Paria Plateau Survey
ARCHAEOLOGICAL INVENTORY OF INDIAN
RUINS, COCONINO COUNTY, ARIZONA

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The Paria Plateau has been a source of interest and consternation to southwestern archaeologists since the days of Neil M. Judd's entradas through the area for the Bureau of American Ethnology. Although nearly 50 years have passed since his reconnaissance, little in the way of a systematic archaeological survey had been done in the region until the inception of this season's work. As a result of this paucity of information, the Paria Plateau has been looked upon as a mysterious repository of a rumored wealth of large and small prehistoric sites. In addition it has long been known to be intimately associated with the enigmatic Virgin Branch of the Anasazi. In 1930 the Gila Pueblo Foundation did survey a small portion of upper House Rock Valley west of the main north-south access road; however little is known of the scope of this work due to poor recording procedures.

This report is concerned with the results of the 1961 archaeological survey conducted in the area of the Paria Plateau. This season's work was initiated on June 19, 1967, with field work continuing through June and July. The analytical phase of this year's project was entered August 1, 1967, and was continued throughout the month. All work was done under the aegis of the United States Bureau of Land Management.

J. Loring Haskell's report was prepared while a graduate student at the University of Arizona.
THE ARIZONA STRIP
As a result of sandy conditions prevailing in many areas of the Paria Plateau, travel is a difficult and laborious task at best. Although the plateau has a well-spaced network of ranch and jeep roads, these can be traversed only in a four-wheel drive vehicle. In most instances sites can be reached only on foot due to the extremely poor driving conditions encountered upon departing from these roads.

During the survey site characteristics were recorded on the Museum's site survey cards. All pertinent data were later transferred to the Bureau of Land Management's site inventory forms. As each site was recorded its location was plotted on the appropriate United States Geological Survey sheet, namely the House Rock Spring SE and NE quadrants as well as the Paria Plateau SW quadrant. In addition each site was located on aerial photographs provided by the Bureau of Land Management. Each aerial photograph used during this season's work was given a sheet of plastic acetate on which each site was marked with a dot and its appropriate site number. Stone catalog cards were used to record all ground stone and bed rock mortars found in the field. Collections were made at each site and designated with the proper site number and provenience. Black and white photographs were taken at each site and, in some instances, 35 mm. color slides were taken as well.

In the field sites were numbered consecutively PPS 1 through PPS 108. Upon return to the laboratory each site
received NA numbers 9601 to 9708, as well as BLM trinumeral
numbers AR 02-01-01 to AR 02-01-108. Where possible all
names of places, washes, and topographical features assigned
by the United States Geological Survey maps have been pre-
served.

PHYSIOGRAPHY

The Paria Plateau is situated in the northeastern por-
tion of the Arizona Strip in Coconino County, Arizona, at
approximately 111° 95' west longitude and 36° 50' north
latitude. The plateau lies directly northwest of Lee's
Ferry, Arizona, and is paralleled below its southern escarp-
ment by U. S. Highway 89A.

In its larger geographic relations the Paria area forms
part of the Colorado Plateau province. The Paria Plateau
is an area of sedimentary beds of Triassic and Jurassic age,
inclining gently northward. Its southern boundary is marked
by a formidable escarpment that rises 1000 ft. or more above
the surrounding country. The entire region lies at an eleva-
tion of between 5200 ft. near the Arizona-Utah state line
in Coyote Valley and 7100 ft. near the rim of the plateau.
On the west the Paria is bordered by House Rock and Coyote
Valleys out of which the plateau rises in a series of bench-
like platforms. Through most of this particular area these
platforms terminate in small cliffs. However, in the more
southerly and northerly portions of the valleys cliffs rise
hundreds of feet from these platforms. In these places few, if any, benches interrupt the precipitous slope that leads to the top of the Paria Plateau. Valley areas adjacent to the escarpment are deeply eroded resulting in numerous box canyons.

Geology

The Paria Plateau is composed primarily of Mesozoic sandstones. Crosscutting the region are several north-south trending monoclinoles that displace these strata along the eastern and western margins of this topographical feature. The region's most characteristic deposit is the massive Navajo Sandstone unit which is believed to be of eolian origin (Gregory 1931: 13). Along the escarpment the red sandstone weathers to either a rusty or dark purplish shade. Invariably, these deposits show black streaks which result from water that has repeatedly trickled down over the faces of this formation. This unit forms the abundant dune sand that characterizes the Paria Plateau more than anything else. In numerous places the easily eroded Navajo Sandstone has been finely sculptured into buttes, natural arches, and zoomorphic shapes. In addition this deposit is characterized by innumerable small caves and alcoves. Crossbedding on a large scale is another salient feature of this unit which often displays abrupt and repeated truncations. Underlying the above, the Wingate Formation forms the Paria's second important sedimentary layer. Although not as striking
in appearance as the Navajo unit, it shares many features with that deposit: crossbedding, probable eolian origin, vermilion color, and concretions that are constantly eroding out of it.

House Rock and Coyote Valleys owe their existence to the erosion of the soft Chinle and Moenkopi Formations where they have been brought to the surface as a result of the East Kaibab Monocline (Gregory 1931: 129). Thick marly shales compose the most conspicuous parts of the Chinle, but wherever the Chinle is exposed over areas of considerable size as it is along the basal portions of the Vermilion Cliffs, it gives rise to the familiar badlands topography (Gregory 1931: 11). These mud hills form a conspicuous part of these valleys’ landscapes as they take on various hues of gray, pink, lavender, and yellow. In these areas fragments of silicified wood frequently are found that have been eroded out of this deposit. Along the eastern margins of these valleys the Chinle often forms long slopes which are occasionally broken by a thin horizon of limestone as in the northeastern portion of Coyote Valley. Shinarump Conglomerate is generally present at the base of the upper Triassic Chinle Formation; however in House Rock and Coyote Valleys it caps only the eroded upper surface of the Moenkopi Formation. The field party observed that the most conspicuous outcrops of Shinarump and Moenkopi are along the monocline. Shinarump is characterized by lenses of conglomerate
that contain abundant amounts of silicified wood. At certain localities this wood attains lengths of 5 to 6 ft. and is up to 3 ft. or more in circumference. Although observed only in Coyote Valley, the Moenkopi Formation there consists of red sandy shales which are characterized by prominent ripple marks and occasional impressions of rain drops. The western boundary of House Rock and Coyote Valleys is delimited by the richly fossiliferous Kaibab Formation. Throughout the western portions of these valleys fossil brachiopods, sponges, and crinoid stems have eroded out of the limestone due to periodic ephemeral sheet wash.

Surficial Deposits

Four types of surficial deposits occur in the Paria Plateau region: alluvial deposits, detrital soil, talus, and eolian sand. In all areas of the Paria Plateau, as well as in its immediate environs to the west, the humic content of the soil is relatively low despite heavy growths of conifers and herbaceous plants in most areas above 5800 ft. elevation.

House Rock and Coyote Valleys are characterized by long, fingerlike alluvial fans and bajadas where there is a coalescence of these features. A detrital soil characterizes the floors of both valleys. This detritus seems to be composed primarily of scree derived from the Kaibab Formation. Paralleling the escarpment there are huge deposits of talus resulting from great masses of rock that have
fallen from the faces of the cliffs. Talus is found in all areas bordering on the scarp. On the plateau eolian sand is the primary surficial deposit with many areas being composed of unconsolidated barchans and blowouts.

**FLORA**

For the Paria Plateau region the general aspect of the floral community is exceedingly variable in size and density. Some species are rather general throughout the area while others are locally abundant and still others are sporadic. The Paria is included within the Upper Sonoran life zone; however, occurring within this zone, there are numerous micro-environments with biota peculiar to these ecological niches.

In the valley areas the dominant plant communities are of a xerophytic type. They include sage brush (*Artemesia tridentata*) and rabbit bush (*Chrysothamnus nauseosus*). These shrubs usually range in size from about 1 to 4 ft. in height with some scattered taller ones. Generally speaking these plants become more luxuriant on the valleys' higher slopes. In color they vary from a silvery gray to a bluish-green which tends to give these communities a somewhat mottled appearance. Usually the area between shrubs has a fair cover of herbs and grasses; however there are often places where a considerable amount of bare ground is exposed. In addition cacti are locally abundant in the
valleys' drier and rockier areas. These cacti communities are characterized by several varieties of hedgehog (*Echinocereus aggregatus* and *Echinocereus engelmanii*), prickly pear (*Opuntia aurea*), pincushion (*Mammillaria arizonica*), and Utah cactus (*Utahia sileri*).

In places where there are seeps and springs, mesophytic plants are the dominant type. These localities are usually situated at the heads of box canyons and are dominated by gambel oak (*Quercus gambelii*) and mountain mahogany (*Cercocarpus montanus*). Along the margins of these places there are often heavy concentrations of the ubiquitous Russian thistle (*Salsola kali*).

Above 5800 ft. in elevation the floral array is remarkably uniform, although there is some local variation resulting from topographical differences. Soils vary from nearly pure sand to occasional sandy gravels. In places where the Chinle Formation has weathered, clay is present in goodly amounts. Above this level the dominant plants are pinyon pine (*Pinus edulis*) and juniper (*Juniperus monosperma*) which occur together in mixed stands and differ widely in size and frequency from one place to the next. On top of the plateau the trees and brush are much more luxuriant. As a rule there is a fair to good grass cover in most places, particularly in those areas that have been chained. *Grama* and *Galleta* are the principal grasses. Smaller shrubs and herbs occur in locally dense stands in open places.
wherever the continuity of the dominant plants is broken. For example in areas of dunes, cow tobacco (Penstemon ambiguus), prairie spiderwort (Tradescantia occidentalis), paintbrush (Castilleja coccinea), and bittercress (Cardamine hirsuta) have established sizable communities. These barchans usually support an abundant growth of rabbit bush (Chrysothamnus nauseosus) and narrow-leaved yucca (Yucca angustissima). Sage brush (Artemesia tridentata) is fairly common over the entire plateau. The floral array also includes several varieties of prickly pear (Opuntia engelmannii and Opuntia aurea), Arizona pincushion (Mammillaria arizonica), and buckhorn cholla (Opuntia scanthocarpa), which are locally abundant.

The area adjacent to the escarpment's rim can be considered a separate ecological niche due to the peculiarity and distinctiveness of the array of plants. The pinyon pine (Pinus edulis) assumes a scrubby and grotesque growth which can be attributed to the strong winds frequently encountered there. Mormon tea (Ephedra divergens), littleleaf mountain mahogany (Cercocarpus intricatus), and gambel oak (Quercus gambelii) comprise the dominant plant community. The ubiquitous prickly pear often occurs in locally thick stands. As for the smaller shrubs and herbs, branching fleabane (Enigeron divergens), cow tobacco (Penstemon ambiguus), and paintbrush (Castilleja coccinea) are fairly common.
Among the Paria's indigenous denizens frequently observed or heard during the 1967 season were chipmunks, cottontails, jackrabbits, and kangaroo rats. Coyotes were heard each evening and on several occasions during the day on the plateau. In addition the area supports a considerable porcupine population as evidenced by the large number of pinyon trees that have been stripped in numerous places of their bark. Badgers are undoubtedly one of the commonest and most abundant carnivores inhabiting the region. Although none were observed first-hand by the survey party, their burrows were present in most areas covered by this season's work. As for felids, one mountain lion, which reportedly had been preying on stock in the vicinity of Two Mile Spring, was seen in a rocky area immediately south of "The Fang." In addition mountain lion tracks were observed on several occasions in other portions of the plateau. The area seems to support a fair-sized deer population as evidenced by tracks, fecal material, and antlers. According to local informants deer seem to be concentrated in the area lying within a few miles of the escarpment. Elsewhere on the plateau they are reported to be quite sparse during much of the year. In years of unusually heavy snows on the Kaibab Plateau the Paria's deer population reportedly shows a concomitant increase due to its somewhat lower elevation and the availability of more and better feed. Bats may well
be among the Paria's most common mammals; as they were observed in considerable numbers each evening at dusk.

As for the remainder of the faunal assemblage, lizards were found to occupy all biotic niches in the Paria region. Snakes were conspicuously on the sparse side and those sighted were non-poisonous species. Although rattlesnakes are known to occur in the area, none were observed by this season's field party. In the amphibian class no adult desert toads were seen on the plateau; however they must undoubtedly occur in respectable numbers, as all weathering pits containing some water harbored large numbers of tadpoles.

The avian population seemed to be concentrated for the most part close to the escarpment, as well as near seeps and springs. Of those observed, jays, bluebirds, swifts, hummingbirds, and whip-poor-wills were the most evident. As for the carrion eating species, the Paria harbors an assortment of hawks, falcons, and crows. A solitary golden eagle was seen by the field party close to "The Fang" in mid-July.

**HYDROGRAPHY**

All drainage in the Paria region is tributary to the Colorado River which lies to the south. For the western portion of the Paria Plateau drainage is into either House Rock or Coyote Washes with the former emptying directly into
the Colorado River approximately 15 mi. south of Marble Canyon and the latter flowing north to meet the Paria River and thence to the Colorado.

The characteristic stream of the area is an intermittent one which usually flows only in places along its course in response to the effects of local showers. During the summer months this shower activity, although often locally intense, is usually brief in duration resulting in ephemeral sheet wash. In sharp contrast the winter rains are usually of a more general character with the result that House Rock and Coyote Washes become through-going streams.

Presumably, the prehistoric occupants of this region were faced with periodic water shortages; as the only available moisture for horticultural purposes is that derived from the seasonal rains. For this reason the great preponderance of archaeological sites recorded for this area are situated adjacent to washes; thereby leaving the remainder of the region sparsely settled.

As might be expected there are numerous springs and seeps which emanate from the Navajo Sandstone of the Vermilion Cliffs. Substantial numbers of sites were recorded in the immediate vicinity of many of the larger ones, for example, Hod Brown and House Rock Springs. On the Paria itself weathering pits are the principal source of water, and these occur wherever the bedrock Navajo Sandstone has been exposed. These saucer-like depressions fill with water
during periods of rainfall and frequently last for considerable periods of time. Some of those observed in the vicinity of Corral Valley attained sizes of as much as 20 ft. in diameter and depths of from a fraction of an inch to as much as 4 ft. However, the bulk of these average between 5 and 10 ft. across and are usually only a few feet in depth. Now, as in the past, these are favored watering places for both wild and domestic animals as evidence by quantities of fecal material concentrated in the immediate vicinity. Consequently, it can be assumed that they were of paramount importance to the prehistoric occupants of the plateau, not only in their hunting activities, but also for their own personal needs. Most of these "pockets" have lips over which excessive amounts of water can escape. As a result washes often have their sources in these places, for example, the area around Corral Valley.

CLIMATE

For the Paria region meteorological statistics concerned with temperature and precipitation are meager and unsatisfactory. However, there are a number of weather stations in the immediate area at Lee's Ferry, Page, Jacob Lake, Fredonia, and Kanab, Utah. In addition seasonal records are available for the buffalo ranch located in lower House Rock Valley. Although these stations tell little of the actual conditions prevailing on the plateau itself, they do give a
reasonably satisfactory picture of weather conditions at comparable elevations in the immediate vicinity. Nevertheless, it should be stressed that these same conditions do not necessarily prevail on the Paria Plateau.

The influence of geographical location in the distribution of rainfall is immediately apparent when comparing the available data. As with the precipitation pattern in this area, temperature is noticeably influenced by elevation and topographical features, too. Generally speaking, the lower elevations have increasing mean annual temperatures and decreasing amounts of precipitation. Conversely, most localities lying above the Vermilion Cliffs are characterized by a higher annual rainfall. On the whole the region's climate is arid to semi-arid. Rainfall records for the surrounding area show average means that are either under 10 in. or just slightly above. The annual distribution of precipitation is rather erratic with the driest months occurring during the start of the growing season, April through June. The months of maximum rainfall are July, August, and September with the latter receiving substantially lower amounts. The period from December through March witnesses a return to somewhat wetter conditions; however, as during the summer rainy season, these rains have a tendency to be on the capricious side. During the winter months snowfalls on the higher elevations are not at all uncommon.

For the Paria region temperature extremes range from over 100° to well below freezing. The summer months are
hot and generally dry with daily highs of near 100°. Temperature changes of 30° or more in a 24 hr. period are not at all uncommon for much of the area. Undoubtedly, the growing season for the House Rock-Coyote Valley area is about 125 to 130 days, thus providing ample time to mature most crops. However, the marginality of the Paria's higher elevations for horticultural pursuits makes that area unsuitable for this purpose; as at least 120 frost free days are needed for the maturation of Zea mays, and these conditions undoubtedly are not met today on a year-to-year basis.

During the summer surface winds are usually dry and moderate; however strong winds were encountered on several occasions during the field party's reconnaissance of the area. On the plateau there was almost a continual breeze out of the southwest which, coupled with the low relative humidity, made for somewhat more comfortable conditions. According to local informants, strong winds are quite common on the plateau during the winter, often buffeting the area for several days at a time. For much of the surrounding region the prevailing wind direction is from the west to southwest. For the average annual precipitation and temperatures for the region surrounding the Paria Plateau, as compiled by the United States Weather Bureau, see Table 1.

ECOLOGICAL SUMMATION

The Paria Plateau is a large wedge-shaped outcropping of sedimentary rock of Jurassic age. Its most conspicuous
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<th>STATION</th>
<th>COUNTY</th>
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<th>ANNUAL MEAN TEMPERATURE</th>
<th>FROST FREE DAYS</th>
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feature is its southern margin, the Vermilion Cliffs. From various vantage points along the escarpment one can easily see the Colorado River gorge and the San Francisco Peaks lying to the south. Surficial deposits are primarily locally derived eolian sands which in many places are unstabilized. Water is scarce in most areas of the plateau; however, where sizable weathering pits occur, generally there is enough water to last the duration of the dry season. The flora and fauna are Upper Sonoran. Xerophytic plants predominate in valley areas, as well as in drier and rockier localities at higher elevations. These plants grade into mesophytic trees, shrubs, and herbs at higher elevations and in places where there are springs and seeps as at the heads of many box canyons which adjoin the western edge of the escarpment. Climatically, the region is semi-arid to arid, being characterized by showers, rapid runoff, rapid evaporation, and substantial diurnal-nocturnal temperature changes.

**DISTRIBUTION OF SITES**

The uneven distribution of sites depicted on the House Rock Spring and Paria Plateau base map is misleading. The distribution unquestionably reflects the local ecological situation. In both House Rock and Coyote Valleys the heaviest concentration of sites occurs adjacent to washes on alluvial deposits and on the benchlike terraces that rise in a series of shelves up to the Paria Plateau. On the
plateau sites are concentrated on the Paria's higher knolls and ridges which are outcroppings of Navajo Sandstone. At these localities the vegetation can be considered, generally speaking, to be on the luxuriant side. In the valleys open and exposed localities with little relief and sites away from the washes were definitely shunned by the prehistoric population. On the plateau areas characterized by unstabilized barchans and low gradients were avoided as well.

Habitation and workshop sites recorded by the 1967 Paria Plateau Survey may be classified as open, talus, or cliff sites. Open sites were located on alluvial fans, bajadas, knolls, and stabilized barchans, while talus sites were situated on the upper-most portions of the detrital material. Cliff sites consisted of one cave and a shelter. Site frequency and occurrence are shown in Table 2.

**SITE LOCATION AND ENVIRONMENT**

Open sites comprised 104 of the 108 sites recorded for the 1967 survey. This group includes both prehistoric and historic sites. Sites occurred on alluvial deposits, knolls, terraces, and sandy ridges. For the prehistoric open sites room estimates ranged from 0 to 50 with the majority having from one to 10 rooms. All pueblos recorded by the field party were one-story structures. Talus sites are uncommon due to the frequency of rock falls. Only two talus sites were recorded during this season's work. In both instances
<table>
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<tr>
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<td>91</td>
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these sites were located on steep talus slopes. Apparently they were momentary stopping places along a prehistoric trail which seems to run along the top of the talus slope. Although small caves occur rather frequently along the Vermilion Cliffs, they were not commonly used by the prehistoric peoples of the area, due primarily to their small sizes. Only one such site was recorded for this season, and it was not in pristine condition; as it had been subjected to livestock damage, rock falls, and repeated Anglo occupation.

At least 52 of the 108 sites recorded this season were located close to major springs, seeps, or weathering pits. All sites were within easy access of arable land which consists of alluvial fans, bajadas, or stabilized dunes. Pinyon pine was within easy access of all sites. As noted above clay occurs in those areas having outcroppings of the Chinle Formation; thus it was readily available to 14 prehistoric sites. In addition many washes just away from these clay-bearing regions contain naturally tempered clays which are the consequence of redeposition. The Chinle Formation also contains large amounts of silicified wood which was apparently held in high esteem by the prehistoric knapper of the Paria country for the fabrication of his tool kit. In addition silicified wood occurs in those places where there are outcroppings of Shinarump Conglomerate. At such localities there is a plentiful supply of cobbles that would have been suitable for use as manos and hammerstones.
SOCIO-CULTURAL IMPLICATIONS

The Paria Plateau, as well as every other ecological niche, has population limits set for it by the availability of exploitable resources; thereby determining in a sense the configuration a particular culture, possessing a primitive technology, may take. Thus, the prehistoric pueblo people of the Paria had to meet these limitations set by their environment in order to have a viable culture. Judging by the heavy concentrations of archaeological sites in the more favored areas, they met this challenge admirably. However, it should be stressed that in every ecological niche these conditions can be met in a number of ways. For example, the puebloans practiced small-scale horticulture in the Paria region while the Paiute, possessing a more impoverished culture and coming into the area after A.D. 1150, arrived on the scene practicing what was essentially a Desert Culture way of life which emphasized the systematic exploitation of the region's biota. Consequently, on the basis of this season's archaeological survey, it is possible to make a few inferences about the settlement pattern and social organization of the Virgin Branch's Anasazi.

As mentioned above there are no permanently flowing streams in the area. However, the great preponderance of sites are situated on the tops of alluvial fans, bajadas, knolls, and ridges that are adjacent to normally dry washes.
These areas, as might be expected, usually foster a luxuriant growth of juniper-pinyon, as well as a host of other plants and herbs. Thus, the former occupants preferred these localities to the valley areas, which, so far as can be discerned on the basis of present evidence, were shunned by the puebloans. Consequently, they had to rely almost exclusively on adequate rainfall and ephemeral sheet wash for a satisfactory harvest. In the country occupied by the contemporary Hopi much the same situation prevails; as a successful harvest depends solely upon the exigencies of the weather. There, as on the Paria Plateau, rainfall is frequently less than 10 in. annually, and, even when it does rain, it may not fall where needed or it might fall in such torrents that crops are uprooted and subsequently destroyed. Thus, as in the days of the Paria's prehistoric pueblos, farming is a hazardous occupation due to insufficient precipitation and frequently uncontrollable floods.

In order to guard against such calamities these people probably planted several fields of maize, squash, and beans as do the Hopi. However, societies possessing a relatively primitive technology can do little to assure a dependable and adequate supply of moisture to thirsty crops when confronted by an environment such as the Paria has to offer. Consequently, they seem to have resorted to a complex ceremonialism which probably emphasized the magical control of the elements as do the present-day Hopi. This approach
seems to be substantiated archaeologically by the presence of kivas and ceremonial ceramic types at many sites. As practiced by the Paria's prehistoric inhabitants, farming required no complicated systems of canals, terraces, or dams. Instead, their crops were planted along the banks of the region's normally dry washes, thus explaining the relatively heavy concentrations of sites, large and small, in these particular areas. Each pueblo was undoubtedly independent and self-sufficient and most of its inhabitants normally spent most of their time there. In all probability their method of farming was the concern of each household or of the clan (Dozier 1960: 156). As a result these villages were sedentary as evidenced archaeologically by the presence of large middens at many sites thus indicating lengthy occupations. Horticultural techniques had been perfected to the point that they permitted the aggregation of a larger number of individuals. Cultivated plants were undoubtedly the primary food source and, most of the time, apparently provided a dependable surplus. In addition the area adjacent to the escarpment supports at the present time a fairly sized deer population, which in aboriginal times was probably larger thereby resulting in another potential food resource. It would seem reasonable to assume that the Paria's bountiful supply of wild vegetal resources were probably utilized to some extent by these people, as well.
It seems likely that their social organization was clan based and it may have been hierarchically arranged to some extent, resulting in a preponderance of ascribed, rather than attained, statuses. Thus, chiefs and clan elders may have resided in preferential locations of the pueblo. Religion was undoubtedly formalized and externalized in kivas, ritual prayer, and offerings to propitiate the often malevolent spiritual world, thereby assuring a successful harvest. Archaeologically, the formality of their religion is reflected in the differentiation of utilitarian and ceremonial wares which are present in varying numbers at most sites.

STRUCTURES

Generally speaking, the prehistoric structures found in upper House Rock and Coyote Valleys are amorphous in shape; as they have for the most part crumbled into rambling low mounds. Invariably, they are situated on small knolls and alluvial fans. The angular limestone blocks from which they are constructed display no signs of having been intentionally shaped. Apparently they were utilized as found, resulting in the use of substantial amounts of mortar during construction. No trace of the mortar was noted during the course of the survey. At some of the better preserved sites many of the smaller structures appear to have been circular in form. Occurring in the same area there are often larger
sites which exhibit the typical rectangular puebloid shape. In the area immediately southwest of Two Mile Reservoir, several upright, slab-lined pithouses and storage cists were found that were of sandstone construction. At a number of sites circular structures, possible kivas, were fashioned from the same building materials in a similar manner. Masonry dwellings of one to three rooms predominated in areas bordering on the valleys. However, individual structures ranged in sizes up to 35 rooms. The orientation of most habitations appears to have been to the east with fewer numbers facing south. Orientation was determined by the presence of what appear to have been doorways and trash deposits. Some sites had no visible masonry.

On the Paria Plateau pueblo dwellings were of red Navajo Sandstone with slab-type construction. In a number of instances these structures still had walls two to three feet high. However, as in the environs of House Rock and Coyote Valleys, the mortar binding these slabs together had long since deteriorated leaving no visible traces. On the plateau the orientation of structures seems to have been to the east or to the south.

**PETROGLYPHS**

Petroglyphs are not particularly common in the Paria Plateau country. Only two such sites were recorded during this season's work, and both of these were located in upper
House Rock Valley in areas relatively close to major springs. For the most part figures depicted were geometric, anthropomorphic, and zoomorphic. The paucity of this type of site is surprising in view of the fact that the area is studded with suitable rock surfaces. Where found, they appear to have been the work of a solitary individual who had momentarily stopped to peck a few figures in the enticing-looking sandstone. At these sites there is no other evidence of material culture. One panel of petroglyphs had been pecked into a large sandstone boulder due east of Hamblin's Headquarters while the other occurred in a small box canyon in the vicinity of Two Mile Spring. During the 1967 field work no petroglyphs were recorded for either Coyote Valley or the Paria Plateau.

LITHIC MATERIAL

Lithic material was found not to be particularly abundant at any site during this season's work. Artifactual material and lithic debris were collected where feasible. When not collected stone artifactual material was recorded on the museum's stone catalog forms and left in the field. Lithic material consisted of chipped stone and ground stone. Bifacially worked projectile points, knives, and a solitary drill comprised this season's chipped stone collection. In shape projectile points ran the gamut from relatively crude triangularly notched types to elegantly knapped, lanceolate
varieties. Materials used in their manufacture include quartz, chalcedony, agate, and jasper. Silicified wood was commonly used by the puebloans in order to acquire these materials. In addition to the above several crude scrapers were recovered as well. These implements were fabricated from Kaibab Limestone as they were richly fossiliferous. One exceptionally large and crude spear point, also knapped from Kaibab Limestone, was recovered as well.

Ground stone included metates, manos, a maul, and several bedrock mortars. All metates and manos were left in the field and recorded on the appropriate forms. No whole metates were evidenced. In addition at no site were they common, which undoubtedly can be attributed to pot hunters who have vandalized many sites in the area. One finely worked maul was recovered this season. This sandstone specimen is characterized by a deeply pecked groove that girdles the maul, providing it with a suitable haft. Bedrock mortars were recorded at several sites. These roughly circular depressions had been systematically pecked into the soft Navajo Sandstone and were approximately 5 mm. in depth.

CERAMICS

In the collection of ceramic material a bias towards the decorated wares was maintained. No collection was intended to reflect a true statistical relationship of pottery types found on the site. The feeling of those involved was
that decorated wares were more sensitive to cultural change; therefore they were better suited to analysis and were indicators of temporal and cultural affinity. Collections were kept isolated by provenience and returned to the Museum.

The sherds were washed and stamped with the NA site numbers and, where applicable, a letter to indicate subdivisions and units of the same site. The sherds from the larger sites were analyzed in the universe of the site alone. Later, the sherds from each site collection were sorted by types and analyzed again in the universe of the total collection. The first analysis provided the analyst with the opportunity of becoming acquainted with the types involved in this particular survey.

Using the published type descriptions of Colton (1952, 1955, 1956) and the research collections at the Museum of Northern Arizona, the materials were sorted by wares and types. The classification was based exclusively on macroscopic examination with the exception of one type, Logandale Gray, which was determined by a chemical method. Design form, presence or absence of slip, clay, and temper were the primary considerations in the classification.

(See Table 3.)

There were no whole vessels in any of the collections.

Gray and corrugated wares were analyzed and sorted rapidly as the emphasis was on the decorated wares to which more attention was devoted. Although the assumption was
### TABLE 3

**CERAMICS - ALL PROVENIENCES**

<table>
<thead>
<tr>
<th>STYLE</th>
<th>TOTAL NUMBER SHERDS RECOVERED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tusayan Gray Ware</strong></td>
<td></td>
</tr>
<tr>
<td>Virgin Series</td>
<td></td>
</tr>
<tr>
<td>North Creek Gray</td>
<td>1388</td>
</tr>
<tr>
<td>North Creek Corrugated</td>
<td>844</td>
</tr>
<tr>
<td>Washington Corrugated</td>
<td>1179</td>
</tr>
<tr>
<td>Coconino Gray (tooled)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Shinarump Gray Ware</strong></td>
<td></td>
</tr>
<tr>
<td>Shinarump Brown</td>
<td>184</td>
</tr>
<tr>
<td>Shinarump Corrugated</td>
<td>251</td>
</tr>
<tr>
<td><strong>Logandale Gray Ware</strong></td>
<td></td>
</tr>
<tr>
<td>Logandale Gray</td>
<td>2</td>
</tr>
<tr>
<td><strong>Tusayan White Ware</strong></td>
<td></td>
</tr>
<tr>
<td>Kayenta Series</td>
<td></td>
</tr>
<tr>
<td>Sosi Black-on-white</td>
<td>54</td>
</tr>
<tr>
<td>Dogoszhi Black-on-white</td>
<td>19</td>
</tr>
<tr>
<td>Black Mesa Black-on-white</td>
<td>45</td>
</tr>
<tr>
<td>Virgin Series</td>
<td></td>
</tr>
<tr>
<td>North Creek Black-on-gray</td>
<td>227</td>
</tr>
<tr>
<td>Sosi style</td>
<td>2</td>
</tr>
<tr>
<td>Dogoszhi style</td>
<td>74</td>
</tr>
<tr>
<td>Hurricane Black-on-gray</td>
<td>20</td>
</tr>
<tr>
<td>Saint George Black-on-gray</td>
<td>73</td>
</tr>
<tr>
<td><strong>Shinarump White Ware</strong></td>
<td></td>
</tr>
<tr>
<td>Virgin Black-on-white</td>
<td></td>
</tr>
<tr>
<td>Sosi style</td>
<td>397</td>
</tr>
<tr>
<td>Dogoszhi style</td>
<td>183</td>
</tr>
<tr>
<td>Black Mesa style</td>
<td>51</td>
</tr>
<tr>
<td>Toquerville Black-on-white</td>
<td>46</td>
</tr>
<tr>
<td>Shinarump white</td>
<td>24</td>
</tr>
<tr>
<td><strong>San Juan Red Ware</strong></td>
<td></td>
</tr>
<tr>
<td>Deadman Black-on-red</td>
<td>3 (?)</td>
</tr>
<tr>
<td>Middleton Black-on-red</td>
<td>41</td>
</tr>
<tr>
<td>Middleton Red</td>
<td>26</td>
</tr>
<tr>
<td><strong>Tsegi Orange Ware</strong></td>
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</tr>
<tr>
<td>Medicine Black-on-red</td>
<td>43</td>
</tr>
<tr>
<td>Tusayan Black-on-red</td>
<td>153</td>
</tr>
<tr>
<td>Citadel Polychrome</td>
<td>26</td>
</tr>
<tr>
<td>Tusayan Polychrome</td>
<td>34</td>
</tr>
<tr>
<td><strong>Unidentified Grey Ware</strong></td>
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</tr>
<tr>
<td><strong>Unidentified White Ware</strong></td>
<td>67</td>
</tr>
<tr>
<td><strong>Unidentified Red Ware</strong></td>
<td>178</td>
</tr>
<tr>
<td><strong>Unidentified Polychrome</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>5640</td>
</tr>
</tbody>
</table>
made that some quantity of the material would be from the
Virgin Branch described by Colton in 1952, the distinction
was difficult to make in many cases between analogous types
of the Kayenta branch. Those sherds which could not, for
various reasons, be classified into types were classified
into wares. Those sherds which seemed not to fit existing
type descriptions were similarly disposed of. In the case
of some of these sherds, however, there were sufficient quan-
tity and recurrence to warrant tentative description.

Descriptions

Included in the breakdown of wares and types is a type
style heretofore undefined. This is the Virgin Black-on-
white, Black Mesa style. There seemed to be no type des-
cribed that fell inside the Shinarump White Ware with Black
Mesa style; whereas in the Tusayan White Ware, St. George
Black-on-gray is the analogous Black Mesa style of the North
Creek type. About 8 per cent of the Virgin Black-on-white
sherds fell into this category; hence this separate style
was included.

Another type which was not defined, but which showed
up in sufficient quantity to justify mention, was a highly
oxidized black-on-white that demonstrated a familiar resi-
dual clay core, diagnostic of the Shinarump Wares, a thick
white slip (more often gray from oxidation than dead-white
as in Virgin Black-on-white), and a brown paint that seemed
to use the same pigments that were found in the paste. This,
of course, could not be determined conclusively unless chemical analysis was done on the sherds. However, sherds of this type were found in more than one site and showed enough similarities that there may be a new type necessary. In this analysis they were classified under unidentified Black-on-white.

Materials

Tusayan Gray Wares:

There was no difficulty in defining and sorting the gray wares. Even with the collection biased, these types proved to compose over 68 per cent of the collection. As stated before they were rapidly analyzed and sorted; for it was felt that they were of little significance. However, it is important to note that these types could have been just as well sorted into Kayenta series groups; as there is no macroscopically observable distinction. The distinction made between types like North Creek Gray, an affinis Lino Gray, Washington Corrugated and Moenkopi Corrugated were purely arbitrary.

Shinarump Gray:

As a general rule, the Shinarump Brown and Corrugated presented no difficulty in analysis. The ware is distinctive because of the purple residual clay speckled throughout by an opaque quartz temper. However, in some cases oxidized North Creek Corrugated and Shinarump Corrugated demonstrated the same color and texture. In such cases the
distinction was made on the basis of the temper. Opaque temper was usually a sign of Shinarump Corrugated and the large transparent quartz crystals indicated North Creek Corrugated. There also seems to be some disagreement among those involved in Virgin Ceramics as to the validity of Shinarump as a type. Some feel that Shinarump is merely a style of Tusayan-Virgin Gray Ware and that it should be classified as North Creek material. From a taxonomic point of view this would also require a re-definition of Virgin Black-on-white and its corrugated counterpart, Toquerville Black-on-white. From the material in this collection it is the feeling of the analyst that there is a distinction between Shinarump Ware, both white and gray, and the existing Kayenta series Tusayan Gray and White Wares. Shinarump Gray Wares composed about 11 percent of all the gray wares, but a greater part of it was found only in the early sites in the south of the valley.

Logandale Gray Ware:

There is only one type in this ware. Logandale Gray is very easy to recognize, but this must be done before washing as its tempering components are soluble in even the weakest solutions of hydrochloric acid. Several of the specimens of this type were completely destroyed in the acid bath. However, this can be avoided by acquainting the field personnel with the type and by marking the bags as they are returned to the Museum. Its limestone temper, paste, and its chalky, pitted surface make it very distinctive.
Tusayan White Ware:

The distinctions between the material of Kayenta and Virgin Series Tusayan White Ware are extremely unclear. The analysis was greatly slowed down by confusion of the two types. Finally, experience with the types led the analyst to draw a distinction that is solidly founded, but perhaps somewhat arbitrary in terms of any cultural significance. It was generally accepted that the paste of the Kayenta series is fine tempered pale gray with closely packed layers of clay. The Virgin material is described by Colton (1952) as having a "large quantity of angular fragments." As a rule the fine material with a definite layer of slip was classified as Kayenta, and the coarser, tan core with extremely thin slip or no slip was classified as Virgin material. On this basis it proved no problem to separate the design styles into Sosi, Dogoszhi, and Black Mesa. In terms of the Kayenta material the distinction was somewhat arbitrary between the Sosi Black-on-white and the Black Mesa Black-on-white. When there was doubt the sherd was classified as Sosi Black-on-white.

The Tusayan White Wares composed about 56 per cent of the total white wares, the other half being composed completely of Shinarump White Ware.

As a rule the Shinarump White Ware presented little difficulty in analysis. The slip was always distinctively
thick and creamy. The core demonstrated the typical Shinarump color and texture. The only difficulty with this material appeared in particularly weathered sherds from sites in the northern part of the valley. Here it was difficult to determine whether the sherds were slipped or not. In these cases the color and texture of the core alone were used as criterion to classify the sherd. As mentioned before the Virgin Black-on-white sherds that had a Black Mesa design style were classed as a new subdivision: Black Mesa style Virgin Black-on-white.

The Redwares:

All the redware material was extremely weathered, in particular the San Juan material. In relation to the black-on-white material, the redware did not carry too much statistical weight. Unidentified redware sherds accounted for 178 of the sherds. Of the total redware sherds the San Juan material composed 21.4 per cent; whereas the Tsegi Orange consists of about 79.6 per cent. Approximately the same percentages prevailed in the unidentified redware between Tsegi Orange and San Juan Red Ware.

The redware from this area was, as a rule, pretty much nondiagnostic; as most of the sherds were too small or grossly weathered. There were a number of unidentified polychromes that showed deviant traits, but they were in such minority that it was impossible to arrive at any conclusions about them. The most prevalent type was Tussayan
Black-on-red, most of which was concentrated in the area of the central valley around NA9650. Sites from the Plateau proper exhibited little or no redware and those from the north showed an expected increase in percentage of San Juan Red Ware.

In the subsequent work in this area it is suggested that the bias indicated previously be maintained. Unless some new technique or more precise ceramic analysis is intended in this area, the grayware and the corrugated ware are of no diagnostic value and their quantity merely slows down the analysis. Although there is no difficulty in analyzing them, there is a logistic problem that arises merely out of their mass. Work in the future must be directed toward devising other methods and techniques for dealing with the gray and corrugated ceramics.

It should be reiterated that the protection of Fugitive Red materials and limestone temper materials begins with the collection. The field personnel should be familiar with these types.

The technique of two analyses, each in the universe of a different dimension, is extremely useful for initial acquaintance with the material, but once the analyst has become familiar with the ceramics the purpose is lost. A consciousness of the material as a whole, the types as a complete range, not only maintains the initial cultural significance of the analysis but also expedites it. When
restricted to the universe of each provenience, the analyst is unable to develop a range of variation on which to base his classification. In this particular collection it became evident that much of the material could fall into several classifications. However, the limitations of the analysis prevented significant groupings of types.

As a whole, the analysis demonstrated several interesting relationships of types involved. The main point to be noticed is the similarity of types which suggests that, perhaps, the types are arbitrarily established to satisfy conditions of individual sherds or groups of sherds and to ignore the preponderance of similarities. The distinction between the Tusayan Gray Ware of the Virgin and Kayenta branches and the distinction between Tusayan White Ware of the Virgin and Kayenta branches is a good example. From the collection on hand it is the feeling of the analyst that there is no real distinction and that the pressures of any pre-existent taxonomy force the analyst to make distinctions that are not really there.

**CERAMIC INTERPRETATION**

As mentioned above the prehistoric cultures of the Arizona Strip have been assigned to the Virgin Branch of the Anasazi root. However, in light of mounting archaeological evidence, it seems probable that the Virgin Branch represents a western extension of the Kayenta Branch.
The temporal range of this season's ceramic assemblages is from approximately A.D. 1100 to A.D. 1250, thus encompassing the period assignable to late Pueblo II and early Pueblo III. The ceramic assemblages from the Paria country are essentially uniform, regardless of the particular area they come from or the nature of the dwelling unit. However, a few generalizations can be made about the frequency and spatial distribution of the ceramic types in the area of upper House Rock and Coyote Valleys as well as in the southwestern quadrant of the Paria Plateau. Generally speaking, there are certain ceramic types that are prevalent throughout the region reached by this season's reconnaissance. Washington Corrugated and North Creek Gray seem to have been in general usage in all sectors of the Paria country. In terms of frequency of sherds North Creek Gray seems to have been slightly more popular in Coyote Valley than in upper House Rock Valley, while the reverse is true for Washington Corrugated. Shinarump Corrugated and Shinarump Brown likewise exhibit a similar frequency and spatial distribution. There are other types which seem to evidence a more sporadic spatial distribution, for example, Toquerville Black-on-white is scarce in the Paria country, but nonetheless, it occurred in all areas covered by this season's survey. Other types evidencing a similar frequency-distribution are Black Mesa Black-on-white and Hurricane Black-on-gray. North Creek Black-on-gray seems to occur somewhat more frequently
on the Paria Plateau and in Coyote Valley with both Sosi and Dogoszhi styles equally represented. Virgin Black-on-white, Sosi style, is found in all areas while the Dogoszhi style seems to be limited to areas of Coyote Valley and the Paria Plateau. Tusayan Black-on-red occurs in greatest frequency from the Two Mile Spring area north to Utah. Medicine Black-on-red is found in all areas but is always scarce. As for the other redwares, Middleton Red and Middleton Black-on-red occur most often in House Rock Valley and are scarce elsewhere. Intrusive polychromes are found in all sectors of the Paria country; however in no instance are they prevalent. These types include Citadel and Tusayan Polychromes.

**SUMMARY**

The 1967 survey of the Paria Plateau region yielded a large amount of data on an area that was hitherto virtually unknown archaeologically. The preceding report is not intended to be the final word on the archaeology of the Paria Plateau as further papers will be written in the future as the project progresses.

The Paria Plateau region lies at an elevation of between 5200 and 7100 feet. The plateau is an area of gently inclined beds of Triassic and Jurassic age. On the west its boundary is marked by the monoclinal upper House Rock and Coyote Valleys. Access to the plateau is limited on the south by the escarpment; however several trails are known to lead up the
precipitous cliff. All drainage in the area is tributary to the Colorado River. The characteristic stream of this area is an intermittent one which usually flows only in places along its course due to the spotty nature of the precipitation pattern. For this reason the prehistoric occupants settled primarily along the many washes dissecting the area, or else in the vicinity of major springs and seeps. Besides being near water resources, these sites are frequently close to localities of suitable building materials, arable land, pinyon, and clay. Water is the one resource that is in short supply; however enough water for domestic needs probably could be derived from weathering pits, springs, and seeps on a year-round basis. Water for horticultural uses depended solely upon the exigencies of the weather.

The prehistoric occupation of the Paria Plateau country was limited to the 12th and 13th centuries, that is, late Pueblo II and Pueblo III times. In upper House Rock and Coyote Valley most sites are located in the open on ridges and alluvial fans. On the plateau sites are confined primarily to the larger and more prominent knolls and ridges. Generally speaking the prehistoric structures found in upper House Rock and Coyote Valleys consist of amorphous piles of boulders. Ruins vary in size and complexity from isolated one-room dwellings to multiple-roomed pueblos with Kivas; however small sites with from one to three rooms are the most prevalent. Limestone boulders or sandstone slabs
were the preferred building materials in the valley and plateau areas, respectively. In both areas the mortar binding these materials together has weathered away leaving no trace. For the most part structures are of four types: pueblos, pithouses, kivas, and storage cists. A number of pithouses were recorded, but these can be defined only with difficulty as they exhibit few formalized features. Round structures, probable kivas, were recorded at most of the larger sites. Storage cists were encountered at only one site. These were small, circular, slab-lines structure. Many sites show signs of having been occupied over considerable lengths of time while others display no visible evidence of a trash midden, thus indicating only a seasonal occupation. As evidenced by this season's work, petroglyphs are scarce in the Paria country as only two such sites were recorded. Both chipped and ground stone were present at most sites. Actual lithic work camps, however, were conspicuously lacking which undoubtedly can be attributed to a lack of suitable raw materials. Only one such site was recorded during this season's reconnaissance. At most sites, pottery is common with the majority being made between A. D. 1100 and 1250. Intrusive ceramic types indicate trade between the Virgin Branch and the Anasazi heartland to the southeast. Vessel forms include both jars and bowls. At the smaller sites little or no pottery is found. When it does occur, it is primarily of a plain utilitarian type. For larger sites,
however, both plain utilitarian and decorated ceremonial types are much in evidence. Large amounts of gray wares were present at the majority of sites and were assignable to both Tusayan and Shinarump Gray Wares.

ACKNOWLEDGEMENTS

The Paria Plateau Survey Project in 1967 was accomplished by staff members of the Department of Anthropology at the Museum of Northern Arizona. Sponsorship and directives for this project were made possible by the Arizona Strip District, Bureau of Land Management.

This project was conceived and initiated by Virgil L. Hart and Gene Herron of the Arizona Strip Office of the Bureau of Land Management. Their successors, Garth M. Colton and Edward Pittman, respectively, brought about the inception of field work. The staff wishes to express grateful appreciation to Edward Pittman for the benefit of his consultations, his many kindnesses, and his enthusiasm in anthropological research, all of which contributed to the merits of this work.

The staff conducting the field work consisted of John L. Haskell, field archaeologist, George A. Foster, Joseph J. Lischka, and Samuel D. Mayhew, all assistants in anthropology. Mr. Haskell led the field party for the field season and wrote the report on the 1967 survey. Mr. Foster assisted in the field work and attended to all logistics and
matters of site survey reporting and documentation. Mr. Lischka and Mr. Mayhew assisted in the field work, and Mayhew did the ceramic study and report.

Alexander J. Lindsay, Jr. was Senior archaeologist and administrative coordinator for the project. Keith Anderson and William D. Wade provided ceramic identifications. Clarice B. Covert and Mary Swank processed the collections recovered from the sites. Albert E. Ward provided preliminary research on the status of archaeological work on the Paria Plateau. Walter B. McDougall and John W. Weaver identified flora specimens removed from the study area. Katherine Bartlett expedited library research. William J. Breed assisted in problems associated with the geology of the Paria Plateau region. Mrs. Calvin H. Jennings was secretary to the project.

In the Paria area Mr. John Rich generously permitted the field party to use a cabin for its base camp. Other persons gave freely of their knowledge of the region, and we would like to express appreciation to Jim Glover, Fay Hamblin, Trever Leach, and Mel Schopman.

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