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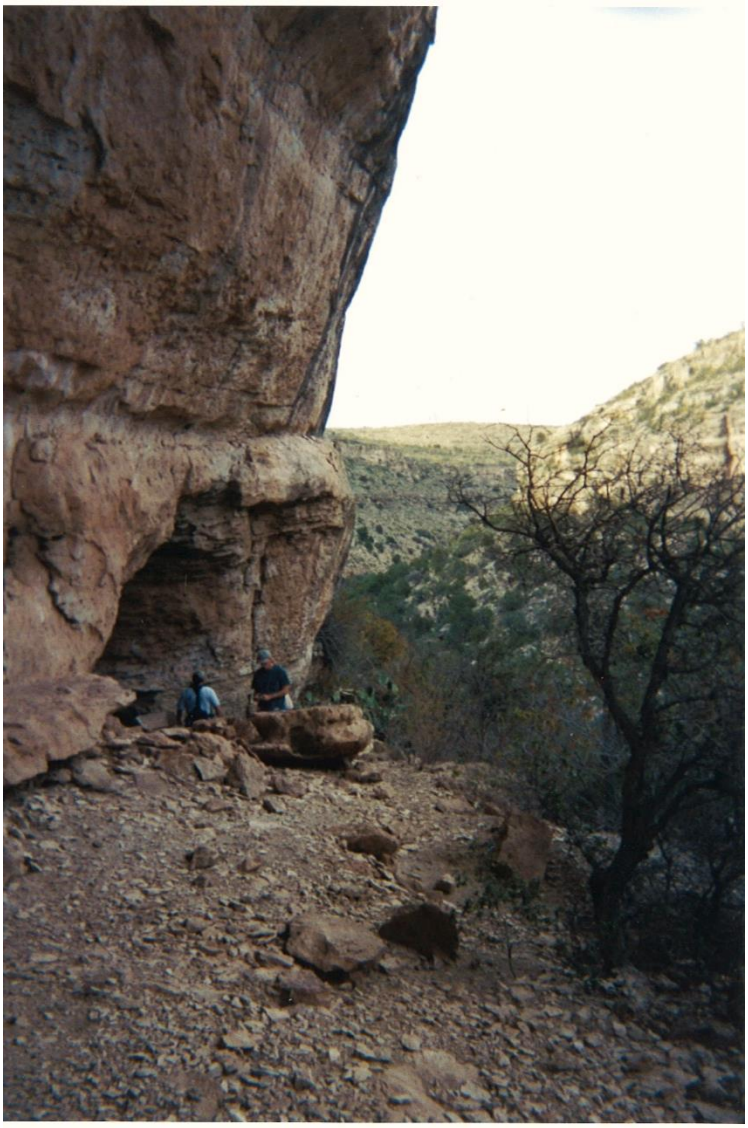

A contemporary view of Hermit's Cave. Read more about the 1938 excavation of this site inside this newsletter. (Photograph courtesy of Lincoln National Forest)

Introduction to the Permian Basin Programmatic Agreement (PA)

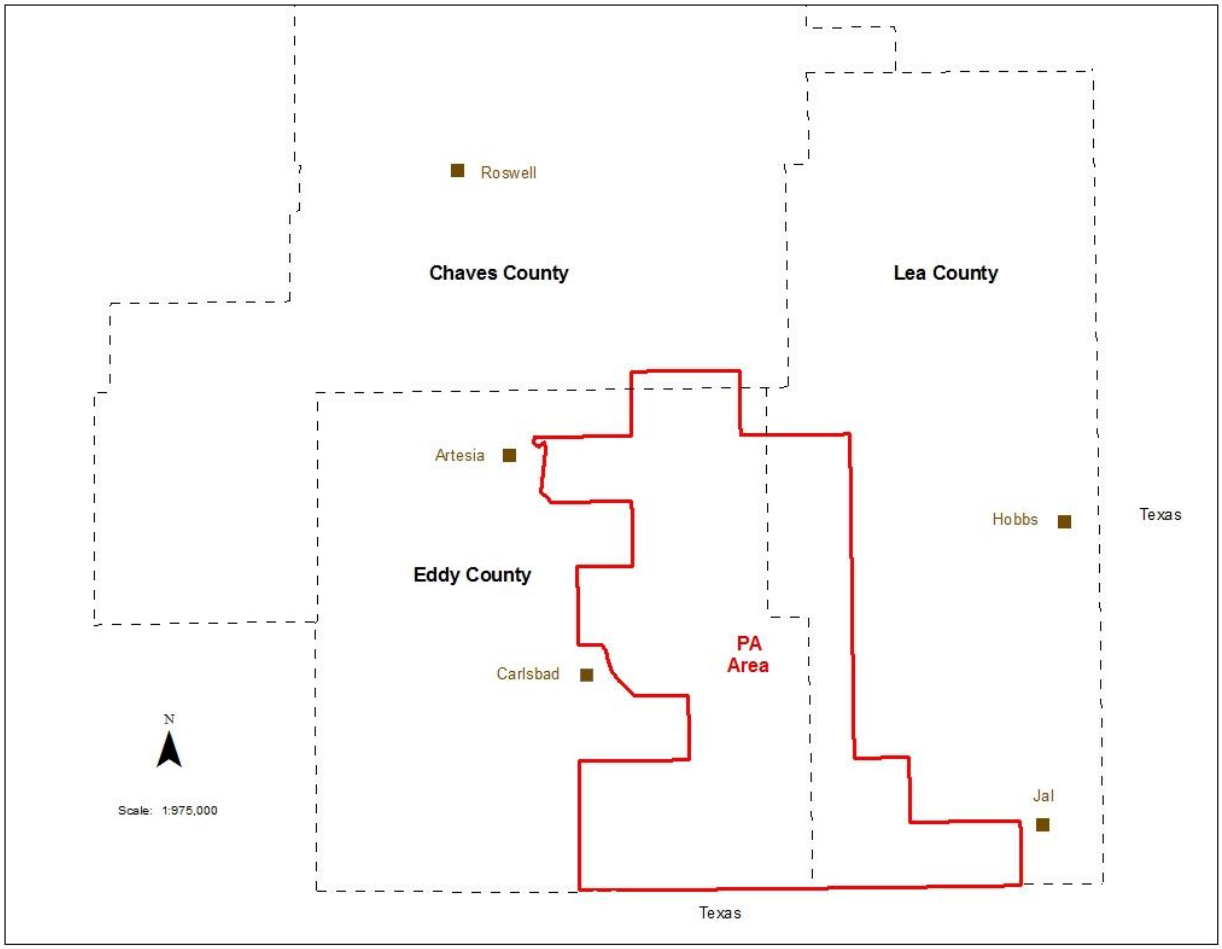

Figure 1. Map showing the Permian Basin PA Area.

The Permian Basin Programmatic Agreement (PA) is an alternate form of compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, that is offered to the oil and gas industry, potash mining companies, and for other industrial projects located in southeastern New Mexico. The PA can be used for federal projects located on Bureau of Land Management (BLM) land or BLM sponsored projects located on private property. Originally begun as a Memorandum of Agreement (MOA), it was extended for a period of three years in April 2013 as a Programmatic Agreement (PA) and the PA was further extended for a period of 10 years beginning in May 2016. The PA area is located partially in Chaves, Eddy, and Lea counties. Proponents of projects within the PA area may contribute to a dedicated archeological research fund in lieu of contracting for project specific archeological surveys, provided their proposed projects avoid recorded archeological sites. This dedicated fund is used to study the archeology and history of southeastern New Mexico.

Current PA News

Research Update

The fieldwork portion has ended for Blanket Purchase Authority (BPA) Number 8 entitled, "Evaluation of the Effect of the Permian Basin Programmatic Agreement (PA) on the Archeological Record within the Permian Basin PA Area." The operation of the PA is predicated upon avoiding recorded sites and placing projects in "blank" areas of the constituent maps. The project sponsor contributes the cost of the archeological survey to the PA, but the survey is not completed. One underlying assumption is that if any unrecorded sites are located in the PA project areas damage to them, or their loss, will be mitigated by research supported by the donated funds. Monitoring the operation of the PA has been through checks completed by CFO archeologists on an intermittent basis and this monitoring has turned up only a couple of instances when a project affected a site. In each of these cases the project proponent voluntarily adjusted the impact area of the project and CFO staff archeologists were able to examine it prior to construction. In each case the research potential of the site was saved.

This project is to examine a 10 percent sample of 1,658 projects processed under the PA during the period from May 1, 2013 to June 30, 2016, which coincides with the length of time during which the PA was first in effect. Any previously unidentified sites that have been affected by these projects will be found and the impact on their potential research will be evaluated. The results of this study will enable all interested parties to see the results of the operation of the PA on the archeological record of southeastern New Mexico and this in turn can provide information to guide the administration of the PA into the future.

Permian Basin PA is Focus of NMAC Fall Conference

The New Mexico Archaeological Council (NMAC) annual conference is often designed around a specific theme and the 2017 meeting focused on the archeology of southeastern New Mexico and specifically on projects that were completed under the Permian Basin PA. The conference was held at the Hibben Center on the campus of the University of New Mexico in Albuquerque on Saturday, November 11, with a public lecture on Friday evening, also at the Hibben Center.

The Friday evening talk entitled "The Merchant Site: Old and New Discoveries at a Prehistoric Village on the Mescalero Plain of Southeastern New Mexico," was given by Myles Miller of Versar, Incorporated, the principal investigator. First excavated by Robert Leslie and the Lea County Archaeological Society 50 years ago to rescue the site from looters, the site has been only briefly reported upon and became a somewhat legendary site of southeastern New Mexico prehistory. His lecture discussed new and old discoveries from the site and how the combined research efforts from the 1960s and the present day have significantly changed our perspective on 14th century settlements in southeastern New Mexico.

The Saturday session, organized and moderated by Cherie Walth, NMAC President, had a total of 12 presentations that are listed below:

> *The Permian Basin Programmatic Agreement Research Program in Southeastern New Mexico*, Martin Stein, Bureau of Land Management, Carlsbad Field Office.

The Permian Basin Programmatic Agreement – The State Historic Preservation Office View, Michelle Ensey, Deputy State Historic Preservation Officer & State Archaeologist.

Mescalero Apache Viewpoint, Holly Houghton, Mescalero Apache Tribe Tribal Historic Preservation Officer.

The Big Picture in Far Southeastern New Mexico: Largescale and Long-term Trends and Patterns, Jim Railey, SWCA, Environmental Consultants, Incorporated.

The Geologic and Archaeological Context for Lithic Resource Acquisition in the Permian Basin of Southeastern New Mexico, Monica L.Murrell, Statistical Resesarch Incorporated and Ziegler Geological Consulting.

Insights on 14th Century Plains-Pueblo Migration and Identity on the Southern Plains of New Mexico: A View from the Merchant Site, Myles Miller, Versar, Incorporated.

Burro Tanks - An Oasis Village on the Mescalero Plain, Matt Bandy, SWCA Environmental Consultants, Incorporated.

Boot Hill Site, LA 32229, Investigations, Marie E. Brown, TRC, Incorporated.

Laguna Plata Site, LA 5148, Kenneth L. Brown, TRC, Incorporated.

Plant Utilization in Southeastern New Mexico – A Review of the Botanical, Ethnographic, and Archaeological Evidence, William T. Whitehead, SWCA Environmental Consultants, Incorporated.

Archaeological Geology of the Permian Basin: What We have Learned in 16 Years of Research, Steve Hall, Red Rock Geological Enterprises.

A Digital Survey for Ring-Midden Features in Southeastern New Mexico using Aerial Lidar Data, Phillip O. Leckman, Statistical Research Incorporated.

The Fall Conference provided an opportunity to share some of the new PA research with other archeologists and the general public in the northern part of the state. NMAC plans to publish a compilation of the papers for future reference.

Other News from the Permian Basin

Hermit's Cave Excavation was a Pioneering Effort

The 1930s saw much professional interest in the caves and rockshelters of southeast New Mexico. Independently of each other, H.P. Mera, of the Laboratory of Anthropology in New Mexico and E.B. Howard of the University of Pennsylvania, Museum, tested and excavated caves and rockshelters in the Guadalupe Mountains during field seasons in 1930 and 1931. Howard eventually chose Burnet Cave for extensive excavation, finishing in 1932. Burnet Cave contained bones of extinct Pleistocene animals, such as the short-faced bear, shrub-ox, and *Bison antiquus* in deposits up to nine feet deep, as well as artifacts and features from the human occupation of the cave. Most significant was a projectile point in

association with bones of extinct bison and oxen, which provided some of the first evidence of the antiquity of humans in North America.

Howard and Mera were not the first people interested in the caves and shelters of the locality, as Mera noted about his visit to Carlsbad, "It was learned that for many years the numerous caves which occur in the Guadalupe Mountains, a few miles to the west, had been the source of a variety of "curios" which had been brought to town and sold or otherwise disposed of. This looting had been going on sporadically since the early 'eighties when settlement was first attempted in some the mountain cañons." (Mera 1938:9).

Near the close of that decade professional interest returned to southeast New Mexico in 1938, as a combined team from the University of Nebraska and the School of American Research, Museum of New Mexico undertook excavations at Hermit's Cave in Eddy County, New Mexico. General supervision of the work was under Dr. C.B. Schultz, assistant director of the Nebraska State Museum, while Edwin Ferdon represented the School of American Research and the Museum of New Mexico. Dr. Schultz had analyzed the animal bone recovered from Burnet Cave and he was interested in Pleistocene animal bones that might be found in Hermit's Cave and at other locations. He noted that "… since 1937 more than a dozen caves have been excavated and over six thousand numbered specimens from these caves have been collected in the Guadalupe Mountains by field parties from the University of Nebraska." (Schultz 1943:243).

Ferdon was in charge of excavating archeological remains from Hermit's Cave and preparing a report for that component of the shelter's content, while Schultz would report on the Pleistocene animal bone. Schultz was not at the site during the excavation, relying on R.M. Burnet, from Carlsbad (for whom Burnet's Cave had been named) and H.A. Tourtelot and R. Kubicek of the University of Nebraska. John Corbett from the School of American Research and Museum of New Mexico, assisted in the last two weeks (Ferdon 1946:1).

Hermit's Cave was chosen for its pristine condition, preserved that way by its occupant, Mr. James Picket, a trapper who had lived there since 1903. His occupancy of the cave kept it from being dug into by local collectors. Mr. Picket agreed to move out for a period of time, provided the shelter was restored to its habitable state at the close of the excavation. The goal of the excavation at Hermit's Cave was to find stratified deposits. As Ferdon stated, "Although the Guadalupe caves have produced no small amount of material, evidence of stratification has been lacking. The cause has usually been traced to former haphazard pothunting by local collectors who have destroyed any stratigraphy that once may have existed." (Ferdon 1946:1).

As noted Ferdon's goal was to define the cultural stratigraphy within the cave as an aid in understanding the prehistoric occupation of the cave and by extension the prehistoric occupation of the area. Often compared to layers in a cake, the interpretation of stratigraphic layers is a concept borrowed from the study of geology and it assumes that in undisturbed deposits the newest artifacts and features will be at the top, while older artifacts or features will be at the bottom of the deposit.

Hermit's Cave measures 24 feet (7 m) from its back wall to the opening, which is 36 feet (11 m) wide. The shelter is 11 ½ feet (3.5 m) high at the center and has a maximum width of 47 feet. (14 m) Immediately to the south of the cave is a shallow shelter in the cliff, in which a complete metate (grinding

stone) was found (Ferdon 1946:2). Hermit's Cave is on a western canyon wall, approximately 65 feet (20 m) above the dry streambed of the canyon floor. Permanent springs are found approximately a mile (1.6 km) downstream and temporary water is available in pockets or holes in the canyon floor after rains or snowmelt.

The archeological excavations within the shelter consisted of a series of adjoining sections, or slices, into the deposits, the majority of them five feet (1.5 m) wide and extending from the surface to a maximum depth of five feet (1.5 m). Three cultural levels were defined, all of them thickest in the center of the shelter and thinning toward the walls. Beneath them was a deposit of Pleistocene animal bones. The cultural levels are described from bottom to top: Level 1 and Level 2 were each approximately one foot (30 cm) thick and separated from each other by a sterile layer 10 inches (25 cm) thick containing soil, twigs, leaves, and animal dung. Level 2 was separated from the top-most Level 3 by a thin packed layer of leaves. Level 3 was 6 inches (15 cm) deep at the center and had evidence of Picket's occupation as well as prehistoric artifacts. Within the three levels the excavators discovered seven features, a "habitation pit" with a hearth in its center, six storage cists, and two hearths. Artifacts of fiber, wood, stone, bone, horn, shell, and pottery were also uncovered.

A hearth, as well as a charred log, burned animal bone, and split bones were found below Level 1 and within the Pleistocene animal remains (termed the geological deposits in the report), but no artifacts were associated. Radiocarbon dating would not be proposed as a dating method until 1946, eight years after the work at Hermit's Cave, so the hearth, potentially datable by the radiocarbon method, could not be further analyzed at the time.

In addition to the lack of the radiocarbon method of dating, there was at the time in southeastern New Mexico no classification of projectile points or well-defined pottery seriation to help in understanding the general time periods during which these items were produced and then deposited in the shelter. To compensate for this Ferdon compared the artifacts and features from the shelter to those from shelters and caves in other geographical regions, including the distant Ozark Mountains in Missouri and Arkansas, and the Four Corners area of New Mexico, Colorado, Utah and Arizona. Reports from Texas cave and rockshelter locations including the Trans-Pecos region, the Big Bend, and from the vicinity of El Paso were also reviewed.

Ferdon used the attributes of features and artifacts in conjunction with natural stratigraphic breaks in the deposits to interpret the past occupations of the cave. A relatively small number of broken pieces of pottery were found in the third or upper level. These potsherds included 10 Lincoln Black-on-Red, 13 Chupadero Black-on-White, and five as yet unnamed sherds, but recognized as co-occurring everywhere with the painted pottery. All date to the period from circa A.D. 1050 to 1550 and by inference the two levels beneath are of an earlier age. The lower levels were not given calendar dates by Ferdon, but he attempted to correlate distinctive artifacts and features to the different levels, including six types of fiber sandals!

In the approximately 80 years that have passed since the excavation of Hermit's Cave archeologists have worked out the relative sequence of the prehistoric occupation of southeastern New Mexico and identified styles of projectile points and additional pottery types that can be used for relative dating. The excavation of a number of sites and small-scale test excavations at others have provided charred plant remains that have been analyzed to construct a radiocarbon time line that can be converted to calendar dates, if desired.

While adjustments to the relative sequence are possible and many more radiocarbon dates are needed to discover a more accurate picture of the prehistoric occupation of the region, the state of our knowledge today is far above that available to Ferdon at the time of his pioneering work at Hermit's Cave.

The majority of this later work has taken place at open sites where only the most durable artifacts, such as those made of stone, will be preserved for long periods of time. Sites located in caves and rockshelters are important for the opportunity they provide to study fragile artifacts, such as those made of fiber that illustrate to us the ingenuity of the people who made them. These artifacts are also portals to investigate other aspects of prehistoric life, as Jolie and McBrinn have noted:

> *Unlike many other artifact classes, perishables dramatically illustrate each step of the manufacturing process because by being an additive technology the very acts by which they are made are preserved in the finished product. They are also the results of leaned behavior, governed by a set of fixed standards of what is and is not locally "acceptable."* (2010:155).

Because they are the products of the social sphere in which they are made they are potentially useful for examining questions beyond those involving the manufacturing techniques of individual artifacts or classes of artifacts. Some of these topics are: people's interaction with their environment through the identification of the plants that were used; people's aesthetic sensibilities reflected in the design of different artifact types and the decorations applied to them; and perishable artifacts as symbols of a people's social identity.

Unfortunately, the opportunities to investigate additional caves and rockshelters in the Guadalupe Mountains using modern methods are limited due to the scale of the previous digging in these places. As the archeologists of the 1930s noted numerous caves and rockshelters were dug into for curios by untrained people, which removed artifacts and destroyed the contexts in which they were found. Added to this are the numerous caves and rockshelters that have been excavated by paleontologists and archeologists and the inventory of these places that are still pristine is vanishingly small. However, new information can come from a reexamination of the archeological collections made at shelters such as Hermit's Cave, especially if a number of collections that come from the same geographical locality are reexamined using the same research design and with current research questions in mind.

Ferdon's report states that more objects of fiber were found in the shelter than any other class of artifact. This is true at other locations where perishable artifacts have been found, for instance, at a site in Coahuila, Mexico where finished fiber-based artifacts outnumber stone tools 20 to 1 (Jolie and McBrinn 2010:155). Among the Hermit's Cave fiber-based artifacts are sandals, complete and in fragments; fragments of coiled baskets, matting, netting and cordage; and bundles of fiber and grass rings. Ninety-nine of these objects are sandals. In order to create a seriation of the sandals for dating purposes Ferdon separated them into types based primarily upon their construction. He described these sandals as being of "wickerwork" construction, although that term is usually associated with the use of small branches or canes to create furniture or baskets. Its use does bring to mind an image of interwoven elements and he used the weaving terms "warp" for the long or length-wise parts and "weft" for those shorter or width-wise elements. In total six types were defined and associated with the three cultural levels in the shelter. Two-warp square-toed sandals had two types; two-warp round-toed sandals had two types; and there were examples of four-warp and five-warp sandals.

The majority (89) of the sandals are of two-warp construction and most (64) of those were defined by him as square-toed varieties.

> *Hermit's Cave produced sixty-four whole and broken two-warp square-toed sandal specimens. Fifty-four of these examples are amazingly uniform in construction and are described as the square-toed sandal Type A. Eight other specimens are basically the same as the Type A square toed sandal, but vary slightly in the warp material and heel finishing. The two remaining specimens show enough variation from the Type A examples as to be regarded as distinct, and are provisionally referred to as the Type B square-toed sandals.*
>
> *Type A Square-Toed Sandals. These square-toed wickerwork sandals (Plate II, a, c), constructed on a foundation of two single leaf, opposing warps, were represented in Hermit's Cave by thirteen whole specimens and forty-one fragments. Ten of these were obtained from the first culture level, and forty-four from the second. Of the whole sandals, only four had complete sandal ties.*
>
> *These sandals were constructed in the following manner: Two long lecheguilla warp strands were laid out parallel to each other and at the desired width of the sandal. The two strands were then split at their heel ends and tied together by a square knot. The splitting of the ends made the strands more flexible. In a number of examples, only one of the split strands from each warp was tied by a square knot. In such cases the remaining loose strand of each element was passed through the knot before it was pulled tight (Plate IV, d). This resulted in a smaller, more compact heel tie than in the former method. Weft strands, consisting of bunches of two to eight yucca fibers, were introduced at the heel and woven over and around each warp in a figure eight pattern. This was continued for the full length of the sandal. Three specimens were constructed of lecheguilla wefts, one single long strand, rather than a bundle being woven at a time. The ends of all weft elements were passed down through the body of the sandal, and protruded at the bottom to form a. shredded pad. ·The small ends of many of the wefts were finished by an odd braid technique (Plate II, d).*
>
> *With the completion of the weft weave, the two warps were allowed to extend 4 to 6 inches beyond the toe. The ends of each were then split down the center to form two strands. The outer strand of each warp was folded back diagonally across the upper surface of the sandal, the two often crossing each other. The inner split strand was then turned back and passed beneath a bundle of weft strands at the toe, after which it was pushed up through the body of the weave to the upper surface of the sandal, where it was fastened to the first or outer split warp strand by a half hitch knot (Plate IV, b). The remaining loose end was allowed to pass back diagonally across the sandal. In this manner each warp element was made secure by being firmly tied to the weft at the toe. It is to be noted that in these sandals the weft forms the square·toed effect.*
>
> *The result of this type of construction is a square-toed, round heeled sandal ranging from 5 (Plate VI, c) to 11 (Plate II, c) inches in length, and from 2-1/2 to 4 inches in width. The sandal tie (Plate II, a, and Plate IV, b) is formed by two long strands of yucca fiber. One fiber forms the heel and arch strap, the strands being fastened to the sandal near the heel by looping around the warps. The other strand is looped about the arch strap and passed down the center of the sandal to the toe, where it is worked down between the wefts to the bottom of the sandal. Here it is*

drawn over to one side and around one warp. It then passes across the upper surface of the sandal, where it is made to hold down the remaining loose ends of the split warp strands. After

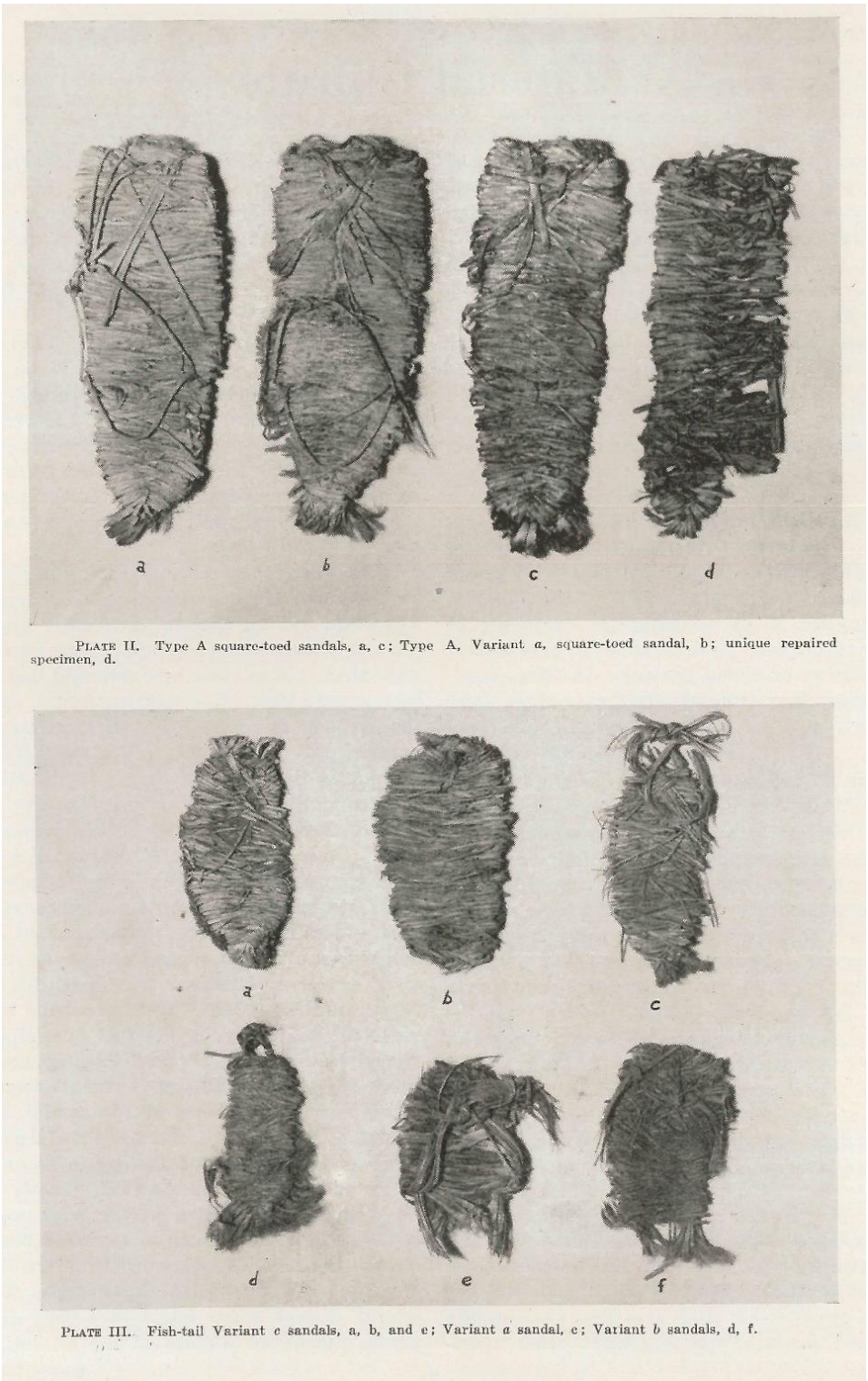

PLATE II. Type A square-toed sandals, a, c; Type A, Variant *a*, square-toed sandal, b; unique repaired specimen, d.

PLATE III. Fish-tail Variant *c* sandals, a, b, and c; Variant *a* sandal, c; Variant *b* sandals, d, f.

Figure 2. Square-toed and fish-tail sandals found in Hermit's Cave. Ferdon's Plates II and III.

passing around the opposite warp to the bottom of the sandal, it is drawn up through the weft near the center of the toe, and is then tied by a square knot to its other end.

In connection with these specimens one unique sandal should be mentioned (Plate II, d). Three-fourths of the sandal, amounting to the toe quarter and half the body, is similar in construction to the Type A square-toed sandals. However, a distinct notch effect at the heel has been obtained by what appears to-have been an addition to the sandal after the original heel segment had broken away. The replacement was made by attaching a much smaller heel to one of the two warps. The inner side of this added heel segment was allowed to swing free, for it was not large enough to connect with the opposite warp. The single connection to the one warp was stiff enough, however, to prevent much free motion. When first discovered, this sandal was thought to represent a toe-notched wickerwork type, the squared end being regarded as the heel.

Variant a. A variant of the Type A square-toed sandal is found in five whole and three broken specimens. The variation is slight, amounting only to the use of a bundle of yucca leaves for the two warps rather than the single lechegulla leaf (Plate II, b). These yucca bundle warps are not tied at the heel, but are held together by the weft, as in the fish·tail sandal types. However, the rest of the sandal, including its tie, is similar to the Type A square·toed examples described above, the squared toe being separated into two smaller bundles in place of the two split strands of the other specimens. Three of these sandals were found in the first level of culture, and four in the second level where the true fish-tail type first came to light. One unlocated example was excavated before the writer arrived at the cave.

Type B Square-Toed Sandals. This type of sandal is represented by two specimens, one found in the top of the second culture level and the other in the third level of the cave (Plate IV, c, and Plate VI, g). In general the two sandals are built in the same manner, but there is slight variation. The sandals are constructed upon a foundation of two opposing warps, formed in one case by a single long lecheguilla leaf, and in the other by two lecheguilla leaves placed one on top of the other. The warp begins in one corner of the square toe of the sandal, extends down one side, curving about at the heel and passing up the opposite side to the toe. This results in a square-toed, round·heeled sandal. At the toe the ends of the warp leaf are split into two strands. One pair is used to tie the warps together at the toe; the other pair is extended upward, forming a toe loop tied at the top in a square knot (Plate IV, c). In the example having a two-leaf warp, the ends of one of the leaves are extended upward into a toe loop, while the second leaf is treated as in the first sandal described above: that is, the ends are split, one pair of strands tying the warps together, the other pair forming a toe loop. It is interesting to note that in this last case two coinciding toe loops are formed for the one sandal.

The weft of the single-leaf warp specimen (Plate VI, g) is formed of single-leaf lecheguilla strands, woven back and forth around the warps in a figure eight pattern, the strands being given a half twist before passing around each warp. In the other specimen, having a double-leaf warp, the weft is composed of bunches of two to five yucca leaves, woven about the warps in a figure eight pattern, the leaves remaining flat. The sandal with the single-leaf warp is 6-1/2 inches long

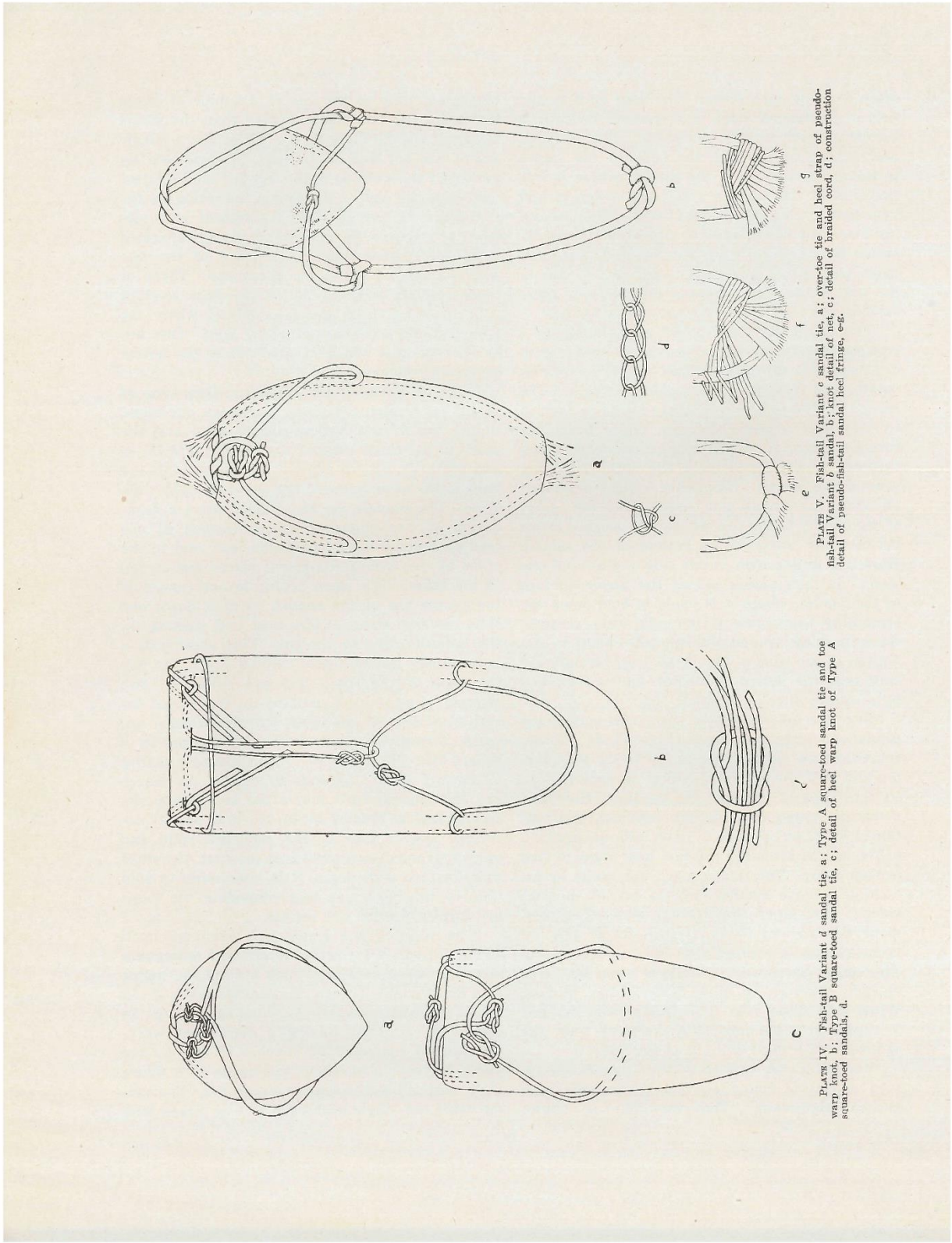

PLATE V. Fish-tail Variant *c* sandal tie, a; over-toe tie and heel strap of pseudo-fish-tail Variant *b* sandal, b; knot detail of net, c; detail of braided cord, d; construction detail of pseudo-fish-tail sandal heel fringe, e–g.

PLATE IV. Fish-tail Variant *d* sandal tie, a; Type A square-toed sandal tie and toe warp knot, b; Type B square-toed sandal tie, c; detail of heel warp knot of Type A square-toed sandals, d.

Figure 3. Details of sandal construction. Ferdon's Plates IV and V.

> *and 3 inches wide. The other example, though of the same width, is an inch shorter. A simple, though apparently complete, sandal tie is found on the longer of the two specimens (Plate IV, c,and Plate IV, U), It consists of a single strand of fiber, which passes beneath the sandal, up over the foot, through the toe loop, and is then tied by a square knot. There is apparently no heel strap* (Ferdon 1946:7-11).

Other two-warp sandals were defined by Ferdon as "round-toed," and these were further subdivided into "fish-tail" and "pseudo-fish-tail" types. The primary characteristic of a fish-tail sandal is that the ends of the warp strands, which are bundles of yucca leaves, extend from the end of the heel, thus resembling a fish tail. He also created variants of these based upon the presence of toe loops or toe straps, and sandal tie. Interestingly, some of these sandals cover the whole foot, but some are shorter half-sandals apparently designed to cover only the ball of the foot. This difference was not a criterion in his classification scheme. A pseudo-fish-tail type has the warp strands tied together at the heel by a single overhand knot. The weft strands at the heel pass over the warp knot where they spread out to form a fan or fish-tail effect. Variants are also defined on the basis of how they were attached to the wearer by toe and heal straps. Twenty-two fish-tail and three pseudo-fish-tail sandals comprise this group.

Two fragments of a four-warp and one sandal of five-warp construction finish Ferdon's classification. One heel fragment of a four-warp sandal had warps composed of bunches of six yucca leaves that extended beyond the weft to form a heel fringe. The second fragment was a toe half that had warps of bundles of six sacahuiste (Beargrass) leaves.

The five-warp sandal is complete, but without ties. It has a square shape and is further differentiated from the other types, by having the warp strands folded back underneath the sandal and fastened by extra weft strands at the heel, thus forming two layers. The two layers are reinforced by ties near the heel and the heel has a fringe formed by the butt and proximal ends of the warp strands that protrude.

The classificatory analysis done by Ferdon of the sandals from Hermit's Cave is interesting and it served his purpose to define diagnostic artifacts for the different cultural levels, but there are other ways to look at the sandals. Coiled baskets, plaited matting, and fine twill plaited sandals at sites in Chaco Canyon and at other sites in northwestern New Mexico were examined in a recent study to identify the social identities of their makers. These artifacts were chosen in part because even fragments illustrate multiple production decisions that result in stylistic variation.

> *They are also intersecting technologies (Hagstrum 2001) that require similar technological knowledge, resources, and labor, although the production of each is organized differently. For example, in contrast to coiled baskets, which ethnographies and cross-cultural data suggest are more likely to be traded within and between villages or given as gifts (e.g., Ford 1972; Tanner 1983: Teiwes 1996), mats and footwear are typically produced at the scale of individual households (Driver and Massey 1957; Ortiz 1979). Generally, if mats or sandals "travel" at all, they are likely to only move as far from home as their maker or wearer does* ((Jolie and Webster 2015:99).

Given that sandal making is leaned behavior, governed by a set of standards of what is and is not acceptable, and that sandals are thought to be made and used by household members it can be anticipated that a new study of these artifacts can provide fresh insights into ancient people's lives. For instance,

Ferdon's observation that more than half of the square-toed sandals were "amazingly uniform in construction" may be a clue to identifying the production of a single individual. It is not often that

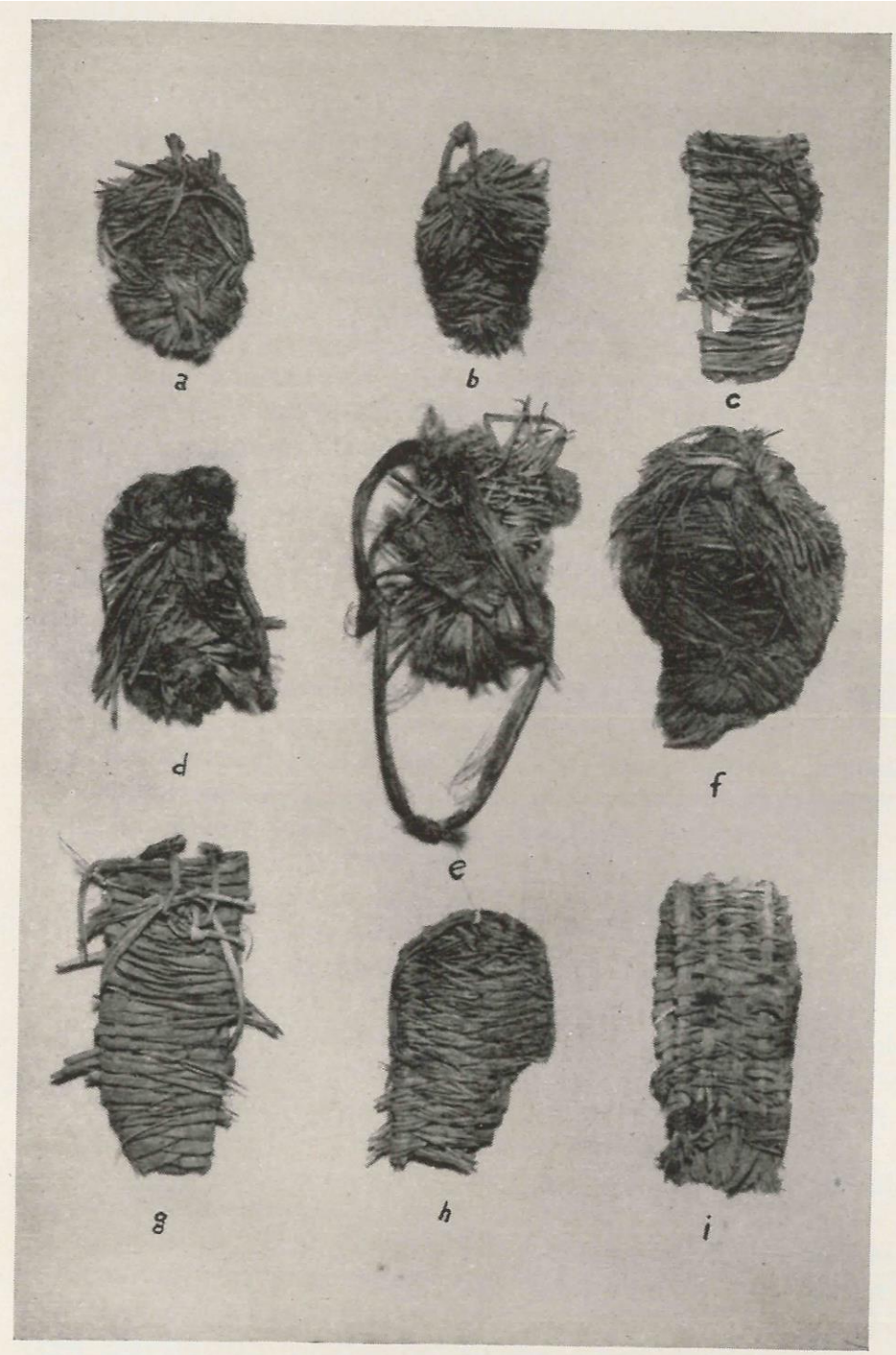

PLATE VI. Fish-tail Variant *d* sandals, a, b: small Type A square-toed sandal, c; fish-tail Variant *e* sandal, d; pseudo-fish-tail Variant *b* sandal, e; Variant *a* sandal, f; Type B square-toed sandal, g; four-warp sandal, h; five-warp, two layer sandal, i.

Figure 4. Sandal types defined by Ferdon are shown here. Ferdon's Plate VI.

individual artisans are defined in archeological studies, since these studies are primarily oriented to searching for artifact patterns and these patterns are most often represented by the combined output of many individuals, each one contributing a few artifacts. A restudy can also add to the understanding of the Hermit's Cave stratigraphy. Modern Accelerator Mass Spectrometry (AMS) radiocarbon dating only requires very small samples to process, so it is conceivable that small samples can be taken from the sandals themselves in order to determine when they were made and to enhance Ferdon's stratigraphy.

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Newsletter Contact Information

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