The Project Gutenberg EBook of Prehistoric Textile Art of Eastern United

States, by William Henry Holmes

This eBook is for the use of anyone anywhere at no cost and with

almost no restrictions whatsoever. You may copy it, give it away or

re-use it under the terms of the Project Gutenberg License included

with this eBook or online at www.gutenberg.org

Title: Prehistoric Textile Art of Eastern United States

Thirteenth Annual Report of the Beaurau of American

Ethnology to the Secretary of the Smithsonian Institution

1891-1892, Government Printing Office, Washington, 1896

pages 3-46

Author: William Henry Holmes

Release Date: November 27, 2006 [EBook #19921]

Language: English

\*\*\* START OF THIS PROJECT GUTENBERG EBOOK TEXTILE ART \*\*\*

Produced by Carlo Traverso, Turgut Dincer, and the Online

Distributed Proofreading Team at http://www.pgdp.net (This

file was produced from images generously made available

by the Bibliothèque nationale de France (BnF/Gallica) at

http://gallica.bnf.fr)

PREHISTORIC TEXTILE ART

OF

EASTERN UNITED STATES

BY

WILLIAM HENRY HOLMES

CONTENTS

Page

Introductory 9

Scope of the work 9

Definition of the art 10

Materials and processes 10

Sources of information 11

Products of the art 13

Wattle work 13

Basketry 15

Types of basketry 15

Baskets 15

Sieves and strainers 17

Cradles 18

Shields 18

Matting 18

Pliable fabrics 21

Development of spinning and weaving 21

Cloths 22

Nets 26

Feather-work 27

Embroidery 28

Fossil fabrics 28

Modes of preservation 28

Fabrics from caves and shelters 29

Charred remains of fabrics from mounds 35

Fabrics preserved by contact with copper 36

Fabrics impressed on pottery 37

INDEX

ILLUSTRATIONS

Page

PLATE I. 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 18

II. Mat of split cane 28

III. Mantle or skirt of light-colored stuff 30

IV. Fringed skirt 32

V. Frayed bag and skeins of hemp fiber 34

VI. Charred cloth from mounds in Ohio 36

VII. Drawings of charred fabric from mounds 38

VIII. Copper celts with remnants of cloth 40

IX. Bits of fabric-marked pottery, with clay casts of same 44

FIG. 1. Fish weir of the Virginia Indians 14

2. Use of mats in an Indian council 19

3. Use of mat in sleeping 20

4. Section of cliff showing position of grave shelter 31

5. Portion of mantle showing manner of weaving 32

6. Analysis of the weaving of fringed skirt 32

7. Former costumes of woman and girl in Louisiana 33

8. Border of bag 34

9. Sandal or moccasin from a Kentucky cave 35

10. Fine, closely woven cloth preserved by contact with

copper beads 36

11. Small portion of rush matting preserved by contact

with copper 37

12. Split-cane matting from Petite Ause island,

Louisiana 38

13. Fabric-marked vase from a mound in North Carolina 39

14. Diagonal fabric, ancient pottery of Tennessee 39

15. Fabric from the ancient pottery of Alabama 40

16. Twined fabric from ancient pottery, Tennessee 40

17. Twined fabric from ancient pottery, Tennessee 40

18. Twined fabric from ancient salt vessel, Illinois 41

19. Twined fabric from ancient salt vessel, Illinois 41

20. Twined fabric from a piece of clay, Arkansas 42

21. Twined fabric from ancient pottery, Tennessee 42

22. Twined fabric from ancient pottery, Missouri 42

23. Twined fabric from ancient pottery, Carter county,

Tennessee 43

24. Twined fabric from ancient pottery, Tennessee 43

25. Twined fabric from ancient pottery, Tennessee 43

26. Twined fabric, with patterns, Ohio valley 44

27. Net from ancient pottery, District of Columbia 44

28. Net from ancient pottery, North Carolina 45

PREHISTORIC TEXTILE ART OF EASTERN

UNITED STATES

BY W. H. HOLMES

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 Virginia[1]

that--

Their houses are built like our Arbors, of small young

springs bowed and tyed, and so close covered with Mats, or

the barkes of trees very handsomely, that notwithstanding

either winde, raine, or weather, they are as warm as stooues,

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.

[1] Hist. Virginia, John Smith. Richmond, 1819, vol. I, 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."[2]

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 Paumaünkie. It was in the form of a sugar loaf and

was open on all sides like a trellis to admit the air.[3]

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 4½ 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.[4]

According to John Lawson, similarly constructed "hurdles" were in use

among the Carolina Indians.

[Illustration: 1.--Fish weir of the Virginia Indiana (after Hariot).]

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 Hariot gives a number of

plates in which the weirs are delineated. The cut here given (figure 1)

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 conveniencies 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.[5]

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.

[1] Hist. Virginia, John Smith. Richmond, 1819, vol. I, p.

130.

[2] Memoires Historiques sur la Louisiane, George Marie

Butel-Dumont. Paris, 1753, vol. II, p. 104.

[3] Moeurs dea Sauvages Ameriquains, Père Joseph François

Lafitau. Paris, 1724, vol. I, p. 286.

[4] Op. cit., vol. I, p. 244.

[5] Hist. Louisiana, Le Page Du Pratz. English translation,

London, 1763, vol. II, pp. 228-229.

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. \* \* \*

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 bullrushes, 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.[6]

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.[7]

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.[8]

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 vermillion for painting themselves, if

they have any, but when they have no vermillion they boil

ochre, and paint themselves with that.[9]

It happens that few baskets have been recovered from mounds and graves,

but they are occasionally reported as having been discovered in 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.[10]

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.[11]

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;"[12] and a similar use by the Indians of Virginia is recorded by

John Smith:

They use a small basket for their Temmes, then pound againe

the great, and so separating by dashing their hand in the

basket, receive the flowr in a platter of wood scraped to

that forme with burning and shels.[13]

From Hakluyt we have the following:

Their old wheat they firste steepe a night in hot water, and

in the morning pounding yt in a morter, they use a small

baskett for the boulter or searser, and when they have syfted

fourth the finest, they pound againe the great, and so

separating yt by dashing their hand in the baskett, receave

the flower in a platter of wood, which, blending with water,

etc.[14]

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.[15]

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).[16]

[6] Hist. of Carolina, etc., John Lawson. London, 1714, pp.

307, 308.

[7] History of the American Indians. London, 1775, p. 424.

[8] Ibid., p. 424.

[9] Hist. Louisiana. English translation, London, 1763, vol.

II, pp. 227-228.

[10] Nat. and Abor. Hist. of Tenn., John Haywood. Nashville,

1823, pp. 191-192.

[11] Op. cit., vol. I, p. 154.

[12] Op. cit., vol. II, p. 226.

[13] Hist. Virginia, John Smith. Richmond, 1819, p. 127.

[14] Hist. of Travaile into Virginia: Win. Strachey, Hakluyt

Society, Lond., 1844, vol. VI, p. 73.

[15] Hist. Louisiana, vol. II, pp. 310, 311.

[16] Op. cit., p. 185.

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 barkes, and in some with

artificiall mattes made of long rushes; from the tops of the

houses downe to the ground.[17]

[Illustration: PL. I. 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.]

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

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 Hariot'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.

[Illustration: FIG. 2.--Use of mats in an Indian council (after

Lafitau).]

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 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 Stone

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.[18]

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."[19]

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.[20]

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,[21] one end of the

mat being rolled up for a pillow as shown in figure 3.

[Illustration: 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."[22] This is well illustrated 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.[23]

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 Paskagoulas 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.[24]

Brackenridge[25] 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."

[17] A Brief and True account of the New Found Land of

Virginia, Thomas Hariot, p. 24.

[18] A Brief and True account of the New Found Land of

Virginia, Thomas Hariot, p. 137.

[19] William Bartram's Travels, etc. London, 1792, p. 302.

[20] Joutel, in B. F. French's Historical Collections of

Louisiana. New York, 1846, p. 149.

[21] Hist. de l'Amér. Sept., Bacqueville de la Potherie. Paris,

1722, vol. III. Plate opposite p. 24.

[22] Hist. Louisiana, Du Pratz. English translation. London,

1763, vol. II, p. 227.

[23] Hist. de l'Amér. Sept., vol. II, p. 17.

[24] Mem. sur la Louisiane, vol. I, pp. 240-241.

[25] Views of Louisiana, H. M. Brackenridge, 1817, p. 178.

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

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

Pensylvania 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.[26]

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

The \_Direa 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.[27]

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.[28]

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 thighes, their women vse to spin,

the barkes 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 as ours. They make also with

it lines for angles.[29]

The Cherokees and other Indians with whom Adair came in contact

preserved in their purity many of the ancient practices. 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 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.[30]

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.[31]

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.[32]

The frequent mention of fabrics used by the Indians for shawls, mantles,

etc., makes it plain that such were in very general use when 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.[33] 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.[34]

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.[35]

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 woof 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 woof are 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.[36]

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.[37]

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.[38]

In another place the same author says:

The Sauteurs, who are beyond the Missisakis, take their name

from a Saut (waterfall) 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.[39]

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.[40]

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."[41]

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.[42] 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.[43]

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."[44]

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, bever, or squirrel skins,

which are very warm. Others again are made of the greenpart

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.[45]

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.[46]

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.[47]

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.[48]

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.[49]

John Smith testifies to the same practices in Virginia as shown in the

following lines:

For their apparell, they are sometimes covered with the

skinnes of wilde beasts, which in Winter are dressed with the

hayre, but in Sommer without. The better sort use large

mantels of Deare skins, not much differing in fashion from

the Irish mantels. Some imbrodered with white beads, some

with Copper, other painted after their manner. \* \* \* We haue

seene some use mantels made of Turky feathers, so prettily

wrought and woven with threads that nothing could be

discerned but the feathers.[50]

[26] Travels in North America, Peter Kalm. English translation,

London, 1771, vol. II, pp. 131, 132.

[27] Ibid., pp. 148-149.

[28] Hist. de l'Amérique, Sept., vol. III, p. 34.

[29] Hist. Virginia. Richmond, 1819, pp. 132-133.

[30] History of the American Indians. London, 1775, pp. 422,

423.

[31] 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.

[32] Ibid., p. 63.

[33] 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. 160-70.

[34] Ibid., p. 164.

[35] Hist. Louisiana, op. cit., vol. II, p. 23.

[36] Memoirs of a captive among the Indians of North America,

John D. Hunter. London, 1823, pp. 289-290.

[37] Hist. of Carolina, John Lawson. London, 1714; reprint,

Raleigh, N. C., 1800, pp. 293-294.

[38] Histoire de l'Amérique Septentrionale, Bacqueville de la

Potherie, vol. III, pp. 33-34.

[39] Ibid., vol. II, pp. 60-61.

[40] Ibid., vol. II, p. 80.

[41] Histoire de la Louisiane, vol. II, pp. 179-180.

[42] The Textile Art, W. H. Holmes, p. 231.

[43] Hist. Virginia, John Smith. Richmond, 1819, vol. I, p.

130.

[44] Hist. Carolina, John Lawson. Raleigh, 1860, p. 37.

[45] Ibid., pp. 311-312.

[46] Hist. de la Louisiane, vol. II, pp. 191-192.

[47] Memoire sur la Louisiane. Paris, 1753, vol. I, pp.

154-155.

[48] Ibid., vol, I, pp. 138-139.

[49] Historie de la Louisiane, vol. II, pp. 184-185.

[50] Hist. Virginia. Richmond, 1819, vol. I, pp. 129-130.

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,

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.

[Illustration: BUREAU OF ETHNOLOGY THIRTEENTH ANNUAL REPORT PL. II MAT

OF. SPLIT CANE.]

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 holding 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.[51]

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.[52]

In the year 1815 a remarkably interesting set of mortuary fabrics was

recovered from a saltpeter 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.[53]

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 about midway between

the creek bed and the slightly overhanging ledge above, the whole height

being estimated at 300 feet.

[Illustration: BUREAU OF ETHNOLOGY THIRTEENTH ANNUAL REPORT PL. III

MANTLE OR SKIRT OF LIGHT-COLORED STUFF.]

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.

[Illustration: FIG. 4.--Section of cliff showing position of grave

shelter.]

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-eights 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. 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.

[Illustration: FIG. 5.--Portion of mantle showing manner of weaving.]

[Illustration: FIG. 6.--Analysis of the weaving of fringed skirt. Threads

natural size.]

The two pieces just described would seem to correspond pretty closely

with the garments formerly worn by women and girls of the lower

Mississippi 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 waist to the knees; when

they have no limbourg they use in the same way a deer

skin.[54].

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

[Illustration: BUREAU OF ETHNOLOGY THIRTEENTH ANNUAL REPORT PL. IV

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.[55]

[Illustration: FIG. 7.--Former costumes of woman and girl in Louisiana

(after Du Pratz).]

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 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

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.

[Illustration: FIG. 8.--Border of bag.]

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 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 figure 9.

Prof. F. W. Putnam and other explorers of these caves have obtained

numerous textile articles of interest.

[Illustration: BUREAU OF ETHNOLOGY THIRTEENTH ANNUAL REPORT PL. V FRAYED

BAG AND SKEINS OF HEMP FIBER.]

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 whatever to suggest a

higher stage of culture than that of the historic Indian.

[Illustration: FIG. 9.--Sandal or moccasin from a Kentucky cave.]

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 somewhat open and net-like, and

very often the pairs of twined woof 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

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.

[Illustration: FIG. 10.--Fine, closely woven cloth preserved by contact

with copper beads.]

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.

[Illustration: BUREAU OF ETHNOLOGY THIRTEENTH ANNUAL REPORT PL. VI

CHARRED CLOTH FROM MOUNDS IN OHIO.]

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

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.[56]

[Illustration: FIG. 11.--Small portion of rush matting preserved by

contact with copper.]

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 mart 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.

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 subsequent

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.

[Illustration: FIG. 12.--Split-cane matting from Petite Anse island,

Louisiana.]

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 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.

[Illustration: BUREAU OF ETHNOLOGY THIRTEENTH ANNUAL REPORT PL. VII

DRAWINGS OF CHARRED FABRIC FROM MOUNDS.]

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,

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.

[Illustration: 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 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.

[Illustration: FIG. 14.--Diagonal fabric, ancient pottery of Tennessee.]

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.

[Illustration: 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

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

of fabric resulting from differences in size and spacing of the threads.

These differences are well brought out in the succeeding figures.

[Illustration: FIG. 16.--Twined fabric from ancient pottery, Tennessee.]

[Illustration: FIG. 17.--Twined fabric from ancient pottery, Tennessee.]

In figure 17 we have a characteristic example of this fabric, obtained

from a fragment of pottery from a mound at Sevierville, Tennessee.

[Illustration: BUREAU OF ETHNOLOGY THIRTEENTH ANNUAL REPORT PL. VIII

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 interlacing. 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.

[Illustration: FIG. 18.--Twined fabric from ancient salt vessel,

Illinois.]

[Illustration: FIG. 19.--Twined fabric from ancient salt vessel,

Illinois.]

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 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.

[Illustration: FIG. 20.--Twined fabric from a piece of clay, Arkansas.]

[Illustration: FIG. 21.--Twined fabric from ancient pottery, Tennessee.]

The example given in figure 20, impressed on a fragment of clay from

Arkansas, has an ornamental border produced by looping the cords of 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.

[Illustration: 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.

[Illustration: 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, 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.

[Illustration: FIG. 24.--Twined fabric from ancient pottery, Tennessee.]

[Illustration: 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 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.

[Illustration: FIG. 26.--Twined fabric, with patterns, Ohio valley.]

[Illustration: 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

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.

[Illustration: BUREAU OF ETHNOLOGY THIRTEENTH ANNUAL REPORT PL. IX BITS

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

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.

[Illustration: FIG. 28.--Net from ancient pottery, North Carolina.]

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 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.

[51] Nat. and Abor. Hist, of Tenn., John Haywood. Nashville,

1823, pp. 163-165.

[52] Ibid., p. 62.

[53] Trans. and Coll. Amer. Antiq. Soc. Worcester, 1820, vol.

1, pp. 318, 319.

[54] Histoire de la Louisiane. Du Pratz. Paris, 1758, vol. II,

p. 191.

[55] Histoire de la Louisiane, Du Pratz. Paris, 1758, vol. II,

p. 193.

[56] Recent Archæological Discoveries in the American Bottom.

Bulletin of the Buffalo Society of Natural Sciences, March 2,

1877, p. 208.

INDEX

ADAIR, JAMES, on Cherokee basketry 16

weaving 23

Indian method of spinning 23

ALABAMA, Fabric-impressed pottery from 39

APOGYNUM, Indian use of, in weaving 23

ARKANSAS, Fabric-impressed pottery from 42

ART, textile, Memoir on 3-45

BAGS, Woven, described 33, 34

BARK clothing 17

fiber used in weaving 23, 24, 25

Mulberry, used for fringe 32

used in embroidery designs 28

net making 27

spinning 22

BARTRAM, W., on council houses of mats 19

on sieve of Georgia Indians 17

BASKETRY discussed 15

Earthenware derived from 11

Lack of pottery modeled from 38

rarely preserved by charring 36

BEADS used in embroidery 28

BILOXI, Mortuary customs of the 21

BRACKINRIDGE, H. M. on Tennessee mortuary customs 21

BRIDGES of wattle work 13

BUTEL-DUMONT, G. M., on Louisiana indian embroidery 28

featherwork 28

mortuary mats 21

sieves 17

Mobilian wattled biers 14

Natchez dwellings 14

rafts of poles and canes 15

CAGES of wattle work 13

CALIFORNIA INDIANS, Stone chipping by 41

CANES used for matting 18

CAROLINA INDIANS, Textile fabrics of 14, 16

CAVES, Fabrics preserved in 29

CHARRING, Fabrics preserved by 35

CHASE,--, on ceremonial knives 16

CHEROKEE, Basketry of the 16

Weaving by the 23

CHOCTAW, Woven pouches and blankets of the 24

CLAWS of birds used with embroidery 28

CLEU, J. F., Split cane matting found by 37

CLOTH. Methods of manufacture of 22

CONTI, a Georgia Indian food 17

COPPER as a fabric preservative 36

used in embroidery 28

CORDAGE, Primitive manufacture of 21

COSTUMES of Louisiana indian women 32, 33

COTTON shawls of lower Mississippi 25

CRADLES, Textile, described 18

CRESSON, H. T., Remains of fish-weirs found by 15

DELAWARE, Remains of weirs in 15

DE SOTO, H., Expedition of 25

DISTRICT OF COLUMBIA, Fabric-impressed pottery from 44, 45

DU PRATZ, LE P., on Louisiana basketry 16

cane rafts 15

clothing 22, 25, 32, 33

dyes 20

embroidery 28

feather work 27

nets 27

sieves 17

textile cradles 18

DWELLINGS of wattle work 13

DYEING of basketry by the Cherokee 16

embroidery materials 28

DYES, use of, by Louisiana Indians 20

ELVAS, KNIGHT OF, on Georgia indian blankets 24

ELVAS, KNIGHT OF on Georgia indian costume 22

EMBROIDERY, Lack of remains of 12

of southern Indians 28

EMMEET, J. W., mortuary fabrics procured by 30

FANS of turkey feathers 17

FEATHER blankets of the Choctaw 24

weaving among Louisiana Indians 25

work described 27

Lack of remains of 12

FISH-WEIRS of Virginia indians 14

of wattle work 13

FLORIDA indians, Nets made and used by 45

FOSSIL fabrics discussed 28

GEORGIA, Fabrics from 36

indians, Textile fabrics of 17

Remains of matting from 36

GRASSES employed in spinning 22

HAIR used in weaving 22, 24, 25, 28, 36

HAKLUYT, RICHARD, on Indian sieves 17

HARIOT, THOMAS, on indian costume 22

mat houses 18

indian fish-weirs 14

method of spinning 23

HAYWOOD, JOHN, Mortuary fabrics described by 17, 29

HEMP, Indian, in spinning and weaving 22, 23, 24, 25, 34

HENRY, JOSEPH, Description of cane matting by 37

HOLMES, W. H., Memoir by, on prehistoric textile art 3-45

on Peruvian feather-work 27

HOWLAND, H. R., Copper-preserved cloth found by 37

HUNTER, J. D., on Osage weaving 25

ILLINOIS, Copper-preserved cloth from 37

Fabric-impressed pottery from 41, 45

IOWA, Fabrics from 36

IROQUOIS, Nets of 26

JOUTEL,--, on indian use of mats 20

KALM, PETER, on indian weaving 22

KLETT, F., Description of textiles found by 34

LAFITAU, J. E., Illustration by, of council mats 19

on Pamunki initiatory shelters 14

LAWSON, JOHN, on Carolina baskets 16

mortuary wrappings 26

Santee feather-work 27

wattled "hurdles" 14

LOUISIANA, Split-cane matting from 37, 38

LYE, Use of, in net-making 26

MCGiLL, A. J., Mortuary fabrics procured by 30

MATS, cane, Burial accompaniments found in 30

of Carolina indians 16

flags and rushes 26

MATTING discussed 18

preserved by charring 36

of split cane from Louisiana 37, 38

MISSOURI, fabric-impressed pottery from 42

MITCHELL, S. L., Mortuary fabrics described by 30

MOBILIANS, Wattled biers of the 14

MORTUARY customs of the Louisiana tribes 21

fabrics preserved in caves 29, 30

wrappings 26

MOUND-BUILDERS, Character of pottery of 12

MOUSE-WOOD, Indian use of, in weaving 23

MULBERRY BARK used in weaving 24, 25

NATCHEZ dwellings of wattle-work 14

NETS of Florida and Virginia indians 45

Manufacture and use of 26

NETTLES employed in spinning 22

NORTH CAROLINA, Fabric-impressed pottery from 38, 45

OHIO, Fabric from mound in 36

OSAGE INDIANS, Weaving by 25

PAMUNKI initiatory shelters 14

PASKAGULA mortuary customs 21

PEMMENAW, Use of, in weaving 23

PLIABLE fabrics described 21

PORCUPINE skins used in embroidery 28

POTHERIE, B. DE LA, on indian nets 26

sleeping mats 20

spinning 23

weaving 22

Iroquois ceremonial mats 21

POTTERY, Fabrics impressed on 37

Use of textiles in manufacture of 11

PRESERVATION of fossil fabrics 28

PUTNAM, F. W., Textile articles found by 35

RAFTS of poles and canes 15

wattle work 13

REEDS used for matting 18

ROPE, primitive manufacture of 21

RUSHES used for matting 18

SANDAL, woven, described and figured 34, 35

SANTEE feather-work 27

SAUTEURS, Use of nets by the 26

SHAWLS, Indian, used by Spaniards as sails 25

SHELTERS, Fabrics preserved in 29

SHIELDS of Virginia Indians 18

SIEVES of basketry 17

SINEW, Cloth of 22

SMITH, JOHN, on indian costume 22

method of spinning 23

shields 18

Virginia indian embroidery 28

feather work 27

fish-weirs 14

SMITH, JOHN, on Virginia indian sieves 17

wattled houses 13

SPINDLE WHORLS as evidence of textile manufacture 11

SPINNING, Development of 21

STRAINERS of basketry 17

SWEAT-HOUSES made of mats 19

TARGETS, Woven 18

TENNESSEE, Fabric-impressed pottery from 39, 40, 42, 43, 44

THOMAS, CYRUS, Mound exploration by 9

THREAD, primitive, Manufacture of 21

TURQUOIS among indians of lower Mississippi 25

TUSKARORA, Basketry of the 16

VIRGINIA indian nets 45

WATTLE WORK defined and described 13

WEAVING, Development of 21

Early descriptions of 22

End of the Project Gutenberg EBook of Prehistoric Textile Art of Eastern

United States, by William Henry Holmes

\*\*\* END OF THIS PROJECT GUTENBERG EBOOK TEXTILE ART \*\*\*

\*\*\*\*\* This file should be named 19921-8.txt or 19921-8.zip \*\*\*\*\*

This and all associated files of various formats will be found in:

http://www.gutenberg.org/1/9/9/2/19921/

Produced by Carlo Traverso, Turgut Dincer, and the Online

Distributed Proofreading Team at http://www.pgdp.net (This

file was produced from images generously made available

by the Bibliothèque nationale de France (BnF/Gallica) at

http://gallica.bnf.fr)

Updated editions will replace the previous one--the old editions

will be renamed.

Creating the works from public domain print editions means that no

one owns a United States copyright in these works, so the Foundation

(and you!) can copy and distribute it in the United States without

permission and without paying copyright royalties. Special rules,

set forth in the General Terms of Use part of this license, apply to

copying and distributing Project Gutenberg-tm electronic works to

protect the PROJECT GUTENBERG-tm concept and trademark. Project

Gutenberg is a registered trademark, and may not be used if you

charge for the eBooks, unless you receive specific permission. If you

do not charge anything for copies of this eBook, complying with the

rules is very easy. You may use this eBook for nearly any purpose

such as creation of derivative works, reports, performances and

research. They may be modified and printed and given away--you may do

practically ANYTHING with public domain eBooks. Redistribution is

subject to the trademark license, especially commercial

redistribution.

\*\*\* START: FULL LICENSE \*\*\*

THE FULL PROJECT GUTENBERG LICENSE

PLEASE READ THIS BEFORE YOU DISTRIBUTE OR USE THIS WORK

To protect the Project Gutenberg-tm mission of promoting the free

distribution of electronic works, by using or distributing this work

(or any other work associated in any way with the phrase "Project

Gutenberg"), you agree to comply with all the terms of the Full Project

Gutenberg-tm License (available with this file or online at

http://gutenberg.org/license).

Section 1. General Terms of Use and Redistributing Project Gutenberg-tm

electronic works

1.A. By reading or using any part of this Project Gutenberg-tm

electronic work, you indicate that you have read, understand, agree to

and accept all the terms of this license and intellectual property

(trademark/copyright) agreement. If you do not agree to abide by all

the terms of this agreement, you must cease using and return or destroy

all copies of Project Gutenberg-tm electronic works in your possession.

If you paid a fee for obtaining a copy of or access to a Project

Gutenberg-tm electronic work and you do not agree to be bound by the

terms of this agreement, you may obtain a refund from the person or

entity to whom you paid the fee as set forth in paragraph 1.E.8.

1.B. "Project Gutenberg" is a registered trademark. It may only be

used on or associated in any way with an electronic work by people who

agree to be bound by the terms of this agreement. There are a few

things that you can do with most Project Gutenberg-tm electronic works

even without complying with the full terms of this agreement. See

paragraph 1.C below. There are a lot of things you can do with Project

Gutenberg-tm electronic works if you follow the terms of this agreement

and help preserve free future access to Project Gutenberg-tm electronic

works. See paragraph 1.E below.

1.C. The Project Gutenberg Literary Archive Foundation ("the Foundation"

or PGLAF), owns a compilation copyright in the collection of Project

Gutenberg-tm electronic works. Nearly all the individual works in the

collection are in the public domain in the United States. If an

individual work is in the public domain in the United States and you are

located in the United States, we do not claim a right to prevent you from

copying, distributing, performing, displaying or creating derivative

works based on the work as long as all references to Project Gutenberg

are removed. Of course, we hope that you will support the Project

Gutenberg-tm mission of promoting free access to electronic works by

freely sharing Project Gutenberg-tm works in compliance with the terms of

this agreement for keeping the Project Gutenberg-tm name associated with

the work. You can easily comply with the terms of this agreement by

keeping this work in the same format with its attached full Project

Gutenberg-tm License when you share it without charge with others.

1.D. The copyright laws of the place where you are located also govern

what you can do with this work. Copyright laws in most countries are in

a constant state of change. If you are outside the United States, check

the laws of your country in addition to the terms of this agreement

before downloading, copying, displaying, performing, distributing or

creating derivative works based on this work or any other Project

Gutenberg-tm work. The Foundation makes no representations concerning

the copyright status of any work in any country outside the United

States.

1.E. Unless you have removed all references to Project Gutenberg:

1.E.1. The following sentence, with active links to, or other immediate

access to, the full Project Gutenberg-tm License must appear prominently

whenever any copy of a Project Gutenberg-tm work (any work on which the

phrase "Project Gutenberg" appears, or with which the phrase "Project

Gutenberg" is associated) is accessed, displayed, performed, viewed,

copied or distributed:

This eBook is for the use of anyone anywhere at no cost and with

almost no restrictions whatsoever. You may copy it, give it away or

re-use it under the terms of the Project Gutenberg License included

with this eBook or online at www.gutenberg.org

1.E.2. If an individual Project Gutenberg-tm electronic work is derived

from the public domain (does not contain a notice indicating that it is

posted with permission of the copyright holder), the work can be copied

and distributed to anyone in the United States without paying any fees

or charges. If you are redistributing or providing access to a work

with the phrase "Project Gutenberg" associated with or appearing on the

work, you must comply either with the requirements of paragraphs 1.E.1

through 1.E.7 or obtain permission for the use of the work and the

Project Gutenberg-tm trademark as set forth in paragraphs 1.E.8 or

1.E.9.

1.E.3. If an individual Project Gutenberg-tm electronic work is posted

with the permission of the copyright holder, your use and distribution

must comply with both paragraphs 1.E.1 through 1.E.7 and any additional

terms imposed by the copyright holder. Additional terms will be linked

to the Project Gutenberg-tm License for all works posted with the

permission of the copyright holder found at the beginning of this work.

1.E.4. Do not unlink or detach or remove the full Project Gutenberg-tm

License terms from this work, or any files containing a part of this

work or any other work associated with Project Gutenberg-tm.

1.E.5. Do not copy, display, perform, distribute or redistribute this

electronic work, or any part of this electronic work, without

prominently displaying the sentence set forth in paragraph 1.E.1 with

active links or immediate access to the full terms of the Project

Gutenberg-tm License.

1.E.6. You may convert to and distribute this work in any binary,

compressed, marked up, nonproprietary or proprietary form, including any

word processing or hypertext form. However, if you provide access to or

distribute copies of a Project Gutenberg-tm work in a format other than

"Plain Vanilla ASCII" or other format used in the official version

posted on the official Project Gutenberg-tm web site (www.gutenberg.org),

you must, at no additional cost, fee or expense to the user, provide a

copy, a means of exporting a copy, or a means of obtaining a copy upon

request, of the work in its original "Plain Vanilla ASCII" or other

form. Any alternate format must include the full Project Gutenberg-tm

License as specified in paragraph 1.E.1.

1.E.7. Do not charge a fee for access to, viewing, displaying,

performing, copying or distributing any Project Gutenberg-tm works

unless you comply with paragraph 1.E.8 or 1.E.9.

1.E.8. You may charge a reasonable fee for copies of or providing

access to or distributing Project Gutenberg-tm electronic works provided

that

- You pay a royalty fee of 20% of the gross profits you derive from

the use of Project Gutenberg-tm works calculated using the method

you already use to calculate your applicable taxes. The fee is

owed to the owner of the Project Gutenberg-tm trademark, but he

has agreed to donate royalties under this paragraph to the

Project Gutenberg Literary Archive Foundation. Royalty payments

must be paid within 60 days following each date on which you

prepare (or are legally required to prepare) your periodic tax

returns. Royalty payments should be clearly marked as such and

sent to the Project Gutenberg Literary Archive Foundation at the

address specified in Section 4, "Information about donations to

the Project Gutenberg Literary Archive Foundation."

- You provide a full refund of any money paid by a user who notifies

you in writing (or by e-mail) within 30 days of receipt that s/he

does not agree to the terms of the full Project Gutenberg-tm

License. You must require such a user to return or

destroy all copies of the works possessed in a physical medium

and discontinue all use of and all access to other copies of

Project Gutenberg-tm works.

- You provide, in accordance with paragraph 1.F.3, a full refund of any

money paid for a work or a replacement copy, if a defect in the

electronic work is discovered and reported to you within 90 days

of receipt of the work.

- You comply with all other terms of this agreement for free

distribution of Project Gutenberg-tm works.

1.E.9. If you wish to charge a fee or distribute a Project Gutenberg-tm

electronic work or group of works on different terms than are set

forth in this agreement, you must obtain permission in writing from

both the Project Gutenberg Literary Archive Foundation and Michael

Hart, the owner of the Project Gutenberg-tm trademark. Contact the

Foundation as set forth in Section 3 below.

1.F.

1.F.1. Project Gutenberg volunteers and employees expend considerable

effort to identify, do copyright research on, transcribe and proofread

public domain works in creating the Project Gutenberg-tm

collection. Despite these efforts, Project Gutenberg-tm electronic

works, and the medium on which they may be stored, may contain

"Defects," such as, but not limited to, incomplete, inaccurate or

corrupt data, transcription errors, a copyright or other intellectual

property infringement, a defective or damaged disk or other medium, a

computer virus, or computer codes that damage or cannot be read by

your equipment.

1.F.2. LIMITED WARRANTY, DISCLAIMER OF DAMAGES - Except for the "Right

of Replacement or Refund" described in paragraph 1.F.3, the Project

Gutenberg Literary Archive Foundation, the owner of the Project

Gutenberg-tm trademark, and any other party distributing a Project

Gutenberg-tm electronic work under this agreement, disclaim all

liability to you for damages, costs and expenses, including legal

fees. YOU AGREE THAT YOU HAVE NO REMEDIES FOR NEGLIGENCE, STRICT

LIABILITY, BREACH OF WARRANTY OR BREACH OF CONTRACT EXCEPT THOSE

PROVIDED IN PARAGRAPH F3. YOU AGREE THAT THE FOUNDATION, THE

TRADEMARK OWNER, AND ANY DISTRIBUTOR UNDER THIS AGREEMENT WILL NOT BE

LIABLE TO YOU FOR ACTUAL, DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE OR

INCIDENTAL DAMAGES EVEN IF YOU GIVE NOTICE OF THE POSSIBILITY OF SUCH

DAMAGE.

1.F.3. LIMITED RIGHT OF REPLACEMENT OR REFUND - If you discover a

defect in this electronic work within 90 days of receiving it, you can

receive a refund of the money (if any) you paid for it by sending a

written explanation to the person you received the work from. If you

received the work on a physical medium, you must return the medium with

your written explanation. The person or entity that provided you with

the defective work may elect to provide a replacement copy in lieu of a

refund. If you received the work electronically, the person or entity

providing it to you may choose to give you a second opportunity to

receive the work electronically in lieu of a refund. If the second copy

is also defective, you may demand a refund in writing without further

opportunities to fix the problem.

1.F.4. Except for the limited right of replacement or refund set forth

in paragraph 1.F.3, this work is provided to you 'AS-IS' WITH NO OTHER

WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO

WARRANTIES OF MERCHANTIBILITY OR FITNESS FOR ANY PURPOSE.

1.F.5. Some states do not allow disclaimers of certain implied

warranties or the exclusion or limitation of certain types of damages.

If any disclaimer or limitation set forth in this agreement violates the

law of the state applicable to this agreement, the agreement shall be

interpreted to make the maximum disclaimer or limitation permitted by

the applicable state law. The invalidity or unenforceability of any

provision of this agreement shall not void the remaining provisions.

1.F.6. INDEMNITY - You agree to indemnify and hold the Foundation, the

trademark owner, any agent or employee of the Foundation, anyone

providing copies of Project Gutenberg-tm electronic works in accordance

with this agreement, and any volunteers associated with the production,

promotion and distribution of Project Gutenberg-tm electronic works,

harmless from all liability, costs and expenses, including legal fees,

that arise directly or indirectly from any of the following which you do

or cause to occur: (a) distribution of this or any Project Gutenberg-tm

work, (b) alteration, modification, or additions or deletions to any

Project Gutenberg-tm work, and (c) any Defect you cause.

Section 2. Information about the Mission of Project Gutenberg-tm

Project Gutenberg-tm is synonymous with the free distribution of

electronic works in formats readable by the widest variety of computers

including obsolete, old, middle-aged and new computers. It exists

because of the efforts of hundreds of volunteers and donations from

people in all walks of life.

Volunteers and financial support to provide volunteers with the

assistance they need, is critical to reaching Project Gutenberg-tm's

goals and ensuring that the Project Gutenberg-tm collection will

remain freely available for generations to come. In 2001, the Project

Gutenberg Literary Archive Foundation was created to provide a secure

and permanent future for Project Gutenberg-tm and future generations.

To learn more about the Project Gutenberg Literary Archive Foundation

and how your efforts and donations can help, see Sections 3 and 4

and the Foundation web page at http://www.pglaf.org.

Section 3. Information about the Project Gutenberg Literary Archive

Foundation

The Project Gutenberg Literary Archive Foundation is a non profit

501(c)(3) educational corporation organized under the laws of the

state of Mississippi and granted tax exempt status by the Internal

Revenue Service. The Foundation's EIN or federal tax identification

number is 64-6221541. Its 501(c)(3) letter is posted at

http://pglaf.org/fundraising. Contributions to the Project Gutenberg

Literary Archive Foundation are tax deductible to the full extent

permitted by U.S. federal laws and your state's laws.

The Foundation's principal office is located at 4557 Melan Dr. S.

Fairbanks, AK, 99712., but its volunteers and employees are scattered

throughout numerous locations. Its business office is located at

809 North 1500 West, Salt Lake City, UT 84116, (801) 596-1887, email

business@pglaf.org. Email contact links and up to date contact

information can be found at the Foundation's web site and official

page at http://pglaf.org

For additional contact information:

Dr. Gregory B. Newby

Chief Executive and Director

gbnewby@pglaf.org

Section 4. Information about Donations to the Project Gutenberg

Literary Archive Foundation

Project Gutenberg-tm depends upon and cannot survive without wide

spread public support and donations to carry out its mission of

increasing the number of public domain and licensed works that can be

freely distributed in machine readable form accessible by the widest

array of equipment including outdated equipment. Many small donations

($1 to $5,000) are particularly important to maintaining tax exempt

status with the IRS.

The Foundation is committed to complying with the laws regulating

charities and charitable donations in all 50 states of the United

States. Compliance requirements are not uniform and it takes a

considerable effort, much paperwork and many fees to meet and keep up

with these requirements. We do not solicit donations in locations

where we have not received written confirmation of compliance. To

SEND DONATIONS or determine the status of compliance for any

particular state visit http://pglaf.org

While we cannot and do not solicit contributions from states where we

have not met the solicitation requirements, we know of no prohibition

against accepting unsolicited donations from donors in such states who

approach us with offers to donate.

International donations are gratefully accepted, but we cannot make

any statements concerning tax treatment of donations received from

outside the United States. U.S. laws alone swamp our small staff.

Please check the Project Gutenberg Web pages for current donation

methods and addresses. Donations are accepted in a number of other

ways including checks, online payments and credit card donations.

To donate, please visit: http://pglaf.org/donate

Section 5. General Information About Project Gutenberg-tm electronic

works.

Professor Michael S. Hart is the originator of the Project Gutenberg-tm

concept of a library of electronic works that could be freely shared

with anyone. For thirty years, he produced and distributed Project

Gutenberg-tm eBooks with only a loose network of volunteer support.

Project Gutenberg-tm eBooks are often created from several printed

editions, all of which are confirmed as Public Domain in the U.S.

unless a copyright notice is included. Thus, we do not necessarily

keep eBooks in compliance with any particular paper edition.

Most people start at our Web site which has the main PG search facility:

http://www.gutenberg.org

This Web site includes information about Project Gutenberg-tm,

including how to make donations to the Project Gutenberg Literary

Archive Foundation, how to help produce our new eBooks, and how to

subscribe to our email newsletter to hear about new eBooks.