gentleman accompanied by his small boy, pull a pencil from his pocket and write their two names on the white marble balustrade. Not only in the Old World but all over this country names are written, carved and painted in every public place. For this reason far-sighted institutions place a register book, available to visitors, to save the furniture and walls.

All over the Southwest, travelers from the earliest Spanish time have left written records of their passing on such rocks as El Morro in New Mexico. Kit Carson carved his name in Keams Canyon and the early Mormon immigrants into Arizona left theirs at many camping places in the desert. These inscriptions are now important historical documents.

Besides the names of persons of European ancestry carved on the rocks and cliffs, thousands of drawings made by the American Indians attract the attention of the visitor. These drawings, although crude, have certain artistic values but studies made of their significance have failed to produce more than a few valid conclusions.

Rock drawings by the American Indians are usually produced in one of three ways. Most of them are pecked on a smooth rock surface with a hard, pointed stone. Incised pictures, that is pictures scratched with a sharp stone, are more rare. The remains of drawings made with paint are rarer still, although they were probably once common. They are not preserved because when exposed to the weather the paint washes off. The paint usually employed was white, red, yellow or black. Painted pictures will not be discussed in this paper and our attention will be centered on those incised or pecked.

The general method of study of rock drawings, following Mallery,⁽¹⁾ has been to record them and to distinguish the historic from the prehistoric which is done largely by observing the presence or absence of horses or other introduced domesticated animals. In interpreting prehistoric drawings the investigator is hampered because it is rarely possible to date them. Many are found far from sites of known age and those that are near ruins often cannot be dated because the sites had been occupied for more than

(1) Mallery, Garrick, "Pictographs of the North American Indians," 1st Annual Report, B.A.E., 1886.

one period. Even placing the drawings in their proper cultural background is not easy to do. Only when such drawings are found far from a frontier can the culture of the draftsman be inferred. Many inscription rocks, like El Morro lie on important trails that were traversed by members of different tribes so the interpretation of rock drawings is made especially difficult.

Next to El Morro probably the most important inscription rocks in the Southwest lie one mile south of Willow Springs, six miles west of Tuba City, Coconino County, Arizona near U. S. Highway 89. They are important because some of the Indian draftsmen who worked on them

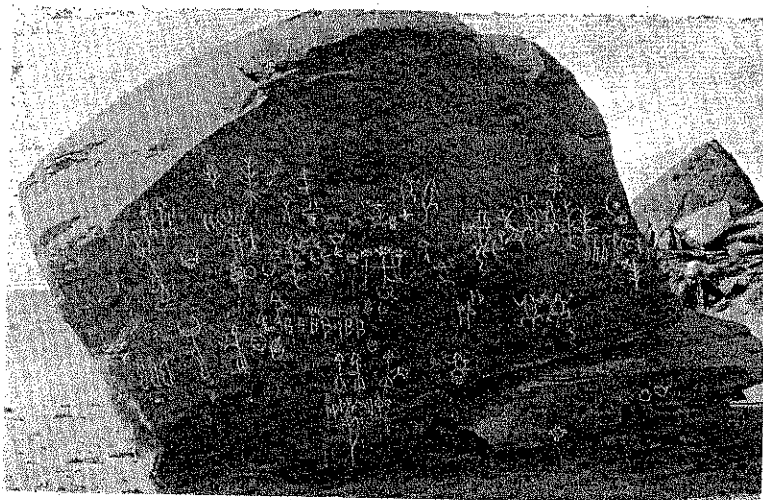


FIG. 1

One of the many rocks covered with Hopi Clan Symbols near Willow Springs, on the Navajo Indian Reservation in Northern Arizona.

are still living, thus placing the interpretation on solid ground. (Fig. 1)

Here many large boulders of Mesozoic sandstone have broken from a cliff and have rolled down a talus slope into a little valley. These boulders are covered, top and sides, with rock drawings called "petroglyphs" pecked or incised in the rock. Some of the petroglyphs are similar to those associated with the ruined pueblos and cliff dwellings of the region, but others are quite different. They differ not only in subject matter but also in the way they are placed on the rock: the same subject, be it a corn plant, a frog or a bow, is frequently repeated and they are usually placed in rows.

These rocks were discovered in 1878 by the geologist,

G. K. Gilbert, who called the place Oakley Springs, and the significance of them was explained to him by Hopi Chief Tuba of Oraibi, who is reported to have said, "Mokis make excursions to a locality in the canyon of the Colorado Chiquito to get salt. On their return they stop at Oakley Springs and each Indian makes a symbol on the rock. Each Indian draws his crest or totem, the symbol of his gens*. He draws it once and only once at each visit."⁽²⁾ Gilbert adds, "There are probably some exceptions to this but the etchings show the general truth. There are many repetitions of the same design, from two to ten will often appear in a row. In several instances I saw the end drawing quite fresh while the others were not so. Much of the work seems to have been performed by pounding with a hard point, but a few of the pictures are scratched on. Many drawings are weather-worn beyond recognition, and others are so fresh that the dust left by the tool has not been washed away by the rain."

Not recognizing that Oakley Springs was the same as Willow Springs, the author and his wife in 1931, reported on these petroglyphs⁽³⁾, and Nequatewa, their Hopi informant, gave the same explanation as had Chief Tuba in 1878. Again in 1937, Titiev⁽⁴⁾ published an account of the trip to the salt mines by still another informant. Titiev tells how a party of Hopis on their way to the salt mine arrived at a shrine called "Tutuveni", which obviously is Willow Springs. "Here each man was supposed to carve his clan emblem on the rocky face of the shrine, and on each successive visit to repeat the device to the left of his original 'signature'. Talasvuyauoma carved a fresh coyote head at the left of a line he had started many years ago. Don's father did the same with a sand hummock which was his sign and Don, being a novice, began a fresh row by carving a sun shield as his device."

Hopis consider the trip to the salt mine a perilous adventure not only because the trail down into the Little Colorado Canyon is precarious—it is said that yucca ropes are needed to descend over certain ledges—but also because the Hopis believe that the Grand Canyon is the abode of spirits of the dead. Here the unseen spirits are believed to live in invisible pueblos and carry on their daily life like living Hopis in the world above. Naturally it takes a brave man to descend into this Indian Hades so it is no wonder that he wishes to make a personal record of his trip.

The principle represented by pictographs is much the

*Clan.

(2) Mallery, op. cit., p. 29.

(3) Colton, Mary Russell and Harold S., "Petroglyphs, the Record of a Great Adventure," *Am. Anthropol.*, Vol. 33, No. 1, pp. 32-37, Jan.-Mar. 1931.

(4) Titiev, M., "A Hopi Salt Expedition," *Am. Anthropol.*, Vol. 39, p. 245, 1937.

same as that which caused the pioneer to cut notches in his rifle butt, or the Indian to collect scalps: it is a means of satisfying one's vanity.

Although unable to explain all the drawings at Willow Springs, Nequatewa has identified most of them. (Fig. 2) In one place, depending on the skill of the artist, different forms of the same symbol appear. In other places different symbols stand for the same clan. This use of apparently unrelated symbols for the same group is explained in the clan legends which all Hopis know. As an example, the

Badger	☞ ☞ ☞	Parrot	☞ ☞
Bear	☞ ☞ ☞	Rabbit	☞ ☞
Bow	B B	Red ant	☞ ☞ ☞
Butterfly	☞ ☞	Reed	☞ ☞ ☞ ☞ ☞
Cloud	☞ ☞ ☞ ☞ ☞ ☞ ☞	Sand	☞ ☞
Corn	☞ ☞ ☞ ☞ ☞ ☞ ☞	Snake	☞ ☞
Coyote	☞ ☞	Snow	☞ ☞
Crow	☞ ☞	Spider	☞ ☞ ☞
Eagle	☞ ☞	Oak clan (extinct)	☞ ☞
Bluebird	☞ ☞	Strap or rope	☞ ☞
Horn	☞ ☞ ☞	Rabbit bush	☞ ☞
Katchina	☞ ☞ ☞ ☞ ☞ ☞	Sun forehead	☞ ☞
Lizard	☞ ☞ ☞	Puma,	☞ ☞
Moon (extinct)	☞ ☞ ☞ ☞ ☞	Unidentified symbols	☞ ☞ ☞ ☞ ☞ ☞ ☞ ☞ ☞ ☞

FIG. 2

Clan Symbols near Willow Springs recognized by Edmund Nequatewa, a Hopi Indian.

symbol for the cloud clan may be a cloud, a rainbow, lightning, a duck, a tadpole, a frog or any aquatic animal or bird; for the corn clan a corn plant is most common but a picture of the Germ God will do as well; the Kachina clan may be represented by a Kachina mask, but just as well by a branch of Douglas fir. Let us see now how this would work in our own culture. Suppose a member of the Smith family paid a visit to the top of the Empire State building and wished to leave a record that he had been

there. Mr. Smith, in order to make the record, pulls a pencil from his pocket, and being illiterate draws the picture of an anvil on the wall. Sometime later his brother John arrives and draws a hammer and still later sister Jane draws a bellows, not because she is a great talker but because she belongs to the Smith family. If you know the meaning of the clan name and the clan story you can recognize the fact that members of the same family have left a record, although the symbols are different. So it is with the Hopis.

Where the symbol is repeated with the same technique Nequatewa told us that it represented repeated visits of the same individual, just as Don later told Titiev. Among the symbols that Nequatewa recognized were those of two



FIG. 3

One of the twenty-six rocks covered with drawings at Inscription Point near the Little Colorado River.

clans that had recently become extinct, suggesting that a number of drawings he could not recognize were symbols of other extinct clans. They become extinct when the last female in the line of descent dies, for membership in a Hopi clan is inherited through the mother. It is the same as if your last name came from your mother and not your father.

Inscription Point, about eight miles northeast of Wupatki Pueblo, appears to be another registration book, in this case with drawings much earlier than those at Willow Springs. At the western end of a small red mesa the rocks are covered with dozens of drawings which we assume were made between 1000-1300 A. D. (Fig. 3). As no prehistoric habitations have been recognized nearby we believe that the drawings are the signatures of travelers, the same symbols appearing many times. If, however, we consider as a test of this theory that the drawings be repeated in rows, we will be disappointed. Very few meet that require-

ment. The rarity of rows of repeated symbols may be a cultural distinction and in early times it may not have been the custom to repeat the symbols in a line any more than it is with us today when we write our names in public places.

If good smooth rocks are found near prehistoric habitations, rock drawings are usually common. Some of the pictures may have a religious or ceremonial significance, but many are obviously "doodling" — that is, made for amusement or to pass the time away.

Rock drawings are also common near springs and water holes if satisfactory rock surfaces are present. Many of the drawings take the form of lightning, snakes, tadpoles and waterdogs (salamanders) and they may be considered to be fetishes or symbols to receive prayers for water. On many rocks game animals predominate and these are strongly influenced by the geographic environment. Where mountain sheep were abundant as in the Tsegi, drawings often illustrate these animals. Deer were frequently drawn by the people of the San Francisco Mountain pine forests, while antelope and water birds were common subjects of the Kayenta people in the Little Colorado valley. Drawings of game animals, we may assume, were in the nature of fetishes. An animal about to be hunted was drawn to make the chase successful.

The dating of prehistoric rock drawings is difficult as previously explained. Unless a datable habitation that was occupied for a short period is located nearby, only broad intervals of time can be inferred. Kidder and Guernsey⁽⁵⁾ were the first archaeologists to recognize, in Northern Arizona, time distinctions. They showed that the human figures drawn by the Basketmakers, that is, before 700 A. D., were represented with broad, square shoulders, which is not the case in later drawings.

In interpreting rock drawings, it is necessary to define the culture areas with much greater accuracy than did Kidder in 1927,⁽⁶⁾ though his basic ideas have been followed by most archaeologists since. Ten years after Kidder's work, Gladwin, using information based on an extensive archaeological survey of the Southwest, proposed a method to designate prehistoric Indian tribes that occupied certain geographical areas.⁽⁷⁾ Although not recognized by Gladwin, the author distinguishes in the period 500 to 1300 A. D. three prehistoric tribes living side by side about the San Francisco Peaks in northern Arizona. Some of the boun-

(5) Kidder, A. V., and Guernsey, S. J., "Basketmaker Caves of Northeastern Arizona," Papers of the Peabody Museum of Amer. Arch. and Ethn., Harvard Univ., Vol. 8, No. 2, Cambridge, 1921.

(6) Kidder, A. V., 1924, "An Introduction to the Study of Southwestern Archaeology," Phillips Academy, Andover, 1924.

(7) Gladwin, W. and H. S., "A Method for the Designation of Cultures and Their Variations," Medallion Papers, No. XV, 1934.

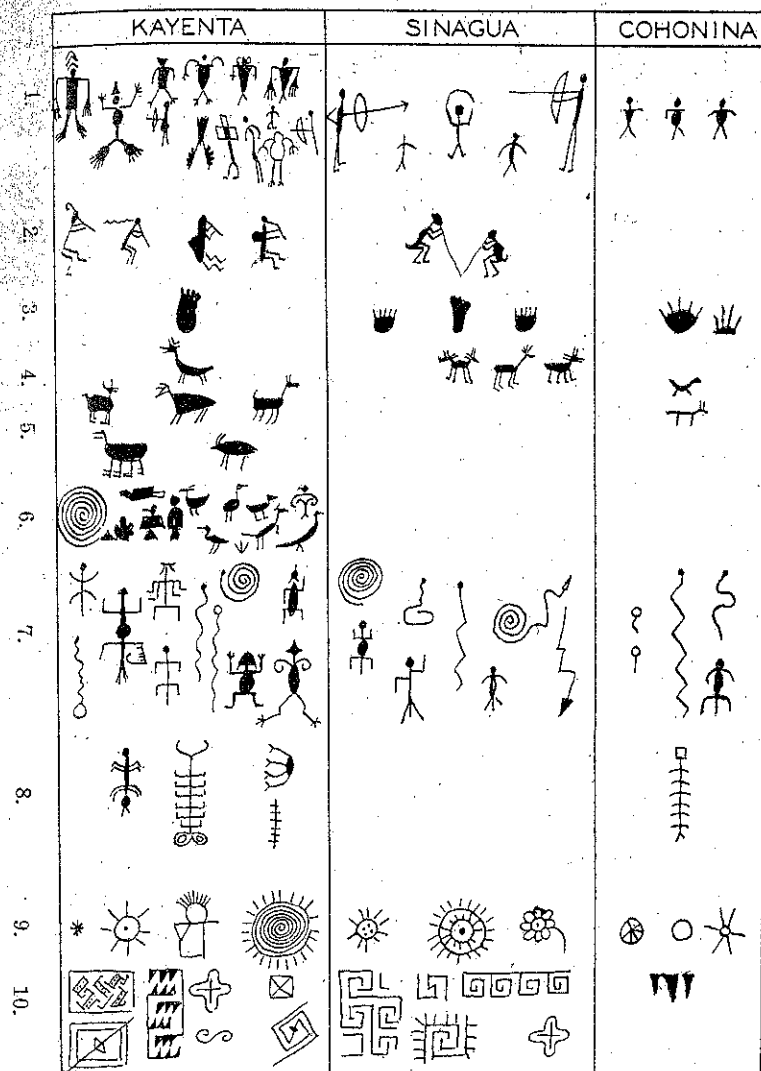


FIG. 4

Drawings from three different areas compared. The forms have been classified as (1) human, (2) humpback flute player, (3) human or bear feet, (4) deer, (5) antelope, (6) birds, (7) reptiles and amphibians, (8) centipeds, insects and spider, (9) sun, and (10) abstract drawings.

daries between these were geographical barriers, such as the deep gorge of the Colorado River and the upland plateaus, covered with pine forests. In other areas the frontiers of culture overlapped, one into the other. To attribute

rock drawings to any one tribe we must select samples far from the cultural frontiers, otherwise we cannot even infer the tribe to which the artist belonged.

At the present time it is very difficult to distinguish the work of one tribe from another even when we recognize the frontiers that have been mapped by the archaeologists. The time element is usually more or less uncertain because we can never be sure that all drawings on one rock belong to one period or are older or more recent than those on another.

Figure 4 shows the type of rock drawings of the three prehistoric tribes of the San Francisco Peaks area, Sinagua, Kayenta and Cohonina—but few conclusions can be drawn from them. The Sinagua seemed to prefer abstract drawings, such as pure design more than did the Kayenta. The Kayenta on the Little Colorado used more abstract subjects than the Kayenta of the Tsegi. The drawings near the Cohonina habitations seem more crude than those of the Kayenta or Sinagua.

To try to draw general conclusions on rock drawings in northern Arizona is still dangerous at the present time. We can say with confidence only that rock drawings have been made for three general purposes, as "doodles", as fetishes, and as signatures of travelers so perhaps the old adage is not always true, that "He is a fool and ever shall, who writes his name upon a wall."

ONYX MARBLE IN NORTHERN ARIZONA

By EDWIN D. MCKEE

ONYX MARBLE is an attractive ornamental stone found widely but locally throughout the Southwest and adjoining parts of Mexico. It is neither onyx, nor marble, but is marked with bands of color as is the former, and has the chemical composition of the latter. It is a form of limestone, closely related from the standpoint of genesis to stalactites and stalagmites of caverns and to travertine that develops as aprons at waterfalls and around hot springs. The calcite crystals of which onyx marble is composed tend to grow in irregular rows, forming bands with the long direction of each crystal oriented at right angles to the band. It may be pale green, honey yellow, light brown or red brown depending on mineral impurities.

The name "Mexican Onyx" is sometimes used for this stone, and much of the commercial product is from Old Mexico. Deposits of sufficient size to be of economic importance are known also in Arizona, quarrying operations having been carried on for years near Mayer in Yavapai County and at upper Cave Creek in Maricopa County. The stone is easy to cut and polish and because of its attractive appearance it is used for lamp stands, pen bases and other decorative objects.

In northern Arizona, a large number of occurrences of onyx marble have been reported within recent years. Most of these have proven to be of limited extent, in some cases involving only the filling of a single large rock crevice. Near Winona, ten and a half miles east of Flagstaff, and at Beaver Creek to the south, however, quarrying operations have been attempted and at a site eighteen miles southwest of Ashfork rather extensive deposits have been worked. Various rock formations, including the Supai, Kaibab and Moenkopi have served as hosts for these deposits, the calcite being deposited by water in cracks such as joints and faults, and between sedimentary beds.

Interest in the onyx marble deposits of the Ashfork Quarry has been stimulated greatly of late by the discovery of well-preserved invertebrate animals of the phylum Arthropoda within the calcite. Among these fossils are several specimens of an arachnid related to the modern whipscorpion, a centipede and fragments of what was probably a type of mite. Apparently these Arthropods had died and been engulfed or else had been accidentally drowned in a flow of water that deposited the calcite and thus entombed the animal remains. The marvelous state of preservation is equal to that of the well-known insects found in amber on the Baltic coast of East Prussia.

Fossils in the onyx marble were found when blocks of