EXPERIMENTS IN PRODUCING HANDWOVEN CASEMENT FABRICS

By

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EXPERIMENTS IN PRODUCING HANDWOVEN

CASEMENT FABRICS

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PREFACE

A desire for increased knowledge, to become more proficient in the craft, and to create articles for specific purposes was fulfilled through this study in the area of handweaving. Although only a very small portion of a large and complex craft was explored in this research, the writer hopes this investigation may prove to be an incentive for others who wish to do research in the area of creative handcrafts.

This writing endeavors to determine if time and labor-saving limitations placed on the handweaver hamper the design and creation of handsome and useful textiles.

The author wishes to express his gratitude to his advisor, Mrs. F. C. Salmon, Associate Professor in Housing and Interior Design, for her competent guidance, helpful suggestions, and cooperation throughout the study. Appreciation and indebtedness is acknowledged to Miss Leevera Pepin, Assistant Professor in Housing and Interior Design and Mr. Milton Paschall, Assistant Professor in Housing and Interior Design, for their contributions as members of the advisory committee. Gratitude is also expressed to Dr. Elizabeth Hillier, Associate Professor of Home Economics Education, for her help in initiating the study.

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CHAPTER I

INTRODUCTION

The Role of Handweaving in Today's Society

Handwoven articles for home furnishing have shown a noteworthy increase in demand in recent years. This demand may be due, in part, to present-day educational facilities which develop an appreciation of handcrafted items. There is a portion of the population that desires something more than can be produced by industrial procedures. These people want "one of a kind" items--items that cannot be manufactured in a factory employing assembly line methods. They want and appreciate the qualities that are inherent in something made by the human hand. Handwoven textiles are very important and popular craft articles today. Handweaving practically disappeared after the Civil War due to the introduction of power looms. Until that time, handweaving had been a matter of necessity because there were no other methods for making the fabrics needed. The revival of handweaving can be attributed to a discriminating public who, tired of the monotony with which quantity production was flooding the market, kept searching for something displaying a more individual nature. These people turned to the crafts practiced by earlier generations to find the unusual and, thus, the hand loom was rediscovered and revitalized.[1]

Development of Weaving

The craft of weaving, one of the earliest methods of constructing fabrics, began when primitive man thought to interlacing twigs or rushes to form mats for his cave. Later, he learned that he could produce a web of a more cloth-like nature by employing the strands derived from splitting bark, roots, and limbs of trees in his weaving. He then discovered that, by twisting together the hair or fur from animals, a strand of unlimited length could be produced. The continuous strand of twisted fiber formed a thread that enabled early man to weave pieces of cloth in lengths that were more useful and desirable than he had been able to make before.[2]

The fundamentals of weaving are ancient, they are the same in all areas of the world, and nothing really new was developed in the craft for hundreds of years. These techniques are so basic that even the machines of today produce nothing that could not have been made centuries ago. Still, handweaving remains a living, growing art. It is a design medium that is always ready to meet the needs and desires of contemporary man in new ways.[3]

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[1]Marjorie Elliott Bevlin, Design Through Discovery (New York 1963), p. 209.

[2]Osma Gallinger Tod, The Joy of Hand Weaving, (New York, 1964), p. 14.

[3]Mary Meigs Atwater, The Shuttle-Craft Book of American Hand-Weaving, (New York, 1947), p. 3.

The first weaving was done on warp-weight looms. In this type of weaving, the warp threads were suspended from a bar and weighted at the bottom for tension. The weaving developed from the top to the bottom. This loom was used by the early Greeks and by the Chilkat Indians of the North Pacific American coast. The two-bar loom was developed next, with the warp stretched from bar to bar. In cases where additional length was wanted, the warp was wound around the bars. With this arrangement, the weaving could progress from either the top or the bottom and the loom could be used in either an upright or a horizontal position. The ancient Egyptians were known to have used this type of loom in a vertical position. The tapestry loom used today is of this variety but used horizontally. The backstrap loom used in pre-Columbian Peru and still found in primative regions of Asia and of Central and South America, is a two-bar loom with an additional feature. The lower bar is attached to a belt which passes about the waist of the weaver. By leaning forward or backward, the weaver can loosen or tighten the warp threads thus allowing adjustment of tension. Fine weaving can be produced with this arrangement.

In these simple looms, the warp threads that were to be interlaced had to be lifted with the fingers to allow the weft, or crosswise threads to be inserted. The weft threads were then packed together with a flat piece of wood called a weaver's sword. Then the shed-rod was developed to speed up the selection of warp threads. The opposite warp threads were raised by a heddle-rod which was tied by means of string-loops to those warp threads running under the shed-rod. These lower threads could then be raised past those on the shed-rod to allow insertion of alternate weft threads. Later the shed-rod was replaced with a series of heddle-rods which allowed more complex handling of warp threads thus producing weaves other than the plain weave. In the medieval loom, these heddle-rods had developed into a series of frames, or harnesses, containing rigid heddles in the form of small, free-moving bars with a small hole in the center of each through which a warp thread passed. These harnesses were suspended from the loom framework and attached to foot pedals by a system of ropes or cords and pulleys. By pressing a pedal, the weaver was able to raise the set of warp threads necessary to allow the weft to be passed through the shed in the interlacing process.[4] Although this arrangement saved time in weaving, warp selection was more limited than by hand. To regain some freedom in warp selection and thus allow production of elaborate pattern weaving, such as brocades and damasks, the Chinese developed the draw-loom. This type of loom replaced the series of harnesses with cords with eyes in the ends through which a warp thread was drawn. These cords were then raised individually or in groups by a "drawboy," a person seated on top of the loom framework. This individual selection of threads facilitated the weaving of intricate and varied designs. The Persians also used this type of loom as early as 520 A. D. and was later adopted in Europe.[5] In the early part of the 19th century, this method of warp selection was mechanized by Jacquard with an invention that raised the proper cords with a system of hooks and blades. The selection was controlled by a chain of perforated cards revolving around a cylinder. The cylinder was rotated by a treadle. The cards

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[4]Anni Albers, On Weaving, (Connecticut, 1965), p. 20.

[5]Albers, p. 32.

were perforated in accordance with a pattern and the pattern could be changed by replacing one set of cards with another.[6]

In the early methods of weaving, the weft threads were inserted without the use of a tool. They were inserted with the hand and the extra length was wound into little bundles. Later, the thread was wound on sticks and unwound as it crossed between the sets of warp threads. Then, to hasten the insertion of the weft in greater lengths, it was wound on bobbins which were inserted into boatlike devices called shuttles. These shuttles were then passed back and forth between alternating sheds, releasing the weft with each passage. The greatest innovation for the insertion of the weft was the introduction of the fly-shuttle in England in the 16th century. In this invention, the shuttle is propelled through the open shed by a driving device. This device is activated by pulling a cord. The shuttle is caught at the opposite side of the loom and held until the shed is changed. The weaver then pulls the cord again, activating the driving mechanism which returns the shuttle through the new shed to its original position. Thus the weft can be introduced faster and over greater widths.[7]

The weaver's sword, mentioned earlier, was the earliest tool for packing each succeeding weft row against the preceding row. Later, the weft was packed or beaten and the warp was spaced by a comb-like device called a "reed." As loom design progressed, the reed was placed in a frame suspended within the loom framework in such a manner that it could be pulled against the weft to beat it into place and pushed

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[6]Albers, p. 35.

[7]Albers, p. 33.

back to allow room for the next shed opening. The reed is composed of thin bars, once made of reed, now made of metal, evenly spaced with openings between. The warp threads are drawn through the openings and are, thus, kept evenly spaced. The openings are called dents and the number of dents per inch across the width of the reed determine the density of the warp and designate the size of the reed (10-dent reed, 12-dent reed, etc.).

Europe's main contribution to weaving was the mechanization of the loom. The fly-shuttle was the first step followed in 1783 by the invention of a power-driven loom by Cartwright. This first loom was powered by an ox, but, in 1786, he introduced an improved model powered by steam. In 1813, the first power loom was set up in the United States. Later, when electricity was harnessed, it was used to drive the power looms of the textile industry.[8]

Although the mechanization of looms has produced a textile industry that supplies the world with vast amounts of fabrics at lower costs, the basic weaving constructions have remained unchanged for centuries. In the weaving process, one set of threads, the warp, crosses another set, the weft, at right angles and the manner in which the two sets of threads intersect one another determine the different weaves.[9]

The most important contribution to weaving in recent times is the development of new textile fibers and advanced methods for spinning and dying as well as the new textile finishes. The synthetic and man-made fibers have had a profound effect on weaving. They have removed the

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[8] Albers, p. 34.

[9] Albers, p. 19.

limitations imposed by the relatively few natural fibers available and have expanded the creative possibilities of the imaginative handweaver. The wool of sheep has been used in spinning thread from very early times as well as the hair and fur from other animals. The plant fibers are also known to have been used by early man for spinning thread. Cotton and flax are the two most common plant fibers and have found extensive use in the past as well as at the present time. Ramie, pineapple, jute, hemp, and coir are some of the plant fibers used less frequently than cotton and flax. The cultivation of silk worms for the production of textiles threads was first accomplished by the Chinese during ancient times. It later spread to the Near East and, finally, to Europe. These were the fibers used by weavers for centuries.

About 200 years ago, the first man-made fiber was developed by a Frenchman named Chardonnet. Attempting to produce an inexpensive substitute for natural silk by copying the methods used by the silkworm, he created the first rayon fiber. He made a gum from vegetable pulp. Then by running the gum through tiny tubes and drying it as it emerged at the opposite end, he created a fine filament much like silk in its softness and luster. This idea gave birth to the unlimited range of man-made fibers now produced. Although many kinds of fibers are still made from pulp bases, chemists now produce fibers through the molecular linkage caused by chemical reactions. These filament fibers can be used in weaving as single-filament yarns, twisted together to form larger filament yarns, or cut up in pieces and spun in soft, staple yarns.

They are also combined with the natural fibers to add desirable properties to the resulting thread.[10]

The background of American weaving began with the early colonists. The Dutch of New Amsterdam, the Mennonites of Pennsylvania, the Scotch who settled in the South, the Irish of New Hampshire, and the Puritans of New England came from rural communities and the textiles that came from their looms were simple cottage types. Before the Revolution, the major output of textiles came from the household looms of the settlers and, after the introduction of textile factories the old art of handweaving continued for many years side by side with the new industrial developments. As late as the Civil War much weaving was still done on household looms, particularly in the rural areas. Between that time and the present very little handweaving has been produced. In some isolated regions of the South, however, mountain women continued to weave on their ancient looms. Although their work was of inferior quality, these women can be given the credit for retaining and preserving our American heritage of handweaving.

The revival of handweaving is international in scope. Although the introduction of power machinery caused serious social disturbances in Europe, power-weaving never completely conquered the field as it did in America. In Europe handweaving continued in the rural districts with very little change. Many fabrics were still handwoven by professionals. In Scandinavia handweaving and spinning were encouraged by public agencies. In Canada handicrafts have developed into a major business. The Italians, Russians, Hungarians, Spanish-Americans,

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[10]Tod, p. 1.

Guatemalans, Peruvians, Mexicans, and Navajos were a great influence on the revival and restoration of American handweaving. This introduction of styles from other cultures into the native American mode proved advantageous.[11]

Today, in America, there are more handlooms in operation than at the time of the Revolution when all textiles were handwoven. Modern handweaving received its' greatest stimulus in the South, where educational agencies promoted the craft to help relieve the poverty of the mountain people. These agencies employed skilled weavers to give instruction to improve the quality of workmanship. In the North, handweaving has been promoted by arts and crafts societies, museums, and art schools and, therefore, has developed as an artistic approach to the craft as opposed to the chiefly economic approach in some areas in the South. Instruction in handweaving is offered in schools and camps all over the country, as well as professional art institutions and universities.

Review of Literature

Research and invention are considered an important part of the field of handweaving. Although some of the new equipment and procedures for producing textiles are extremely complicated and intricate, the basic techniques remain the same.[12] The artist-craftsman, exploring material and form, plays as important a role in society as the pure scientist. The results of his explorations can be a personal reward

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[11] Atwater, p. 21.

[12] Nell Znamierowski, Step-By-Step Weaving, (New York, 1967), p. 6.

if he is a producing craftsman or they can benefit the textile industry if he is employed as a designer or consultant.[13] Walter Hausner says of the handweaver's place in the textile industry:

> Handweaving is still, as it always has been, a slow and time consuming process. Considering this, what place does handweaving fill in the American textile industry today? More and more handweavers are working with and for the textile industry. What is their function? And why has the handloom appeared again in the industry, after having been ignored for many years?
>
> Work with the industry presents the greatest challenge to the professional weaver, requiring a maximum of knowledge, experience, and skill. The skilled and creative handloom weaver, who can design directly on the loom, is emerging as a most valuable adjunct to the textile industry.
>
> Design and experimentation are not only costly so far as time and material are concerned but can also tie up considerable production capacity. The handweaver on his loom can produce a design with a minimum amount of material and in the shortest possible time with no demand on production capacity. No one can better translate ideas into fabrics than a handweaver. When he has imagination, knowledge of fibers and techniques, and experience, he cannot help but produce the desired results.[14]

In reviewing literature in the areas of handcrafts and handweaving, there appeared to be a lack of research involving the design and production of handwoven casement fabrics. In addition, the writer was unable to find any data concerning the designing and production of several textiles on a constant set of warp threads. Therefore, the need for some research and experimentation in these areas seemed apparent.

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[13] Seonaid Mairi Robertson, Craft and Contemporary Culture, (London, 1961), p. 143.

[14] Walter Hausner, "Handweaving in the Textile Industry," Handweaver and Craftsman, IX (1957), p. 28.

Statement of Problem

This study was conducted to discover if a significant number of designs for handwoven casement fabrics can be produced on a handloom by keeping constant the warp yarns and threading pattern, changing only the kinds and combinations of filling yarns. Casement fabrics are light-weight and usually plain and loosely woven. They are used for draw curtains and are left unlined. Their semi-sheerness acts as a screen to give privacy to the interior of a room and to soften or diffuse natural sunlight.

Casement fabrics were selected as the type of textile to be used in this study because of the popularity of these fabrics for window treatments and because they are used to solve a variety of curtain problems.

Purpose

The artist-craftsman who produces, on a handloom, fabrics for curtains and other uses spends much time and energy in the process of altering warp yarns and threadings when he changes from the production of one casement fabric to another. If it were possible to produce a variety of designs for casement fabrics to fulfill the requirements of several window treatment problems by using one set of warp yarns and one threading and making changes only in the color, texture, size, or fiber content of the filling yarns, the handweaver could be saved much time and labor.

Hypotheses

It is hypothesized that a significant amount of variety can be developed in handwoven casement fabrics by keeping the warp constant and changing only the kinds, combinations and spacings of the weft yarns.

Methodology

Since there were no previous studies in this area to aid in developing a procedure for obtaining the necessary data, the investigator found it necessary to devise a method with which the answers to the problem could be found.

Five houses were selected from the Architectural Record, Mid-May, 1967, and, from each of these houses, one window or window area was chosen as a window treatment problem. The investigator then produced on a handloom three designs in casement fabrics for each of the five windows. Each of the five sets of three fabric designs was then evaluated as to how well they solved the particular curtain problems for which they had been developed.

A number of designs for casement fabrics were developed and produced by the investigator on a handloom as solutions to certain prescribed window problems. The samples were submitted to a panel of judges. This panel evaluated the designs according to how well each one fulfilled the requirements of the window treatment problem for which it was developed. Three members of the faculty of the Housing and Interior Design department at Oklahoma State University served as a judging panel. They were selected because of their extensive knowledge of window treatments and the fabrics used in these treatments.

The loom used to produce the samples of casement fabric was a floor model, four-harness loom with a beater which contained a fifteen-dent reed. Although the loom would weave up to thirty-four inches in width, a warp only six inches wide was placed on it for the weaving of the fabric samples. The loom was warped with size 8/4 natural cotton carpet warp set at fifteen threads per inch. The loom was threaded for plain or tabby weave.

Limitations of Study

This study was concerned only with creating a variety of fabric textures and patterns in handwoven casement fabrics. Weft yarns were selected for their visual contribution to the fabrics and not for their fiber content. Neither durability nor maintenance of the fabrics were considered as factors in this investigation.

All of the fabrics were designed to be used in traverse curtains.

Data available on the five houses used in the study did not include information on color. Therefore, the casement fabrics designed as possible solutions for solving these window treatment problems employ only neutral shades in their coloring. It was felt that this exclusion of other colors was permissible since the study was concerned primarily with design of texture and pattern and the degree of light control.

CHAPTER II

FINDINGS

Five houses were selected from the Architectural Record, Mid-May, 1967, and, from each of these houses, one window or window area was chosen as a window treatment problem. The five houses selected for the study include (1) a country house on a wooded site in Connecticut designed by Edward Larrabee Barnes, (2) a vacation house located at York Harbor, Maine designed by Herbert Vise, (3) a contemporary house in Cambridge, Massachusetts designed by the owner Hugh Stubbins, (4) a house designed by Earl R. Flansburgh and Associates as a series of pavilions around an open court near Harvard, Massachusetts, and (5) a large house on the St. Lawrence Seaway designed by Richard R. Moger.

Three handwoven casement fabrics were designed and produced by the writer as possible curtaining solutions to each of the five window areas. The houses and selected window areas and the fabrics created for them are described in detail in the following pages, as well as the evaluation of the fabrics.

The first house selected for the study is a large country house located on a heavily wooded site in Connecticut. The south wall of the living room contains double sliding glass doors with a section of fixed glass above them. The upper section of glass is the same width as the sliding doors and extends to the ceiling. Since the site is secluded, curtaining for privacy is unnecessary. However, an excess amount of sunlight during the winter months as the sun moves to the south suggested the use of casement fabric for light control.

The three casement fabrics designed as possible solutions for this curtaining problem were conceived to compliment the handsome interior of the room while diffusing any offensive light rays.

The first casement fabric designed for this window area (Sample 1-A) was woven in the following manner: Twenty shots of 20/2 natural cotton warp yarn, one shot carrying two threads of 10 lea natural linen warp yarn, ten shots 20/2 natural cotton warp yarn, one shot 10 lea natural linen warp yarn, five shots 20/2 natural cotton warp yarn, five shots 8/4 natural cotton carpet warp, then repeat. This fabric was considered undesirable because it tended to pucker.

The second casement fabric designed for this window area (Sample 1-B) was woven of 5/2 natural cotton warp yarn with one shot of a single yarn alternating with one shot carrying two yarns. This fabric was considered to be lacking in enough refinement and sophistication for the general character of the room.

The third casement fabric designed for this window area (Sample 1-C) was woven of three shots carrying two threads of 8/4 white cotton carpet warp alternating with three shots carrying single threads of 10/2 oyster linen warp yarn. This fabric was considered the best solution for the window because it was compatible with the character of the room and the horizontal stripe visually widens the vertical window area.

All three fabrics produced desirable light control.

The second house selected for this study is located at York Harbor, Maine. It was built primarily for summer vacation use. The exterior of the house is finished with white cedar shingles and the wood framing and

Figure 1. Sample 1-A

Figure 2. Sample 1-B

Figure 3. Sample 1-C

sheathing on the interior walls and ceilings are exposed and unfinished. The living-dining area contains a large expanse of glass in the north wall overlooking the harbor and one in the south wall overlooking the entry court. Since the house is used, for the most part, during the summer, direct sunlight from the south is not considered a significant problem. However, some type of curtaining was considered necessary to shut out the mirror effect of the glass that was caused by outside darkness. A fabric surface would also soften the rough, natural interiors.

The first casement fabric designed for these window areas (Sample 2-A) was woven of ten shots 8/4 natural cotton carpet warp alternating with one shot heavy two-ply jute binder twine. This fabric was considered to be compatible in texture and design with the interior space but the stiffness of the jute forming the horizontal stripe might interfere with the drape of the curtains.

The second casement fabric designed for these window areas (Sample 2-B) was woven of two shots 8/4 natural cotton carpet warp alternating with one shot three-ply natural cotton seine cord. This fabric was considered an undesirable solution because it had too much pattern for the plain, unfinished interior surfaces.

The third casement fabric designed for these window areas (Sample 2-C) was woven of 2/2 natural slub yarn of cotton and linen. This fabric was considered the best solution to the curtaining problem because its' relatively smooth surface without any design provided a pleasant contrast to the rough finish of the interior walls.

The third house selected for this study is located in Cambridge, Massachusetts, in an area of period homes. Although of contemporary

Figure 4. Sample 2-A

Figure 5. Sample 2-B

Figure 6. Sample 2-C

design, the house is compatible with those of earlier vintages because of its' simple, barnlike form. An exterior of rough-sawn redwood and an interior of dark stained fir and white painted rough plaster reflect a respect for good materials and finishes that are beautiful, simple, and easy to maintain. Across the east side of the house is an expanse of glass units (windows, doors, and window walls) forming the east wall of the study, the living room, and the dining room. Although the eastern exposure does not create a great problem of excess sunlight, the large area of glass needs some type of curtaining to provide privacy in a neighborhood of closely spaced houses. A curtain fabric would also soften the hard, smooth-surface appearance of the glass.

The first casement fabric designed for this window area (Sample 3-A) was woven of one shot carrying two threads of 8/4 natural cotton carpet warp alternating with one shot carrying two threads of 8/4 white cotton carpet warp. This fabric was considered to be lacking the formal appearance that the interior demanded.

The second casement fabric designed for this window area (Sample 3-B) was woven of 10 lea two-ply natural linen carpet warp. This fabric was considered too dark and lacking formality.

The third casement fabric designed for this window area (Sample 3-C) was woven of 8/4 white cotton carpet warp carrying two threads in each shot. This fabric was considered the best solution for this curtain problem because it was the lightest in color of the three fabrics and had the flattest, simplest design.

The fourth house selected for this study is located at Harvard, Massachusetts on a heavily wooded site. Since views of the countryside are in abundance in every direction, the house was designed as a cluster

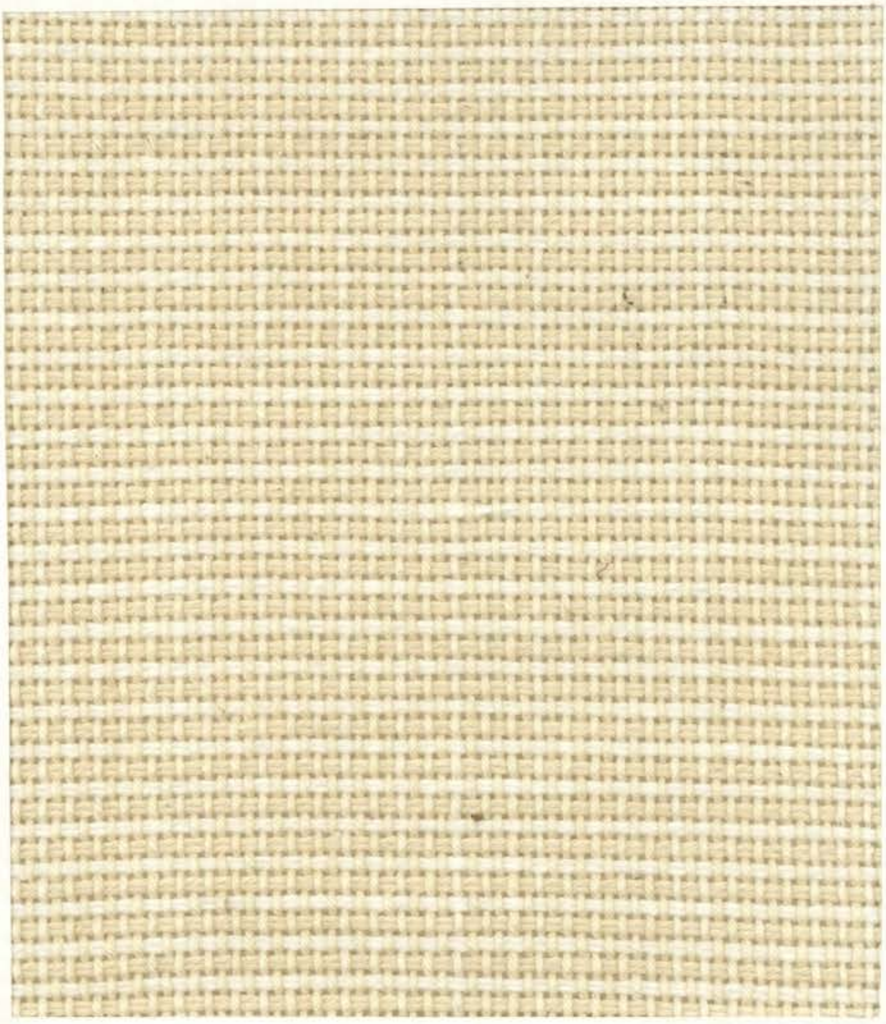

Figure 7. Sample 3-A

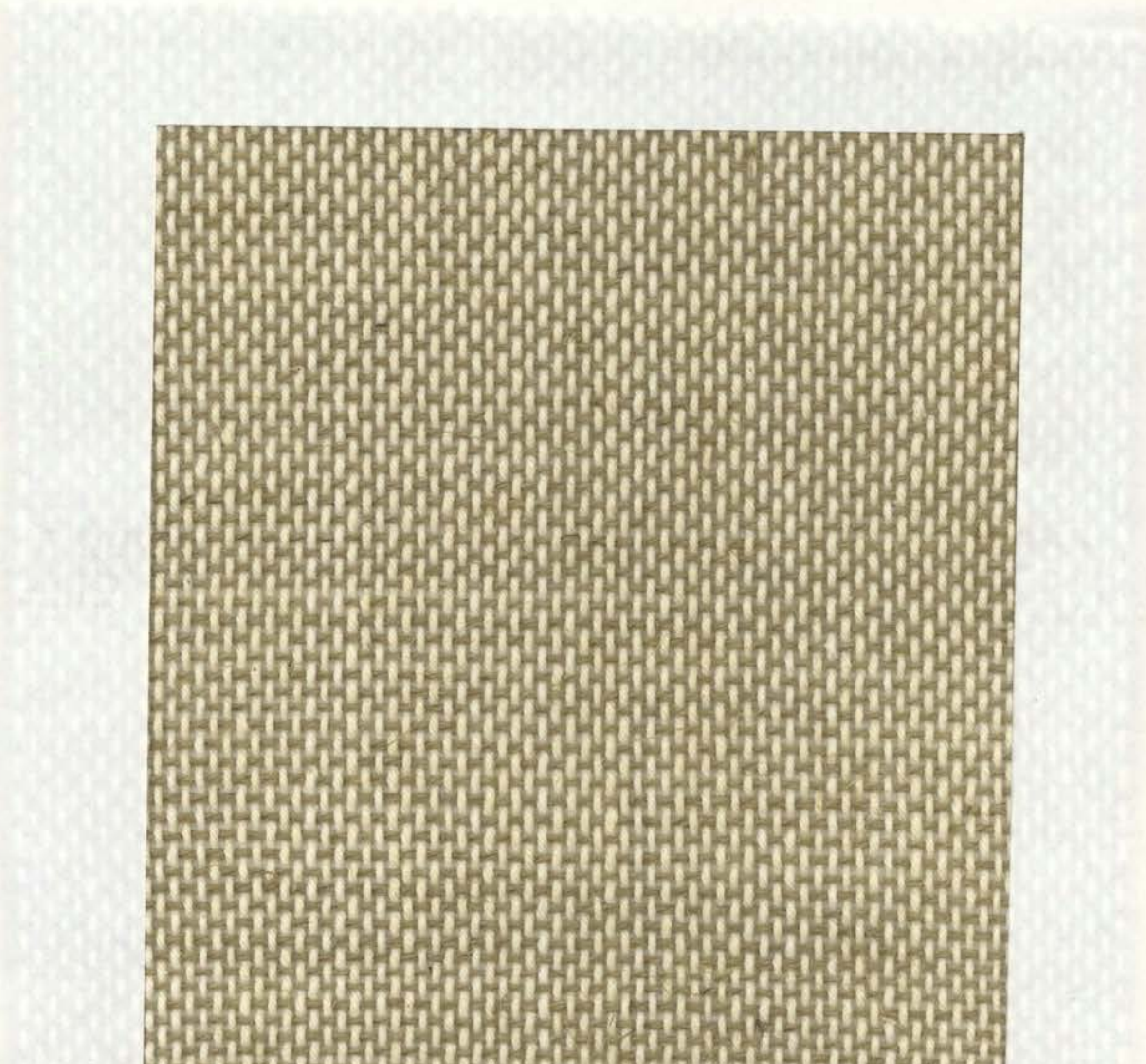

Figure 8. Sample 3-B

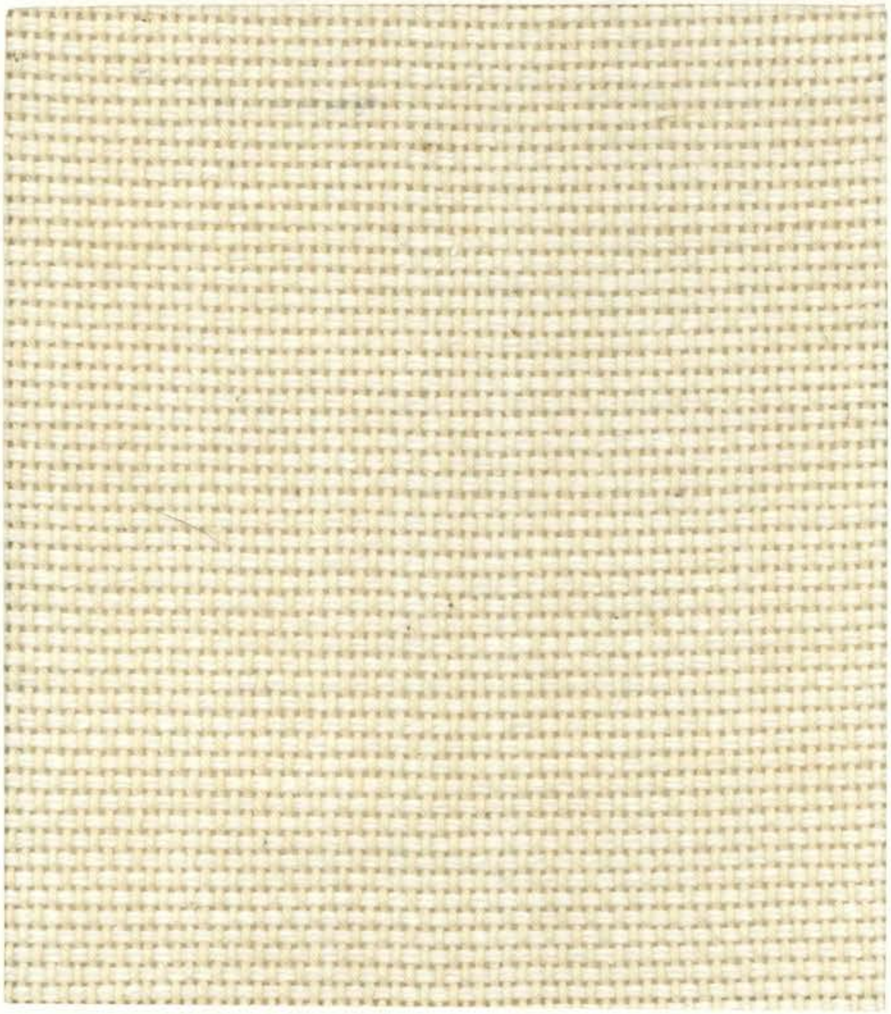

Figure 9. Sample 3-C

of four pavilions surrounding a central court. Each pavilion was planned with a glass area facing its' own different view while the central court provides a contrasting intimate area. The west wall of the dining room is entirely glass facing an imposing view of mountains. Curtaining is necessary to control the strong afternoon sunlight without obscuring the view.

The first casement fabric designed for this window area (Sample 4-A) was woven of ten shots 8/5 natural cotton carpet warp alternating with one shot three-ply natural cotton seine cord. Possible problems in draping were considered as drawbacks to this fabric because of the stiffness of the seine cord in the horizontal direction.

The second casement fabric designed for this window area (Sample 4-B) was woven of twenty shots 10/1 grey linen warp yarn alternating with ten shots 10 lea natural linen carpet warp. This fabric was considered not so favorable a solution to the curtaining problem because the strong sunlight would probably bleach the dark weft yarns.

The third casement fabric designed for this window area (Sample 4-C) was woven of six shots of tightly beaten 8/4 natural cotton carpet warp alternating with six shots of the same yarn loosely beaten. This fabric was considered the best solution to the curtaining problem because it was the most sheer of the three fabrics. However, the horizontal striped effect might create a low horizontal effect in an already rather low ceilinged room.

The fifth house selected for this study is a large country house at Clayton, New York. It is built on a site overlooking the St. Lawrence River and the Thousand Islands. One area of the living room is surrounded on three sides by a continuous glass wall which provides a full

Figure 10. Sample 4-A

Figure 11. Sample 4-B

Figure 12. Sample 4-C

view of the river. To provide some light control and to soften the large glass area, some type of curtaining is necessary. The fabric should be so sheer that the view is not obscured.

The first casement fabric designed for this window area (Sample 5-A) was woven of 10/1 grey linen yarn. The closeness of the weft yarns made the fabric too opaque and the texture was considered much too rough for the smooth, clean lines and surfaces of the interior.

The second casement fabric designed for this window area (Sample 5-B) was woven of five shots 10/2 oyster linen warp yarn, five shots 20.2 oyster linen warp yarn, five shots 40/2 oyster linen warp yarn, then repeat. It was felt that this fabric might interfere with the view due to its' density. However, the pattern it would lend to the room might compensate for this.

The third casement fabric designed for this window area (Sample 5-C) was woven of 40/2 oyster linen warp yarn. This fabric was considered the best solution to this curtaining problem because it was the most transparent of the three fabrics and its' fineness expresses the same elegant character of the room.

NOTE: The term "warp" used in the descriptions of the casement fabrics refers to a type of yarn produced and sold to be used as warp in the weaving process. In this study "warp" yarns were used as filling yarns to produce casement fabrics.

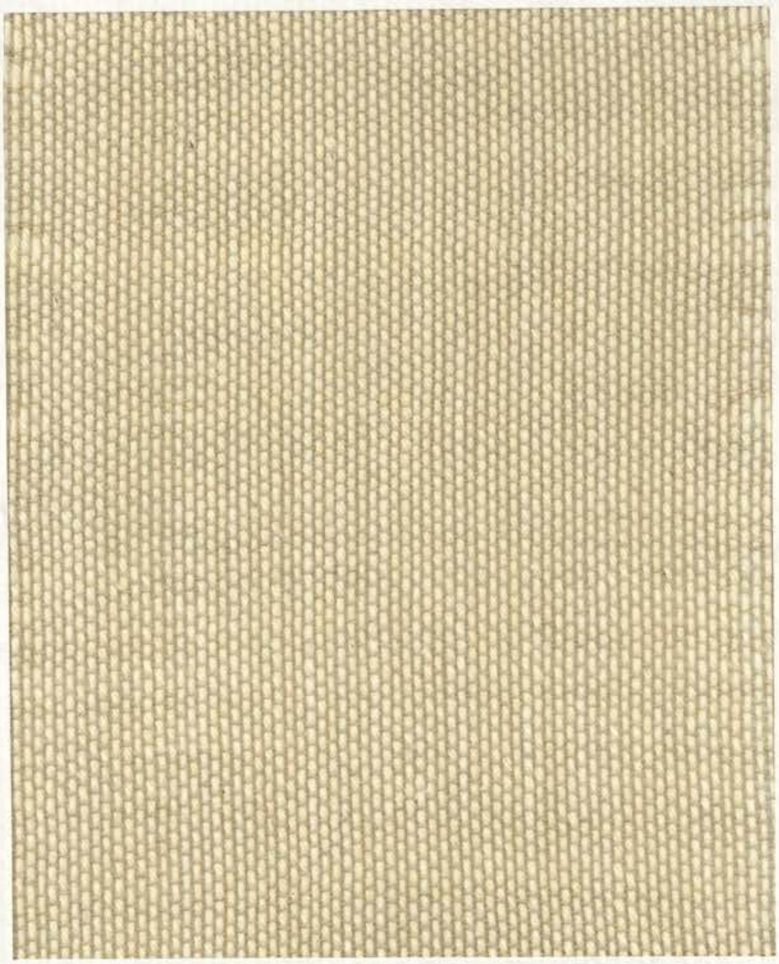

Figure 13. Sample 5-A

Figure 14. Sample 5-B

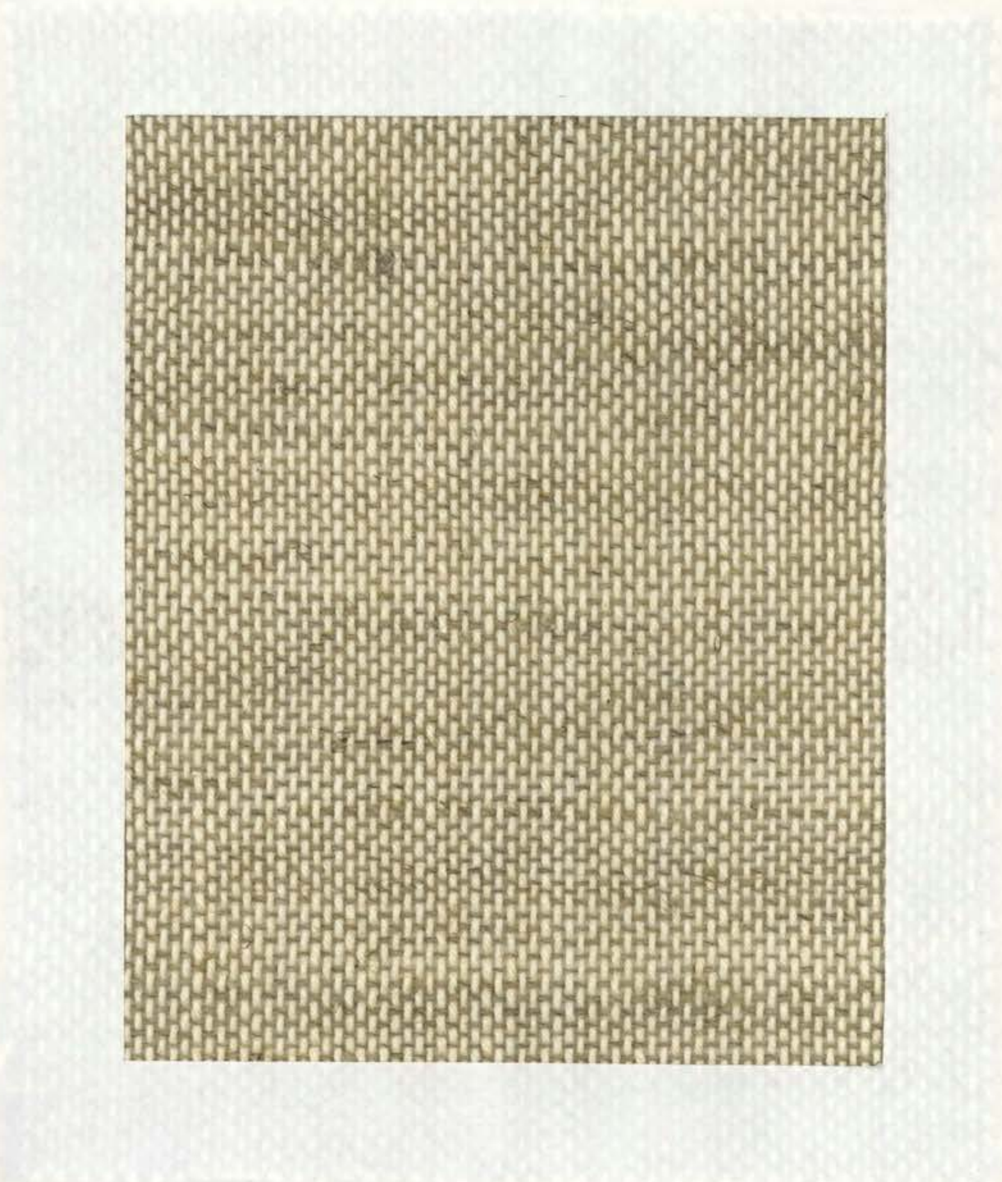

Figure 15. Sample 5-C

CHAPTER III

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Handweaving has come to the forefront as one of the most popular crafts being practiced today. This development is due to a public who, through better education, has an appreciation for well designed articles created by a trained craftsman working and experimenting directly with a material. After a period of virtual obscurity, the handloom is once again being utilized in the design of handsome, useful textiles. Although there are many craftsmen who design, produce, and market handwoven textiles on an individual basis, the textile industry is realizing the importance of the artist-craftsman who has the knowledge, skills, and imagination to develop textile designs on the handloom that can be adapted to power loom production methods. Research and experimentation in the field of handweaving are now being recognized as important contributions to the individual craftsman and to the textile industry. This study examines the possibility of whether or not a handweaver can produce a significant variety of textile designs on a constant set of warp threads by making changes only in the filling or weft yarns. If this were possible, the craftsman could warp his handloom with a substantial amount of yardage and create fabrics for several situations without the need of changing the warp or threading pattern. Casement fabrics for use as draw curtains were selected as the type of textile to be explored in this investigation.

The hypothesis of this study is: A significant amount of variety in handwoven casement fabrics can be developed by keeping the warp count and threading pattern constant and making changes only in the weft yarns. Fifteen casement fabrics were designed and produced by the writer as solutions to certain prescribed window problems. All the fabrics were created on one set of warp threads and woven in plain or tabby weave. A panel of judges composed of three faculty members of the Housing and Interior Design department at Oklahoma State University evaluated the fabrics and determined how well they solved each of the prescribed problems.

Conclusions

1. While all of the casement fabrics designed for this study were considered good designs and could be used as possible solutions to the window treatment problems for which they were developed, one design from the three fabrics created for each window area was considered as the best solution to that problem. The other two fabrics designed for the area had some less desirable characteristic that would cause them to be rated less favorably.

2. Fifteen casement fabric designs were developed in this investigation, which represent a signficant amount of variety in texture and pattern in the finished fabric although the warp remained constant for all of the examples.

Recommendations

The following are recommendations relative to further study in the area of handwoven casement fabrics:

1. That a study be conducted to determine the durability of the casement fabrics produced within the limitations of this study.

2. That a study be conducted using a variety of warps and keeping the filling thread or threads constant to see if a significant variety of casement fabrics could be developed.

3. That more casement fabrics be designed within the limitations of this study for other window problems with each using other filling or weft yarns.

SELECTED BIBLIOGRAPHY

Albers, Anni. On Weaving. Middletown, Connecticut: Wesleyan University Press, 1965.

Albers, Anni. "On the Designing of Textiles and the Handweaver's Place in Industry." American Fabrics, No. 50 (Summer, 1960), 98.

Anonymous. "Roy Ginstrom, Versatile Handweaver and Designer of Fabrics for Power Looms." Handweaver and Craftsman, XIII, No. 3 (Summer, 1962), 6.

Atwater, Mary Meigs. The Shuttle-Craft Book of American Handweaving. New York: The Macmillan Company, 1951.

Becher, Lotte. Handweaving Designs and Instructions. New York: The Studio Publications, 1954.

Bevlin, Marjorie Elliott. Design Through Discovery. New York: Holt, Rinehart, and Winston, 1963.

Cripps, A. K. "Weaving That Pays: Practical Experience Over 25 Years." Handweaver and Craftsman, XII, No. 3 (Summer, 1961), 53.

Hausner, Walter. "Handweaving in the Textile Industry Today." Handweaver and Craftsman, IX, No. 1 (Winter, 1957), 28.

Hotchkiss, A. "Weaving for a Livelihood." Handweaver and Craftsman, XII, No. 1 (Winter, 1961), 26.

Lunning, Just. "The Living Crafts." Craft Horizons, XX (July/August, 1960), 11.

McDevitt, Jan. "The Craftsman in Production." Craft Horizons, XXIV (March/April, 1964), 21.

Moseley, Spencer, Pauline Johnson, and Hazil Koenig. Crafts Design. Belmont, California: Wadsworth Publishing Company, Inc., 1963.

Phelps, Marie. "On Selling Weaving." Handweaver and Craftsman, XI, No. 1 (Winter, 1960), 53.

Read, Herbert. Art and Industry. London: Faber and Faber Ltd., 1954.

Robertson, Seonaid Mairi. Craft and Contemporary Culture. London: George G. Harrap and Co., Ltd., 1961.

Siegel, Ellen. "Designing for the Handloom and the Power Loom." *Handweaver and Craftsman*, XV, No. 1 (Winter, 1964), 6.

Thorpe, Azalea Stuart and Jack Lenor Larson. *Elements of Weaving*. New York: Doubleday and Company, Inc., 1967.

Tod, Osma Gallinger. *The Joy of Hand Weaving*. New York: D. Van Nostrand Company, Inc., 1964.

Tovey, John. *The Technique of Weaving*. New York: Reinhold Publishing Corporation, 1965.

Wallance, Dan. *Shaping America's Products*. New York: Reinhold Publishing Corporation, 1956.

APPENDIX A

GLOSSARY OF WEAVING TERMS

Beater of the Loom: Part of the structure which is moved back and forth to pack the weft rows taut; composed of two vertical pieces and horizontal end pieces for holding the reed, the whole device working back and forth in an arc from it's pivot at the base or top of the loom; also called the Batten.

Cloth, Woven: Cloth consisting of two sets of threads, called the warp and weft threads, that cross or intersect each other at right angles.

Counterbalanced Loom: A loom in which the sets of harnesses are tied in such a way that, when the weaver presses on certain treadles, the harnesses attached to these treadles are lowered while all the others are raised.

Dent: Any one of the vertical openings in the loom reed; reeds are named according to the number of dents per inch they carry, such as 16-dent reeds and 24-dent reeds.

Threading the Warp Through the Reed: Drawing each warp thread in succession through the eyes of the heddles, or the dents of the reed.

End: Another name for warp thread.

Harnesses: The wooden or metal frames holding the heddles through which the warp threads are threaded, and being hung at the center of the loom about midway between the front-beam and back-beam.

Heddles: Cord or wire loops attached to bars called heddlebars in the harness frames, their purpose being to provide openings for threading through the warp threads so that the latter may be lifted to make the shed for weaving.

Loom: The framework across which threads are stretched in parallel order and at a tension for the weaving of cloth.

Plain Weaving: A method in which cloth is formed by the interlacing of two sets of threads placed at right angles, and in which the threads pass under and over one another in simple alternation.

Reed: A steel or wood device having separate openings or dents spaced at even distances, through which the successive warp threads are threaded to keep them parallel and properly spaced, being placed in the beater in many looms and being also to pack the weft rows taut.

Set of the Warp: The number of warp threads per inch in the reed to obtain a certain texture.

Shed: The opening made between warp threads to provide for the passing through of the weft threads in the weaving of cloth, the different sheds being made possible by the lifting or lowering of certain warp threads above or below others by means of loops or heddles placed on bars or between harnesses.

Shot: Another name for a row of weft.

Sley: To thread the warp threads through the reed; also another name for the reed.

Texture of a Woven Piece: The appearance and feel of it's fabric surface.

Thread: A long tensile length of many fibers twisted together.

Warp: The name given to the series of threads stretched lengthwise of the loom.

Warp Threads: The foundation threads stretched taut on a loom and interlaced by the weft threads to make cloth.

Warping a Loom: Stretching the threads for the warp to a desired length, beaming them, threading them, sleying them through the reed, and tying them down; sometimes called Dressing the Loom.

Weaving: The interlacing of two sets of threads at right angles to each other in various ways to form a fabric or cloth.

Weft: The name given to the weaving threads used crosswise of the warp through the sheds made by the harnesses; also called the filler or woof.

Weft Row: One passage of the thread between the warp threads from selvage to selvage; also called a row of weft, a pick, or a shot.

Yarn: The term given to material spun and prepared for use as thread in weaving.

Osma Gallinger Tod, The Joy of Hand Weaving (New York, 1964), p. 309.

NUMBERING SYSTEM FOR COTTON AND LINEN YARN SIZES

COTTON

Cotton count is based on a standard length of 840 yards per pound. The number of 840 yard lengths in one pound will give the yarn count. A No. 1 cotton has 840 yards per pound and No. 10 cotton has 8400 yards per pound. The higher the yarn number the finer the yarn. Yarn sizes are written as two numbers, one over the other. The top number is the size of the yarn and the bottom number is the number of plies or single strands of fiber that are twisted together to form the yarn.

LINEN

Linen is measured by the lea. One lea is 300 yards. The number of leas in one pound determines the count. Therefore, seven lea 1-ply linen would measure 2100 yards; seven lea 2-ply linen would measure 1050 yards per pound.

Azalea Stuart Thorpe and Jack Lenor Larson, Elements of Weaving (New York, 1967), p. 229.

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