
PREHISTORIC TEXTILE ART
OF
EASTERN UNITED STATES
BY
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INTRODUCTORY.

SCOPE OF THE WORK.

About the year 1890 the writer was requested by the Director of the Bureau of Ethnology to prepare certain papers on aboriginal art, to accompany the final report of Dr. Cyrus Thomas on his explorations of mounds and other ancient remains in eastern United States. These papers were to treat of those arts represented most fully by relics recovered in the field explored. They included studies of the art of pottery, of the textile art and of art in shell, and a paper on native tobacco pipes. Three of these papers were already completed when it was decided to issue the main work of Dr. Thomas independently of the several papers prepared by his associates. It thus happens that the present paper, written to form a limited section of a work restricted to narrow geographic limits, covers so small a fragment of the aboriginal textile field.

The materials considered in this paper include little not germane to the studies conducted by Dr. Thomas in the mound region, the collections used having been made largely by members of the Bureau of Ethnology acting under his supervision. Two or three papers have already been published in the annual reports of the Bureau in which parts of the same collections have been utilized, and a few of the illustrations prepared for these papers are reproduced in this more comprehensive study.

Until within the last few years textile fabrics have hardly been recognized as having a place among the materials to be utilized in the discussion of North American archeology. Recent studies of the art of the mound-building tribes have, however, served to demonstrate their importance, and the evidence now furnished by this art can be placed alongside of that of arts in clay, stone, and metal, as a factor in determining the culture status of the prehistoric peoples and in defining their relations to the historic Indians. This change is due to the more

careful investigations of recent times, to the utilization of new lines of archeologic research, and to the better knowledge of the character and scope of historic and modern native art. A comparison of the textiles obtained from ancient mounds and graves with the work of living tribes has demonstrated their practical identity in materials, in processes of manufacture, and in articles produced. Thus another important link is added to the chain that binds together the ancient and the modern tribes.

DEFINITION OF THE ART.

The textile art dates back to the very inception of culture, and its practice is next to universal among living peoples. In very early stages of culture progress it embraced the stems of numerous branches of industry afterward differentiated through the utilization of other materials or through the employment of distinct systems of construction. At all periods of cultural development it has been a most indispensable art, and with some peoples it has reached a marvelous perfection, both technically and esthetically.

Woven fabrics include all those products of art in which the elements or parts employed in construction are more or less filamental, and are combined by methods conditioned chiefly by their flexibility. The processes employed are known by such terms as wattling, interlacing, plaiting, netting, weaving, sewing, and embroidering.

MATERIALS AND PROCESSES.

Viewing the entire textile field, we find that the range of products is extremely wide. On the one hand there is the rude interlacing of branches, vines, roots, and canes in constructing houses, weirs, cages, rafts, bridges, and the like, and on the other, the spinning of threads of almost microscopic fineness and the weaving of textures of marvelous delicacy and beauty.

The more cultured peoples of Central America and South America had accomplished wonders in the use of the loom and the embroidery frame, but the work of the natives of the United States was on a decidedly lower plane. In basketry and certain classes of garment-making, the inhabitants of the Mississippi valley were well advanced at the period of European conquest, and there is ample evidence to show that the mound-building peoples were not behind historic tribes in this matter. In many sections of our country the art is still practiced, and with a technical perfection and an artistic refinement of high order, as the splendid collections in our museums amply show.

The degree of success in the textile art is not necessarily a reliable index of the culture status of the peoples concerned, as progress in a particular art depends much upon the encouragement given to it by local features of environment. The tribe that had good clay used

earthenware and neglected basketry, and the community well supplied with skins of animals did not need to undertake the difficult and laborious task of spinning fibers and weaving garments and bedding. Thus it appears that well-advanced peoples may have produced inferior textiles and that backward tribes may have excelled in the art. Caution is necessary in using the evidence furnished by the art to aid in determining relative degrees of culture.

SOURCES OF INFORMATION.

The failure of the textile art to secure a prominent place in the field of archeologic evidence is due to the susceptibility of the products to decay. Examples of archaic work survive to us only by virtue of exceptionally favorable circumstances; it rarely happened that mound fabrics were so conditioned, as the soil in which they were buried is generally porous and moist; they were in some cases preserved through contact with objects of copper, the oxides of that metal having a tendency to arrest decay. The custom of burial in caves and rock shelters has led to the preservation of numerous fabrics through the agency of certain salts with which the soil is charged. Preservation by charring is common, and it is held by some that carbonization without the agency of fire has in some cases taken place.

Considerable knowledge of the fabrics of the ancient North American tribes is preserved in a way wholly distinct from the preceding. The primitive potter employed woven textiles in the manufacture of earthenware; during the processes of construction the fabrics were impressed on the soft clay, and when the vessels were baked the impressions became fixed. The study of these impressions led to meager results until the idea was conceived of taking castings from them in clay, wax, or paper; through this device the negative impression becomes a positive reproduction and the fabrics are shown in relief, every feature coming out with surprising distinctness; it is possible even to discover the nature of the threads employed and to detect the manner of their combination.

Evidence of the practice of textile arts by many ancient nations is preserved to us by such implements of weaving as happened to be of enduring materials; spindle-whorls in clay and stone are perhaps the most common of these relics. These objects tell us definitely of the practice of the art, but give little insight into the character of the products. It is a notable fact that evidence of this class is almost wholly wanting in the United States; spindle-whorls have in rare cases been reported from southern localities, and a few writers have mentioned their use by modern tribes.

It happens that in some cases we may learn something of the progress made by vanished peoples in this art by a study of the forms of such of their earthen vessels as were manifestly derived from baskets, or

made in imitation of them. The ornamental art of peoples well advanced in culture often bears evidence of the influence of the system of combination of parts followed originally in the textile arts, and little art, ancient or modern, in which men have endeavored to embody beauty, is without strongly marked traces of this influence. By the study of archaic ornament embodied in clay, wood, and stone, therefore, the archeologist may hope to add something to the sum of his knowledge of ancient textiles. It should be noted that the pottery of the mound-builders shows less evidence of the influence of textile forms than does that of most other nations, and some groups of their ware appear to present no recognizable traces of it whatever.

Although much information has been brought together from all of the sources mentioned, it is not at all certain that we can form anything like a complete or correct notion of the character and scope of the art as practiced by the mound-builders. No doubt the finest articles of apparel were often buried with the dead, but a very small fraction only of the mortuary wrappings or costumes has been preserved, and from vast areas once thickly inhabited by the most advanced tribes nothing whatever has been collected. Of embroideries, featherwork, and the like, so frequently mentioned by early travelers, hardly a trace is left.

The relations of our historic tribes to the ancient peoples of our continent and to all of the nations, ancient and modern, who built mounds and earthworks, are now generally considered so intimate that no objection can be raised to the utilization of the accounts of early explorers in the elucidation of such features of the art as archeology has failed to record. The first step in this study may consist quite properly of a review of what is recorded of the historic art. Subsequently the purely archeologic data will be given.

PRODUCTS OF THE ART.

In undertaking to classify the textile fabrics of the mound region it is found that, although there is an unbroken gradation from the rudest and heaviest textile constructions to the most delicate and refined textures, a number of well-marked divisions may be made. The broadest of these is based on the use of spun as opposed to unspun strands or parts, a classification corresponding somewhat closely to the division into rigid and pliable forms. Material, method of combination of parts, and function may each be made the basis of classification, but for present purposes a simple presentation of the whole body of products, beginning with the rudest or most primitive forms and ending with the most elaborate and artistic products, is sufficient. The material will be presented in the following order: (1) Wattle work; (2) basketry; (3) matting; (4) pliable fabrics or cloths.

WATTLE WORK.

The term wattling is applied to such constructions as employ by interlacing, plaiting, etc., somewhat heavy, rigid, or slightly pliable parts, as rods, boughs, canes, and vines. Primitive shelters and dwellings are very often constructed in this manner, and rafts, cages, bridges, fish weirs, and inclosures of various kinds were and still are made or partly made in this manner. As a matter of course, few of these constructions are known to us save through historic channels; but traces of wattle work are found in the mounds of the lower Mississippi valley, where imprints of the interlaced canes occur in the baked clay plaster with which the dwellings were finished. When we consider the nature of the materials at hand, and the close correspondence in habits and customs of our prehistoric peoples with the tribes found living by the earliest explorers and settlers, we naturally conclude that this class of construction was very common at all known periods of native American history.

The constructors of native dwellings generally employed pliable branches or saplings, which are bound together with vines, twigs, and other more pliable woody forms. John Smith says of the Indians of Virginia¹ that—

Their houses are built like our Arbors, of small young springs bowed and tyed, and so close covered with Mats, or the barks of trees very handsomely, that notwithstanding either winde, raine, or weather, they are as warm as stooques, but very smoaky, yet at the toppe of the house there is a hole made for the smoake to goe into right over the fire.

¹Hist. Virginia, John Smith. Richmond, 1819, vol. 1, p. 130.

Butel-Dumont also, in describing the dwellings of the Natchez Indians of the lower Mississippi region, speaks of the door of an Indian cabin "made of dried canes fastened and interlaced on two other canes placed across."¹

A singular use of wattle work is mentioned by Lafitau. He states that the young men, when going through the ordeal of initiation on attaining their majority, were placed apart in—

An inclosure very strongly built, made expressly for this purpose, one of which I saw in 1694, which belonged to the Indians of Paumaunkie. It was in the form of a sugar loaf and was open on all sides like a trellis to admit the air.²

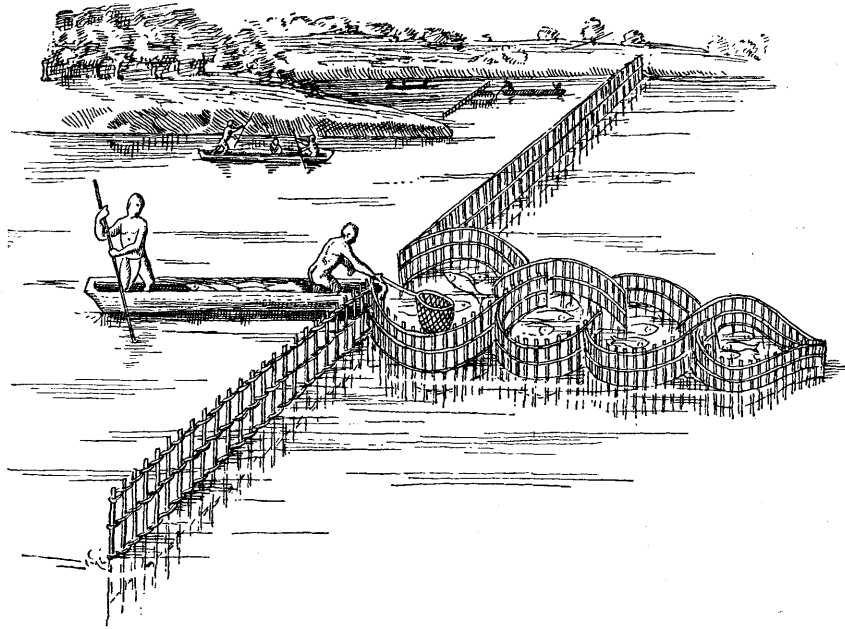


FIG. 1.—Fish weir of the Virginia Indians (after Harriot).

Of a somewhat similar nature was the construction of biers described by Butel-Dumont. Speaking of the Mobilians, he says:

When their chief is dead they proceed as follows: At 15 or 20 feet from his cabin they erect a kind of platform raised about $4\frac{1}{2}$ feet from the ground. This is composed of four large forked poles of oak wood planted in the earth, with others placed across; this is covered with canes bound and interlaced so as to resemble greatly the bed used by the natives.³

According to John Lawson, similarly constructed "hurdles" were in use among the Carolina Indians.

The tide-water tribes of the Atlantic coast region made very frequent use of fish weirs, which were essentially textile in character. John Smith mentions their use in Virginia, and Harriot gives a number of plates in which the weirs are delineated. The cut here given (figure 1)

¹Memoires Historiques sur la Louisiane, George Marie Butel-Dumont. Paris, 1753, vol. II, p. 104.

²Mœurs des Sauvages Américains, Père Joseph François Lafitau. Paris, 1724, vol. I, p. 286.

³Op. cit., vol. I, p. 244.

is from Hariot's plate XIII. It represents a very elaborate trap; much simpler forms are shown in other plates. Slender poles set in the shallow water are held in place by wattling or interlacing of pliable parts.

It is probable that traps of similar character were used by the mound-building tribes wherever the conditions were favorable. The only apparent traces of such weirs yet found in any part of the country are a number of stumps of stakes discovered by H. T. Cresson in Delaware river near Wilmington, but these appear to be much heavier than would have been used for the purpose by the natives.

Another somewhat usual use of wattling is mentioned by various authors. Butel-Dumont speaks of a raft made of poles and canes, and Du Pratz, writing of the Louisiana Indians, says:

The conveniences for passing rivers would soon be suggested to them by the floating of wood upon the water. Accordingly one of their methods of crossing rivers is upon floats of canes, which are called by them Cajeu, and are formed in this manner. They cut a great number of canes, which they tie up into faggots, part of which they fasten together sideways, and over these they lay a few crossways, binding all close together, and then launching it into the water.¹

We learn from various authors that cage-like coffins were constructed of canes and reeds something after the wattle style; and hampers, cages for animals, chests for treasures or regalia, biers, carrying chairs, fish baskets, beds and seats were often similarly made. These articles, being generally light and portable, and constructed of delicate parts, can as well be classed with basketry as with wattle work.

BASKETRY.

TYPES OF BASKETRY.

Perhaps no branch of the textile art was of greater importance to the aborigines than basketry. This term may be made to cover all woven articles of a portable kind which have sufficient rigidity to retain definite or stable form without distention by contents or by other extraneous form of support. It will readily be seen that in shape, texture, use, size, etc., a very wide range of products is here to be considered. Basketry includes a number of groups of utensils distinguished from one another by the use to which they are devoted. There are baskets proper, hampers, cradles, shields, quivers, sieves, etc. There is frequent historical mention of the use of basketry, but the descriptions of form and construction are meager. An excellent idea of the ancient art can be gained from the art of the present time, and there is every reason to believe that close correspondence exists throughout.

BASKETS.

Lawson refers to basket-making and other textile arts of the Carolina Indians in the following language:

The Indian women's work is to cook the victuals for the whole family, and to make mats, baskets, girdles, of possum hair, and such like.

¹ Hist. Louisiana, Le Page Du Pratz. English translation, London, 1763, vol. II, pp. 228-229.

The mats the Indian women make are of rushes, and about five feet high, and two fathom long, and sewed double, that is, two together; whereby they become very commodious to lay under our beds, or to sleep on in the summer season in the day time, and for our slaves in the night.

There are other mats made of flags, which the Tuskeruro Indians make, and sell to the inhabitants.

The baskets our neighboring Indians make are all made of a very fine sort of bull-rushes, and sometimes of silk grass, which they work with figures of beasts, birds, fishes, &c.

A great way up in the country, both baskets and mats are made of the split reeds, which are only the outward shining part of the cane. Of these I have seen mats, baskets, and dressing boxes, very artificially done.¹

James Adair, although a comparatively recent writer, gives such definite and valuable information regarding the handiwork of the Southern Indians that the following extracts may well be made. Speaking of the Cherokees, he remarks:

They make the handsomest clothes baskets, I ever saw, considering their materials. They divide large swamp canes, into long, thin, narrow splinters, which they dye of several colours, and manage the workmanship so well, that both the inside and outside are covered with a beautiful variety of pleasing figures; and, though for the space of two inches below the upper edge of each basket, it is worked into one, through the other parts they are worked asunder, as if they were two joined a-top by some strong cement. A large nest consists of eight or ten baskets, contained within each other. Their dimensions are different, but they usually make the outside basket about a foot deep, a foot and an half broad, and almost a yard long.²

This statement could in most respects be made with equal truth and propriety of the Cherokee work of the present time; and their pre-Columbian art must have been even more pleasing, as the following paragraph suggests:

The Indians, by reason of our supplying them so cheap with every sort of goods, have forgotten the chief part of their ancient mechanical skill, so as not to be well able now, at least for some years, to live independent of us. Formerly, those baskets which the Cheerake made, were so highly esteemed even in South Carolina, the politest of our colonies, for domestic usefulness, beauty, and skilful variety, that a large nest of them cost upwards of a moidore.³

That there was much uniformity in the processes and range of products and uses throughout the country is apparent from statements made by numerous writers. Speaking of the Louisiana Indians, Du Pratz says:

The women likewise make a kind of hampers to carry corn, flesh, fish, or any other thing which they want to transport from one place to another; they are round, deeper than broad, and of all sizes. * * * They make baskets with long lids that roll doubly over them, and in these they place their earrings and pendants, their bracelets, garters, their ribbands for their hair, and their vermilion for painting themselves, if they have any, but when they have no vermilion they boil ochre, and paint themselves with that.⁴

It happens that few baskets have been recovered from mounds and graves, but they are occasionally reported as having been discovered in

¹ Hist. of Carolina, etc., John Lawson. London, 1714, pp. 307, 308.

² History of the American Indians. London, 1775, p. 424.

³ Ibid., p. 424.

⁴ Hist. Louisiana. English translation, London, 1763, vol. II, pp. 227-228.

caverns and shelters where conditions were especially favorable to their preservation. Such specimens may as reasonably be attributed to the mound-building as to the other Indians. The following statement is from John Haywood:

On the south side of Cumberland river, about 22 miles above Cairo, * * * is a cave * * *. In this room, near about the center, were found sitting in baskets made of cane, three human bodies; the flesh entire, but a little shrivelled, and not much so. The bodies were those of a man, a female and a small child. The complexion of all was very fair, and white, without any intermixture of the copper colour. Their eyes were blue; their hair auburn, and fine. The teeth were very white, their stature was delicate, about the size of the whites of the present day. The man was wrapped in 14 dressed deer skins. The 14 deer skins were wrapped in what those present called blankets. They were made of bark, like those found in the cave in White county. The form of the baskets which inclosed them, was pyramidal, being larger at the bottom, and declining to the top. The heads of the skeletons, from the neck, were above the summits of the blankets.¹

SIEVES AND STRAINERS.

It is apparent that baskets of open construction were employed as sieves in pre-Columbian as well as in post-Columbian times. Almost any basket could be utilized on occasion for separating fine from coarse particles of food or other pulverulent substances, but special forms were sometimes made for the purpose, having varying degrees of refinement to suit the material to be separated.

Bartram mentions the use of a sieve by the Georgia Indians in straining a "cooling sort of jelly" called conti, made by pounding certain roots in a mortar and adding water.

Butel-Dumont describes the sieves and winnowing fans of the Louisiana Indians. The Indian women, he says, make very fine sieves—

With the skin which they take off of the canes; they also make some with larger holes, which serve as bolters, and still others without holes, to be used as winnowing fans. * * * They also make baskets very neatly fashioned, cradles for holding maize; and with the tail feathers of turkeys, which they have much skill in arranging, they make fans not only for their own use, but which even our French women do not disdain to use.²

Le Page Du Pratz says that "for sifting the flour of their maiz, and for other uses, the natives make sieves of various finenesses of the splits of cane;"³ and a similar use by the Indians of Virginia is recorded by John Smith:

They vse a small basket for their Temmes, then pound againe the great, and so separating by dashing their hand in the basket, receiue the flowr in a platter of wood scraped to that forme with burning and shels.⁴

From Hakluyt we have the following:

Their old wheat they firste steepe a night in hot water, and in the morning pound-
ing yt in a mortar, they use a small baskett for the boulder or searser, and when

¹ Nat. and Abor. Hist. of Tenn., John Haywood. Nashville, 1823, pp. 191-192.

² Op. cit., vol. i, p. 154.

³ Op. cit., vol. ii, p. 226.

⁴ Hist. Virginia, John Smith. Richmond, 1819, p. 127.

they have syfted fourth the finest, they pound againe the great, and so separating yt by dashing their hand in the baskett, receive the flower in a platter of wood, which, blending with water, etc.¹

CRADLES.

That cradles of textile construction were used by the mound-builders may be taken for granted. The following is from Du Pratz, who is speaking of the work of the inhabitants of the lower Mississippi:

This cradle is about two feet and a half long, nine inches broad. It is skillfully made of straight canes of the length desired for the cradle, and at the end they are cut in half and doubled under to form the foot. The whole is only half a foot high. This cradle is very light, weighing only two pounds. * * * The infant being rocked lengthwise, its head is not shaken as are those who are rocked from side to side, as in France. * * * The cradle is rocked by means of two ends of canes, which make two rollers.²

SHIELDS.

Woven targets or shields would seem to be rather novel objects, but such are mentioned by John Smith, who used those belonging to friendly Indians in an encounter on the Chesapeake:

Here the Massawomek Targets stood vs in good stead, for vpon Mosco's words we had set them about the forepart of our Boat like a forecastle, from whence we securely beat the Salvages from off the plaine without any hurt. * * * Arming ourselues with these light Targets (which are made of little small sticks woven betwixt strings of their hempe and silke grasse, as is our cloth, but so firmly that no arrow can possibly pierce them).³

MATTING.

No class of articles of textile nature were more universally employed by the aborigines than mats of split cane, rushes, and reeds, and our information, derived from literature and from such remnants of the articles themselves as have been recovered from graves and caves, is quite full and satisfactory. Mats are not so varied in form and character as are baskets, but their uses were greatly diversified; they served for carpeting, seats, hangings, coverings, and wrappings, and they were extensively employed in permanent house construction, and for temporary or movable shelters. A few brief extracts will serve to indicate their use in various classes of construction by the tribes first encountered by the whites.

Hariot says that the houses of the Virginia Indians—

Are made of small poles made fast at the tops in rounde forme after the maner as is vsed in many arbories in our gardens of England, in most townes couered with barks, and in some with artificiall mattes made of long rushes; from the tops of the houses downe to the ground.⁴

It would appear from a study of the numerous illustrations of houses given by this author that the mats so often referred to were identical

¹ Hist. of Travalle into Virginia: Wm. Strachey, Hakluyt Society, Lond., 1844, vol. vi, p. 73.

² Hist. Louisiana, vol. II, pp. 310, 311.

³ Op. cit., p. 185.

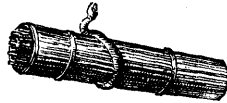
⁴ A Brief and True account of the New Found Land of Virginia, Thomas Hariot, p. 24.



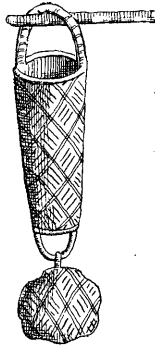
a



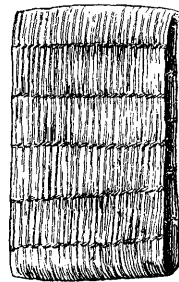
b



d



c



e

PRODUCTS OF THE TEXTILE ART.

a. Openwork fish baskets of Virginia Indians; b, manner of weaving; c, basket strainer; d, quiver of rushes; e, mat of rushes.

in construction with those still in use among the tribes of the upper Mississippi and the far west. The rushes are laid close together side by side and bound together at long intervals by cords intertwined across. In *e*, plate I, is reproduced a small portion of a mat from Harriot's engraving of the dead-house of the Virginia Indians, which shows this method of construction.

The modern use of mats of this class in house construction is known by an example which I have seen represented in a small photograph, taken about the year 1868, and representing a Chippewa village, situated somewhere in the upper Missouri valley, probably not far from Sioux City, Iowa.

Mats were used not only in and about the dwellings of the aborigines, but it was a common practice to carry them from place to place to sleep on, or for use as seats or carpeting in meetings or councils of ceremonious nature. The latter use is illustrated in a number of the early



FIG. 2.—Use of mats in an Indian council (after Lafitau).

accounts of the natives. Figure 2, copied from Lafitau, serves to indicate the common practice.

The omnipresent sweat-house of the aborigines is thus described by Smith:

Sometimes they are troubled with dropsies, swellings, aches, and such like diseases; for cure whereof they build a Stoue in the forme of a Doue-house with mats, so close that a few coales therein covered with a pot, will make the patient sweat extreamely.¹

Bartram, speaking of the Seminoles, states that the wide steps leading up to the canopied platform of the council house are "covered with carpets or mats, curiously woven of split canes dyed of various colours."²

¹ A Brief and True account of the New Found Land of Virginia, Thomas Hariot, p. 137.

² William Bartram's Travels, etc. London, 1792, p. 302.

The use of mats in the mound country in very early times is described by Joutel as follows:

Their moveables are some bullocks' hides and goat skins well cured, some mats close wove, wherewith they adorn their huts, and some earthen vessels which they are very skilful at making, and wherein they boil their flesh or roots, or sagamisé, which, as has been said, is their pottage. They have also some small baskets made of canes, serving to put in their fruit and other provisions. Their beds are made of canes, raised 2 or 3 feet above the ground, handsomely fitted with mats and bullocks' hides, or goat skins well cured, which serve them for feather beds, or quilts and blankets; and those beds are parted one from another by mats hung up.²

The mats so much used for beds and carpets and for the covering of shelters, houses, etc., were probably made of pliable materials such as rushes. De la Potherie illustrates their use as beds,¹ one end of the mat being rolled up for a pillow as shown in figure 3.

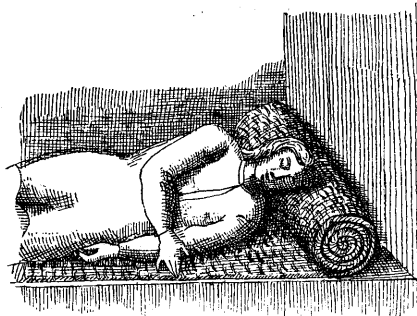


FIG. 3.—Use of mat in sleeping (after De la Potherie).

The sizes of mats were greatly varied; the smallest were sufficient for seating only a single person, but the largest were many yards in length, the width being restricted to a few feet by the conditions of construction.

Mats were woven in two or more styles. Where the strands or parts were uniform in size and rigidity they were simply interlaced, but when one strong or rigid series was to be kept in place by a pliable series, the latter were twisted about the former at the intersections as in ordinary twined weaving. The heavy series of strands or parts were held together side by side by the intertwined strands placed far apart, a common practice yet among native mat-makers. Much variety of character and appearance was given to the fabric by varying the order of the strands in intersection. It was a common practice to interweave strands of different size, shape, or color, thus producing borders and patterns of no little beauty. Du Pratz thus mentions the use of dyes by the Louisiana Indians: "The women sometimes add to this furniture of the bed mats woven of cane, dyed of 3 colours, which colours in the weaving are formed into various figures."³ This is well illustrated

¹ Hist. de l'Amér. Sept., Bacqueville de la Potherie. Paris, 1722, vol. III. Plate opposite p. 24.

² Joutel, in B. F. French's Historical Collections of Louisiana. New York, 1846, p. 149.

³ Hist. Louisiana, Du Pratz. English translation, London, 1763, vol. II, p. 227.

in the mat from a rock shelter in Tennessee, later to be described, and the Indians of the east and north practiced the same art.

Speaking of the ceremony of smoking the calumet among the Iroquois, De la Potherie says:

The ceremony is held in a large cabin in winter and in summer in an open field. The place being chosen, it is surrounded with branches to shade the company. In the center is spread a large mat of canes dyed in various colors, which serves as a carpet.¹

Frequent mention is made of the use of mats in burial. Two brief extracts will serve to illustrate this use. Butel-Dumont makes the following statement regarding tribes of the lower Mississippi:

The Paskagonlas and Billoxis do not inter their chief when he dies, but they dry the corpse with fire and smoke in such a way that it becomes a mere skeleton. After it is reduced to this state they carry it to the temple (for they have one as well as the Natchez) and put it in the place of its predecessor, which they take from the spot it occupied and place it with the bodies of the other chiefs at the bottom of the temple, where they are arranged one after the other, standing upright like statues. As for the newly deceased, he is exposed at the entrance of the temple on a sort of altar or table made of cane and covered with a fine mat very neatly worked in red and yellow squares with the skin of the canes.²

Brackenridge³ says that a few years ago, in the state of Tennessee, "Two human bodies were found in a copperas cave in a surprising state of preservation. They were first wrapped up in a kind of blanket, supposed to have been manufactured of the lint of nettles, afterwards with dressed skins, and then a mat of nearly 60 yards in length."

PLIABLE FABRICS.

DEVELOPMENT OF SPINNING AND WEAVING.

The use of simple strands or parts in textile art precedes the use of spun threads, but the one use leads very naturally up to the other. In employing rushes, stems, grasses, etc., the smaller strands were doubled to secure uniformity of size, and when a number of parts were used they were combined into one by twisting or plaiting. In time the advantage in strength and pliability of twisted strands came to be recognized, and this led to the general utilization of fibrous substances, and finally to the manufacture of suitable fibers by manipulating the bark of trees and plants. Spinning was probably not devised until the weaver's art had made considerable advance, but its invention opened a new and broad field and led to the development of a magnificent industry. Semi-rigid fabrics served for a wide range of uses, as already described, but soft and pliable cloths for personal use and ornament were made possible only by the introduction of spinning.

On the arrival of the whites the native art was well advanced; thread, cordage, and even ropes of considerable weight were made with

¹ Hist. de l'Amér. Sept., vol. II, p. 17.

² Mem. sur la Louisiane, vol. I, pp. 240-241.

³ Views of Louisiana, H. M. Brackenridge, 1817, p. 178.

a degree of uniformity and refinement that surprises us. The finest threads with which I am acquainted are perhaps not as fine as our no. 10 ordinary spool cotton thread, but we are not justified in assuming that more refined work was not done. What we have is only that which happened to be preserved through burial with the dead or by impression on the plastic surface of clay used in the arts.

The materials employed for spinning by the aborigines were greatly diversified. Through historical as well as through purely archeologic sources we learn that both vegetal and animal filaments and fibers were freely used. The inner bark of the mulberry was a favorite material, but other fibrous barks were utilized. Wild hemp, nettles, grasses, and other like growths furnished much of the finer fibers. The hackling was accomplished by means of the simplest devices, such as pounding with hammers or sticks. The hair and sinews of animals were frequently spun into threads and woven into cloth.

A few citations from early authors will indicate sufficiently for present purposes the methods of spinning and weaving employed by tribes which, if not in all cases mound-builders, were at least the neighbors and relatives of the mound-building Indians.

CLOTHS.

The character of the woven articles is to a great extent indicated in the extracts which follow. It evidently was not customary to weave "piece" goods, but rather to make separate units of costumes, furnishing, etc., for use without cutting, fitting, and sewing. Each piece was practically complete when it came from the frame or loom. For clothing and personal use there were mantles, shawls, and cloaks to be worn over one or both shoulders or about the body as described by Hariot, Smith, the Knight of Elvas, Du Pratz, and others; there were skirts fastened about the waist and drawn with an inserted cord or looped over a belt; there were belts, sashes, garters, shot pouches, and bags. For household use there were hangings, covers for various articles, and bedclothing; there were nets for fishing and cords for angling. Some of these extracts describe the whole group of activities included in the practice of the art as well as the use of the products. I have considered it preferable to quote as a unit all that is said on the subject by each author, giving cross reference, when necessary, in discussing particular topics under other headings.

Weaving among the Indians of New Jersey, Pennsylvania, New York, and the northeast is described by Kalm, De la Potherie, and others. The following extracts are from Kalm, and will serve to indicate the status of the art over a wide area:

Apocynum cannabinum was by the Swedes called Hemp of the Indians; and grew plentifully in old corn grounds, in woods on hills, and in high glades. The Swedes had given it the name of Indian hemp, because the Indians formerly, and even now, apply it to the same purposes as the Europeans do hemp; for the stalk may be divided into filaments, and is easily prepared. When the Indians were yet settled among

the Swedes, in Pennsylvania and New Jersey, they made ropes of this apocynum, which the Swedes bought, and employed them as bridles, and for nets. These ropes were stronger, and kept longer in water, than such as were made of common hemp. The Swedes commonly got fourteen yards of these ropes for one piece of bread. Many of the Europeans still buy such ropes, because they last so well. The Indians likewise make several other stuffs of their hemp. On my journey through the country of the Iroquese, I saw the women employed in manufacturing this hemp. They made use neither of spinning wheels nor distaffs, but rolled the filaments upon their bare thighs, and made thread and strings of them, which they dyed red, yellow, black, etc., and afterwards worked them into stuffs, with a great deal of ingenuity. The plant is perennial, which renders the annual planting of it altogether unnecessary. Out of the root and stalk of this plant, when it is fresh, comes a white milky juice, which is somewhat poisonous. Sometimes the fishing tackle of the Indians consists entirely of this hemp. The Europeans make no use of it, that I know of.¹

In another place this author describes the weaving of bark fibers:

The *Dirca palustris*, or Mouse-wood, is a little shrub which grows on hills, towards swamps and marshes, and was now in full blossom. The English in Albany call it Leather-wood, because its bark is as tough as leather. The French in Canada call it Bois de Plomb, or Leaden-wood because the wood itself is as soft and as tough as lead. The bark of this shrub was made use of for ropes, baskets, etc., by the Indians, whilst they lived among the Swedes. And it is really very fit for that purpose, on account of its remarkable strength and toughness, which is equal to that of the Lime-tree bark. The English and the Dutch in many parts of North America, and the French in Canada, employ this bark in all cases where we make use of Lime-tree bark in Europe. The tree itself is very tough, and you cannot easily separate its branches without the help of a knife: some people employ the twigs for rods.²

De la Potherie, who wrote at an earlier date than Kalm, says—

The women spin on their knees, twisting the thread with the palm of the hand; they make this thread, which should rather be called twine (fisselle), into little balls.

Hariot, John Smith, and Adair bear witness to the primitive practice of the art in Virginia and the Carolinas. Smith uses the following words:

Betwixt their hands and thighs, their women vse to spin, the barks of trees, Deere sinewes, or a kinde of grasse they call Pemmenaw, of these they make a thread very even and readily. This thread serveth for many vses. As about their housing apparell, as also they make nets for fishing, for the quantitie as formally braded as ours. They make also with it lines for angles.⁴

The Cherokees and other Indians with whom Adair came in contact preserved in their purity many of the ancient practises. The following extracts are, therefore, of much importance to the historian of the textile art in America:

Formerly, the Indians made very handsome carpets. They have a wild hemp that grows about six feet high, in open, rich, level lands, and which usually ripens in July: it is plenty on our frontier settlements. When it is fit for use, they pull, steep, peel, and beat it; and the old women spin it off the distaffs, with wooden machines, having some clay on the middle of them, to hasten the motion. When the

¹ Travels in North America, Peter Kalm. English translation, London, 1771, vol. II, pp. 131, 132.

² Ibid., pp. 148-149.

³ Hist. de l'Amérique, Sept., vol. III, p. 34.

⁴ Hist. Virginia. Richmond, 1819, pp. 132-133.

coarse thread is prepared, they put it into a frame about six feet square, and instead of a shuttle, they thrust through the thread with a long cane, having a large string through the web, which they shift at every second course of the thread. When they have thus finished their arduous labour, they paint each side of the carpet with such figures, of various colours, as their fruitful imaginations devise; particularly the images of those birds and beasts they are acquainted with; and likewise of themselves, acting in their social, and martial stations. There is that due proportion and so much wild variety in the design, that would really strike a curious eye with pleasure and admiration. J. W—t, Esq., a most skilful linguist in the Muskohge dialect, assures me, that time out of mind they passed the woof with a shuttle; and they have a couple of threddles, which they move with the hand so as to enable them to make good dispatch, something after our manner of weaving. This is sufficiently confirmed by their method of working broad garters, sashes, shot pouches, broad belts, and the like, which are decorated all over with beautiful stripes and chequers.

The women are the chief, if not the only, manufacturers; the men judge that if they performed that office, it would exceedingly depreciate them. * * * In the winter season, the women gather buffalo's hair, a sort of coarse, brown, curled wool; and having spun it as fine as they can, and properly doubled it, they put small beads of different colours upon the yarn, as they work it, the figures they work in those small webs, are generally uniform, but sometimes they diversify them on both sides. The Choktah weave shot-pouches which have raised work inside and outside. They likewise make turkey feather blankets with the long feathers of the neck and breast of that large fowl—they twist the inner end of the feathers very fast into a strong double thread of hemp, or the inner bark of the mulberry tree, of the size and strength of coarse twine, as the fibres are sufficiently fine, and they work it in manner of fine netting. As the feathers are long and glittering, this sort of blankets is not only very warm, but pleasing to the eye.¹

The extent and importance of the art among the Gulf tribes are indicated by a number of early observers. The Knight of Elvas speaks of the use of blankets by the Indians, 83 degrees west longitude, and 32 degrees north latitude, or near the central portion of Georgia:

These are like shawls, some of them are made from the inner barks of trees, and others from a grass resembling nettle, which, by threading out, becomes like flax. The women use them for covering, wearing one about the body from the waist downward, and another over the shoulder, with the right arm left free, after the manner of the gypsies: the men wear but one, which they carry over their shoulders in the same way, the loins being covered with a bragueiro of deer-skin, after the fashion of the woolen breech-cloth that was once the custom of Spain. The skins are well dressed, the color being given to them that is wished, and in such perfection, that, when of vermilion, they look like very fine red broadcloth, and when black, the sort in use for shoes, they are of the purest. The same hues are given to blankets.²

At Cutifachiqui similar fabrics were observed:

In the barbacoas were large quantities of clothing, shawls of thread, made from the barks of trees and others of feathers, white gray, vermilion and yellow, rich and proper for winter.³

The frequent mention of fabrics used by the Indians for shawls, mantles, etc., makes it plain that such were in very general use when

¹ History of the American Indians. London, 1775, pp. 422, 423.

² Narratives of the Career of Hernando de Soto in the Conquest of Florida as told by a Knight of Elvas. Translated by Buckingham Smith. New York, 1866, p. 52.

³ Ibid., p. 63.

the town of Pacaha was captured, and the Spaniards clothed themselves with mantles, cassocks, and gowns made from these native garments. Everywhere woven shawls were a principal feature of the propitiatory gifts of the natives to the Spaniards.

The extent of this manufacture of hempen garments by the Indians of the lower Mississippi is well indicated in the account of the adventures of the expedition on the western side of the Mississippi at Aminoga. The Spaniards undertook the construction of brigantines by means of which they hoped to descend the Mississippi and to pass along the gulf coast to Mexico. A demand was made upon the natives for shawls to be used in the manufacture of sails, and great numbers were brought. Native hemp and the ravelings of shawls were used for calking the boats.¹ What a novel sight must have been this first European fleet on the great river, consisting of five brigantines impelled by sails of native manufacture!

It is worthy of note that in this region (of the lower Mississippi) the Spaniards saw shawls of cotton, brought, it was said, from the west—probably the Pueblo country, as they were accompanied by objects that from the description may have been ornaments of turquois.²

The following is from Du Pratz:

Many of the women wear cloaks of the bark of the mulberry-tree, or of the feathers of swans, turkies, or India ducks. The bark they take from young mulberry shoots that rise from the roots of trees that have been cut down; after it is dried in the sun they beat it to make all the woody part fall off, and they give the threads that remain a second beating, after which they bleach them by exposing them to the dew. When they are well whitened they spin them about the coarseness of pack-thread, and weave them in the following manner: they plant two stakes in the ground about a yard and a half asunder, and having stretched a cord from the one to the other, they fasten their threads of bark double to this cord, and then interweave them in a curious manner into a cloak of about a yard square with a wrought border round the edges. * * * The girls at the age of eight or ten put on a little petticoat, which is a kind of fringe made of threads of mulberry bark:³

This is illustrated farther on.

The manner of weaving in the middle and upper Mississippi country is described by Hunter, who, speaking of the Osage Indians and their neighbors, says:

The hair of the buffalo and other animals is sometimes manufactured into blankets; the hair is first twisted by hand, and wound into balls. The warp is then laid of a length to answer the size of the intended blanket, crossed by three small smooth rods alternately beneath the threads, and secured at each end to stronger rods supported on forks, at a short distance above the ground. Thus prepared, the wool is filled in, thread by thread, and pressed closely together, by means of a long flattened wooden needle. When the weaving is finished, the ends of the warp and wool are

¹Narratives of the Career of Hernando de Soto in the Conquest of Florida as told by a Knight of Elvas. Translated by Buckingham Smith. New York, 1866, p. 160-70.

²Ibid., p. 164.

³Hist. Louisiana, op. cit., vol. II, p. 23.

tied into knots, and the blanket is ready for use. In the same manner they construct mats from flags and rushes, on which, particularly in warm weather, they sleep and sit.¹

Fabrics of various kinds were employed in burial, although not generally made for that purpose. The wrappings of dead bodies were often very elaborate, and the consignment of these to tombs and graves where the conditions were favorable to preservation has kept them for long periods in a most perfect state. By exhumation we have obtained most of our information on this subject. Our knowledge is, however, greatly increased by descriptions of such burial customs as were witnessed in early times. Extracts already given refer to the use of fabrics in mortuary customs. Many others could be cited but the following seems sufficient:

After the dead person has lain a day and a night in one of their hurdles of canes, commonly in some out house made for that purpose, those that officiate about the funeral go into the town, and the first young men they meet withal, that have blankets or match coats on, whom they think fit for their turn, they strip them from their backs, who suffer them so to do without any resistance. In these they wrap the dead bodies, and cover them with two or three mats which the Indians make of rushes or cane; and, last of all, they have a long web of woven reeds or hollow canes, which is the coffin of the Indians, and is brought round several times and tied fast at both ends, which, indeed, looks very decent and well. Then the corps is brought out of the house into the orchard of peach trees, where another hurdle is made to receive it, about which comes all the relations and nation that the dead person belonged to, besides several from other nations in alliance with them; all which sit down on the ground upon mats spread there for that purpose.²

NETS.

The manufacture and use of nets by natives in various parts of the country are recorded by early writers, some of whom have already been quoted. Speaking of the Iroquois De la Potherie says:

The old men and those who can not or do not wish to go to war or the chase, make nets and are fishers. This is a plebian trade among them. Their nets are made of thread of nettles or of white wood, the bark of which they make into thread by means of lye which renders it strong and pliable.³

In another place the same author says:

The Sauteurs, who are beyond the Missisakis, take their name from a Saut (water-fall) which flows from Lake Superior into Lake Huron by a great fall whose rapids are extremely violent. These people are very skillful in fishery by which they obtain white fish as large as salmons. They cross all these terrible rapids into which they cast a net like a sack, a little more than half an ell in width by one in depth attached to a forked stick about 15 feet long.⁴

A novel use of nets is recorded by this author as follows:

For taking pigeons in summer in nets, they make a broad path in the woods and attach to two trees, one on each side, a large net made in the shape of a sack well opened.⁵

¹Memoirs of a captive among the Indians of North America, John D. Hunter. London, 1823, pp. 289-290.

²Hist. of Carolina, John Lawson. London, 1714; reprint, Raleigh, N. C., 1860, pp. 293-294.

³Histoire del'Amérique Septentrionale, Bacqueville de la Potherie, vol. III, pp. 33-34.

⁴Ibid., vol. II, pp. 60-61.

⁵Ibid., vol. II, p. 80.

Du Pratz, speaking of the fishing nets of the Louisiana Indians, states that they "are meshed like ours and made of lime-tree bark; the large fish are shot with arrows."¹

FEATHER WORK.

Feather work was one of the most remarkable arts of the natives of Mexico and other southern countries at the period of the conquest. The feathers were sometimes woven in with the woof and sometimes applied to a network base after the fashion of embroidery. Rarely, it may be imagined, were either spun or unspun fabrics woven of feathers alone. Very pleasing specimens of ancient Peruvian feather work are recovered from graves at Ancon and elsewhere, and the method of inserting the feathers is illustrated in the Sixth Annual Report of the Bureau of Ethnology.² In few instances has such work been recovered from mounds or burial places, but there can be no doubt that the mound-building tribes were experts in this art. Frequent mention is made of the feather work of the natives by the earliest explorers of the Mississippi valley, and the character of the work may be gathered from the extracts already given and from those which follow.

John Smith, speaking of the feather work of the Virginia Indians, says:

We haue seene some vse mantels made of Turky feathers, so prettily wrought and woven with threads that nothing could be discerned but the feathers.³

Lawson mentions a "doctor" of the Santee nation who "was warmly and neatly clad with a match coat, made of turkies feathers, which makes a pretty show, seeming as if it was a garment of the deepest silk shag."⁴

In another place the same author says:

Their feather match coats are very pretty, especially some of them, which are made extraordinary charming, containing several pretty figures wrought in feathers, making them seem like a fine flower silk shag; and when new and fresh, they become a bed very well, instead of a quilt. Some of another sort are made of hair, raccoon, beaver, or squirrel skins, which are very warm. Others again are made of the green part of the skin of a mallard's head, which they sew perfectly well together, their thread being either the sinews of a deer divided very small, or silk grass. When these are finished, they look very finely, though they must needs be very troublesome to make.⁵

Du Pratz thus describes the art in Louisiana:

If the women know how to do this kind of work they make mantles either of feathers or woven of the bark of the mulberry tree. We will describe their method of doing this. The feather mantles are made on a frame similar to that on which the peruke makers work hair; they spread the feathers in the same manner and fasten them on old fish nets or old mantles of mulberry bark. They are placed, spread in this manner, one over the other and on both sides; for this purpose small turkey feathers are used; women who have feathers of swans or India ducks, which are white, make these feather mantles for women of high rank.⁶

¹ Histoire de la Louisiane, vol. II, pp. 179-180.

² The Textile Art, W. H. Holmes, p. 231.

³ Hist. Virginia, John Smith. Richmond, 1819, vol. I, p. 130.

⁴ Hist. Carolina, John Lawson. Raleigh, 1860, p. 37.

⁵ Ibid., pp. 311-312.

⁶ Hist. de la Louisiane, vol. II, pp. 191-192.

Butel-Dumont describes feather work of the natives of Louisiana briefly as follows:

They [the women] also, without a spinning wheel or distaff, spin the hair or wool of cattle of which they make garters and ribands; and with the thread which they obtain from lime-tree bark, they make a species of mantle, which they cover with the finest swan's feathers fastened one by one to the material. A long task indeed, but they do not count this trouble and time when it concerns their satisfaction.¹

EMBROIDERY.

The use of beads, quills, and other articles to beautify the surfaces of fabrics and skins was as common, no doubt, with the ancient as with the modern native inhabitants of the Mississippi valley. In discoursing on the dress of native women of Louisiana Butel-Dumont says that the young girls wear—

* * * a sort of network attached to the waist and terminating in a point, * * * both sides of which are ornamented with ribbons of thread made from lime-tree fiber, also made into network. From the waist to the knees hang several cords of the same thread, to the ends of which are attached claws of birds of prey, such as eaglets, crows, etc., so that when the girls walk these make a rattling noise which is highly pleasing to them. This kind of ornament does not illy resemble those nets which we use to cover our horses to protect them from flies.²

From Du Pratz we have the following:

The women make also designs in embroidery with the skin of the porcupine; they remove for this purpose the skin of this animal, which is white and black; they split it very fine to use as embroidery thread, dye a part of the white skin a red color, another part yellow, and a third part is left white; they usually work on black skin, and dye the black a reddish brown; but if they work on bark, the black [threads] remain the same. Their designs are very similar to some of those found in Gothic architecture; they are composed of straight lines which form right angles at their conjunction, which is commonly called the corner of a square. They also work similar designs on mantles and coverings which they make with the bark of the mulberry tree.³

John Smith testifies to the same practices in Virginia as shown in the following lines:

For their apparell, they are sometimes covered with the skinned of wilde beasts, which in Winter are dressed with the hayre, but in Sommer without. The better sort vse large mantels of Deare skins, not much differing in fashion from the Irish mantels. Some imbroidered with white beads, some with Copper, other painted after their manner. * * * We haue seene some vse mantels made of Turkey feathers, so prettily wrought and woven with threads that nothing could be discerned but the feathers.⁴

FOSSIL FABRICS.

MODES OF PRESERVATION.

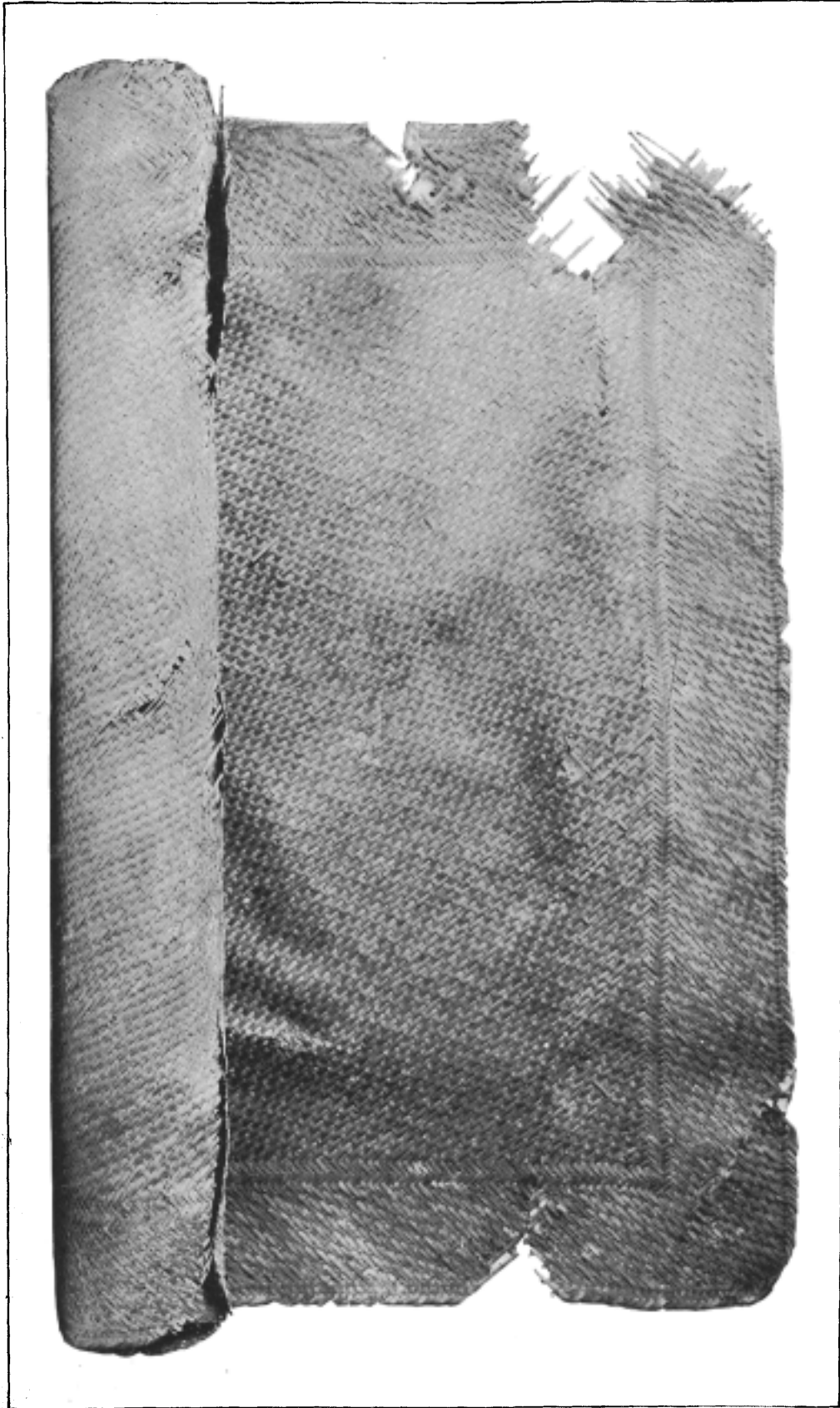
Contenting myself with the preceding references to the practice of the arts of spinning and weaving in the various regions of the country,

¹ Memoire sur la Louisiane. Paris, 1753, vol. 1, pp. 154-155.

² Ibid., vol. 1, pp. 138-139.

³ Histoire de la Louisiane, vol. 11, pp. 184-185.

⁴ Hist. Virginia. Richmond, 1819, vol. 1, pp. 129-130.



MAT OF SPLIT CANE.

I pass on to an examination of the archeologic material which includes traces or remnants of the weaver's work from all sections of the country. As already mentioned, there are a number of ways in which textile articles or data relating to them may be preserved in such manner as to permit examination and study.

Through charring by the use of fire in burial rites, and by contact with copper or preservative salts in burial caves, numerous pieces of cloth and parts of costumes have come into our possession. One of the most fertile sources of information has but recently been made available. The ancient potter employed woven fabrics in handling, finishing, and decorating pottery. From mounds, graves, and dwelling sites, all over the country, vases and sherds are found covered with impressions of these fabrics, and so well preserved that by taking casts in clay or wax entirely satisfactory restorations are made. Something may be learned from the recovery of implements of spinning and weaving, but up to this time the only relics secured are a few rather rude spindle whorls.

I shall present in the following paragraphs such portions of the available data as seem calculated to illustrate briefly and clearly the nature of the ancient art.

FABRICS FROM CAVES AND SHELTERS.

At an early date in the history of the country reports began to find their way into print relating to the discovery of mortuary fabrics in caverns and shelters. Extracts from some of these publications may be given.

From the writing of John Haywood historian of Tennessee, we have the following:

In the spring of the year 1811, was found in a copperas cave in Warren county, in West Tennessee, about 15 miles southwest from Sparta, and 20 from McMinnville, the bodies of two human beings, which had been covered by the dirt or ore from which copperas was made. One of these persons was a male, the other a female. They were interred in baskets, made of cane, curiously wrought, and evidencing great mechanic skill. They were both dislocated at the hip joint, and were placed erect in the baskets, with a covering made of cane to fit the baskets in which they were placed. The flesh of these persons was entire and undecayed, of a brown dryish colour, produced by time, the flesh having adhered closely to the bones and sinews. Around the female, next her body, was placed a well dressed deer skin. Next to this was placed a rug, very curiously wrought, of the bark of a tree and feathers. The bark seemed to have been formed of small strands well twisted. Around each of these strands, feathers were rolled, and the whole woven into a cloth of firm texture, after the manner of our common coarse fabrics. This rug was about three feet wide, and between six and seven feet in length. The whole of the ligaments thus framed of bark were completely covered with feathers, forming a body of about one eighth of an inch in thickness, the feathers extending about one quarter of an inch in length from the strand to which they were confined. The appearance was highly diversified by green, blue, yellow and black, presenting different shades of colour when reflected upon by the light in different positions. The next covering was an undressed deer skin, around which was rolled, in good order, a plain shroud manufactured after the same order as the one ornamented with feathers. This article resembled very much in its texture the bags generally used for the purpose of hold-

ing coffee exported from Havanna to the United States. The female had in her hand a fan formed of the tail feathers of a turkey. The points of these feathers were curiously bound by a buckskin string, well dressed, and were thus closely bound for about one inch from the points. About three inches from the point they were again bound, by another deer skin string, in such a manner that the fan might be closed and expanded at pleasure. * * *

The cave in which they were found, abounded in nitre, copperas, alum, and salts. The whole of this covering, with the baskets, was perfectly sound, without any marks of decay.¹

There was also a scoop net made of bark thread; a mockasin made of the like materials; a mat of the same materials, enveloping human bones, were found in saltpetre dirt, six feet below the surface. The net and other things mouldered on being exposed to the sun.²

In the year 1815 a remarkably interesting set of mortuary fabrics was recovered from a saltpetre cave near Glasgow, Kentucky. A letter from Samuel L. Mitchell, published by the American Antiquarian Society, contains the following description of the condition of the human remains and of the nature of its coverings:

The outer envelope of the body is a deer skin, probably dried in the usual way, and perhaps softened before its application, by rubbing. The next covering is a deer skin, whose hair had been cut away by a sharp instrument, resembling a hatter's knife. The remnant of the hair, and the gashes in the skin, nearly resemble the sheared pelt of beaver. The next wrapper of cloth is made of twine doubled and twisted. But the thread does not appear to have been formed by the wheel, nor the web by the loom. The warp and filling seemed to have been crossed and knotted by an operation like that of the fabricks of the northwest coast, and of the Sandwich islands. * * * The innermost tegument is a mantle of cloth like the preceding; but furnished with large brown feathers, arranged and fastened with great art, so as to be capable of guarding the living wearer from wet and cold. The plumage is distinct and entire, and the whole bears a near similitude to the feathery cloaks now worn by the nations of the northwestern coast of America.³

The Bureau of Ethnology had the good fortune to secure recently a number of representative pieces of burial fabrics of the classes mentioned in the preceding extracts, and somewhat detailed descriptions of these will sufficiently illustrate the art as practiced by the early inhabitants of the middle portions of the country.

The relics which have come into the possession of the Bureau were obtained in 1885 by Mr. A. J. McGill from a rock shelter on "Clifty" or Cliff Creek, Morgan county, Tennessee. Mr. J. W. Emmert, through whom they were procured, reports that they were found in a grave 3½ feet below the surface and in earth strongly charged with niter and perhaps other preservative salts. The more pliable cloths, together with skeins of vegetal fiber, a dog's skull, some bone tools, and portions of human bones and hair, were rolled up in a large split-cane mat. The grave was situated about as shown in the accompanying section (figure 4). A shelf some 20 feet in width, with depressed floor, occurs

¹ Nat. and Abor. Hist. of Tenn., John Haywood. Nashville, 1823, pp. 163-165.

² Ibid., p. 62.

³ Trans. and Coll. Amer. Antiq. Soc. Worcester, 1820, vol. 1, pp. 318, 319.



MANTLE OR SKIRT OF LIGHT-COLORED STUFF.

about midway between the creek bed and the slightly overhanging ledge above, the whole height being estimated at 300 feet.

The mat, a very excellent piece of work, is 6 feet 6 inches by 3 feet 4 inches. By reference to plate II it will be seen that it is neatly and artistically made and quite well preserved. The strands are from one-third to three-sixteenths of an inch in width and are even on the edges and smoothly dressed on the back. The hard, glistening outer surface of the cane is light in color and the dressed surface is dark naturally or artificially, and the weaving is so managed that a tasteful border and a checkered effect are produced by alternately exposing the light and dark sides. This piece probably very fairly represents the split-cane work of the whole cane-producing region. A similar piece of work from the gulf coast is illustrated in figure 12.

Inclosed with the mat were three pieces of fabric of especial interest, all pertaining, no doubt, to the costume of the person buried. The piece of cloth shown in plate III probably served as a mantle or skirt and is 46 inches long by 24 wide. It is of coarse, pliable, yellowish-gray stuff, woven in the twined style so common all over America. The fiber was doubtless derived from the native hemp, and the strands are neatly twisted and about the size of average wrapping cord. The warp strands, 24 inches in length, extend across the piece; and on the left margin, as seen in the illustration, they are looped for the passage of a gathering string, while on the left they have been cut to form a short fringe. The opposing series (the woof strands) have been passed through, with the length of the cloth in pairs, which are twisted half around at each intersection, inclosing the web strands in alternating pairs as shown in detail in figure 5. These twined strands are placed three-eighths of an inch apart, the web being so close that the fabric is but slightly open. The twined strands are carried back and forth in groups of four as shown at the ends in the plate, and are knotted as illustrated in the figure.

A piece of fabric of much interest is presented in plate IV. It may be an unfinished garment of the class shown in the preceding illustration, but it is more likely a complete skirt, the narrow woven band with its gathering string serving as a belt and the long fringe being the skirt. The length at the gathered edge is 34 inches, and the pendant length is 20 inches. The material and the weaving are the same as in the piece of cloth already described, although the work is somewhat coarser.

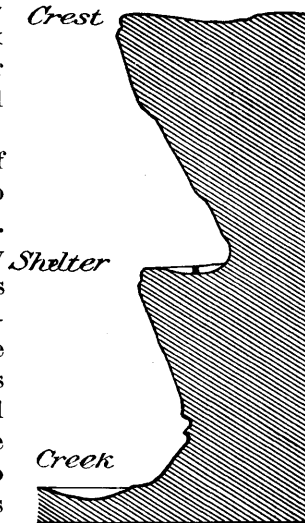


FIG. 4.—Section of cliff showing position of grave shelter.

A detailed study of the border is given in figure 6, the vertical series of threads being pulled apart to show more distinctly the manner of combination.

The two pieces just described would seem to correspond pretty closely with the garments formerly worn by women and girls of the lower Mis-

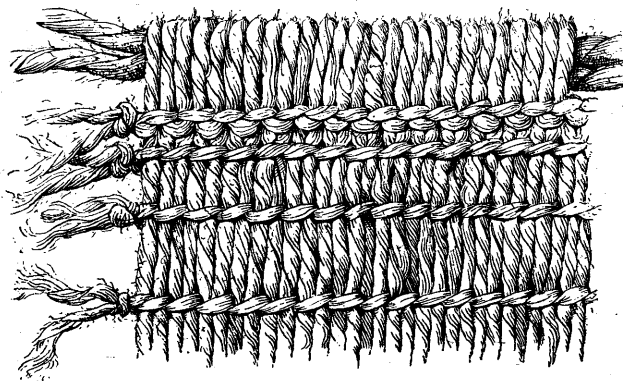


FIG. 5.—Portion of mantle showing manner of weaving.

issippi country, as illustrated by Du Pratz in a plate facing page 310, volume II, of his *Histoire de la Louisiane*. His plate is reproduced in figure 7. The following are translations of his descriptions of the garments delineated:

The women in warm weather have only a half ell of limbourg, with which they are covered; they fold this cloth around the body and are well clothed from the

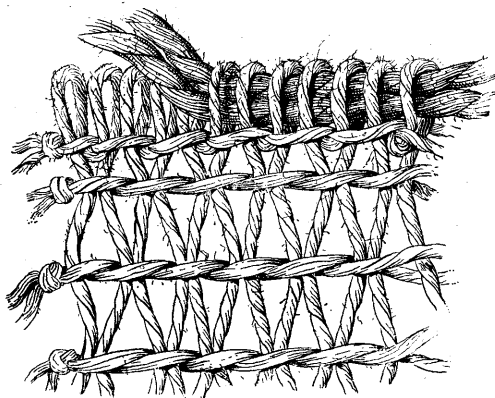


FIG. 6.—Analysis of the weaving of fringed skirt. Threads natural size.

waist to the knees; when they have no limbourg they use in the same way a deer skin. * * * 1.

When the girls reach the age of eight or nine years they are clothed from the waist to the ankles with a fringe of threads of mulberry bark, fastened to a band



FRINGED SKIRT.

which is attached below the abdomen; there is also another band above the abdomen which meets the first at the back; between the two the body is covered in front by a network which is held there by the bands, and at the back there are merely two large cords, each having a tassel.¹

Of equal interest to the preceding is the badly frayed bag shown in plate v. It is 20 inches in length and 13 inches in depth. The style



FIG. 7.—Former costumes of woman and girl in Louisiana (after Du Pratz).

of weaving is the same as that of the two preceding examples; a peculiar open effect is produced by the rotting out of certain strands of dark color, which were arranged in pairs alternating with eight lighter threads. The construction of the border or rim of this bag is quite remarkable. As shown in figure 8, the upper ends of the vertical

¹Histoire de la Louisiane, Du Pratz. Paris, 1758, vol. II, p. 193.

strands are gathered in slightly twisted groups of four and carried up free for about two inches, when they are brought together and plaited with remarkable neatness into a string border. As if to convey to the curious investigator of modern times a complete knowledge of their weavers' art, the friends of the dead deposited with the body not only the fabrics worn during life but a number of skeins of the fiber from which the fabrics were probably made. This fiber has been identified as that of the *Cannabis sativa*, or wild hemp. Two of the skeins are shown in plate v.

The presence of these unworked materials makes it probable that the individual burned was a female, for the distaff and the loom have been and are universal emblems of the practical enslavement of that sex.

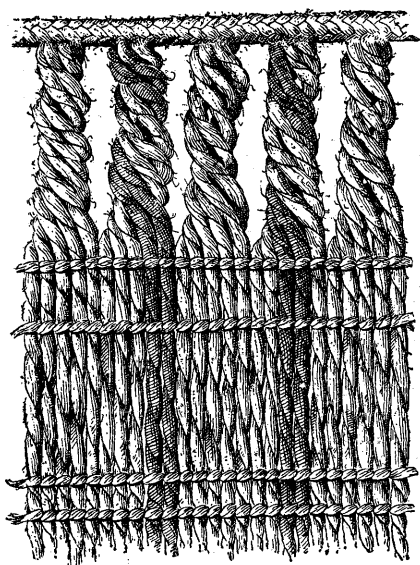
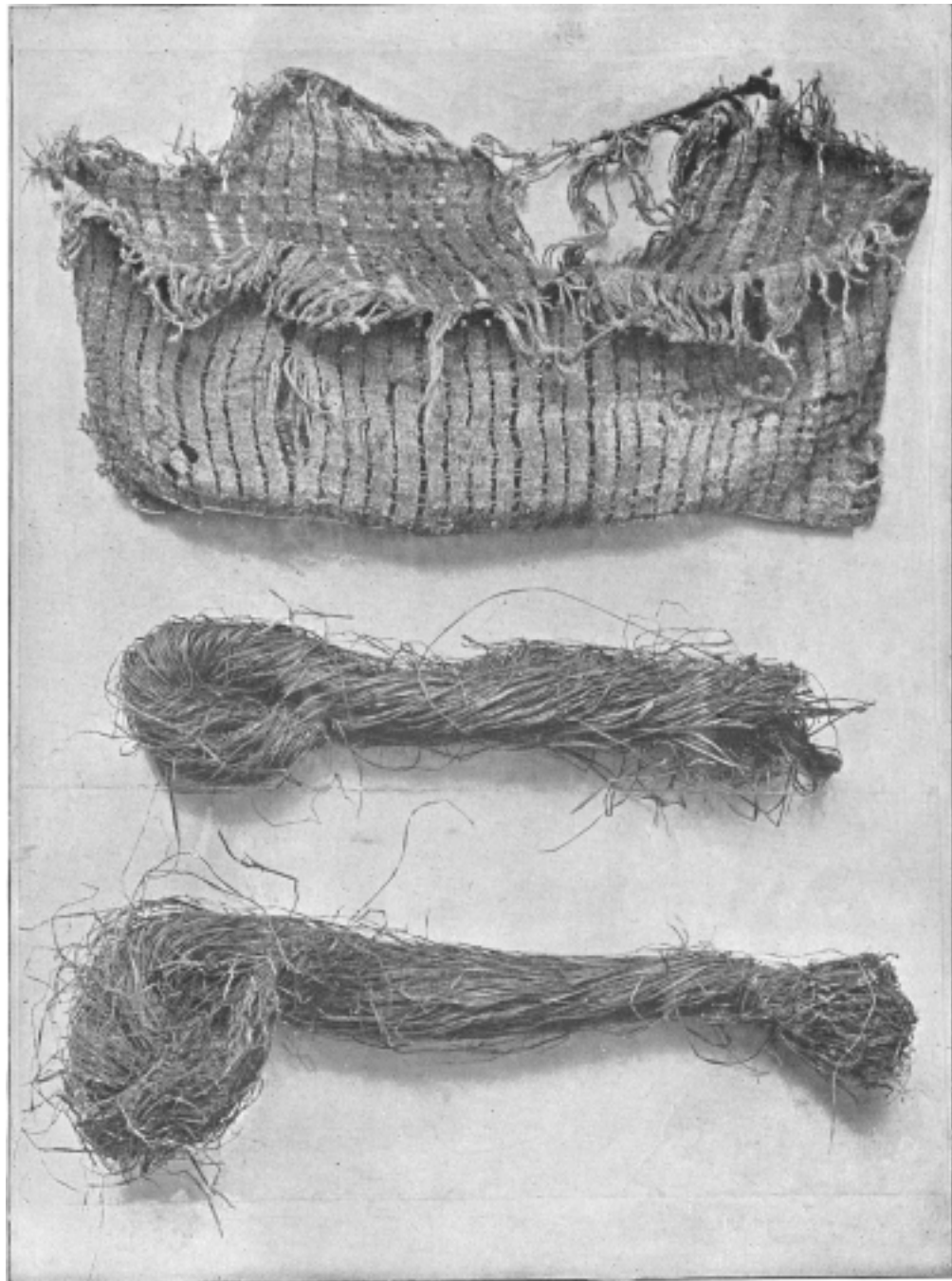


FIG. 8.—Border of bag.

woof are of bast. There is a border of open work bound by a plaited band as seen in figure 8, and the manner of weaving is identical with that shown in that figure. The second bag is 22 inches long and 16 deep. The web is of bast, the woof of hemp. The smaller specimen is 14 by 9 inches and is made exclusively of hemp, and is thus much more pliable than the others. The small remnant of a larger bag shows a web of heavy, plaited bast strands resembling the specimen impressed on pottery and shown in *a*, plate IX. Besides these pieces there is a bit of heavy, compactly woven stuff, resembling the broad part of a sling, which shows traces of a geometric pattern, and a piece of flattish rope 12 feet long and 12 inches broad plaited very neatly of hempen twine.

Among a number of cave relics from Kentucky donated to the Museum by Mr. Francis Klett, are some textile articles. Among these is a sandal or moccasin woven or plaited very neatly of bast. It is shown in

A small but very instructive group of burial fabrics is preserved in the National Museum. These specimens were found with a desiccated body in 1877 in a cave 8 miles from Mammoth cave, Kentucky. They consist of a number of bags and other articles woven in the usual styles of bast and hemp. Nearly all of the articles are worn or fragmentary, but the fiber is wonderfully preserved and the original colors are as fresh as if the burial had taken place but yesterday. There are three wide-mouthed, shallow bags, resembling the one from Tennessee illustrated in plate v. The largest is 34 inches long when closed, and 15 inches deep. Both web and



FRAYED BAG AND SKEINS OF HEMP FIBER.

figure 9. Prof. F. W. Putnam and other explorers of these caves have obtained numerous textile articles of interest.

CHARRED REMAINS OF FABRICS FROM MOUNDS.

That the well-preserved fabrics just illustrated represent fairly the textile work of the mound-builders is practically demonstrated by the evidence furnished by the mounds themselves. From hundreds of sources come the same story; and it is not necessary here to enter into any elaborate discussion of the subject or to multiply illustrations. I present in plates VI and VII specimens of mound fabrics which, since they were burned with the dead, undoubtedly formed part of the clothing of the living or were wrappings of articles deposited with the bodies. These coarse cloths may be considered as fairly representing the weaving of the mound-builders. There are among them some finer examples of weaving than those obtained from the caves and shelters of Tennessee and Kentucky, but there is nothing specifically different in material or methods of combination, and there is nothing what-

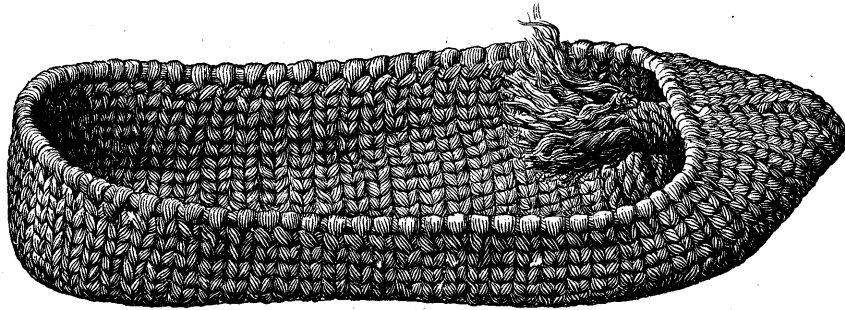


FIG. 9.—Sandal or moccasin from a Kentucky cave.

ever to suggest a higher stage of culture than that of the historic Indian.

The fiber is quite fine and is more probably of hemp than of the bark of trees. The strands are generally well twisted and even, the twist being in most cases to the right, or as if twisted on the thigh with a downward movement of the right-hand, the thread being held in the left. As in the case of cave fabrics as well as the work of the modern peoples of the region, the weaving is nearly all in the twined style, of which there are two varieties; one in which each strand of the web is in turn inclosed simply by the woof twisted in pairs, and the other in which alternate pairs of the web strands are inclosed by the twined pairs of the woof. Cloths woven in the first method are often quite close, as the woof threads are readily pressed or pounded down on one another entirely hiding the web strands, giving a fabric of much compactness and strength. The second variety is usually some-

what open and net-like, and very often the pairs of twined wool strands are placed far apart, as shown in several of the illustrations given in this paper. The finest mesh observed is in the first of these styles, and includes about twenty intersections to the inch.

From the Ohio mounds also there are examples of plain as well as of diagonal interlacing. In appearance the cloth is much the same as that done in the twined style. In a few cases a border or selvage of very simple construction is seen. A looped margin for the passage of a gathering cord is common.

In plate VI a number of bits of charred cloth are shown; being quite black the camera fails to give them with clearness, but the drawings presented in plate VII serve to make clear all details of the strands and their combination. The charring has taken place in cremating the dead, in the burning of offerings or through accidental subjection to heat. In some cases very considerable portions of the cloth are found, but it is usually in a very fragile state and little has been preserved.

Specimens preserved in this way are obtained from a large area, including the Ohio and a large portion of the Mississippi valleys.

FABRICS PRESERVED BY CONTACT WITH COPPER.

The preservation of woven textures through association in burials with implements or other articles of copper is of common occurrence. Our museums contain many examples of copper celts retaining on their

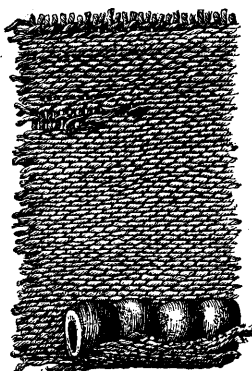
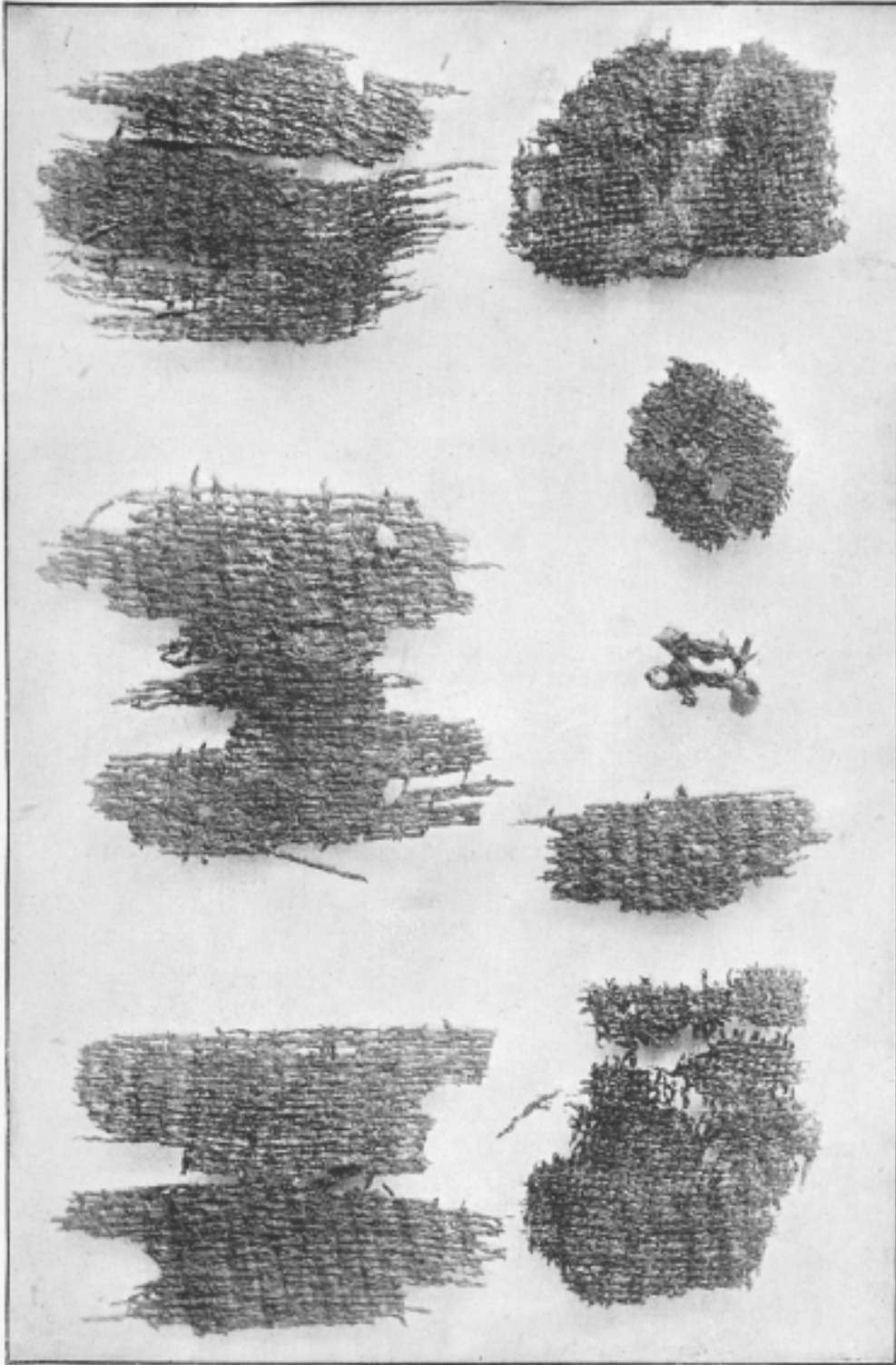


FIG. 10.—Fine, closely woven cloth preserved by contact with copper beads.

surfaces portions of cloth so well preserved that the fibers retain much of their original strength as well as color. In plate VIII three examples are shown from a mound near Davenport, Iowa, and a fourth from a mound near Savannah, Georgia. The fabrics on *a* and *b* are of the twined style and, although occurring 800 miles apart, are identical in every respect. The cloth on *c* is very closely woven and has the appearance of simple interlacing. The finest piece of work that has come to my notice is a bit of cloth from a mound in Pike county, Ohio. It has from thirty-five to forty strands to the inch, and looks much like coarse twilled goods. It is woven in the twined style, however, and is therefore of native origin. It was preserved by contact with a large number of copper beads, four of which are shown in the cut, figure 10.

Traces of basketry are rarely preserved either by charring or by contact with copper. Matting is occasionally preserved in these ways. Figure 11 illustrates a piece of rush matting found fixed to the surface of a bit of copper in a mound near Augusta, Georgia.

The weaving of the hair of many species of quadrupeds, the buffalo, the opossum, the rabbit, etc., is noted by a number of authors, and a few



CHARRED CLOTH FROM MOUNDS IN OHIO.

specimens of haircloth have been recovered from mounds. Mr. Henry R. Howland found in a mound near Alton, Illinois, two varieties of cloth preserved by contact with a copper ornament representing a turtle-shell; they are described as follows:

Closely fitting over the outer surface of the copper shell is, first, a woven cloth of a vegetable fibre, similar in its general character to the outer matting above described, but of a stronger and better preserved fibre, apparently more like that which forms the woven coating of the Davenport axes. This is covered in turn with a softer, finer fabric, now of a dark-brown color, formed of twisted strands, laid or matted closely together, though apparently not woven. The material of which these strands are formed proves, under microscopic examination, to be animal hair.¹

An illustration of ancient split cane matting is presented in figure 12. The specimen was obtained from Petite Anse island, near Vermilion bay, southern coast of Louisiana, and a photograph was presented to the Smithsonian Institution in 1866, by J. F. Cleu. The following description, as given by Prof. Joseph Henry, appears on the label attached to the specimen:

This fragment of matting was found near the surface of the salt, and about 2 feet above it were remains of tusks and bones of a fossil elephant. The peculiar interest in regard to the specimen is in its occurrence in situ 2 feet below the elephant remains, and about 14 feet below the surface of the soil, thus showing the existence of man on the island prior to the deposit in the soil of the fossil elephant. The material consists of the outer bark of the common southern cane (*Arundinaria macrosperma*), and has been preserved for so long a period both by its silicious character and the strongly saline condition of the soil.

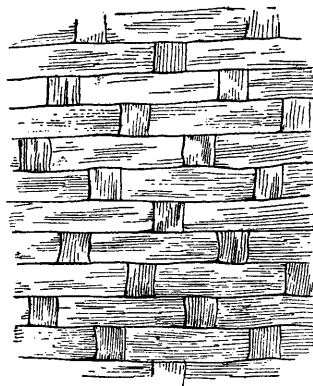


FIG. 11.—Small portion of rush matting preserved by contact with copper.

FABRICS IMPRESSED ON POTTERY.

It was a common practice among the aborigines to employ woven fabrics in the construction and ornamentation of earthenware. Impressions were thus left on the clay, and by baking these were rendered as lasting as if engraved on stone.

From no other source do we obtain so wide a range of fabrics. The fabric-marked vases and sherds are obtained from mounds, graves, and village sites all over the country. There is not a state within the Mississippi or Atlantic drainage that does not furnish some example of the preservation of native fabric impressions on earthenware. The perfection with which every character of these textures is preserved is well shown in a number of the figures here introduced.

A somewhat extended study of this subject was published in the Third Annual Report of the Bureau of Ethnology, and illustrations of nearly all the styles of weaving were given. As indicated by subse-

¹Recent Archæological Discoveries in the American Bottom. Bulletin of the Buffalo Society of Natural Sciences, March 2, 1877, p. 208.

quent investigations, a number of slight inaccuracies of analysis and drawing occur in that paper, but they are of such minor importance that detailed correction is unnecessary.

It would seem that imprints of cloth woven in the plain interlaced style appear to be quite rare, although it is difficult, from the impressions on clay, to distinguish this from other forms when the threads are closely impacted. In somewhat rare cases the interlacing is so arranged and alternated as to give diagonal effects as in a specimen

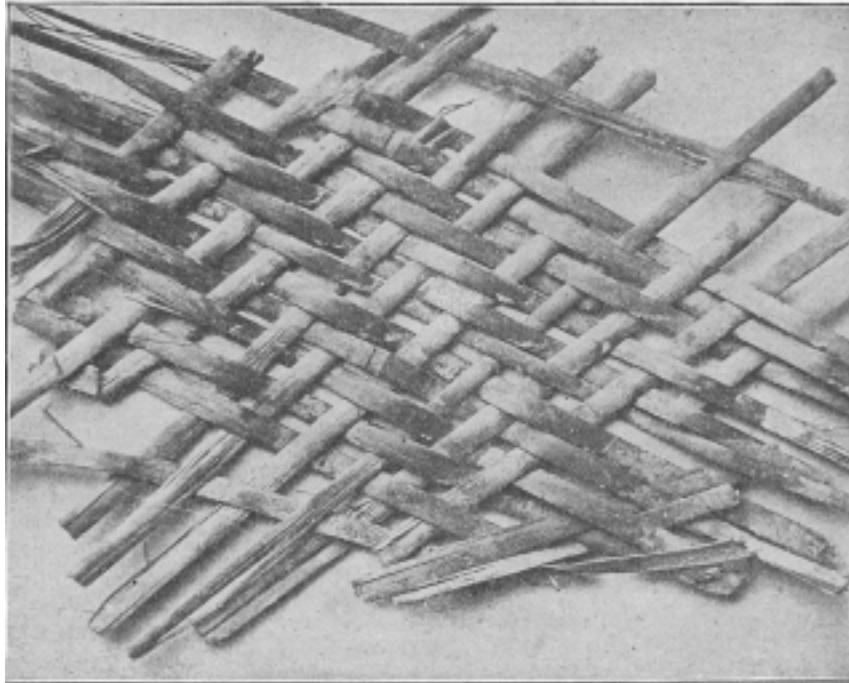
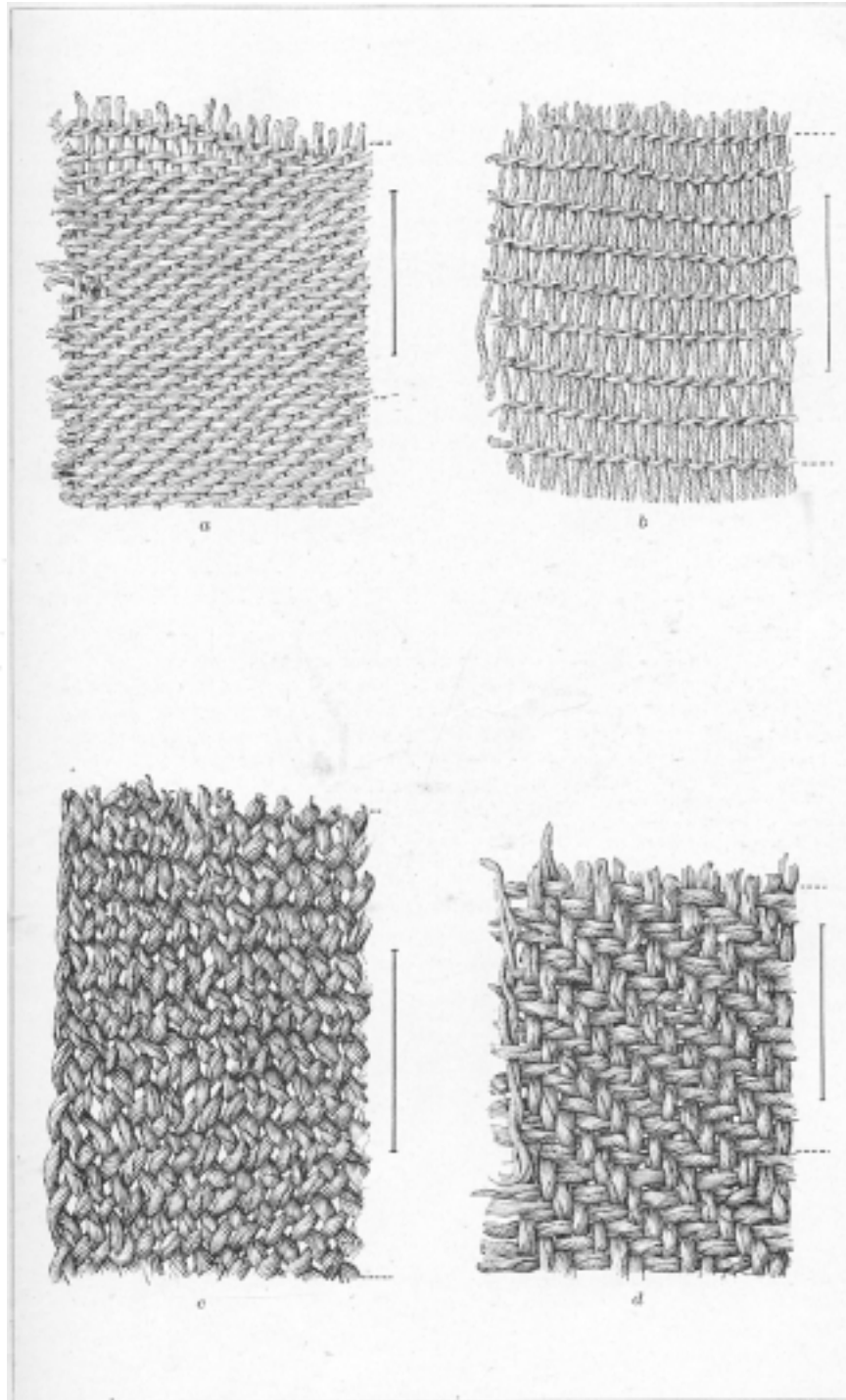


FIG. 12.—Split cane matting from Petite Anse island, Louisiana.

shown in figure 13. These effects are peculiar to the interlaced fabrics, not being produced in twined or netted work.

It has been supposed that vessels of clay were often modeled in baskets, and that the native earthenware preserved numerous impressions of baskets. On closer analysis these impressions turn out to be the application of pliable cloths, or of cords singly or in groups, or of stamps covered with textiles or having geometric textile-like patterns engraved on them. I can not recall a single example from eastern United States in which it is entirely clear that the clay vessel was modeled in a basket. The impressions of basket work occasionally seen are only partial, having been applied after the vessel was practically finished.

I present in figure 13, a small earthen vessel from a mound in North Carolina, the entire exterior surface of which is marked with a fabric,



DRAWINGS OF CHARRED FABRIC FROM MOUNDS.

a pliable cloth or bag woven in the twined styled. The impressions are not the result of a single application of the texture, but consist of several disconnected imprintings as if the hand or a paddle covered with cloth had been used in handling the vessel or in imparting a desired finish to the surface.



FIG. 13.—Fabric-marked vase from a mound in North Carolina.

Specimens of diagonal fabrics, restored from potsherds, are given in figures 14 and 15. The first is a very neatly woven diagonal from the ancient pottery of Polk county, Tennessee. Two series of cords have been interwoven at right angles to each other, but so arranged as to produce the diagonal effect. One series of the cords is fine and well

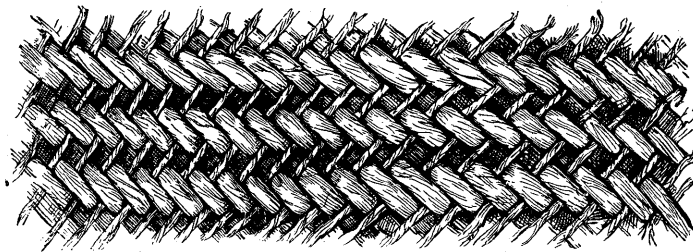


FIG. 14.—Diagonal fabric, ancient pottery of Tennessee.

twisted, the other coarser and very slightly twisted. The second is a piece of matting restored from the impression on a small piece of pottery collected in Alabama. It was probably made of rushes or heavy blades of grass.

Twined weaving prevails in the fabrics impressed on pottery as in those from all other aboriginal sources. An example of the simplest

form, obtained from a small fragment of pottery found in Polk county, Tennessee, is shown in figure 16. Two series of threads are interwoven at right angles, the warp being arranged in pairs and the woof singly.

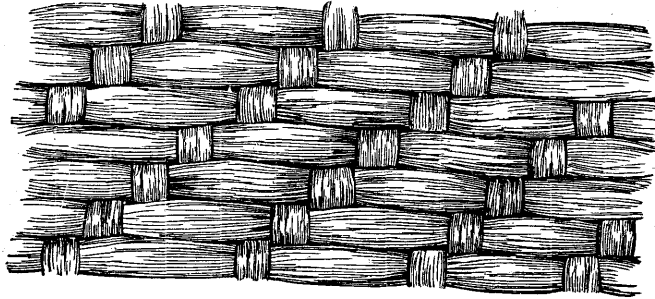


FIG. 15.—Fabric from the ancient pottery of Alabama.

At each intersection the pairs of warp threads are twisted half around upon themselves, inclosing the woof threads and holding them quite

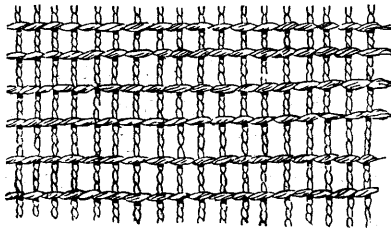


FIG. 16.—Twined fabric from ancient pottery, Tennessee.

firmly, so that the open net-like effect is well preserved even under strain or in long continued use. There are many varieties of this form

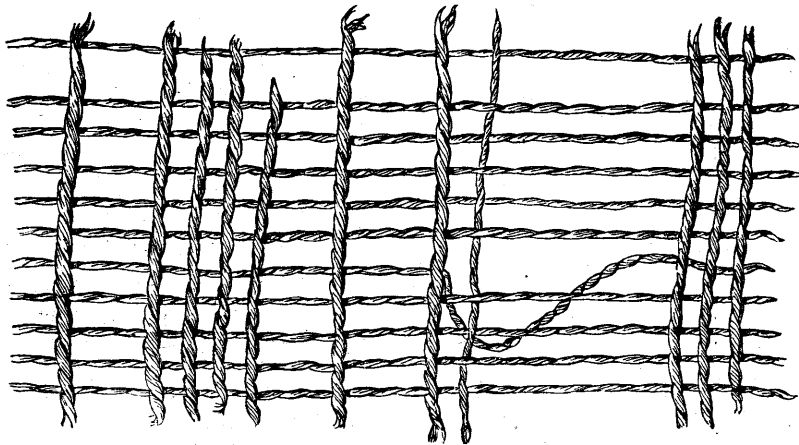
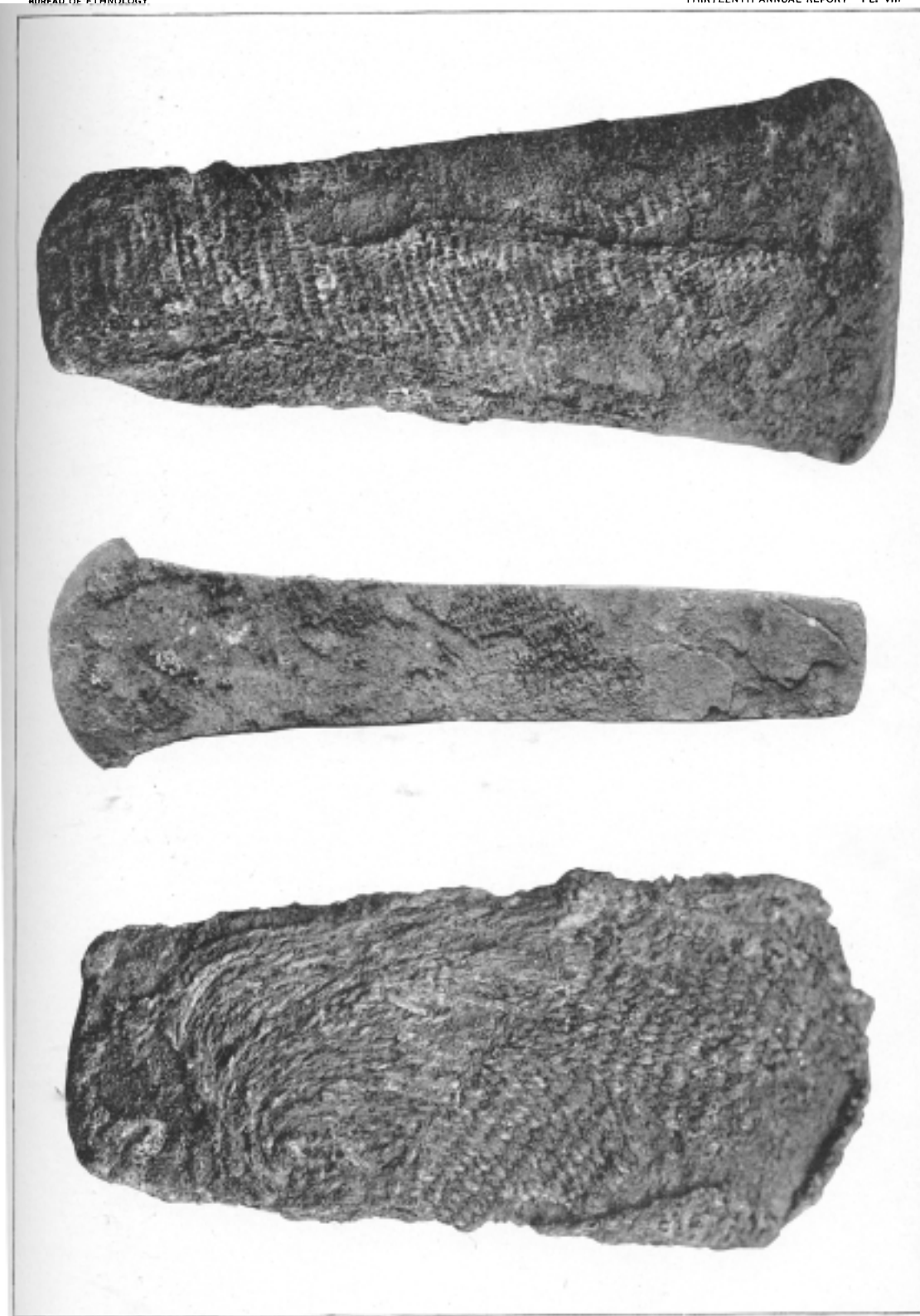


FIG. 17.—Twined fabric from ancient pottery, Tennessee.

of fabric resulting from differences in size and spacing of the threads. These differences are well brought out in the succeeding figures.

In figure 17 we have a characteristic example of this fabric, obtained from a fragment of pottery from a mound at Sevierville, Tennessee.



COPPER CELTS WITH REMNANTS OF CLOTH.

The impression is quite perfect. The cords are somewhat uneven, and seem to have been only moderately well twisted. They were probably made of hemp fiber. It will be observed that the threads of the web are placed at regular intervals, while those of the woof are irregularly placed. It may be noticed that in one case the woof has not been doubled, the single thread having, as a consequence, exactly the same relation to the opposing series as corresponding threads in simple inter-

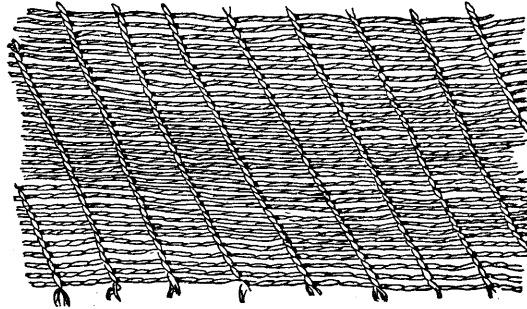


FIG. 18.—Twined fabric from ancient salt vessel, Illinois.

lacing. The impression, of which this is only a part, indicates that the cloth used in shaping the vessel was considerably distorted when applied to the soft clay.

Nowhere else are found so many fine impressions of fabrics on clay vessels as in the ancient salt-making localities of the Mississippi valley. The huge bowls or vats used by the primitive salt-maker have generally been modeled in coarse, open fabrics, or have had cloths impressed

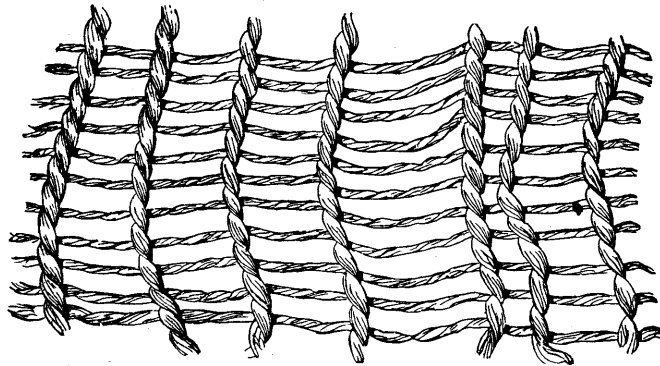


FIG. 19.—Twined fabric from ancient salt vessel, Illinois.

upon them for ornament. In figures 18 and 19 fine examples of these impressions are given. The latter engraving illustrates a specimen in which every detail is perfectly preserved. Only a small portion of the original is shown in the cut. It is noticeable that the cords are quite heavy and well twisted, although the spacing is somewhat irregular.

The example given in figure 20, impressed on a fragment of clay from Arkansas, has an ornamental border produced by looping the cords of

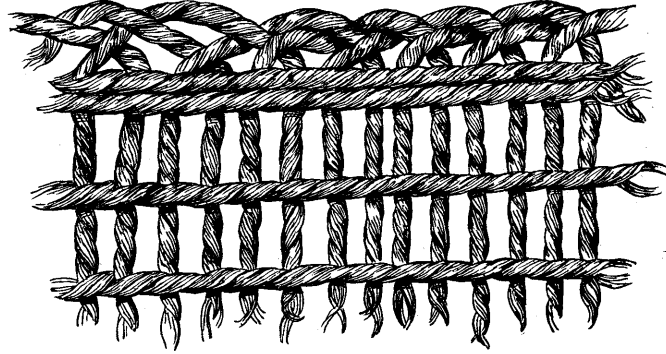


FIG. 20.—Twined fabric from a piece of clay, Arkansas.

the web, which seem to have been five in number, each one passing over four others before recrossing the frame. A specimen showing a somewhat different border is given in figure 21.

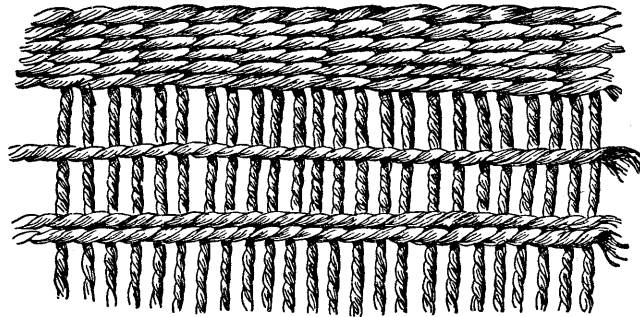


FIG. 21.—Twined fabric from ancient pottery, Tennessee.

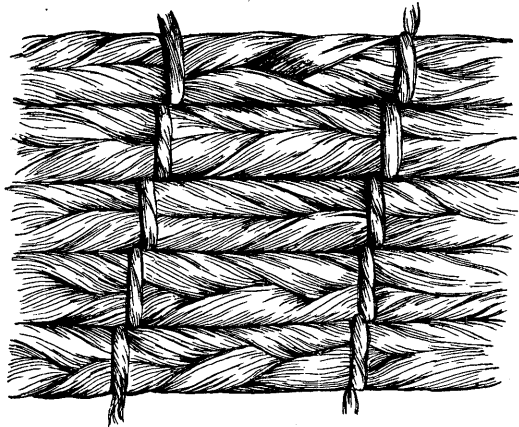


FIG. 22.—Twined fabric from ancient pottery, Missouri.

The interesting specimen illustrated in figure 22 was obtained from a small fragment of pottery found in Ripley county, Missouri. The

combination of the two series of strands clearly indicates the type of fabric, the twisted cords of the woof being placed very far apart. The warp is of braid formed by plaiting strands of untwisted fiber, probably bast. All the details are shown in the most satisfactory manner in the clay cast.

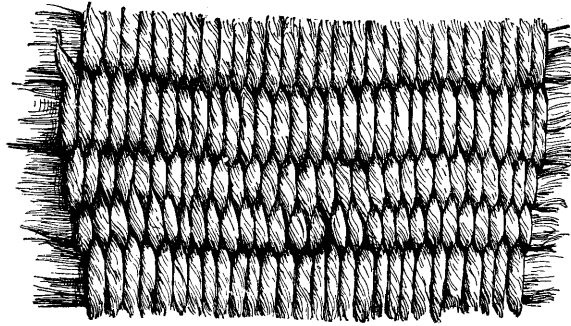


FIG. 23.—Twined fabric from ancient pottery, Carter county, Tennessee.

In figure 23 we have a similar fabric closely woven or impacted. I have made the drawing to show fillets of fiber appearing at the ends; these do not appear in the impression. It is highly probable, however,

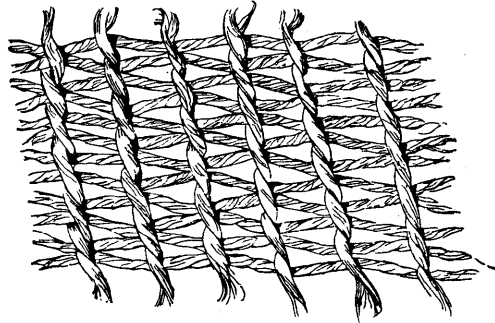


FIG. 24.—Twined fabric from ancient pottery, Tennessee.

that these fillets are plaited bands, as in the preceding example. They are wide and flat, giving somewhat the effect of basket-work of splints or rushes.

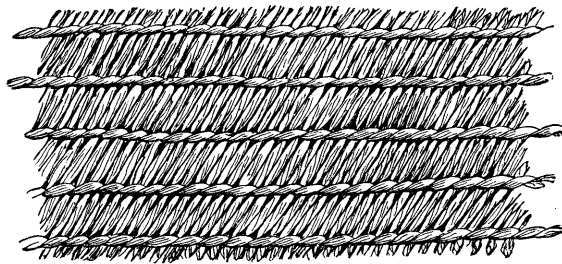


FIG. 25.—Twined fabric from ancient pottery, Tennessee.

Another variety of the twined fabrics, distinguished by peculiarities in the combinations of the threads, is illustrated in figures 24 and 25. The threads of the warp are arranged in pairs as in the specimens

already described, but are twisted in such a way as to inclose two of the opposing series instead of one, each succeeding pair of warp threads taking up alternate pairs of the woof threads. Figure 25 is from a

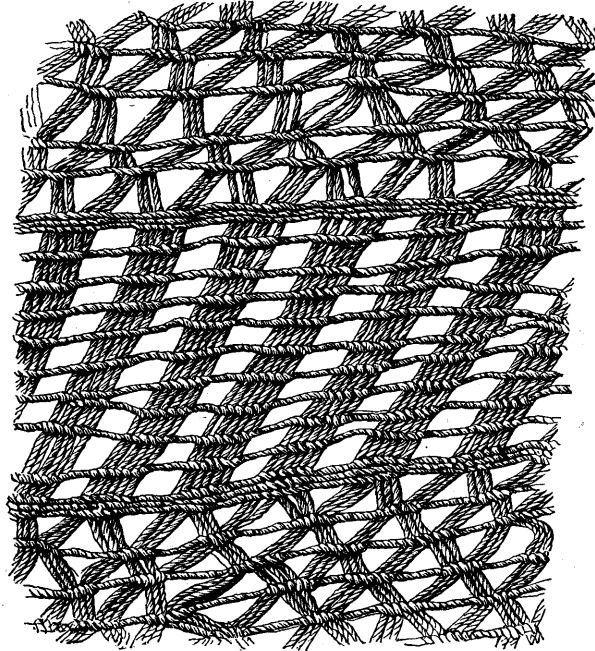


FIG. 26.—Twined fabric, with patterns, Ohio valley.

small piece of pottery exhumed from a mound on Fain island, Jefferson county, Tennessee. The threads of the woof are quite close together, those of the web being far apart.

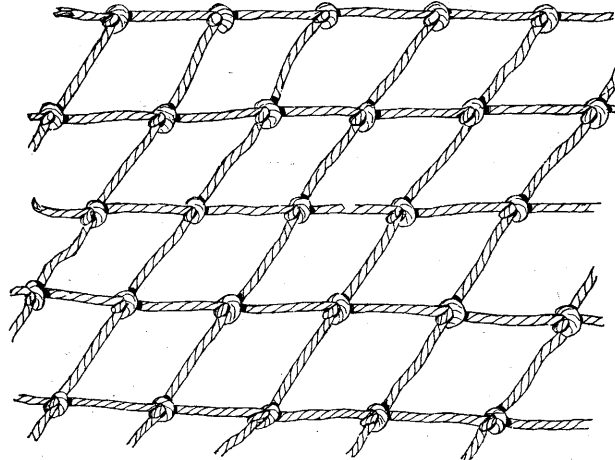
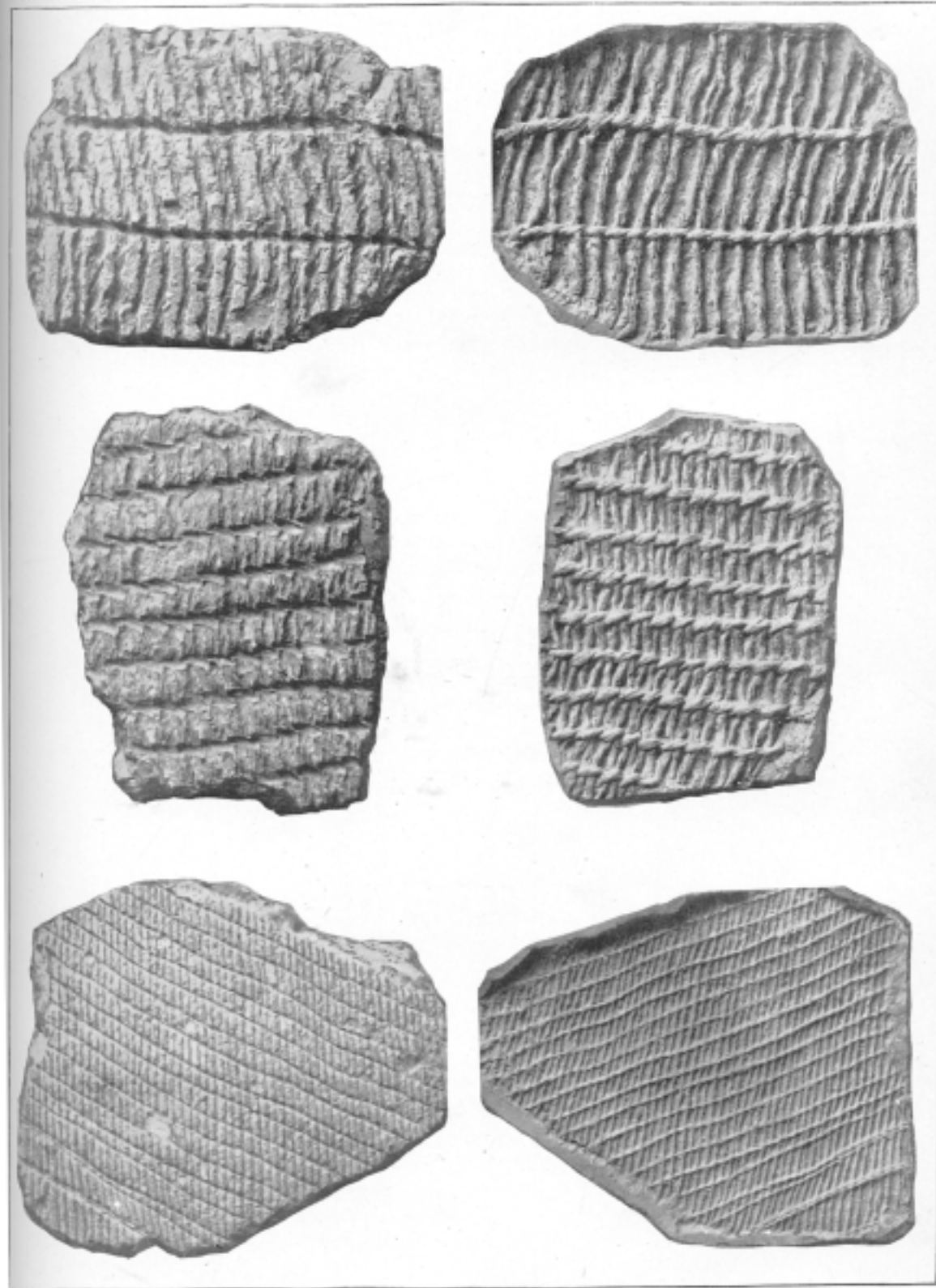


FIG. 27.—Net from ancient pottery, District of Columbia.

That the native love of decoration had a marked influence on the weavers' art in its simplest and rudest as well as higher forms is well



BITS OF FABRIC-MARKED POTTERY, WITH CLAY CASTS OF SAME

evinced even in the meager vestiges brought to light by researches in the mounds. Decorative borders and fanciful combinations of strands are shown in some of the preceding cuts, and figure 26, copied from a pottery fragment obtained in the Ohio valley, indicates a more ambitious attempt at embellishment. The fabric was evidently of ornate design and the execution excellent.

Plate IX is intended to convey a clear notion of the nature and appearance of fabric-marked pottery and of the manner of securing positive impressions in clay. Three bits of pottery from Illinois are placed at the left, and the three casts appear at the right. All illustrate open fabrics of comparatively simple pattern done in the characteristic twined style.

Nets were in use by the Indians of Florida and Virginia at the time of the discovery, and the ancient pottery of the Atlantic states has preserved impressions of innumerable specimens. The piece shown in figure 27 is from a small fragment of pottery picked up in the District of Columbia. The impression is so perfect that the twist of the cord and the form of the knot may be seen with ease. Most of the examples from this locality are of much finer cord and have a less open mesh than

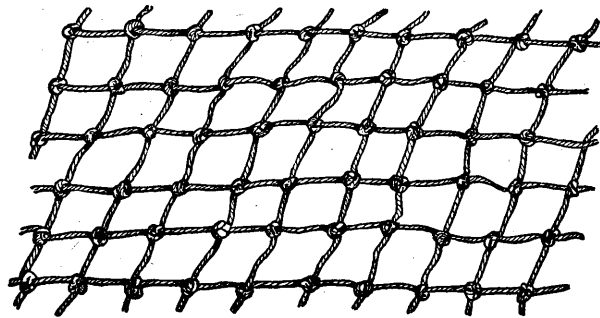


FIG. 28.—Net from ancient pottery, North Carolina.

the specimen illustrated. The net illustrated in figure 28 is from a specimen of North Carolina pottery. Netting of this class was still in use among the natives of the Chesapeake region when the English colonies were founded.

The lesson of the prehistoric textile art of eastern United States is simple and easily read, and goes far to round out the story of native occupation and culture. Colonial records furnish definite knowledge of the woven fabrics and weaving of the nations first encountered by the whites. Graves, mounds, and caves give us an insight into the pre-Columbian status of the art, and evidence furnished by associated industries which happen to echo features of the textile art contribute to our information. Charred cloths from the great mounds are identical in material, combination of parts, and texture with the

fabrics of the simple savage. Cloths preserved by contact with copper implements and ornaments characteristic of the art of the builders of the mounds do not differ in any way from the humble work of the historic peoples. All tell the same story of a simple, primitive culture, hardly advanced beyond the grade separating the savage from the barbarous condition.