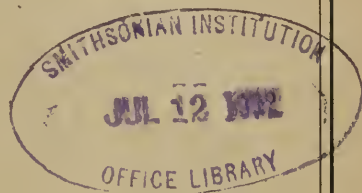


SMITHSONIAN MISCELLANEOUS COLLECTIONS
VOLUME 87, NUMBER 7

PRELIMINARY CLASSIFICATION OF PREHISTORIC SOUTHWESTERN BASKETRY

BY
GENE WELTFISH

Fellow of the National Research Council, 1930-1932



(PUBLICATION 3169)

CITY OF WASHINGTON
PUBLISHED BY THE SMITHSONIAN INSTITUTION
JULY 12, 1932

SMITHSONIAN MISCELLANEOUS COLLECTIONS
VOLUME 87, NUMBER 7

PRELIMINARY CLASSIFICATION OF PREHISTORIC SOUTHWESTERN BASKETRY

BY

GENE WELTFISH

Fellow of the National Research Council, 1930-1932



(PUBLICATION 3169)

CITY OF WASHINGTON
PUBLISHED BY THE SMITHSONIAN INSTITUTION
JULY 12, 1932

The Lord Baltimore Press
BALTIMORE, MD., U. S. A.

PRELIMINARY CLASSIFICATION OF PREHISTORIC SOUTHWESTERN BASKETRY¹

By GENE WELTFISH

Fellow of the National Research Council, 1930-1932

CONTENTS	PAGE
Introduction	2
Abbreviations	3
The San Juan area.....	3
Sites in Navaho National Monument.....	3
Marsh Pass, Ariz., and associated sites.....	3
Betatakin	6
Cradle House	7
Canyon del Muerto.....	8
Canyon de Chelly.....	10
Southern Utah sites.....	12
Grand Gulch	12
White Canyon	13
Kane County	14
Battle Canyon (San Juan County, southeastern Utah).....	14
Allan Canyon (San Juan County, southeastern Utah).....	16
Butler Canyon (San Juan County, southeastern Utah).....	16
Mesa Verde sites.....	16
Mesa Verde proper.....	16
Mancos Canyon	19
Johnson Canyon	21
Piedra District, southwestern Colorado.....	21
Pueblo Bonito, N. Mex.....	21
Aztec Ruin, N. Mex. (Animas and La Plata region).....	22
Miscellaneous collections	23
Southern Utah (San Diego Museum collection).....	23
Southern Utah and southwestern Colorado (Wetherill, and McLloyd and Graham collections).....	24
Palatki, central Arizona.....	25
Little Colorado River region, Arizona.....	26
Chaves Pass	26
Chevron Ruin	27

¹ Acknowledgment is due the Council for Research in the Humanities, Columbia University, whose grant made possible a great part of the museum study on which this treatment is based; the work has been completed as Fellow of the National Research Council.

	PAGE
Lower Gila region.....	27
Casa Grande	27
Upper Gila region.....	28
Bear Creek on Blue River.....	28
Rio Grande region.....	30
Pajarito Plateau, N. Mex.....	30
Lower Rio Grande Region.....	31
Site near Las Cruces, N. Mex.....	31
West of Sacramento Mountains.....	32
West of Carlsbad, N. Mex.....	33
Ancient Pueblo	33
Sikyatki	34
Hopi (Moki)	34
Santa Ana	35
Sia	35
Zuñi	36
Miscellaneous	37
Types of basketry.....	38
Basket Maker type coiling.....	38
Cliff Dweller type coiling.....	38
Three-rod-triangular type coiling (fig. 11).....	39
One-rod-foundation coiling	40
Unusual coiled specimens.....	40
Sifter coiling	41
Twill-plaiting	42
Wickerwork	42
Twined basketry	42
Baskets showing combinations of techniques.....	43
Conclusions	44
Literature cited	45
Techniques illustrated	47

INTRODUCTION

The following notes on prehistoric basketry of the Southwest are not an exhaustive treatment. They include references to the material with which I have come in contact and are a first attempt at classification.

The material is more or less uneven. It includes well-documented specimens from sites which have been thoroughly excavated, sporadic specimens which have been obtained from sites of undoubted importance but not as yet thoroughly worked out, and some general and miscellaneous collections of important specimens, some of which cannot be definitely ascribed to a particular site or archeological period. In the latter category would fall the Wetherill and the McLloyd and Graham collections and the collection in the San Diego Museum which can be referred only to generalized geographical locations. I have

listed the material by sites so far as it was possible, and included under site classifications whatever in the above general collections could be localized.

ABBREVIATIONS

In referring to collections in various museums the following abbreviations are used:

A.M.N.H.	American Museum of Natural History, New York, N. Y.
B.M.	Brooklyn Museum, Brooklyn, N. Y.
F.M.N.H.	Field Museum of Natural History, Chicago, Ill.
M.A.I., H.F.	Museum of the American Indian, Heye Foundation, New York, N. Y.
S.D.M.	San Diego Museum, San Diego, Calif.
U.C.M.	University of California Museum, Berkeley, Calif.
U.P.M.	University Museum, University of Pennsylvania, Philadelphia, Pa.
U.S.N.M.	United States National Museum, Washington, D. C.

THE SAN JUAN AREA

SITES IN NAVAHO NATIONAL MONUMENT

MARSH PASS, ARIZ., AND ASSOCIATED SITES¹

Culture horizons: Basket Maker, Pueblo I, and Cliff Dweller.

From caves, ruins, and burials in Marsh Pass and in Sagiotsosi² and Sayodneechee canyons, Kidder and Guernsey have unearthed great numbers of basketry remains. These are the type sites for basketry of Basket Maker type technique. Two periods are well represented in the basketry recovered from this location, Basket Maker and later Cliff Dweller, and in addition a single specimen from Cave 1, Segi Canyon, represents the intermediate, Pueblo I or pre-Pueblo period.³

The Basket Maker basketry found, with the exception of one twill-plaited specimen from White Dog Cave and another which may be matting from Cave 1, Kinboko in Marsh Pass, was exclusively coiled ware. Basketry specimens were so abundant in Basket Maker caves

¹ Kidder and Guernsey; Guernsey and Kidder. Statements on the material from these sites are based upon these publications; I have also had the opportunity of examining specimens in the Peabody Museum.

² Besides the Kidder and Guernsey material, a coiled burden basket, a cradle basket, and a bowl are illustrated in Cummings, 1910, p. 34, as probably from this location; and another cradle basket is mentioned from Bat-woman's House, Cummings, 1915, pp. 281-282.

³ This basket is pictured on pl. 13, Guernsey, 1931. The specimen is in the Peabody Museum.

as to constitute almost one third of the specimens found. The shapes of Basket Maker work fall into five classes: trays (the commonest form), bowls, carrying baskets, water baskets, and trinket baskets. Designs are all in black.

The technique of the coiling found in this Basket Maker material can be summarized as follows: The work is consistently done toward the left of the basket maker (fig. 1*a, b*). Most of the work is done on the concave surface; some globular forms are worked on the concave surface to the shoulder and thence on the convex surface from shoulder to rim; a few globular forms are worked entirely on the convex surface (fig. 1*b*). The work being consistently in the left direction, concave work surface implies that the stitching is done at the far edge of the circumference (fig. 1*a*), while convex work surface implies that the stitching is done on the near edge of the circumference

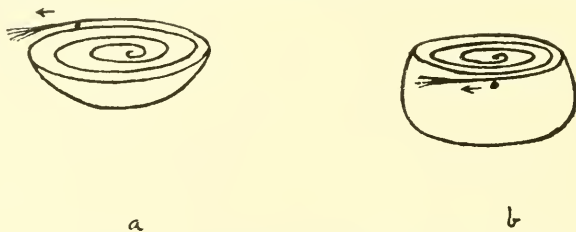


FIG. 1.—*a*. Coiled basket with counter-clockwise spiral, worked on the concave surface, toward the left of the worker. *b*. Coiled basket with clockwise spiral, worked on the convex surface, toward the left of the worker. The dot indicates the place on the circumference where the work is done.

(fig. 1*b*). Descriptively, baskets worked on the concave work surface show a counterclockwise spiral (fig. 1*a*); those worked on the convex work surface show a clockwise spiral (fig. 1*b*). Throughout Basket Maker coiling the stitches are noninterlocking (figs. 2, 3).¹ The predominant or typical foundation is two-rod-and-bundle-triangular (fig. 2); occasional specimens were found to have a single-rod-surrounded-by-fiber foundation (fig. 3).

The above description with respect to the two-rod-and-bundle-triangular foundation baskets defines technically what I refer to throughout this paper as Basket Maker type coiling.

Twill-plaiting.—One specimen in twill-plaiting from White Dog Cave² is in over-2-under-2 weave with the bottom unwoven; it is probable that the basket was made downward from the rim.³

¹ Kidder and Guernsey, pp. 168-169, fig. 80.

² Guernsey and Kidder, p. 63, and pl. 23*b*, opposite p. 62.

³ Compare the specimen of twill-plaiting from Canyon del Muerto described elsewhere in this paper, and the jar-shaped specimen from Canyon de Chelly.

The Pueblo I or pre-Pueblo period is represented by a single specimen, a well-preserved coiled burden basket from Cave 1, Segi Canyon. The walls are almost vertical for about two thirds of the height, forming a narrow ellipse in cross-section, the upper third to the rim showing a very decided flare. The coiling is of the regular Basket Maker type.

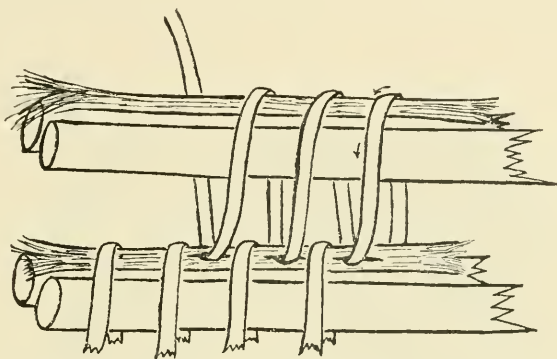


FIG. 2.—Coiling, with noninterlocking stitches, on a two-rod-and-bundle-triangular foundation. (This is the typical Basket Maker technique.)

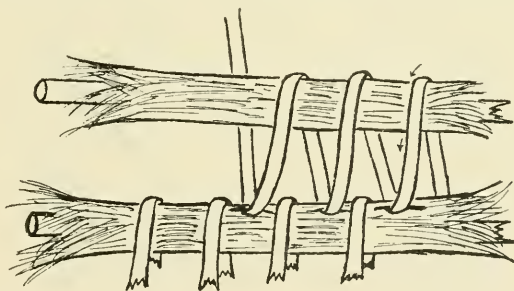


FIG. 3.—Coiling, with noninterlocking stitches, on a single-rod-surrounded-by-fiber foundation. (This is a variant of the Basket Maker type technique.)

Cliff Dweller material¹ includes fragments of shallow coiled trays and yucca-ring baskets. The yucca-ring baskets are predominant, the coiling being far rarer than in the Basket Maker sites.

The technique of Cliff Dweller coiling is identical with that found in Basket Maker trays, the two types being distinguishable only in texture. In Basket Maker material, the stitch measurements range

Guernsey and Kidder, p. 63, also point out the contrast of this type of twill-plaited basket with the yucca-ring baskets which are made from the bottom center up (fig. 4).

¹ Kidder and Guernsey, pp. 108-110.

from $2\frac{1}{2}$ coils and 6 to 7 stitches per inch (the coarsest) to 7 coils and 12 stitches per inch (the finest), the great majority of specimens having 5 coils and 9 to 11 stitches per inch. The stitches are spaced so that the foundation shows between stitches. In Cliff Dweller material, the stitch measurements range from 4 to $4\frac{1}{2}$ coils and 8 to 10 stitches per inch (the coarsest) to 5 coils and 17 stitches per inch (the finest). In all Cliff Dweller material the foundation elements are entirely concealed. In general, the sewing splints used by the Cliff Dwellers are considerably finer than those of the Basket Makers.

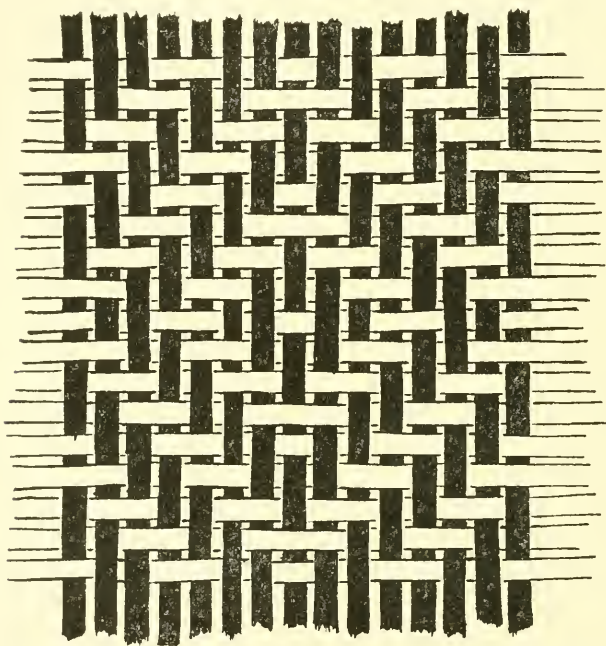


FIG. 4.—Central pattern of a yucca-ring basket in over-2-under-2 twill-plaiting with concentric diamond pattern, illustrating the type of twill-plaited basket made from the center bottom outward. (This is the typical Cliff Dweller technique.)

The yucca-ring baskets are made in over-2-under-2 twill-plaiting of yucca strands as a mat and fastened to a wooden rim ring. All the yucca-ring baskets from this site had concentric diamond patterns; one fragment indicated use of strands of two colors (fig. 4).¹

BETATAKIN

There are three specimens of coiled work from Betatakin in the United States National Museum. One is a fragmentary basket

¹ Kidder and Guernsey, p. 100.

bottom,¹ the other two are bowls.² All are in Basket Maker type coiling on two-rod-and-bundle-triangular foundation (fig. 2). No design is evident. The stitch measurements are similar, one being 5 coils, 12 stitches to the inch, another 5 coils, 11 stitches, and the third $4\frac{1}{2}$ coils, 11 stitches.

A yucca-ring basket collected by Fewkes at this site is made in over-2-under-2 weave with a concentric diamond pattern in one color.³

CRADLE HOUSE

This ruin was named after the find there by W. B. Douglass of a Cliff Dweller cradle, with which was associated a pair of infant sandals.⁴ The basket is of burden-basket form with a deep cleft in the bottom; it is made in Basket Maker type coiling on a two-rod-and-bundle triangular foundation with noninterlocking stitches.

Fewkes, 1911a, mentions another specimen, practically identical with the above, which was found by E. B. Wallace in San Juan County, Utah, not far from the Colorado River. This, according to Fewkes, finally reached the Field Museum of Natural History. I find that this is the specimen which is now in the University of Pennsylvania Museum.⁵ I have not seen the basket figured by Fewkes, but I have seen the Pennsylvania specimen and another in the San Diego Museum.⁶ These are so nearly identical that Fewkes' comment would apply, "that the two (three) might have been made by the same woman." I have examined both specimens in detail. They are so much alike that it is sufficient to give the facts on the San Diego basket.

The San Diego basket comes from "a cave in southern Utah." It is about in the same condition as the one figured by Fewkes, the design somewhat more faded. The measurements are: 21 inches high ($14\frac{1}{2}$ inches from rim to leg, $6\frac{1}{2}$ inches for the legs), and the oval mouth is 9 by 6 inches.⁷ It is coiled on a two-rod-and-bundle-triangular

¹ U.S.N.M. No. 270259.

² U.S.N.M. No. 312393: I examined this specimen through the courtesy of N. M. Judd; U.S.N.M. No. 270258, Fewkes.

³ U.S.N.M. No. 270252, Fewkes.

⁴ Fewkes, 1911a, pp. 29, 30; pls. 19, 20, and 21.

⁵ The University Museum, University of Pennsylvania, has published a post-card photograph of this specimen. Farabee, p. 202, says: "The basket was found in a cliff house in Moki Canyon, San Juan County, Utah, near the Colorado line. In 1904 it was exhibited at the World's Fair, St. Louis. Thereafter it was on loan at the Field Museum until finally purchased by the University Museum in 1908."

⁶ S.D.M. No. 4759.

⁷ Compare Fewkes, 1911a, pl. 19, "Dimensions: length 22 inches, breadth 9 inches; diameter 6 inches."

foundation, with noninterlocking stitches, and is apparently worked toward the left of the worker on the concave work surface. The stitch measurements are 4 plus coils and 12 stitches per inch. At the finish there are about 2 inches of false braid stitching. The design, practically identical with the Fewkes and Pennsylvania specimens, is in red and black.

Two other specimens of this type are referred to by Cummings.¹ One, "found in a pot hole in one of the gulches of Sagi at Sosi Canyon," the other from a room in Bat-woman House.

Besides these specimens I have seen miniature coiled baskets of this shape and workmanship; the texture of the stitching and foundation was much finer. Evidently such a miniature is a *tour de force*. These miniatures I saw through the courtesy of N. M. Judd of the United States National Museum; I understand they are part of his material from Pueblo Bonito.

Interesting in this connection is also a specimen in the Museum of the American Indian, Heye Foundation, which is from a cave in Grand Gulch, Utah.² It is a miniature basket, like a toy, made in twill-plaiting in under-2-over-2 weave, in a shape that suggests a cradle basket; that is, it has a body and two legs.

CANYON DEL MUERTO

Culture horizons: Basket Maker III, Post Basket Maker, and Pueblo III.

E. H. Morris found large numbers of baskets at several sites in Canyon del Muerto in Arizona. His collections are now in the American Museum of Natural History. In addition, there is the large beautiful plaque in the United States National Museum.³

In the basketry from the earlier horizons, two techniques are found, close coiling and twill-plaiting. There is evidence in the pottery remains from the site of the presence of a second type of coiling there, sifter coiling.

Close coiling.—All the coiled basketry from this site is decidedly uniform in texture and technique. The technique is Basket Maker type (figs. 1 and 2), namely, with counterclockwise spiral, made on the concave work surface toward the left of the worker, with non-interlocking stitches. There are differences in the handling of globu-

¹ Cummings, 1910, illustration p. 34; and Cummings, 1915, pp. 281-282.

² M.A.I., H.F. No. 5/1790. Cf. elsewhere in this paper under Grand Gulch.

³ U.S.N.M. No. 231776. It is a flat, round, coiled plaque secured by the Bureau of Indian Affairs; Culin, 24th Ann. Rep. Bur. Amer. Ethnol., includes a photograph of this basket as frontispiece.

lar baskets.¹ In foundation, most of the baskets are made on a two-rod-and-bundle-triangular foundation (fig. 2), occasional specimens on two-rod-and-reed-triangular foundation.² The stitching runs about 5 coils and 9 stitches to the inch.³

In shape the coiled baskets include trays, bowls, globular baskets, large conical burden baskets, and a number of burden baskets of a different type—with almost vertical walls, flaring somewhat at the mouth, and with bottom and cross-section elliptical. The dimensions of the ellipse are about 3:1.⁴

Designs that occur on these baskets are in black, or in red and black. The plaque in the United States National Museum has a beautiful realistic figure of a frog painted in blue on the non-work surface.

Sifter coiling.—A basket-moulded sherd⁵ from this site shows in reverse sifter coiling which resembles the Canyon de Chelly specimen (fig. 6).⁶

Twill-plaiting.—From this site there is a cylindrical basket of yucca, woven in over-2-under-2 twill-plaiting. At the mouth, the shoulder, and the bottom is a row of twining. The bottom is open, and the strands of yucca from the body are unwoven and lie loosely across the bottom. It seems probable that the basket was woven from the mouth down.⁷

Material of the Pueblo III period⁸ from this site includes a coiled bowl and four yucca-ring baskets. The coiled bowl has almost vertical walls, and is finely stitched in Basket Maker type technique on a two-

¹ See above, p. 4. Cf. Amer. Anthropol., vol. 32, p. 386.

² For example, the U.S.N.M. plaque, as above.

³ Morris, 1927, includes, pp. 195, 196, photographs of seven trays with the A.M.N.H. numbers. Fig. 43e, p. 196, illustrates the average texture. The other photographed specimens show rather finer stitching than the average of the coiled work from this site.

⁴ For example A.M.N.H. Nos. 29.1/8442 and 29.1/8343. All the specimens of this type of burden basket were found by Morris at one Basket Maker III site, in association with the mummy of a child.

⁵ Morris, 1927, p. 138, fig. 1a.

⁶ B.M. No. 11913, discussed elsewhere in this paper under Canyon de Chelly.

⁷ A.M.N.H. No. 29.1/1549.

⁸ These baskets were found by E. H. Morris in a burial cist which contained a mummy, pottery of Mesa Verde type, and other objects. The entire contents of the burial cist are on exhibit in the American Museum of Natural History. According to the label, "the only ruin in the locality characterized by such pottery is a large pueblo half a mile distant, from which presumably the body was brought for interment. The burial dates from the last ancient occupation of Canyon del Muerto, probably around 1000 A. D."

rod-and-bundle-triangular foundation (fig. 2). The closeness of the texture corresponds to what I have called above Cliff Dweller. Of the four yucca-ring baskets, two are large and two are small. Two are made in over-2-under-2 weave with plain diagonal pattern; two in over-3-under-3 weave have a concentric diamond pattern (fig. 4).

CANYON DE CHELLY

Many years ago the Days secured cultural material from Canyon de Chelly, now in the Brooklyn Museum. Included is basketry in two techniques, coiling and twill-plaiting. The coiling is of two types, close coiling and sifter coiling. Of three examples of close coiling analyzed, a burden basket and a vertical-sided shallow bowl are Basket Maker type (fig. 2) in all particulars,¹ while the third specimen, a

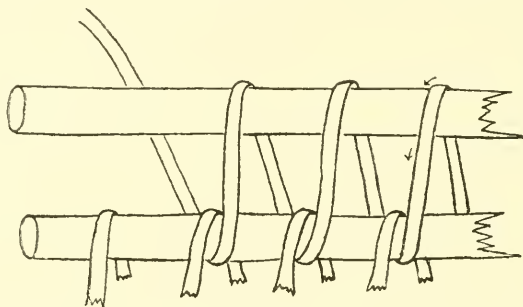


FIG. 5.—Coiling, with interlocking stitches, on a single-rod foundation.

bowl, is atypical in that it has interlocking stitches and is made on a single-rod foundation (fig. 5).² This basket is one of the occasional baskets in this technique found associated with Basket Maker type material. The vertical-sided shallow bowl shows 4 coils, 7 to 9 stitches to the inch.

A specimen of sifter coiling is illustrated in Figure 6.³ It is made on a two-rod-and-bundle-triangular foundation with noninterlocking stitches. The thread is wrapped about the foundation of the course of coiling in work; at intervals it is caught in the foundation of the course below, and then wrapped about itself between the courses. In principle, this method is of the same type as the sifter-coiling techniques found in specimens from the Hazzard Collection (fig. 7) and from Bear Creek on Blue River (fig. 17). This Canyon de Chelly technique, as will be seen from a comparison of Figures 6 and 7, differs from that

¹ B.M. No. 11912; the other is unnumbered. This burden basket has almost vertical walls and is oval in cross-section.

² B.M. No. 10904.

³ B.M. No. 11913.

of the specimen in the Hazzard Collection in that the "standing-part" of the fastening stitch, instead of being inserted under the wrapping of the completed course of coiling below, is set between two wrappings and put through the foundation of the completed course of coiling

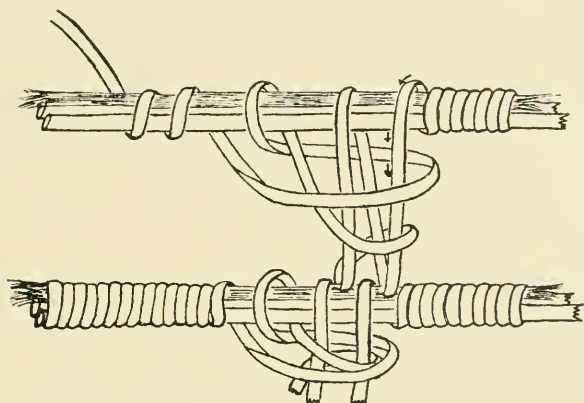


FIG. 6.—Sifter coiling, on two-rod-and-bundle-triangular foundation, with noninterlocking stitches. Type found in Canyon de Chelly (variant of type B).

below; in wrapping around the "standing-part" of the fastening stitch, the thread is wrapped twice instead of once; and finally the fastening stitches are not made in alternate order, but one directly above the other so that they appear as radial lines on the sides.

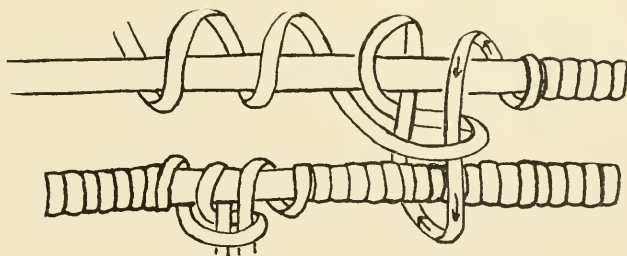


FIG. 7.—Sifter coiling, type B: Hazzard collection.

The twill-plaiting technique is found in yucca-ring baskets in over-2-under-2 weave. A typical specimen¹ has a concentric diamond pattern (fig. 4). Another has a plain diagonal twilled design.² A third specimen is jar-shaped, was probably made from the mouth to the bottom without closing the bottom, and has a false bottom of bunched yucca leaves fastened together by twining.³

¹ B.M. No. 11942.

² B.M. No. 11941; found with the mummy of a child in White House. A. E. Douglass dates White House 1060-1275 A. D.

³ B.M. No. 11918.

SOUTHERN UTAH SITES

GRAND GULCH

Considerable basketry and fragments have been found in Grand Gulch. The material I have seen from this site is in the American Museum of Natural History and the Museum of the American Indian, Heye Foundation. The basketry includes work in close coiling, sifter coiling, and twill-plaiting techniques.

Close coiling.—Seventeen complete baskets and a number of basket-bottoms consistently show the following technique: Concave work surface, counterclockwise spiral, worked toward the left of the worker, noninterlocking stitches, on a two-rod-and-bundle-triangular foundation (Basket Maker type, figs. 1a, 2).¹

The shapes of these baskets include trays, deeper round bowls, bowls with flat bottoms and straight slanting walls, baskets with flat bottoms and straight slanting walls which are oval in cross-section, large conical burden baskets, and globular baskets. Decorations are in red and black or in all black. These baskets are all coarse in texture, of the Basket Maker type of texture (with foundation elements appearing between the stitches) rather than of the Cliff Dweller texture.

Three baskets from Grand Gulch, of which two are small bowls and one a globular form, are made on a one-rod foundation with interlocking stitches (fig. 5): the bowls are made on the concave work surface, have a counterclockwise spiral, and were made toward the left of the worker (fig. 1a); the globular basket was made on the convex work surface and has a clockwise spiral; it was also made toward the left of the worker (fig. 1b).²

Sifter coiling.—One basket in sifter coiling comes from this site. Around the rim are several courses of coiling on a one-rod foundation with interlocking stitches; in technical traits this one-rod coiling is identical with that of the two bowls above mentioned, which are on one-rod foundation. The sifter technique is identical with that in a sifter basket from Kane County, Utah (fig. 8).³

Twill-plaiting.—Six baskets examined from this site, in over-2-under-2 weave, fall into two groups:

¹ Mason, pls. 205-211, and Pepper, 1902, both picture many of the Grand Gulch specimens which are in the American Museum of Natural History. The museum numbers are: A.M.N.H. No. H-12264, 12270, 12273, 12275, 12276, 12279, 12315, 13133, 13161, 13505, 13507, 13509, 13511, 13515, 13526, 13527, 13928, 13960.

² M.A.I., H.F. Nos. 5/5350, 5/5352; A.M.N.H. No. H/13955.

³ Now in the American Museum of Natural History. See Amer. Anthropol., vol. 32; pp. 484 and 488, fig. 18a. See also Mason, p. 257 and pl. 31.

Two globular baskets made of yucca leaves are of the type that is probably made from the mouth down, leaving the bottom open; one of these has a small mat fastened by twining to the bottom opening and a twill-plaited collar attached.¹

Four baskets of yucca made from the center bottom up (similar in this to the yucca-ring baskets) include three bowl shapes with slightly constricted necks. At the mouth, they are finished by bending the edge over a rod and fastening with a row of twining. All have concentric diamond patterns (fig. 4). They differ from yucca-ring baskets in that the body is full and the neck constricted, so that they must have been shaped while weaving as yucca-ring baskets never

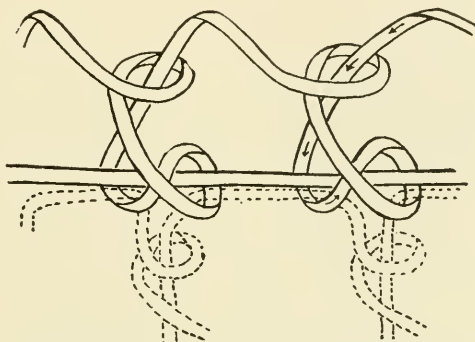


FIG. 8.—Sifter coiling, type A: Kane County.

are. The fourth basket made of yucca leaves is of a form with body and two legs suggesting a cradle basket.²

There is also a yucca-ring basket from Grand Gulch now in the American Museum of Natural History.³

WHITE CANYON

I have seen a basket in the Museum of the American Indian, from a cave at this location. It is a coiled tray of Basket Maker technique in every particular, with a zigzag design in black⁴ (measurements: 6 coils, 13 stitches per inch).

¹ A.M.N.H. No. H/13533, M.A.I., H.F. No. 5/5351. Baskets of this type with bottom unwoven are mentioned in this paper under Marsh Pass, Canyon del Muerto, Canyon de Chelly, and the San Diego collection from southern Utah.

² M.A.I., H.F. Nos. 5/5353, 5/5354, 5/5357, 5/1790. On the cradle basket see in this paper under Cradle House.

³ The basket was found filled with beans. It is thus very doubtful that this is a basket of Basket Maker manufacture. Cf. Guernsey and Kidder, p. 63, footnote 1, who refer to Pepper, p. 23, 1902. Mason, pl. 210, upper picture, center of lower row, illustrates this basket.

⁴ M.A.I., H.F. No. 8/3822.

KANE COUNTY

Culture horizon: Basket Maker II.

From Kane County, Utah, Nussbaum¹ secured 30 basketry specimens, which included one in sifter coiling, the rest in close coiling.

All the specimens in close coiling with one exception are consistently Basket Maker type technique on a two-rod-and-bundle-triangular foundation (fig. 2). One basket in close coiling has a foundation of a rod-surrounded-by-fiber, but in all other respects is consistently Basket Maker type work (fig. 3).

The basket in sifter coiling is in a unique technique of stitching illustrated in Figure 8.

BATTLE CANYON (SAN JUAN COUNTY, SOUTHEASTERN UTAH)

There are 11 coiled baskets from this site in the Field Museum. Nine of these are of Basket Maker type coiling, concave work surface, counterclockwise spiral, worked toward the left of the

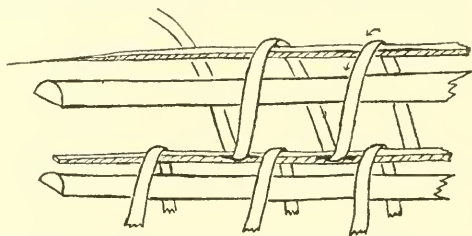


FIG. 9.—Coiling, with noninterlocking stitches; foundation of a split rod with a strip of yucca placed upon it. (Battle Canyon, southeastern Utah.)

worker, noninterlocking stitches, with variations in the foundations. Six baskets have the usual two-rod-and-bundle-triangular foundation (fig. 2),² one has a two-rod-and-reed (or strip of yucca blade)—triangular foundation,³ and two have an unusual foundation: this consists of a round, rather heavy rod split in two, the flat split surface being placed downward. Upon the upper rounded surface of the rod a strip of yucca (?) is placed, through which the stitches are caught (fig. 9).⁴ Stitch measurements are: one basket with

¹ Nussbaum. See also my notes on the material from this site in *Amer. Anthropol.*, vol. 32, pp. 484, 486, 487, 488.

² F.M.N.H. Nos. 165299, 165293 (found with Basket Maker skull 165294); 165296, 165295, 165285 (these last three found with Basket Maker mummy of a child 165297); 165289 (found containing desiccated mummy of infant 165290).

³ F.M.N.H. No. 165302 (found with Basket Maker III mummy of child 165303).

⁴ F.M.N.H. Nos. 165288, 165292 (both coated with light yellow gum on inside).

4½ coils, 7 stitches per inch; 4 with 5½ coils, 9 stitches per inch; one with 6 coils, 10 stitches; another with 5½ coils, 9 stitches; and the last two with 5½ coils, 10 stitches, and 5½ coils, 13 stitches per inch. These are all round bowl and tray shapes with the exception of one large burden basket (165285), oval in cross-section, which probably had a pointed bottom.

Of the two remaining baskets from this locality, one is unusual in shape and weave and is probably of Pueblo III period as indicated by the associated artifacts.¹ It is oblong, indented on the long sides, having something of a guitar shape, the individual coils being

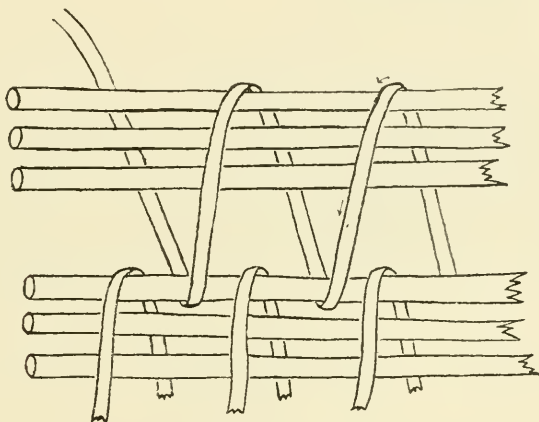


FIG. 10.—Coiling, with noninterlocking stitches, three-rod-vertical foundation.

narrowed at the ends and widened at the sides. The walls of the long sides are bent inward at the rim.

The coiling is of general Basket Maker type: counterclockwise spiral, concave work surface, toward the left of the worker, with noninterlocking stitches; the foundation is three-rod-vertical, the top rod being thinner than the other two (fig. 10). The rim coil has a foundation of two rods placed side by side.

The other basket² is a deep round bowl made on a one-rod foundation, with interlocking stitches (fig. 5). The spiral is clockwise, the work surface concave, and the work probably proceeded toward the right of the worker. The decoration is in dark brown bark.

¹ F.M.N.H. No. 165274, burial cave no. 1.

² F.M.N.H. No. 165294.

ALLAN CANYON (SAN JUAN COUNTY, SOUTHEASTERN UTAH)

From this locality are four almost complete coiled fragments of uneven quality. All are of Basket Maker type technique (fig. 2).

A large oval burden basket found over a burial is probably Basket Maker II (measurements: $5\frac{1}{2}$ coils, 9 stitches per inch).¹ A large round tray of coarse open texture is made on a rod-surrounded-by-fiber foundation (fig. 3). (Measurements: 5 coils, 7 stitches per inch.) A round shallow bowl has almost vertical walls (measurements: $4\frac{1}{2}$ coils, 13 stitches per inch).² A very closely woven almost cylindrical fragment is probably Cliff Dweller³ (measurements: $4\frac{1}{2}$ coils, 15 stitches per inch).

BUTLER CANYON (SAN JUAN COUNTY, SOUTHEASTERN UTAH)

There are two baskets from this locality, one a coiled basket and the other a small twill-plaited yucca-ring basket. The coiled basket is a small bowl of the usual Basket Maker type weave in all particulars (fig. 2). Measurements: 6 coils, 10 stitches per inch. The design is in red and black.⁴ The twill-plaited yucca-ring basket is in over-2-under-2 weave and has a concentric diamond pattern (fig. 4).⁵

MESA VERDE SITES

MESA VERDE PROPER

A specimen found by Fewkes in Mesa Verde National Park, a coiled basketry bottom, now in the United States National Museum, is labeled from Oak Tree House. Fewkes also figures from Spruce Tree House⁶ a coiled basketry bottom, and from Cliff Palace a coiled basket hopper and an unfinished coiled plaque.⁷

Nordenskiöld figures three coiled specimens from Step House: a cylindrical basket found in a grave, a bowl, and a circular lid found hidden in a refuse heap; and four twill-plaited yucca-ring baskets, three from Spruce Tree House and one from Ruin 9.⁸

In the Wetherill collections there are seven specimens marked as

¹ F.M.N.H. No. 165286 (found over burial, field no. 258).

² F.M.N.H. No. 165300.

³ F.M.N.H. No. 165291.

⁴ F.M.N.H. No. 165304.

⁵ F.M.N.H. No. 165301.

⁶ A. E. Douglass dates Spruce Tree House 1273 A. D. approximately.

⁷ Fewkes, 1909, fig. 14, p. 42; 1911, pl. 29 and fig. 2, p. 73.

⁸ Nordenskiöld, pl. 44, 3, 5, 4; 44, 1, 2; 45, 2, 1.

from a cliff house in Navaho Canyon. Six of these are coiled baskets, and one is a yucca-ring basket.¹

Coiling.—All the specimens of coiling show noninterlocking stitches, counterclockwise spiral with concave work surface, which means a direction of work toward the left of the worker.² While there is some variation in foundations, all but two of the variations agree in having triangular form of three elements.

The specimens from Oak Tree House and Spruce Tree House, the hopper from Cliff Palace, one Wetherill basket from Navaho Canyon, and probably the Nordenskiöld material have two-rod-and-bundle-triangular foundation (fig. 2). (Stitch measurements: the Oak Tree

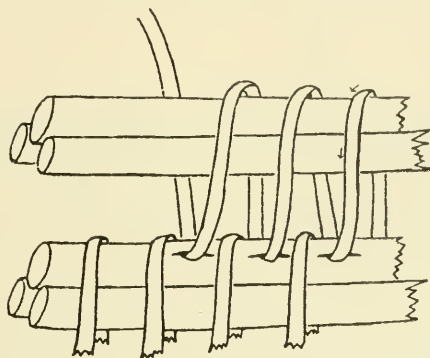


FIG. 11.—Coiling, with noninterlocking stitches on a three-rod-triangular foundation.

House specimen 5 to 6 coils, 22 stitches per inch; the Wetherill specimen 5 plus coils, 14 stitches per inch.)

Three Wetherill specimens from Navaho Canyon have a foundation of two-rod-and-reed-triangular. (Measurements: $4\frac{1}{2}$ coils, 11 to 12 stitches per inch.) One Wetherill Navaho Canyon specimen and apparently the unfinished plaque from Cliff Palace have three-rod-triangular foundation (fig. 11). (Measurements: Wetherill basket, 3 coils, 7 stitches per inch.) Exceptional are one of the above Wetherill specimens, which in addition to work on a two-rod-and-reed-triangular foundation on the rim, has walls made on a single-rod foundation with the stitches noninterlocking (fig. 12); and a little oblong-shaped basket, also Wetherill, which is made on a soft rod which has been split by the sewing stitches passing through it³ (measurements: 6 plus coils, 10 stitches per inch).

¹ U.P.M., Wetherill Nos. B 51, 55, 54, 42; U.C.M. Nos. 2/3035, 2/3068, 2/3065.

² Statements for Spruce Tree House and Cliff Palace specimens figured by Fewkes, 1909, are based on his pictures; I have not seen the specimens.

³ U.P.M., Wetherill Nos. B 51 and B 42.

Twill-plaiting.—The yucca-ring basket in the Wetherill collections, which is allocated to Navaho Canyon, has a zigzag design carried out in strands of two colors, in under-3-over-3 weave. After the basket was completed, a small plaited collar woven under-1-over-1 was fastened around the rim.¹ Two of the Nordenskiöld baskets from Spruce Tree House are of this same type with meander or scroll designs carried out in two colors, having a small plaited collar fastened around the rim.² The two others are woven in one color, the specimen from Spruce Tree House having a meander pattern, that from Ruin 9 a concentric diamond pattern (fig. 4). Similar to these, with scroll

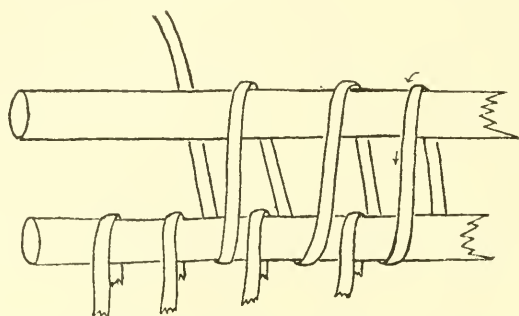


FIG. 12.—Coiling, with noninterlocking stitches, on a single-rod foundation. (This variant of single-rod coiling is of rare occurrence.)

pattern and collar about the rim, is an unallocated yucca-ring basket in the Field Museum; the basket is in over-4-under-4 weave and is 10 inches in diameter.

Shapes.—All the coiled Wetherill specimens (except the one oblong basket, which is similar to small modern pottery paint cups) as well as the Cliff Palace basketry hopper, are bowl and cylindrical shapes; the bowls are similar in size and shape. Of the two cylindrical shapes, one is shallow and one deep.³ The Nordenskiöld coiled material consists of a bowl, a deep cylindrical basket, and a circular lid.

¹ U.C.M. No. 2/3065. There are other specimens of yucca-ring baskets in the Wetherill collections which agree in all the above particulars (although designs vary) with the one described, but these are not allocated. See especially U.C.M. Nos. 3/3071 and 2/3064. In addition, Kidder and Guernsey, p. 109, refer to several Wetherill baskets in two colors as in the Colorado State Museum at Denver.

² Nordenskiöld, pl. 44, 1 and 2.

³ U.P.M., Wetherill No. 42, shallow; U.C.M. No. 2/3635.

MANCOS CANYON

In the Wetherill collections there is one basket marked "From Sandal Cliff House, Mancos Canyon" in double coiling on a two-rod-and-bundle-vertical foundation (fig. 13); the stitching runs three coils, 15 stitches to the inch.¹

From the description of the contents of the Wetherill collections as "from the Cliff Houses in Mancos and tributary canyons of southwestern Colorado," I judge that several other Wetherill specimens with canyon locations are to be associated with this region:

"Lake Canyon": a tray in Basket Maker type coiling but with two-rod-and-reed-triangular foundation (measurements: 4 coils, 12

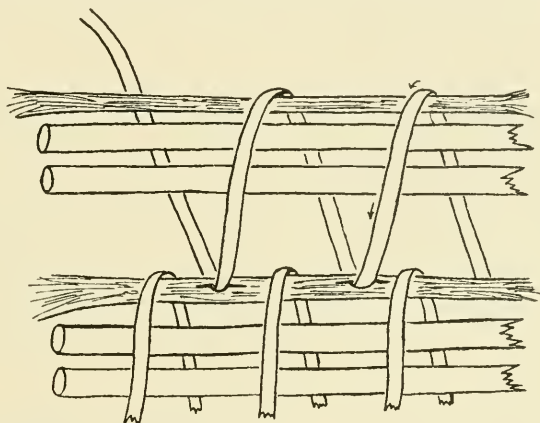


FIG. 13.—Coiling, with noninterlocking stitches, on a two-rod-and-bundle-vertical foundation.

stitches per inch) and a design in black, from a cave; and a basket in sifter coiling of the Kane County type from a ruin (fig. 8).² In this sifter basket, it is not clear which is the work surface; if it were worked as usual on the concave surface, the direction of work is toward the right, in which trait it differs from other sifters of this type. (In descriptive terms, this sifter has a clockwise spiral.)

"Red Canyon": One bowl from a cliff house is in Basket Maker type coiling (fig. 2) in all details, with a design in black (measurements: 6 coils, 11 stitches per inch). One yucca-ring basket is in over-3-under-3 weave; the pattern is concentric diamond in black and natural (fig. 4); there is a plaited collar fastened to the outer rim.³

¹ U.P.M., Wetherill No. 50 B; cf. Amer. Anthropol., vol. 32, p. 485.

² U.P.M., Wetherill No. 20 D, and Wetherill No. 4 D.

³ U.P.M., Wetherill No. 9 D; U.C.M., No. 3/3071.

"Lost Canyon": Five specimens of coiled ware from this locality include two trays and three bowls.¹ Both trays are Basket Maker type technique on two-rod-and-bundle-triangular foundation (fig. 2) with stitch measurements $5\frac{1}{2}$ coils, 10 plus stitches per inch. The tray from "ruin in Lost Canyon" is $18\frac{1}{2}$ inches in diameter and very shallow; it has a black band design near the rim. The other from "Deep Canyon-Lost Canyon" is $19\frac{3}{4}$ inches in diameter, $4\frac{1}{2}$ inches deep, with a black horizontal zigzag design; the foundation of the rim coil consists of two rods and a twisted two-ply cord as the apex of the triangular foundation, instead of a bundle of fiber which is used in the body of the basket. The three bowls include one typical Basket Maker type $7\frac{1}{2}$ inches in diameter (stitch measurements: 5 coils, 8 stitches per inch) with black band design; one called "Cliff Dweller" from Lost Canyon in Navaho Canyon with body made in Basket Maker type coiling on a two-rod-and-bundle-triangular foundation (fig. 2), and a set-in bottom made on a one-rod foundation with interlocking stitches (fig. 5); stitch measurements of the body coiling run 10 to 12 stitches, 5 coils to the inch; of the bottom 5 to 6 stitches, 6 rods per inch; and a third, vertical-walled with bottom missing, on a single-rod foundation with noninterlocking stitches (fig. 12), counter clockwise spiral, concave work surface, toward the left of the worker, from cliff house. The stitches are successively a wrapping of the new rod alternating with a regular single-rod stitch (which includes both the new rod and the rod of the course below).

"Colorado River Canyon": *Coiling*.—Two bowls and a bottom fragment in Basket Maker type coil on two-rod-and-bundle-triangular foundation (fig. 2). One bowl $7\frac{3}{4}$ inches in diameter, 3 inches deep, has a design of black horizontal lines with no apparent plan; stitch measurements are 9 stitches, 5 plus coils per inch, with the workmanship rough and uneven. The other "found in a cave on the Colorado River," diameter of mouth 11 inches, diameter of bottom 5 inches, height $5\frac{1}{2}$ inches (stitch measurements: 5 to 6 coils, 10 stitches per inch), has a twisted fiber string near the rim and remnants of pitch on the inside. The bottom fragment "found in a cliff house" is $4\frac{1}{2}$ inches in diameter (stitch measurements: 5 plus coils, 9 stitches per inch).

Plaiting.—Two yucca-ring baskets include one which has a collar and a design of a double set of concentric squares in black and natural, and another without collar which has a concentric diamond pattern all natural color (fig. 4).²

¹ Trays: U.C.M. Nos. 2/3073, 2/3075; Bowls: U.C.M. Nos. 2/3074, 2/3067; U.P.M., Wetherill No. 13 D.

² Bowls: U.C.M. No. 2/3069; U.P.M., Wetherill No. 14 D; fragment U.P.M., Wetherill No. 2 D; Yucca-ring baskets: U.C.M. Nos. 2/3064, 2/3063.

JOHNSON CANYON

In cliff dwellings in Johnson Canyon, east of the Mancos River in southwestern Colorado, Morris found fragments of a fine closely coiled basket, a fragment of a twill-plaited basket, and a netlike container made of yucca leaves fastened on a wooden ring.¹ The coiled fragment, from the figure, has a two-rod-and-bundle-triangular foundation, noninterlocking stitches, and was worked toward the left of the worker (fig. 2).

PIEDRA DISTRICT (SOUTHWESTERN COLORADO)

In 1928 Roberts found here in a pit house a small charred fragment of coiling, about 2 inches square, which is now in the United States National Museum.² The pit houses according to Roberts are Pueblo I period.

The coiling is Basket Maker type, two-rod-and-bundle-triangular foundation, with noninterlocking stitches (fig. 2). The stitches are sewn quite far apart so that the foundation material is exposed between them; in which characteristic it resembles Basket Maker rather than Cliff Dweller. In connection with the coarseness of texture of this basketry, it is interesting to note Kidder's comments on the early transitional or peripheral character of this site;³ and that type A house is postulated as earliest at this site.

PUEBLO BONITO, N. MEX.⁴

Culture horizon: Pueblo III.

In Pepper's excavations at Pueblo Bonito, he found basketry remains in two techniques, close coiling and twill-plaiting.⁵ In reference to Pepper's ground plan the distribution of the finds was as shown below. The page numbers refer to Pepper, 1920.

Room 2, two coiled baskets, one a meal or gambling tray, "two-rod coil type and has a herringbone edge on the angle of the rim." 1½ feet in diameter (p. 36).

Room 13, fragment of a bowl with evidence of red pigment on both surfaces (p. 69).

¹ Morris, 1919a. Basketry fragment, pl. 47c; plaiting, pl. 52a; netted container, pl. 52b. I have noted pl. 52b as resembling the basketlike containers described and figured by Morris, 1919b, fig. 35 and p. 57.

² U.S.N.M. No. 348328. See Roberts, pl. 3 and pp. 22 and 74. The specimen was found in his "A" village, 5-E 2 (house and room identification).

³ Kidder, 1931, pp. 126-127.

⁴ Date: (According to A. E. Douglass) 919 (earliest beam cut) to 1130 A. D. (latest beam cut).

⁵ Pepper, 1920. The ground plan is fig. 155.

Room 24, a yucca-ring basket (p. 96).

Room 25, fragments and a whole coiled basket "of the three-rod coiled variety"; and a yucca-ring basket with the concentric diamond pattern (p. 107).

Room 32, "one very large basket" (coiled?) (p. 162).

Room 33, a cylindrical basket, 3 inches in diameter and 6 inches in length, covered with turquoise mosaic (coiled?).

Another cylindrical basket, decorated with turquoise and shell beads. (4 cm in diameter and 6 cm in length) (pp. 164 and 169, fig. 71: pp. 174-175).

Room 62, a number of large coiled baskets found covering pockets containing broken potsherds.¹

I have not seen the specimens referred to in the above. I read Pepper's "two-rod-coiled type" as two-rod-and-bundle-triangular foundation (fig. 2), and his "three-rod-coiled variety" as three-rod-triangular foundation (fig. 11). Thus we have evidence from Pueblo Bonito of coiled basketry, possibly of Basket Maker type, with two types of foundation, and of yucca-ring baskets.²

AZTEC RUIN, N. MEX (ANIMAS AND LA PLATA REGION)

Culture horizon: Great Pueblo period (late Pueblo III).

Morris obtained specimens and other evidence from Aztec indicating that two types of basketry techniques were in use there: coiling and plaiting. There is also a type of basketlike container.³ The coiled baskets were of three shapes: plaques, bowls, and cylindrical forms. The plaiting included two "carelessly made plaited baskets," and a plaited rush bag. From the illustration the bag is in twill-plaiting in over-2-under-2 weave.

Morris refers to basketlike containers, of which 15 were found. The foundation is a hoop of wood, bound with yucca, to which a lacing of yucca strips is attached to form a loose meshwork within which is a lining of husks.⁴

¹ Pepper, 1920, pp. 234-235, and p. 227, fig. 100.

² Mr. Judd showed me miniature coiled baskets in cylindrical, oblong, and cradle-basket forms, which he has not yet described in print. These are on two-rod-and-bundle-triangular foundation, in technical aspects analogous to the work of the Basket Maker type site (Marsh Pass). They have a false-braid edge. This edging is referred to by Pepper, above, as "herringbone" on the two-rod-and-bundle coiled basket from room 2. Elsewhere in this paper I have compared the shape of Judd's miniature cradle basket to others (under Cradle House, Navaho National Monument).

³ Morris, 1919b, pp. 54, 56, 57, figs. 32 and 35. A. E. Douglass dates Aztec as about 20 years later than Pueblo Bonito, namely about 1150 A. D.

⁴ Morris, 1919b, fig. 35, and p. 57; see also reference in this paper under Johnson Canyon.

MISCELLANEOUS COLLECTIONS

SOUTHERN UTAH (SAN DIEGO MUSEUM COLLECTION)

In the San Diego Museum, classified as prehistoric baskets from southern Utah, is a collection of seven coiled and three twill-plaited baskets.

Coiling.—Five coiled baskets are Basket Maker type in every particular (fig. 2).¹ The shapes are: two bowls, one very large tray (21¼ inches in diameter), a burden basket, and a cradle basket.² All the baskets have about 4 plus coils to the inch, the stitching ranging from 11 to 14 stitches to the inch. The burden basket has two horizontal black zigzag designs; the tray has a band of black near the center. Both tray and burden basket have two lugs of fiber cord on the convex or outside surface. One of the bowl-shaped baskets contains the mummy of a baby wrapped in a rabbit-fur cloak.

One small coiled globular basket is made in Basket Maker type technique but the texture is finer.³ There are 6 to 7 coils and 14 stitches to the inch near the bottom. The work is finer toward the mouth; it has a plain edge and all the work was done on the convex surface. The mouth is inverted and depressed; six courses at the mouth are made on multiple grass foundation, so that this part of the basket is soft and flexible. A skin covering was put over the mouth and shoulder of the basket and fastened to it by cross-tying of buckskin thongs over the sides and under the bottom. The basket is 5 inches in diameter, 2½ inches high and the mouth opening is 2½ inches in diameter.

One coiled bowl is made on a single-rod foundation with interlocking stitches (fig. 5), counterclockwise spiral, concave work surface toward the left of the worker. There is a false braid edge.⁴

Twill-plaiting.—Twill-plaited baskets include two yucca-ring baskets in over-2-under-2 weave, one of which has a concentric diamond pattern (fig. 4),⁵ and one globular-shaped basket in over-2-under-2 weave, probably made from the mouth down, with open bottom, over which a square of twill-plaiting has been fastened with one row of twining. This latter basket has two collars of plaiting, the outer one attached extraneously and the inner one a part of the body. There is a fiber drawstring at the mouth.⁶

¹ S.D.M. Nos. 4789, 4756, 4788, 4759.

² See also under Cradle House in this paper.

³ S.D.M. No. 4758, similar in shape to the globular yucca basket below, (S.D.M. No. 4791).

⁴ S.D.M. No. 4790.

⁵ S.D.M. Nos. 4755, 4762.

⁶ S.D.M. No. 4791; baskets of this type and shape with bottom open and collar attached, are described also under Canyon de Chelly and Grand Gulch.

SOUTHERN UTAH AND SOUTHWESTERN COLORADO (WETHERILL, AND
McLLOYD AND GRAHAM COLLECTIONS)

Basketry material important from a technical standpoint is contained in the McLloyd and Graham and the Wetherill collections now in the University Museum, University of Pennsylvania, and the University of California Museum. Wherever possible in this paper I have grouped or included specimens from these collections with locations or sites; there remain, however, a number of baskets for which no allocations can be made beyond the general regional one as above.¹

Coiled basketry.—Basket Maker type coiling on a two-rod-and-bundle-triangular foundation (fig. 2) includes four bowls and one tray. Three undecorated bowls are respectively $8\frac{1}{4}$ inches in diameter of mouth, $4\frac{1}{4}$ inches high, $3\frac{1}{4}$ inches in diameter of bottom; 11 inches in diameter of mouth, $4\frac{1}{2}$ inches in diameter of bottom, $5\frac{5}{8}$ inches high; and $13\frac{1}{2}$ inches in diameter of mouth, 8 inches in diameter of bottom, 5 inches high. The stitch measurements are 6 coils, 8 stitches; 5 coils, 7 stitches; 5 coils, 13 plus stitches per inch.² A larger bowl, $14\frac{1}{4}$ inches in diameter of mouth, 9 inches in diameter of bottom, 6 inches high, 4 plus coils, 12 to 13 stitches per inch, with a design in dark brown, an unusual color, has a circular piece of native cloth glued to the outer bottom with pinyon gum.³ The tray is $16\frac{1}{4}$ inches in diameter by $4\frac{1}{2}$ inches deep, runs 9 plus stitches, 6 coils to the inch, and has a black zigzag band design.⁴

Cylindrical forms.—These include three pieces, all of relatively fine texture; one piece shows 6 coils, 15 stitches to the inch, while another is very fine, running 5 plus coils, 22 stitches to the inch (Cliff Dweller texture). Two have designs in red and black.⁵ There are two oval baskets, one of which is a burden basket. One of the oval baskets has a design in black, while the burden basket has a design in red and

¹ In reference to baskets of this collection in the University of California Museum, which have been classified above under canyon names, Dr. L. M. O'Neale sent me the following note from the catalog: "Baskets shipped from University of Pennsylvania, received August, 1891, named as C. D. Hazzard Collection, divided by G. H. Pepper." Cf. Amer. Anthropol., vol. 32, p. 485, note 58.

² U.P.M., Wetherill No. 15 D (found with skeletal remains), Nos. 21 D, 25 D (found with human remains).

³ U.P.M., Wetherill No. 22 D.

⁴ U.P.M., no number.

⁵ U.P.M., Wetherill Nos. B 38, and D 21 (found with human remains); the third is U.P.M., no number.

black.¹ One oblong basket, without decoration and of coarse texture, shows a use of both yucca and wood sewing threads in the same basket.²

Basket Maker type coiling on a two-rod-and-reed-triangular foundation: two bowls, one tray, one cylindrical shape. The tray is of coarse texture, the other three pieces somewhat finer. One undecorated bowl has red paint adhering to the outside. The other bowl and the tray are decorated in red and black.³

There is one shallow, circular fragment of Basket Maker technique on a three-rod-triangular foundation; it is rather coarse in texture.⁴

Interlocking.—Two trays on a two-rod-and-reed-triangular foundation, worked on the concave surface to the left of the worker, show interlocking stitches; the stitch measurements are 5 coils, 10 stitches, and 5 coils, 12 stitches to the inch; one has a decoration in black in an unusual shiny material.⁵ Two specimens on a one-rod foundation show interlocking stitches (fig. 5), and are worked on the concave surface to the worker's left. One is a bowl, the second a cylindrical piece, with an unusual embroidery decoration.⁶

Sifter coiling.—There is one sifter basket in these collections. The technique is illustrated in Figure 7. In principle it is related to the technique of specimens from Canyon de Chelly (fig. 6) and from Bear Creek on Blue River (fig. 17). I have grouped these variants as all of one sifter-coiling type, called type B.

PALATKI, CENTRAL ARIZONA

Basketry fragments found in a cliff house by J. W. Fewkes are in the United States National Museum. I have seen a fragment of coiling and a number of fragments of twining.

Coiling.—The coiled fragment is made with noninterlocking stitches, on a three-rod-triangular foundation (fig. 11). It is rather coarse work, running 6 coils and 9 stitches to the inch.

*Twining.*⁷—These fragments are parts of what were evidently large conical burden baskets, made in twilled-twining (fig. 14). The stitch

¹ U.P.M., both specimens without number.

² U.P.M., Wetherill No. 11 D (found with human remains).

³ The bowls and tray are U.P.M., no number; the cylindrical fragment is U.P.M., Wetherill No. B 36.

⁴ U.C.M. No. 2/3072.

⁵ The two trays are U.P.M., no number.

⁶ The two pieces are U.P.M., no number.

⁷ U.S.N.M. No. 156293; Basket fragments, Palatki, Ariz., ruin A, house G (J. W. Fewkes, 634).

is regular twilled-twine to the rim, three-strand twine (fig. 15) at the rim and the rim finish consists of two rows of loose coiling, with noninterlocking stitches on a scrap foundation. The twine stitches trend upward toward the right. No decoration is discernible. It seems likely that in shape and technique these baskets were similar to modern Havasupai burden baskets.

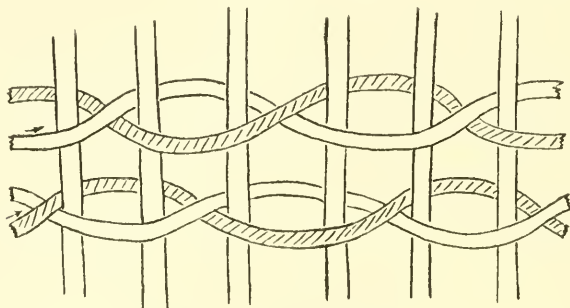


FIG. 14.—Twilled-twining.

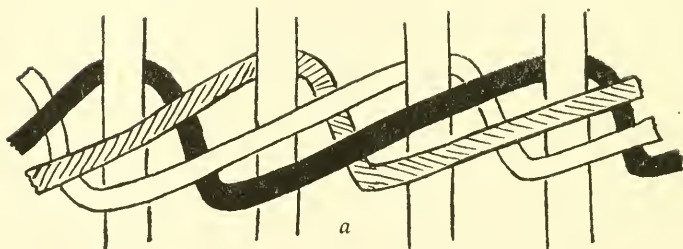


FIG. 15.—Three-strand twining.

LITTLE COLORADO RIVER REGION, ARIZONA

CHAVES PASS

In the United States National Museum are fragments of coiled basketry secured by Fewkes at this location.¹ They show evidence of having been painted with red and blue paint. The stitches are noninterlocking; the foundation is three-rod-triangular (fig. 11), composed of very fine thin rods. The fragments are so badly battered as to make any further comment hypothetical.

¹ U.S.N.M. No. 157925.

CHEVLON RUIN¹

Fewkes collected from this site 12 fragments and a large part of a broken basket, all in coiling. I examined the broken basket in the United States National Museum.²

The coiling is made on a three-rod-triangular foundation (fig. 11), counterclockwise spiral, concave work surface, toward the left of the worker (fig. 1a), with noninterlocking stitches (fig. 11). The foundation rods are very thin and fine. The basket is all in black with a fret pattern in natural thread: reconstructed, it is a shallow

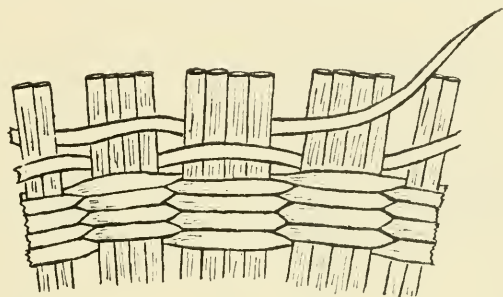


FIG. 16.—Wickerwork.

basket with flat bottom and vertical walls, diameter of bottom, $3\frac{1}{2}$ inches, height of walls about $1\frac{3}{4}$ inches.

The specimens from this site are technically similar to those from Chaves Pass.

A specimen of wickerwork in every respect like modern Hopi wickerwork of Third Mesa was recovered by Fewkes from Chevlon Ruin (fig. 16).³

LOWER GILA REGION

CASA GRANDE

From Casa Grande there are a large number of charred fragments of coiled basketry in the United States National Museum. In the Museum is also one coiled tray from this site, with a black meander design in martynia thread, which is unquestionably of Pima manufac-

¹ Chevlon Ruin is 15 miles from Winslow.

² U.S.N.M. No. 157915; see also J. W. Fewkes, 22nd Ann. Rep. Bur. Amer. Ethnol., pt. 1, p. 99 and fig. 63. The same basket is figured in Mason, pl. 220, and p. 509.

³ Mason, pl. 219 and p. 508.

ture in all respects, differing decidedly from the other material from the site.¹

The coiling of the charred fragments is made on a three-rod-triangular foundation (the foundation rods are very fine and thin), with noninterlocking stitches (fig. 11) and plain edge. It looks as though the edge might have been sewn with martynia thread. Measurements: 6 to 8 coils and 14 stitches per inch. Technically this work is similar to the coiling of Cheylon Ruin and Chaves Pass, as above.

UPPER GILA REGION

BEAR CREEK ON BLUE RIVER

From this site (Montezuma's cave) Hough obtained a large number of baskets.² There are baskets in close coiling, sifter coiling, and twill-plaiting, and one specimen in an unusual technique—wrapped coiling. Hough also mentions wicker baskets which I have not seen.

Close coiling.—Six specimens I examined included two bowls about 5 inches in diameter and 2 inches in height, one fragment of the neck of a globular basket, one fragmentary bowl rim, and two miniature globular baskets ($2\frac{1}{4}$ inches in diameter, $1\frac{1}{2}$ inches in height; $1\frac{1}{4}$ inches in diameter, 1 inch in height).³ In all these specimens, the coiling stitches are noninterlocking and are made on a two-rod-and-bundle-triangular foundation (fig. 2). The bowls and fragments were worked on the concave work surface toward the left of the worker (fig. 1a); the two miniature globular baskets were worked on the convex surface (inevitable in such globular forms) to the right of the worker—an anomalous direction of work, which is probably to be explained by attributing them to left-handed basket making. The texture of the stitching in the fragments and in the miniatures is very fine, that in the two small bowls, a little coarser; the range of the measurements is from 7 coils, 23 stitches per inch in one fragment to 4 coils, 10 stitches per inch in the coarser bowl. Decoration: one bowl is decorated in red and black, the other in black, and the larger miniature globular basket has a dark red decoration.

Sifter coiling.—Twelve small, possibly miniature, sifter baskets⁴ (the range of diameters is from 2 inches to $5\frac{1}{4}$ inches) are consistent

¹ U.S.N.M. cat. 254596, acc. 49619, o. 296, Fewkes, prehistoric Casa Grande.

² Hough, 1907, pp. 50-52 and 24-25.

³ U.S.N.M. Nos. 246130; 246128; 232103; 246156 (cf. Hough, 1914, pl. 17, No. 4); 246129 and 232096 (cf. Hough, 1914, pl. 17, Nos. 2 and 5).

⁴ U.S.N.M. Nos. 246142, 246143, 232089, 246140, 246139, 246134, 246136, 246141, 246137, 232087, 246131; 246135 (cf. Hough, 1914, pl. 24); 246138 (this

in all technical aspects except foundation. They are worked on the concave work surface to the left of the worker (counterclockwise spiral) with noninterlocking stitches. The stitch technique is what I have called type B sifter coiling, which includes also specimens from Canyon de Chelly (fig. 6) and from the Hazzard collection (fig. 7). Foundations are of three types: three baskets are on two-rod-and-bundle-triangular (fig. 2); six are on multiple grass (fig. 17); and three are on rod-surrounded-by-bundle (fig. 3). The thread is wrapped about the course of coiling in work and at intervals is fastened to the course below. There are two ways of treating the fastening stitch: either the stitch is caught in the foundation of the course below the one in work (fig. 17) (analogous to Canyon de Chelly specimen), or the stitch passes underneath the lower course (analogous to

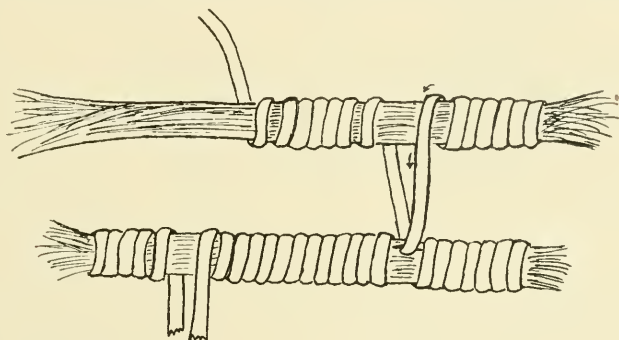


FIG. 17.—Sifter coiling on a multiple-grass foundation. (Type found at Bear Creek on Blue River; variant of type B.)

the Hazzard collection specimen). This latter method of fastening the stitch occurs in the three specimens with rod-surrounded-by-bundle foundation; in the remaining nine with two-rod-and-bundle-triangular and with multiple-grass foundations, the stitch is caught in the foundation of the lower course. This variety of type B sifter coiling differs from the other two kinds in that the fastening stitch is not bound around itself between the courses. It differs further from the Canyon de Chelly variety in that instead of the fastening stitches being made one directly above the other, they are fastened in alternate order in the successive courses (see p. 11 and fig. 7).

In all the baskets the starting knot is so made as to leave a large hole in the center bottom; all are finished off with a few false-braid

specimen is fastened with thread to a small stick, umbrella-fashion; cf. Hough, 1914, fig. 317). Hough, 1907, p. 25, refers to these sifter baskets as "lazy stitch."

stitches. All the baskets are decorated on the outside, the non-work surface, by painting in colors: black, red and black, red, black and white, red and blue. Two, in addition, are painted all over inside with red. (These two have respectively, outside decoration in red and black, and red and blue, and are both on a multiple-grass foundation.)

Wrapped coiling.—One small conical basket is made in wrapped coiling similar to the work of Mohave burden baskets; the weaving strands are of basket-thread.¹

Twill-plaiting.—Three specimens of twill-plaiting² in over-3-under-3 weave; the first is a yucca-ring basket with concentric diamond pattern (fig. 4), the second is a finely woven yucca-ring basket with

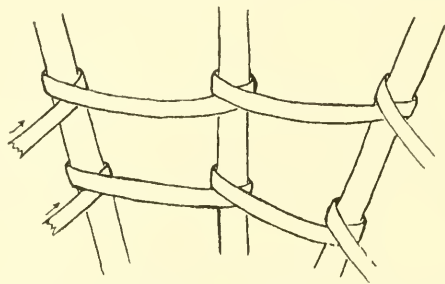


FIG. 18.—Wrapped coiling.

a square rim ring and diagonal design,³ and the third is an olla-shaped basket with a bottom design of a cross into which are set four series of concentric right-angled elements. This olla shape was made all in one piece, evidently beginning at the center bottom.⁴

A twill-plaited specimen of special interest is a small, flat square mat with key pattern.⁵ (Compare with Nordenskiöld's plaited baskets from Mesa Verde, described above.)

RIO GRANDE REGION

PAJARITO PLATEAU, N. MEX.

From the small-house ruins of the Pajarito Plateau there is evidence of a great deal of close coiling and some twill-plaiting which may be mat work. The evidence is in the form of "an extraordinarily high

¹ Hough, 1907, p. 25, refers to this Mohave type work; see also Mason, p. 230, fig. 13, and Hough, 1914, p. 88 and fig. 318.

² U.S.N.M. Nos. 246159; 246161; 246160.

³ Hough, 1914, pl. 17, No. 1.

⁴ Hough, 1914, pl. 17, No. 3; also fig. 179.

⁵ Hough, 1914, pl. 16, No. 2.

percentage of basket-marked sherds" found in association, primarily, with black-on-white pottery.¹

Kidder observes: "Such sherds occur, it is true, in most other black-and-white groups, but they are of the greatest rarity. Here, however, they can be picked up at almost any site. The impressions show that bowls and the lower parts of ollas were often formed in baskets. In these cases the clay was apparently coated on the inside of the basket and pressed down hard enough to render the marks of the weave sharp and clear. The upper parts of ollas were probably constructed by the regular coiling method. Some bowls, however, seem to have been molded or cast entire in basket forms, as the impression of the weave runs to the rim. The baskets themselves were all of the coiled variety, tray- or bowl-shaped; the coils measure 4 to 5 mm in breadth and there are about six stitches to the centimeter" (15 plus stitches, 5 to 6 coils per inch).

From the photographed basketry-marked sherd, with the accompanying cast,² the coiling is close work, either on a two-rod-and-bundle-triangular foundation (fig. 2), or on a three-rod-triangular foundation. More probably it is the former. If it were made on a three-rod-triangular foundation (fig. 11), the appearance would probably be more rugose and the depressions between the courses of coiling, deeper. The sherd betrays suggestions of a zigzag design which was made in a heavier thread than the regular sewing thread, as shown by zigzag rows of deeper impressions in the sherd, higher elevations in the cast.

In my opinion the general texture and finish of the basketry suggested by this sherd is decidedly similar to Basket Maker type work of the finer (Cliff Dweller) grade.

LOWER RIO GRANDE REGION

Three sites in the Lower Rio Grande Region have yielded specimens of prehistoric basketry.

SITE NEAR LAS CRUCES, N. MEX.

From a site near Las Cruces, N. Mex., there are four baskets in the United States National Museum. Some basketry sherds were also found, but no pottery.³

¹ Kidder, 1915, pp. 413-414, and pl. 14. Pl. 14b shows on the filling-in of the mouth of a broken olla the impression of a twill-plaited mat; see also Kidder's text, p. 426.

² Kidder, 1915, pl. 14a. From the standpoint of the way the basket was made, the sherd should be examined with the page inverted.

³ I examined these four specimens in the United States National Museum through the courtesy of Dr. Walter Hough. They were obtained in connection

All four specimens are in close coiling. Two are rather deep, round bowls, one a burden basket of an unusual shape—in profile the basket shows deeply concaved walls and widely flaring mouth; a cross-section would be ovaloid—and the fourth is a unique specimen of coiling in that it is shovel-shaped (fig. 19*b*). While it is probable that the burden basket had a design, in their present condition no designs could be made out on the first three of the above. In the shovel-shaped basket a radial design appears, sewn in dark red bark (almost a black).

In all technical traits, the four baskets are Basket Maker type, consistently on two-rod-and-bundle foundation (fig. 2); the stitch texture is coarse. The first three specimens are sewn with wood sewing thread, the usual Basket Maker type sewing thread, while in the shovel-shaped basket, a yucca sewing thread was used.

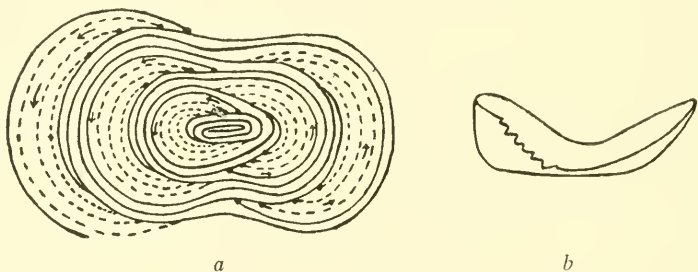


FIG. 19.—Shovel-shaped coiled basket from site near Las Cruces, N. Mex. *a*. Shows the insertion of several sets of partial circuits to produce a form narrow in the middle, with walls built up at the two ends. *b*. Profile view.

The shovel-shaped basket, being an unusual shape for coiling, shows a special way of using the coiling technique. In addition to the usual continuous circuit, partial circuits of coiling are introduced at intervals as illustrated (fig. 19).

WEST OF SACRAMENTO MOUNTAINS

From a cave on the west side of the Sacramento Mountains I have seen a fragment of coiled basketry.¹ This is in the typical Basket Maker technique of coiling on a two-rod-and-bundle-triangular foundation with noninterlocking stitches. The texture runs 5 coils, 10 stitches per inch. The fragment is too small to determine work surface or possible shape.

with the Yale Expedition of 1929. The site is further identified as Dona Ana County, in the southwestern portion of New Mexico, close to the east bank of the Rio Grande, about 25 miles north of the Texas State line. The shovel-shaped basket is U.S.N.M. No. 345916.

¹ Found by E. B. Howard of the University Museum, Philadelphia.

WEST OF CARLSBAD, N. MEX.

From a cave 50 miles west of Carlsbad, I have seen a coiled fragment which is in Basket Maker technique.¹ The texture is coarser than the Sacramento specimen, running 4 coils, 8 stitches per inch. The foundation was probably rod-surrounded-by-bundle-of-fiber. The arrangement of splicings suggests that the surface may have been originally in two colors, with a design in triangular elements.

The indications are that the Lower Rio Grande region forms the southeastern boundary of the Southwestern basketry area. Further to the south a distinct type of coiled basketry is found. I have so far seen material of this Texas type from Brewster County, Texas,² from D. G. Knight cave (20 miles southwest of Valentine, Texas),³ and from the Guadalupe Mountains.¹

The Texas type of coiled basketry is made on a bundle-of-grass foundation, with stitches split on the non-work surface, worked toward the left of the worker, on the concave surface; yucca sewing thread is used.

ANCIENT PUEBLO

Over a period of many years, basketry has been secured from a number of the existing pueblos (as well as one ruin—Sikyatki) which have been classified as "ancient pueblo." There is no adequate evidence as to who made these baskets, but there can be little doubt that they are of considerable antiquity.

Many of the baskets were collected long ago by Stevenson and Powell and are illustrated by photographs in Mason.⁴ There are occasional specimens in other museums, some obtained quite recently, and still others are today in the hands of traders in Santa Fe and elsewhere.

¹ Found by E. B. Howard of the University Museum, Philadelphia.

² Found by M. R. Harrington of the Southwest Museum. Specimens now in Museum of the American Indian, Heye Foundation.

³ Found by F. M. Setzler of the U. S. National Museum.

⁴ I give below in reference to the specimens, Mason's plates and page references; there is some confusion in the Mason references; where my museum number references do not agree with his information, they should be taken as a correction of Mason, as they have been obtained directly from the specimens. This is also true of some of Mason's allocations to pueblos and collectors.

SIKYATKI

Culture horizon: Late Pueblo IVa.

In the United States National Museum there are specimens of basketry from Sikyatki in three techniques: wicker, close coiling, and twill-plaiting.¹

From the illustrations, the coiling is made on a bundle foundation and sewn with yucca sewing thread. This identifies it with modern Hopi coiling now made on Second Mesa.

The technique of the wicker specimen is also identical with the modern Hopi wickerwork now made on their mesa (fig. 16).

The twill-plaiting seems to be in too bad a condition to make out details from the photograph. The piece may have been part of a yucca-ring basket, such as are made today on Second Mesa; or it may be a piece of matting. In either case it seems similar to modern Hopi work.

HOPI (MOKI)

From Hopi, I have seen four coiled baskets, three of which are bottle shapes, and one an oblong oval basket (boat-shaped):

U.S.N.M. No. 68473 (Mokis, J. W. Powell), not illustrated in Mason. Measurements: total height $9\frac{5}{8}$ inches; diameters, bottom $8\frac{1}{2}$ inches, neck $5\frac{1}{4}$ inches, mouth $7\frac{1}{4}$ inches; $4\frac{1}{2}$ coils, 14 stitches per inch. Design in black and red.

U.S.N.M. No. 68474 (Mokis, J. W. Powell), Mason, pl. 214, third basket from left in upper row; also Mason, p. 502. Measurements: total height 7 inches; diameters, bottom $7\frac{1}{2}$ inches, neck $4\frac{3}{4}$ inches, mouth $5\frac{3}{4}$ inches, 4 coils, 12 stitches per inch. Design in red and black.

A.M.N.H. No. 50/9570 (Hopi); in shape, size, and texture similar to the above. No design discernible.

U.S.N.M. No. 68471 (Mokis, J. W. Powell), Mason, pl. 214, first basket at left in upper row; and Mason, p. 502.² Measurements: $3\frac{3}{4}$ inches high; diameters, bottom $9\frac{1}{4}$ inches, mouth $7\frac{1}{2}$ inches; $5\frac{1}{2}$ coils, 13 stitches per inch. No design discernible.

All the above specimens are in Basket Maker type coiling; two-rod-and-bundle-triangular foundation (fig. 2), noninterlocking stitches, convex work surface, clockwise spiral, worked to the left of the worker (fig. 1*b*). The American Museum specimen is made on the concave surface past the bend (fig. 1*a*), then work is transferred to the convex surface and proceeds thereafter from the outside (fig. 1*b*).³

¹ Mason, p. 509 and pls. 221, 222.

² Mason, p. 502, calls these two baskets Stevenson's Zuñi collections; this disagrees with catalogue and specimens. Note that the photograph of U.S.N.M. No. 68471 shows in white the designation as I have it.

³ See also in reference to this change of work surface, Amer. Anthropol. vol. 32, p. 486. The presence of both of these methods, viz., globular baskets worked

In addition to the above specimens, Mason, Plate 218, pictures nine "ancient baskets from Oraibi," of which seven are coiled and two twined.¹ Six of the coiled baskets are on three-rod-triangular foundation (fig. 11). In texture and technique these coiled baskets are different from those above described, resembling the modern work of Utes. The large twined water bottle has a frame woven in like that of a burden basket, as has also one of the twined bottles from Zuñi (Mason, pl. 213, upper center).

SANTA ANA

In the Museum of the American Indian, Heye Foundation, there is a coiled, bottle-shaped basket collected in Santa Ana.² The measurements are: $7\frac{1}{2}$ inches high; diameters, bottom $8\frac{1}{2}$ inches, mouth 7 inches; $5\frac{1}{2}$ coils, 14 stitches to the inch. The technique is in every particular Basket Maker type coiling on two-rod-and-bundle-triangular foundation (fig. 2). There is a design in red and black.

SIA

From the pueblo of Sia there are six coiled bottle-shaped baskets:

U.S.N.M. No. 134213 (Siana, N. Mex., Stevenson), Mason, pl. 28, lower, and p. 253.³ Measurements: total height $9\frac{1}{4}$ inches; diameters, bottom $9\frac{1}{2}$ inches, neck, $5\frac{1}{8}$ inches, mouth $7\frac{1}{2}$ inches; 4 plus coils, 15 stitches per inch. Design in black.

U.S.N.M. No. 134214 (Stevenson; Mason, p. 499, calls this Sia), Mason, pl. 212, lower. Measurements: height 9 inches; diameters, bottom 8 inches, neck 6 inches, mouth 7 inches; 4 coils, 12 stitches per inch. Design in red and black.

U.S.N.M. No. 134214 (Siana, N. Mex., Stevenson), Mason, pl. 214, lower row, fourth from the left, and Mason, p. 502.⁴ Measurements: $11\frac{1}{4}$ inches high; diameters, bottom, $7\frac{3}{4}$ inches, neck, $4\frac{3}{8}$ inches, mouth $6\frac{1}{2}$ inches; 5 coils, 12 stitches to the inch. Design in red and black.⁵

throughout on the convex surface, and others with change of work surface is not inconsistent with finds of typical Basket Maker material, viz., Marsh Pass collections of Kidder and Guernsey.

¹ Mason, pp. 506-507, describes these baskets, pointing out that one is modern; he lists museum numbers.

² M.A.I., H.F. No. 7/825.

³ Mason, p. 253, calls both baskets in pl. 28, Sia, while he titles pl. 28 itself, Zuñi. The upper basket is Zuñi, the lower is Sia.

⁴ Note that this basket and the preceding one have the same museum numbers as well as the two specimens numbered 134215. There are four specimens, not two.

⁵ That the design of this and the preceding specimen is red and black is my judgment; at the present day both designs appear as faded brown and red.

U.S.N.M. No. 134215 (probably Gill, 1902?), Mason, pl. 212 upper and p. 499f. Measurements: height $7\frac{1}{4}$ inches, diameters, bottom 6 inches, neck $4\frac{3}{8}$ inches, mouth $5\frac{1}{4}$ inches; 5 coils, 13 stitches per inch. Design in black.

U.S.N.M. No. 134215, Mason, pl. 214, lower row, third from the left. I have not seen the specimen. Mason gives, p. 502, diameter $11\frac{1}{2}$ inches. Design not discernible from photograph.

Eldody collection, No. 8463 (seen in La Fonda shop, Sante Fe, N. Mex.). With a rawhide band and handle around the neck; design in red and black.

All the above specimens are made in every particular in Basket Maker type coiling on a two-rod-and-bundle-triangular foundation (fig. 2), convex work surface (fig. 1*b*).

ZUÑI

From Zuñi there are three coiled bottle shapes and two coiled globular baskets.¹

U.S.N.M. No. 68550 (Zuñi, Powell), Mason, pl. 214, second basket from the left in the upper row, and p. 502. The basket has a small leather handle; design in black. Measurements: total height $4\frac{1}{2}$ inches; diameters, bottom 4 inches, mouth $3\frac{3}{4}$ inches; 5 coils, 13 stitches per inch.

U.S.N.M. No. 42140, Mason, pl. 214, first basket from right in upper row, and p. 502. Measurements: $4\frac{1}{4}$ inches high; diameters, bottom 4 inches, neck $3\frac{1}{4}$ inches, mouth $4\frac{3}{8}$ inches; 5 coils, 10 stitches per inch. Leather handle; design in black.

U.S.N.M. No. 68489 (Zuñi, Stevenson), Mason, pl. 214, lower row, second from the left,² and p. 502. Measurements: total height $9\frac{3}{4}$ inches; diameters, bottom $8\frac{1}{2}$ inches, neck $4\frac{1}{4}$ inches, mouth $6\frac{1}{4}$ inches; $3\frac{1}{2}$ coils, 10 stitches per inch. Design in dark red.

U.S.N.M. No. 68472 (Zuñi, Powell), Mason, pl. 214, upper row, fourth from left and p. 502. Measurements: $4\frac{3}{4}$ inches high; diameters, bottom $5\frac{1}{2}$ inches, mouth, $5\frac{3}{4}$ inches; $3\frac{1}{2}$ coils, 11 stitches per inch. Leather handle; design not discernible.

U.S.N.M. No. 68479 (Zuñi, Powell), Mason, pl. 28 upper and p. 253. Measurements: $5\frac{1}{4}$ inches high; diameters, bottom $7\frac{3}{4}$ inches, mouth $9\frac{1}{2}$ inches; 5 coils, 15 stitches per inch. Design in red and black.

The above five specimens are in every particular Basket Maker type coiling on a two-rod-and-bundle-triangular foundation (fig. 2) and convex work surface throughout (fig. 1*b*). The last one has the bottom broken out and a false bottom sewn in which is coarse coiling on a three-rod-triangular foundation, with stitches split on the non-work surface which faces the outside bottom.

¹ There is also U.S.N.M. No. 68546 (Zuñi, Powell), Mason, fig. 189, p. 503. I have not seen this specimen. From Mason's figure it seems very likely to be a Chiricahua Apache basket; it is not at all similar to the baskets above.

² Mason, p. 502, has apparently transposed the numbers of the first and second baskets from the left in the lower row of his pl. 214.

Besides these coiled baskets called "ancient Zuñi," Mason also figures (pl. 213) seven twined baskets and one wicker basket, collected by James Stevenson. The twined baskets are bottle-shaped, while the wicker basket is globular. The types of twined stitches used include plain twining, twilled twining (fig. 14), and three-strand twining (fig. 15).¹ The twining is made toward the right of the worker (clockwise spiral, convex work surface) stitches trending upward toward the right in the direction in which the work proceeds. The technique of the wicker basket is similar to modern Hopi work, Third Mesa (fig. 16).

MISCELLANEOUS

Besides the above baskets, there are seven coiled baskets secured in pueblos, and classified as "ancient pueblo" which do not specify what pueblo. All are bottle shapes.

U.S.N.M. No. 313165 (collected by Hubby²). Design in red and black.³

U.S.N.M. 328022 (Hubby²). Design in red and black.³ Measurements: 7 $\frac{3}{4}$ inches high; diameter 10 inches; 4 coils, 15 stitches per inch.

U.S.N.M., no number. Measurements: 4 inches high, diameters, bottom 4 $\frac{3}{4}$ inches, mouth 3 $\frac{3}{8}$ inches; 4 coils, 11 stitches per inch. Probably undecorated.

U.S.N.M. No. 221415 (collected by F. H. Cushing). Measurements: 11 $\frac{3}{4}$ inches high; diameters, bottom 8 $\frac{1}{2}$ inches, neck 5 $\frac{1}{8}$ inches, mouth 6 inches; 4 plus coils, 13 stitches per inch. Design in faded dark brown or black.

U.S.N.M. No. 166800 (Mooney, Apache).⁴ Measurements: 5 inches high; diameters, bottom 4 $\frac{1}{2}$ inches, mouth 3 $\frac{1}{2}$ inches; 5 coils, 12 stitches per inch. Design not discernible.

Indian Arts Fund, Santa Fe (no number). Measurements: 8 inches high; diameters, bottom 8 inches, mouth 5 $\frac{3}{4}$ inches; 4 coils, 14 stitches per inch. Design in black.³ Buckskin handle around neck.

F.M.N.H. No. 103032 (obtained at Navajo, Ariz., by H. E. Sargent). Measurements: 9 $\frac{3}{4}$ inches high; diameters, bottom and mouth 7 $\frac{1}{4}$ inches; 5 coils, 13 stitches per inch. Design in red and black. Two rawhide lugs on shoulder.

The seven baskets are in every particular Basket Maker type coiling on a two-rod-and-bundle-triangular foundation (fig. 2); all are made on the convex work surface throughout (fig. 1b).

¹ Mason, pp. 500-501, describes the specimens and gives museum numbers.

² Mrs. Hubby calls these Paiute ceremonial baskets. "These baskets were used by and are found among the Pueblo Indians. They were used to buy a fetich." These two baskets are in no technical or decorative aspects similar to Paiute work.

³ The designs on these three baskets resemble in style those on the "Ancient Pueblo" baskets from Sia.

⁴ From the note "collected among the Apaches by Mooney"; but not like Apache work. Consistent with the "ancient pueblo" baskets of this type.

TYPES OF BASKETRY

In the preceding notes, it will be seen that certain technical types stand out clearly:

In coiling there are the three types with triangular foundation elements: Basket Maker, in two varieties: two-rod-and-bundle-triangular (fig. 2) and two-rod-and-reed-triangular; Cliff Dweller; and the type with three-rod-triangular foundation (fig. 11). All three are consistent in left direction of work, concave work surface (figs. 1a, b), noninterlocking stitches (fig. 2). The difference between the Basket Maker and Cliff Dweller is one of texture. Both have two-rod-and-bundle-triangular foundation (fig. 2). The third type differs from the two preceding only in that the foundation is three-rod-triangular instead of two-rod-and-bundle. There is also the type on single-rod-surrounded-by-fiber-foundation, with noninterlocking stitches (fig. 3).

One other coiling technique occurs with sufficient frequency to be called a type. This is the coiling on one-rod foundation with interlocking stitches (fig. 5), left direction of work and concave work surface (fig. 1a).

In sifter coiling, there are two types, A (fig. 8) and B (figs. 6, 7, 17), of which the latter occurs with minor variations.

In twill-plaiting there are two types, the yucca-ring baskets made from center bottom upwards (fig. 4), and the second type which is probably made from mouth down with the bottom unfinished.

BASKET MAKER TYPE COILING

On the basis of the textual distinction between Basket Maker and Cliff Dweller material, basketry of Basket Maker type coiling occurs in the preceding enumeration in Marsh Pass and associated sites, Canyon del Muerto, Canyon de Chelly, the Piedra District, Grand Gulch, Kane County, Battle Canyon, Allan Canyon, Lake Canyon, among the Wetherill material from southern Utah and southwestern Colorado, possibly at Las Cruces, N. Mex., and in caves of the Lower Rio Grande Region.

The Basket Maker subvariety, distinguished from the regular Basket Maker only in that the foundation is two-rod-and-reed-triangular, occurs in Canyon del Muerto, Battle Canyon, Navaho Canyon, Lake Canyon, and in the Wetherill material from southern Utah and southwestern Colorado.

CLIFF DWELLER TYPE COILING

Material of such fine texture as to be associated typologically with Cliff Dweller material rather than Basket Maker material, is found

at Marsh Pass, Betatakin, Cradle House, other Navaho National Monument sites, Mesa Verde, Johnson Canyon, Canyon del Muerto, White Canyon, Allan Canyon, Butler Canyon, Pueblo Bonito, among the San Diego material from southern Utah, among the Wetherill pieces from southwestern Colorado (and southern Utah), Bear Creek on Blue River, Pajarito Plateau, and "Ancient Pueblo" material.

The above distinctions, being typological, are, of course, tentative and subject to correction; where but few specimens are recovered, no range of measurements can be taken and certain measurements are bound to fall in an intermediate class, as, for example, those of the "Ancient Pueblo" material. Also, in view of the close association of Cliff Dweller and Basket Maker cultures as indicated by Kidder and Guernsey, and the probability that Cliff Dweller peoples looted Basket Maker remains, where we have only miscellaneous specimens from a location it is likely that we are dealing with a mixture of the types.

THREE-ROD-TRIANGULAR TYPE COILING (FIG. 11)

Material consistent with Basket Maker type coiling except for three-rod-triangular foundation comes from Navaho Canyon and Cliff Palace (Mesa Verde), Pueblo Bonito, Palatki, Chaves Pass, Cheylon Ruin, and Casa Grande; one such basket also is in the Wetherill collection.

In connection with the above three types, it is important to note that all have triangular-form foundations. Triangular-form foundation in North American coiled basketry, modern as well as ancient, has a definitely limited distribution. In prehistoric material it occurs in Lovelock Cave as well as in the Southwest. In modern material it occurs among the Pomo-Maidu-Miwok, Paviotso and Southern Paiute, Chemehuevi, Ute, Havasupai, San Carlos and Jicarilla Apache, and Navaho. Its northernmost occurrence is among the Pomo and its southernmost among the San Carlos Apache. It is likely that three-rod-triangular foundation is a later development from two-rod-and-bundle, and that two-rod-and-reed-triangular foundation is a transitional step. To the basket maker, the function of the apex element is to bind the courses together. The sewing thread passes through the apex bundle (fig. 2), reed or rod (fig. 11). On the other hand, there is no mechanical reason for placing the lower two elements side by side, save perhaps to thicken the walls; but this could be accomplished in other ways. Thus the origin of the use of triangular foundations in basketry coiling can not be determined by functional factors, but must rather be credited to historical factors. With this in mind, and considering the limited area of distribution for triangular-form foun-

dations, there is some reason to believe that ultimately these contiguous appearances of the use of such a foundation are in some way historically related.

In some of the Basket Maker material there are occasional baskets, as noted, which have a foundation of rod-surrounded-by-fiber (fig. 3); namely, close-coiled baskets from Marsh Pass, Kane County, Allan Canyon and the Lower Rio Grande Region, and sifter coiling from Bear Creek and in the Wetherill collection. The close-coiled baskets are in other traits like the Basket Maker—Cliff Dweller complex. From a formal standpoint, this type of foundation can be classified with bundle foundation (fig. 17). Little of historical significance can be drawn from similarities in basket-making technique which are based merely on the use of bundle-form foundations, since this is the most universally used type of foundation in coiled basketry in the world. Mechanically, it is the most elementary. The function of the bundle is to give a foundation body through which the sewing stitch can readily pass, binding course to course.

ONE-ROD-FOUNDATION COILING

From Canyon de Chelly, Grand Gulch, Battle Canyon, Allan Canyon, and in the San Diego collection from southern Utah and the Wetherill collections, there are coiled baskets on a one-rod foundation with interlocking stitches (fig. 5), counterclockwise spiral, concave work surface toward the left of the worker. It seems likely that these will prove to have been intrusive ware. In addition, there are two specimens of one-rod coiling, as above, save that the stitches do not interlock (fig. 12). One of these is a complete basket from Lost Canyon: the other is a Wetherill basket from Navaho Canyon, the walls of which are in one-rod coiling, the rim in two-rod-and-reed-triangular coiling. It is interesting to note that on a basket which, from its other traits is Basket Maker type coiling, the one-rod coiled stitches do not interlock. The stitching of the Lost Canyon basket is unusual in that it has a wrapping of the new foundation rod alternating with each regular stitch.

UNUSUAL COILED SPECIMENS

In the Wetherill material from southern Utah and southwestern Colorado are two trays on a two-rod-and-reed-triangular foundation, apparently of the usual Basket Maker type and texture, but with interlocking stitches. These are the only examples of coiling other than on a one-rod foundation with interlocking stitches.

Two coiled bowls from Battle Canyon which are Basket Maker type coiling in all other respects are made on a foundation of half a heavy rod with a strip of yucca placed upon it, through which the stitches are caught (fig. 9).

Two baskets are unusual in that they have foundations of vertical form. One is the oblong basket from Battle Canyon which has a three-rod-vertical foundation (fig. 10), although the rim coil is made on a foundation of two rods placed side by side; the other is a basket from Sandal Cliff House, Mancos Canyon, made in double coiling on a two-rod-and-bundle vertical foundation (fig. 13).

SIFTER COILING

This technique occurs in two types which I have called A and B. Type A (fig. 8) is found without variation in a specimen from Grand Gulch, one from Kane County, and one from Lake Canyon. Type B occurs in three variants. The Hazzard collection specimen is from the Wetherill material, and comes from southern Utah or southwestern Colorado (fig. 7). A simpler type, without binding stitch around the "standing-part," is found in 12 specimens from Bear Creek on Blue River (fig. 17). A type with double binding around the "standing-part" is found in the Canyon de Chelly material (fig. 6); the specimen differs from the Hazzard collection specimen in that instead of the bindings alternating in the successive rows, they are found one above the other, forming vertical lines which radiate from the center. The Blue River specimens show both these methods of placing the fastening stitch. On a basket-marked sherd from Canyon del Muerto there is evidence of sifter coiling which resembles the basket from Canyon de Chelly. As sifter coiling is a unique technique in North America, unknown in modern work save for the "grasshopper" baskets of the Yokuts,¹ and as the two types mentioned are not mechanically related, these two distributions are of importance historically.²

In foundation, type A is consistently made on a single-rod. Type B occurs with three foundations: two-rod-and-bundle-triangular (fig. 2), rod-surrounded-by-fiber (fig. 3), and bundle-of-grass (fig. 17). Thus type B, on the basis of foundations, is to be associated with Basket Maker close coiling, while type A affiliates rather with the one-rod coiling with interlocking stitches which occurs sporadically (figs. 5, 8).

¹ Mason, pl. 196; p. 480, figs. 172 and 173.

² I have seen modern basketry in shops made in type B sifter coiling said to have been made by Mexican natives.

TWILL-PLAITING

Yucca-ring baskets (fig. 4) and twill-plaited baskets of that type are found in Marsh Pass Cliff Dweller material, and occur also at Betatakin, Canyon del Muerto, Canyon de Chelly, Grand Gulch, Butler Canyon, Navaho Canyon, Spruce Tree House, Red Canyon, Colorado River Canyon, Pueblo Bonito, in the southern Utah material of the San Diego Museum, and at Bear Creek on Blue River. Kidder and Guernsey established this type of basket at Marsh Pass as the typical Cliff Dweller product, and there seems reason to believe that the specimens from other localities are to be associated with the same culture horizon.

Twill-plaited baskets with unfinished bottom were found at Marsh Pass (with Basket Maker material), Canyon del Muerto, Canyon de Chelly, Grand Gulch, and southern Utah (S.D.M.). The Basket Maker associations of the Marsh Pass material suggest that this unfinished bottom type is earlier than the Cliff Dweller yucca-ring type.

From Johnson Canyon, Aztec Ruin, and Sikyatki there is evidence of twill-plaiting which may be baskets, but if so the type can not be determined.

WICKERWORK

Wickerwork has been mentioned in the above treatment as found in Cheylon Ruin (fig. 16) and at Bear Creek on Blue River, in Sikyatki and in the Zuñi "Ancient Pueblo" collection. This wicker technique is the same as modern Hopi and Zuñi wickerwork. Prehistorically, wickerwork is found in Lovelock,¹ and in modern work in Pomo seedbeaters and Algonquian trinket baskets.

TWINED BASKETRY

Twined basketry is unknown in Basket Maker material. In the above enumeration, twined basketry is referred to from Palatki (figs. 14, 15) and in the "Ancient Pueblo" material of Hopi and Zuñi. In shapes, technique, and texture this work resembles modern work of Havasupai and Hualapai, and of modern Ute. Except for the evidence of shapes, this twined work could also be compared with that of Apache groups.

¹ Cf. Amer. Anthropol., vol. 32, pp. 490-491. The statement that wickerwork in prehistoric material is "found exclusively" in Lovelock Cave is to be considered corrected by the statement in this paper.

BASKETS SHOWING COMBINATIONS OF TECHNIQUES

In the foregoing discussion several coexistences of two techniques on the same specimens occur:

The basket from Navaho Canyon (Mesa Verde) which has walls on a single-rod foundation with a rim made on two-rod-and-reed-triangular foundation indicates the contemporaneity of single-rod foundation coiling and Basket Maker coiling; but it should be noted that the one-rod coiling here is without interlocking stitches (fig. 12). Single-rod foundation coiling with noninterlocking stitches is unusual, and its distribution sporadic in modern times. In prehistoric material the specimen in question is the only one known to me which is normal single-rod coiling; the specimen from Lost Canyon has special peculiarities. In modern work one-rod noninterlocking coiling is limited to a few coiled baskets of the Paviotso Paiute. In the Paviotso work, the absence of interlocking is not a conventional trait of their technique, as in collections of their one-rod coiled baskets interlocking and split stitching are to be found as well as noninterlocking. By contrast, one-rod foundation coiling is generally to be found associated with interlocking stitches (fig. 5). In view of the undoubted Basket Maker type provenience of the prehistoric basket on which this one-rod coiling without interlocking is found, the implication seems to be that when peoples who made Basket Maker type work attempted one-rod coiling, their noninterlocking convention was carried over. This seems to me to support the theory that the one-rod coiled baskets with interlocking stitches are intrusive where they are found associated with Basket Maker or Cliff Dweller material.

The basket in sifter coiling of type A (fig. 8) which comes from Grand Gulch has several courses of one-rod foundation coiling with interlocking stitches (fig. 5) around the rim. If, on the basis of the foregoing, the one-rod coiled baskets with interlocking be considered intrusive ware, the sifter baskets of type A must also be considered intrusive. It is of interest in this connection that although sifter coiling of type B (figs. 6, 7, 17) has a wide distribution in the world, being found even in modern Mexican native work, in a specimen from San Salvador, and in characteristic work of Samoa and other places in the South Seas, I know of only one analogy to sifter work of type A, and this is only a partial similarity, viz, basketry made in Tierra del Fuego.¹

The basket in the Wetherill collection from either southern Utah or southwestern Colorado, which is made in Basket Maker type coiling

¹ See Mason, p. 258, fig. 59, and p. 531, fig. 204.

on a two-rod-and-bundle-triangular foundation (fig. 2), but which has been repaired by setting in a bottom coiled on a one-rod foundation with interlocking stitches (fig. 5), again indicates the contemporaneity of the two techniques. In the light of the above discussion of the intrusive character of the one-rod coiling with interlocking stitches, it should be noted that while this bottom shows interlocking stitches, it is not part of the basket, but an attached piece.

Two exceptional specimens are known. There is first the specimen from Sandal Cliff House, Mancos Canyon, in double coiling on two-rod-and-bundle vertical foundation (fig. 13); double coiling is limited in modern times to San Carlos Apache and Salinan. The second is the specimen of wrapped coiling from Bear Creek on Blue River, which resembles Mohave work (fig. 18).

CONCLUSIONS

The most important implication of the above seems to be the strong evidence of a unified San Juan area in which Basket Maker material is concentrated, with more divergent types appearing at the periphery.¹ The outstanding Basket Maker types associated with this area are the close coiling with noninterlocking stitches on two-rod-and-bundle-triangular foundation (fig. 2) and two-rod-and-reed-triangular foundation, the sifter coiling of type B (figs. 6, 7, 17), and the twill-plaited baskets with open bottom. Associated with this area but perhaps intrusive are the coiled baskets with interlocking stitches on one-rod foundation (fig. 5) and the sifter coiling of type A (fig. 8).

The outstanding Cliff Dweller types are the close-coiled basketry of Basket Maker type technique with finer texture and the yucca-ring baskets (fig. 4). The apparent Cliff Dweller traits of the so-called "Ancient Pueblo" coiled basketry is supported by the persistence into modern times of the making of yucca-ring baskets, a Cliff Dweller trait, at Hopi (Second Mesa) and the Rio Grande pueblos.

The close coiling with noninterlocking stitches of fine texture on three-rod-triangular foundation (fig. 11) is a basketry type that is independent of the Basket Maker—Cliff Dweller complex. Its distribution is more southern, and it seems to be related to a later culture horizon. The type is identical with the modern coiled basketry of the San Carlos Apache. This is the only modern parallel which is exact.

The close affiliation of Sikyatki with modern Hopi peoples is supported by the basketry evidence. The intrusion of twined ware is

¹ The specimens from caves in the Lower Rio Grande region are a striking exception to the concentration in the San Juan area of the Basket Maker type.

suggestive of possible purchase from Havasupai and Hualapai, or possibly Ute. The practise of purchasing Havasupai coiled baskets is current today among the Hopi.

The appearance of a distinct Texas type of coiled basketry south of the Lower Rio Grande probably marks the limit of the prehistoric Southwestern area.

LITERATURE CITED

CULIN, S.

1907. Games of the North American Indians. 24th Ann. Rep. Bur. Amer. Ethnol.

CUMMINGS, B.

1910. The ancient inhabitants of the San Juan Valley. Bull. Univ. Utah, vol. 3, pt. 2, pp. 5 and 34.
1915. Kivas of the San Juan drainage. Amer. Anthrop., n. s., vol. 18, pp. 281-282.

FARABEE, W. C.

1902. Museum Journ., December, p. 202.

FEWKES, J. W.

1909. Antiquities of the Mesa Verde National Park, Spruce Tree House. Bull. 41, Bur. Amer. Ethnol.
1911a. Preliminary report on a visit to the Navaho National Monument, Arizona. Bull. 50, Bur. Amer. Ethnol.
1911b. Antiquities of the Mesa Verde National Park, Cliff Palace. Bull. 51, Bur. Amer. Ethnol.

GUERNSEY, S. J.

1931. Explorations in northeastern Arizona, report on the archeological field work of 1920-1923. Pap. Peabody Mus. Amer. Archeol. and Ethnol., vol. 12, no. 1.

GUERNSEY, S. J., and KIDDER, A. V.

1921. Basket-Maker caves of northeastern Arizona. Pap. Peabody Mus. Amer. Archeol. and Ethnol., vol. 8, no. 2.

HOUGH, W.

1907. Antiquities of the Upper Gila and Salt River valleys in Arizona and New Mexico. Bull. 35, Bur. Amer. Ethnol.
1914. Culture of the ancient pueblos of the Upper Gila River region, New Mexico and Arizona. Bull. 87, U. S. Nat. Mus.

KIDDER, A. V.

1915. Pottery of the Pajarito Plateau and of some adjacent regions in New Mexico. Mem. Amer. Anthropol. Assoc., vol. 2, pt. 6.
1931. Review of F. H. H. Roberts' Bulletins 92 and 96, Bureau of American Ethnology. Amer. Anthrop., n.s., vol. 33, pp. 121-126.

KIDDER, A. V., and GUERNSEY, S. J.

1919. Archeological explorations in northeastern Arizona. Bull. 65, Bur. Amer. Ethnol.

MASON, O. T.

1904. Aboriginal American basketry. Rep. U. S. Nat. Mus. for 1902.

MORRIS, E. H.

- 1919a. Preliminary account of the antiquities of the region between the Mancos and La Plata rivers in southwestern Colorado. 33rd Ann. Rep. Bur. Amer. Ethnol., pp. 155-206.
- 1919b. The Aztec ruin. *Anthrop. Pap. Amer. Mus. Nat. Hist.*, vol. 26, pt. 1.
- 1927. The beginnings of pottery-making in the San Juan area; unfired prototypes and the wares of the earliest ceramic period. *Anthrop. Pap. Amer. Mus. Nat. Hist.*, vol. 28, pt. 2.

NORDENSKIÖLD, G.

- 1893. *The Cliff Dwellers of the Mesa Verde*. Translated by D. Lloyd Morgan, Stockholm.

NUSSBAUM, J. L.

- 1922. A Basket-Maker cave in Kane County, Utah, with notes on the artifacts by A. V. Kidder and S. J. Guernsey. *Mus. Amer. Ind., Heye Found., Ind. Notes and Monogr.*, no. 29.

PEPPER, G. H.

- 1902. The ancient Basket-Makers of southeastern Utah. *Amer. Mus. Journ.*, vol. 2, no. 4, supplement.
- 1920. Pueblo Bonito. *Anthrop. Pap. Amer. Mus. Nat. Hist.*, vol. 27.

ROBERTS, F. H. H., JR.

- 1930. Early pueblo ruins in the Piedra District, southwestern Colorado. *Bull. 96, Bur. Amer. Ethnol.*

WELTFISH, G.

- 1930. Prehistoric North American basketry techniques and modern distributions. *Amer. Anthrop., n.s.*, vol. 32, pp. 454-495.

TECHNIQUES ILLUSTRATED

COILED BASKETRY

	Fig. No.	Page
Coiled basket, with counterclockwise spiral, worked on the concave surface, toward the left of the worker.....	1a	4
Coiled basket, with clockwise spiral, worked on the convex surface, toward the left of the worker.....	1b	4
Coiling, on a two-rod-and-bundle-triangular foundation, with non-interlocking stitches.....	2	5
Coiling, on a three-rod-triangular foundation, with noninterlocking stitches	11	17
Coiling, on a single-rod-surrounded-by-fiber foundation, with non-interlocking stitches	3	5
Coiling, on foundation of a split rod with a strip of yucca placed upon it, with noninterlocking stitches.....	9	14
Coiling, on a single-rod foundation, with noninterlocking stitches..	12	18
Coiling, on a single-rod foundation, with interlocking stitches.....	5	10
Coiling, on a three-rod-vertical foundation, with noninterlocking stitches	10	15
Coiling, on a two-rod-and-bundle-vertical foundation, with non-interlocking stitches	13	19
Sifter coiling, type A: Kane County.....	8	13
Sifter coiling, type B: Hazzard collection.....	7	11
Canyon de Chelly.....	6	11
Blue River	17	29

TWILL-PLAITING

Over-2-under-2 twill-plaiting, with concentric-diamond pattern (center of a yucca-ring basket).....	4	6
---	---	---

TWINING

Twilled-twining	14	26
Three-strand twining	15	26

WICKER

Wickerwork	16	27
------------------	----	----

WRAPPED COILING

Wrapped coiling	18	30
-----------------------	----	----

SHOVEL-SHAPED COILED BASKET

Shovel-shaped coiled basket from site near Las Cruces, N. Mex....	19	32
---	----	----