INVOCATIONS TO THE GODS
THE SOUTHEASTERN UTAH FREMONT PICTOGRAPHS

by

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INTRODUCTION

It has been a challenge to try to understand from the Fremont Indian rock art, their knowledge of weather processes, and what may be their attempt to control weather.

In the high desert Southwest the annual rainfall at the present time is about 10 inches per year. Moisture from the fall rains, winter snow and spring rains, is stored in the soil. In late spring, early summer there is a fair weather season under the influence of high pressures when the weather is warm, clear and dry. In early July there is a thermal low that develops in southwest Arizona, and around that a counterclockwise flow of air brings moist air from the Pacific Ocean over the southwest United States to the low and high desert regions. The result is the summer thunderstorm monsoon season, the source of summer moisture to the land.

The Fremonts planted their corn in the spring. The seeds sprouted, started growing, then used up the available soil moisture. If the monsoon season was delayed, or didn't develop, drought and crop failure would follow. The Fremonts probably recognized this annual weather cycle, and to assure the onset of the monsoon season sent invocations to the rain gods to gain their favor, and moisture for their crops.

They were animists, believed in a rain god -- or gods. If the god was not in the sky, in the apparent form of clouds, or rain itself, the god was somewhere else, and, from the evidence of their art work, resided underground.

The Fremonts were keenly observant of their environment, and from what they saw, divined those locations where the rain gods lived underground when they were not in the sky where rock formations had the appearance of clouds, where water runoff marks on the cliffs looked like rain showers, where water flowed from underground.

Where the gods resided, the Fremonts emplaced their art works as supplications to the gods within, to entreat them to return to the sky. Occasionally, a site with only a view of the sky was acceptable. Their artists drew portraits of their rain gods, embodied as clouds of the sky and other phenomena associated with rain. The portraits are as varied as the artists' visions, from simple symbolism to elaborately decorated works of art. In some we see rattlesnake messengers supplicatory to portraits of the underground rain gods. In other panels we see the Fremonts themselves in supplicatory attitudes.

Many of the panel designs could have been inspired by the artists' observations of phenomena associated with rain. Comparison of the pictograph subjects with meteorological phenomena indicate the Fremonts were close observers of weather sequences associated with

rain, and probably had a capability of making forecasts of rainy weather, based on observations of cloud sequences [1]. Without a written language the Fremont panels depict clouds and other meteorological phenomena that precede rain, the characteristics of clouds, rain showers, and on the smallest scale, the final desired result of their invocations, of rain itself.

It is not known whether the portraits were painted as an annual ritual, or only when a drought threatened their crops.

Eventually, as does every culture, the Fremonts moved on -- to somewhere. But unlike many prehistoric peoples, they left behind writings on canyon walls that let us share a portion of their knowledge and beliefs.

THE BUCKHORN DRAW FREMONT PICTOGRAPH SITE.

The site of the Fremont culture pictographs in Buckhorn Draw is in the Wingate sandstone formation, of the late Triassic period. The canyon wall at and above the site is about 250 feet high, almost vertical for the first 160 feet, then sloping back to blocked sandstone at the top. Layers of the sandstone exhibit varying surface colors, depending on the degree of development of "desert varnish". Light tan, red and very dark brown. The light tan sandstone surface was of "recent" exposure, and there was not sufficient time to develop darker surface colors. The red layers are deposition of iron oxide at the surface, the very dark brown surface is a deposit of iron and magnesium oxides, the latter being the oldest exposed surfaces on the canyon walls. The pictographs are on a sandstone surface that has been exposed by fracturing from the wall of a large layer of sandstone that exposed a "fresh" surface, probably only a few thousand years ago. The fallen blocks can still be seen at the foot of the cliff, although many of them have probably been covered by the road built between the cliff and the nearby stream. The "fresh" cliff exposure is in general about 80 feet high and 400-500 feet long.

Water that drained from the upper surfaces of the canyon has dissolved some of the iron and manganese oxides there and then redeposited the oxides as vertical stains on the most recently cleaved surfaces. The stains are quite dark in some areas, especially on the right, northeast, portion of the pictograph site.

The pictographs were placed on a section of the cliff that has been most recently naturally exposed, and is a light tan color, with a light degree of desert varnish as can be noted where the sandstone surface has been recently exposed within the last fifty years. The difference between the petroglyphs that have been integrated with some of the pictographs have almost the same degree of desert varnish as does the background surface of the cliff face. The exposure of the surface that the pictographs are emplaced upon may have occurred only a few, or a few hundred years, before the pictographs were painted.

The Bureau of Land Management of the United States Department of the Interior has erected a chain link face about 160 feet long to protect the pictographs. Buckhorn Draw pictograph sketches in this report have been given index numbers. The fence is the basis for deriving the index numbers, being the number of feet from the left, or southwest end of the fence that parallels the face of the cliff.

At index number 80 (IN 80) are geological features that have been important to the

At index number 80 (IN 80) are geological features that have been important to the selection of the site by the Fremont Indians, refer to Figure 1. 83 feet above the road is a skewed elliptical concretion, about 27 feet long, 13 feet high. When the diagonal layers of sand and clay were being deposited on a horizontal surface at the 83 foot level a source of chemicals was deposited on the 83 foot level. A diagonal lamination of the sandstone is indicated by light shading on the concretion on Figure 1, dipping slightly down from upper right to lower left. With time the soluble chemicals diffused through the surrounding medium, eventually being fixed into place as the deposit was solidified by the silicification process. The chemicals diffused more slowly perpendicular to the laminations than parallel to them. The result is a concretion of skewed elliptical shape resulting in an inner line and an outer shell that was harder than the surrounding media. The "radial" lines from the central nucleus do not appear to come from a "point" surface, the original source of the diffusive chemical may have had dimensions of several feet. The nucleus apparently lay on an impervious surface, since no downward propagation radials or diffusive rings are visible. When a vertical crack in the sandstone allowed the surface of the cliff to split off, it fortuitously split through the concretion, exposing it in cross section, and leaving the upper surface of the concretion in bas relief from the background face of the cliff.

At 77 feet above the road is a flood generated unconformity that can be traced throughout the Buckhorn Draw and its tributaries in the vicinity. It is softer than the local silicified sandstone. It appears to be permeable since water stains on the sandstone can be traced to a water flow that originated at level 77, then flowed down the cliff surface to a ledge at level 55 where there are a number of water stains. The water was probably mineral free spring water originating from within the unconformity, since the water apparently dissolved, or prevented, the desert varnish from forming on these "stains". This is in direct contrast to the water stains noted previously from surface water that had drained from upper levels of the canyon wall and stained the cliffs at the pictograph site with a dark deposit.

At the time the pictographs were being emplaced, some 1000 years ago, possibly with a more moist climate, there may have been a seepage of water from the unconformity, and occasionally the water stains at level 55 may have been actively damp. There are 28 (note the number for later reference) stains that extend about 14 feet along a ledge, the longest stain is about 9 feet long. Anthropomorphized copies of these water stains appear as representations of the rain god in many of the pictographs at Buckhorn Draw.

CLOUD FORM SEQUENCES ASSOCIATED WITH RAIN.

The Fremont Indians must have been interested in and observed carefully the sequence and types of clouds associated with the rainy days of spring and summer rain showers.

There are two types of weather regimes that result in rain, one widespread, the other localized rain showers. Both regimes require the transport of moisture from a warm marine source to the region where the rain falls.

Widespread regional rain is associated with cyclonic circulation that mixes moist warm and cool air in the spring or fall, resulting in cloud formation and subsequently, rain. The same systems in the winter would result in snow. The first clouds observed are the high

level clouds that are often ice crystals, exhibiting solar haloes and parhelia (sun dogs). The clouds lower and thicken with time, becoming stratocumulus, distinguished by rounded masses on the under side of the cloud layer. The final cloud form is nimbostratus, with rain reaching the ground.

The summer rain showers are formed when moist maritime air is transported over land. The moisture usually arrives first at midlevel altitudes and forms wave clouds over mountain peaks and mountain ranges. These clouds are termed altocumulus lenticularis. Over single peaks the clouds often take the shape of a single cloud, formed as shown by three typical examples in Figure 2. Anthropomorphized copies of these clouds appear as representations of the rain gods in many of the Fremont pictographs throughout southeastern Utah.

As the moist air layer deepens toward the surface afternoon rain showers appear that don't reach the ground, are termed virga, and are often seen as a single tapered shaft, becoming narrower as they approach the ground. Virga tapers to a point for two reasons: First, increased downward velocity by rain droplet drag on air within the shower narrows the cross sectional area of the downdraft. Second, evaporation of the droplets on the outer surface of the shower to the surrounding dry air finally reduces the shaft to a point. The water stains at level 55, Figure 1, may have been visualized as being rain shafts in the form of virga, and used as subject matter for the Fremont pictographs.

When the moist air layer is finally extends throughout the lower atmosphere, rain showers will reach the ground without significant evaporation.

The typical cumulonimbus, or thunderstorm cloud, exhibits many readily perceived phenomena; the whole cloud with parts such as the upwelling cloud column, its anvil cloud, mammatus, the rain shaft (sometimes bent by wind shear), cloud-to-cloud and cloud-to-ground lightning, thunder, rainbows, and, on the smallest scale individual raindrops and hail.

INVOCATIONS TO THE GODS.

The Fremont Indians had a vital interest in spring and summer rainfall for their crops and forage for game, as evidenced by their Buckhorn Draw pictographs. Fall rain and winter snows would not be of as much importance since the crops would have been harvested before those seasons. The content of the pictographs emphasize that summer showers were of prime importance, were instrumental in their choice of site for the pictographs.

The Buckhorn Draw site has natural features that led the Fremont Indians to believe that it was a sacred place possibly even an underground residence of, the rain god(s). At IN 80, 83 feet above the road is the concretion that is a natural rendition of a rainbow, or cloud, whose proportions are almost exactly reproduced below as an ochre pigmented rainbow, or cloud, pictograph. There is evidence that the arched natural symbol and those of the pictographs can be interpreted as either the arch of the upper surface of a swelling cumulus cloud, or a rainbow, depending upon the substance of the pictograph.

Below the rainbow, or cloud, at 55 feet above the road, is what could be interpreted as a stylized cloud base with the water marks on the cliff interpreted as virga or rain showers "falling" from the cloud, 28 in number. If the 55 foot level is not considered as the cloud base, then the 28 water marks could be interpreted as virga or rain showers from the cloud

above with its base at the 83 foot level. The number 28 is significantly repeated in features of the pictographs. If 28 was inconvenient, the number 28 was halved to 14, or halved again to 7.

Contemporary Hopi Indians hold their rain dance at a date that anticipates the beginning of the monsoon, the summer rain shower season. Previously captured rattlesnakes are released at this time to carry prayers for rain to the underground rain gods. At several southeastern Utah pictograph and petroglyph sites horned snakes are presented as messengers to the rain gods.

The Buckhorn Draw pictographs show both lightning and the horned (sidewinder) rattlesnake. Apparently the snakes were Fremont symbols for lightning. Representing thunder pictorially is a problem. The bear symbol is a possibility, standing on hind legs and growling. The bear, or thunder, symbols at Buckhorn Draw are portrayed more realistically near the central index number 80. Representations of the bear become more stylized with distance, and time sequence of painting of the pictograph, from the center of the panel. See in sequence: IN 55.5, IN 44, IN 99, IN 46.5, IN 152.7, and IN 23 to view the progression from realistic to stylistic representation.

Analysis of the spatial distribution of pictographs with respect to distance from the natural central sacred symbols is shown in Figure 3. There are about 78 separate pictographs (some groups are considered as one unit). The pictographs were classified by size and index number. A linear regression curve between the two parameters had a correlation coefficient of 0.4, some but not much correlation.

A histogram presentation of the data, Figure 3, shows the area directly below the natural "rainbow" or "cloud" and "rain showers" is the most sacred location, regardless of size. The number of pictographs in interval IN60 to IN80 is low for several reasons. Those in the interval are large, taking up most of the space, and the surface of the cliff has an undulating surface, apparently less favored as a drawing surface. Also, the surface there may be unstable, and some of the pictograph pigments may have faded or flaked off.

The conclusion is that the most sacred location for a pictograph is at IN 80, the closer to the significant natural features on the cliff above, the more efficacious would be the invocation to the gods. The histogram indicates that during some period of time the importance of emplacing an invocation lessened. They become fewer in number, and smaller as the distance from the center of the panel increases.

Several reasons for abandonment of the site are possible: The distance from the most favored location was too far for an invocation to have any influence upon the rain gods. A continuing drought or decreasing crop yield from soil depletion could have shaken their confidence in the efficacy of the invocations. Or a change in tribal politics, the chief or council changing their outlook on the ritual. Maybe a younger less faithful generation preferred their own rituals that did not include the act of creating pictographs. Or?

A number of the pictographs have petroglyphs associated with them. Some have been "killed" so their spirit can be sent to the gods as messengers. Animals are disabled or killed by petroglyph marks on the heart, or limbs. Several animal petroglyphs (10 cm or less in length) have almost the entire body obliterated by the petroglyphed wound. Apparently the petroglyph has a minimum "effective" size. Often a petroglyph in the region of the groin proclaims the masculinity of the messenger.

THE BUCKHORN DRAW PICTOGRAPH INVENTORY.

The numbers associated with a pictograph illustration is the number of feet from the left (southwest) end of the chain link fence at the site.

There are pictographs that have no adequate words to describe their form, such as the common term: Anthropomorph, a representation of the human figure.

The neologisms below are suggested to describe this study and certain pictographs, for which there is no defined word.

Archaeometeorology -- the meteorology of prehistoric peoples. Theopluvian -- rain god.
Bestiamorph -- a representation of a beast.
Nephomorph -- a representation of a cloud.
Pluviomorph -- a representation of rain.

Following is an inventory of the Buckhorn Draw pictographs. Information given for each pictograph includes:

INDEX NUMBER.

Form: Theopluvian, supplicant, anthropomorph, neophomorph, pluviomorph, bestiamorph, etc.
Color: Ochre, brown, red. Red appears in many instances to be oxidation in situ of brown pigments.
Size: Height and width, centimeters.
Petroglyphs: Where, description.
Artist: If it is obvious that the same artist was responsible for more than one pictograph.
Comment: By the author.

It is suggested that the inventory of pictographs be read starting with the description of IN 80 to IN 84 and examine the pictographs in sequence to the left, or successively smaller numbers to In -39. Then proceed from IN 84 to the right, or increasingly larger numbers to IN 157. In this way the reader will examine the pictographs in time order of origin, and be able to view the variation of the original theme as interpreted by different artists.

IN -39

Form: Anthropomorph.
Color: Red.
Size: 50 cm high x 15 cm wide.
Comment: Outside of the fence. Very faint, no details.

IN -30 to -33

Form: Three anthropomorphs.
Color: Red.
Size: 30 cm high x 90 cm wide.
Comment: Outside of the fence. Very faint, no details.

IN 12

Form: Theopluvian anthropomorph.
Color: Red.
Size: 31 cm high x 28 cm wide.
Artist: Same as IN 32?
Comment: Lower portion is faded out. The "halo" is not completed. This could represent parhelic arcs (sun dogs), indicators of the influx of high level moisture, preceding rain. The four down curved lobes above the arcs could represent mammatus clouds, or stratocumulus, both direct indicators of rain.

IN 23

Form: Bestiamorph, stylized bear?
Color: Grayish purple, unusual color.
Size: 20 cm lower left to upper right.
Comment: Appears to be a stylized form of a bear, see comments for IN 55.5.

IN 32

Form: Theopluvian anthropomorph.
Color: Red.
Size: 31 cm high x 11 cm wide.
Petroglyph: Below visible border of pictograph.
Artist: Probably same artist as IN 12.
Comment: Lower portion faded out. Probably a solar halo around the head. The artist of IN 12 and IN 32 may have recognized the importance of the parhelia and the solar halo as being precursors of rainy or snowy weather. The Zuni Indians say, regarding halos: "When the sun is in his house, it will rain soon". [1] A petroglyph below the lower border was probably on the now faded lower body of the anthropomorph.

IN 33

Color: Red.
Comment: Very faint, no details.

IN 34

Form: Theopluvian anthropomorph.
Color: Brown.
Size: 77 cm high x 77 cm wide.
Comment: Faint, head, arms and rain showers from shoulders are indistinct.

IN 35.5

Form: Theopluvian anthropomorph.
Color: Red.
Size: 85 cm high x 40 cm wide.
Petroglyph: Lower body.
Artist: Same body style as IN 34, stocky legs.
Comment: Shoulder on right is under IN 37. The appendage down from the shoulder on the left could either be an arm or a rain shower.

IN 37

Form: Anthropomorph.
Color: Dark brown.
Size: 148 cm high x 92 cm wide.
Petroglyphs: A belt with some attached item. Groin.
Comment: Black and white photograph for record shows a faint circle closes above the "horns". Possibly the face may have been a pigment that was not permanent.

IN 38.5

Form: Two anthropomorphs and superimposed herbivore.
Color: Brown.
Size: 31 cm high x 23 cm wide.
Comment: Invocation to the god of the hunt?

IN 39.5

Form: Probably anthromorph.

Color: Red.
Comment: Faded, no detail.

IN 40

Form: Anthropomorph.
Color: Red, probably faded from brown.
Size: 61 cm high x 13 cm wide.
Comment: Very thin body, probably a pluviomorph. Possibly a rain shower from hand on right.

IN 41

Form: Anthropomorph.
Color: Brown, faded red spots.
Size: 86 cm high x 44 cm wide.
Petroglyph: Mid body.
Artist: Similar body, head treatment as IN 37.
Comment: Possible rain shower from hand on right.

IN 42

Form: Anthropomorph.
Color: Brown.
Size: 19 cm high x 5 cm wide.
Comment: Above hand of IN 41, on right. Faded, no details.

IN 44

Form: Bear.
Color: Brown.
Size: 27 cm high x 22 cm wide.
Petroglyph: Approximate location of heart.
Comment: Single bear, paired with a single snake, IN 45.5. The two symbols, together, the bear for thunder, the snake for lightning, are probably a hieroglyph meaning "thunderstorm". See also IN 55.5.

IN 45.5

Form: Snake.

Color: Red.
Size: 38 cm long.
Comment: Single snake, paired with a single bear, IN 44. The two symbols, together, the snake for lightning, the bear for thunder, are probably a hieroglyph meaning "thunderstorm".

IN 46.5

Form: Bear.
Color: Brown, faded red highlights.
Size: 23 cm, lower left to upper right.
Comment: Stylized bear. appendages may be due to pigment spreading and staining. See IN 55.5.

IN 47

Form: Anthropomorph.
Color: Brown, faded red highlights.
Size: 54 cm high x 40 cm wide.
Petroglyphs: Heart, lower body.
Comment: No outstanding features.

IN 51

Form: Theopluvian anthropomorph.
Color: Red-brown.
Size: 133 cm high x 83 cm wide.
Petroglyphs: Heart and four lower "buttons".
Artist: IN 54, IN 55.5.
Comment: Rain showers from the end of shortened arms, both sides. Lightning in the form of a horned rattlesnake on left side. The feet are planted on 14 stripes. This pictograph and IN 54 are located on the cliff where a down wash of runoff water from the canyon wall above has caused pigment of the pictograph to run down and stain the cliff a reddish-brown. The strongly emphasized rain showers may be a reflection of the artist's purpose in selecting this water washed location, as has also been observed at other pictograph sites in the region.

IN 54

Form: Theopluvian anthropomorph.
Color: Red.

Petroglyphs: Heart, stomach and groin.
Size: 112 cm high x 83 cm wide.
Artist: IN 51, IN 55.5.
Comment: Rainbow arch over and touching head. Rain showers falling from outstretched arms. (See IN 51 for different location of source of rain showers.) The left side has two lightning symbols (snakes?). Location in down wash stain from runoff of rain shower water from cliffs above has caused the pigment to run down and stain the cliff below. Other pictograph sites in the region are also deliberately placed in water runoff locations.

IN 55.5

Form: Bear.
Color: Red.
Size: 30 cm high.
Artist: Probably drawn in conjunction with IN 54.
Comment: This pictograph may have been the first rendition of the bear. The bear is erect on two hind legs, in a posture that it might be most likely to growl. It could represent the sound of thunder. There are lines radiating from the head of the bear. This technique is sometimes used by modern cartoonists to indicate that an animal is making a sound.

Two lightning bolts are found on the adjoining anthropomorph IN 54. Successive drawings of the bear symbol are to be found at IN 46.5, IN 44, IN 23 and IN 152.7, the latter two being stylized representations of the bear's upright posture. In every rendition of the bear it is seen to be facing to the right, the significance of this a right facing placement is not known. The bear IN 46.5 is associated with an anthropomorph IN 47, but the latter is so lacking in detail that no lightning, even if previously drawn, is apparent. The bear IN 55.5 is in conjunction with lightning on a nearby theopluvian anthropomorph. IN 44 and IN 152.7 are bears that are paired with snakes.

IN 59

Form: A theopluvian anthropomorph is the central figure. It has a halo, much as IN 32. Game animals. A single upright spear.
Color: Brown.
Size: Central theopluvian anthropomorph, 52 cm high x 5 cm wide. Feathers, each 90 cm high x cm wide, 86 cm separation at bottom, 66 cm separation at top. The top upper right bighorn sheep is 15 cm long, sheep below 12 cm long. A double row of bighorn sheep, about 18 between the feet of feathers, 5 to 7 cm long. Anthropomorph to lower left of left feather, 19 cm high x 7 cm wide.
Petroglyphs: Heart of central theopluvian anthropomorph. Head of secondary anthropomorph, lower left. Body of each bighorn sheep (22).
Artist: Same fine line technique as IN 64.
Comment: The artist of this (and IN 64) was an unusually meticulous craftsman. The body

of the theopluvian anthropomorph consists of vertical lines, 1 to 2 mm wide, that give about 50% coverage of the background, the head is solid color. The head is completely surrounded by an oval line. The feathers are not visible from the fence line without binoculars. The shaft of the feathers has about 30 barbs on each side, 1 to 2 mm wide, about 20 cm long, separated by about 5 mm. The feathers may have been used to confer the title of "chief" upon the central theopluvian anthropomorph. Most of the sheep are line drawings, excepting on the left side. On some of the sheep the outlines have completely vanished with time and weathering of the uneven surface: however, the orderly progression of petroglyphs that "killed" the game indicates where the pictographs would have been located. The background of the feathers (at least on a portion of the feather on the right) is speckled with pigment probably to represent raindrops. There may be the representation of a spear in front of the upper right side sheep.

This artist was concerned with rain (the halo, fine line structure of the anthropomorph (see showers IN 64), and speckled dots) as it affected the supply of game animals, as compared to his invocation as expressed in IN 64. On IN 64 he used no petroglyphs.

IN 64

Form: Theopluvian anthropomorph.
Color: Brown.
Size: 103 cm high (left side) x 90 cm wide.
Artist: Same fine line technique as IN 59.
Comment: The artist used a meticulous fine line technique. The body and extended arms are one solid color. The rain showers from the arm are about 25 cm long, 1 to 2 cm width, with approximately 5 mm separation (note width and spacing are similar to IN 59). There are about 45 vertical lines on each side. The two "stains" below the showers, one on each side of the body are fine line structured rain showers, slanting down to the right may indicate wind shear. On the left is a solid color vertical shaft, with three curved lines on each side originating from the top end of the shaft where it connects to the arm. These possibly represent lightning. A rock ledge at the bottom of the theopluvian anthropomorph's body, slanting down to the end of the shaft has not retained pigment, with complete loss of the pictograph below this level.

2.5 miles down the canyon is the entrance to Calf Canyon, leading up to the east. Up Calf Canyon 2 miles, at the junction of Cow Canyon, are three caves in the north wall of the canyon. The cave to the west was occupied by living quarters, the central cave has some lithic scatter, the eastern cave a few petroglyphs and on the east wall a pictograph site. The anthropomorphs on the panel are hardly visible. A grid of black lines below the anthropomorphs suggests a map of the canyon floor below, possibly dividing the floor into plots of ground for whatever crops would have been grown there. Of particular interest is a faintly visible panel that consists of rain falling from a cloud above. In the falling rain is the snake/ lightning symbol, painted on a portion of the cave wall that had been polished to receive the paint. The line structure of the falling rain is similar to the techniques used in the IN 59 and IN 64 pictographs. Possibly the artist that drew IN 59 , IN 64 and the pictograph

in the east cave lived in this small community.

IN 66

Form: This pictograph has three sections. Along the left side are astronomical events. The middle section is a theopluvian nephomorph. Down and to the right from the nephomorph is a rain shaft
Color: Reddish brown.
Size: Meteor trail, 5 m (500 cm); crescent moon and unknown attached feature, 35 cm high x 22 cm wide. Nephomorph, 35 cm high x 22 cm wide. Rain shaft, 205 cm long x 20 cm wide. Artist: One of a kind!
Comments: This artist was a critical observer of day and night phenomena, and presented them in a stylized form.

On the left is the trail of a meteorite across the night sky. It passed behind a cloud--or over the Milky Way? Also, this could be a reference to the nova that appeared near the crescent moon, July 1054. If so, this dates this particular panel as having been painted after July 1054. The moon's phase was about three days past new moon, a few hours after sunset judging from the direction of curvature of the new moon. There are 14 dots delineating the meteorite's path where it passed behind or through the feature recorded near the crescent moon.

The theopluvian nephomorph, a stylized cumulonimbus cloud is a masterpiece of symbolism. Occasionally a thunderstorm cloud develops without having a cloud wall that obscures the internal rain shaft. IN 66 could be the representation of such a cumulonimbus cloud. The top of the cloud has 7 upward projections. Could these represent feathers to confer the title of "chief", or could the artist have experienced or seen the hair on his or someone's head standing erect while on a mountain top, due to the enhanced electric field from a nearby thunderstorm? Static electricity might have induced a corona current emanating from the hair in such circumstances, but it would be a rare event that anyone survived the probable subsequent lightning bolt.

Cloud to ground lightning bolts are seen emerging from the top of the cloud. Such bolts usually take the curved path depicted, around the cloud, on their way to ground. The bolt on the left is associated with the rain shaft from the bottom of the cloud, the one on the right is associated with the second rain shaft to the right and slanting downward to the right.

Internal structure of the cloud shows a rain shower as dots down through the cloud, and out at the bottom. The rain shafts are delineated at their boundary by solid lines, both in and out of the cloud. Outside the rain shaft boundary, but within the cloud are two lightning bolts, one on either side of the rain shaft representing cloud to cloud internal lightning activity. A gap in the rain shaft continuity may be an obscuring, or an attempt to give the cloud "eyes" to anthropomorphize the thunderstorm cloud. There are 14 dots in the region above the "eyes".

The rain shaft slanting from the vicinity of the cumulonimbus down to the lower right has solid line boundaries delineating the rain. The slanting rain shaft, at an angle from the rain shaft from the cloud above could be a record of a rain shaft that has been bent by wind shear. It is more likely that the artist is separately recording what he observed regarding the optical characteristics of rain drops and sunlight near the earth's surface. The raindrops are small streaks, rather than dots. When one stands on the edge of a cliff during a rain shower that has large drops, with the sun at one's back shining on the observer and the raindrops, the raindrops take on the appearance of being brightly shining small streaks.

The artist drew the raindrop streaks in the rain shaft to the lower right of the cloud as being 3.2 cm long and 5 mm wide. The reason he chose the 3.2 cm length for the raindrop streak can be explained by experiment and calculation.

When a raindrop falls through a narrow cone of space as seen by the eye, the rain drop will be brilliantly lit by back scattered sunlight from the droplet, while the droplet is within the cone. Geometrically it can be shown that the length of the streak of light from the raindrop as seen by the eye subtends an angle of about 6.3 degrees. Persistence of vision of a bright light makes the raindrop appear to be a streak as it traverses the cone of brilliant back scattered light. The rain drop would have to be beyond 40 feet before persistence of vision would not result in a streak that subtended the cone of back scattered light. If an artist were standing such that his eye was 29 cm from his canvas, and drew the raindrop streak to subtend that same angle, he would draw the streak 3.2 cm long, as did the artist of IN 66. If this was the artist's intent, to represent the raindrops near the earths surface as streaks, he was a remarkable observer of natural phenomena.

It is difficult to understand how the artist knew (if he did) that maximum size of a raindrop is 5 mm diameter, since the terminal velocity of a 5 mm drop is over 900 cm sec^{-1}. It could be that the artist saw and noted the largest size of hole left as a raindrop fell into dust, or flour.

Miniature copies of portions of his work appear in IN 128 and 153.5. If not his work, copies of his work give evidence of his reputation among his peers.

IN 75

Form: Theopluvian anthropomorphic nephomorph.
Color: Brown.
Size: 90 cm high.
Petroglyphs: Heart and groin.
Artist: IN 76.
Comment: IN 75 and IN 76 have the same body style of drawing, thin torso, leaning to the right, length and bend of legs. IN 75 has no arms, possibly faded with time. When viewed from the side altocumulus lenticularis clouds can sometimes be seen to be curved, the cloud following the curve of nonturbulent airflow as it flows up, over, and down a mountain. If this cloud were to be reproduced by an artist as an anthropomorphic nephomorph, it would be curved as if leaning to the right if viewed from north of the cloud (since upper air flow over a mountain is always from the west in the temperate zone). The lack of arms may be

deliberate, since a cloud has no arms, but the artist could not resist adding legs. This is one of the earlier pictographs, drawn when the subject matter was presented more as seen in the sky, than were later artist interpreted pictographs.

IN 76

Form: Theopluvian anthropomorphic nephomorph.
Color: Brown.
Size: 72 cm high x 29 cm wide.
Petroglyph: Heart and groin.
Artist: IN 75.
Comment: Same body style as IN 75, except with outspread arms and fingers, holding snake/lightning on left side. There are 14 orange stripes above IN 76, IN 76.5. The nephormorph leans to the right as does IN 75, comments regarding the leaning are the same as noted for IN 75.

IN 76.5

Form: Anthropomorph.
Color: Faint red.
Size: 51 cm high x 28 cm wide.
Petroglyph: Mid body.
Comment: Outspread arms, with snake/lightning on left side. 14 stripes are above IN 76 and IN 76.5. There are about eight faint red stripes below IN 76.5. There may have been 14, but the others, numbering to a total of 14 could have been broken off from the face of the cliff.

IN 80 Low Level.

Form: Two lobed theopluvian nephomorph, flanked by pluviomorphs.
Color: Reddish brown. Stripes and rabbit, red.
Size: 170 cm high x 35 cm wide, rabbit 24 cm long x 16 cm high.
Petroglyphs: Heart of nephomorph, front leg and head of rabbit.
Comment: This pictograph is located at ground level, no scaffolding was necessary to paint this figure as it was for many other pictographs in the immediate vicinity. It is directly under the natural "rainbow/cloud" and "rain showers" on the cliff above. This would be the most sacred location on the cliff face, and is probably the first pictograph to be painted. The artist may have faithfully reproduced an altocumulus lenticularis cloud form such as shown in Figure 2. The cloud form apparently had only one down wind lobe. Pictographs painted at a later time are more elaborate and imaginative.

To the left are 14 rain shower stripes. There are a number of rain shower stripes to

the right that are too faint to adequately examine, probably 14 in number. An enlargement at the top of each stripe suggests the artist was presenting the stripes as having heads, and should be classified as stylized pluviomorphs.

The rabbit, looks like a long eared jack rabbit, was important as a source of food, leather and fur.

The upper portion of the IN 80 neophomorph appears in the sketch labeled IN 80 to IN 84 Middle.

IN 80 to IN 84 Middle Level.

Form: Rainbow, or nephomorph.
Color: Ochre.
Size: 86 cm high x 177 cm wide.
Petroglyphs: At ends of arch.
Artist: Ochre pigment also used in IN 94, IN 96, and IN 97. Comment: The artist made a faithful copy of the natural arch 83 feet above. Figure 4 is a sketch of the original arch and from Table 1 it can be seen that the artist reproduced the skewed proportions of the natural arch to within a few percent.

Concretion	h/d	0.36
Pictograph	h/d	0.40
Concretion	r/d	0.62
Pictograph	r/d	0.60

Table 1. Comparison of concretion and pictograph arch.

It is not certain how the Fremont Indians interpreted the naturally arched concretion on the cliff above. It could have been interpreted as a rainbow, or as cloud, or had a double meaning. A similar situation exists at the Old Woman Wash and there the Fremont Indians interpreted an arched feature on the canyon wall as cloud, because below it they petroglyphed a number of rain shower symbols (see discussion of other archeometeorological sites at the end of the Buckhown Draw pictograph inventory).

IN 84 Middle Level.

Form: Panel of nephomorphs.
Color: Brown.
Size: 44 cm high x 73 cm wide.
Petroglyphs: See Comments.

Comments: At the right end of the arch are 14 pluviomorphs, some with petroglyphed heads. The simplicity of form compared to the water stains on the cliff above leads to the conclusion that the water stains above were considered to be a sacred symbol of the rain gods within the cliff.

There are two snakes, one with a petroglyphed head, and a petroglyphed bighorn sheep.

IN 80 to IN 84 High Level.

IN 80 High.

Form: Panel of anthromorphic pluviomorphs.
Color: Brown.
Size: About 80 cm high x 60 cm wide.
Comments: Four anthropomorphic pluviomorphs, IN 80 to IN 81, at a level above ground that would require a scaffold to paint. The intent of the artist was to create images that empowered the sacred power of the natural features above. They are directly below the water stain "rain showers" on the cliff above. Their long, thin appearance suggests the artist modeled the pluviomorphs after the form of the water stains.

The first group painted was probably a triptych, consisting of the second, third and fourth pluviormorphs. The third figure has its feet facing forward, the second to the right, facing the third. The fourth has no feet, possibly faded out. Arms of the central pluviomorph terminate in rain showers. The lines at mid level of the figures is symmetrical in number on both sides of the central figure, and the two bird figures are on either side of the central figure. Initially there may have been only three bighorn sheep above the triptych.

Another artist probably later added the pluviomorph on the left (its proportions differ from the other three), so his artistic addition would partake of the prestige of the original triptych. The 28 stripes above all four figures were probably added at the same later time, since the stripes are centered over all four figures.

IN 82 High.

Form: Two theopluvian anthropomorphic pluviomorphs.
Color: Brown.
Size: 125 cm high x 44 cm wide.
Comment: The artist took artistic liberty in portraying these pluviomorphs, assumed to be such because of their proximity to other pluviomorph figures nearby. Their form is not tapered. Symmetry is seen in the placement of two birds over the figures. The left figure has a rain shower pendant from one arm. The feet on the left figure are turned to face the figure on the right, the feet of that on the right are missing. Between the pair is a horned lightning/rattlesnake.

IN 83 High.

Form: Theopluvian anthromorphic nephomorph.
Color: Brown.
Size: 23 cm high x 23 cm wide.
Comments: Occasionally when looking toward the Wasatch Plateau a patch of cloud can be seen that extends along the ridge line. Should an altocumulus lenticularis cloud be located within this patch, the cloud formation, when inverted, may have a winged form such as appears in this pictograph.

This type of cloud may be the model for this pictograph, rain showers from outstretched arms. The figure has 14 lines downward from the outstretched arms on each side, for a total of 28.

IN 79 to IN 85 High.

Form: Bestiamorphs.
Color: Brown.
Size: Double lined snake figures, lines 3 to 4 cm apart.
Comment: These figures may have been the last pictographs added to the IN 80 to IN 84 panel.

Two snakes are vertically suspended along the upper left border of the panel.

Two are cross bodied horned rattlesnakes. They are painted over the IN 80 to 84 Middle rainbow/cloud arch, and proceed to the right upper border of the IN 80 to 84 High panel. These might be interpreted as messengers to the underground and invisible rain gods within the cliff. In contrast, in the pair of figures IN 115 and IN 116 and in Figure IN 147 the snake messengers are in the presence of a visible rain god.

There are two looped double lined designs, one centered under the pluviormorph triptych at IN 81 High, the other under the paired pluviomorphs at IN 82 High. The intent of these designs is an enigma.

IN 79 to IN 85 High.

Form: Spattered paint drops.
Color: Brown.
Comment: Above all is a thick crescent shaped speckled area, horns down, stretching from the two snakes on the left border, up over the four bighorns and two flying ducks, and down to the theopluvian. Paint has been spattered in the area as a representation of a rain shower. This reinforces the interpretation that the Fremont artists considered the natural concretion above symbolically represented a rain cloud.

IN 86.5 and IN 87.

Form: Unknown.
Color: Red.
Size: 22 cm high, each.
Comment: Faded, no detail.

IN 89

Form: Anthropomorphic theopluvian.
Color: Brown.
Size: 167 cm high x 95 cm wide.
Petroglyphs: Heart, mid-body and groin.
Comment: This is an especially complete theopluvian, with a rainbow/cloud, lightning, rain showers on the right. The legs are curiously jointed, more canine than humanoid. From the forked lower left end of the rainbow/cloud (lightning?) a speckled area of spattered paint fans down narrowly downward to the level of the feet. From the lower right end of the rainbow/cloud (lightning) a speckled area of spattered paint fans broadly downward to about the level of the petroglyph at the groin. The speckled areas represent rain showers.

IN 92

Color: Red.
Comment: Faint, no details.

IN 93

Form: Theopluvian nephomorph.
Color: Brown.
Size: 126 cm high x 41 cm wide.
Petroglyphs: Head, waistline, two at groin level.
Artist: Same as IN 93.5, IN 98A, IN 99, and IN 100. Long thin nephomorphs, with upraised arms. Two, IN 93 and IN 99 have dotted chests. Four, IN 93.5, IN 98A, IN 99 and IN 99.5 hold in one hand an uplifted unidentified object (flute?).
Comments: Only nephomorph (no feet) with petroglyphed head. Arms uplifted in supplication, chest area has 40 dots representing rain.

IN 93.5

Form: Anthropomorph.
Color: Red.
Size: 44 cm high x 18 cm wide.
Petroglyph: Groin.
Comment: Has arms stretched up in supplication as does IN 93.

IN 94, 96, 97.

These were originally a triptych of probably unhorned anthropomorphic pluviomorphs. A second artist has overpainted the original brown figures with an ochre pigment. The dotted lines of IN 94 and 97 are outlines of the original brown figures, the solid lines are the overpainted ochre figures. The horned figures appear not to be of the same slender character as the originals.

The legs of IN 94 and IN 97 overpainted figures appear to be in a dancing mode, as are no other of the Buckhorn pictographs. The original brown feet of IN 94 face right toward the central figure of the triptych, IN 96, the brown feet of IN 97 face left toward IN: 96. The feet of IN 96 face forward.

The petroglyphs are through the overpainted ochre pigment. This implies the possibility that all the petroglyphs on the Buckhorn pictographs may have been added at a later date.

IN 94

Form: Original anthropomorphic pluviomorph, overpainted with horned anthropomorph.
Color: Ochre overpainted on brown.
Size: 101 cm high x 41 cm wide.
Artist: Horned figures at IN 96, 97 and 99.5. Possibly ochre rainbow, IN 80 Middle, because of pigment.
Comment: This artist, is the only one except for the cloud/rainbow, to use an ochre pigment. Snake/lightning, left side. The ochre toe of the leg on the left almost touches the lower end of the ochre snake. The original brown legs are shown as dotted lines. The feet of the original figure are turned to the right, toward the central figure.

IN 96

Form: Anthropomorphic pluviomorph.
Color: Brown.
Size: 133 cm high x 25 cm wide.
Artist: See IN 94.

Petroglyph: Heart.
Comments: Very thin body, lighter colored pigmented ochre band across chest, and an ochre belt at the waist have probably been overpainted on the original figure. The horns are very faint, original or overpainted is uncertain. Petroglyph over heart. A light band (no desert varnish representing a rainbow/cloud is over the shoulders and behind the head may have been pigmented at one time, protecting the cliff surface from desert varnish development. (The double line outlining the area does not appear on the pictograph.) The pigment still remains as appendages on the lower ends of the rainbow/cloud. The feet of the original figure are facing forward.

IN 97

Form: Anthropomorphic pluviomorph.
Color: Ochre, brown snakes.
Size: 100 cm high, x 37 cm wide.
Petroglyphs: Heart, shoulders.
Artist: See IN 94.
Comments: The legs shown are the overpainted ochre figure. The original legs, faint brown paint, are shown as dotted lines. The two snakes (?) at the shoulders are the original brown. The feet of the original figure are turned to the left, facing the central figure.

IN 98A

Form: Anthropomorph.
Color: Brown.
Size: 49 cm high.
Artist: See IN 93.
Comment: This series of theopluvian/anthropomorphs has upraised arms, holding an unidentified object (A flute? Was music part of the ritual?) in one hand, in this pictograph on the left.

IN 98B

Form: Necklace.
Color: Brown.
Comments: A necklace consisting of ten elements. The form of the anthropomorph is vaguely visible. The body pigment is weathered away, leaving only a faint shadow on the background where the desert varnish is not as well developed as is the background.

IN 98.8

Form: Bear.
Color: Red.
Size: 21 cm long x 10 cm high.
Petroglyph: Heart.
Comments: One of six bear pictographs. This is the best representation, the humped back suggests a grizzly bear. This pictograph overlays IN 99. See IN 55.5 for comments on bears.

IN 99

Form: Nephomorph.
Size: At least 136 cm high.
Artist: See IN: 93.
Comments: Another pictograph where the pigment has weathered away, leaving a shadow where the desert varnish is not as well developed as on the surrounding surfaces. The outline of the original pictograph is shown on the sketch. The upraised arm on the right grasps an unknown object (flute?). The chest area has four rows of dots, for a total of 28 probably a representation of rain drops.

IN 99.5

Form: Horned anthropomorph.
Color: Red.
Size: 49 cm high x 26 cm wide.
Artist: See IN 94.
Comments: The last of a series of four horned anthropomorphs -- this one has an articulated hand. Each of the four treats legs and feet in a different manner.

IN 100

Form: Nephomorph.
Color: Brown.
Size: 136 cm high x 41 cm high.
Petroglyph: Heart, groin.
Artist: See IN 93.
Comment: Tall, thin curved nephomorph (see IN 75), uplifted arms, hand articulated on left, holding unidentified object on right (flute?, atlatl?).

IN 100.5

Form: Theopluvian anthropomorph.
Color: Brown.
Size: 46 cm high x 36 cm wide.
Petroglyph: Groin.
Artist: IN 102.5, IN 105, IN 107, IN 108, (IN 116?), IN 128, IN 152.
Comments: This is one of a series of theopluvian anthropomorphs that are characterized by arms that terminate in solid circles. If not the same artist--then the form of expression of this pictograph set a trend. It appears that streams of water flow from most of the circles. These can be interpreted as rain showers. Only on the right side does this anthropomorph have comparatively long streams, curved as if some one had shaken a hose nozzle to make the water streams exhibit waves.

IN 101

Form: Animal--deer, elk?
Color: Brown.
Size: 36 cm high x 71 cm wide.
Petroglyphs: Heart, abdomen (3), tail, at each hoof (4), in front of nose (2).
Comment: The largest animal pictograph. There are no apparent meteorological phenomena associated with this pictograph.

IN 102.5

Form: Theopluvian anthropomorph.
Color: Red.
Size: 84 cm high x 50 cm wide.
Artist: See IN 100.5.
Comments: If the IN 94 series is a horned headdress, they then set the precedent for this anthropomorph to be wearing a feathered headdress, or to be a chief. Enhanced photography indicates there is a rainbow/cloud/halo enclosing the head. On the left is the stylized rain shower streaming from a solid circle, on the right are the showers, but no solid circle.

IN 104

Form: Probably anthropomorph.
Color: Red.
Size: 127 cm high x 38 cm wide.
Petroglyphs: At top of solid portion of remaining pigment. Comments: The upper two thirds are faded, no body details, except a rainbow/cloud that survives at the top. The lower third looks like a stylized tornado--but is probably just a preservation of only a part of the

whole pictograph, a dancing figure, such as IN 94.

IN 105

Form: Theopluvian anthropomorph.
Color: Red.
Size: 118 cm high x 61 cm wide.
Petroglyph: Waistline.
Artist: See IN 100.5.
Comments: Downward projecting arms with solid circles generating showers. Showers overlay IN 104 and IN 107. Very long arms. Horizontal projection from shoulders, with 7 rain showers on left, four on the right.

IN 107

Form: Theopluvian anthropomorph.
Color: Red.
Size: 102 cm high x 52 cm wide.
Petroglyph: Lower abdomen.
Comments: The head is capped with what may be a stylized portrayal of the incus or anvil cloud that spreads from the upper portion of a cumulonimbus cloud. The arm on the left terminates in a circle emanating rain showers. It overlays IN 105. The arm on the right is only a partial, it terminates in; the vicinity of the uplifted arm of IN 108.

IN 108

Form: Theopluvian anthropomorph.
Color: Red.
Size: 107 cm high x 48 cm wide.
Petroglyph: Groin.
Artist: See 100.5.
Comments: Arm on left, feet, faded, no detail. Rain showers emanating from circle on uplifted arm on right.

IN 110

Form: Theopluvian anthropomorph.
Color: Red.
Size: 72 cm high.
Comment: Head, feet, arm on right faded, no detail. Snake/lightning from arm on left,

snake/lightning also on right.

IN 114

Form: Probably theopluvian anthropomorph.
Color: Red, faint.
Size: 45 cm high.
Artist: See IN 100.5.
Comment: Faded no details. The head, placed on a narrow neck appears on the pictographs from IN 100.5 to IN 147, possibly the same artist painted all or most of those figures.

IN 115 and 116

Form: Sidewinder bestiamorph and theopluvian anthropomorph.
Color: Sidewinder red, brown head; brown anthropomorph. Size: Panel, 66 cm high x 78 cm wide.
Artist: See IN 100.5.
Comment: Stylized bestiamorph representation of the lightning/sidewinder snake. The anthropomorph is similar to IN 100.5, except the arms are up. As noted previously in the section entitled Invocations to the Gods, a Hopi ceremony releases rattlesnakes to carry their prayers for rain to their underground rain gods. Does this panel represent that a rattlesnake messenger carrying a Fremont prayer has met and is supplicating an underground rain god for his favor?

In Nine Mile Canyon there is a petroglyph with a similar sidewinder bestiamorph in supplication to a panel of raindrops similar to IN 129 to 135.5.

IN 117

Form: Anthropomorph.
Color: Red.
Size: 37 cm high x 14 cm wide.
Comments: Faint, few details. There may be a snake/lightning.

IN 119 to 125.5

Form: Theopluvian anthropomorph.
Color: Brown.
Size: 156 cm high x 197 cm wide.
Petroglyphs: Heart, navel.
Comments: This pictograph, like IN 51 and In 54 is located on the cliff side where a down

wash of runoff water from above stains the canyon wall. The arms are upraised. Horizontal lines supporting rain shower symbols spread out from both shoulders. The artist probably drew the rain showers on the left side, 15 -- then counting, he realized he could put only 13 on the right side to get the sacred number: 28.

IN 126

Form: Theopluvian anthropomorph.
Color: Brown.
Size: 42 cm high.
Comments: Faint, details at the top indistinct. Rain shower from upraised arm on right.

IN 126.5

Form: Theopluvian anthropomorph.
Color: Red.
Size: 107 cm high x 35 cm wide.
Petroglyph: Heart.
Comments: Arm on right uplifted. Arm on left becomes rainbow/cloud over head, and continuation on right becomes lightning to ground.

IN 128

Form: Theopluvian anthropomorph.
Color: Brown.
Size: 31 cm high x 20 cm wide.
Petroglyph: Chest.
Artist: See IN 100.5.
Comments: Arms down at sides, possibly ending in circles. Feet faded, no details, if not ever painted this could be a nephomorph. The rain shower symbols have been influenced by reference to the powerful pictograph IN 66. There is a dotted upper portion of the rain shower, but the lower portion has solid lines rather than small streaks. The rain shaft has a wind shear, dots above, lines below. The artist of IN 66 was apparently a wise man, whose work was worth emulating.

IN 129 to 135.5

Form: Horizontal rows of dots.
Color: Brown.
Size: 12 cm high x 165 cm wide.
Comments: Three rows of about 90+, or over 270 dots, total. Dots in other pictographs represent rain (see IN 128). This pictograph may be a record of rainfall, but, as are the other pictographs, is probably an invocation to the gods to put rain on the ground.

The Nine Mile Canyon petroglyph (See IN 115.) has the horned rattlesnake bestiamorph in supplication to similar rows of dots, as if the rain dots were a theopluvian pluviomorph.

IN 147

Form: Sidewinder bestiamorph and theopluvian anthropomorph.
Color: Brown anthropomorph. Red-brown snake.
Size: 35 cm high anthropomorph.
Petroglyphs: Groin, rainbow, solar disc.
Comments: The comments of IN 115 and 116 are applicable to this pictograph/petroglyph panel.

The lower portion of the rattlesnake/lightning is faded, no details. The rainbow is a petroglyph, its outline represented by dotted lines. It splits on the right, maybe the artist viewed a portion of a double rainbow on the right end. The ends of the rainbow are deeply petroglyphed. The dimensions of the inner petroglyphed rainbow approximates that of a natural rainbow, unlike the rainbow/cloud at IN 80 to 84 Middle.

The artist understood the relationship between the sun and a rainbow -- a solar disc is represented by three petroglyphed concentric rings.

IN 151

Form: Theopluvian anthropomorph.
Color: Brown top, red bottom.
Size: 79 cm high.
Comment: Unremarkable.

IN 152

Form: Theopluvian anthropomorph.
Color: Brown top, red lower level.
Size: 75 cm high.
Artist: See 100.5.
Comments: Arms horizontal. Another anthropomorph with arms that terminate in solid circles, with emanating rain showers.

IN 152.3 and 152.7

Form: Horned snake and stylized bear, paired.
Size: Snake 35 cm long, bear 14.5 cm long.
Comments: Paired snake/bear, lightning/thunder, the Fremont hieroglyph for thunderstorm. See In 55.5. The snake and its paired bear may be in supplication to a theopluvian anthropomorph as in IN 147.

IN 153

Form: Anthropomorph.
Color: Brown.
Size: 43 cm high.
Comment: Anthropomorph with arms raised in supplication.

IN 153.5

Form: Anthropomorph, theopluvian nephomorph.
Color: Brown.
Size: 29 cm high.
Artist: See IN 128.
Comments: Unusual, an anthropomorph in profile, both arms to the right, raised in supplication to a theopluvian nephomorph, a representation of a cumulonimbus cloud. Very much like the upper portion of IN 66. 7 projections from top (feathers of a chief?), solid line rain showers from bottom of cloud. As in IN 128, the artist of IN 66 was apparently a wise man, whose work was worth emulating.

IN 149 to 154

Form: Petroglyphed dots.
Petroglyphs: Dots only, no pigments.
Comments: Petroglyphs can be seen on bodies of IN 153, and IN 153.5. See also comments for IN 129 to 135.5.

IN 156

Form: Unknown.
Color: Red.
Size: 16 cm high.

Old Woman Wash.

The Old Woman Wash pictograph/petroglyph site is about five miles east of Temple Mountain, in the San Rafael Reef.

As at Buckhorn Draw, the site has a source of water from within the cliff in the form of a cave near the top of the cliff. The cave appears to be shallow, and has probably been formed by runoff of surface water through a vertical crack in the cliff. The cliff face in the immediate vicinity also has numerous dark water stains from surface runoff above.

The dominant figure of the panel is an armless, legless theopluvian nephomorph. Some figures appear to be anthropomorphic nephormorphs. Other symbols represent weather phenomena, rain showers in various presentations, some possible snake/lightning symbols.

As at Buckhorn Draw, an arch has been painted on the pictograph panel that duplicates proportions of a natural arch 10 m upstream from the panel. The painted arch being segmented, could represent a rainbow. The natural arch has an interesting series of petroglyphs inscribed on the side of the shelf below the arch. There are 22 anthropomorphic pluviomorphs, side by side, below the central portion of the arch. Each consists of a vertical arrangement of four equally spaced rain drops approximately 40-50 cm tall, approximately 10 cm apart. The top three dots have 5 dependent lines reaching down almost to the drop below. The bottom drop has only two lines, as if for legs. The intent of the petroglyph panel is to represent a rain shower, with the arch above representing the swelling cumulus cloud rain source.

The natural arch, both here and at Buckhorn Draw, appears to have been interpreted as being a representation of a cloud. When an arch is incorporated in a pictograph it sometimes partakes of the appearance of a rainbow. The ambivalence of how to exactly interpret the painted arch leads to ascribe it a dual nature as rainbow/cloud.

Canyonlands National Park (Horseshoe Canyon)

Horseshoe Canyon is that portion of Canyonlands National Park west of the Green River. Barrier Creek runs through the canyon, and from that comes the designation of the panels as Barrier Canyon pictographs.

There are three significant pictograph panels.

The first panel is up canyon about 0.5 miles from the jeep trail. On the southeast wall of the canyon, it is always in the shade, and the canyon wall has water stains on a portion of the cliff above the panel. The figures are theopluvian anthropomorphic nephomorphs, with legs, but no arms. Some have vertically striped bodies.

The second panel is across and up canyon, on the sunny side. There are no water stains on the cliff wall where the panel is located. However, the sandstone cliff has two colors, a tan layer above a gray layer. The pictograph figures are placed on the gray layer, and could be classified as theopluvian anthropomorphic nephomorphs, none with legs. Unlike other panels in the region, the body of the theopluvians are strongly tapered from top to bottom, in some cases being almost as wide as it is tall. Some of the bodies are ornamented with lines, but most have solid color bodies. A few have arms. Classifications

of the figures is uncertain, theopluvian nephomorphs figures are notably higher than wide. Suppose the darker sandstone layer were to be considered the base of a rain cloud, the lighter sandstone layer could be the sky seen beyond the base of the cloud. The figures then could be considered to be rain showers, from the cloud, against a sky background. The figures would then be classified as theopluvian anthromopomorphic pluviomorphs.

The third panel, almost two miles up canyon, on the same side as the second panel, is the Grand Gallery. From this panel has been derived a description that has become the archetype for describing other pictograph figures in the region: The Barrier Canyon style. The large dominate figures are probably theopluvian anthropomorphic nephomorphs, their design derived from the altocumulus lenticularis cloud form of Figure 2, with a shortened and rounded trailing end. Nearly all are without arms or legs. Many of the pictographs have the vertical stripes of the rain shower symbol on the body of the nephomorph. Some of the figures have blank eyes.

One of the third panel figures has many of the features of the Buckhorn Draw figure IN 66. Although the figure adheres to the rule of site that the outer form of the figure be that of an altocumulus lenticularis, the decorations on the figure are those of an active thunderstorm. It has rain within its body with cloud-to-cloud lightning, cloud-to-ground lightning outside the body, eyes formed by blanks in the rain shower within the head, striped rain drops in the lower body, and ornamentations along the shoulders and lower waist that appear to number 28, each. The adjacent theopluvian nephomorph, adorned with lightning designs, has an attendant anthropomorph in a posture of supplication.

The Doll House Vicinity.

About one mile west of the Doll House formation, about five miles southwest of the confluence of the Green and Colorado Rivers is a small panel, about one meter wide, that has a variety of meteorological symbols. The artist was alert in his observations of cloud forms and may have visited other pictograph sites because the forms of his figures are similar to other pictographs located many miles away, in Horseshoe Canyon and Buckhorn Draw.

A double lobed theopluvian nephomorph, like Buckhorn Draw IN 80, but with a blunt lower end as are the Barrier Canyon Grand Gallery pictographs, with legs. (As an aside, a double lobed theopluvian nephomorph is located in a cave on the east shore of the lake in Joe's Valley.)

Another is like the Grand Gallery pictographs, no arms, no legs, with vertical stripes. Those two, and a third anthropomorph, are curved, concave to the right, (See Buckhorn Draw, IN 75, IN 76), as if the artist was viewing altocumulus lenticularis clouds as they would appear when viewed over the Henry Mountains to the southwest.

Two others are like the second gallery Barrier Canyon forms, strongly tapered from top to bottom, no arms, no legs, one with vertical stripes.

In the upper right are four theopluvian anthropomorphic nephomorphs, no heads, with lightning/snakes between. Below are rain shower symbols, with corn plants growing from the ground below the showers.

Near the bottom, unique to this site, is a pictograph that may be a rendition of

crepuscular rays. Two broad gray horizontal lines, one could represent the earth, and the one above a distant mountain range, with red rays of sunlight emanating from behind the upper gray line. The rays, if extended downward would converge to a point below the gray lines. With the sun below the horizon, at the point of convergence, this would be the appearance of rays of sunlight shining between cumulus cloud turrets in the west, and up into the evening sky. A portent of rain on the morrow.

Sego Canyon.

A few miles north of Thompson, Utah, is the Sego Canyon pictograph site, decorating the cliffs on both sides of a shallow canyon. The basic figure is very similar to the Horseshoe Canyon pictographs, theopluvian nephomorphs with no arms nor legs. As at the Grand Gallery, a few of the heads have large blank eyes. There are also a few lightning/snake symbols.

Black Dragon.

The Black Dragon panel is in Black Dragon Wash in the San Rafael Reef, just north of highway I-70. There is only one large theopluvian nephomorph with legs at this panel. The body has the vertical stripes of a rain shower. The unusually large, sprawling, pictograph may be an eared grebe, a water fowl that occasionally is found in this part of Utah.

Head of Sinbad.

Head of Sinbad is about 35 miles west of Green River, Utah, just south of highway I-70. Two small panels have theopluvian anthropomorphs. Two figures have the large eyes noted at the Grand Gallery of Horseshoe Canyon. Accompanying features are lightning/snakes, and rain shower symbols. Complex diagrams, open circles combined with arches could be an artists expression of a cloud with rain drops below. The four larger open circles, two above, two below, in line with a lightning/snake held by one of the anthropomorphs are an enigma.

Prickly Pear Flat.

Prickly Pear Flat is a pictograph site about 8 miles southeast of the top of Cedar Mountain, and about 6 miles from the Buckhorn Draw pictograph site. The face of the cliff has a discontinuity, much as does the Buckhorn Draw site, that may have been a source of water seeping from the cliff. The surface of the cliff in some areas of the panel has disintegrated, leaving only partial figures for viewing. Intriguing are glimpses of rain

High, a small figure with rain showers from outstretched arms. Another similarity is a horned rattlesnake bestiamorph is in supplication to a theopluvian anthropomorph as in Buckhorn Draw IN 147. The upraised arm of the anthropomorph apparently terminates in a circle that is the origin a rain shower as does the IN 100.5 series of Buckhorn Draw pictographs.

McConchie Ranch.

McConchie Ranch, on Dry Creek, northwest of Vernal, Utah, is the site of extensive petroglyph panels. The west end of the panels has several Barrier Canyon style theopluvian anthropomorphs, and nephomorphs.

There are a few minor pictographs, one is an almost exact duplicate of the enigmatic Buckhorn Draw IN 156.

Fremont Indian State Park, Sevier, Utah.

A petroglyph site, with several panels. Among them is a theopluvian anthropomorph, with a corn stalk in one hand, and holding a nephomorph in the other. The design has been copied as a support for the park mail box.

On one panel is a very small rendition of a rain cloud. It consists simply of an arch, opening downward, with one large circular raindrop at the base of the arch, and another raindrop below. It is 10 cm. high, 6 cm. wide.

An upper level petroglyph is a theopluvian anthropomorphic nephomorph. The upper body and horned head have the desert varnish completely removed by petroglyph marks. The outlined lower part of the body has ten vertical lines of dots within the outline, representing a rain shower. There are arms, but no legs. The lower outlined border of the figure is wavy.

Lyman Lake State Park, Arizona.

Just east of the camp ground is a small hill, with petroglyphs on the sides, and on top on the horizontally exposed sandstone layers. Several petroglyphs on top, with an open view of the sky, consist of a snake and a bear paw print. With the snake and bear in conjunction, these hieroglyphs could also represent thunderstorms. They could be a revised portrayal of the thunderstorm hieroglyph by Fremont Indians that migrated 350 miles south of Buckhorn Draw to a more fertile area, forced south by drought. Or this could be an exchange of information by peoples living apart over this distance, so that both utilized the snake and bear hieroglyph to represent a thunderstorm.

CONCLUSION.

The reason for discussing other sites is to show that the inspiration for creating the pictographs that are invocations to the rain gods at the Buckhorn Draw site is not unique. As a conjecture, the Buckhorn Draw and/or Old Woman Wash geological features may have been the site(s) of origin of the ritual of drawing the figures that are theopluvian nephomorphs and pluviomorphs. Other pictographs and petroglyphs may have been placed on less suitable sites as the ritual became more widely practiced throughout the Fremont community.

The Buckhorn Draw pictograph panel is unusual in the varied ingenuity of expression of a single theme by the artists that executed the figures. As such, its diversity and geological features have provided clues to interpret the figures that represent the meteorological theme at other Fremont Indian pictograph and petroglyph panels.

Both Old Woman Wash and the Doll House area pictograph panels also show the diversity of expression such as is found at Buckhorn Draw.

The Horseshoe Canyon sites lack the diversity of expression form of figure found in the panels discussed above. Each of the three sites has a different dominate type of form expressing their invocations to the rain gods theme. The third panel figure that has features much the same as Buckhorn Draw IN 66, and a 28 count on some of its ornamental features, must have been painted at a later date since the number 28 is derived from a geological feature at Buckhorn Draw.

The other sites discussed contain elements of meteorological phenomena, but not to the exclusion of other figures. The most favored figure to be found at these sites, and at other sites in the region that are not discussed is the theopluvian anthropomorphic nephomorph, with or without arms and legs.

The climate in the region was apparently subject to occasional drought, when the summer thunderstorm monsoon season was delayed or failed. In response the Fremont Indians sought to alleviate the situation with the only response they had: Ritualistic paintings of theopluvian nephomorphs and pluviomorphs as invocations to their rain gods.

After serving in World War II as an Air Force radar officer I took my degrees in physics from Occidental College. I then joined the U. S. Weather Bureau, serving successively as observer, meteorologist, and until retirement as an atmospheric physicist, specializing in cloud physics. Specific research projects were in the fields of atmospheric electricity, atmospheric particulates involved in cloud droplet formation, ice nucleation processes and visibility.

My last project was measuring visibility and correlated atmospheric parameters on Cedar Mountain, forty miles southeast of Price, Utah, 1976 to 1979. Work-study students on the project and I would visit points of interest in the surrounding Castle Valley on our day off, including the Buckhorn Draw pictograph site. After several viewings it became apparent that some of the pictographs represented meteorological phenomena.

With retirement in 1979, one of my projects has been to interpret the purpose of the pictographs displaying meteorological phenomena at Buckhorn Draw and other sites, and their correlation to geological features found at those sites.

REFERENCE.

1. C. F. Brooks, "The Use of Clouds in Forecasting," Compendium of Meteorology, American Meteorological Society, Boston, Massachusetts, 1952, 1334 pp. (see pp 1167 - 1178.)

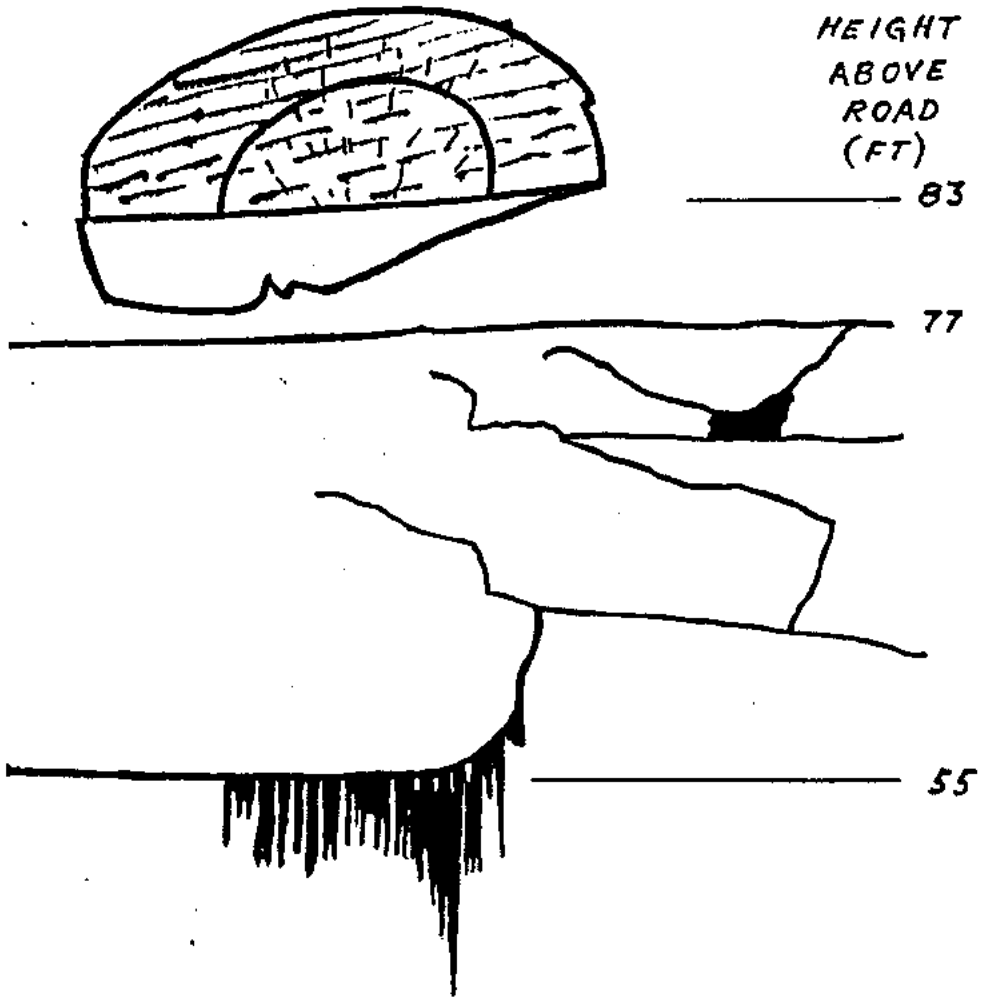


Figure 1. Sketch of geological features at Buckhorn Draw pictograph site.

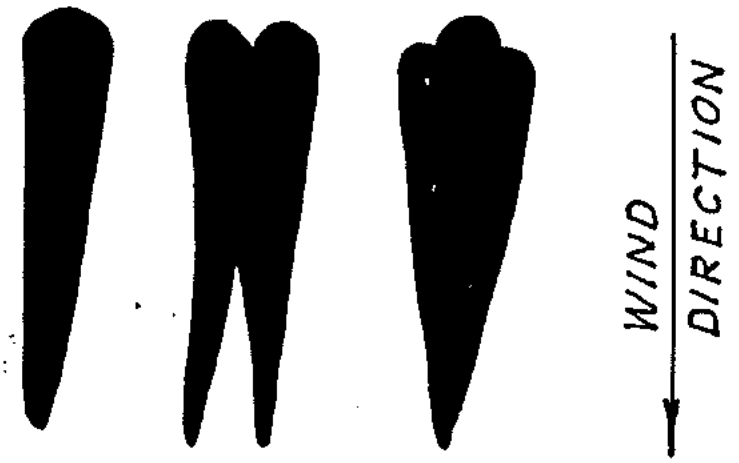


Figure 2. Some altocumulus lenticularis cloud types.

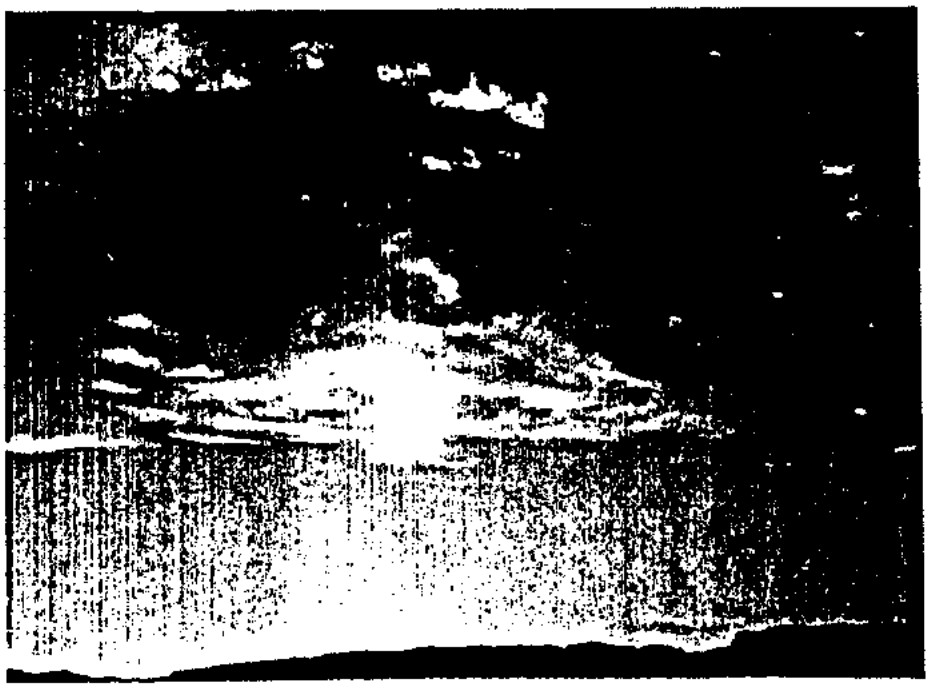


Figure 3. Altocumulus lenticularis over the Wasatch Plateau.

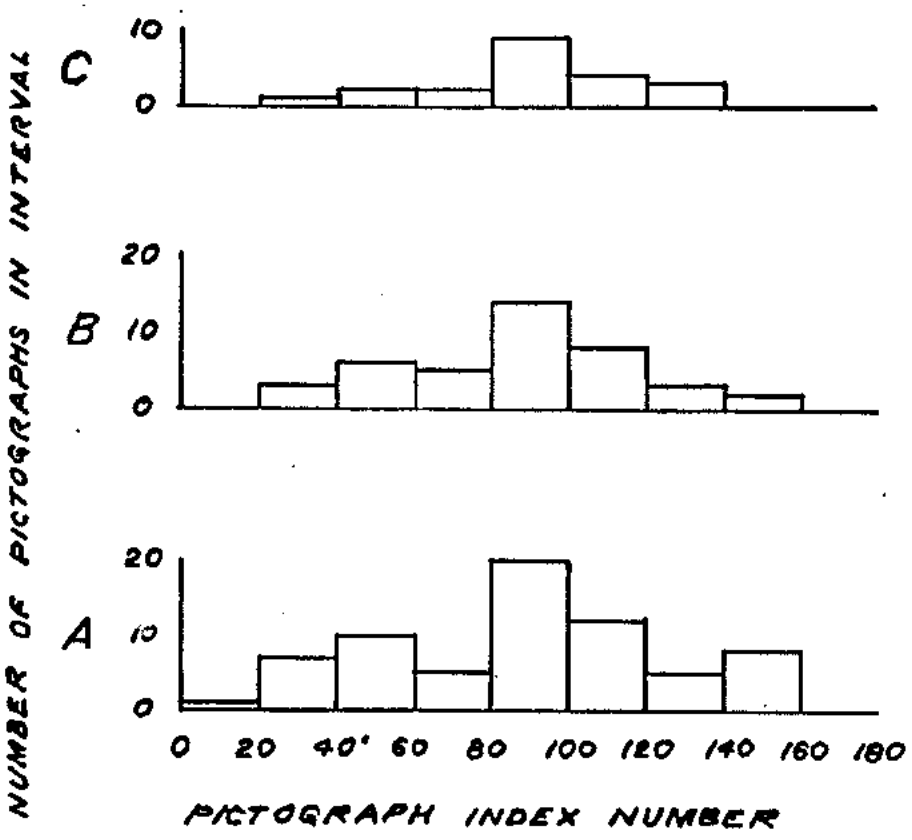
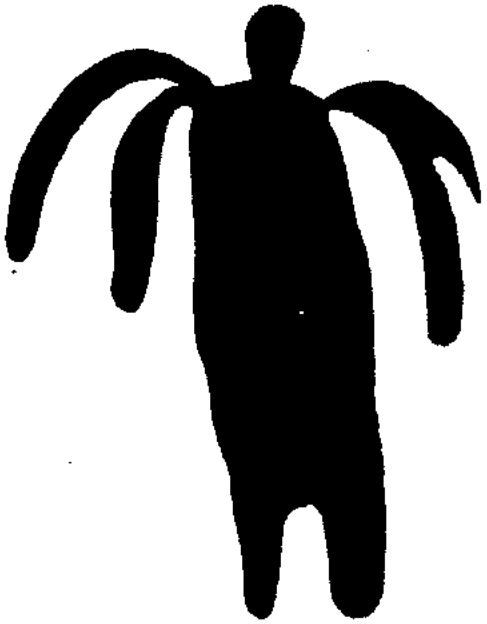


Figure 4. Histogram of number of pictographs versus index number. A, all pictographs. B, pictographs having a dimension (height or width) greater than 50 cm. C, pictographs having a dimension greater than 100 cm.

IN 12

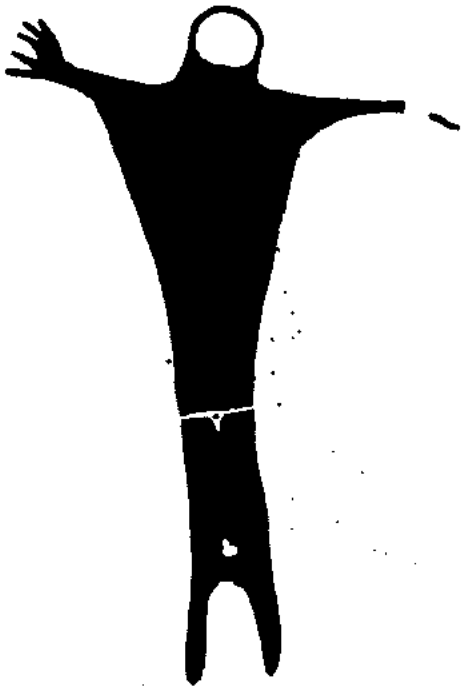
IN 23

IN 32



IN 34

IN 35.5



IN 37

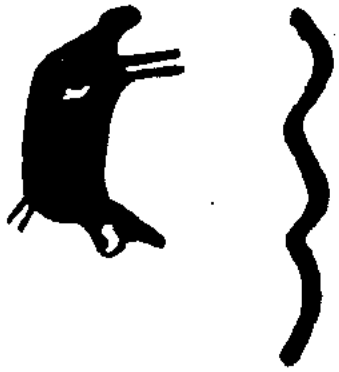
IN 38.5

IN 40

IN 39.5

IN 41

IN 42



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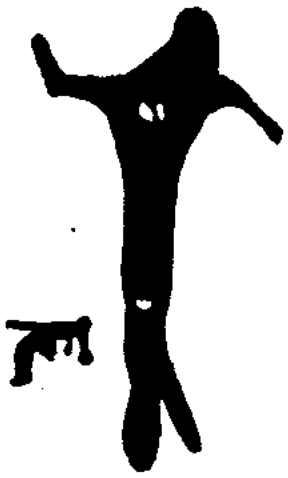
IN 45.5



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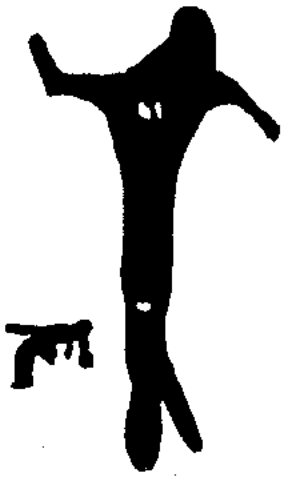
IN 46.5



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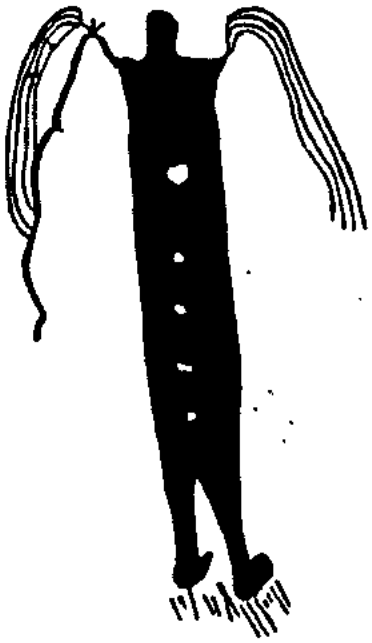
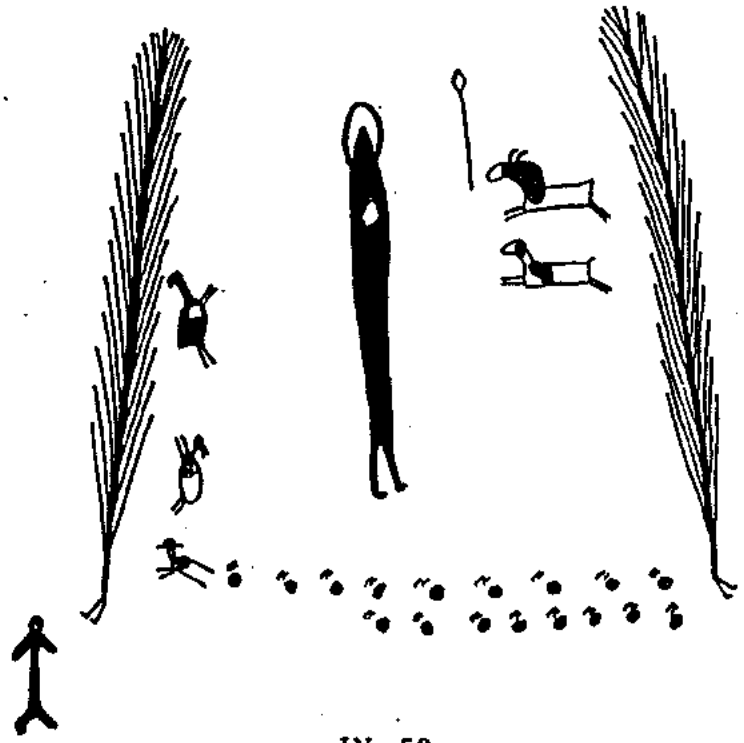


IN 51

IN 54 IN 55.5

IN 54 IN 55.5



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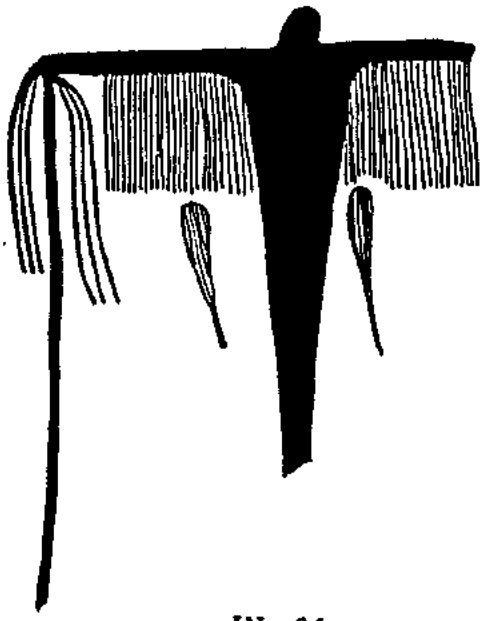

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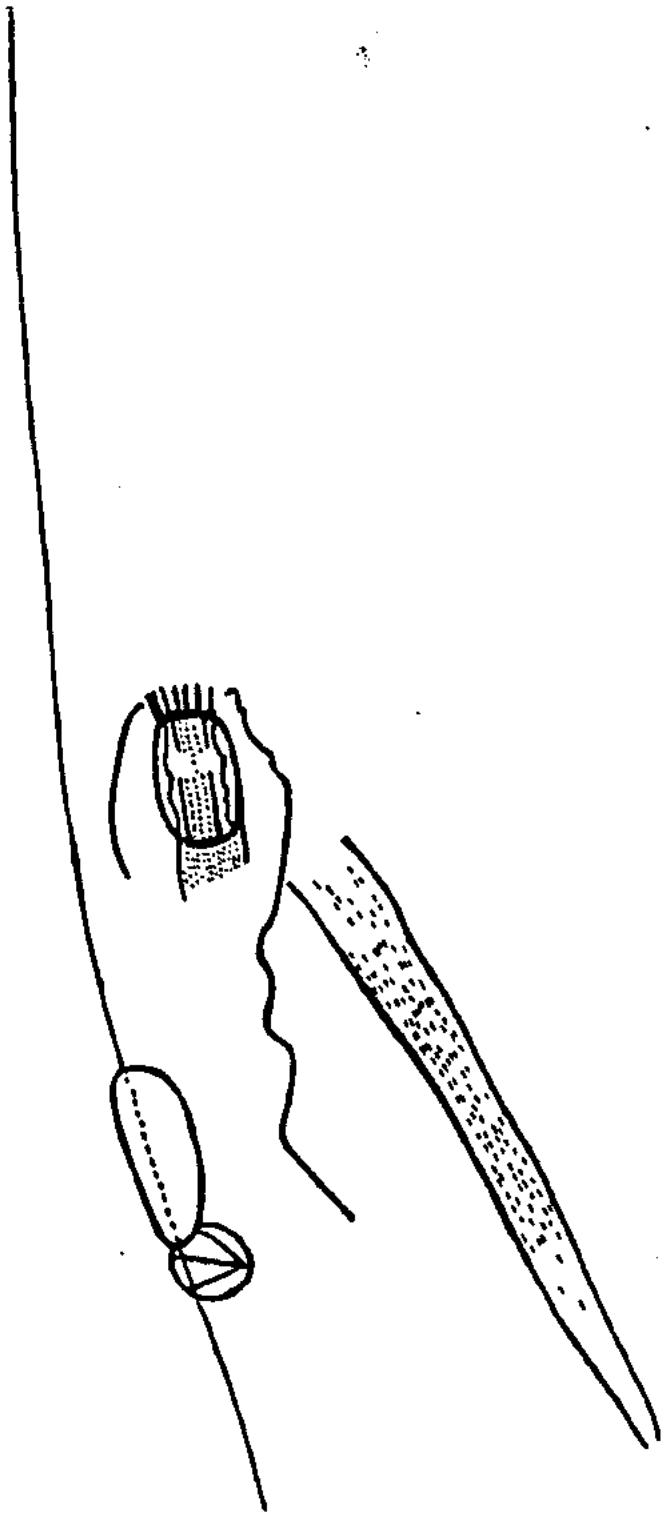

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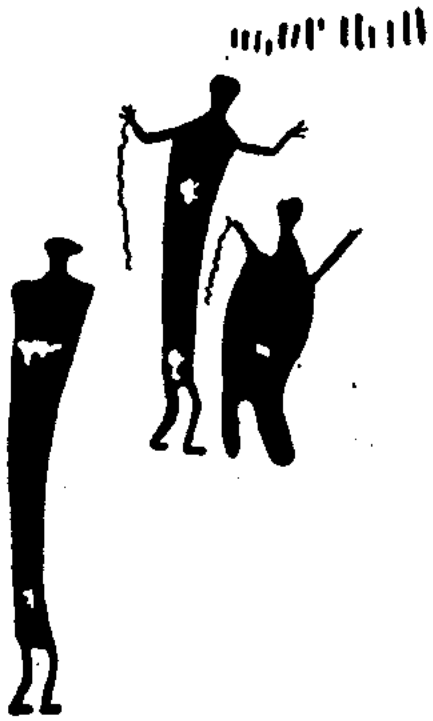
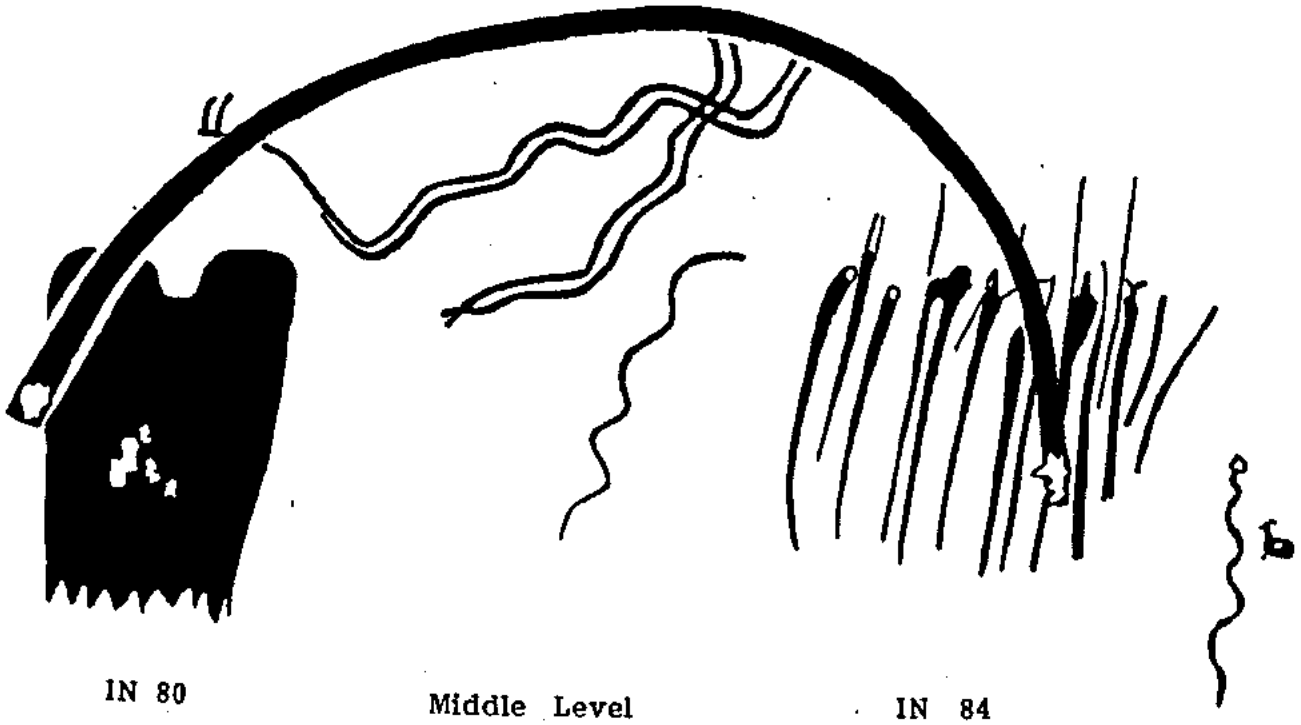
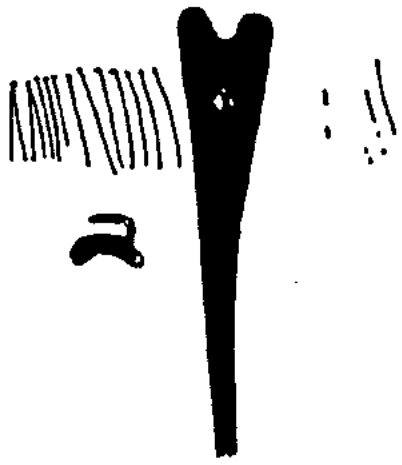


IN 75 IN 76 IN 76.5



IN 80 Middle Level IN 84



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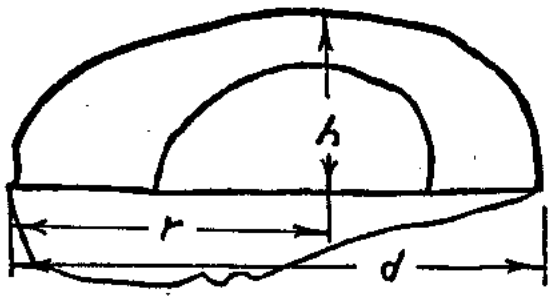
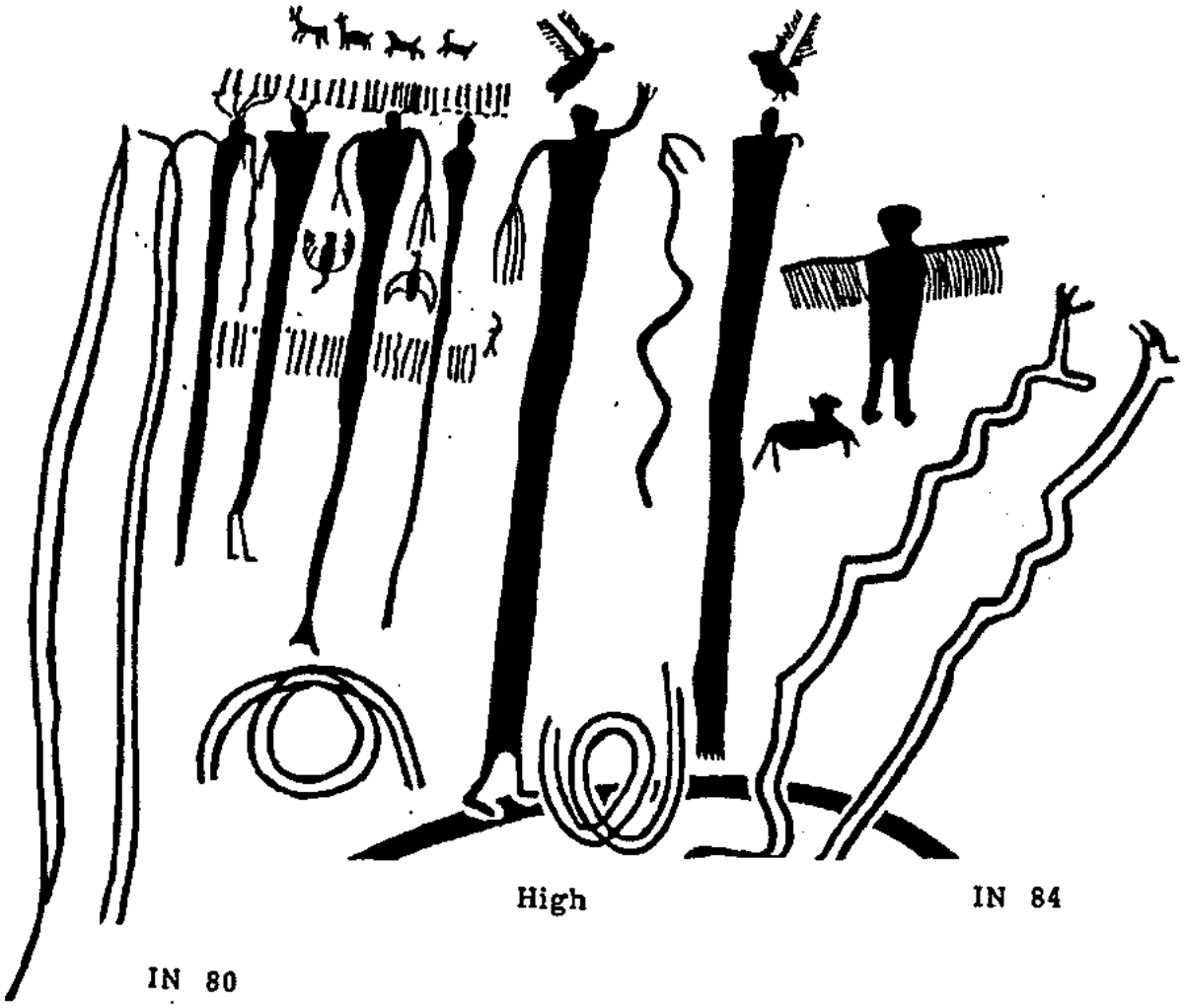
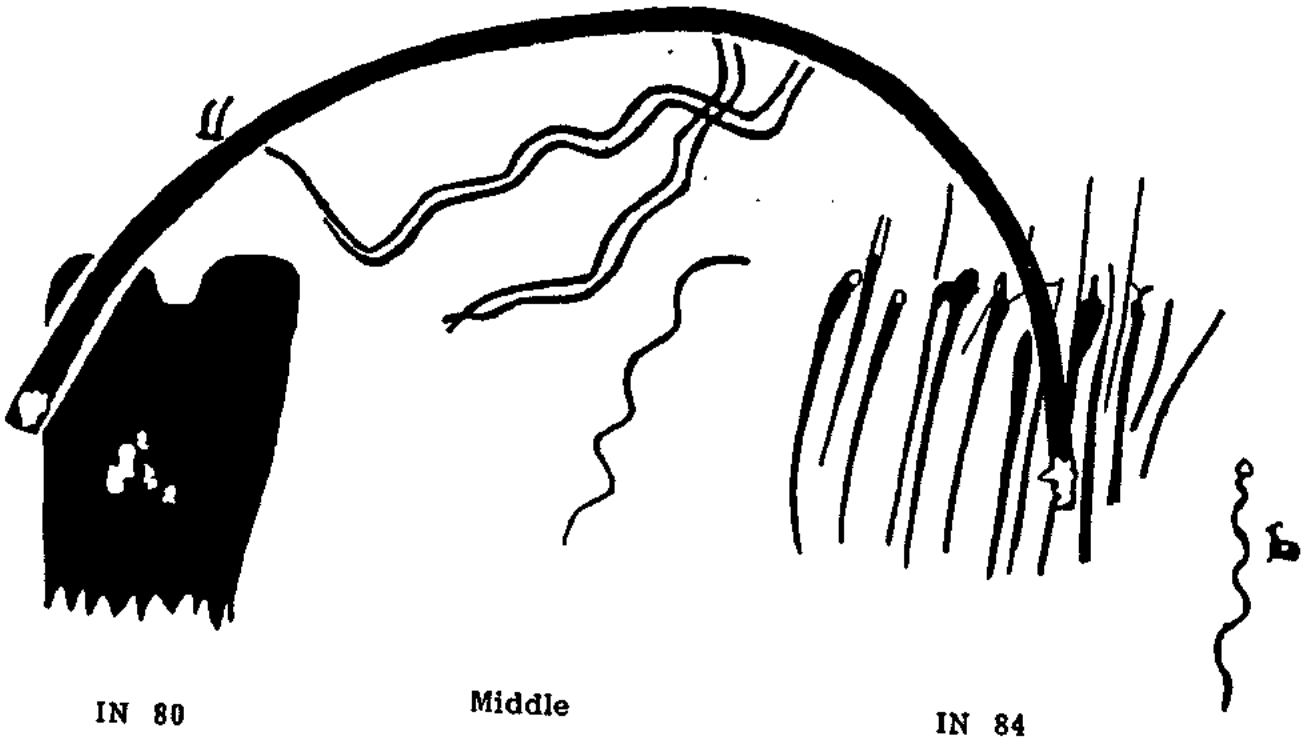


Figure 5. Sketch of "rainbow/cloud" concretion on cliff, 83 feet above the road at IN 80.



IN 80 High IN 84



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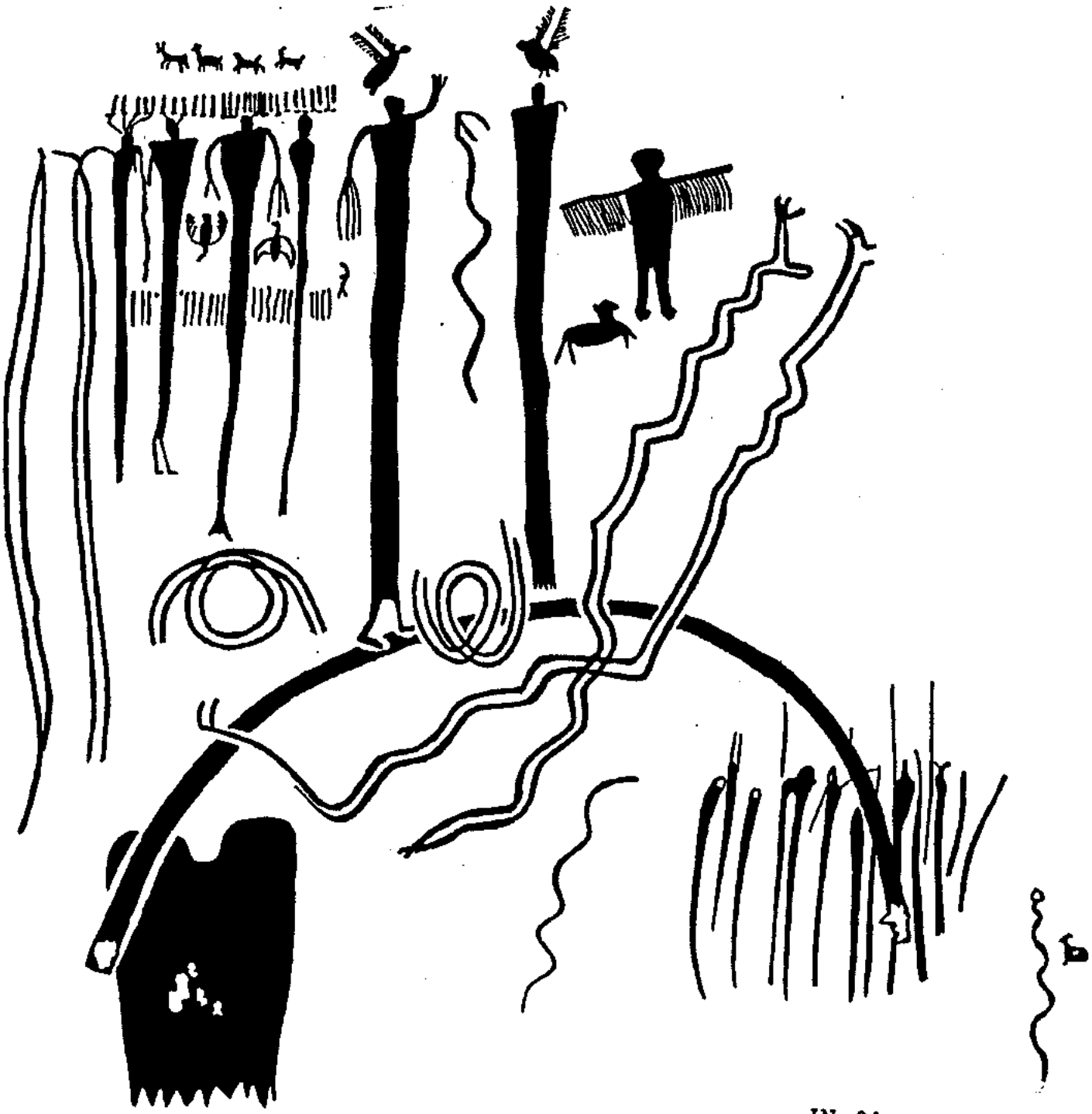
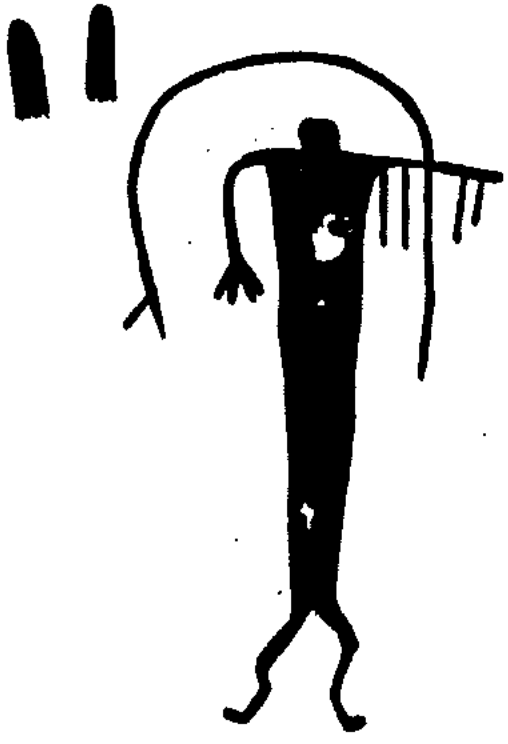


IN 84

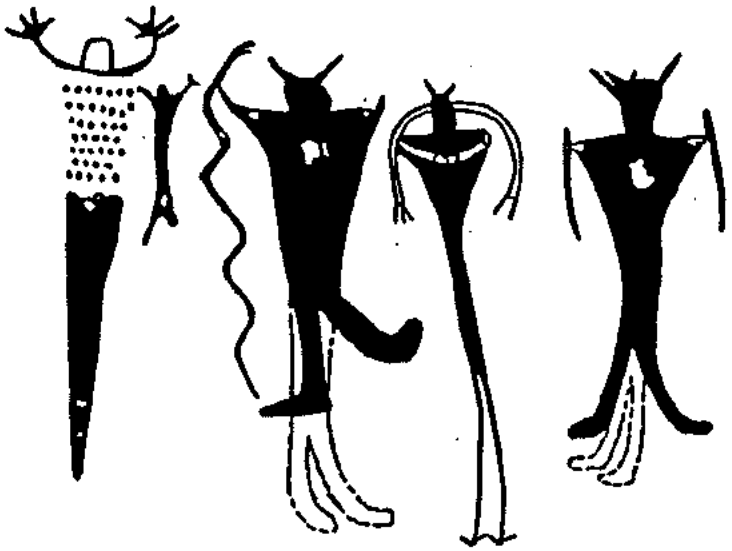
IN 80

IN 80 High IN 84



IN 86.5

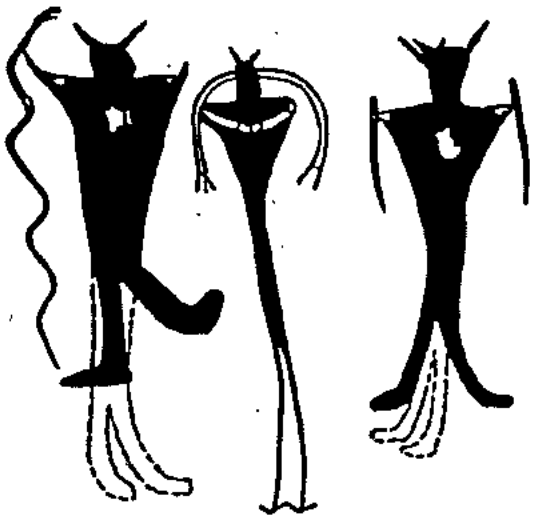
IN 87 IN 89



IN 93.5 IN 94 IN 97

IN 93

IN 96



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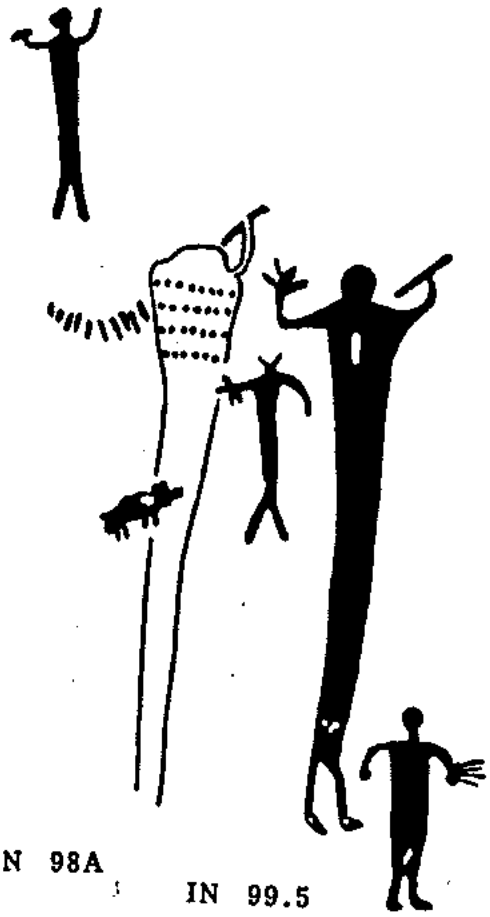
IN 94

IN 97



IN 98A

IN 99.5

IN 98B

IN 100

IN 99

IN 100.5

IN 98.8

IN 98A

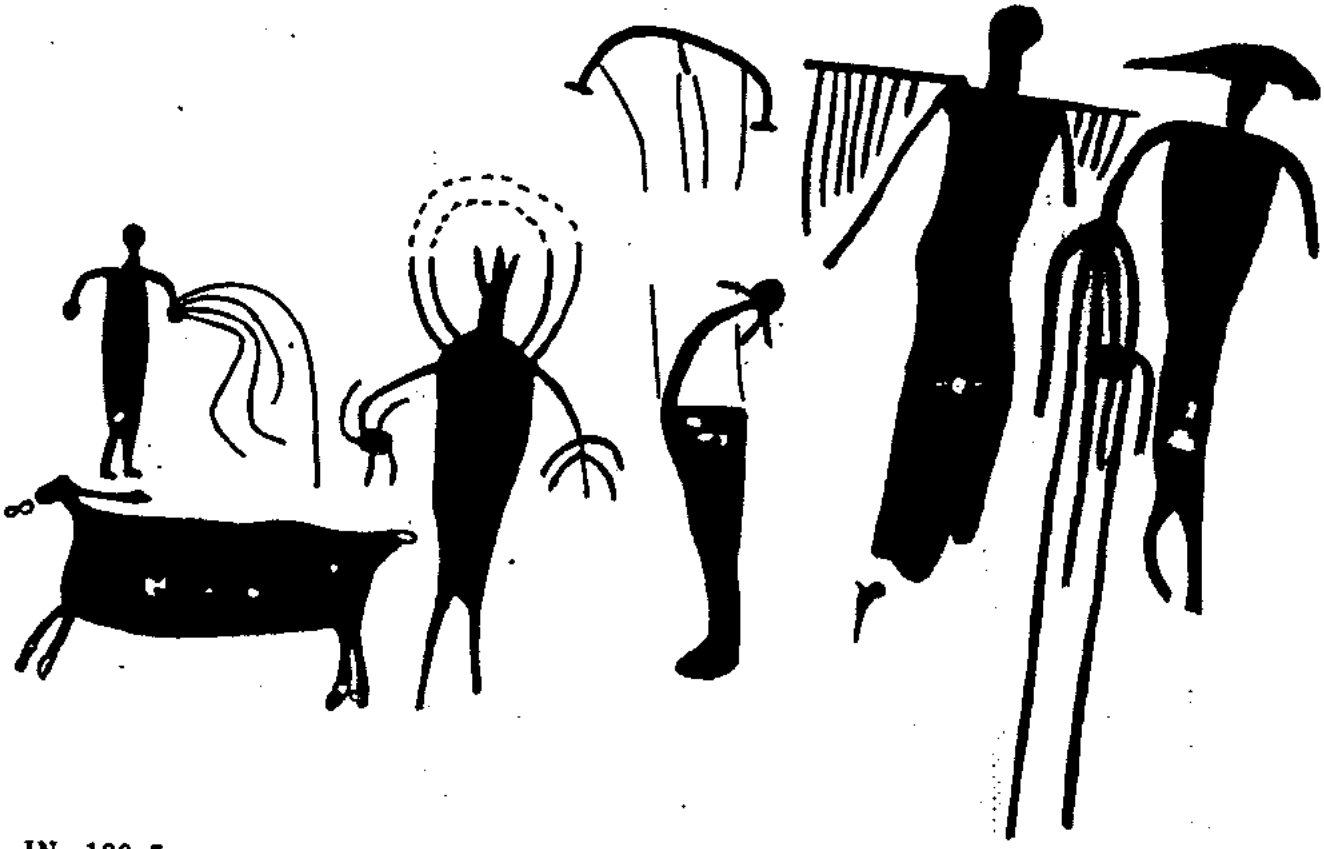
IN 98B IN 99.5

IN 99 IN 100

IN 98.8 IN 100.5

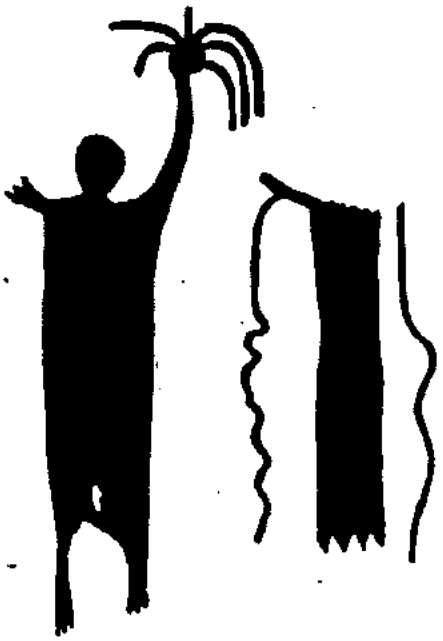
IN 100.5

IN 101



IN 100.5

IN 101 IN 102.5 IN 104 IN 105 IN 107



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IN 110

IN 114

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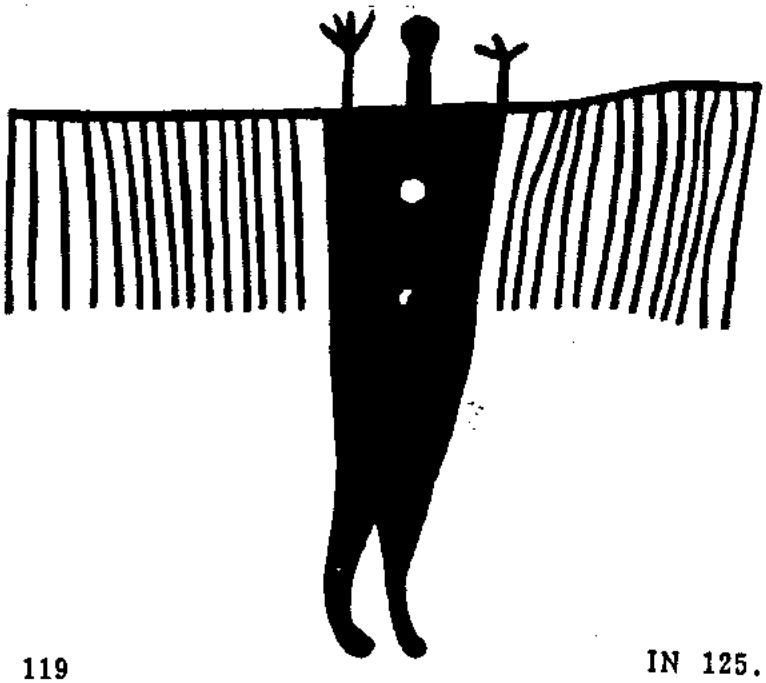
IN 116

IN 117



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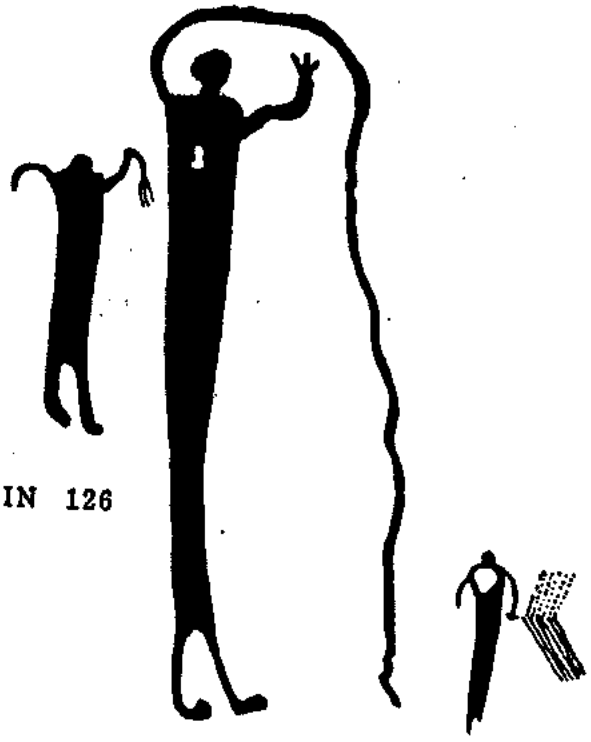

IN 126

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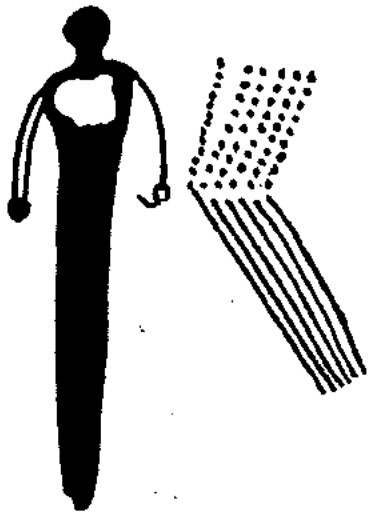

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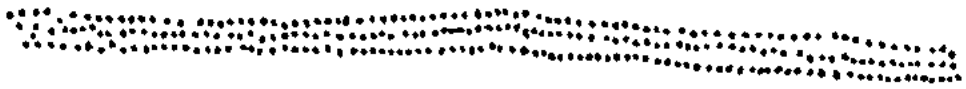

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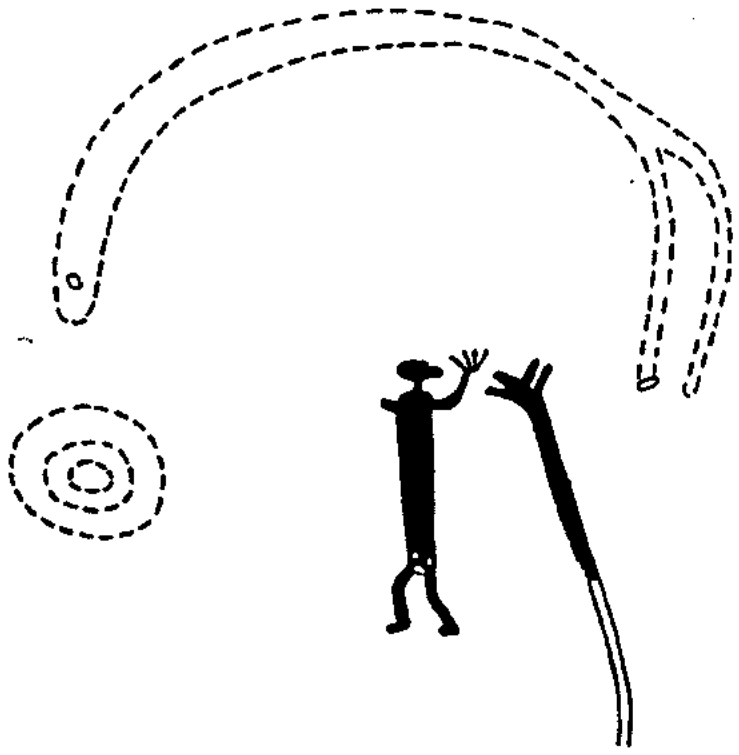

IN 147

IN 152.7

IN 152.3

IN 152

IN 151

IN 153.5

IN 153

IN 156

IN 157