WEAVING WITH MATERIALS NATIVE
TO THE TEXAS GULF COAST

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TO THE TEXAS GULF COAST

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CHAPTER I

INTRODUCTION

Statement of the Problem

The present study explores some of the materials native to the Texas Gulf Coast between Corpus Christi and Beaumont relative to their adaptability to weaving. The problem is three-fold: first, to collect and identify the indigenous materials which might prove suitable for weaving; second, to determine the range of uses which each might serve in a weaving program; and third, to test further each selected specimen by making a sample into a finished woven product.

Scope of the Problem

No attempt is made to include in this study all of the possible materials of the coastal region. Only a few of the many available materials, both vegetable and animal, have been selected. The vegetable materials chosen for study are beach grass, bamboo cane, cat-tail, date palm, marsh grass, palmetto palm, pampas grass, Spanish dagger, Spanish moss, and tassel grass. One animal material, Gorgonian coral, has also been employed.
Plain weave is the only technique used in this project, thereby allowing concentration on the inherent beauty of the fiber. Each specimen is used in its natural color.

Some of the materials selected for experimentation have been employed in weaving prior to this study. The aim of the writer is to show additional ways in which these items may be used. Other selections are new to the field of weaving; therefore, the writer endeavors to show how specimens in this group may be adapted to the loom and converted into functional articles.

Procedure

Chapter I is set up primarily as an introduction to acquaint the reader with the problem which the writer attempted to solve. In selecting the organic materials for this study, choices were made on the basis of the fiber content of each specimen, the pliability and length of the fiber, and its possible durability and strength. A description of the materials which function in the experiments is included in this chapter.

The procedure used in preparing the plants for weaving is set forth in Chapter II. The testing of the fibers on the loom is described in Chapter III, which also includes a discussion of how the satisfactory woven samples were used in the fabrication of finished articles. A description of the articles woven follows, and other projects using the
same materials are suggested. Chapter IV presents the conclusions drawn from this study and sets forth standards for selecting native materials for weaving.

Review of Literature

In pursuing the problem of weaving with native materials, the writer found the following literature valuable. An article by the Craigheads shows how palm leaves may be used as mats for beds and as water-proof material for shelter.¹ While this article does not explain the techniques used in weaving the palm leaves, much can be learned from the illustrations which accompany the article. Geraldine Funk discusses the properties and use of fibers new to weaving, although no weaving techniques are considered.²

Some weaving techniques suitable for native materials may be found in a study by Georgia Belle Leach.³ In addition to some very good illustrations showing techniques in weaving as done by the Mexican people, some finished

¹John and Frank Craighead, "We Survive in a Pacific Atoll," The National Geographic Magazine, XCIII (January, 1948), 73-94.

²Geraldine Funk, "Weaving with Wild Fibers," Craft Horizons, IX (Summer, 1949), 16.

articles are also reproduced. Likewise, a study by Gladys Simpson gives valuable information on weaving with native materials.4

Description of Selected Materials

Beach grass (*Uniola paniculata* L.).—Sometimes called sea-side oats, beach grass is described by the common name it carries (see Fig. 1). It is pale green in color. The long individual grass blades and the simple, erect, woody stems bearing the seed heads grow directly from the ground. Beach grass grows from extensively creeping root-stock on very sandy land and along the sea coast, especially on coastal islands. It possesses possibilities for effective arrangements when used for decorative purposes.

Fig. 1.—Photograph of beach grass

Cane (*Arundinaria sp.*).—A member of the bamboo family, this cane grows in large clumps that are slightly under ten feet tall (see Fig. 2). The cylindrical stems are divided by joints every two to four inches. At each joint there is a blade-like leaf, often as long as eighteen inches. It is light green in color.

Bamboo cane grows in the very damp, rich soil of river and creek banks. It is very brittle at the joints; so only the leaves are of much value for weaving. These leaves become very leathery and tough after drying.

Cat-tail (*Typha latifolia*).—The cat-tail is a tall, perennial, swamp herb with a creeping root-stock and narrow flat leaves (see Fig. 3). The cat-tail has odd brown flowers in the form of dense, blunt sticks on unbranched stems that are often ten feet tall. It may be found growing in and

Fig. 2.—Photograph of cane.

Fig. 3.—Photograph of cat-tails.
around the swampy edges of fresh, still bodies of water. The plants appear as tall green spikes protruding high above the water, and when growing on land, will tower several feet above a man's head. The stalks grow very closely together, forming a thicket that it is impossible to penetrate without cutting a path.

**Coral (Gorgonian sp.).**—This coral, unlike the other specimens used in this study, is not a plant but a colonial animal (see Fig. 4). While still wet or fresh from the sea, exceedingly small pinpoint-like openings can be seen all along the main axis of the thread-like structure. In the living state very small, almost microscopic, coral polyps can be seen projecting from these openings. The stiff thread-like structure around which these numerous individuals live is of a horny nature and gives support to these greatly elongated coral colonies. These colonies will grow to an indefinite length. The individual threads will vary in color from a bright yellow to a dull earth red.
Date palm (*Phoenix roebelina*).—The date palm is a lofty tree, thirty to 100 feet in height (see Fig. 5). It has straight branchless trunks topped with a crest of waving shaggy leaves. The leaves resemble uncurled ostrich plumes and are sometimes as long as twenty feet.

The date palm is found growing all along the Gulf Coast; however, it thrives better when far removed from the sea's cooling influence.

Marsh grass (*Spartina spartina*).—Commonly called marsh grass, this plant grows in clusters to about two feet in height (see Fig. 6). It has very stout, needle-like, dark-green leaves which are usually tinged with purple at the tips.

Marsh grass grows abundantly in damp sandy soil where few other plants will survive.
Palmetto palm (*Sabal palmetto*).—The palmetto, a palm native to the New World, grows profusely in Florida and along the Gulf Coast. This variety of palmetto often grows to a height of sixty feet and higher (see Fig. 7). The stems, or trunk, will range in diameter from twelve to fifteen inches. The deeply cut, fan-shaped, bright-green leaves have a long fibrous stem. The palmetto is occasionally referred to as the cabbage palm.

Pampas grass (*Cortaderia selloana*).—Pampas grass is an erect perennial, growing in large bunches, with numerous long narrow basal blades that are very rough on the margins (see Fig. 8). The plant has large feathery plumes that are often used for decorative purposes. Pampas grass frequently reaches a height of twelve feet.
Spanish dagger (*Yucca gloriosa*).—The Spanish dagger grows to a height of eight feet, with a stem twelve to fifteen inches in diameter (see Fig. 9). It has dark-green leaves, sometimes reaching twenty inches in length. These leaves grow directly from the main stem, forming a crest at the top of the stalk. This plant is native to North America and may be found growing in most of the southern and western states and in Mexico.

![Photograph of Spanish dagger](image)

Spanish moss (*Tillandsia usneoides*).—Spanish moss is an epiphytic herb of the pineapple family. It has long, slender, moss-like stems that are gray in color and covered with tiny leaves and very small flowers (see Fig. 10). Spanish moss hangs in long strands from the branches of trees, preferably the post oak.

![Photograph of Spanish moss](image)
Tassel grass (*Sacharum narenga* Hamilt.).—Tassel grass grows very profusely along roadsides and in uncultivated fields and pastures. It reaches an average height of three feet, but in moist rich soil it is sometimes eight feet high (see Fig. 11). The stems are rather slender, a characteristic common to most grasses; however, this variety can be easily identified by the hairy growth found at the base of the seed structure. Tassel grass is pale green in color. 

In the succeeding chapters, the above-mentioned materials will be called by their common names.
CHAPTER II

COLLECTION AND PREPARATION OF MATERIALS

The materials used in this study were gathered over a period of two weeks. The descriptions that follow on the preparation of the specimens for weaving include washing the collected materials, drying, straightening the stalks, and stripping the leaves from the stems. Other processes discussed include removing fibers from plant stems, splitting leaves to desirable widths, soaking fibers and leaves, boiling fibers, gluing fibers together to form one continuous thread, and separating seed heads from their stems.

All materials were checked each day from the time they were collected until the writer considered them ready for weaving. Their condition was judged by the ease with which the fibers could be removed, or by the reduction of shrinkage that took place in the leaves from day to day until no change was evident.

Beach grass.--The samples of beach grass collected for experimentation were gathered at the time of year when they had dried on the plant. Actually, little preparation was necessary other than washing them under a slow stream of water to remove the sand from the seeds and leaves and
drying them again in the sun. When the second drying was completed, the weaving experiments were begun. Since the leaves of the beach grass were too fine to be a practical weaving material, they were stripped from the stems and discarded, leaving only the stem and seed heads to be used for experimentation.

The stems were normally straight, thus eliminating the problem of straightening; but the few that were warped after washing were tied in bundles while still wet and hung in the sun. A weight was attached to the lower end of the bundle to place tension on the whole group. The bundle was left for four days, or until thoroughly dry, before removing the weight.

Before the beach grass stems were used for weaving, the seed heads were removed, to be used separately.

**Bamboo cane.**—It was found that bamboo cane had to be gathered while still green to insure the weaver a straight piece of material. The leaves were removed as soon as the cane was gathered. They were torn into long narrow strips, arranged in small straight bundles—three or four inches in diameter—and tied securely at intervals of three inches. These bundles were then hung up to dry. The stripped cane was tied into groups of three or four canes each, weighted, and hung up to dry. This drying took approximately ten days
for both the cane and the leaves. The dried cane was split into splints an eighth of an inch wide.

*Cat-tail.*—The cat-tails were gathered while still green. In gathering the samples used for this project, they were pulled up by the roots and spread out to dry on higher sunny ground. It was found that if they were spread on damp ground they would mildew and decay. When thoroughly dry, after two to three weeks, the leaves were separated from the main stalk. The leaves were then stored in loose stacks to prevent creasing and breaking.

Some of these leaves were split so that the inner pulp might be removed in long strips for possible use alone as a weaving material.

*Coral.*—The species of coral used in this study may be found washed up along the beach in large matted bundles. Due to its very offensive odor, it required a drying period of at least three months before it was deodorized. Various experiments, including the use of disinfectants, were tried to rid it of its odor, but none was successful. Partial success was attained by soaking the coral in a strong solution of Ivory Snow, but even this was not satisfactory enough to make it worth while.

This material was spread in the sun to dry and then left out of doors in a protected place. After three months
the strands were separated and grouped according to color and length.

For textural interest, sections of the colored outer covering were removed from the main fiber before it was used as a weft. For another experiment all of the color was removed, leaving only the dark-brown inner filament.

**Date palm.**—Preparing the date palm for weaving was accomplished in three to four days. Once the leaf was cut from the tree, it was left for two days, not to dry completely, but to shrink. In this study, the leaf and the leaf-stem fibers were used as weaving materials. The small separate leaves were removed from the main leaf-stem and split into sixteenth-inch strips. The strips were placed in clear water and left to soak for twelve hours before weaving; then, while still wet, they were woven into a fabric. By using the leaves wet, they could be bent at each turn of the weft without breaking.

The fibers of the leaf stem were removed easily after the stem was split. This was done after the leaf stem had been allowed to dry for a week. Like the leaves, the fibers required soaking for twelve hours before weaving. The writer also got equally good results by boiling the fibers for thirty minutes.

**Marsh grass.**—Unless gathered while green, marsh grass is useless for weaving. While green, the leaf is in a long
tight roll, resembling a small unjointed reed or cane, and when cut at this stage, then allowed to dry, it retains its original form. If the marsh grass leaves are allowed to dry on the plant, the leaves open out and become soft and crumbly. The drying was found to take from seven to ten days. As previously mentioned, the leaf has a dangerously sharp end. This point was cut off soon after the leaf was dry, and prior to weaving.

**Palmetto palm.**—Both the leaf and the leaf-stem of the palmetto were used in experiments. The leaf-stem contains a strong fiber, rich brown in color and sometimes reaching a length of three feet or more. Strips from the leaf itself sometimes attain thirty inches in length. Both the stem fibers and the leaf strips required soaking before they were ready for weaving. Best results were obtained from a soaking period of not less than twelve hours. Another method of preparation used was the boiling of the fibers for thirty minutes prior to weaving. The weaving was done while the material was still wet.

**Pampas grass.**—The leaves of the pampas grass were cut and spread to dry. After four days the dry blades were split down the center of the vein and soaked in cool water. It was discovered that soaking only a few minutes gave as good results as soaking for several hours.
The edges of this grass are very sharp and tooth-like. However, one can move the fingers along the grass from the base of the blade to its tip without danger of laceration, since the tooth-like edges face the tip of the leaf.

Spanish dagger.—The "daggers," or leaves, of the Spanish dagger were cut and left to dry for three weeks. After drying, they were hammered to loosen the fibers and remove the hard outside skin. Then the partially loosened fibers were brushed vigorously with a stiff wire brush to clean and separate them for weaving.

The fibers, varying in length from six to fifteen inches, were joined with aeroplane glue to make one continuous thread. This work was very slow but not difficult.

Spanish moss.—Since Spanish moss gets its nourishment from the air, it must be boiled when first gathered; otherwise, it will continue to grow. Boiling for ten minutes was found to be adequate; then it could be spread to dry. The moss became so brittle after drying that it was hardly practical for weaving; however, where possible, long strands were salvaged and preparation made for weaving.

Tassel grass.—Tassel grass requires practically no preparation other than gathering and drying. All of the stalk, including the leaves and the tassel, was saved for weaving. The stalks were tied into bundles when first gathered and left to dry for three to four days. This completed the preparation process.
CHAPTER III

WEAVING OF FABRICS AND THEIR APPLICATION TO USEFUL ARTICLES

Introduction

All weaving experiments recorded in this study used the plain-weave technique so that emphasis would be upon inherent qualities of the material rather than on the pattern of the weave. The weaving was done on an eight-inch two-harness table loom, a twenty-four-inch four-harness "Structo" table loom, and a twenty-four-inch, square, hand loom similar to those used in making tufted rugs. One piece was woven directly on the frame of a two-panel screen. In a few instances, described below, the native materials were used for both warp and weft. In most cases, however, they seemed better suited for use as weft only; so they were given strength and resiliency by combining them with plain white cotton yarn, off-white carpet warp, or tan crochet cotton. The warp chosen varied with the material used for the weft, and in three of the experiments two kinds of yarn were combined in the warp.

In weaving the test fabrics, the writer kept in mind the standards by which the woven products would be evaluated:
(1) how well the fabrics would withstand continued use, and
(2) what was the range of uses each might serve.

Weaving of Fabrics

Beach grass and cat-tails.--Fabric was woven using
beach grass combined with cat-tail leaves (see Fig. 12).
Brown carpet warp was used for
the warp. The seed heads, or
"tassels," and their stems
were combined with the cat-
tail leaves to form a def-
inite texture. The unit of
the repeated textural pattern
comprised nine rows, as fol-
lows: four cat-tail leaves,
one tassel stem, three cat-
tail leaves, and one tassel.
The seeds (tassel) were pulled
out from the warp threads and
left to hang like fringe.

This combination of materials
presented interesting con-
trasts in both texture and
color. The dried cat-tail leaves displayed a very subtle
variety of colors ranging from light pink to beige to
yellow. The fringe of seeds presented a very pleasing
texture contrast to the flat blades of the cat-tail leaves; for further contrast in texture the round stem of the beach grass completed the pattern.

Cat-tails.---A second project using cat-tails was devoted to the weaving of the inside pulp of the leaf (see Fig. 13). For weaving, the "Structo" loom was warped with white cotton thread. The fabric obtained was very soft, much the same in appearance as is raw silk, but with the tactile quality of suede. The predominant color in this fabric was light tan, shading into light brown and giving the finished material a variegated effect.

Coral.---Two samples were made, using the coral as a weft. The first of these experiments was done on the
eight-inch loom, using a light-tan cotton warp (see Fig. 14). This fabric was inclined to be rather stiff, but it proved

![photograph of woven fabric using stripped fibers of coral](image)

flexible enough for many uses. The fibers were very much like horsetail, both in color and in texture. The second experiment was made with much of the bright coloring still on the main fiber. Two pieces of fabric were woven on the "Structo" loom, one with yellow coral and one with red coral (see Figs. 15 and 16). Enough of the color remained on the dark-brown fiber to form a very interesting, as well as attractive, pattern when woven with white cotton warp. As planned, the red and yellow coloring of the "skin" dominated that of the stripped part of the fiber; however, it was fascinating to note the dark-brown streaks as contrasted to the bright color in the fabric when the coral was woven. Both pieces of material were given five coats of liquid plastic and two coats of wall-paper lacquer.
Fig. 15.—Photograph of woven fabric using yellow coral.

It was at this time that the writer realized that through this process much of the original color of the coral, which had faded slightly in drying, was restored. While much of the coloring was restored through application of the liquid plastic and wall-paper lacquer, it was primarily applied as a protective coating to prevent future crumbling of the calcium-like coloring of the coral and to give it more flexibility.
Fig. 16.—Photograph of woven fabric using red coral.

Date palm.—The sample using the leaf of the date palm was woven on the "Structo" loom. The warp consisted of alternating threads of brown and white carpet warp (see Fig. 17). The palm leaves, although dried, still retained a pale-green tone and combined with the brown and off-white carpet warp to produce a very pleasing checked effect in the finished woven product. This material is surprisingly soft and flexible—qualities that make it adaptable to a wide range of uses in making woven articles.
Fig. 17.—Photograph of woven fabric using leaf of date palm.

Marsh grass.—An experiment was made using the marsh grass in weaving on the "Structo" loom. On removing the sample from the loom, it was discovered that the grass had too smooth a surface to be held in place by the cotton warp employed. A second experiment was then tried, using brown carpet-warp on the square hand loom. The warp threads were twined around the grass in an attempt to hold it in place. This, however, also proved unsatisfactory. For the third experiment the marsh grass was combined with
palmetto palm leaves (see Fig. 18). This proved more successful than the first two experiments. The resulting fabric had an interesting contrast between the dull roughness of the palm leaves and the lustrous smoothness of the marsh grass. This pattern utilized alternating rows of leaf strips and marsh grass.
Palmetto palm.—The fibers from the leaf stem of the palmetto were woven with alternating warp threads of brown and off-white carpet warp (see Fig. 19). The dark-brown palm fibers thus repeated the color of the brown warp threads and contrasted with the white, producing a woven fabric esthetically satisfying from both a visual and a tactile standpoint.

Pampas grass.—Pampas grass was found satisfactory for both the warp and the weft. This grass was woven while still wet. After weaving, the material was covered with five coats of liquid plastic. This plastic was applied to
the pampas grass in an effort to smooth out the rough edges of the woven leaves. The finished product proved too rough for use as a woven fabric, even after application of the plastic; therefore, it was discarded, even though it could be worked with ease.

**Spanish dagger.**

Spanish dagger fibers were so fine that it was found necessary to work in very bright light. White paper placed beneath the woven material as it progressed made it much easier for the weaver to see the separate fibers. Two shades of light-tan crochet cotton were employed for the warp (see Fig. 20). The change in color in the warp was so subtle that one did not become aware of it until the fabric was held against the light. This fabric was one of
rare beauty seldom seen in hand-woven material, in which leaf fibers were employed.

**Spanish moss.**—Long strands of the Spanish moss were separated and woven to make a small sample. The moss had become very brittle after drying, making weaving practically impossible; therefore, it was not used for further study.

**Tassel grass.**—

For weaving with the tassel grass, the leaves and tassels were left attached to the stems to present variety in color and texture (see Fig. 21). The unusual quality of the finished woven material resulted from the many colors presented. Many shades of dull red, purple, and yellow combined to create a visual texture of rich color, accented
with occasional spots of the satin tassels showing beneath the warp.

Bamboo cane.--A sample of weaving was made with a combination of bamboo splints and leaves as weft and light-tan cotton yarn as warp (see Fig. 22). The pattern of the weft repeated a bamboo strip and a leaf strip alternately. The resulting fabric had a very rough texture, but was visually pleasing, the cane being dark yellow with spots of white serving as accents near the joints.

Useful Articles Made from Woven Fabrics

Before this study could be considered complete, the woven fabrics had to be tested for adaptability to some practical use. The writer, therefore, experimented to find out which of the fabrics would prove serviceable under certain conditions.
The frame for a screen was made, leaving space for the application of a hand-woven panel (see Fig. 23). This panel, using a weft of beach grass and cat-tail leaves, was woven directly onto the screen, the screen frame serving as a loom. A similar use of these materials—beach grass and cat-tails—would be in woven blinds for a porch or game room. Leaves of cat-tails have, of course, also been used in the weaving of chair seats, baskets, purses, place mats, lamp shades, or floor mats.¹

The fabric made from the pulp of the cat-tail leaf was used in making an evening bag (see Fig. 24). A Spanish

buckeye, found on the beach at Corpus Christi, was used as an ornament in completing the design of the bag. This material would also make a suitable mat for a picture.

A lamp was constructed, using an aluminum stove connection for a stand (see Fig. 25). The lampshade, with white detail paper as a foundation, was covered with the fabric made with yellow coral. Since the coral will not hold up under continued handling, its range of uses is limited.

The fabric woven of date-palm leaves, being durable and very flexible, was made into a place mat (see Fig. 26). Other possible uses for this fabric would be for purses or lampshades.
Fig. 26.—Photograph of place mat of fabric using date palm leaves.

A handbag was made from the fabric woven of palmetto palm fibers (see Fig. 27). A zipper was inserted to complete construction of the bag. This material could be used for place mats or lampshades.

Fig. 27.—Photograph of handbag of fabric using palmetto palm fibers.
The marsh-grass and palmetto-palm fabric was made into a place mat (see Fig. 28). It was necessary only for the writer to tie the warp threads at each end of the material to have the place mat completed.

The tassel grass seemed best suited for some type of matting (see Fig. 29). Since only a narrow piece of material had been woven, it was made into a place mat. If one had access to a wider loom, the material could be woven into mats for the floor or into window shades.
CHAPTER IV

SUMMARY AND RECOMMENDATIONS

Summary

This study explored some of the materials native to the Texas Gulf Coast relative to their adaptability to weaving. The solution was reached through three major steps; first, the collection and the identification of the materials; second, by determining the range of uses each might serve in a weaving program; and third, by the development of each selected item into a finished woven product.

Chapter I served as an introduction to acquaint the reader with the foregoing problem. A description of the collected materials and the limitations of the study were presented.

Chapter II was devoted to the collection of the specimens. The preparation of these materials for weaving was described.

Chapter III included the testing of the fibers on the loom. The successfully-woven fabrics were used in the planning of finished articles.
In collecting the materials for this study the writer exercised much care in choosing materials with the following qualifications: (1) plants with few or no joints, (2) materials of a high fiber content, (3) strong fibers, and (4) rich color.

Some of the methods employed for preparing the materials for weaving were known to the writer through past experience. In preparing the unfamiliar materials, the trial and error method was employed. While it was possible that sources could have been found, explaining methods for preparation of similar materials, it was felt that more value would be derived from actual experimentation.

The looms and technique used in weaving the native materials were limited; first, only the plain-weave technique was employed; second, only three types of looms were used—an eight-inch two-harness table loom, a twenty-four-inch "Structo" table loom, and a twenty-four-inch, square hand loom.

When weaving the materials was completed, experiments were made to test the fabrics under conditions of actual use. The fabrics found most desirable for use were: the beach grass and cat-tail leaves, used as a panel for a screen; the fabric woven with the inside pulp of the cat-tail leaf, used in the construction of an evening bag; the colored coral, employed as a covering for a lampshade; the
date-palm leaf fabric, used for making a place mat; the marsh-grass and palmetto-palm leaf fabric, also used as a place mat. The fabric woven of fibers from the leaf stem of the palmetto was used successfully for a handbag. The weaving of a fabric of Spanish dagger fibers was successful, but was not employed in making a finished article. This fabric was very flexible, a quality which makes it adaptable to many uses. The tassel grass fabric was satisfactorily used for a place mat. Other possible uses for the former were suggested.

Recommendations

The writer is aware that only the surface has been touched in this study of weaving with native materials found in the Corpus Christi area. Further experimentation might be done in this field by exploring a wider range of native materials. Some of the materials available, but not included in this study, are pine needles, the inner bark of the mesquite and cedar trees, the fibrous seeds from milkweed and the Texas virgin bower, Johnson grass and its roots, and corn shucks. Although emphasis has been placed on the plain-weave technique by the writer, an increased variety of textural effects might be obtained were other weaving techniques employed. These fabrics woven of native
materials might be adaptable to more uses by combining them with other types of warp and by employing larger looms.
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