CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

LAVA LAVAS OF THE WESTERN CAROLINE ISLANDS

A graduate project submitted in partial satisfaction of the requirements for the degree of Master of Arts in

Art

by

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DEDICATION

To the people of Fassarai

ACKNOWLEDGEMENTS

My sincere appreciation and thanks to Chief Hathiylul and Chief Harongthal, to Joanna Digelmar, my teacher and interpreter, to George Hofalui, my island host, to my father, Bill Hamner, who accompanied me on this adventure and to my husband, Dan, whose support enabled me to do this project.

TABLE OF CONTENTS

Figure

Figure Page

Plate

ABSTRACT

LAVA LAVAS OF THE WESTERN CAROLINE ISLANDS

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The primary concern of this project is to document the fiber preparation and the weaving process of the wraparound lava lava skirt worn by the women in the Western Caroline Islands of Micronesia and to send the information back to them for their future reference.

Due to acculturation many changes are taking place in the Carolines. The use of commercial thread has almost completely replaced the natural fibers and soon the loom may fall into disuse.

By recording the total weaving and fiber preparation processes and including information on the fiber changes occurring now in the lava lava and a brief history of the area and of the lava lava, I hope to help preserve some of the rich heritage of these island people.

Part 1

INTRODUCTION AND HISTORY

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I did my weaving research during August and September of 1978 on the tiny island of Fassarai in the Western Caroline Islands of Micronesia. Fassarai is located within the Ulithi Atoll about 380 miles southwest of Guam and 800 miles north of New Guinea (Figure 1).

Most of Micronesia is a Trust Territory of the Pacific administered by the United States Department of the Interior and includes the Caroline, Marshall and Mariana Islands. (The Gilbert Islands are technically part of geographic Micronesia but they are a British colony.)

Micronesia means "tiny" islands and includes 2,141 islands and atolls of which only 96 are inhabited. These islands cover an area the size of the continental United States, but together only contain some 700 square miles.

Early inhabitants of this area filtered down from Southeast Asia into the Philippines and Indonesia and eventually populated Palau, Yap and the Mariana Islands. Later on descendants from eastern Melanesia occupied the Gilbert, Marshall and Eastern and Central Caroline Islands. Over four centuries ago European explorers arrived in the Western Carolines searching for a water route to the East

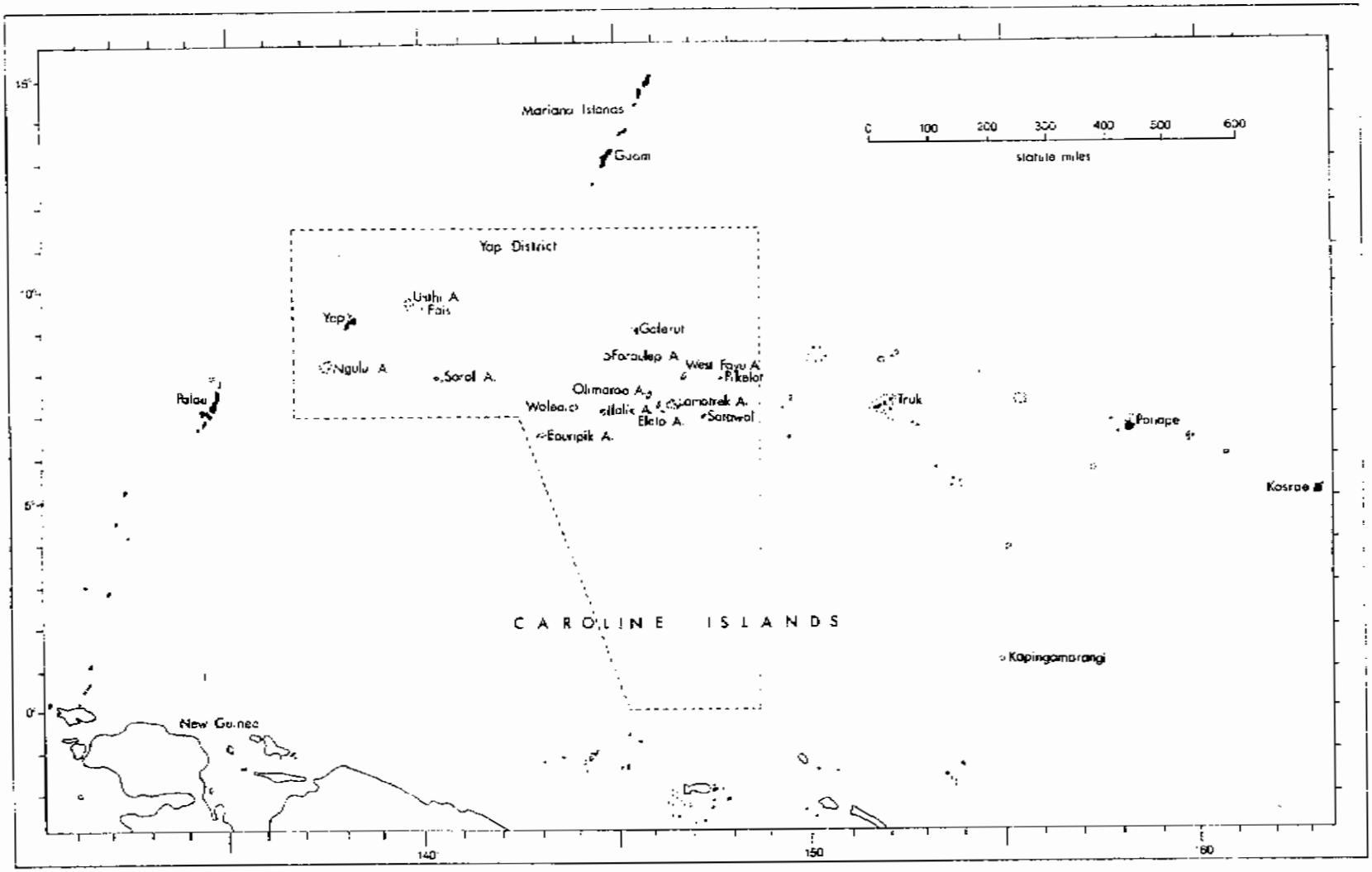

Mariana Islands
Guam
0 100 200 300 400 500 600
statute miles
Yap District
Urithi A.
Fais
Yap
Gofarut
Ngulu A.
Sorol A.
Faraulep A.
West Fayu A.
Pikelot
Olimarao A.
Palau
Woleai
Ifalik A.
Lamotrek A.
Elato A.
Satawal
Eauripik A.
Truk
Ponape
Kosrae
CAROLINE ISLANDS
Kapingamarangi
New Guinea
140
150
160

figure 1

Indies and Ulithi was probably sighted in the early 1500's by either a Portuguese or a Spanish captain. During the next three centuries the area was occasionally visited by English, German and Spanish traders, missionaries and anthropologists.

In 1899, after the Spanish American War, Germany purchased Micronesia (Guam was ceded to the U.S.A.) but the administration was short lived because in 1914 the Japanese declared war on the German Empire and took control of Ulithi and the rest of the islands in Micronesia. For eight years the Japanese military controlled the area and in 1922 the League of Nations gave Japan a mandate over the islands. Micronesia remained under Japanese jurisdiction until 1944 when the United States seized the area during World War II. Since 1947 most of Micronesia has been under a Strategic Trusteeship Agreement with the United States which will expire in 1981. In 1978 the Northern Marianas became a commonwealth of the United States.

Change is continually taking place in Micronesia and its future is uncertain. Yap, Ponape and Kosrae have become the Federated States of Micronesia, the Marshall Islands are under a Constitutional Government and the Government of the Republic of Palau is still in the process of being formed.

Ulithi is part of the Yap District, the most traditional group of islands in Micronesia, which includes

Ngulu, Sorol, Woleai, Eauripik, Ifalik, Elato, Olimarao, Lamotrek, West Fayu and Faraulep Atolls and the islands of Pikelot, Satawal, Gaferut and Fais (Figure 1).

Ulithi is a coral atoll comprised of some 30 small islets that surround a deep lagoon about 15 miles wide and 24 miles long (Figure 2). The four islands that are inhabited are Falalop (the largest), Mogmog (the highest class island of the group), Asor and Fassarai (the lowest class island of the group).

Fassarai is a long, curved island about a mile long and 600 feet across (Figure 3) and is inhabited at this time by about 75 people. Before I could visit this secluded, traditional island I had to get permission from the Trust Territory officials on Yap and from two island chieftans. The first chief I met was Chief Talog, second in command to Chief Harongthal of Fassarai, who gave me permission to visit his island. However, Chief Hathiylul (Chief Hathy), the Paramount Chief of Mogmog Island and all the outer islands, has the final word on visitors and I was privileged to get his permission to spend a month on Fassarai. Chief Hathy selected George Hofalui of Fassarai to watch over me and George's married daughter, Joanna Digelmar, became my teacher and interpreter.

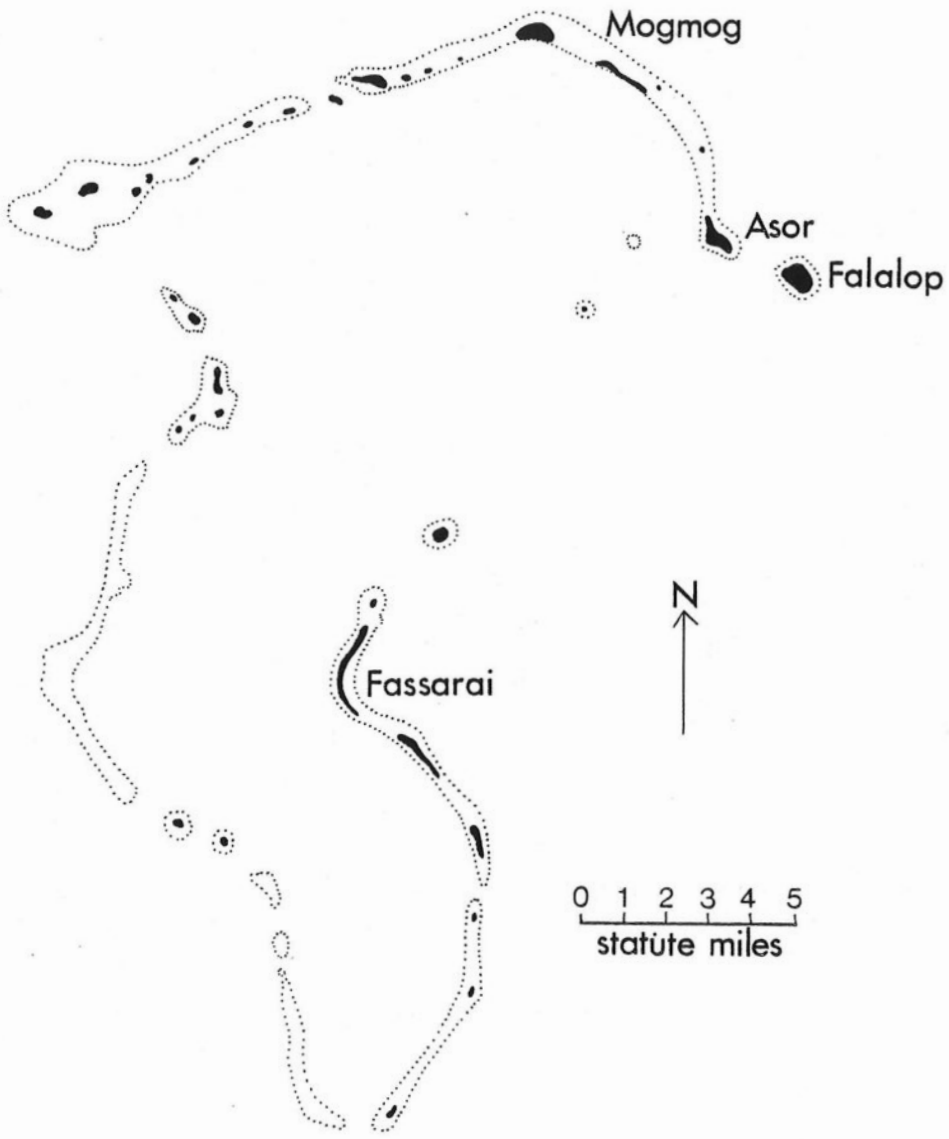
Fassarai is a traditional island in every respect. There is no electricity and drinking water is caught from roof and tree catchments. The villagers still live in

Addendum:

Addendum:

Page 11 should read:

Weaving on a loom is limited to the Caroline Archipelago (excluding Palau) and to some of the islands on Melanesia's northern fringe.



ULITHI ATOLL

figure 2

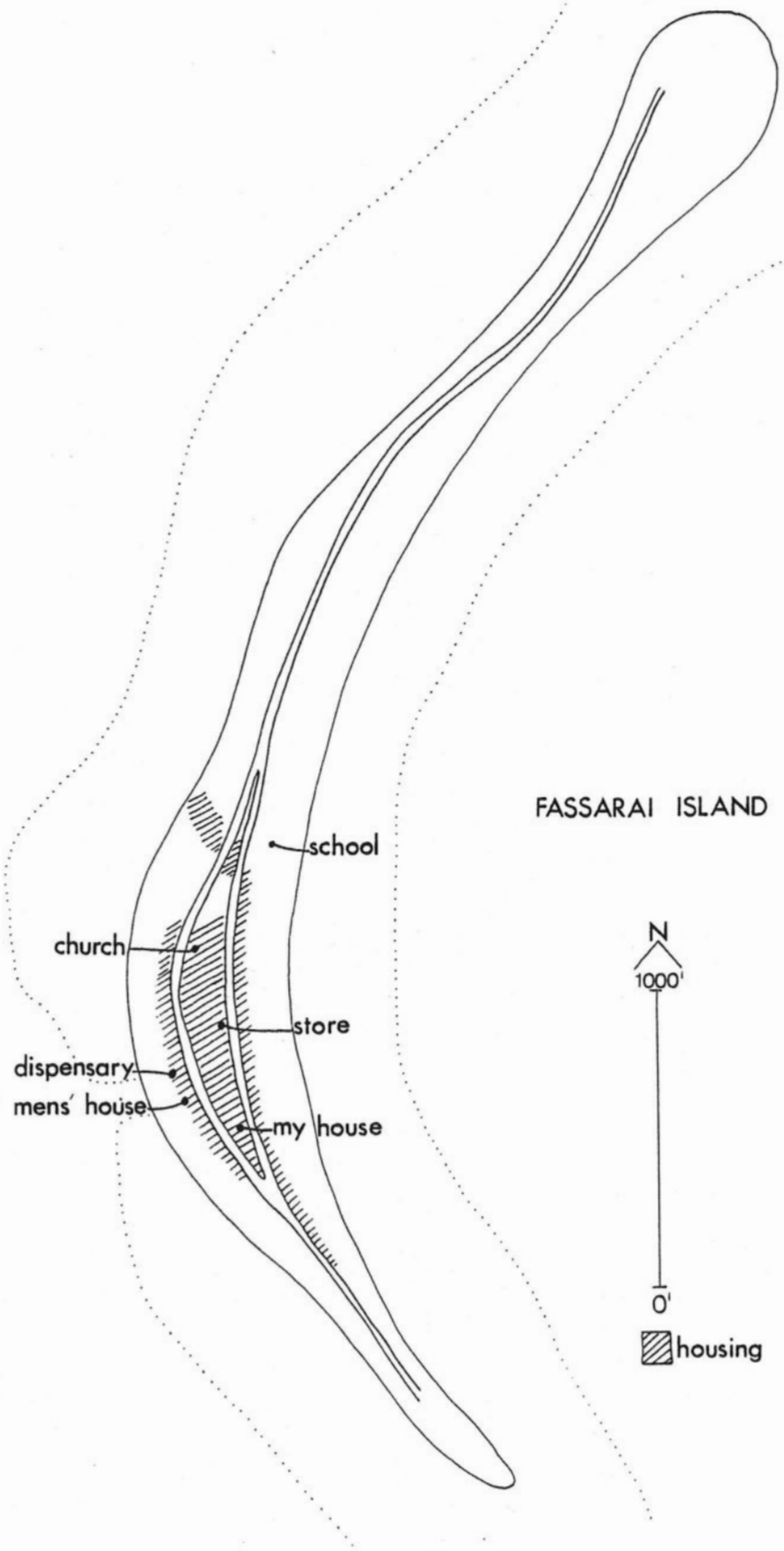

FASSARAI ISLAND
school
church
store
dispensary
mens' house
my house
N
1000'
0'
housing

figure 3

small thatch roofed houses with coral floors and wear loincloths and wraparound skirts called lava lavas.

The Ulithian people have tenacious social institutions and have fought to save their culture through inundations by the Spanish, British, Germans, Japanese and Americans. Today change is occurring very rapidly in this island paradise and some of the old traditions are being lost through acculturation.

One of the changes taking place is in the fiber content of the lava lava. Commercial thread is being used instead of the traditional banana and hibiscus fibers and young girls are losing interest in learning the age-old, time-consuming weaving process that represents the women's pivotal role in their culture.

As disruption from outside sources continues to occur, what will happen to the lava lava and the important spot it holds within the society of these Micronesians? "Societies which expressed their integrity and self-confidence in their textile arts [such as in Indonesia] have been permanently broken by the trauma of entering modern society" (Lindholm, 1979:39).

There is a possibility that their ancient loom will be forsaken for a modern one and that commercially produced lava lavas will be introduced to these people who will then decide that there is no need to manufacture their own garments. The disuse of native women lava lavas could even

cause a decline in some of their cultural rituals. These are just some of the possibilities that can happen in the very near future as Micronesian culture is assimilated by other cultures and a money status economy takes over.

Dr. William Lessa stated in 1964, "It requires no clairvoyance to predict that it will not be too long before the native loom falls into disuse. Should it do so, it would release women from a good deal of time spent in preparing fibers and laboriously weaving them" (Lessa, 1968: 356).

Because these changes are occurring so rapidly, I feel that it is important to document the weaving process and the fiber preparation now before it is too late.

My area of research was only on one island, Fassarai, but I feel that since this island is so traditional and has close proximity to a district center, the lava lava fiber changes occurring here are indicative of the changes that are occurring or will occur in the near future on the outer islands.

Part 2

THE LAVA LAVA

Part 2

THE LAVA LAVA

The women's lava lava, or wraparound skirt, and the men's loincloth, or *thu*, are still the traditional garments worn by the people of the Yapese atolls in the Western Caroline Islands. They are woven out of banana or hibiscus fiber on an ancient horizontal backstrap loom.

Weaving on a loom is unknown in Oceania except for in the Caroline (excluding Palau) and Mariana Islands. The highest development of weaving occurred in the past on Ponape and Kosrae and to the west, toward Yap, the development declined.

Today lava lavas are still being made on the low atoll islands surrounding Yap and Truk, but not on Ponape and Kosrae. Clothing changes occurred in the Eastern Carolines in the mid-nineteenth century when missionaries arrived and slowly the weaving of tols (skirts), or body mats, as they were called then, declined.

Elizabeth Krämer-Bannow reports that during the 1910 German expedition she found that the women on Kosrae had completely stopped weaving tols and only pieces of old mats could be found in their weaving baskets. To help revive the tradition of these art pieces she offered ten German

marks apiece for each new tol. Thirty were woven for her within a three-week period, proving that even though the tols were not worn, the weaving skill had not been completely lost (Krämer-Bannow, 1919:187).

Woven belts and headbands were being produced at this time because the missionaries had found a market for them in America. Today only samples of old body mats can be found in museums.

The men's loincloth, called *guluch* in Ulithian, is longer and wider and simpler in design than the women's lava lava and is always woven from the softer, more pliable banana fibers. A garment made completely from banana fibers is called a *ter*.

During the German and Japanese occupations cotton loincloths were introduced but it has only been during the last 20 years that bright, solid colored cotton material has almost completely replaced the woven loincloth. The banana loincloths that are woven today are given as gifts or saved as tributes during burial rites. Since the men's use of the woven loincloth is declining, I will concentrate on discussing the use and production of the women's lava lava.

Gulfui, which means hibiscus, is the special Ulithian name given to the women's knee length lava lava. Their wraparound skirt is a rectangular piece of material about 18 to 23 inches (46 to 58 cm) wide and 80 inches (203 cm)

long which includes approximately 11 inches (28.5 cm) of fringe on either end. For a very tall or heavy person the width and length can be extended accordingly (Plate 1).

The fabric is wrapped around the hips in such a manner that the fringes hang down in front of the body between the legs (Figure 4). Today some women wear a cloth wraparound skirt under the woven skirt for added comfort.

Lava lavas are traditionally held up at the waist with a belt of carved discs made by the men. These discs are hewn from sea shells, tortoiseshell or coconut shells and are strung on sennet cords (rope made from twisted coconut fiber) to form a belt approximately 2½ feet long. A 10 inch cord on each end is tied on the back at the waist. The wide part of the belt wraps over the skirt in the front but does not hold down the gaping section in the back. The belts vary in width size from ¼ inch to 1½ inches and larger (Plate 2 and Figure 5). The more strands the belts have the more valuable they are.

One of the more popular modern belts is the army belt of World War II since its brass buckle has an easy clasp. Other types of belts used now are men's pant belts, rope and cording (Plate 3).

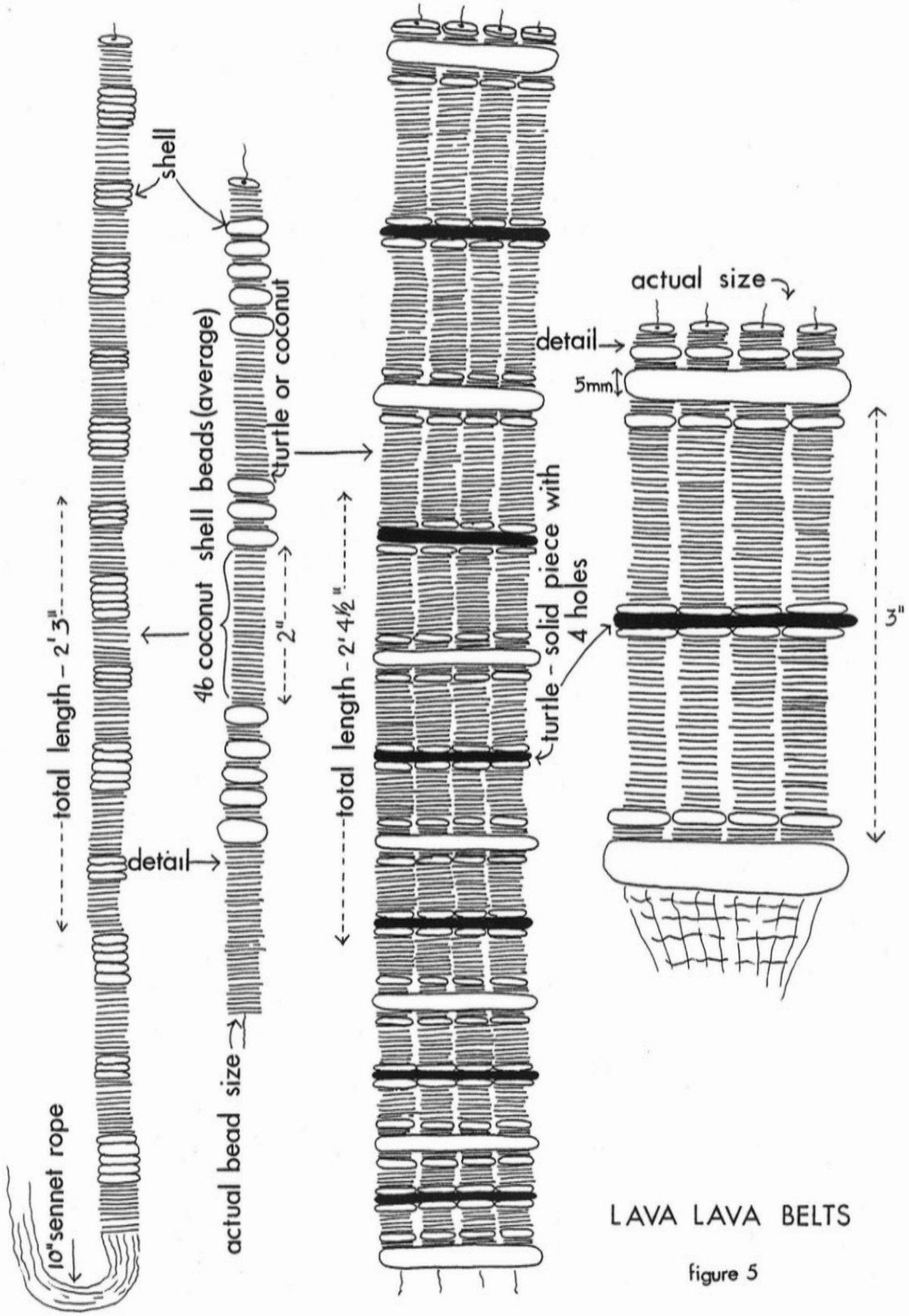
The upper portion of the women's body is unadorned, exposing the breasts which have no sensual connotations in this culture. It is the thigh and groin that are the sensuous areas of the woman's body and must not be seen.

Plate 1. Two lava lavas of different width and length. (A) Banana and commercial thread; (B) Hibiscus and banana fiber.


A
B

figure 4

Plate 2. Detail of traditional lava lava belts.



LAVA LAVA BELTS

figure 5

Plate 3. Traditional and modern lava lava belts.

In the past elaborate geometric designs were tattooed on the women's thighs, groin and labia minora.

The women take special precautions to help protect this part of their body. They bathe in the ocean with their skirts on, they do not climb trees and when getting into a canoe they push themselves up onto the edge in a sitting position and swing their legs over into the canoe. The privilege of seeing the woman's thigh area belongs only to her man.

Prepubescent girls usually wear grass skirts made from shredded coconut or pandanus leaves although some wear simple cotton wraparounds that are twisted and tucked at the waist. It is not until they have reached menses and have gone through a ritual that they are allowed to wear the lava lava.

Traditionally when a young girl reached menarch she went to the menstrual house. Here she bathed in the ocean wearing her grass skirt and then changed to a dry grass skirt and placed a lava lava on her head. For four days the girl wore the lava lava on her head and for four more days on her shoulders. Then after a magical coming of age ritual with the older women she would switch to wearing the adult lava lava (Lessa, 1966:103). Since the menstrual houses are not being used much any more, this traditional ritual has probably fallen into disuse.

When a young girl starts menstruating or is around 11

years old she begins to learn to weave from her mother, older sisters or aunts. It is through this master-apprenticeship that she learns the family weaving skills and design motifs. But weaving appears to be on the decline since the younger girls of today do not seem as interested in learning the tedious weaving and fiber preparation process.

The weaving in the Caroline Islands is done primarily by the women except on Kapingamarangi where the men do the weaving (refer to Figure 1). The Ulithians taught both the Yapese women and men to weave on the ring warped loom but only men weave money cloth on the extended loom (Riesenberg and Gayton, 1952:350).

Depending on the amount of time available, the weaving is usually done inside the house for several hours each morning. I arrived in late August during the breadfruit season and few women had time to sit and weave since they had to participate in the communal preparation of the fruit.

The traditional skirt is made primarily with hibiscus fibers. When a combination of hibiscus and banana fibers is used the softer banana fiber is used on the edges that rub up against the waist and on the back of the knees. The basic seven striped everyday skirt (the type I will concentrate on) is a simply woven (over one, under one), warp-faced (more warps than wefts), black and white striped garment that all adult women are expected to weave (Plate

4). The other two categories of weaving that the lava lavas fall into include pattern weaving and brocading.

In pattern (warp-float) weaving, extra sheds are created by adding more string heddles whereas in brocading extra wefts are inlaid to create a more complicated surface design. Many skirts combine all three techniques (Plate 14). The resulting geometric designs are similar to local tattooing and plaited matt motifs and are comprised of triangles, diamonds, crosses and chevrons.

In the past the Kosraens and Ponapeans were the most skilled of the island weavers and produced finely woven and embellished fabrics. The Kosraens specialized in patterns made with intricate knotted warps and the Ponapeans warp knotted and brocaded with shell discs and small beads.

These more intricately designed fabrics have greater value than the more simply woven (tabby or plain weave) skirts and historically "chiefs, navigators, carpenters, and one class of ritual specialist could be identified by the colors and patterns of their loincloths" (Mead, 1979: 349).

Color still plays an important part in the wearing of the lava lava and women traveling to a higher class island from their lower class island home usually wear skirts of subdued colors.

Every adult woman is expected to be able to make the basic everyday skirt which consists of seven large stripes,

Plate 4. Seven striped lava lavas.

(A) Hibiscus, banana and commercial thread;

(B) All commercial thread.


A
B

six narrow stripes and a fine striped border that run the length of the material (Plate 4). Black and white are the most popular colors with blue next in preference and yellow and green following. Red is used sparingly on the borders of most lava lavas and is occasionally edged with a line of green, white or black. The color preference depends on the weaver.

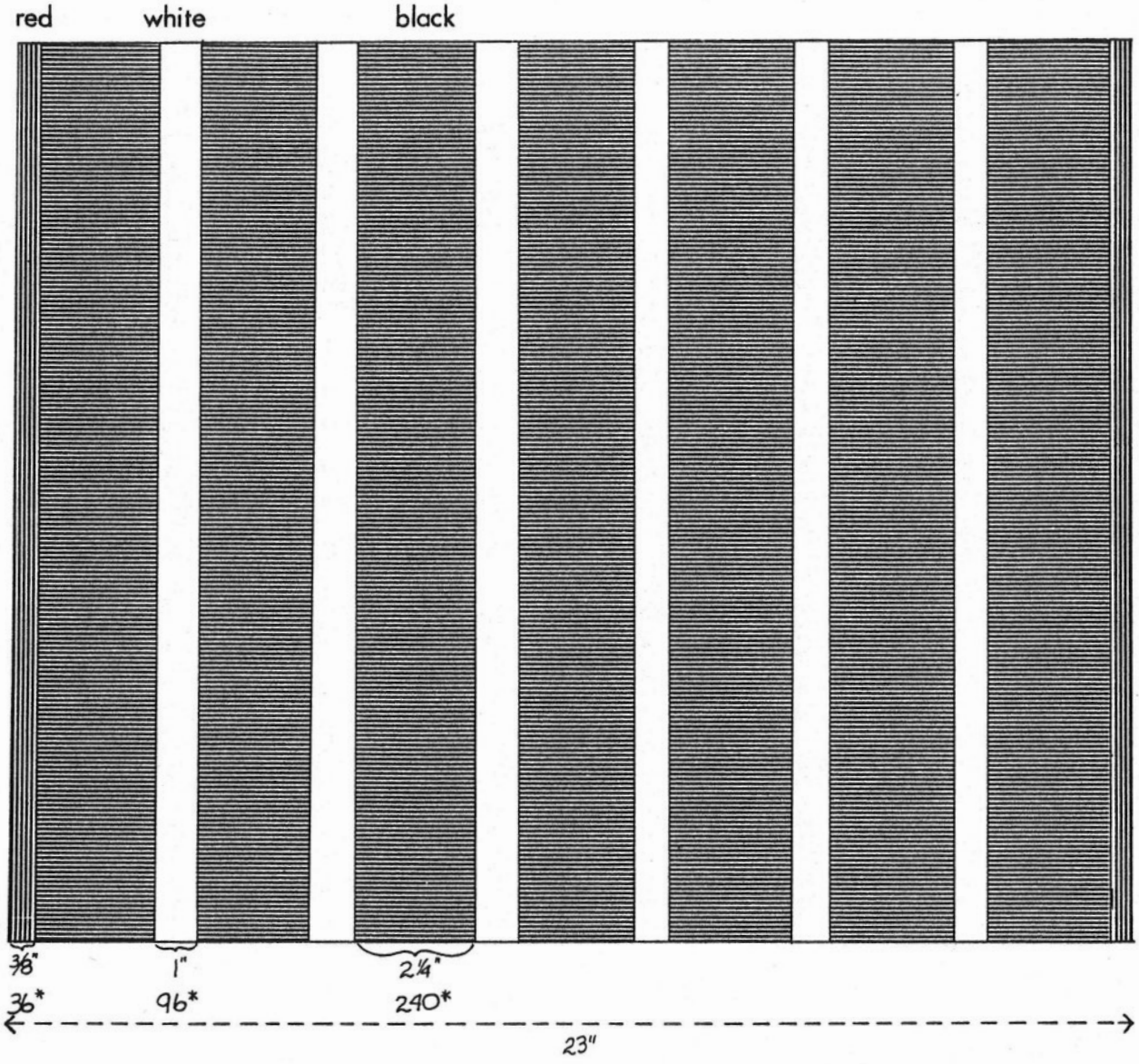
Some color combinations preferred:

Seven Stripe	Six Stripe
black	white
black	yellow
black	red
blue	white
blue	yellow
green	white
purple	natural
purple	red and white

Traditionally these skirts are made with hibiscus or hibiscus and banana but today commercial thread is also being used. Men's loincloths are made only of banana.

As seen in Figure 6, the average size for the large stripe in a lava lava woven with commercial thread is 2¼ inches (240 threads), the smaller stripe is ¾ inch (96 threads) and the border stripe is ½ inch (36 threads). Stripe size and thread counts vary considerably depending on the fiber used, the size of the fiber and the weaver (see comparison chart, Figure 7). These stripes are created within the warp and color variations are created by knotting on new colors to the continuous warp (refer to section on Warping).

BASIC SEVEN STRIPE LAVA LAVA



* thread count

Stripe size and thread counts vary according to individual weaver and the material used.

figure 6

Variations in the basic striped pattern are made by carefully and sparingly adding neutral or contrasting warps to the larger stripe or border area. The more skilled weaver may even incorporate geometric designs or subtle pattern changes by using extra string heddles to form more sheds, but the basic integrity of the simple striped skirt is maintained.

When different heddles are used in the seven striped areas, plain tabby weave is usually used in the six striped area. There are multiple variations and the preference is up to the weaver.

The 1979 girl graduates from the Outer Islands High School (Falalop, Ulithi) chose to wear identical seven striped lava lavas of purple, red and white that coordinated with the boys' *thus*.

In addition to being used as garments, lava lavas are ceremonial pieces and are "used as a gift, as a tribute, as payment for punishable acts and as a trade item" (Welborn and Bothmer, 1977:23).

A special, intricately designed lava lava called a *machii* is woven to present to the Chief of Gagil (Gachapar Village) on Yap. The *machii* has no central stripe but has elaborate geometric designs going one-third of the way up the middle of both sides. It is not worn, but is used as an altar cloth during rituals.

Legendary history reports that this chief is the owner

of all the outer islands since Yap discovered them. However, the spiritual beings were there before the chief so the *machii* is given to the spirits. After the *machii* has been presented to the Paramount Chief of the outer islands he, in turn, gives it to the Paramount Chief of Gagil who gives it to the priest or magician who is in charge of the sacred place. It is left with the other offerings at the sacrificial spot where it must remain until it rots. It must never be worn, sold or used for personal use.

When a new paramount chief is selected a special type of loincloth is held over his head during the installation rites. This loincloth is never worn, but is sometimes given as a gift to the Paramount Chief of Gagil (Lessa, 1966:34). Woven loincloths are also used in fishing rituals and the lava lava is referred to in myths.

A myth is told about Rapungalug, a spurned husband, who found out that his wife was having an affair with another man. He divorced her by moving out of their hut and the village chiefs decided that the ex-wife's family should be fined 30 lava lavas to be given to Rapungalug and his family. The punishment was accepted and the debt was accomplished in two months (Welborn and Bothmer, 1977: 25).

The lava lava also holds an important place in the burial ritual. When a lava lava is given as a burial gift

it is referred to as a *hotut* which means sheet or blanket. When someone dies you say, "Here is my *hotut*." Only *hotuts* of natural fiber are allowed next to the body during burial.

After the dead person has been washed, anointed with oil and rubbed with fragrant flowers and leaves, a loin-cloth and tumeric are placed under the right arm so they can be presented as gifts to the custodian of the other world (Lessa, 1966:113). Personal belongings are buried along with the dead such as bowls, cooking utensils, sleeping mats, necklaces and lava lavas. Friends and relatives come from other islands and bring food and lava lavas as tribute to the dead person. Depending on personal preference, a few to a great quantity of lava lavas are buried in the grave. When Jesuit priest Father Walter died of cancer in 1977 he was buried on Ulithi in a grave with hundreds of lava lavas.

Another story recounts the death of a beloved island man. After the family had bathed and prepared the body for burial, friends and relatives began arriving with lava lavas.

> To which member of the family the skirt was given, depended on how the gift-bearer was related to the deceased person. The closer a person's kinship, the closer to the immediate family the gift of skirts would be given. A distant relative gave his gift at the end of a complex chain of aunts, uncles and cousins. Gradually, each gift moved up the kinship chain until a large basket of lava lavas had accumulated at the family's house.
>
> When all the gifts had been received, several lava lavas were put into the box with the

> body. It was necessary that those next to the body be made of fiber. The man had requested that only a few be buried with him, so one was placed under each arm and one was placed on the chest. These lava lavas were chosen at random from the large basket, as was the custom, so that no particular friend or relative would be shown favoritism. . . . After the funeral, some remaining lava lavas were given to relatives who had to travel especially long distances. The few skirts that were left were divided among the man's children (Welborn and Bothmer, 1977:24).

The lava lava as a garment and as a ceremonial piece has special significance in this Micronesian society and its preservation is important.

Part 3

LAVA LAVA COMPARISONS

Part 3

LAVA LAVA COMPARISONS

The purpose of the following comparisons is to document the fiber changes occurring at this time in the lava lava due to the introduction of commercial thread.

There is quite a difference visually, texturally and esthetically between the lava lavas made from all natural fibers, those made from all commercial thread and the ones made out of a combination of both. The style, or total effect, of the textile is a combination of color, the fibers used and the quality of the weaving (Plates 5 and 12).

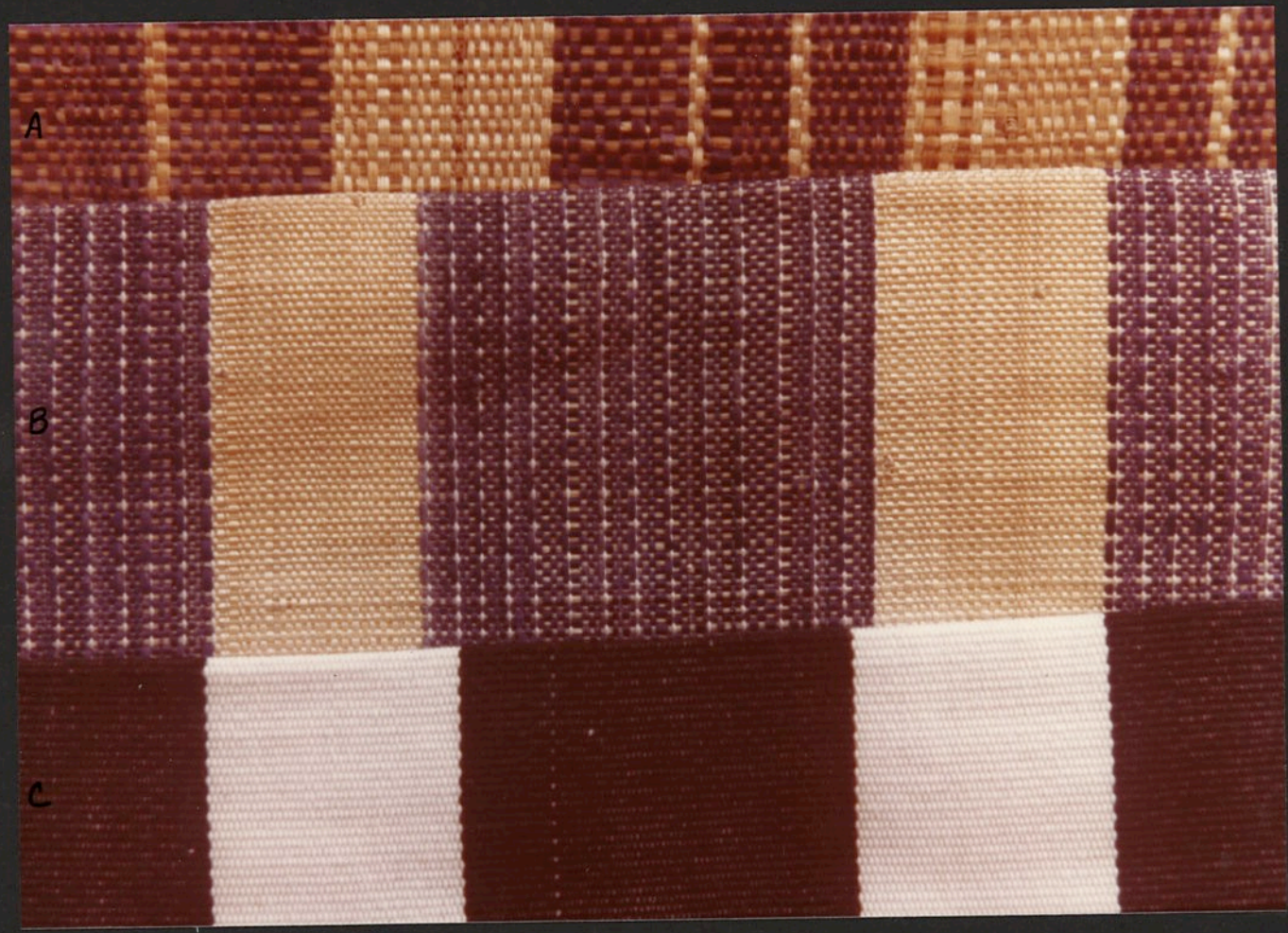
My first lava lava comparisons will include four samples of the basic seven striped skirt and the second group of comparisons will include four other skirts of varying designs and fiber content. Exact sources of these skirts are unknown, only that they are from the outer islands in the Yap District (Figure 7).

COMPARISONS OF FOUR SEVEN STRIPED LAVA LAVAS

(1) HIBISCUS AND BANANA (PLATES 1B AND 6)

This particular fiber skirt is less refined and coarser to the eye and hand than the other three skirts.

Plate 5. Transitional comparison of three lava lavas of different fiber content. (A) Banana and hibiscus; (B) Banana, hibiscus and commercial thread; (C) All commercial thread.


A
B
C

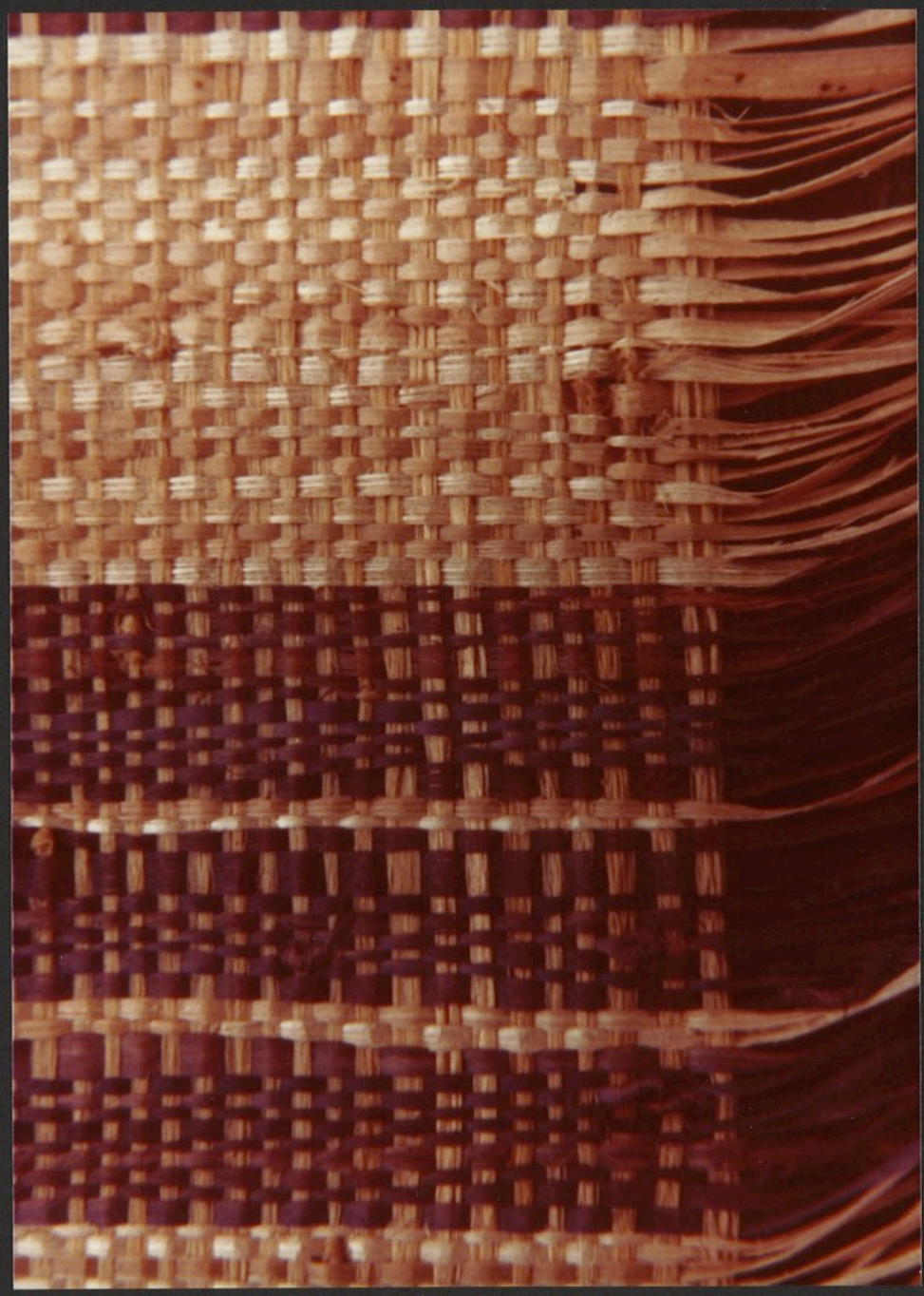
	7 STRIPE LAVA LAVAS[+1]	COLOR	LARGE 7 STRIPE	NARROW 6 STRIPE	BORDER	WARP EPI.[+2]	WEFT EPI.	WIDTH	LENGTH	FIBER WIDTH
1	HIBISCUS 56% BANANA 44%	PURPLE NATURAL	1½" to 2¼" (3.8cm–5.7cm) 35 to 49 ends	1" (2.5cm) to 1¼" (3.2cm)	¼" (7mm) to ⅜" (1cm) 12 ends	20	BANANA 15	21" (53.2cm)	58½" (148.3cm)	1-3mm
2	HIBISCUS 15% BANANA 85%	DARK BLUE MEDIUM BLUE LIGHT BLUE PURPLE RED NATURAL	5.3cm (average) (range 4.3 - 6cm)	2.7cm (average) (range 2.5 – 3.5cm)	6mm 9 ends	26	HIBISCUS 13	21½" (54.5cm)	56½" (143.3cm)	2-3mm
3	HIBISCUS-50% BANANA-32% COMMERCIAL THREAD-18%	PURPLE NATURAL	2" (5cm) 85 ends	1" (2.5cm) 42 ends	6mm 28 ends	42	BANANA 32	19½" (49.5cm)	57½" (145.8cm)	1mm
4	COMMERCIAL THREAD 100%	BLACK WHITE BORDER: red, green, white	BLACK 1⅝" (4.2cm) 160 ends	WHITE 1⅛" (2.8cm) 88 ends	3/16" (5mm) RED-18 GREEN-5 Thread WHITE-3 26 ends	84	2 strands pink COMMERCIAL THREAD 24	18" (45.6cm)	56½" (143.3cm)	
	PATTERNED LAVA LAVAS									
5	HIBISCUS 100%	NATURAL	–	–	–	17	HIBISCUS 12	22½" (57.1cm) to 24" (60.8cm)	61" (154.5cm)	2-4mm
6	BANANA 100%	NATURAL PURPLE RED	–	–	–	31	BANANA 21	21" (53.2cm)	56½" (143.3cm)	1-5mm
7	BANANA 39% COMMERCIAL THREAD-61%	PINK BLACK WHITE NATURAL PURPLE	–	–	–	BANANA-29 COMMERCIAL THREAD-120	BANANA-29 COMMERCIAL THREAD-33	average 21" (53.2cm) (20" - 21.5")	53" (34.4cm)	1mm
8	COMMERCIAL THREAD 100%	PINK RED YELLOW GREEN BLACK WHITE	–	–	–	82	C. THREAD 1 strand grey thread 27	19" (48.2cm)	55" (140.5cm)	

[+1] fibers in warp
[+2] ends per inch

LAVA LAVA COMPARISONS

figure 7

Plate 6. Detail of hibiscus and banana fiber lava lava.



joining knots are bulky and visible in the warp and weft, giving a rough, scratchy surface to the fabric. There are also many floating warps and wefts and the stripe sizes vary considerably, showing that the weaver was not as skilled or as careful as other weavers. Although the warp creates the stripe design, the hibiscus weft is clearly visible, causing a variable horizontal pattern in the vertical stripe. Mimeograph ink could have been used to dye the purple stripes (refer to section on Dyes).

The thread count (the proportion of warps to weft per inch) averages 20:15 (20 warps:15 wefts), creating more of a "square count" rather than a "warp-face" weave where the weft does not show at all. Thread counts as high as 87:39 and 70:24 have been recorded on older, finely woven Caroline Island textiles (Riesenberg and Gayton, 1952:356).

The warp and weft fibers measure 1-3 mm in width. If the fibers had been narrower, a much finer, denser fabric would have been produced.

Banana fiber provides the narrow background stripe and border area and purple dyed hibiscus forms the larger stripe pattern. A variation on this basic pattern has been made by two warp sets of two threads of natural banana set carefully in the purple stripe and one strand of purple in the border. The skirt contains 56% hibiscus and 44% banana fiber in the warp.

(2) HIBISCUS AND BANANA (PLATES 7 AND 8)

Although this is a seven striped skirt, the unusual use of color and the uneven stripes show that the weaver was experimenting with more contemporary ideas within the traditional design context. All stripes fluctuate in size and arrangement of color. No two stripes are alike but the arrangement of the many colors (light blue, blue, blue green, purple, pink purple and dark purple) on the natural background are balanced and attractive. This is the only fabric of this color and design that I found.

The thread count (26:13) and the fiber width (2-3 mm) give this fabric a slightly denser weave than the first skirt but the hibiscus weft is still clearly visible. The skirt contains 85% banana and 15% hibiscus fiber in the warp and a combination of commercial and mimeograph dyes appear to have been used.

(3) HIBISCUS, BANANA AND COMMERCIAL THREAD (PLATES 4A AND 9)

This finely woven transitional or combination fiber fabric has been created by a skilled weaver. Joining knots are carefully made, the fibers are finely and consistently split (1 mm), the stripes are even and the surface is smooth.

The banana weft is almost obscured as the thread count is higher (42:32). The same purple dyed hibiscus forms the larger stripe but this time one strand of white commercial

Plate 7. Middle section of contemporary seven stripe lava lava made with hibiscus and banana fiber.

Plate 8. Detail of contemporary seven stripe lava lava made with hibiscus and banana fiber.

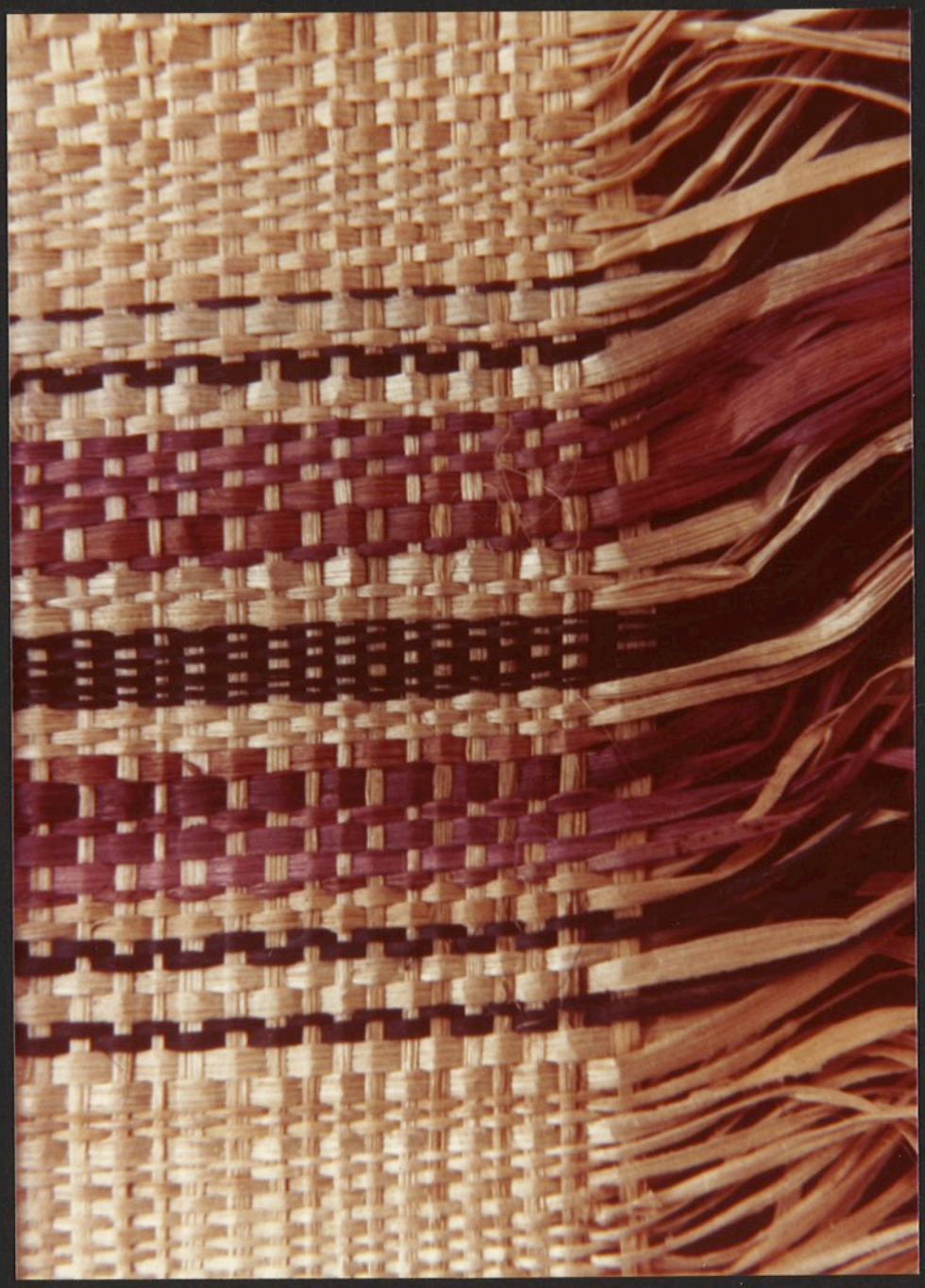
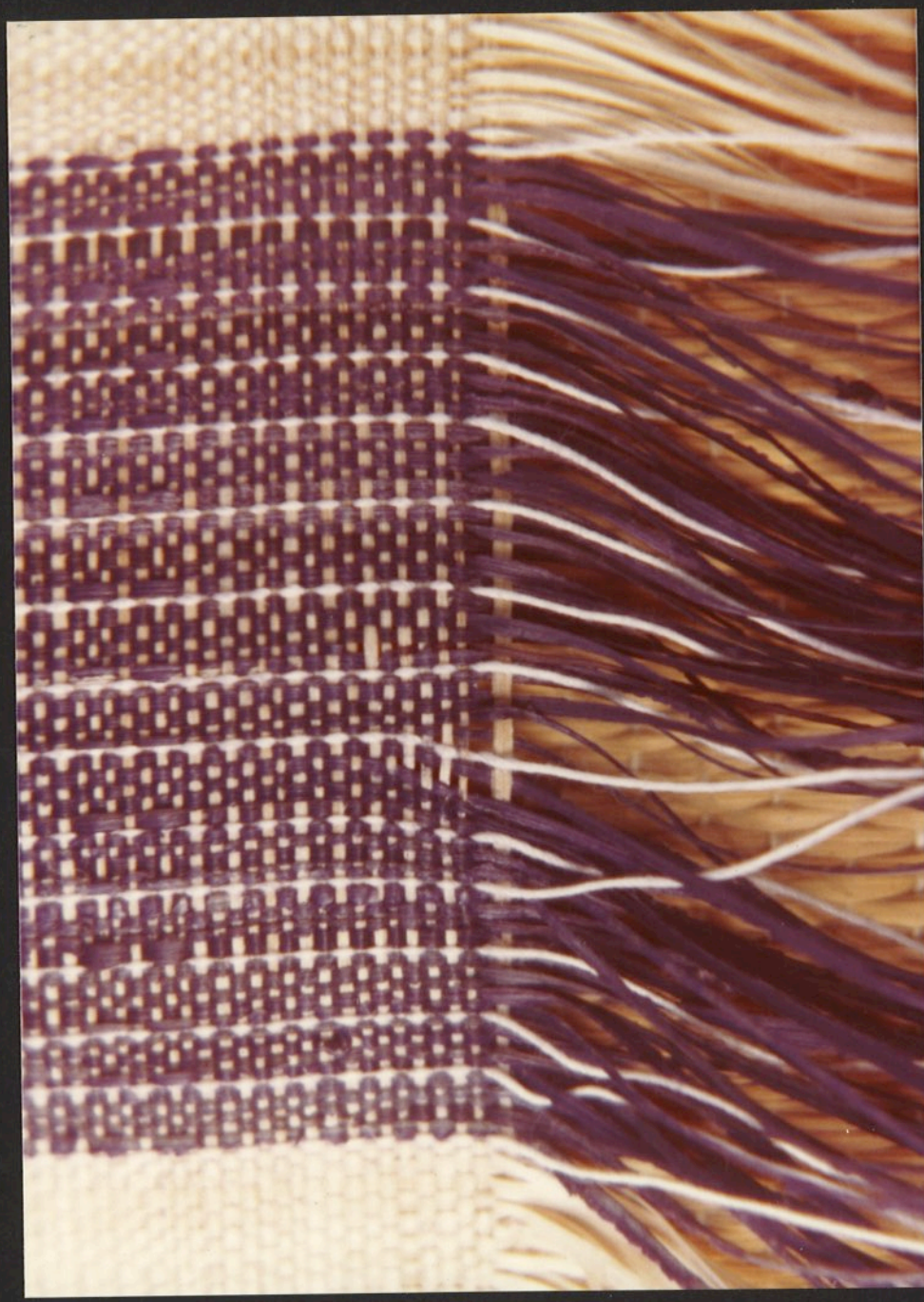


Plate 9. Detail of hibiscus, banana and commercial thread lava lava.



thread has been placed after each group of five purple strands. Commercial thread is not used in the narrow natural banana striped area but is included again on the border where 28 strands are used with two strands of purple on the selvage. The frugal use of the costly commercial thread has produced, in my judgment, an artistically pleasing fabric. The skirt contains 50% hibiscus, 32% banana and 18% commercial thread in the warp.

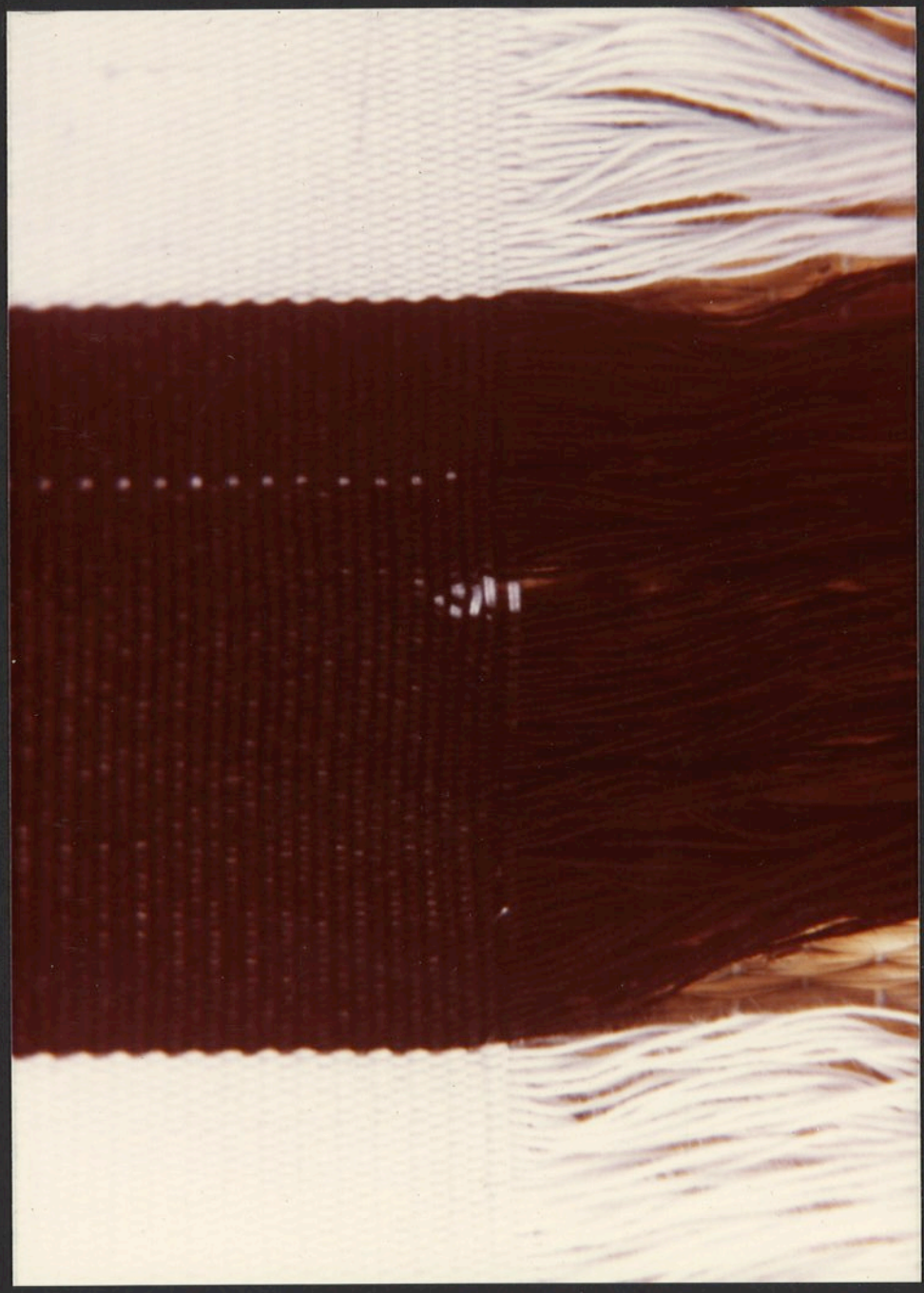
(4) ALL COMMERCIAL THREAD (PLATES 48 AND 10)

This all commercial thread skirt has the feel and look of a factory produced fabric. There are no knots and the threads are of a consistent size (40 weight). The fabric is soft and pliable but lacks the sheen of the banana and hibiscus fibers.

The high thread count of 84:24 produces a true warp-faced fabric where the two-ply pink thread weft is obscured. Uniform stripe size is easier to control when working with commercial thread and one does not have to worry as much about thread breakage.

Only black and white, a popular color combination, are used in the main stripes but the border is made up of three threads of white, five threads of green and 18 threads of red (a favored border color).

Plate 10. Detail of all commercial thread lava lava.



COMPARISONS OF FOUR PATTERNED LAVA LAVAS

These skirt patterns do not include any basic seven stripe designs. They are a sample of a variety of designs that will not be explored in detail (refer to Figure 7).

(5) HIBISCUS (PLATE 11)

This all natural hibiscus lava lava is probably a young girl's first, or sampler, skirt since it has no pattern, is loosely woven, the knots are large and bulky and the width fluctuates from 22½ inches to 24 inches. The hibiscus is much darker and more uneven in color than in skirt #1, suggesting that it probably came from an older tree.

Since the threads range in size from 2-4 mm the average thread count is 17:12 but in some areas it gets as low as 12:10. The skirt is rough and stiff and much longer (24 inches) than the other skirts.

(6) BANANA (PLATES 12B AND 13)

A skilled weaver has produced this finely woven (31:21) skirt that has commercially dyed red and purple stripes that are evenly spaced over a natural banana fiber background. The fiber width averages 1.5 mm and a weft of banana is clearly visible. The fabric has a sheen to the surface and is smoother and softer than the all hibiscus skirt.

Plate 11. Detail of all hibiscus fiber lava lava.

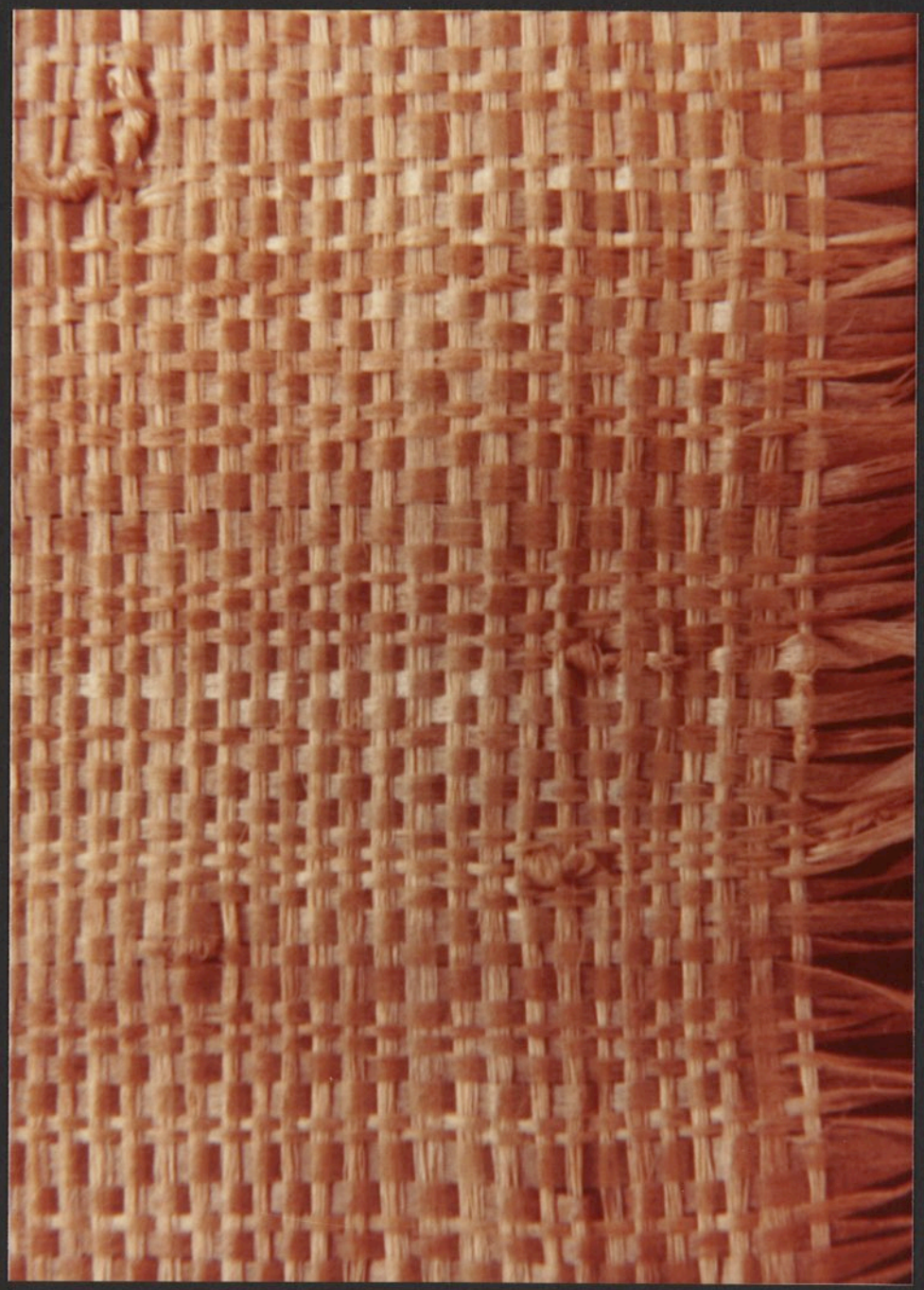


Plate 12. Three lava lavas. (A) All commercial thread; (B) Banana; (C) Banana and commercial thread.


A
B
C

Plate 13. Detail of central stripe in all banana fiber lava lava.

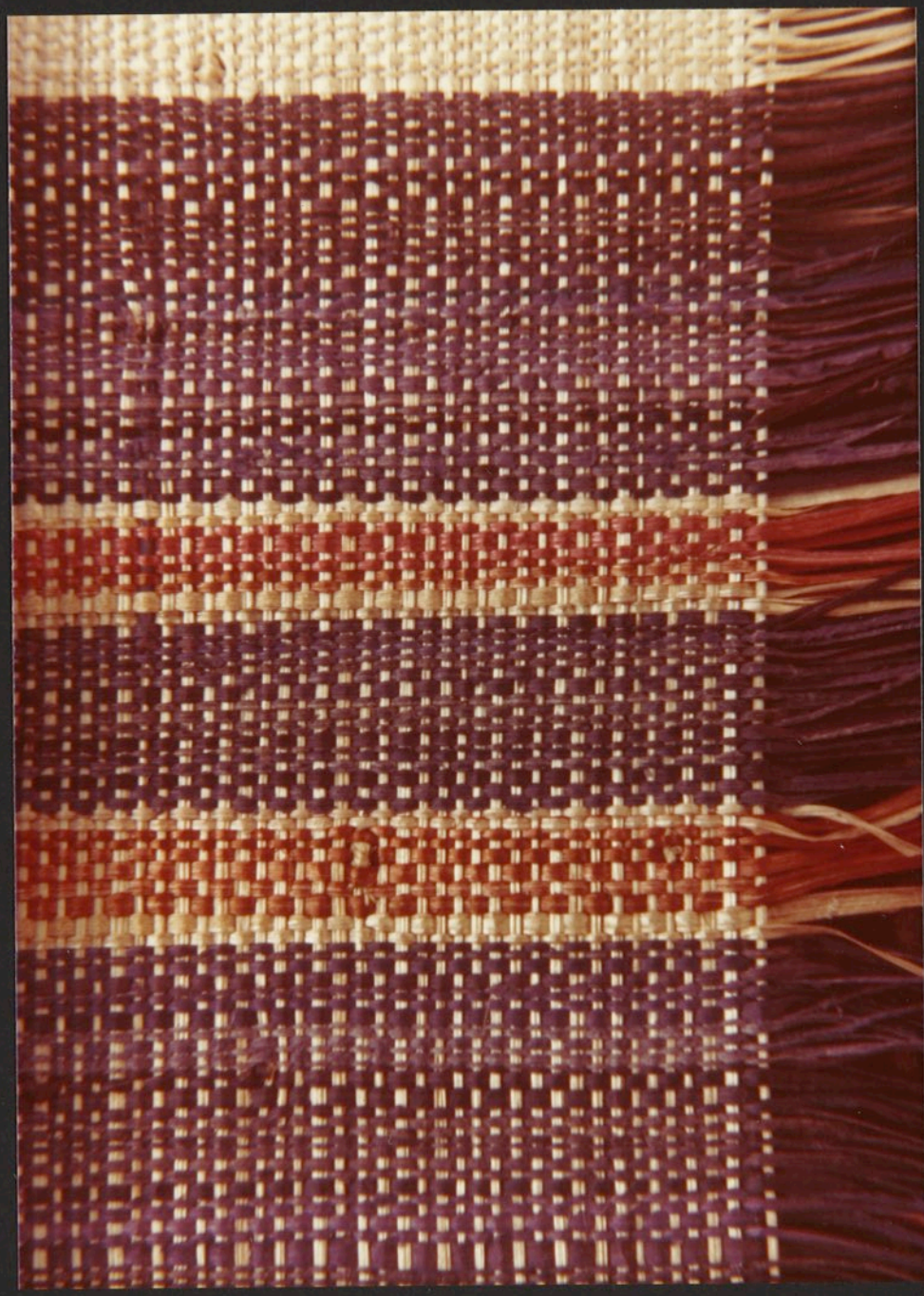


Plate 14. Detail of banana and commercial thread lava lava with geometric weft inlay of purple hibiscus fiber.

(7) BANANA AND COMMERCIAL THREAD (PLATES 12C, 1A AND 14)

The pattern of this skirt consists of a black bordered central stripe of commercial thread in pink, white and black with geometric patterns created by the addition of extra string heddles. Black stripes with a corresponding pink, white and black pattern edge the sides. The background is of natural banana and both ends are decorated with geometric patterns in the weft of laid-in purple dyed hibiscus.

The banana fibers are 1 mm in width and the banana thread count is 29:29 (a perfect "square count"). The size 40 and 50 commercial thread that is used is much narrower than the banana fiber and so there is a thread count of 120:33. This variation in the thread count creates a warp-face weave in the black stripe commercial thread areas but does not create one in the banana fiber background area where the weft commands as much area as the warp.

Since the density is different with these fibers, a squeezed in buckling effect is caused when the background area joins the stripe. Although commercial threads outnumber the banana fibers 61% to 39%, the banana commands the larger surface area with 72% to the commercial thread's 28%.

(8) ALL COMMERCIAL THREAD (PLATES 12A AND 15)

Several weights of commercial thread (40, 50 and a pearl #5 weight) have been used in varying colors (light and dark pink, lemon yellow, bright yellow, red, white, green and black) to create a multistriped design.

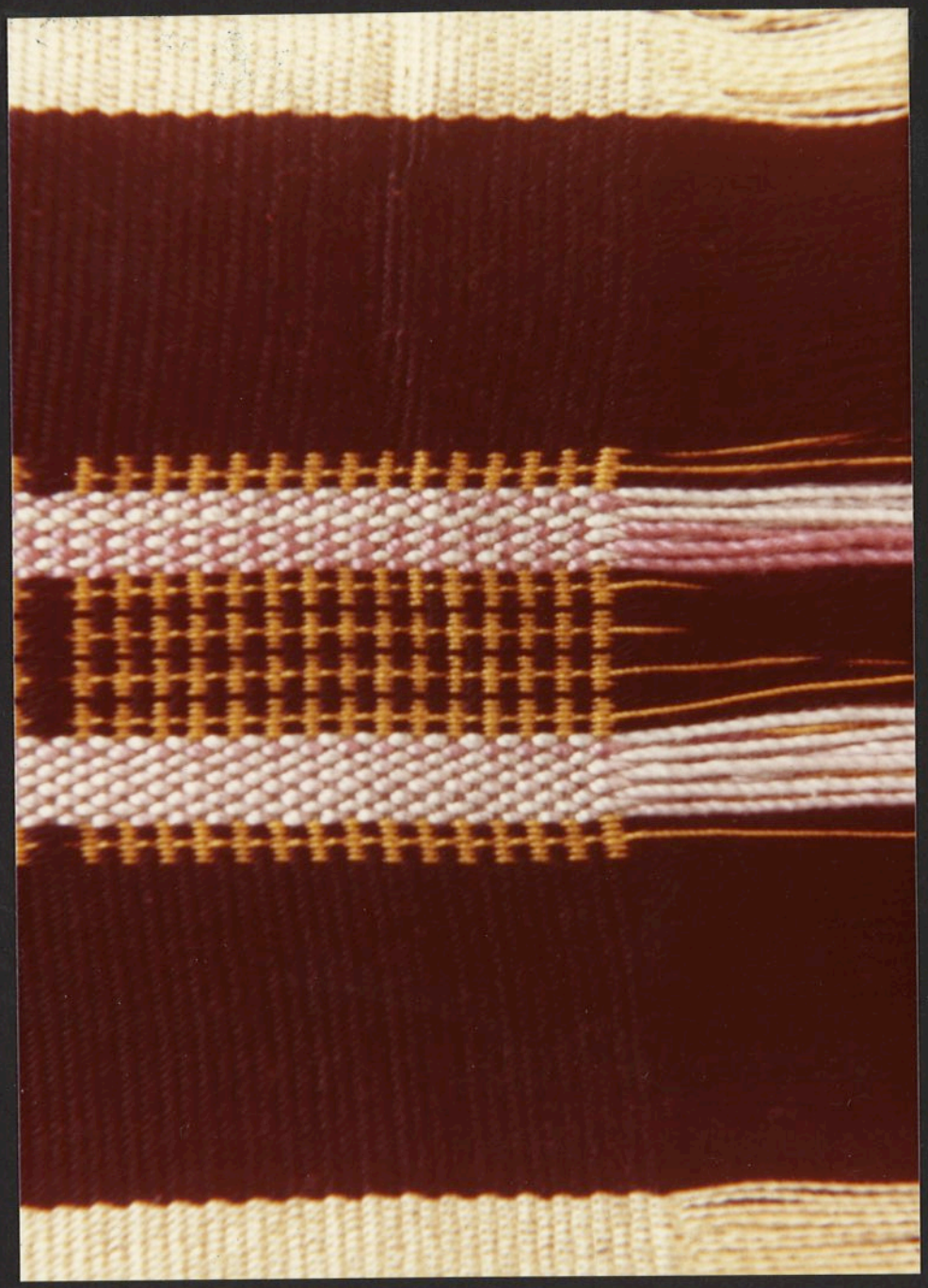
Since varying weights of thread have been used in different proportions, the thread count varies. The largest color area, the pale yellow background (40 weight), has a thread count of 82:27. The entire fabric is warp-faced, but due to the different weights of thread used, the yellow stripes are slightly puckered. The fabric is soft and smooth and has the feel and look of a commercially produced fabric.

SUMMARY

Each of the above lava lavas is unique in its color and design variations. We find that the style of each skirt is greatly affected by the fibers used, the colors selected and the quality of the weaving. The general visual effect of the designs of the seven striped lava lavas are similar, but on closer examination one discovers variations that provide each piece with its special individuality.

The all hibiscus skirts are stiffer and rougher than the all banana skirts which are preferred for their softness and the whiteness of the fiber. The fabrics made with

Plate 15. Detail of central stripe of all commercial thread lava lava.



commercial threads are soft, smooth and flexible.

The natural colors of the hibiscus and banana provide a neutral color with many value changes that use of a commercial thread is unable to achieve. The dyed fibers (refer to section on Dyes) are more subtle than the commercial colors and occasionally tend to dye unevenly, bleed onto the weft and fade from the sun and repeated washings. Commercial threads do not have these problems.

It is understandable why commercial thread is being used now. There is no tedious fiber preparation or dyeing joining knots are not needed and so the surface is smooth, there is less thread breakage, the colors are permanent and bright, the fabric washes easily and lasts longer and it is more comfortable to wear. But it still costs money to purchase the thread.

The traditional natural fiber skirt may not have the above attributes, but it has others. First, it does not cost anything to make. The variations in the fibers, their width and the dyes used give the fabric a texture and a woven quality that commercial thread cannot achieve. More time, skill and patience go into this skirt and because of this it is the skirt that is laid close to the body in death.

Part 4

TECHNICAL INFORMATION

Part 4

TECHNICAL INFORMATION

PREPARATION OF THE FIBERS FOR WEAVING

It appears that the use of indigenous fibers (banana, hibiscus and agave) are being rapidly replaced by the use of commercial thread in the lava lava. Therefore, it is important to document the preparation of indigenous fibers for future reference.

The four types of fiber used today to weave the lava lava are banana, hibiscus, agave and commercial thread which are used singly or in combination with each other. The preparation of natural fibers consumes more time and energy than the weaving process itself.

PREPARATION OF INDIGENOUS FIBERS

Banana Fiber

There are many types of banana trees but only one kind is the best for weaving. *Malug* is the Ulithian name for the tree used on Fassarai and is probably a plantain known as Manila hemp (*Musa textilis*) (Matthews, 1947:369), which has many varieties of varying qualities of strength. The banana tree that produces eating bananas, *Musa paradisica*, has weak fibers and is not used. Folk taxonomy enables the

weaver to easily pick out the best tree for her fibers. Banana fiber is preferred over hibiscus because it is softer, finer, brighter, has a high sheen and is more flexible. It is also the most precious and valuable of the natural fibers.

Materials Needed for Preparation

1. Round, wooden pounding stick 2 feet 9 inches long by 7 inches in circumference (some longer and thicker).

2. Shell for scraping (pearl shell with one edge sharpened. In the past in Kosrae, a cooked lobster claw was used to sharpen shell edges) (Krämer-Bannow, 1919:173), or a piece of coconut shell sharpened on one side.

3. Knife.

4. Two large banana trees or four small ones.

Procedure

1. Select the proper tree that has a trunk about six feet high before the leaves start; cut it down at the base and at the top below the leaves.

2. While sitting on the ground in the shade, start at the base of the trunk and peel off the outer dirty brown leaves, exposing the creamy yellow interior. This inner bark area is the phloem or bast section of the plant and contains the fibrous material.

3. Before starting, turn trunk to find top layer of leaves and then work from left to right.

4. Beginning at the base (Figure 8) peel ¾ inch strips off the trunk. The strip is dislodged from the far end with a snap of the wrist and placed in the shade. The bottom part of the first few leaves have heavy pulp on them. They may be discarded or dried and the mid-ribs used as string. Some strips will not have pulp on

PEELING STRIPS OFF BANANA TRUNK

figure 8

them and will not have to be scraped. These strips should be gently crinkled in the hands before being put in the sun to dry. They are coarser than the scraped pieces and their edges, when split, are ragged.

5. Continue tearing off strips until they begin to tear unevenly. This is a sign that the fibers are soft and weak and will break easily. Unused trunk is fed to the pigs.

6. After enough strips have been gathered, the scraping (*rorui*) process can begin.

7. Sit on the ground with the left leg bent and the left foot tucked under the extended right leg. Take the pounding stick, place it parallel to the extended right leg, put one end under the left knee and place a small rock under the middle of the stick (Figure 9).

8. Lay the leaf, pulp side up, on the stick with the base end (the larger end) at the far end of the stick.

9. While holding the leaf with your left thumb, take the shell with your right hand and with the sharp side make a cutting line in the pulp. With a clean sweeping motion, scrape the pulp off the leaf and flip it off the end of the stick. Continue this motion about eight times until the leaf is free of pulp and is silk white. Do not pull the shell back towards yourself because this will pull the juice back into the leaf and the fibers will be weakened.

10. Reverse — hold the longer, unfinished end taut between the big toe and second toe and scrape from the finished end to the unfinished end (Figure 10). Release toe grip and finish scraping leaf as in previous step. Be careful not to break shell when putting it down on the ground.

11. Place the scraped pieces on white coral or sand where they can dry for several hours in the sun. Dry completely, being careful not to step on them.

PREPARING BANANA FIBERS

figure 9

Splitting and Tying the Fibers

1. Each strand of dried fiber should have the broken, uneven pieces removed from the sides.

2. Starting in the middle of the strip, measure off a 1 mm section at the edge (can be smaller or larger). With a pin or your fingernail, separate the fibers and run the split with your fingers to the end of the strip (Figure 11). Continue across the strand until it is evenly split. A slip knot can be made with the loose ends at this time or when the whole piece has been shredded (Plate 16).

3. Reverse ends and repeat the process.

4. When the entire piece has been split and slip knot made at one end, wrap strands in a circle and slip knot one end of bundle (Plate 16). Set bundles aside in a basket until all strands are completed.

5. To tie ends together, untie one small bundle. Take two strands, making sure the ends are strong, and tie together using a *bogbog* knot (see Figure 12). I was shown knots #1 and #2 but knot #3 has been reported in other parts of Micronesia (Hiroa, 1950:150) and is, no doubt, universally used. Loose tied ends are put into a woven basket or box to keep them from blowing away.

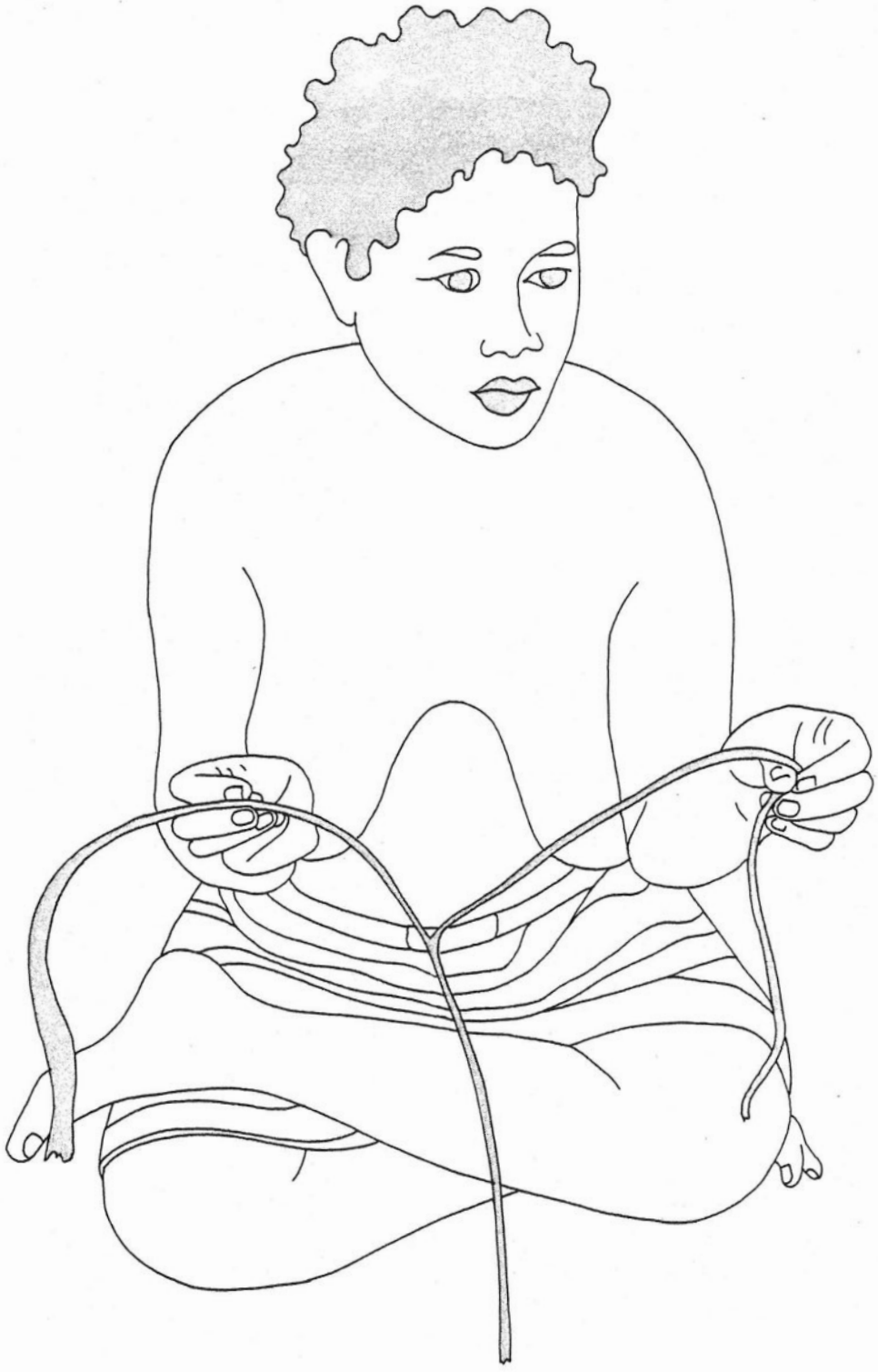
6. When the basket is full, hand butterfly bundles (*talewchigs*) are made (Figure 13).

7. Dyeing is done at this time (refer to section on Dyes).

8. To determine how much fiber you will need to make the main seven stripes, clench enough butterfly bundles in your hand so that your thumb and index finger are two inches apart. Two of these handfuls should be an approximate amount for the seven stripes. Two more handfuls should be enough to complete the skirt.

9. Butterfly bundles are kept in a basket or box until ready for the warping process.

10. The preparation process from beginning to end can take a few days or several months, depending on



SPLITTING FIBERS

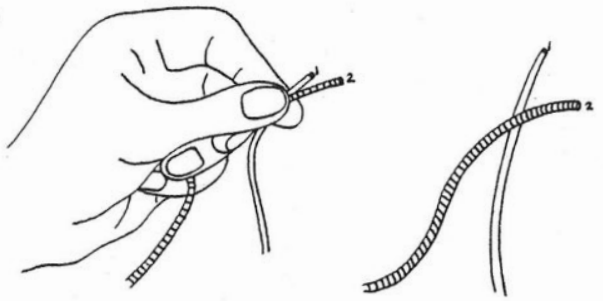
figure 11

Plate 16. Banana fibers split and tied.

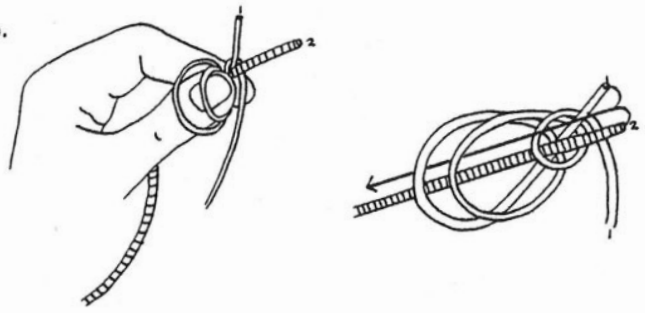
JOINING KNOT
(bogbog)

I.

a.



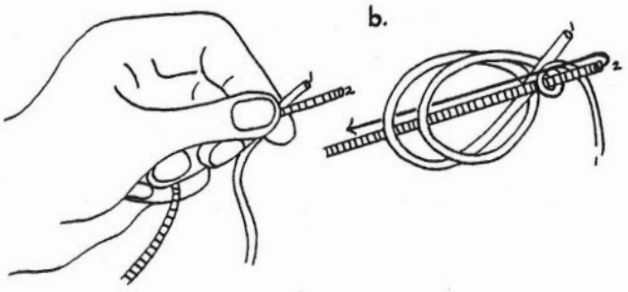
b.



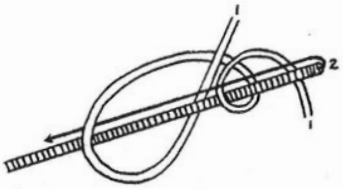
II.

a.

b.



III.

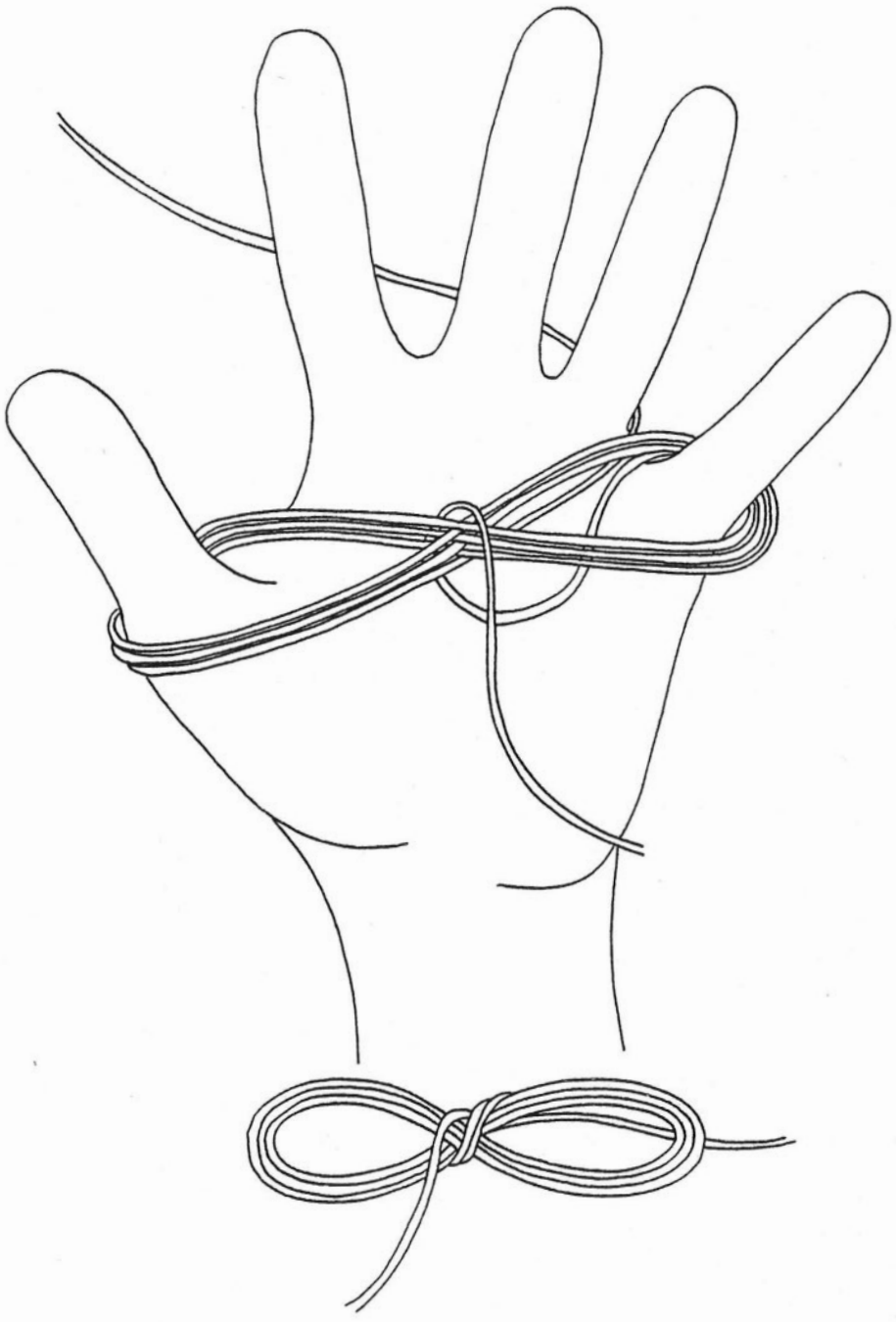


I. Hold ends in left hand and with right hand make large loop first, smaller loop second and a tiny loop last. Put ends "1" and "2" over last loop and through first two loops and hold with with thumb. Pull tightly on end "1" taking up slack in smaller loop first and larger loop second.

II. Same as #I except make last loop over only end "2". Put end "2" over last loop and through first two loops.

III. Same as #II except make only one large loop and one small.

figure 12



Butterfly Bundle

figure 13

the time available.

Hibiscus Fiber

Gulfui is the Ulithian name given to the hibiscus tree used in weaving. The tree most commonly used is *hau*, a wild hibiscus which is probably *Hibiscus tiliaceus* (Matthews, 1947:359). The large trunk has many branches, the leaves are large and glossy and heart-shaped and the flowers are yellow and cup-shaped. Hibiscus fiber is darker and coarser than banana fiber and is never used in the man's loincloth. Older trees produce a fiber with a deep tan color, whereas a young tree produces a whiter fiber.

Materials Needed for Preparation

1. Knife.
2. Coconut leaf basket.
3. Several straight 10-15 foot sapling branches thumb-width size to six inches in circumference. Use only new sprouts from the bottom of the trunk. The side branches off larger branches are sometimes used, but they are harder to work with and more difficult to get.

Procedure

1. Cut a 10-inch to 15-inch thumb-size or larger hibiscus stem off at its base.
2. Trim off the leaves with a knife.
3. Peel off the outer bark and crush it in your hands, or the green outer layer can be scraped off with a shell or knife and then the bast removed. The peeled, unused branch is used for cross beams in houses or for loom parts.

4. Fold bark over itself and tie with one end to form a bundle (Plate 17).

5. At low tide, put the hibiscus bundles in the ocean. Clear rocks away from the sand, place bundles on smoothed sand and hold down the edges with rocks. Another method is to place bast fibers on the sand, cover them with sand and then lay an old coconut leaf mat over the area and secure its sides with pieces of coral. If only a small amount of fiber is to be soaked, the bundles are placed in an old coconut leaf basket and the basket is held in place on the ocean floor with rocks at its edges. If rocks or coral pieces are put in the center, the fibers will be crushed. Sometimes the entire branch is put into the ocean to soak.

6. Leave in the ocean for seven to 10 days to *ret* or soften. Retting is a process in which bacterial action works on the parenchyma between the fiber layers to separate them from each other. If you over "ret" the fiber can be gummy and coarse.

7. If, after a week or more, the hibiscus is not soft enough, leave it in the water longer. If it is ready, take it out, undo the bundles and carefully separate the fibers and wash away the sand, film and residue with the ocean water.

8. Rinse fibers again with sweet water.

9. Hang fibers to dry in a breezy, shaded area. The sun will dry the fibers too quickly, causing them to weaken and turn brown.

10. When dry, peel layers of hibiscus apart, discarding the holey, brittle outer layers (Plate 18).

11. Hold each separated strand at the ends with both hands and snap the fiber. If it breaks too easily, it is too weak and must be thrown away. Sometimes only the ends are weak but the middle is strong. This creates many shorter ends and, hence, more knots. A lot of hibiscus is thrown away.

12. Hibiscus does not need to be scraped but it is split and tied the same as the banana fiber.

Plate 17. Bundle of hibiscus fibers.

Plate 18. Layers of hibiscus fiber (right), split and tied hibiscus fibers (left).

Hibiscus and banana fibers are quite different as can be seen in Plate 19. The hibiscus fiber is very porous, whereas the banana fiber is smooth and the fiber elements run evenly lengthwise (see fiber samples in Figure 14).

Agave Fiber

Another fiber that is occasionally used for weaving is a species of *Agave americana* (*fàch*) of American origin that was no doubt introduced into the area for use as a fiber plant or an ornamental. The leaves are long, strong and smooth and have a sharp spike on the end. It produces a very strong fiber and so is used for the string heddles as well as for weaving.

Procedure

First way:

1. Cut off a leaf about four feet long and five inches wide.
2. Peel entire leaf into strips about ¾-1 inch wide.
3. Fold strips into a bundle and tie with end in the middle (like hibiscus) and put in a basket in the ocean for about a week. This entire procedure is the same as for hibiscus.
4. When softened, gently pull string fibers away from the leaf and rinse in fresh water (Plate 20).
5. Drying and tying directions are the same as for banana and hibiscus.

Second way:

1. Prepare the same way as for banana fiber. Take fresh strips and scrape and dry in the sun, etc.

Plate 19. Detail of hibiscus (left) and banana (right) fibers. (Approximate size — twice life size.)

Figure 14. Hibiscus fiber (left) and banana fiber (right).


NATURAL FIBERS
Hibiscus
Banana

Plate 20. Detail of agave. (Approximately four times actual size).

The juice from the agave can cause some people to itch and may cause severe dermatitis, so it is not used that much. When it is used, it is used as string heddles, as warp in the narrow stripes or as a laid-in warp in brocaded patterned areas.

COMMERCIAL THREAD

On some islands commercial thread has almost completely replaced the use of natural fibers. The reason is that there is no preparation or dyeing, the colors are more permanent and brighter and the finished garment is much softer and more durable than the natural fiber lava lavas.

Commercial thread was first introduced on Yap in the late 1950's or early 1960's by Father William J. Walter, a Jesuit priest. The thread, produced by the American Thread Company in New York City, arrived parcel post and Father Walter was very secretive about his source.

The popularity of the commercial thread quickly spread by canoe and possibly by other Catholic priests to Truk's outer islands where it is presently used.

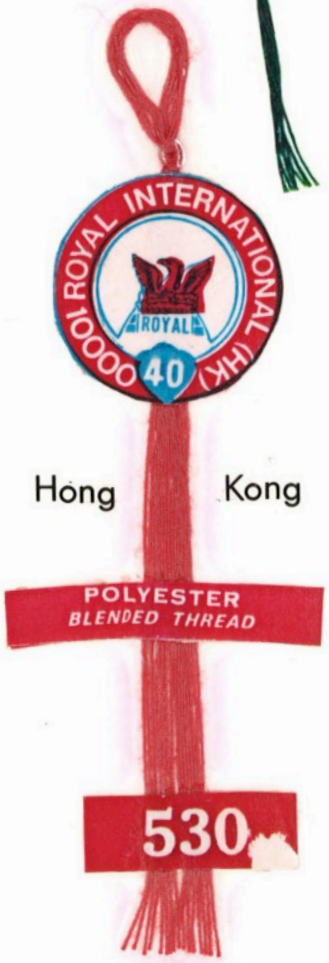
Thread costs money and so it is sometimes used sparingly in a lava lava with a mixture of banana and hibiscus fibers. When used in this manner it is placed in the border areas, narrow stripe areas and patterned areas.

The Yap Cooperative Association Store, which supplies all the outer Yapese islands, is presently selling three qualities of thread from China, Japan and Hong Kong (Figure 15).

Figure 15. Thread samples from China, Japan, Hong Kong and the United States.

COMMERCIAL THREAD

Japan



Hong Kong

China

The threads are cotton, polyester, or cotton polyester blends and differ in weights. The finer the thread, the more warps are needed so a medium weight of 30 is preferred. Some qualities of thread are not preferred for the string heddles because they tend to "ball up" and stick to the warp.

An average price for a cone of #604, 40 weight Japanese cotton thread is $6.00. One of these cones is enough for seven large stripes.

The Hong Kong thread (Figure 15) is a strong polyester blend but it is so fine (#40) that it requires many more warp threads to attain the desired lava lava width. Hong Kong "blood" red is preferred over the orangish Chinese red.

China is the source for the best quality cotton thread (#40). It comes in all colors.

Japan supplies a thicker (#30) 100% Vinylon thread. It is quite popular due to its strength, thickness and non-shrinking qualities. Hong Kong and Japan supply the standard black and white colors.

The purchasing source of the American thread is not known since it was picked up on Fassarai.

DYES

Commercial dyes have almost completely replaced natural dyes so information regarding indigenous dye recipes is difficult to obtain.

Natural Dyes

Historically dyes were made from plants. Black was prepared by burning candlenuts, brown was obtained by pounding the mangrove root, yellow came from tumeric roots and a rich blue was made from the suckers of young banana trees (Ball, 1929:45).

In 1910 on Kosrae (called Kusaie then) Elizabeth Krämer-Bannow compiled several natural dye recipes which are as follows.

Black

The calyx of the wilted mangrove flowers are smashed in fresh water with a stone and pressed. The resulting liquid is put onto the leather-like leaf of the *Buschtaros* plant which has been put over a wooden bowl. The fibers are placed in the bowl where they soak for a while and then they are wrung out.

A variation of this recipe is the addition to the mangrove calyx juice of small amounts of a special grey mud that probably contains iron. The fibers are placed in this liquid, soaked and kneeded for a long period of time and then wrung out slightly. They are removed and rolled in a taro leaf for half a day and then washed in fresh water until there is no mud left. A nice dark color similar to a grey indigo blue is produced (Krämer-Bannow, 1919:175-176).

Yellow (Kosrae)

A special yellow root (*Curcuma*) is scraped with a shell and the scrapings are put on a taro leaf. The fibers are put on top of the scrapings and covered with additional scrapings. The fiber and scrapings are kneeded and wrung for a long time on top of the surface of the taro leaf until a liquid is produced. Without adding any water, the fibers, scrapings and liquid are then rolled up in the taro leaf and left to set for several hours. They are then rinsed and hung to dry. A very rich gold color is produced that is not sunfast (Krämer-Bannow, 1919:176).

Red (Kosrae)

Only a few men in this area have the privilege of making the sacred red color which is time consuming and difficult to make. A special cook house is used and only the men who make the dye, which takes three months, are permitted in this house. While searching for the root of the *Morinda citrifolia* they cannot eat or speak. The root is washed and scraped and put into a wooden bowl with the ash of an *Alsophila* fern tree. A red juice is produced when these materials are pressed together and fibers are put into the juice to be dyed (Krämer-Bannow, 1919:176).

The one old dye recipe that I obtained was through information given to me by Chief Harangthal's wife. It is not used any more and so may contain some discrepancies.

Black (*ruchupung*)

Made with rust and keel leaf:

1. Get an old rusty metal pot (first metal pots were brought in by the Spaniards) and partially fill it with sea water. Scrape the rust off the pot sides into the pot with a piece of coral or hard rock. The outside rust can be scraped into one-half of a coconut shell and then added to the pot.

2. Get the husk from a green coconut (a drinking coconut), pound the husk with a rock until it is soft and then drop it in with the rust and the sea water.

3. Get some leaves from the keel tree. (Probably *Terminalia samoensis* or *catappa*. The *T. catappa* is a tropical almond and the fruits are a source of black dye.) Pound the leaves with a rock on a piece of board or on a large rock or coral at low tide.

4. Find a shallow part in the coral that has sea water in it and put the pounded leaves in it. Add the tied butterfly bundles of banana and hibiscus that have been strung on a fiber string and soak them until you get the color you want.

5. Take out the bundles and shake and put them into the rust solution. Leave the bundles in the rust solution for one day, turning them every four hours to give them an even color.

6. Remove the bundles from the solution, wring them out and dry them in the shade.

Plant dyes produce black, rust, red and yellow, but since they have not been used for some time and have been replaced with commercial dyes, little local knowledge is known about them. One ingenious modern dye technique that is widely used today involves using mimeograph paper.

Mimeograph Paper Purple Dye

1. Bring to a boil a one-quart pan filled with fresh water.

2. Add mimeograph paper to the boiling water. If using one strong, new sheet, use only ½ or ¼ sheet. If you are using used, weak sheets, use two or three whole pieces. Boil mimeograph pieces until the right color is achieved.

3. Place dry tied bundles of fiber strung on string into the boiling water for 15 to 20 minutes. Take them out every so often and check for the right color.

4. Remove bundles and rinse them in ocean water until there is no bleeding of color. Rinse bundles again in fresh water.

5. Untie the ends of the string holding the dyed bundles and tie each end to branches, forming a clothesline. Scatter the fiber pieces to let them dry. Dry the pieces in the shade because the sun will fade the color and weaken the fiber.

Commercial Dyes

Rit dye is an all-purpose dye that is used on Yap for their grass skirts and for fiber dyeing on the outer islands. They use red, yellow, blue, purple and green.

The more popular Japanese Miyako dye is a direct dye using sulfonic acid and produces the same colors and is sold in powder form in small jars. I was told that for this procedure you boil enough water to cover the fibers. Dye is added (the amount depending on the color desired) to the boiling water along with a little salt and lemon juice. The fiber is then put in the water and stirred until the desired color is obtained and then removed and set in the shade to dry.

However, the Japanese directions, when translated, are more descriptive than the verbal directions given to me.

1. Make a dye concentrate by placing entire bottle of dye into a small bowl with 1½ cups of boiling water. Stir well to completely dissolve the powder. Place a vat of hot water over a fire and pour in half of the concentrate.

2. Soak the fibers in hot water, wring them out and then quickly submerge them in the boiling dye vat. Stir solution with a long stick, making sure all the fibers are evenly dyed.

3. After boiling 5 to 6 minutes, stirring continuously, remove the fibers and pour in the rest of the dye concentrate and from 2 to 10 teaspoons of salt (depending on color). Stir well and return fibers and continue boiling.

4. Continue boiling and stirring fibers for 30 to 40 minutes. The higher the temperature the better the fiber will dye. Remove the fibers and wait until they cool. Wring them out, rinse in cold, fresh water and dry them in the shade (Plate 21).

THE LOOM

Weaving in the Caroline Islands is done on a horizontal tension backstrap loom (Figure 16). The backstrap loom is one of the more primitive of looms and refers to any loom that has warp stretched between the weaver's body and a stationary object, enabling the tension to be easily controlled by a slight shift of the weaver's weight. Backstrap loom weaving is an ancient method that is still used today in many parts of the world and is the only true loom known to exist in the Pacific.

Riesenberg believed that the loom type and weaving techniques originated someplace in Southeast Asia where

Plate 21. Japanese Miyako dye directions.

直接 ムやた染 （木綿・麻・人絹・ビニロン用）

色数…黄・オレンヂ・藤色・鼠・紫・緑・オリーブ・桃色・青・赤・水色・エンジ・納戸・海老茶・赤茶・焦茶・牡丹・茄子紺・紺・黒…計21色

〈染める前にお読み下さい〉

◎加熱染色法とは……

染めるもの230gに対し次のものを用意します

		布の目方に対し
染　料（濃色）	直接 ムやた染……1瓶	$\frac{8}{100}$
染　料（淡色）	直接 ムやた染……約½瓶	$\frac{2}{100}$
助　剤	食塩……約50 g	$\frac{25}{100}$
染　め　湯	約9 ℓ	40倍

◎染める容器は……

ムやた染色釜　又はホーロー引き・鉄製・プリキ製の器で染めものがゆっくりつかり　らくにかきまわせる位の大きさの器が必要です

◎染める時間と温度は……

Ⓐ50℃位の温度から染め始める

Ⓑ15分間位で煮たてる

Ⓒあと15分間位煮染めを続け取出してさましてからよく水洗する

染め方の順序　（直接 ムやた染 1瓶を使い230gの布を染める例）

小器に熱湯を入れ直接 ムやた染 一瓶を一応溶かしておく

染め器に適量の水を用意し　火にかけて50℃位になったら①を半分入れる

予め水でしめした布を手早く入れ　よくかきまぜ5分間位染めて一度布を取出す

①の残りの染料と食塩50 gを入れよくかきまぜてから再び布を入れる

布をよく動かしながら次第に温度を上げ煮たて　80℃～90℃　30分位経ったら布を取出す

染まった布はよくさましてから色が落ちなくなる迄水洗する

一応色が出なくなったらミカノール色止液（裏面をごらん下さい）に5分～10分浸しておくと更に洗濯に丈夫に染上ります　最後に軽く水洗しますが色はピタリと止まっています

MADE IN JAPAN

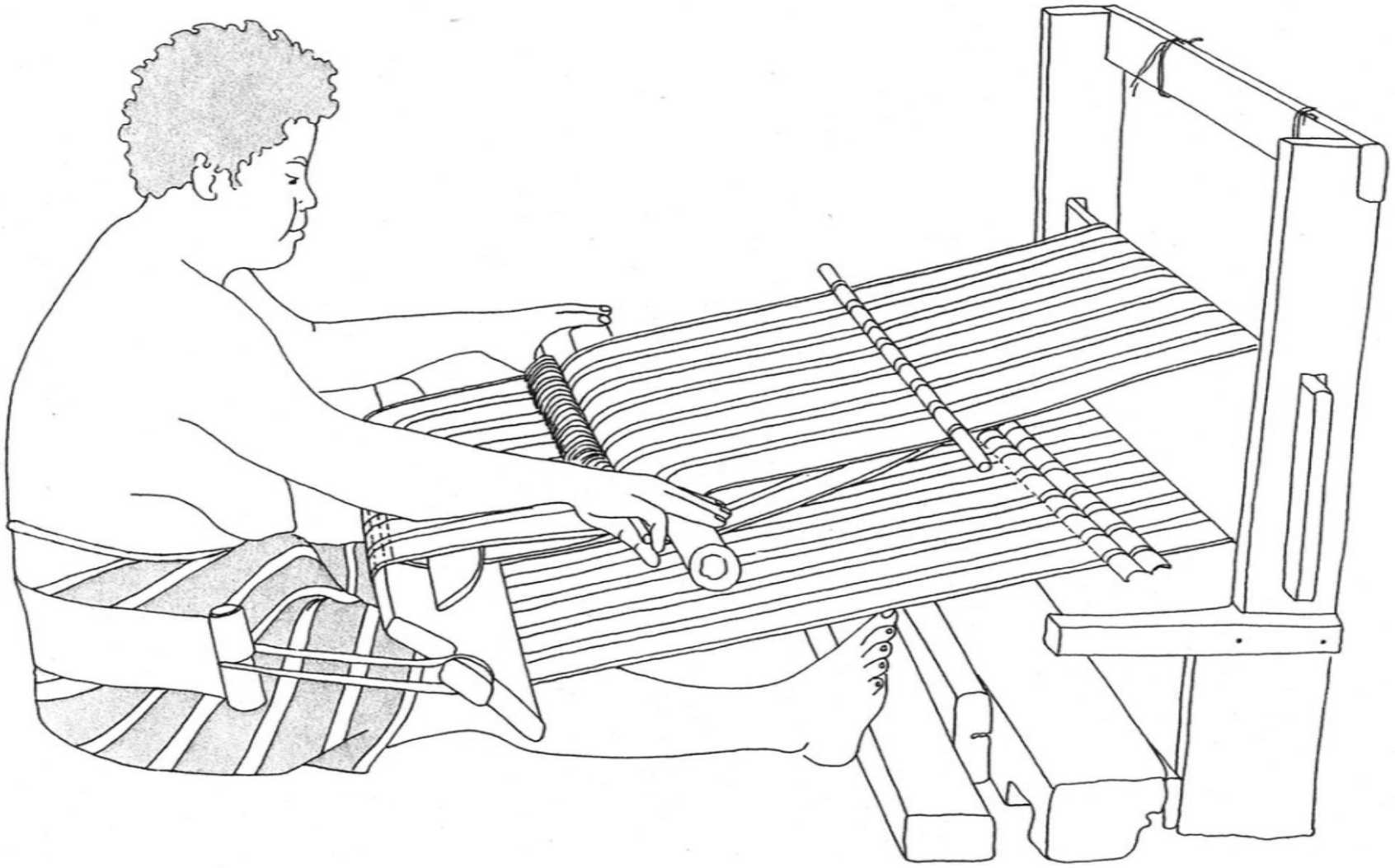


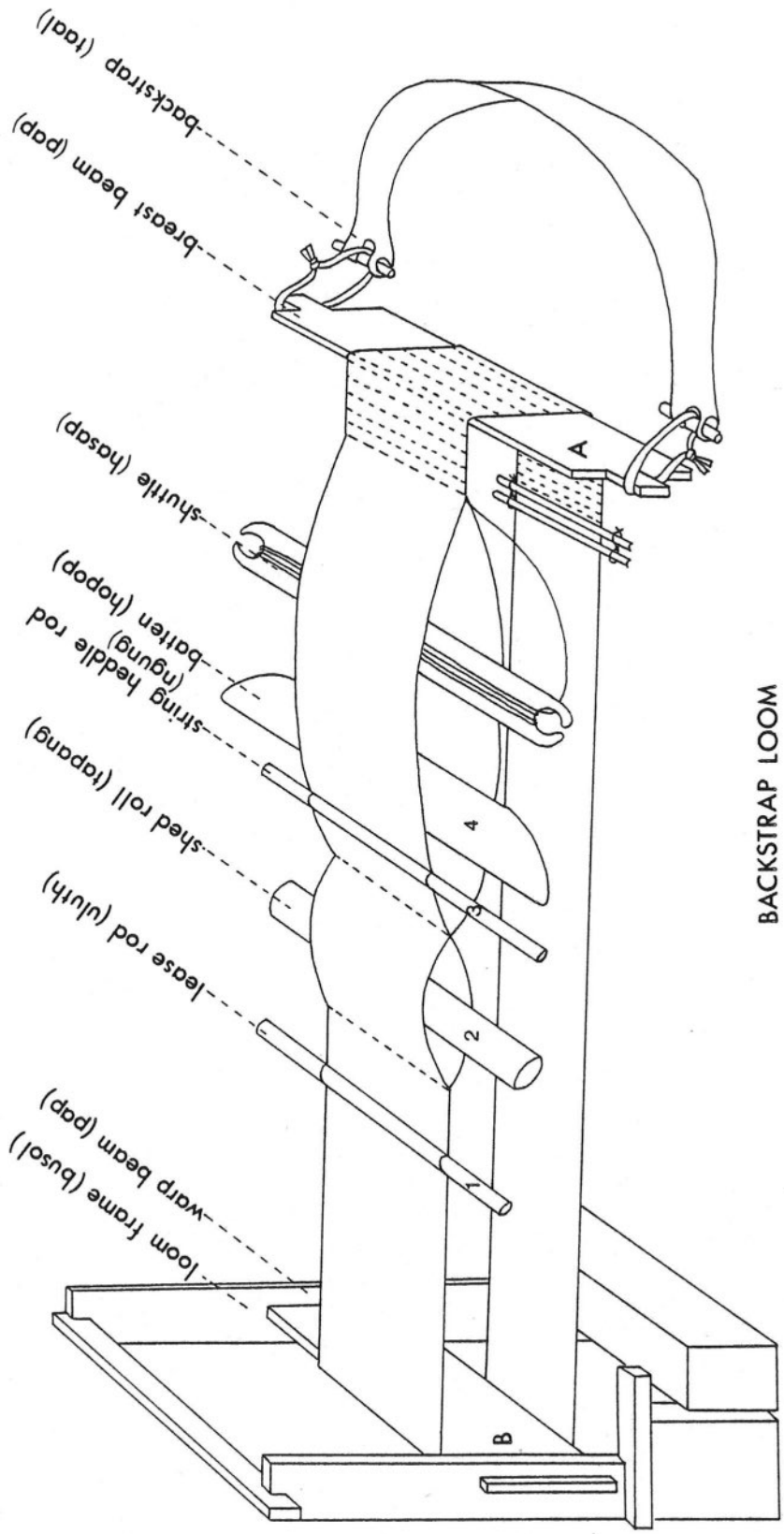
figure 16

they filtered down through Indonesia into the Caroline Islands and then into the northern Melanesia area (Riesenberg and Gayton, 1952:342).

A ring-woven fabric is produced from threads warped spirally around two beams. The front beam is attached to the weaver by a strap which goes around the weaver's back and against which she leans to regulate the warp tension. The heddle, shed roll and lease rod are between the breast beam and the opposite warp beam on the upper warp plane. Other parts include the beater or battening sword and a bobbin. For more complicated weaving a pattern stick and brocading awl are used (Figure 17).

There is a basic similarity in loom parts throughout the Carolines, although there are some variances in the size and shape of the swords and breast beams. Loom backs vary from simple stick frames to Lomotreks, well built frames with intricate, geometric designs. Loom frames in Fassarai are tied in doorways inside the house or to inside beams. They can also be secured to trees or posts outside. When not in use, the unfinished weaving is carefully rolled over the front beam and stored on the arms of the loom frame.

The looms on Fassarai are made from scraps of wood and can be constructed in a few hours (Figure 21). Some looms are constructed better than others, but all are of a simple design without decoration. Wood is difficult to



BACKSTRAP LOOM

figure 17

find on this small island and has to be brought in from other islands. The shuttles, batten and other loom parts are carefully maintained and are handed down from mother to daughter.

LOOM PARTS (FIGURES 17 AND 18)

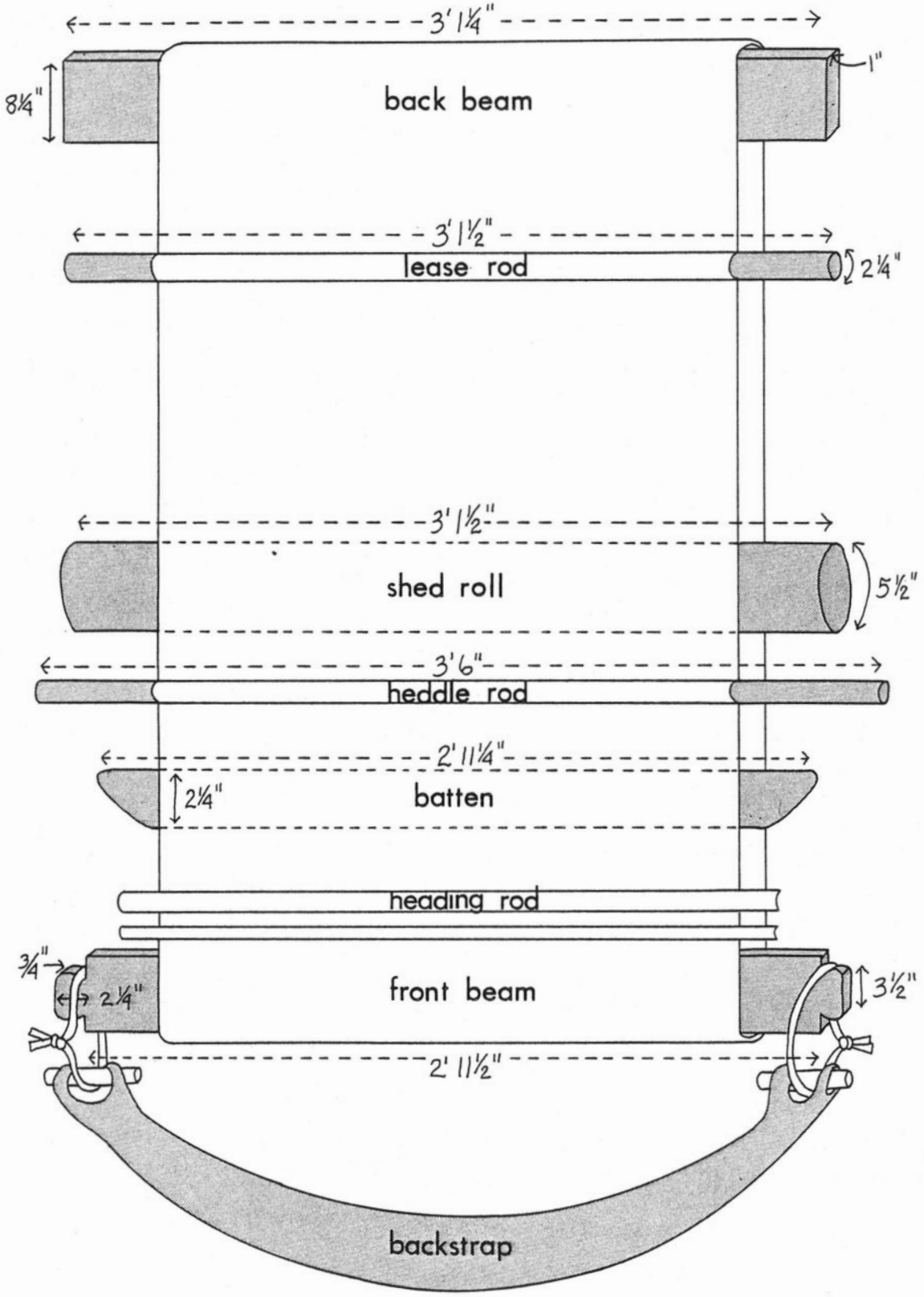
Backstrap (*taal*) (Figure 19) – A piece of fabric that goes around the weaver's waist and is attached to the lugs of the front beam of the loom. It is approximately 2½ feet long and 6 inches wide and is traditionally made of sennet (coconut fiber). Today straps of heavy, white canvas are also used.

(A) Front Breast Beam (*pap*) – A flat, rigid board-shaped piece of wood that supports the warp and keeps it horizontal. It is approximately 3 feet long by 6 inches wide.

Heading Rods – Pieces of split bamboo that are used to create the first sheds, but fiber can also be used. Bamboo is not grown on Fassarai. Approximate sizes are 2½ feet long by 1 inch wide.

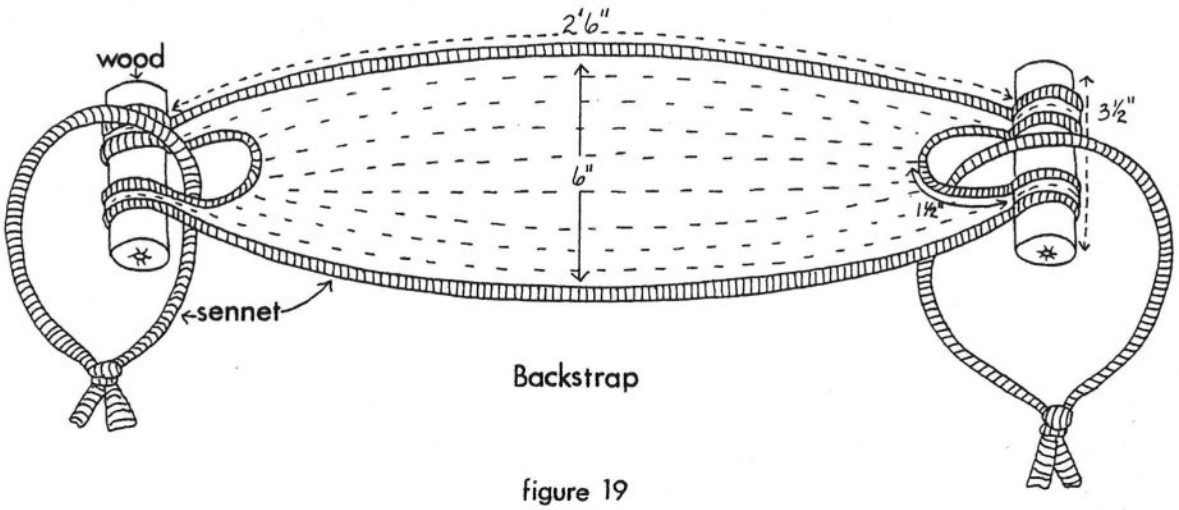
Shuttle or Bobbin (*hasap*) (Figure 20) – An open-ended wooden tool that holds the weft fibers so they can be passed through a shed in the warp. It is approximately 18 inches long by 2 inches wide.

(4) Batten or Beater (*hopop*) – A single-edged wooden stick that is used to pack down the weft threads and help



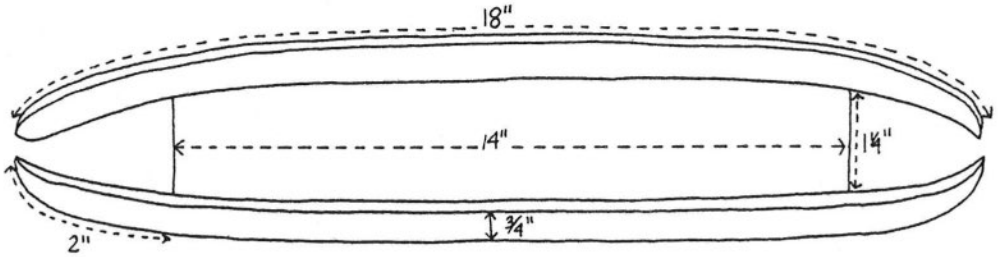
LOOM PARTS

figure 18



Backstrap

figure 19



Shuttle

LOOM PARTS

figure 20

separate and increase the size of the shed. It is approximately 3 feet long by 2¼ inches wide.

Warp (Figure 37) – A set of threads placed parallel and lengthwise on the loom.

Weft (Figure 37) – A set of threads perpendicular to the warp and selvage.

(3) Heddle Rod (*ngung*) – A smooth, straight stick that supports the string heddles. It is approximately 3½ feet long by 1 inch wide.

String Heddles – They are made from fiber or thread and control the separation of the warp and create a shed.

(2) Shed Roll (*tapang*) – A smooth, round piece of dry bamboo that is used to help create a shed. It is approximately 3 feet long by 10 inches in circumference.

(1) Lease Rod (*uluth*) – A smooth, straight stick that holds all warps evenly and parallel to the front beam. It is approximately 3 feet long by 4 inches in circumference.

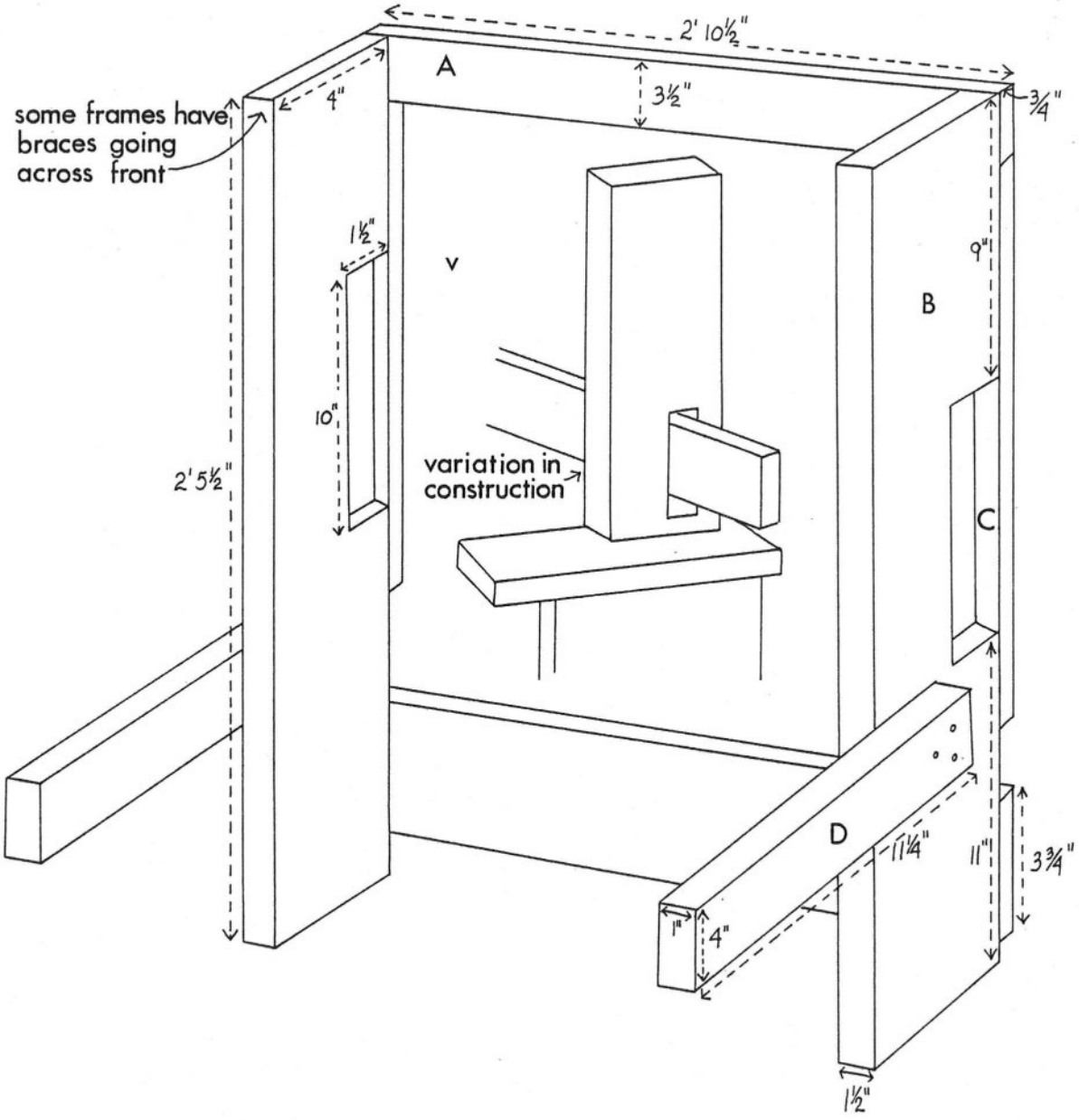
(B) Back Warp Beam (*pap*) – A flat, rigid board-shaped piece of wood that supports the warp and keeps it horizontal. It is approximately 3 feet long by 8 inches wide.

Loom Frame (*busol*) (Figure 21) – A simple, vertical wooden frame that supports the back warp beam. For frame sizes refer to Figure 21.

WARPING

(Using Commercial Thread)

Commercial thread was used in the following warping



LOOM FRAME

figure 21

and weaving directions because of its ease in handling and because there was no preparation of the thread as there is with indigenous fibers.

Weaving is done on a continuous, knotted, ring warp that is wound spirally around two beams. Color changes are made in the warp by knotting in new threads only in the fringe area.

Warping is accomplished by using a warping bench or board that has four vertical sticks and sits on legs on the ground (Figure 22). In ancient times, sticks of breadfruit wood were set directly into the ground, but today a sturdy wooden board with World War II bullet shell casings is used (at least on Fassarai). Another warping bench consisted of a flat, legless board with four sticks that was supported off the ground with rocks. Warping benches in the Western Carolines are simple and without decoration, but warping benches from Kosrae were decorated with elaborate, geometric designs.

Winding the Warp

These warping directions are for the basic everyday, black and white seven stripe, plain weave (two sheds) lava lava (Figure 6). Warping is usually done inside the house or directly outside in the shade. Not every household has a warping bench and so they are shared.

WARPING

figure 22

Materials Needed

1. Warping bench with five holes; fifth hole is used when making the larger men's loincloth (Figure 23).

2. Four bullet shell casings or sticks (Figure 24).

3. Small, round rock or piece of coral 4½ inches long.

4. Long, smooth stick.

5. Thread – one #604 cone is enough for the seven large black stripes. Extra thread is needed for the narrow white stripes and red border.

Process

1. Use a small rock or piece of coral and wrap a long length of white thread around it. This will be used for the string heddles. Make a small loop knot on the end.

2. To begin, place red border thread through string heddle loop and then tie a 6-inch loop onto the end of the red thread and put it over casing #1. Make sure all casings are secured in the board. If they are not and become loose during the warping process, they will tilt and warps will be uneven lengths, causing uneven thread tension.

3. The spools of thread are held to the right of the weaver on the end of a stick stuck into the ground at a 45° angle. If natural fibers are used, the basket or box of materials is placed to the weaver's right with the butterfly bundles untied.

4. Basic warping pattern (Figure 25):

   a. Place border thread loop around #1.

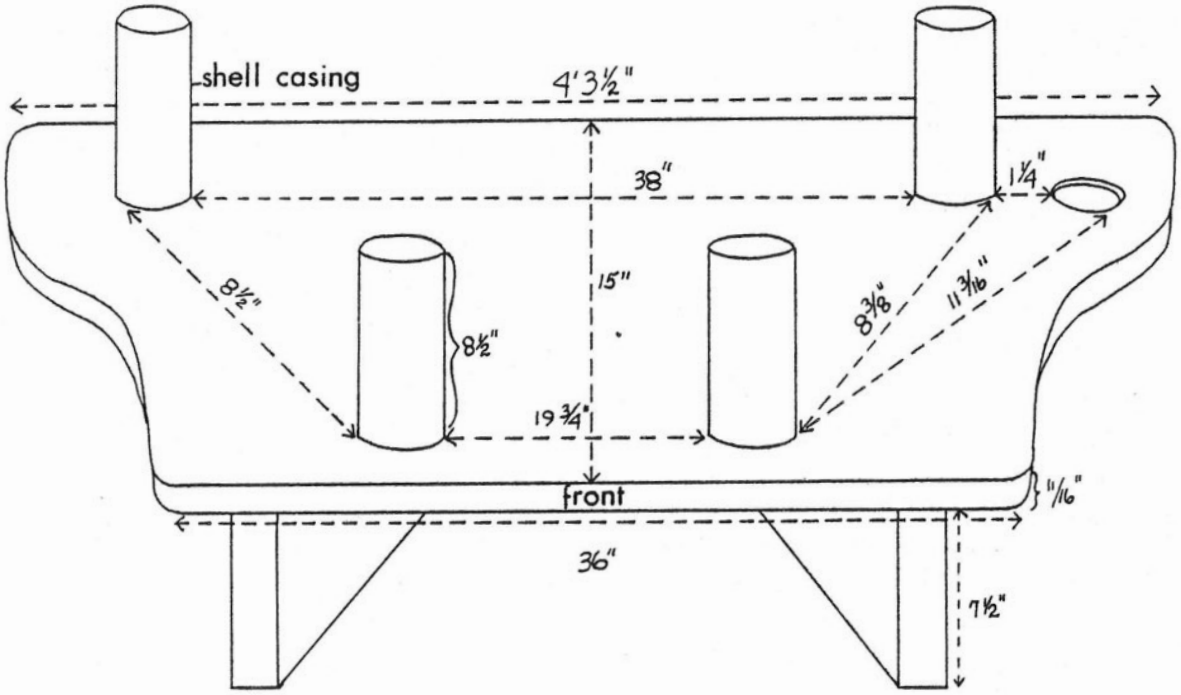
   b. Bring thread to left back and go right to left around the back of #2.

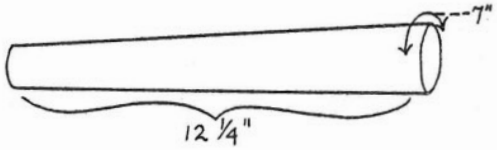
   c. Pull thread across board and go around the back of #2.

   d. Bring thread forward and around the front of #4.

WARPING BOARD

figure 23



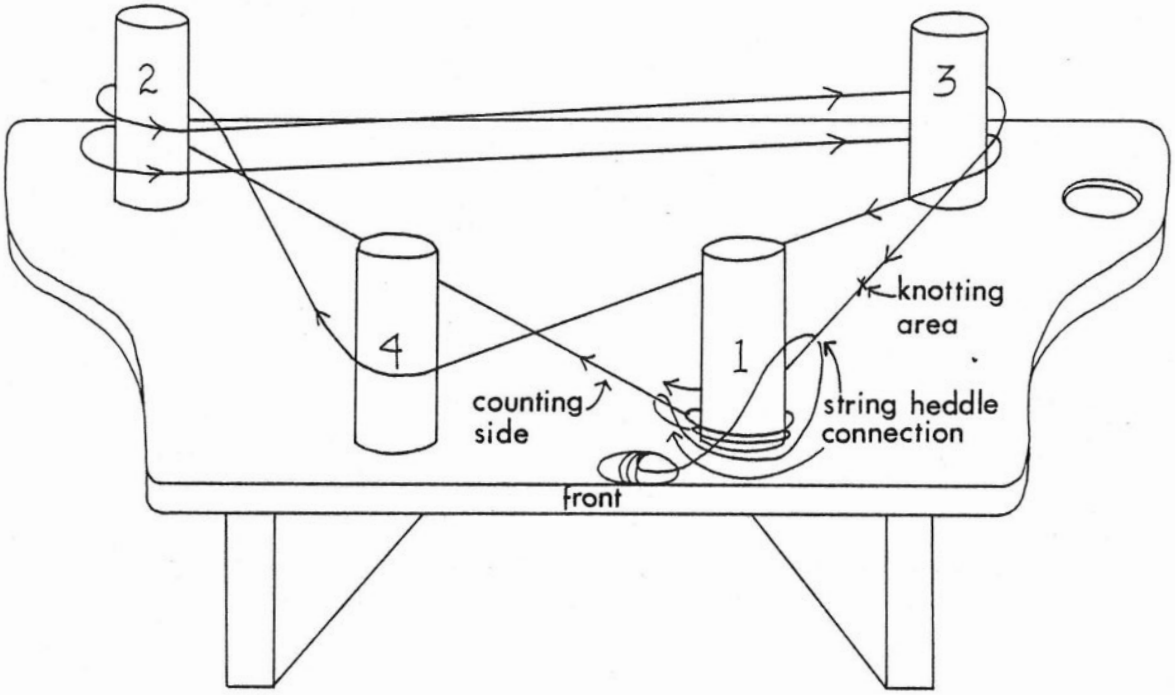


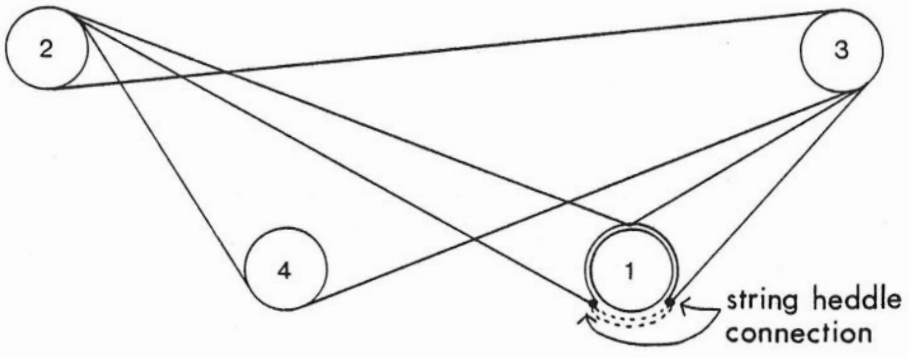
Shell Casing

figure 24

WARPING PATTERN

figure 25





Top View of Warp Pattern

figure 26

e. Back of #2, around back right to left as in step "b."

f. Over and around #3.

g. Bring up to front in back of #1. Push threads down evenly on casings. Be sure to keep threads loose. If they are wrapped too tightly, they will pull the warping posts in.

h. String Heddle Attachment (Figure 27) — The string heddle is attached by going under and over the warp thread with the heddle thread on the left side of casing #1 and placing the rock to the right of the casing, making sure the heddle thread is taut.

i. Continue warping sequence from b-g, except this time make the heddle loop to the right of casing #1 and place the rock to the left. A warping pattern will form as in Figure 26.

6. Continue warping sequence until there are nine border threads on the counting side (left side) of casing #1 (Figure 25). Actual overall count at the counting side is four times this amount.

7. The black thread for the large stripe is attached at this time. All thread additions are made between #1 and #3 casing using a *bogbog* knot (Figure 29).

8. Continue warping with black thread until you have a count of 60 threads (240 overall). Then switch to white thread and warp 25 threads (100 overall) for the narrow stripe. Go back to black for a count of 60 and continue warping until there are 7 black stripes and 6 white stripes. Finish off with 9 red border threads. This is an average thread count for this type of skirt.

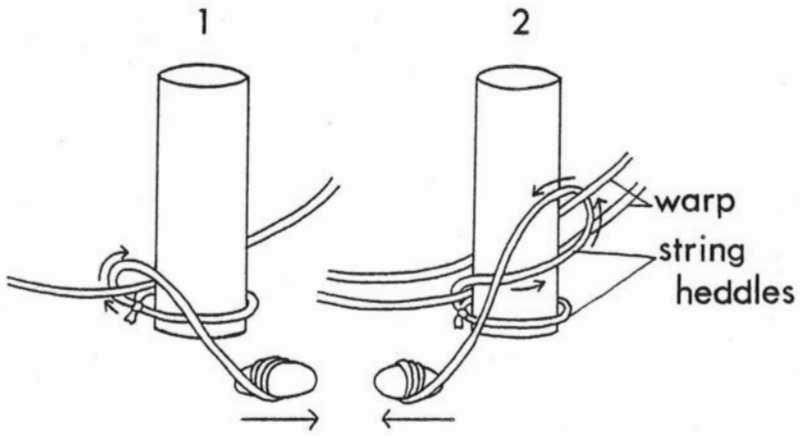
9. Tie off warp end with a slip knot to the top warp.

10. A good worker can complete the warping process in four or five hours.

SETTING UP THE LOOM

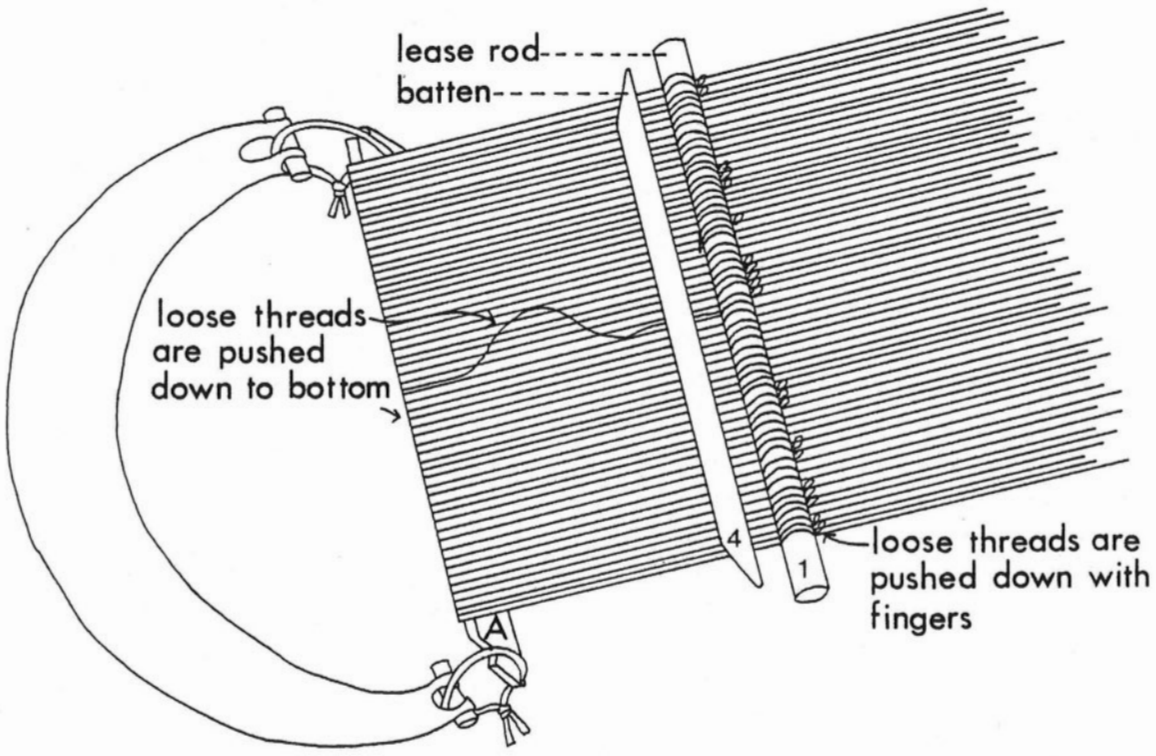
Refer to Figure 29:

1. Place a strong, smooth dowel (3) through the



Attaching String Heddles

figure 27



Lease Rod Preparation

figure 28

string heddle junction and carefully remove the casing.

2. Put the bamboo (2) in next.

3. Continue putting in loom parts and removing casing according to Figure 29. The actual order of removal does not matter.

4. Straightening the threads:

   a. Two-person method:

      1. This consists of two people sitting on the ground facing each other with legs out-stretched and the toes of each person holding the large bamboo rod (Plate 22).

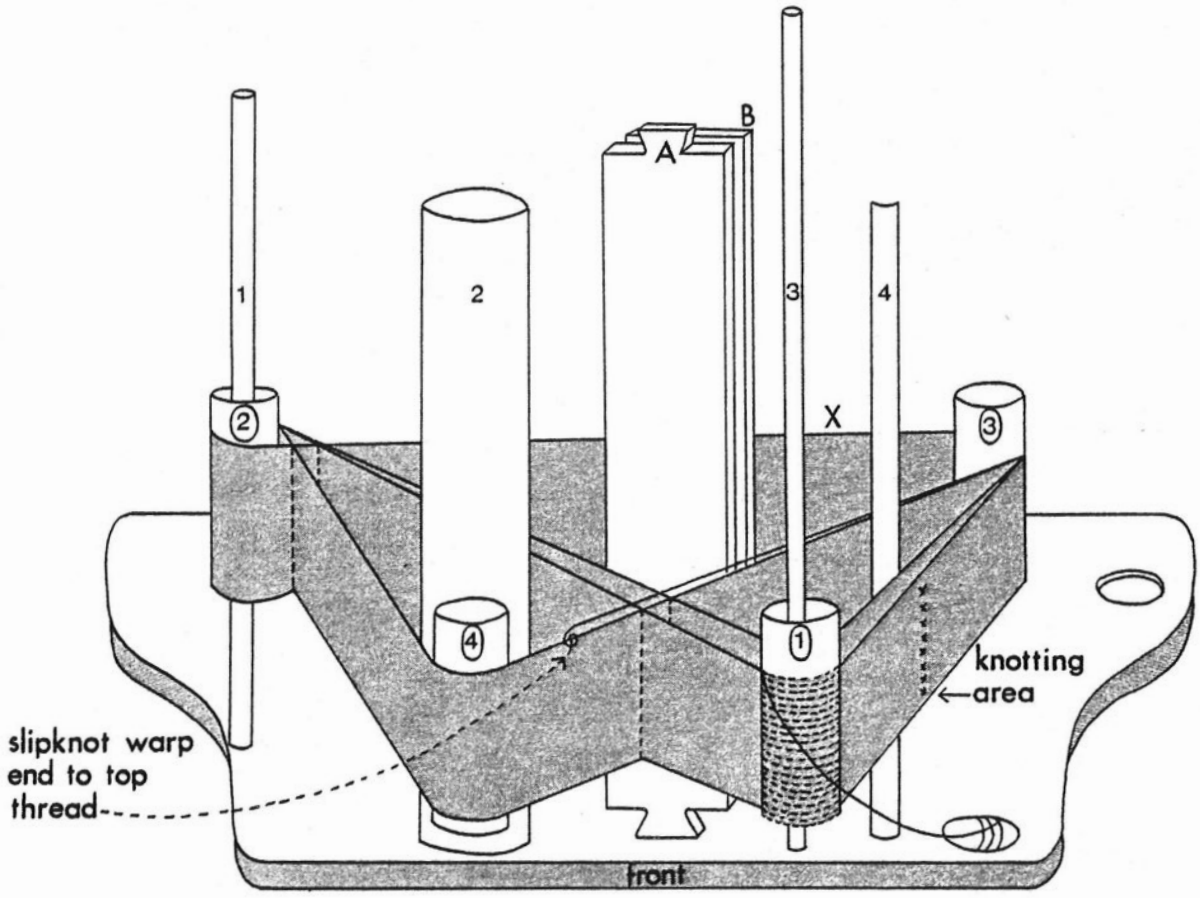
      2. Starting at one end, one person separates the first color and shakes it to the second person who separates and lays the color to one side. This is repeated until all threads are evenly separated on the front and back boards.

   b. One-person method:

      1. With the "X" side of the threads on top (Figure 29) put warp beam (B) onto the back loom frame. Stick (1) (lease rod) with the crossed threads should be at the working end near the weaver. Other loom parts are underneath on the bottom layer (Figure 30). The large bamboo shed roll has been temporarily replaced with a lighter piece of split bamboo (2).

      2. While sitting on the floor, start at one end (usually the right) and carefully separate and untangle the threads on the lease rod. After a dozen or more are done, take a stick and reach back to the back beam and carefully separate those threads. If available, a second person can help with the back beam threads. Continue separating and untangling threads until they are all evenly spaced and the width you want the lava lava.

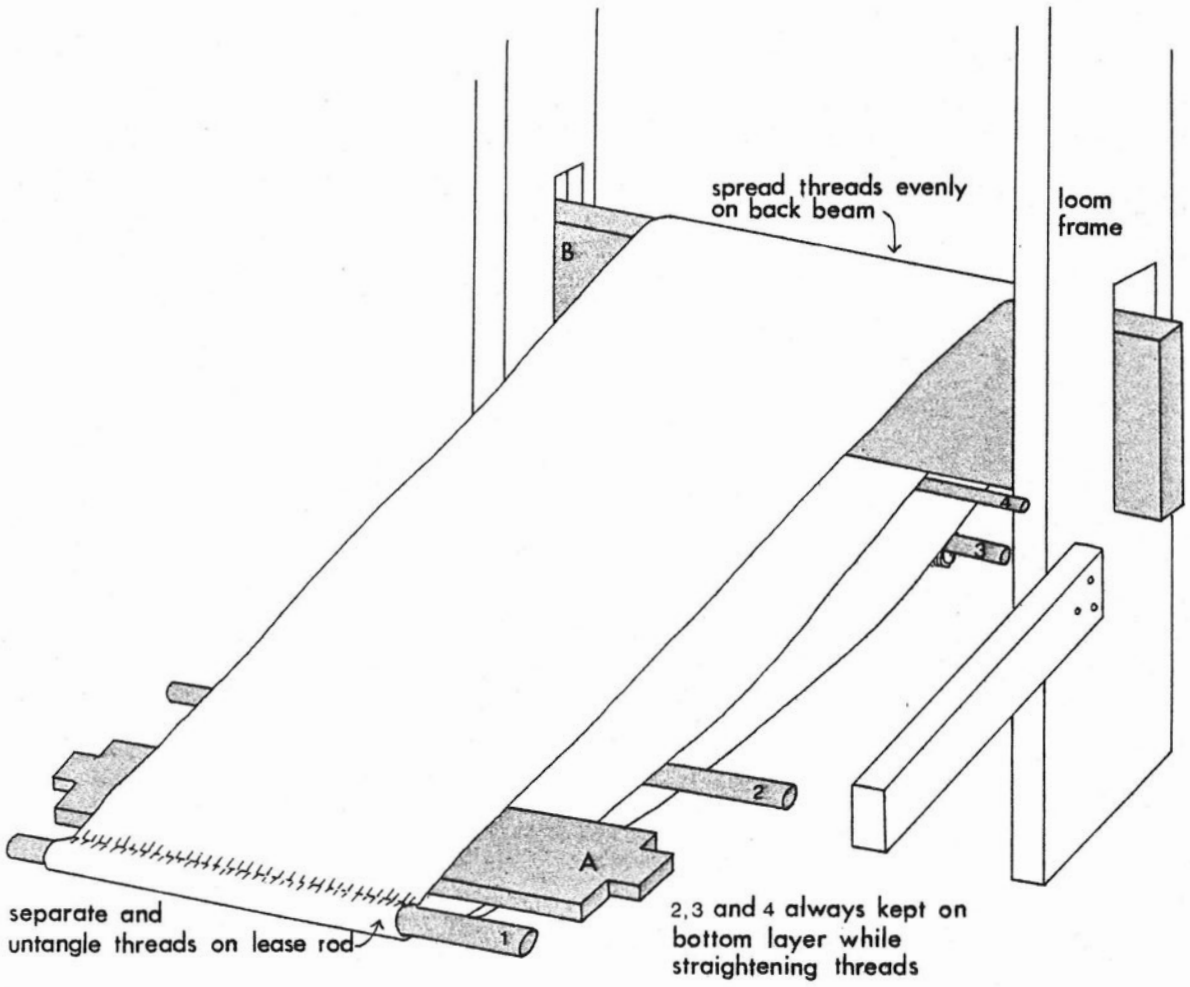
      3. When all threads are untangled and evenly distributed on the lease rod and the back beam, take front beam (A), pull it gently



POSITION OF LOOM PARTS ON WARP

figure 29

Plate 22. Preparing warp.



PUTTING WARP ON THE LOOM

figure 30

toward you and attach it to the backstrap around your waist. Your legs will be extended at this time with your feet pushing on the base board of the loom back.

4. Use fingers and batten to tighten threads on the lease rod as it rests on top of the threads (Figures 28 and 30). The purpose of the lease rod is to keep the threads evenly spaced and the design straight. If the stick is not completely smooth and straight, the threads will catch and cause problems. Continue pushing with the batten and pushing and turning the rod to smooth and straighten the warp threads until the lease rod is near the back beam (Figure 31). (During the weaving process as the lease rod moves down closer to the weaver, the above process is repeated.) As the warp is straightened and stick (1) becomes hard to reach, front beam (A) is twisted so the warp moves forward and down towards the body. Loose warp threads are pulled down and around the front beam (Figure 28).

5. Keep pushing and pulling on stick (1) until all threads move smoothly and stick (1) moves easily among the threads. Commercial threads tend to stick more than natural fibers during this process. However, when weaving, natural fibers are more difficult to work with. Some people straighten the whole warp, some only half, at this time. During this process all loom pieces are kept on the bottom layer of the warp.

6. When finished with stick (1), carefully slip stick (2) up and over front beam (A). Keep adjusting thread to keep evenly spaced.

7. Bring the string heddle rod up and over beam (A).

8. When the string heddles are on top, carefully replace the split bamboo stick (2) with the larger bamboo shed roll. The shed roll will be in back of the string heddles away from the weaver.

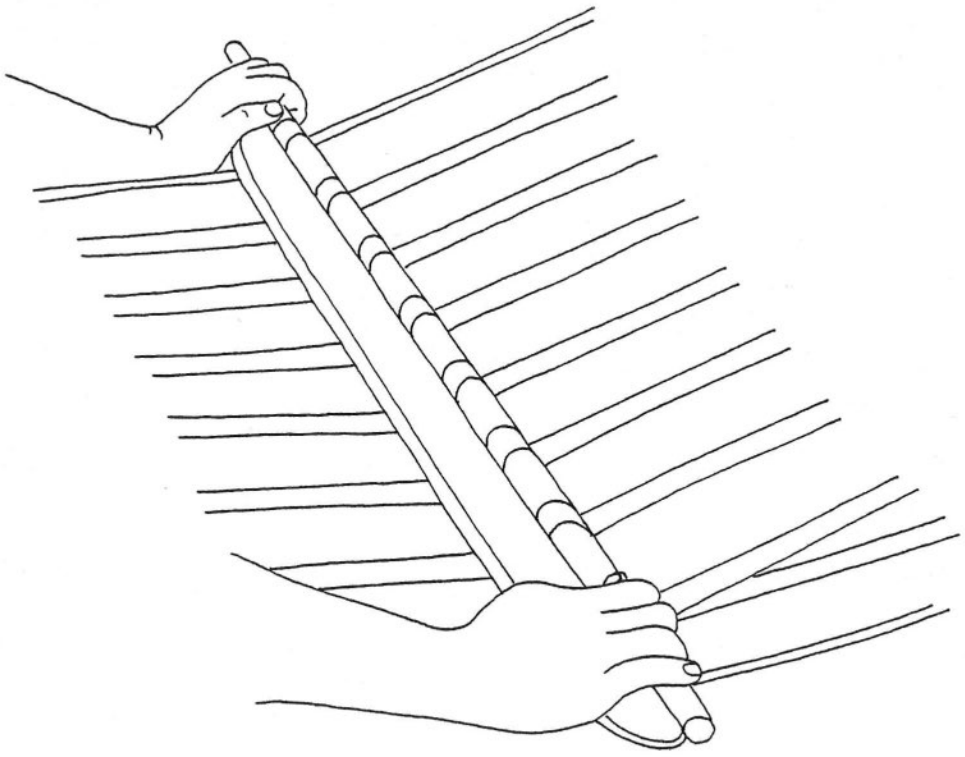


figure 31

9. Adjust the warp so that the knotted areas lay on the middle of front beam (A) and the lease rod is at the back of the warp near the back beam. Between the front beam and the back beam are the string heddle rod, shed roll and lease rod (Figure 32).

10. This straightening process takes about three hours. If you are finished for the day at this point, carefully wrap the threads over the front beam (up and over) and lay the wrapped beam on the side boards of the loom. Cover the threads with a towel to protect them.

THE WEAVING PROCESS

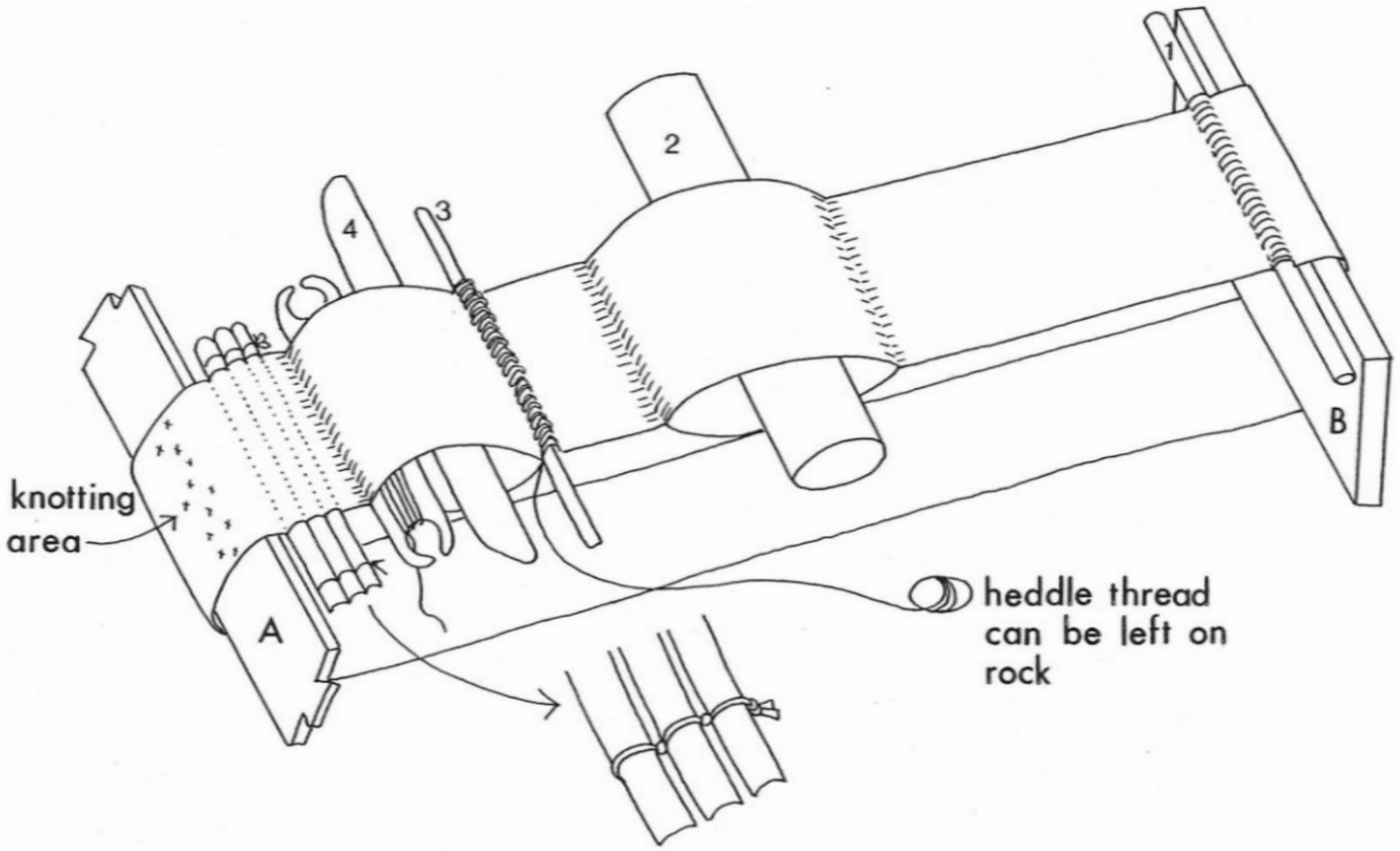
(Using Commercial Thread)

The plain or tabby weave is the simplest but most firm and most durable type of weave and is created by the weft consistently going over and under the warp threads in a one-to-one order (Figure 37).

The warp was evenly divided into two equal odd/even sections or sheds during the warping process when the string heddles were made.

As seen in Figure 32, the upper warp layer has been divided into two, equal sheds and the lower layer of warps remains unused until it rounds the back beam and becomes the upper warp layer.

The two sheds are referred to as the shed and counter shed. The "counter" shed occurs when the bamboo shed roll is placed directly behind the heddle rod and the odd threads are on the bottom (Figure 33A). When the odd



PREPARING TO WEAVE

figure 32

threads are pulled up above the even threads with the heddle rod, the "shed" is created (Figure 33C).

Preparing to Weave

A detailed description of the weaving process is described in the Step-by-Step Weaving section.

1. Sit in front of the loom with your legs outstretched and your feet on the baseboard of the loom. If your legs are too short to hold the warp taut, more boards can be added across the baseboards of the loom frame (Figure 16).

2. If the warp has been rolled up and covered, remove the cover (a towel or piece of cloth) and place it over your legs.

3. While holding onto the ends of the front beam, carefully unwind the weaving onto your thighs.

4. Wrap the backstrap around your waist and attach its ends to the lugs of the front beam. The backstrap should sit on the lower back, just below the waist, resting on the fatty upper part of the buttocks. Twist and double over the ends of the backstrap to suit your body.

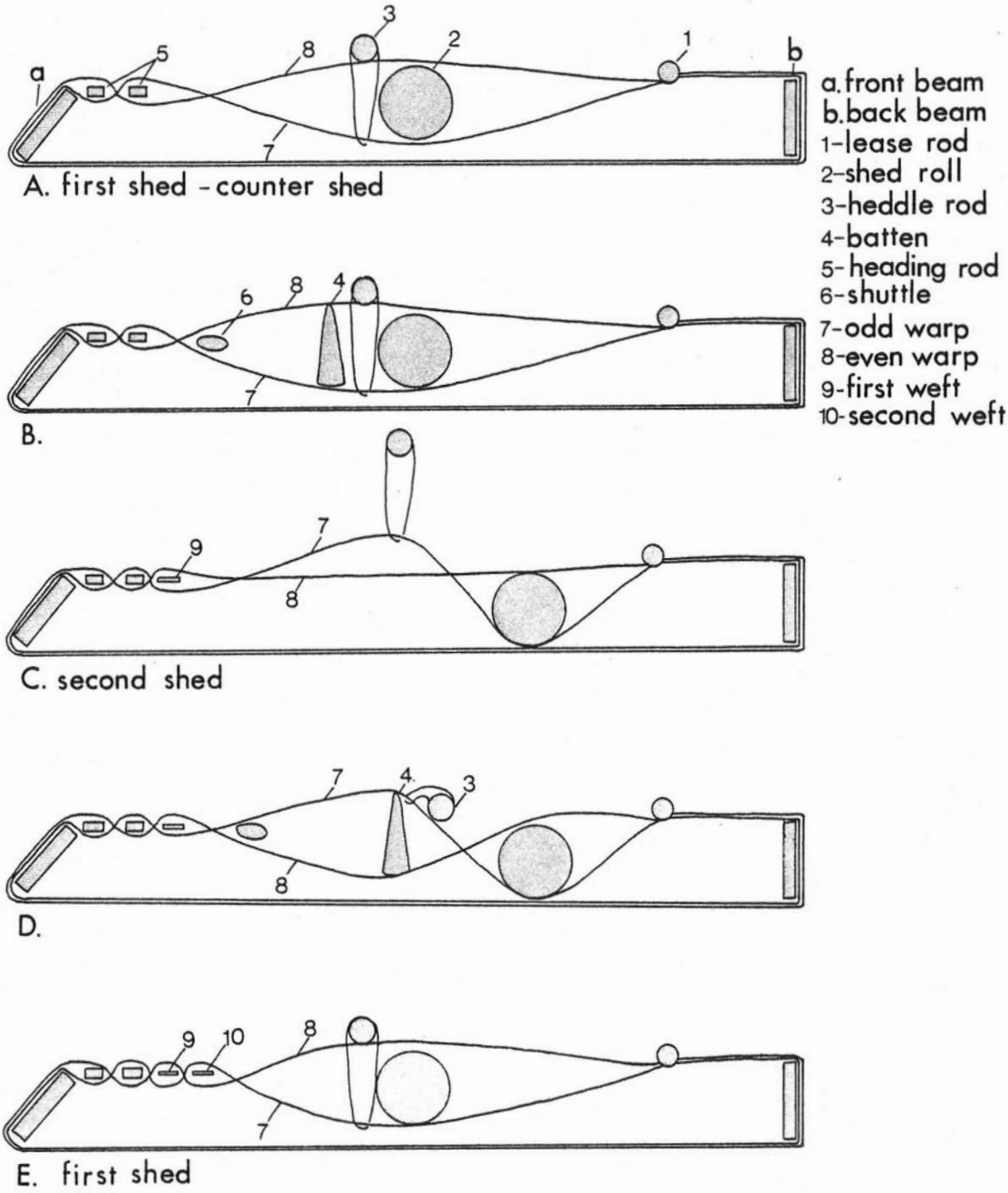
5. Readjust warp to make sure threads are flat, untangled and evenly spaced.

6. First shed or counter shed (Figure 33):

    a. The shed roll should be placed directly behind the string heddle rod.

    b. Roll bamboo shed roll and string heddle rod back and forth together to form the first shed (Figure 34).

    c. With the right hand, insert the batten through the counter shed in front of the heddle rod and move it up and down to separate the threads. If the batten picks up incorrect threads, it will have to be moved back a little until the corrections are made. When the shed is open, push batten back toward the heddle rod and place vertically on its rounded edge. Insert a straight split bamboo slat



SIDE VIEW OF SHED OPENINGS
AND LOOM PARTS

figure 33

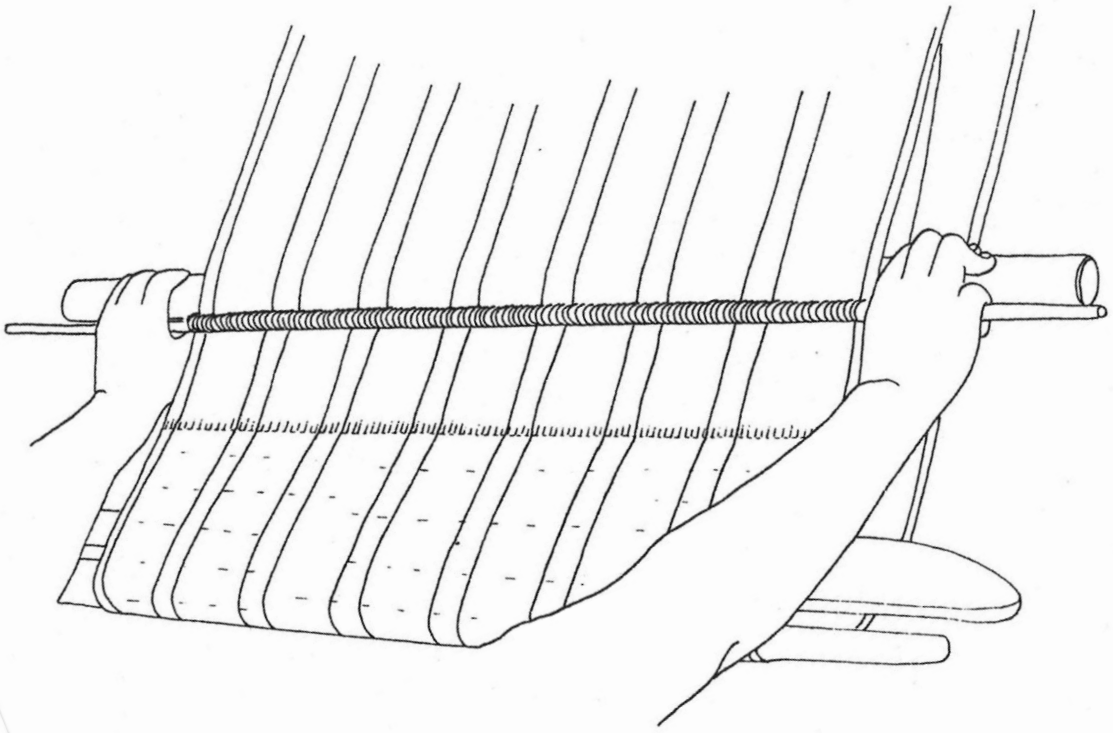


figure 34

(heading rod) and pull it toward the front beam.

d. Lay batten flat, roll shed roll back and change shed.

7. Second shed:

a. Part the heddle loops in the middle and with the index and second fingers of the left hand (palm up) lift up the string heddle rod (odd threads) (Figure 35).

b. To further open the shed, hold the center of the batten with the right hand and beat down the threads in back of the heddles and in front of the shed roll (Figure 35). This is difficult to do if the thread you are using tends to ball up on the heddles.

c. With the right hand, place the batten through the open shed. Hold both ends of the batten and go up and down on the warp with the sharp edge to make sure all threads are separated and in the correct place. If they are not, correct them.

d. Using the batten, beat down the threads on the first shed.

e. To further open the shed, slide batten back toward the heddle rod and stand it vertically on its curved edge. Insert second slat of split bamboo (fibers may also be used). If necessary, the shed can be changed and a third bamboo slat inserted.

8. Starting in the middle of these heading rods, carefully readjust the threads so they are evenly spaced and the same width as the threads on the lease rod. Work from the middle of the rod to each side.

9. Tie the slats together at both ends to keep them from moving (Figure 32). These slats also help keep the weaving straight.

10. A heavy thread or fiber can be inserted in the next shed to give a strong beginning to the weaving.

11. You are now ready to weave the skirt fabric.

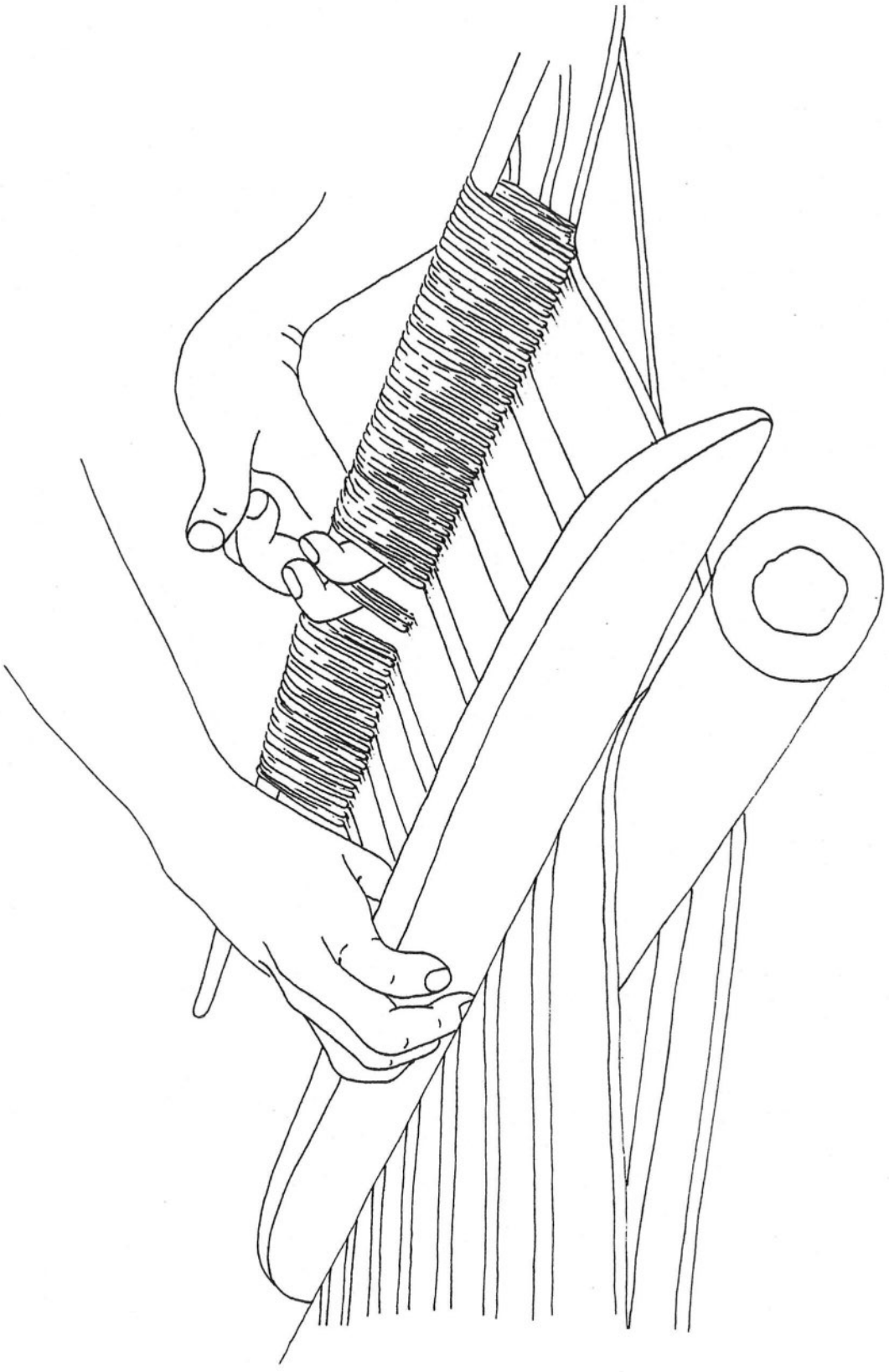


figure 35

Step-by-Step Weaving

1. Weft: wefts are made with a double thickness of cotton or a wider strip of natural fiber. Light colors are used since a dark weft might show. For example, if black and white cotton thread are used, then a double thickness of white would be used for the weft.

   To prepare a shuttle of cotton thread for weaving, wind off a large amount of single thread from a cone onto a rock. Do not break the thread, but fold it over, creating a double width. Wind this double width from the rock and cone onto the shuttle. Natural fiber threads are wound onto the shuttle from their basket container. Ends are joined with a *bogbog* knot as you go along.

2. Weavings are usually stored rolled up with the shed roll and string heddles together and the batten left in next to the weaving in the counter shed that has been formed.

3. Re-establish the counter shed by rolling the shed roll and heddle rod together over the warp (Figure 34).

4. With legs outstretched and feet pushing on the baseboard, lean back into the backstrap, clasp the ends of the batten that has been stored in the shed, and with a rolling, chopping motion of the batten, open the threads toward the weaving. It is important to lean back and keep the threads taut.

5. With both thumbs on the front sharp ends of the batten and the fingers around the back, push down hard on the threads. A second tightening motion is done by pushing up on the top threads with the batten while leaning forward a bit on the loosened warp. This two-step beating process is extremely important in making a tight, strong weave where the weft will not show.

6. The batten is pushed back toward the heddle rod and turned vertically on its rounded edge to increase the depth of the shed.

7. Unloosen several rounds of thread from the shuttle and pass the shuttle right to left through the open shed and place it on your lap with your left hand (Figure 36). Several inches of weft should

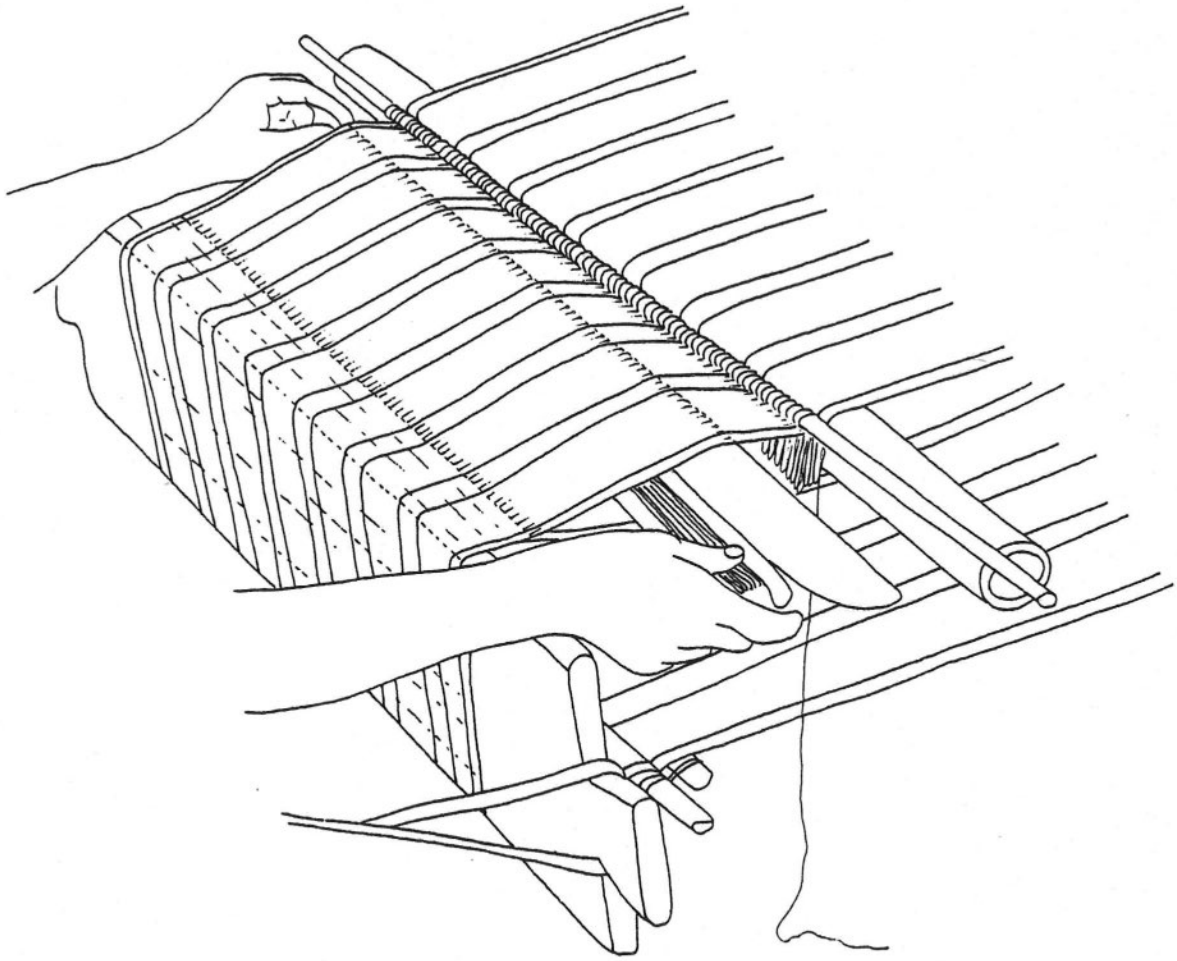


figure 36

be left free and unwoven so it can be slip knotted to the warp fringe when the weaving is complete. The weft should be straight across next to the heading stick (no bubbling). The fingers are used to gently push down the selvage edges.

8. The straight edge of the batten is used to gently push down the thread before the new shed is begun. Leave the batten in place while changing sheds.

9. Push the shed roll to the back and move the heddle rod forward in a rolling motion. With the first and second fingers of the left hand (palm up), carefully pick up the center section of the heddle rod between the heddle loops (Figure 35). Remove the batten from the previous shed and with the right hand clasping the center back, push hard against the shed roll with the straight edge of the batten. The back part of the buttocks is pushing back while the top part of the body leans forward to reduce thread tension and further open the shed.

10. Place the slanted batten into the new shed and push it back and forth under the threads to make sure the threads are in their proper place. Release the heddle rod.

11. As in step #4, roll and push with the batten to tighten weft.

12. Slide batten back toward heddle rod and turn vertically on its rounded edge.

13. With left hand pick up shuttle from lap, unwind more weft and push it through the shed from left to right to the right hand. Hold weft with fingers at left selvage so it does not pull in.

14. Straight edge of the batten is used to gently push thread in place against other weft. Lay batten flat in shed and change shed.

15. With rolling motion and threads taut, grasp shed roll and roll forward to heddle bar. Grab both at their ends and with the threads still taut, roll both together to create the first, or counter, shed (Figure 34). Remove batten and reinsert into new shed.

16. Repeat process from step #4.

17. As the weaving progresses and is hard to reach, it can be turned on the circular warp by leaning back on the belt and twisting the front beam toward you with both hands.

18. When you want to put the weaving away, leave the batten in place (usually in the counter shed), lay a flat stick over the threads to keep them from tangling, remove the backstrap and roll the front beam up and over the threads and place it on the side arms of the loom. Shuttle is placed on top of the rolled up piece and everything is covered with a towel or cloth.

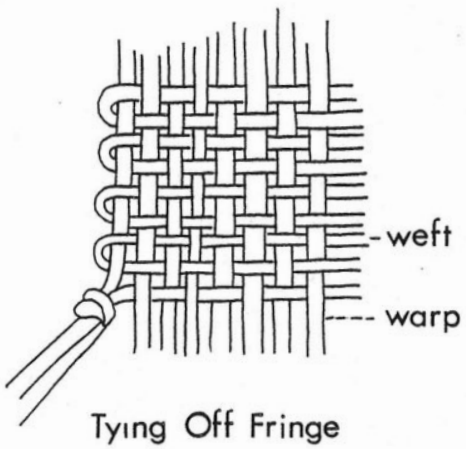
19. Broken threads – trace far end of broken thread and tie new thread to end with a *bogbog* knot. Rethread correctly and either tie new thread to old thread or overlay at weaving edge.

20. Repeat weaving process (4-15) until approximately 20 inches of warp is left.

21. Cutting the fringe – a thread is used to measure the fringe length and then folded in half to determine the middle. The batten is placed on edge between the two layers at this middle part of the thread or equidistant from the two woven edges. With the threads taut, cut the warps on the back of the beam at the left side, in the middle and on the right side, leaving some uncut warp threads in each section to maintain the tension. When these threads are cut, the loom parts can be removed.

22. Fixing the fringe – the weft ends on either end of the skirt are slip knotted together with one or more of the warp ends to keep the fabric from unraveling. Similar knots can be made on the opposite ends (Figure 37).

The Lava Lava is Completed.



Tying Off Fringe

figure 37

Part 5

CONCLUSION

Part 5

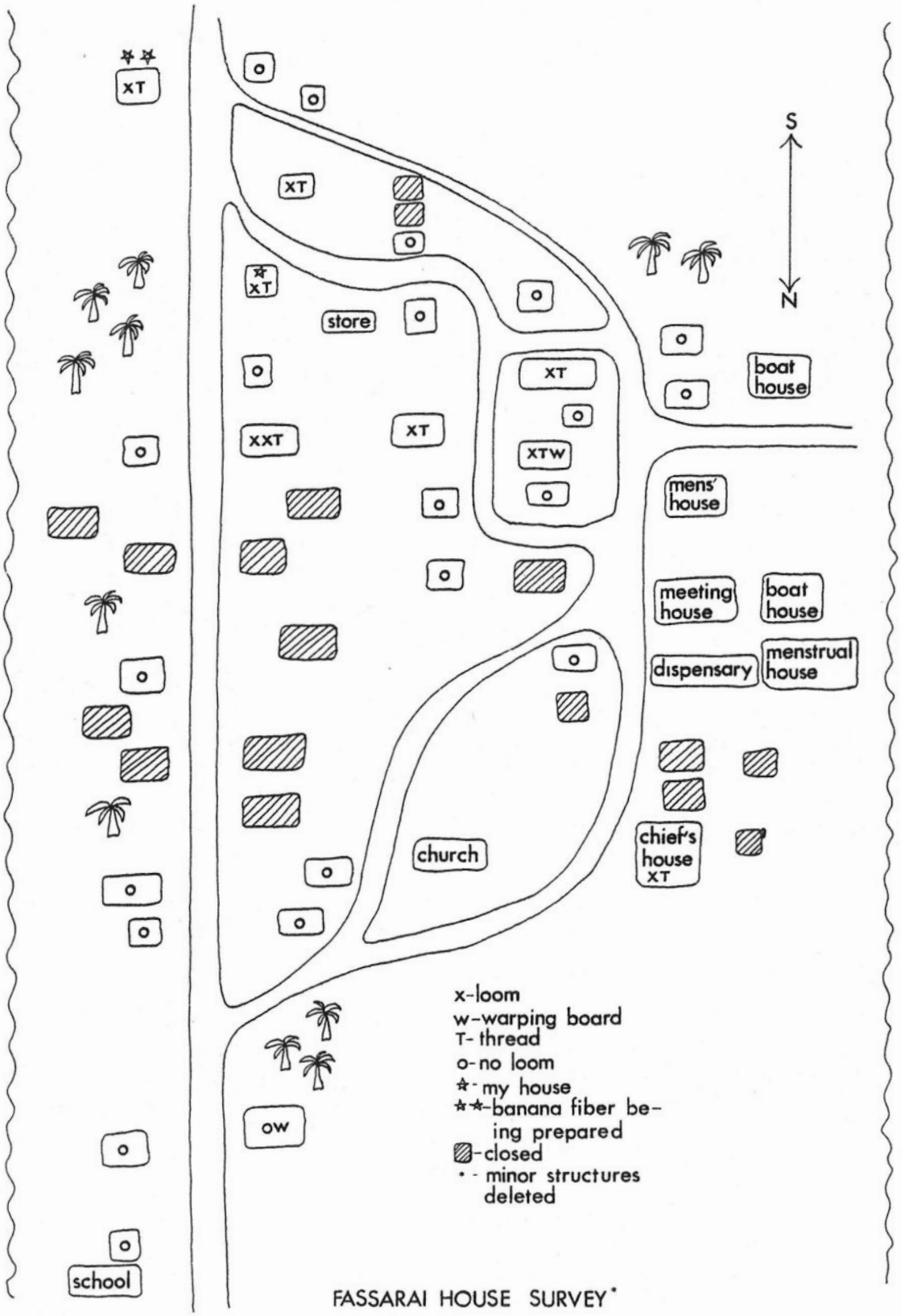
CONCLUSION

It has been my intent to gather as much information as I could about the lava lava. As Dr. Lessa said, the native loom will soon fall into disuse. Documenting the fiber changes occurring now and the fiber preparation and weaving procedures are extremely important for future reference.

The general house survey I took on Fassarai (Figure 38) in September of 1978 is indicative of the changes occurring in the lava lava. The survey shows that no natural fiber lava lavas were being woven at that time, although some banana was being prepared for weaving. Of the 24 open houses, only nine looms could be found, one of which was mine.

The survey was taken over a year ago and today (January 1980) the Yap Cooperative Association manager reports that almost no natural fiber lava lavas are being made and the ones that are are considered collector's items.

More changes are inevitable.



FASSARAI HOUSE SURVEY*

figure 38

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