REGISTRATION, IDENTIFICATION AND CONSERVATION OF HISTORIC LACE SPECIMENS

By

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REGISTRATION, IDENTIFICATION AND CONSERVATION

OF HISTORIC LACE SPECIMENS

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INTRODUCTION

Clothing of the American people has been overlooked as a means of preserving the society and culture of America. Unlike priceless art objects, clothing was possessed by every family and often treated with less respect (Keck, 1974). People of today are often surprised to realize that the clothing they are wearing will soon become historic costume.

Historic costume collections serve as a resource for students of clothing and textile design. In studying historic costume or textiles the student or researcher explores more than the total garment. Attention is also given to small details or accessories of dress as they often tell much about the wearer and the society in which the person lived. Information regarding the stage of technological development may also be gained from the study of clothing, fabrics and trimmings. Throughout the ages lace has served as a trimming and ornamentation for clothing (Baker, 1949). Lace was described by Schwab (1957, p. 43) as "the aristocrat of fabrics, holding a high place in art, tradition and romance." A similar view of lace was expressed by Stimson (1968, p. 2), when she described lace as "a specialty among textiles which has a history, a vocabulary and an artistic value all its own."

The historic costume collection of the Clothing, Textiles and Merchandising Department at Oklahoma State University contained many

pieces of historic lace. These included lace made both by hand and machine. Care of the historic costume collection had been provided for by graduate assistants assigned to the collection. Work was being undertaken to register, identify, repair and properly store the collection as a whole. Among the various items in need of attention were the historic lace specimens as only a few miscellaneous specimens had been registered and identified. Many lace specimens were stored in cardboard boxes or with other items that were awaiting registration. All historic lace specimens were in need of proper cleaning and storage. The historic lace specimens were deemed to be useful and meaningful for study only after they had been properly registered and identified. Proper care and storage of the historic lace specimens would enable them to be used as a valuable teaching tool for years to come.

There is a general lack of information regarding the care and preservation of historic costume and textiles. In a study conducted by Vondercrone (1957), she noted that

> Information on the storage of historic costumes was not available from any source of literature. Books, periodicals and pamphlets relating to historic costume, costume collections and fashion history were devoid of pertinent facts on the subject of their storage (p. 3).

Greene (1964, p. 26) indicated "an almost total absence of publications on eighteenth- and nineteenth-century historic costume conservation in this country." Of the information that was available, only a few references were made regarding the care and preservation of historic lace.

Purpose

The purpose of the study was to register, identify, and determine

proper methods of cleaning, storage and display for selected lace specimens from the historic costume collection in the Clothing, Textiles and Merchandising Department at Oklahoma State University.

Steps included in the study were:

1. To register selected lace specimens according to the system currently in use.
2. To identify selected lace specimens, determining the class of construction and the specific name where possible.
3. To determine proper cleaning, storage and display techniques for historic lace specimens.
4. To make recommendations for both immediate and long term care of historic lace specimens.

Assumptions

In conducting the study the following assumptions were made:

1. Although lace is considered a textile, due to its delicate nature and construction, special methods should be employed in cleaning, storage and display.
2. Due to the age of the historic lace specimens studied, the fibers used in their construction were of natural origins. The fiber content was either cotton, linen or silk.

Limitations

The researcher made no attempt to relate the history of lace itself either in production or use. Studies have previously been conducted to yield such information.

Restoration or repair of historic lace was not included as a part of the study. In many cases the very delicate construction and fragile condition of historic lace specimens would not have been enhanced by attempts at restoration.

A fiber analysis to determine fiber content was not conducted. Obtaining fiber samples for this purpose would cause unnecessary damage to the historic lace specimens.

No attempt was made to specifically date the historic lace specimens. Although some lace specimens were dated, it was not known whether this was the date of manufacture, purchase or use.

Definition of Terms

For the purpose of conducting the study the following terms were defined:

Accession - The acquisition of additional property by growth, increase, or other addition to existing property (Webster's Seventh New Collegiate Dictionary, 1972, p. 5).

Classify - A process to assign an item to a particular category (Webster's Seventh New Collegiate Dictionary, 1972, p. 153).

Collection - An accumulation of objects gathered for study, comparison or exhibition (Webster's Seventh New Collegiate Dictionary, 1972, p. 162).

Group - An assemblage of objects that is regarded as a unit (Webster's Seventh New Collegiate Dictionary, 1972, p. 369).

Lace - A fine openwork fabric usually figured and made of fine threads which is used mainly for household coverings or for ornamentation of dress (Webster's Seventh New Collegiate Dictionary, 1972, p. 471).

Register - To assign to a specimen an individual place in a list or register of the materials in the collection in such a manner that it cannot be confused with any other specimen listed (Chenhall, 1975, p. 8).

Specimen - An item designated for the purpose of historical research, study or preservation.

CHAPTER II

REVIEW OF LITERATURE

"The creation of art is a basic human impulse" (Tortora, 1975, p. 42). This impulse may be expressed in the form of decoration of the individual or the environment. As clothing was developed various means of decoration were employed to set the wearer apart from others (Zearley, 1964). Through the centuries this has been accomplished, in part, with costumes decorated with lace.

Due to the expanse of its manufacture by hand, lace was long considered an item of luxury or an accessory to denote wealth and position. It was not until lace was produced by machine that it became available to the common person. "Lace was expensive; it was a luxury fabric, and few could afford it" (Schwab, 1957, p. 11).

Lacemaking is an art that was almost lost due to social changes and the industrial revolution. There has been a long standing need for the recognition of lace and the art of lacemaking as noted by Blum (1920) when she stated that, "there should be a revival of the appreciation of this beautiful art which has remained dormant in America" (p. 9). Currently a revival in the interest of lace and the art of lacemaking is occurring in America.

Origin of Lace

"It is primarily through the scanning of old paintings that have

survived that the history of lace has been compiled" (Kliot and Kliot, 1973, p. 5). However, there are many theories, myths and legends concerning the origin of lace. It has been suggested that the spider was the first lace maker and that perhaps it was from the spider's web that the inspiration for lace was born. Another theory of the origin of lace has been expressed:

> Garments, when fresh and new, needed no ornament about the immediate edge, but as they became frayed and worn the threads were twisted and stitched together, and little by little, from such humble beginnings, grew the beautiful fabric we call lace (Moore, 1904, p. 3).

"Evidence of fabrics formed by twisting threads can be found dating back over six thousand years in Egypt, Northern Europe, and China" (Kliot and Kliot, 1973, p. 5). These and other practices were the techniques upon which handmade laces were built (Bath, 1974). Among the first materials used to make lace were gold, silver and colored silk. As the years passed the knowledge and skills of net making, embroidery and twisting of threads was handed down. What we now know as lace came into being during the sixteenth or possibly the latter part of the fifteenth century (Blum, 1920).

Italy is considered to be the country of origin for lace as we now know it (Schwab, 1957). Needle lace is believed to have originated in Venice and bobbin lace to have originated in Milan (Zearley, 1964). Flanders also claims to be the first country involved in lace making although the earliest written mention of lace is found in Italian inventories (Moore, 1904). It is, however, noted by Zearley (1964, p. 2) that "some authorities give credit to Flanders for the development of bobbin lace." The art of handmaking lace spread throughout Italy and on to France, Flanders, Belgium, England and Ireland (Schwab,

1957). Within 50 years lace was established as a recognized industry in most European countries (Blum, 1920).

Lace Classifications

Stimson (1968, p. 4) noted that "from the general to the specific, lace is organized into categories according to construction techniques." In the past lace made by any technique other than needle or bobbin was not even considered to be real lace. Bigg-Wither (1936, p. 5) noted that, "the question of machine made lace need not worry the collector as none of the old styles has ever been exactly copied." She also stated that "in classifying lace, first determine whether it is needle point or made on a pillow with bobbins" (1936, p. 5).

Caplin (1932, p. 155) defined "real" lace as handmade lace and "imitation" lace as that made by machine. He then went on to substitute the term "machine-made" lace for "imitation" (1932, p. 155). The term "hand-made" was also used by Caplin (1932) to include laces that were crocheted or knotted as well as the term "mixed" to include those made by techniques such as applique.

In a discussion of lace classes Stimson (1968, p. 4) stated that "the construction techniques most commonly accepted are (1) needlepoint, (2) bobbin, and (3) others (which includes appliqued laces, decorated nets, machine-made laces, and combinations of those)." Another method of classifying lace or textile techniques was presented by Kliot and Kliot (1973, p. 1), "it is useful to think of all techniques as falling into one of two categories: single thread textiles or multiple thread textiles."

Single thread textiles are those constructed from a continuous thread and made one stitch at a time (Kliot and Kliot, 1973). These would include such techniques as knitting, netting, tatting, crochet or needle lace. Several identical threads are employed in construction of multiple thread textiles in which at least two of the threads are used in making a stitch. Weaving is the most common example of multiple thread techniques although other methods include bobbin lace, sprang and macrame.

Although laces are generally named for the town where they were originally made, "it is not where the lace is made that matters but the form of the finished work" (Bigg-Wither, 1936, p. 3). The older laces are formed into three groups, these being the needlepoints, the pillow or bobbin laces and the decorated nets. A pedigree, or family tree, of these laces may be found in Appendix A.

Care of Lace in the Past

Techniques and methods used for the care or cleaning of laces have changed over the years. At present the main concern is to avoid damage to the lace. In past years, when laces that are now historic were the laces actually being worn, the main concerns were cleaning the lace and producing a desirable appearance.

Two methods were discovered for washing black lace. One method was to boil an old, black kid glove in a pint of water and, once it had cooled, dip the lace into the solution (The New Dressmaker, 1921; Ervin, 1964). After this was completed the lace could then be rolled over a bottle or pinned to a covered board to dry (The New Dressmaker, 1921). An alternate method of drying the black lace was to spread it

between folds of a newspaper and press it with a book (Ervin, 1964). An alternate solution for washing black lace consisted of "a teaspoonful of gum arabic, dissolved in one teacupful of boiling water; when cool, add half a teaspoonful of black ink" (Ervin, 1964, p. 284).

Procedures for washing white laces were varied. One method was to

> Cover a bottle with linen stitched smoothly to fit the shape. Wind the lace about it, basting both edges to the linen. Wash on the bottle, soaping and rinsing, then boil in soft water. Dry in the sun. Clip the basting threads and do not iron. If carefully done, it will look like new lace (Ervin, 1964, p. 284).

The same procedure is indicated as safe for ordinary laces although fine laces should first be soaked in a bath of olive oil (deDillmont, 1977). It was indicated that valuable lace was not washed often and the oil bath served to return the lace to a supple state (deDillmont, 1977).

Other methods of laundering lace indicated that only a pure soap be used (The New Dressmaker, 1921; Powys, 1953). For cleaning lace of cotton or linen it was best to

> . . . let it simmer and steam in soft water with Spanish pure castile soap in a covered bowl. The lace has first to be wrapped around a round rod of wood covered with flannel, with the lace edge very carefully flattened out to preserve the points and curves at the border (Powys, 1953, p. 215).

Stains were removed in various ways using such substances as boracic powder for rust and ether for "greasy laces, dirty from perspiration or human touch" (Powys, 1953, p. 215). Opinion varied as to whether laces should be tinted. One author indicated that it was safe to tint lace with coffee and that glue added to the rinse water could be used if a stiff lace was desired (Bigg-Wither, 1936). Starching lace was noted as acceptable by another author, as long as a thin

starch was used (deDillmont, 1977). Yet another author indicated that starch should not be used as it was hard to remove and tended to rot the lace (Powys, 1953). Tinting was also noted to be unacceptable as it was not easily removed if a white lace was wanted later on (Powys, 1953).

It was generally considered safe to iron laces on the wrong side, on a padded surface, with a cool to moderately hot iron (Bigg-Wither, 1936; deDillmont, 1977; Powys, 1953). Pinning the lace during drying was recommended to insure proper shaping, especially of the points or picots (deDillmont, 1977; Powys, 1953).

One author recommended that lace be dry and well aired beforehand and that the storage area never be in a damp place (Bigg-Wither, 1936). Lace could be stored either folded in a blue paper or rolled in linen (Bigg-Wither, 1936). Laces could also be stored in China silk (Powys, 1953).

Small pieces of lace could be mounted in a book, sewn onto dark pages, with the name and date of the lace recorded (Bigg-Wither, 1936). In order to display lace, Bigg-Wither indicated that "small pieces look very well mounted on black velvet and hung in frames" (1932, p. 5).

Care and Preservation

Perhaps the primary purpose of a historic costume collection is to serve as a reference for the student of historic costume. Student understanding of historic garments can be enhanced by allowing the students to actually see the garments they are studying. According to Skewes, Horridge and Smathers (1976) there are two main purposes

> . . . served in historic costume collections housed in colleges or universities; providing readily retrievable historical evidence for instruction and research today; and preserving historical costumes for future generations of students and scholars (p. 12).

The value of a costume collection was also noted by Edgeworth (1976, p. 5) in her statement that "an authentically dated collection has wide use in graduate research." It is therefore important that an effort be made to date, identify and preserve items housed within any costume collection.

Acceptance of historic costumes and textiles implies a stewardship which makes necessary the proper care of such items (Giffen, 1970). Historic costumes and textiles are irreplaceable and serve as records of our past and, as stated by Harris (1977, p. 43), "one can never be too careful with them."

All textiles begin to deteriorate from the moment they are made. Finch and Putnam (1977, p. 18) found that "a textile can have inherent weakness caused in manufacturing which might result in destruction."

> Manufacturing processes or finishes, too, can do long term harm as a result of distortion or chemical treatment of the fibers even though, when new, the material was attractive and pleasing (Finch and Putnam, 1977, p. 19).

The primary concern in caring for historic textiles should be that of preventing deterioration. The "objective of the conservation program is to preserve the textiles without changing the original texture, color or construction" (Dirks, 1976, p. 8).

Finch and Putnam (1977, p. 22) indicated that "responsible conservation seeks to save what is there and neither adds to nor takes anything away from the original."

In order to determine the treatment to be given each object, consideration must be given to the current condition and future use of the item (Finch and Putnam, 1977). Since no two textile pieces are alike, each has its own special needs and problems which are dependent on the fiber content, dyes used, actual construction techniques and past treatment (Dirks, 1976). Rules must often be amended to allow for the special characteristics of any given item.

> Because there is disagreement in many fields over which conservation methods are best and which are more harmful than others, no one museum conservator has had the last word. Each institution has its own theories and techniques for caring for its collection (Dirks, 1976, p. 8).

A review of the home economics research abstracts revealed three previously conducted studies concerning lace. The earliest study (Baker, 1949) dealt with historical cycles of lace in fashion. A study of nineteenth century women's lace headdress and neckwear was conducted by Zearley during 1964. Stimson (1968) conducted research to identify and classify lace samples from the Elizabeth Sage historic costume collection at Indiana University.

Only one of the three studies conducted dealt with the identification and classification of historic lace (Stimson, 1968). The same study also contained very brief information regarding the method used for cleaning historic lace samples. A study conducted by Vondercrone (1957) regarding the storage of a costume collection mentioned the storage of lace along with storage of other textile items. Zearley (1964) recommended that studies be undertaken to determine methods of storage and display for lace or lace items. Care, preservation and methods of restoring and mending were also recommended for study.

Registering

When a new collection arrives at a museum the first step in its processing is usually the completion of a registration form (Edgeworth, 1976). The purpose is to record the donor as well as any general information about an item. Skewes et al. (1976, p. 11) noted that "registration's primary purpose is to provide an immediate, brief and permanent means of identifying each item."

Registering or cataloging items provide museum staff, researchers, and scholars with information as to what is contained within a collection (Jachimowicz, 1977). The primary purpose in cataloging, as indicated by Skewes et al. (1976, p. 12) is "to classify objects methodically and with descriptive detail."

When an item becomes part of a collection it is assigned a registration or catalog number. As explained by researchers (Skewes et al., 1976):

> The simplest and most generally used numbering method is to use the year of acquisition followed by a decimal point; then a second set of numbers recording its accession number . . . followed by a second decimal point; the last set of numbers identifies the actual article within the donation (p. 11).

A card file is also recommended in which to keep information regarding items in the collection (Skewes et al., 1976). The card file should include references by catalog number, donor name and item name. Information to be recorded as indicated by Skewes et al. (1976) included the registration number, the date received, the acquisition source, the date of the item and its condition. These procedures are currently followed in cataloging the historic costume collection in

the Clothing, Textiles and Merchandising Department at Oklahoma State University.

Labeling Textiles

In addition to cataloging an item it is also important that the item be labeled to facilitate identification and record keeping. The information to be attached to an item usually consists of the registration or catalog number and possibly the date. The method recommended by Skewes et al. (1976) was to either type the number or write it with India ink onto a linen tape which is then sewn onto the garment.

> The object in marking is to have clear, permanent, and readily accessible identification, so placed that it will not detract from the object's appearance. The consistency of tape placement is important to prevent a major search for the tape each time an object must be identified (Skewes et al., 1976, p. 12).

Another method (Giffen, 1970) was to utilize an idelible laundry pen on cloth tapes or commercially made name tapes. The name tapes would have the name of the collection printed on them and would be large enough to allow addition of the catalog number.

The placement of the label may vary depending on the item. Giffen (1970) found that for labeling of flat textiles it was best for the number to be applied in the lower right corner if this can be determined. However the item is stored, the label should be placed where it is easily exposed. Wherever the label is placed it should not be visible during display of the item.

At no time should paper be stitched, pinned or taped to fabric (Giffen, 1970). In applying a catalog number label to an item Finch

and Putnam (1977, p. 39) stated that "one should never use self-adhesive tape nor allow any other adhesive in the form of labels to come in contact with the textiles." Giffen (1970) indicated that iron-on tapes should not be used as the adhesive will have a tendency to give way or cause damage to the fibers.

Many times a label may be sewn onto the item as the least damaging method of labeling an item. Finch and Putnam (1977) stated that

> . . . careful stitching - always inserting the needle between, and not into, the threads of the material - is potentially the least damaging form of treatment and does have the great advantage that it is reversible now and in the future (p. 90).

Cleaning Textiles

The cleaning of historic items should be approached with care and knowledge of the subject. Rice (1964, p. 8) found that "deposits frequently obscure the structural details of the yarns and fabrics and hide colors and patterns." Yonker (1973) noted that

> If any garments are to be preserved intact for future study and research, they must be carefully cleaned and the effects of deterioration inhibited before irreplaceable damage is done to the fabric by soil, age and light (p. 1).

The care and preservation of historic textiles is an important part of museum work (Schrank and Musa, 1978). Whether on display or in storage, a textile should be cleaned before it receives any treatment in terms of restoration or conservation (Finch and Putnam, 1977). Different approaches than those normally used for fabrics must be used for cleaning and washing old textiles. Yonker (1973, p. 2) found that "little has been written pertaining to the conservation and cleaning of ancient textiles." Judgment must be used by those

responsible for cleaning textiles when determining which methods are most suited to a particular item.

Soils are any deposits or discolorations that are detectable by sight, odor or touch (Rice, 1964). They may be classified as to how they are deposited and how they are removed. Rice (1964, p. 8) recommended that "removal treatments and techniques . . . be adapted to the individual soil substance."

Before any attempt at cleaning is made one must know the fiber content of the item, the type of dirt present and whether the dyes used, if any, are likely to run (The Textile Museum, 1956). If drycleaning is to be used then it should precede any wet cleaning attempts (The Textile Museum, 1956).

> Drycleaning is best used to remove soils that are tarry, waxy, oily or greasy, for items containing fugitive colors, for old or oxidized fabrics, for napped fabrics or those with a special finish, for quilted fabrics and for items made with leather or feathers (Rice, 1967, p. 22).

An item should be drycleaned only if it is strong enough to withstand the process. There are varying opinions regarding the use of spot cleaners on garments. This, too, could depend on the particular item. Some reports indicate successful use of spot removers.

Many precautions should be taken when drycleaning items. Large or heavy items should not be cleaned with delicate items (Giffen, 1970). It is recommended that delicate items be placed in bags and not subjected to agitation. Items should be aired after cleaning to allow creases to disappear and fumes to dissipate (Finch and Putnam, 1977).

Before laundering any item the dust present must be removed. Recommended procedures indicated the use of a vacuum cleaner either with or without a brush attachment. When cleaning in this manner it is best to protect the item by placing a screen over it to keep the nozzle from coming in direct contact with the item being cleaned (Finch and Putnam, 1977).

The same considerations for drycleaning can be applied to laundering textiles. Before any item is laundered it should be tested for color fastness (Finch and Putnam, 1977). Soft water and detergent that will not harm fibers were recommended (The Textile Museum, 1956). Detergents should be neither too acidic or too alkaline as an extreme either way will cause fiber damage (The Textile Museum, 1956). Sources of laundering techniques indicate Calgon as the preferred water softener.

Containers for washing should be large enough to accommodate the item without crowding. At all times the item should be supported (Finch and Putnam, 1977) which may best be accomplished by use of screening. Care should be taken to gently move suds and water through the item being washed. Finch and Putnam (1977) indicated that a sponge is best for this purpose. A shampoo attachment may be used for rinsing. It is possible to allow the item to soak or to agitate it gently with the hands. Rinsing must continue until all detergent or suds are gone.

The water temperature should never be too hot. A warm to cool temperature is best. As the water becomes dirty it should be changed. This should continue as long as dirt is coming from the item (The Textile Museum, 1956).

Various methods may be employed in drying an item. If blotting will hasten drying time, it may be done. Giffen (1970) stated that "drying may be done on a rack, or on sheets spread on the grass. Sunlight will, of course, brighten whites, but colored fabrics should be dried in the shade." Finch and Putnam (1977, p. 51) indicated that "all pieces should be allowed to dry naturally away from bright light, especially sunlight and artificial heat."

Other aspects of cleaning include bleaching and ironing. If whiteness in a yellowed cotton or linen item is desired it may be washed in either sodium perborate or Neutrogena-hydrogen peroxide. The item should first be smoothed with the fingers to see if pressing is really necessary. For pressing, a cool iron temperature should be used. Stimson (1968) indicated the procedure she used for cleaning lace.

> The samples which were soiled were carefully washed in a quart jar of mild soap and distilled water solution, stretched into shape on terrycloth towels and pinned in place with straight pins. The samples which were not soiled were pinned into shape and subjected to steam for a short period of time (p. 29).

Finch and Putnam (1977) recommended that a template of the lace be made before washing and that afterward the lace

> . . . be dried flat, right side uppermost . . . pinned out into position on a piece of soft-board which has been covered with melinex film, polythene or blotting paper. The pins used should be brass lace pins (p. 51).

White lace, as noted by Finch and Putnam (1977), may have taken on a yellow cast in its old age. However, if the lace is clean, Finch and Putnam (1977, p. 55) indicated that "the mellowed effect of lace is surely preferable to having lace which has been made white by bleaching but weakened in the process."

Storage of Small Textiles

The clothing, textiles and merchandising departmental historic costume collection is currently housed on the second floor of the Home Economics West building. Space has been provided in a classroom converted for that purpose. At this time storage facilities include racks for hanging items and wooden cabinets and drawers for garment, accessory and flat textile storage. Larger textiles are stored on acid-free paper covered rolls, which are placed in a wooden cabinet.

"Ideal storage facilities provide protection from light, insects, chemical disintegration, and strains on fibers" (Giffen, 1970). Many times it is difficult for a small museum to contain the ideal storage facilities. "Even under adverse conditions, however, it is important to keep the ideal before one and to work toward it as best one can given the available resources" (Jackimowicz, 1977, p. 36). Fikioris (1973, p. 91) stated that "basic handling and storage procedures should be universal, but the actual arrangement of the objects will vary from institution to institution."

When organizing storage the available space as well as the use of the collection must be considered. Textile storage should come as close as possible to ideal conditions.

"Equipment which is used for the storage of historic costumes must both support . . . and protect from soil" (Vondercrone, 1957, pp. 27-28). Trays, wooden drawers, cardboard boxes, metal drawers or plastic boxes may be used for flat storage. Regardless of how a textile is stored it must be protected from damage. Damage can be caused from contact with acid fume producing substances such as wood

or cardboard or from sharp metal corners or the points of staples (Dirks, 1976; Giffen, 1970). Textiles may be protected from damage by the use of buffered cardboard, then undyed, unbleached, unwashed muslin (Dirks, 1976).

Before any textile is stored it should be cleaned and repaired. Textiles should be stored flat with no strain placed on them and no folds or creases present when possible. When an item must be folded the folds should be padded with acid-free paper and the item should be refolded periodically. Flat textiles may be stored on rolls if there is no space for storing flat. The rolls used are generally cardboard cylinders or tubes that are covered with acid-free tissue paper or muslin. The tube should be longer than the textile and may be pieced to obtain the proper length needed. The textile being rolled should be absolutely flat, right side out, and a layer of acid-free tissue paper should be inserted between layers of the textile (Dirks, 1976; Finch and Putnam, 1977; Giffen, 1970; Keck, 1974). The rolls may then be placed or suspended in cabinets after being covered to protect the textile and visibly labeled to prevent unnecessary handling.

A textile should never be sealed in plastics as "they encourage moisture condensation, which can cause mold and nonwaterproof dyes to bleed" (Dirks, 1976, p. 10). At all times the textile must be allowed to breathe. Textiles will deteriorate as a result of exposure to light (Vondercrone, 1957). Fikioris (1973, p. 34) noted that store rooms should be "equipped with fluorescent light fixtures with ultraviolet filter sleeves over the tubes." The lights should be used only when necessary. "The best conditions for the preservation of fabrics

are found in a cool temperature and a dry atmosphere" (Vondercrone, 1957, p. 36). Giffen (1970) recommended that conditions "should be cool (60° - 70°), low in humidity (about 40%) and free from atmospheric impurities." However, Keck (1972, p. 13) recommended that the relative humidity should be from "45%-60% and temperatures of 65°-72° Farenheit."

The recommended procedure for storage of lace in particular is to store samples flat with no folds. Acid-free paper or muslin should be used above and below each item for protection. If this is not possible the samples should be stored on rolls with acid-free paper placed between each layer of fabric.

Display of Small Textiles

Items from the historic costume collection are on display at all times. Display space is provided in the form of a display window with lighting and three small display cases without lighting.

An item receives much handling and is moved often in the course of displaying. Care must be taken to prevent damage from occurring at anytime a textile is being handled. During the time a textile is on display it may also be considered to be in storage. Precautions regarding storage should be observed, as much as possible, while an item is on display. Some rules for handling textiles and costumes have been set forth by Fall (1964, pp. 37-38) and may be found in Appendix B.

Yonker (1973, pp. 80-81), in a study concerning preservation of historic cotton fabric, found that "textiles are often incorrectly

displayed by pinning." This method of supporting a textile may cut threads, thus beginning a tear or forming a hole.

When displaying an item care should be taken in exposing it to light sources. "Fragile pieces should always be displayed where light can be excluded wherever it is possible to do so" (Finch and Putnam, 1977, p. 26). The area selected for display should be secure and provide safe conditions in terms of light, temperature and humidity. Displayed items should be varied over time to allow items to "rest" in proper storage conditions.

Framing is recommended for display of small lace pieces (Bigg-Wither, 1936; Finch and Putnam, 1977). The backing color may be very dark to provide contrast (Bigg-Wither, 1936), or it may be just a slightly bit darker color than the lace (Finch and Putnam, 1977). The backing color should be chosen depending on the effect desired in displaying lace.

Lace should be stitched to a backing only enough to hold it in place (Finch and Putnam, 1977). When placing a textile in a frame, care should be taken that the item is protected from any source of damage and from contact with glass.

Summary

Lace is a textile with a fascinating history. Its origins go back to ancient times and its popularity has never waned. There are various classes of laces, each being defined by the method of their construction. Within these classes laces are named by their appearance.

Lace has had and still has an important place in the history and development of clothing. Lace samples used for study enhance learning

of historic costume and textile students. If historic lace is to be preserved it must be cared for properly.

Caring for lace encompasses cataloging, cleaning, storage and display. Cataloging an item provides knowledge to indicate the identity and where, in a collection, it may be located.

The cleaning methods best suited to lace seem to be laundering in cool, soft water with a mild detergent. Lace may be pinned into place and allowed to dry to aid in maintaining its original shape.

The proper storage of lace would provide for the samples to be flat and unfolded. Samples may be rolled with acid-free paper if this type of storage is unavailable. Atmospheric conditions should be cool, dark and of the proper humidity range.

Considerations must be given, in the display of lace, to the safety of the samples. They should not be exposed to harm and this may best be facilitated by framing the samples. Depending on the effect being sought, lace may be secured by carefully sewing to either a light or dark backing fabric.

CHAPTER III

PROCEDURE

Little work had been done to properly register, identify, care for and store the lace specimens contained in the historic costume collection in the Clothing, Textiles and Merchandising Department. In their current condition the laces were not useful to the collection nor to students and faculty. The purpose of the study was, therefore, to register, identify and determine proper methods of cleaning, storage and display of selected lace specimens from the historic costume collection.

Steps included in the study were:

1. To register selected lace specimens according to the system currently in use.
2. To identify selected lace specimens, determining the class of construction and the specific name where possible.
3. To determine proper cleaning, storage and display techniques for historic lace specimens.
4. To make recommendations for both immediate and long term care of the historic lace specimens.

Sample

The historic lace specimens chosen for the study were selected from four separate groups of lace specimens. Three of the four groups

were already housed within the historic costume collection. The fourth group was found in the textile laboratory of the Clothing, Textiles and Merchandising Department.

The lace specimens from the four groups, approximately 450, represented various methods of lace production, both hand and machine made. Due to the age and increasing rarity of handmade laces, those specimens representing hand methods and techniques were chosen for the study. A total of 78 lace specimens were included for study.

Each of the four groups of lace specimens was stored in a cardboard box. Several of the lace specimens were mounted and were identified in some manner. No documentation of criteria, however, was included for determining the identity of the laces. Mounting of the specimens was done in a manner that was rapidly aiding in their deterioration. All lace specimens were improperly stored by current standards and the majority of the lace specimens were in need of cleaning.

Registration

The mounted lace specimens were unmounted to facilitate registration and identification. All lace specimens were registered according to the system that was currently in use.

The historic costume collection represented the total of the historic garments, textiles and Merchandising Department. The historic costume collection was composed of smaller units which were individual specimens, or groups of specimens, that had been accessioned into the collection.

As a specimen, or group of specimens, was accessioned into the historic costume collection a written record was made. As a part of the record keeping process, each specimen group received its own individual registration number. The registration number was unique to each specimen or specimen group and was used for identification and record keeping purposes.

The registration system provided each specimen with a registration number. Each number contained three parts separated by decimal points, and each part represented significant information. The first part indicated the year in which the specimen was first registered. The second part represented the placement, in registration order, of the group from which the specimen came among all of the groups registered in that particular year. The third part represented the order, within a specific group, that the particular specimen was registered. A "B" placed before the first part of the registration number indicated that the group, or specimen, was present before the year during which it was registered.

The search for lace specimens contained in the historic costume collection was conducted at a time when registration of other specimens or groups of specimens was actively being undertaken. Each of the four lace groups was present prior to 1978 and as each group of lace specimens was found it was assigned a registration number. Each lace specimen from within its respective group was registered using the registration number assigned to the group from which it came. The groups of lace specimens selected for the study were the twelfth, seventeenth, eighteenth and nineteenth groups to be registered in the historic costume collection during 1978. The groups of lace

specimens, although not registered in consecutive order, did represent the total accumulation of unregistered lace specimens within the historic costume collection. Therefore, the registration number for the first lace specimen from the twelfth group to be registered was B78.12.1.

Each lace specimen was labeled with its individual registration number. For labeling purposes small merchandise tags were attached to the specimens by means of a cotton thread looped through an open space on the lace specimen. The tags were attached to sufficiently allow passage of the cotton thread around, not through, threads making up the pattern of the lace specimen. The tags were placed in the lower right-hand corner of the lace specimen, or as close to it as possible. The registration number was written on the tags using a permanent black ink to insure that the ink would not rub off onto the lace specimen. The method of labeling with tags was preferred to sewing labels onto the lace specimens as it did not cause damage to fibers and was reversible.

Identification

After each lace specimen was given a registration number it was classified by one of three construction methods, these being bobbin, needle or miscellaneous. The specific name of the lace specimen was determined where possible. Caplin (1932), in determining the name of a lace, noted that "a lace is named from its appearance" (p. 157). Factors for determining the appearance of a lace include "the materials used, method of manufacture, pattern, type of ground, presence

or absence of cordonnet, fineness or coarseness, shallow or deep scallop" (Caplin, 1932, p. 157).

A survey was made of currently available resources to establish which references were used in the determination of construction methods and the specific names of the lace specimens. A total of nine sources were found to be suitable for use in lace identification (Appendix C). One published reference, from the total of those chosen, was deemed sufficient for determining the name of the lace specimen. Definitions of lace terms and specific lace names are found in Appendix D.

Written descriptions of each of the lace specimens were made. These included the registration number, class of construction, specific name where possible, size of each lace specimen and identifying references. The size of the lace specimen was determined by metric measurement. A worksheet (Appendix E), based on a combination of those developed by Stimson (1968) and Zearley (1964), was used for the purpose of recording data regarding the lace specimens. All completed lace worksheets were placed in the files of the historic costume collection. A completed worksheet for one of the lace specimens is found in Appendix F.

Determining Methods of Cleaning, Storage and Display

Information regarding proper methods of cleaning, storage and display was sought from museums or persons generally recognized as prominent in the field of historic costume and textile care. Museums known to contain a lace collection and persons known to be associated

with lace collections were among those contacted. The names of museums or persons contacted were obtained from published references regarding historic costume and textiles or were selected on recommendation or reference of persons currently working in the field.

The information sought regarded lace specifically. A letter of inquiry (Appendix G) was sent to each museum and person selected. A list of those museums or persons contacted is found in Appendix H.

Findings

The findings consisted of a discussion regarding the registration and identification of the lace specimens studied. Also included was a listing of the classes of construction and the specific names of the lace specimens studied, as well as the number of lace specimens found to be of each class and name. Information as to the proper cleaning, storage and display of lace specimens that was gained from the museums or persons contacted was also reported. Information received which dealt with textiles in general, rather than lace specifically, was considered valid and was reported. The letters of response and any other information received was placed in the files of the historic costume collection.

As a part of the findings, recommendations were made for both immediate and long term care of the historic lace specimens contained in the historic costume collection. The recommendations were made based on resources reviewed and the responses of the museums and persons contacted regarding cleaning, storage and display of historic lace specimens and are included in Chapter IV.

CHAPTER IV

RESULTS AND DISCUSSION

The purpose of the study was to register, identify and determine proper methods of cleaning, storage and display for selected lace specimens from the historic costume collection of the Clothing, Textiles and Merchandising Department at Oklahoma State University. Steps included in the study were:

1. To register selected lace specimens according to the system currently in use.
2. To identify selected lace specimens, determining the class of construction and the specific name where possible.
3. To determine proper cleaning, storage and display techniques for historic lace specimens.
4. To make recommendations for both immediate and long term care of the historic lace specimens.

The results and findings of the study are reported in this chapter.

Registration of Lace Specimens

Step one of the study involved the registration of selected lace specimens according to the system currently in use. The laces chosen for the study were selected from four separate groups of laces and comprised the total of unregistered and unidentified lace handmade

specimens in the collection. Due to the increasing age and rarity of handmade laces, those specimens that represented hand methods and techniques were chosen for registration and study.

The registration system currently in use provided each specimen with its own individual registration number. The registration number consisted of three parts separated by decimals, with each part representing specific information about the specimen. The first part indicated the year in which the specimen was first registered. The second part represented the placement, in registration order, of the group from which the specimen came among all of the groups registered in that particular year. The third part represented the order, within the specific group, in which the specimen was registered. A "B" placed before the first part of the registration number indicated that the specimen was present before the year during which it was registered.

As a result of the study a total of 78 historic lace specimens representing hand methods or techniques were registered. From the total number of lace specimens registered, 34 were from the twelfth group to be accessioned into the historic costume collection in 1978. Those specimens received the registration numbers of B78.12.1 through B78.12.34. From the seventeenth group to be accessioned in 1978 a total of three lace specimens were registered. The registration numbers assigned to those three specimens were B78.17.1 through B78.17.3. The eighteenth group accessioned in 1978 contained 16 lace specimens that were registered. For those specimens the registration numbers were B78.18.1 through B78.18.16. The last 25 of the 78 lace specimens

to be registered were from the nineteenth group to be accessioned in 1978. The registration numbers for those specimens were B78.19.1 through B78.19.25.

As a part of the registration process, each lace specimen was labeled with its registration number. This was accomplished by printing the registration number, in permanent black ink, on small merchandise tags which were then attached to the lace specimens. The tags were attached in a manner that would not cause damage to fibers or threads and were located in the lower right-hand corner of the lace specimens, or as close to that location as was possible.

Identification of Lace Specimens

Step two of the study involved the identification of selected lace specimens. A survey was made of currently available references to establish those used in the determination of construction methods as well as the specific names of the lace specimens. A total of nine references were found suitable for lace identification (Appendix C).

As part of the identification process, each lace specimen was first classified as being one of three construction methods. These classes of construction were bobbin, needle or miscellaneous. The class of construction of a lace specimen was determined by the appearance of the lace specimen in comparison to examples found in the references chosen for use in lace identification. After the class of construction was established, the specific name of the lace specimen was determined where possible. This was also done by comparing the lace specimen to visual and written examples found in the references

chosen for use in lace identification. Identifying characteristics, both in design and construction, of the examples from the identifying references and the lace specimens being identified were used by the researcher to determine both the class of construction and the specific name of each lace specimen. One published reference, from the total of nine selected, was deemed sufficient for determining the specific names of the lace specimens due to the wide variety of designs of the lace specimens and the varying scope of the references used for identification purposes.

Written descriptions of the lace specimens were made as a part of the identification process. Information regarding the registration number, class of construction, specific name, size of the lace specimen and identifying references were included on a lace worksheet. A worksheet was completed for each lace specimen.

As a result of the study a total of 78 historic lace specimens representing hand methods or techniques were identified. All 78 of the lace specimens were identified as to class of construction. Specific names were identified for 77 of the 78 lace specimens. The specific names of the lace specimens within each class and the number of specimens of each name are found in Table I.

Laces of the Bobbin Class of Construction

Nine lace specimens from the 78 lace specimens were found to be of the bobbin class of construction. These nine lace specimens were identified by the presence of characteristics found in bobbin made laces as indicated by the lace identification references. The most

TABLE I

CLASS OF CONSTRUCTION OF LACE SPECIMENS
WITH THE SPECIFIC NAMES AND LACES
WITHIN EACH CLASS AND THE
NUMBER OF SPECIMENS
OF EACH NAME

Class of Construction	Number of Specimens
Bobbin	
Cluny	3
Milanese	3
Torchon	2
Unnamed	1
Needle	
Drawnwork	1
Point Venise	1
Punto in Aria	3
Rosepoint	1
Venetian	1
Miscellaneous	
Antique Filet	8
Battenburg	6
Crochet	5
Embroidered Net	2
Irish Crochet	8
Knit	2
Limerick Tambour	2
Plain Filet	13
Princess Applique	3
Princess Guipure	3
Sol Lace	2
Tatted	2
Tuscan Filet	6
Total	78

notable characteristics of bobbin made laces are a woven, clothlike appearance of the solid units of the design and the twisting or braiding of threads found in construction or other design units of the laces (Caplin, 1932). An example of a bobbin made lace is found in Figure 1.

Among the nine bobbin class lace specimens, three were identified specifically as Cluny lace. The three specimens of Cluny lace were identified as such by the presence of solid, wheat-like units and coarse, clothlike units found to make up the design (Caplin, 1932; Eveleth, 1974).

Three lace specimens from the bobbin class of construction were identified as Milanese lace (Figure 2). These laces are most likely of Russian origin as indicated by the designs found to make up the specimens (Bath, 1974). The design unit consisted of a continuous, symmetrical, curving line using the woven clothlike effect (Bath, 1974). Torchon lace was identified as the specific name of two of the three remaining lace specimens. The Torchon laces consisted of a design made of the characteristic woven cloth units that were formed into fan shapes (Caplin, 1932). The specific name of one lace specimen from the nine specimens of the bobbin class of construction remained unidentified. The lace specimen displayed no distinguishing characteristics in design to aid in the determination of a specific name.

Laces of the Needle Class of Construction

The needle class of construction contained seven of the 78 lace specimens. These lace specimens were identified as such by the

presence of construction techniques characteristic of needle made laces as indicated by the lace identification references. The most distinguishing characteristic of needle made laces is the use of the buttonhole stitch found in both the ground and the design units of the lace (Sharp, 1971). An example of a needle made lace is found in Figure 3.

The needle class of construction, although containing the least number of total lace specimens, did yield a fairly wide variety of laces. One example of Drawnwork, one of the earliest forms of needle lace, was found among the specimens. The Drawnwork specimen was identified as such by its construction. Threads are removed in either the warp or weft direction and the remaining threads are grouped into patterns and held in place by a needle made stitch (deDillmont, 1977; Roberts, 1925).

One specimen each of Point Venise, Rosepoint, and Venetian laces were found. The Point Venise was recognized by the presence of floral motifs and a ground made of bars of thread covered with a buttonhole stitch and decorated with picots (Roberts, 1925). The specimen of Rosepoint lace was identified by the presence of an elaborate floral design and a finely constructed net ground made of buttonhole stitches (Caplin, 1932; Eveleth, 1974). The specimen representing Venetian lace (Figure 4) was also identified by the design which was floral but not of the fineness of Rosepoint lace (Caplin, 1932; Eveleth, 1974).

Punto in Aria, one of the early needle laces, was identified as the specific name of three of the seven lace specimens from the

needle class of construction. These specimens were identified by their design which was largely geometric in nature (Eveleth, 1974).

Laces of the Miscellaneous Class of Construction

The largest number of the lace specimens identified, 62 of 78, were from the miscellaneous class of construction. This class included laces, other than those that were bobbin or needle made, that represented construction techniques involving handwork of some sort. The handwork may have been involved in completion of the entire piece or in only a part of it.

Filet lace accounted for 27 of the total of 62 lace specimens from the miscellaneous class of construction. Laces of three different specific names were identified among the total of the Filet specimens. These were Antique Filet, Plain Filet and Tuscan Filet. Hand made Filet laces are made on a knotted, square, mesh base into which the pattern is then darned with a needle and thread (Caplin, 1932). The majority of the Filet lace specimens, 13 of the 27, were found to be Plain Filet (Figure 5). This type of Filet was identified by the pattern, which was made up of designs darned into the meshes and following the squares of the meshes (Caplin, 1932). Antique Filet was the name determined for eight of the lace specimens representing hand made Filet. These were identified by the presence of braid-like overlays as well as the darned patterns found in Plain Filet (Caplin, 1932). Tuscan Filet specimens were identified by the presence of an extra group of threads which served to outline design units and to form scroll designs as well as the darned pattern of Plain Filet (Caplin, 1932).

Battenburg lace (Figure 6) was the specific name found for six lace specimens. The Battenburg lace specimens were identified by their construction which consisted of a straight, machine made tape formed into a design and held in place by fancy needle stitches (Caplin, 1932). Another lace much like Battenburg is Princess Guipure (Figure 7) which was found to be the specific name of three lace specimens. Princess Guipure is made in the same manner as Battenburg with the exception of a novelty, machine made tape as well as a straight tape (Caplin, 1932). Princess Applique was the name found for three lace specimens. Like Princess Guipure, Princess Applique was made of both a straight and a novelty braid, used in combination, to form the design of the lace. The designs of Princess Applique are sewn to a machine made net ground (Caplin, 1932).

Among the lace specimens, four were found that also employed a machine made net as the ground for a design. Two of these were identified as Embroidered Net. This type of lace consisted of a pattern formed of various needle made darning stitches sewn into the net ground (deDillmont, 1977). The remaining two specimens employing a net ground were identified as Limerick lace of the Tambour type of construction. This Limerick-Tambour lace was identified by the design which was formed from a floss or thread which was drawn through the meshes of the net by a hooked, or tambour, needle (Roberts, 1925).

Many laces from the miscellaneous class of construction were formed from a thread that had been shaped by hand using some sort of implement. Among the miscellaneous class of laces were many specimens formed in that manner. The names of these laces were Crochet, Irish Crochet, Knit, Tatted and Sol Lace. Under the specific name of

Crochet lace five specimens were found. The Crochet lace specimens were identified by their construction of thread loops formed into various patterns by the use of a crochet hook (Picken, 1957). Eight lace specimens were identified as Irish Crochet. The Irish Crochet lace specimens were identified by the presence of the traditional rose and shamrock motifs found in the design (Caplin, 1932).

Examples of knit lace were found in two of the lace specimens. These specimens were identified by their construction, an interlocking series of loops of thread formed into patterns by the use of knitting needles (Picken, 1957). Tatting was found to be the specific name of two more lace specimens from the miscellaneous class of construction. Tatted lace may be identified by the series of circles and picots that are knotted into a particular pattern using thread and a shuttle (Picken, 1957).

The remaining lace specimens were also a knotted lace. These two specimens were identified as Sol Lace (Figure 8) and were recognized in part by their circular shape. The Sol Laces were formed by the knotting of threads placed in a circular shape, the threads crossing at the center (Eveleth, 1974). One of the two specimens was of the circular shape and the second was of the same shape with the addition of needle darned spokes which were typical of the lace.

Summary

A total of 78 lace specimens were identified as to class of construction and all except one were identified as to their specific name. A total of nine lace specimens were found to be of the bobbin class of construction. Within this class, lace specimens representing

three specific names of lace were identified--Cluny, Milanese and Torchon. One lace specimen remained unidentifiable as to specific name.

The needle class of construction contained a total of seven lace specimens representing five specific names of lace. Identified laces were Drawnwork, Point Venise, Punto in Aria, Rosepoint and Venetian.

The miscellaneous class of construction contained the largest number of lace specimens with a total of 62 being from that class. The specific names of the laces identified from that class were Antique Filet, Plain Filet, Tuscan Filet, Battenburg, Princess Guipure, Princess Applique, Embroidered Net, Limerick-Tambour, Crochet, Irish Crochet, Knit, Tatted and Sol Lace.

Determining Methods of Cleaning, Storage and Display

Information regarding proper methods of cleaning, storage and display for historic lace specimens was sought from museums or persons generally recognized as prominent in the field of historic costume and textile care. Among those contacted were museums known to contain a lace collection or persons known to be associated with lace collections. Specific information regarding lace was sought. A letter of inquiry (Appendix G) was sent to each museum or person selected. A total of 16 inquiries were sent, 10 of which produced responses. Of these 10 responses, seven contained information deemed sufficiently related to the care of historic lace specimens to merit reporting in this chapter.

Methods of Cleaning Lace Specimens

Information regarding or related to the cleaning of historic lace specimens was received from four of the sources contacted. Although methodology varied among sources, there were common considerations regardless of the methods employed.

The ideal situation, as stated by one textile conservator, was to "have a qualified conservator" deal with the care of an historic lace collection (Commoner, 1978). The same conservator also noted that the cleaning of lace is controversial and she therefore recommended a conservative approach.

A similar concern for the well-being of a specimen during the cleaning process was expressed by Tucker, Hersh, Kerr, Berry and McElwain (1978), "cleaning involves considerable risk but should be done if the textile is quite dirty." Cleaning was indicated to make an item more attractive and to reduce the danger of attack by insects or mirco-organisms.

> The primary goals in treating cotton or linen are to return the fabric to a neutral state--because the normal acid condition of old fabrics accelerates their deterioration--and to remove the particles that cause abrasion or wear (McHugh, 1967, p. 3).

It is therefore recommended that

> . . . before cleaning operations are initiated, the literature should be thoroughly studied and experienced practitioners should be consulted. Of course, any cleaning scheme should first be evaluated on a very small and inconspicuous portion of the total textile (Tucker et al., 1978).

Problems which could occur during the cleaning of textile items, as indicated by researchers, were "bleeding and modification of dyes and the dissolving of degraded fibers" (Tucker et al., 1978). Several

instances were given in which lace could not, or should not, be laundered. These included the use of threads that were colored but not colorfast, the use of metal threads and when the fabric was too brittle to survive the treatment (Victoria and Albert Museum, undated a). The following procedure was given for testing the colorfastness of a thread:

> . . . hold two small pieces of cotton-wool on either side of the fabric and press together firmly for a few seconds. If any dye at all comes off, the object cannot be washed. Each colour has to be tested separately (Victoria and Albert Museum, undated a).

As a prelude to laundering, all loose dirt should be removed from the specimen. This may be accomplished by either hand brushing or vacuuming with a low power vacuum (McHugh, 1967). The specimen should be placed flat and covered with a fiberglass screen.

The specimen should be kept totally flat during the laundering process to insure overall cleaning (McHugh, 1967). Specimens which must be folded should be done so with care and with as few folds as possible. Worn or weak areas found in the specimen should be protected by receiving special care. A weak specimen may be supported by placing it between fiberglass screening during laundering procedures. Specifically regarding lace specimens it was indicated that

> Lace and crochet pieces will come out flatter and with a more finished appearance if they are sewn between the screens. Sew the article to one piece of screen, carefully passing the needle between the fabric's warp and weft to prevent the needle from damaging the yarns. Make the stitches at least half an inch long to spread support, as short stitches made over only a few yarns may break the yarns. Reinforce weak spots with extra stitches. After you have secured the fabric to the screen backing, stitch the second piece of protective screening in place (McHugh, 1967, p. 4).

All containers used in laundering procedures should be glass, unchipped enamel or a nonreactive plastic (McHugh, 1967; Victoria and Albert Museum, undated a). It is suggested that the specimen be lowered into the laundering solution as opposed to pouring the solution over the specimen (McHugh, 1967). The specimen should be removed from the solution by being tipped and lifted carefully rather than directly lifting it from the solution as that may cause damage to the specimen (Victoria and Albert Museum, undated a).

Because most laces are of cotton or linen threads, the information received from the Smithsonian Institution regarding cleaning, How to Wet-Clean Undyed Cotton and Linen (McHugh, 1967), was quite appropriate. Several methods are given for laundering specimens. The first method is to soak the specimen in distilled water at room temperature for one-half hour (McHugh, 1967). The author indicated that it is best to use either distilled or deionized water as it is free from impurities which may harm the specimen.

A second method indicated that the specimen may be soaked in a solution made with "one ounce of non-ionic detergent to one gallon of distilled water that has been warmed to 95° Farenheit" (McHugh, 1967, p. 6). This method suggests that the specimen should be soaked until the water is dirty and the soaking be repeated if the item has not come clean in the first washing. The solution may be brushed onto the surface of the item using a soft paint brush (Victoria and Albert Museum, undated a).

Another method may be used for cleaning specimens that are delicate or only slightly soiled. A solution made with a neutral or pure soap (McHugh, 1967 and Victoria and Albert Museum, undated a) is

made by dissolving "about one-eighth of a 3-1/2 ounce cake of neutral soap in one cup of distilled water; then add one ounce of this solution to one gallon of distilled water" (McHugh, 1967, p. 6).

The item should be thoroughly rinsed several times when a soap or detergent solution has been used. The rinsing may be done with distilled water at a warm temperature (McHugh, 1967) or with running water, using distilled water for the final rinse (Victoria and Albert Museum, undated a). Specimens enclosed in screening may require additional rinsing as the screen may retain the detergent (McHugh, 1967).

Bleaching of a specimen may be indicated if the specimen remains stained, discolored or yellowed after washing. A mild bleach solution may be produced by the use of "5/7 ounce of 30 percent hydrogen-peroxide to one quart of distilled water at room temperature" (McHugh, 1967, p. 7). A 1/4 ounce of sodium perborate may be added to stabilize the solution and may aid by speeding the bleaching process. The procedure for bleaching a specimen is to:

> Soak the article in the solution for no more than 5 minutes; then lay the saturated piece out flat on a sheet of clear plastic and fold lightly so that the entire piece is encased without severe creasing. Leave the article folded until the desired whiteness is reached. The greatest bleaching effect occurs at the beginning of the process, which normally takes about one hour. You may need to leave badly colored items in the plastic wrapping to bleach longer, but avoid excessive bleaching as this may be harmful to the fabric. The maximum limit for bleaching is three hours (McHugh, 1967, p. 7).

Following the bleaching process, the specimen should be unwrapped and rinsed in water at room temperature with extra rinsing if the specimen is between screens.

Another solution for producing whiteness, of a low permanency, contains "1/2 ounce of sodium perborate to 1/2 gallon of distilled

water heated to 85° Farenheit" (McHugh, 1967, p. 7). The specimen should be soaked from one to four hours and rinsed in distilled water at 85° Farenheit.

The drying of items may best be accomplished by laying them flat upon an undyed fabric towel and allowing them to dry at room temperature. Paper towels should not be used as they may contain acids which would harm textile items. Regarding lace it is particularly noted that to dry

> . . . large pieces such as lace veils, thoroughly drain on a suspended fiber glass screen, then lay it out on a large white bed sheet. If sewn between screen for the process then it will be very smooth after drying (McHugh, 1968, p. 11).

The lace specimen may receive an ironed appearance by carefully smoothing and blocking it for drying if the condition of the specimen permits (McHugh, 1967; Victoria and Albert Museum, undated a). The specimen may be smoothed, while wet, on a piece of glass and left to dry (McHugh, 1967). A cloth towel should be placed over the specimen and then removed when it has absorbed the surplus water.

Although pressing is not generally recommended it may be done if necessary to smooth specimens that could not be smoothed on glass. If pressing is to be done the iron should be cool and caution should be taken so as not to harm the specimen with the point of the iron (McHugh, 1967). A recommended method is to place the specimen to be ironed face down on a soft "ironing blanket," cover it with a piece of cotton and then press gently (Victoria and Albert Museum, undated a).

Methods of Storing Lace Specimens

Information regarding, or related to, the storage of historic

lace specimens was received from five of the ten responding sources, four were museums and one was a university related textile collection. The information received from the Curator of the Helen Louise Allen Textile Collection, University of Wisconsin, indicated that lace specimens were stored in acid-free, 22 inch by 28 inch by 2-1/2 inch Solander boxes available from Talas, 104 5th Avenue, New York, New York (Morrisey, 1978). The specimens are layered within the boxes using washed muslin to separate the layers, five of which are generally placed in one box. The Solander boxes are then placed in open shelved, wood storage units. The storage units are 25 inch by 31 inch by 60 inch and are placed on casters with each unit holding 12 acid-free boxes. The storage units are kept in a storage area which is temperature, light and humidity controlled.

A similar procedure is followed by the Metropolitan Museum of Art. Lace specimens are "layered in acid-free tissue paper in cardboard boxes of shallow drawers lined with dark blue muslin" (Marley, 1978). No indication was given as to why muslin of a dark blue color was used.

Regarding the storage of lace, the Textile Conservator of the Cooper-Hewitt Museum, New York, stated that "each piece must be treated individually depending on its condition and structure" (Commoner, 1978). The lace pieces should be protected from damage by light, dust and movement, as well as sudden changes in temperature and humidity. Lace pieces may be stored flat on acid-free mat board or, if in good condition and no relief work is present, the piece may be rolled on cardboard tubes. The tubes should be covered with

acid-free tissue paper and the pieces may be protected from dust by covering with polyethylene sheeting.

Among the information contained in How to Wet-Clean Undyed Cotton and Linen Fabrics (McHugh, 1967), reference is made to the storage of items of cotton and linen fibers. The recommended procedure is to place the unironed specimen in a clean, undyed fabric case. The specimen should be totally dry when placed in storage and should be aired periodically. Caution is given against using boxes or paper that may contain acid that might damage or discolor the fabrics.

Information titled Hints on Storing Antique Textiles in the Home (1976) was received from the Smithsonian Institution. This information would also be applicable to the storage of specimens contained in the historic costume collection. The general procedures indicated that, when possible, textiles be clean when placed in storage and that the textile specimen be stored flat. Specimens which must be stored folded should be padded at the folds with strips of washed, unbleached muslin or old sheets. Damage by moisture condensation would be avoided by not storing specimens in sealed plastic bags or containers (Smithsonian Institution, 1976; Victoria and Albert Museum, 1978). Historic specimens stored in drawers are best placed at the top to avoid damage by the presence of heavier items stored on top of them.

Particularly fragile specimens which could be damaged by folding may be rolled over a cloth covered tube such as a mailing tube or even a paper towel tube. Care should be taken to avoid creasing the specimen while rolling and attention should also be given to avoid rolling the specimen too tightly. Both creasing and tight rolling may split

or damage the fabric of the specimen. Directions for rolling an item indicate that

> . . . proper tension can be maintained if rolling is done on a table or other flat surface, the width of the cloth, that has been cleared for this purpose. The cloth should rest flat and smooth on the table; as the roller glides along it picks up the cloth as it moves away from the individual(s) doing the rolling (Smithsonian Institution, 1976).

Recommendation was also made that, if the items were folded, they be refolded periodically to change the position of the folds.

The information received from the Victoria and Albert Museum (1978) contained many of the same considerations for the storage of lace as did the information received from the Smithsonian Institution. A convenient recommended method for storing lace was to place it in shallow drawers contained in a dust proof cabinet.

The importance of a controlled atmosphere was also indicated. It was noted that it was "essential to keep the relative humidity of storage and display rooms below the danger level; i.e., below 70% at temperatures between 60° and 75°" (Victoria and Albert Museum, 1966). To avoid excessive drying, as well as mold and mildew growth, the Smithsonian Institution (1976) recommended "air conditioning in which the temperature is in the 65° to 70° range and the relative humidity is between 40% and 50%."

Regarding the effect of light on historic specimens, indications were that light caused fading of some of the dyes used in textiles (Victoria and Albert Museum, 1966). Textile specimens that are in storage should not be exposed to light as natural cellulose or animal fibers are damaged by light rays (Smithsonian Institution, 1976).

Any light, either strong or weak, will produce damage. It was noted that "the damage caused by light cannot at present be reversed; i.e., faded colours and brittle materials cannot be restored to their original condition" (Victoria and Albert Museum,1966). It is therefore preferable to limit light to "5 to 15 lumens per square foot (50-150 lux)" (Victoria and Albert Museum, 1966). Care should also be given to avoid damage by ultra-violet radiation which is best removed totally by the use of filters or filtering manufactured for that purpose.

Methods of Displaying Lace Specimens

Information regarding the display of historic lace specimens was received from four sources. These were the Cooper-Hewitt Museum, the Smithsonian Institution, the Victoria and Albert Museum and the Helen Louise Allen Textile Collection. As with cleaning and storage methods, a variety of techniques was presented.

Lace specimens from the Helen Louise Allen Textile Collection, University of Wisconsin, were displayed by various methods depending on the purpose they were serving. Old and fragile items "are hand sewn with silk thread to a backing of silk crepelene" (Morrisey, 1978). Specimens being used in a classroom situation "are laid on muslin covered matboards for display" and the curator of the collection also stated that laces "have been laid on dark felt yardage covering table tops for walk around displays" (Morrisey, 1978).

The Textile Conservator at the Cooper-Hewitt Museum indicated that the procedure used for displaying historic lace specimens

consisted of placing laces

> . . . inside a case that contains a slanted board (60 degree angle or less). The board is covered with an appropriate backing material. As long as this backing material is not a slick fabric, there is usually enough surface friction to support the lace without any use of sewing or pins. If necessary, a few stainless steel insect pins (size 00) can be used (Commoner, 1978).

Commoner (1978) indicated that the display method is used because it "avoids the expense and time consuming mounting process and causes no damage to the lace."

Consideration is given to the light level to which the lace specimens are exposed during display. Commoner stated that in the galleries the light levels "are kept below 8 foot candles and ultra violet filtering acrylic sheets are used in the case construction" (1978).

At the Victoria and Albert Museum lace is shown "against medium or dark coloured backgrounds in glass cases which are, as far as possible, dustproof" (Victoria and Albert Museum, 1978). The lace collection used for study is "housed in a series of pull-out frames in a press, the lace being mounted on a coloured linen ground" (Victoria and Albert Museum, 1978).

Concern regarding damage caused by light during display was also expressed. It was suggested by personnel at the Victoria and Albert Museum that lace "only be displayed under aritifical light if this is practicable and certainly not opposite a window or under a skylight" (1978). The lights on the laces should be turned off when not needed and it is advised, if possible, "to keep the level of illumination at below 20 foot candles" (Victoria and Albert Museum, 1978).

Framing a textile specimen for display or study is a possibility that should not be overlooked. Information received from the

Smithsonian Institution that dealt with display was in the form of an information sheet entitled "Framing" which contained suggestions for safely framing a textile item. As a part of the framing system,

> . . . the frame should contain a stretcher over which a fabric such as undyed, unbleached muslin, is tightly stretched and attached, with rust proof staples. The textile can then be stitched to this fabric near the edges of the textile with enough additional stitches throughout its center to spread support for the strain of hanging. Again, the stitches should be taken through all the layers of fabric and should be at least one-half inch long to spread the strain over many yarns (Smithsonian Institution, undated).

The covered stretcher serves to prevent the textile from touching anything other than muslin. It is also important to keep the front of the textile from coming in contact with the frame, glass and mat. This may be done "with a strip of wood" which should be placed "around the inner edge of the frame" (Smithsonian Institution, undated). The textile should be far enough from the wood strips to prevent contact. A backing of pegboard is suggested as it allows for circulation while the muslin stretcher "will block the entrance of dust and harmful fumes" (Smithsonian Institution, undated).

Miscellaneous Information

Bibliographic information concerning textile storage and display was received from the Curator of Costumes and Textiles of the Brooklyn Museum (Coleman, 1978). A bibliography related to conservation of museum collections was received from the Conservator of the Henry Francis duPont Winterthur Museum, Delaware (Fikioris, 1974). A supply list for materials used for the conservation of textiles was also among information received from the Henry Francis duPont Winterthur Museum (Fikioris, 1978). The list contained aids for cleaning, sewing and storage. The

Victoria and Albert Museum, London, provided a list of addresses of suppliers and manufacturers of materials used for textile conservation (undated b). The list also contained a short bibliography related to textile conservation.

Recommendations for Care of Lace Specimens

Step four of the study involved making immediate and long term recommendations for cleaning, storage and display of historic lace specimens. The recommendations were to be based on published materials reviewed for the study and on the information received from the museums and from the persons contacted concerning the care of historic lace.

Current Facilities and Conditions

At this time the historic costume collection is housed in the Clothing, Textiles and Merchandising Department and is located on the second floor of Home Economics West. The storage and work areas are contained in one room.

Adequate facilities for laundering items do not currently exist in the costume room; however, equipment and facilities are present to enable cleaning, by vacuuming, of historic garments and textiles. Facilities for wet-cleaning are available at the Oklahoma State University Museum.

Storage facilities suited particularly to lace storage include map cases and wooden storage drawers. The map case drawers measure 41"l x 2"h x 31-1/2"d and the wooden drawers measure 19-1/2"l x 5-1/2"h x 15"d. There are also numerous wooden shelves with a surface measuring 31-1/2"l x 15"d and with a variable height, 2" being the minimum distance between shelves. Rolled textile storage is also available for extremely large

pieces of lace, as recommended by several textile conservators (Dirks, 1976; Finch and Putnam, 1977; Giffen, 1970; Keck, 1974).

The amount and quality of light in the room is controlled. All windows are sealed to prevent sunlight and dust from entering and all fluorescent tubes are covered with ultraviolet filtering sleeves. The lighting system is arranged so that lights over the work area are operated by a switch separate from that operating lights over the storage area. The temperature and relative humidity of the costume room are not, at this time, separate and controllable for the room alone.

Facilities suited to the display of lace specimens consist of two mobile display cases located in the same area as the costume room. The cases are of wooden construction on the sides, bottom, back and top. The front is of glass and no lighting system is present in the cases. Access to the cases is gained from the back. The display area measures 46"l x 40"h x 15-1/2"d and the cases are moderately dust proof.

Regardless of the methods used in the care and preservation of historic costumes and textiles it is recommended that information contained in the costume room regarding historic costumes and textiles be kept up to date and current. As new, better and safer procedures are established they should be implemented, as far as possible, in the care of historic costumes and textiles.

Recommendations for Cleaning Lace Specimens

It is recommended that procedures for immediate cleaning of lace specimens, with the available facilities, be limited to the removal of dust and dirt by vacuuming as recommended by Finch and Putnam (1977)

and McHugh (1967). In general, the procedure involves placing a fiberglass screen, with cloth bound edges, over the textile specimen and then vacuuming the specimen through the screen, using a low power suction.

It is recommended, for long term care regarding the cleaning of lace specimens, that the costume room be outfitted with the facilities and equipment suitable to laundering historic textile specimens. A copy of Caring for Textiles (Finch and Putnam, 1977) should be obtained for the costume room to serve as a guide for laundering lace specimens. The information received from the Smithsonian Institution, in the form of How to Wet-Clean Undyed Cotton and Linen (McHugh, 1967) as well as the information received from the Victoria and Albert Museum (undated a), The Washing and Mounting of Samplers and Other Small Embroideries should also be used as guidelines for laundering lace specimens.

Each lace specimen is different and should receive personalized treatment. There is no one procedure that can be definitely suited to all lace specimens; however, the above mentioned references should be used as guidelines. The following steps are recommended for laundering lace specimens.

1. Determine the fiber content of the specimen.
2. Test the dyed areas for colorfastness in an inconspicuous spot.
3. Before laundering, clean the specimen by vacuuming according to the recommended procedures.

4. Sew the lace specimen inside a fiber glass screen if the size permits or at least support the specimen on a layer of screening during the laundering process.
5. Use a container made of glass, enamel or a non-reactive plastic for laundering. The container should be large enough to accommodate the specimen.
6. Use either distilled or de-ionized water that is also a soft water.
7. Use either a pure soap or mild detergent for laundering and change the solution as the water becomes dirty.
8. Avoid damage to specimens by gently handling them while they are wet and avoid damage by suddenly or forcibly moving water through the specimen.
9. Rinse the specimen enough to sufficiently remove all traces of soap or detergent.
10. Blot the specimen dry with a clean, white cotton towel.
11. Allow the specimen to air dry either on the screen in which it was washed or smoothed onto glass.
12. A template or "rubbing" of the lace specimen may be made before laundering to aid in proper shaping during drying.
13. The specimen may be fastened through open spaces on an acid-free surface using rust-free pins for drying.
14. Avoid exposure of the specimen to light as it is drying.

At this time bleaching and dry cleaning of the lace specimens are not recommended due to their age and irreplaceability. Ironing is also not recommended as damage could be caused to the specimens during the process.

Recommendations for Storing Lace Specimens

Two procedures are recommended for immediate storage of the lace specimens. It is recommended that drawers from the map case be utilized for storage of small specimens or specimens in the shape of costume accessories, such as collars. The drawer size is 41 inches long by 2 inches high by 31-1/2 inches deep, thus allowing a large storage area and one shallow enough to prevent extensive layering of the specimens. The drawer should be cleaned to remove dust and any loose dirt particles. The drawer should then be lined with clean, unbleached cotton muslin that has been cut large enough to sufficiently cover the bottom and sides of the drawer. The material should extend 2" to 3" above the sides of the drawer to allow it to be folded over the laces once they are in place.

The lace specimens should be placed flat in the drawer, slightly separate from each other and with the registration tags visible. After the first layer has been placed in the drawer a layer of acid-free tissue paper should be placed over it. The second layer of lace specimens may then be placed in the same manner as the first with a layer of acid-free tissue paper following them. This procedure may be followed until four layers of lace are in place. Once the last layer is in place, with the acid-free tissue paper over it, the muslin extending over the edges of the drawer may be folded down over the tissue.

The muslin lining will protect the laces from damage caused by sharp points in the drawer. The acid-free tissue is preferred to muslin for layers because of its lighter weight on the laces. The

larger and heavier lace specimens should be placed in the bottom layers with the lighter and smaller laces placed in the uppermost layers. A record should be kept of the registration numbers of the specimens stored in each drawer and on each layer to facilitate in finding them.

A second recommendation is made for storage of lace specimens of greater length or a larger size. These pieces may be rolled on acid-free tissue covered cardboard tubes. Only specimens that are flat, with no raised work, should be rolled. For narrow specimens, paper towel tubes may be cut to a width 2" wider than the specimen. This would then allow their placement, standing upright, in a wooden drawer that had been muslin lined. The tubes may be held away from each other and stabilized by placing crumpled acid-free tissue between them.

Care should be taken in rolling the specimens to keep a loose tension on the fabric and to avoid rolling in creases. After rolling, regardless of the length of the tube, the specimen should be covered with acid-free tissue to protect it from dust. All tubes should be labeled with the registration number of the specimen. Care should be given that the specimen does not come in contact with acid producing substances or surfaces in any storage procedure.

Lights in the storage area should be turned off except when they are needed. Provision should be made, if possible, for temperature and relative humidity control of the costume room. These controls would aid in preservation of laces regardless of the storage method being used. Temperature levels recommended are between 60° and 70° with a relative humidity between 40 and 50 percent.

The same methods described for short term storage could be utilized for long term storage of lace specimens. Two alternatives for flat storage are recommended as possible goals.

The most suitable procedure is based on that utilized by the Denver Art Museum and consists of a layered, modular system constructed of acid-free Bristol board (Bush, 1978). Each module is of a designated size which would allow only one unit per storage drawer or several units per storage area. The storage area could be either custom made or could be adapted to fit into facilities already present such as shelves or drawers. The units could also be placed in acid-free boxes.

Each module would consist of several layers of acid-free Bristol board. The bottom layer would be solid and the second layer would consist of a frame made of acid-free Bristol board. The frame would be made by removing the center of the acid-free Bristol board leaving a margin of one-half inch along all four edges of the frame. The frame would be placed on the solid bottom layer and the lace specimen or specimens would be placed in the open space formed by the frame. The third layer would be solid with another frame placed on top of it. This procedure would be continued until the desired size unit is completed.

Using this system and a sufficiently heavy Bristol board, several layers oculd be placed together to form the units. An advantage of this system is the alleviation of pressure placed on specimens in layered storage when the Bristol board is sturdy enough to prevent sagging of solid layers onto the specimens below. The units may vary in size to fit the needs of the lace specimens being stored.

The method prevents excess handling of specimens and provides a safe, firm support for them.

The topmost layer of the unit must be solid to protect the specimens from dust and light. A record of the registration numbers of the specimens stored in each unit should be placed on top of the unit.

A second procedure would be based on that in use for laces of the Helen Louise Allen Textile Collection. In utilizing that method the lace specimens are layered, between pieces of muslin, in acid-free boxes. The depth of the boxes allow about five layers of laces per box. The boxes would then be placed in open shelf, wooden storage units that are mobile. This type system would eliminate the need to line drawers and would allow for expansion of the storage facilities as needed.

The same procedures used for short term storage also apply to long range storage when utilizing rolled storage. It may be advantageous to place a layer of acid-free tissue paper between the layers of the specimen as it is rolled. Polyethylene sheeting may be used to replace acid-free tissue paper for covering the specimens after they are rolled.

Improvements could be made, however, on the storage of the cardboard tubes once the lace is properly placed on them. A cabinet designed especially for rolled storage could be outfitted with pegs to hold the longer tubes. The storage unit could be outfitted with slightly angled pegs attached to the wall at one end which would permit the tube to be placed over the peg and rest against the wall. The slight upward tilt would prevent the possibility of the tube accidently sliding off the peg. The pegs should be placed with

enough space between them to allow placement of a tube without it coming in contact with the other stored tubes.

Narrow lace specimens that have been rolled could be stored either on a shelf or a drawer that has been outfitted with pegs placed perpendicular to the flat, bottom surface. The tubes would then be placed over the pegs and would stand upright on one end. The pegs should be placed far enough apart to prevent stored tubes from touching. The same procedure for storage of short tubes could be applied to a cabinet outfitted with pegs on the bottom as well as the sides and back of the cabinet.

Recommendations for Displaying Lace Specimens

Regardless of the methods used to display lace specimens there are several basic precautions which should be taken. Care must be given to avoid damage to the specimens from either handling or display techniques. A specimen should not be displayed over a long period of time as this may cause damage to the specimen. Considerations should be given to light conditions of the display area to avoid damage to the specimen by light. The illumination should be below eight to ten foot candles and, if possible, an ultra-violet filtering device should be placed between the light source and the specimens on display. It is specifically recommended that the specimens not be displayed opposite a window and that artificial light be used at all times. The display area should be as dust free and clean as possible.

The two small display cases that are available should be utilized for immediate display of lace specimens. Since no shelves exist in the cases, and adding them is not desirable, the bottom surface of

the case should be used for display. If the surface was covered with a dark colored muslin or an all cotton ribless corduroy fabric, the lace specimens could then be placed, flat, on the fabric. Information regarding the lace specimens may then be placed in the cabinet above the laces. The information sheets may either be attached to the back of the cabinet or suspended from the top of it.

Efforts that could be made in the future to improve lace display facilities could be achieved by modifying existing facilities and possibly obtaining more desirable and convenient equipment. Existing facilities could be improved with the addition of a slanted, plywood board, or display prop, that could be constructed to fit into the two small display cases. The board would be the width of the case and would be slanted upward at approximately a 60 degree angle, from the front of the case to meet the back of the case. The board could be supported by a wooden frame that would allow it to be utilized in the display of laces for classroom teaching as well as in the display cases.

The board should be covered with a dark color, ribless corduroy fabric. The dark color would permit the design of the lace to be seen and the napped surface would provide surface friction to hold the laces in place. The board may be fitted with a layer of styrofoam, between the board and fabric, and the laces pinned in place with small rustproof pins.

The above mentioned methods of display would increase the total display area per case and allow more and larger pieces of lace to be shown. This method should still allow room for the information sheets to be displayed within the case.

A more convenient display area could be achieved by using a different style of display case. A display case of metal and glass construction would remove the possibility of damage to lace specimens caused by acid fumes emitted from wood, as with the cases currently in use. A flat display case set on legs and with glass sides and top would provide a larger display area and permit greater visibility of the lace specimens. Regardless of the case used it should be locked at all times and a record should be kept of the specimens currently on display in it.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The purpose of the study was to register, identify and determine proper methods of cleaning, storage and display for selected lace specimens from the historic costume collection in the Clothing, Textiles and Merchandising Department at Oklahoma State University. Laces contained in the collection that were handmade or that represented hand techniques were registered according to the system currently in use for the historic costume collection. The laces were then identified as to class, or method of construction and as to the specific name within the class.

Information regarding proper methods of cleaning, storage and display was sought from museums and from persons either prominent in the field of historic textile care or known to be associated with a lace collection. Based on the responses received and the published references reviewed for the study, recommendations were then made for the cleaning, storage and display of lace specimens contained in the historic costume collection.

Conclusions

The following conclusions were drawn from the study:

1. Lace specimens contained in the historic costume collection

may be registered effectively according to the system currently in use for the collection.

2. Lace specimens contained in the historic costume collection may be identified as to class of construction and specific name, within the class of construction, utilizing the published references available at the Oklahoma State University Edmond Low Library.
3. Various methods for the cleaning, storage and display of lace specimens are utilized and differ with the person or museum consulted.
4. General guidelines or considerations are found to be a basic part of the majority of conservation methods employed or recommended for lace specimens.
5. Proper methods of cleaning, storing and displaying lace specimens that are specifically suited to the needs and resources of the historic costume collection could be determined based on the information received from the museums and persons contacted.

Recommendations

The following recommendations were made for further research. It is recommended that:

1. Further research be conducted to register and identify machine made lace specimens contained in the historic costume collection.
2. Further research be conducted to register and identify

trims other than lace that are contained in the historic costume collection.

3. A section of the few specimens of great length be utilized for experimentation regarding laundering techniques and agents.
4. Research be conducted to identify lace used as trim or as a part of the garments contained in the historic costume collection.
5. Research be conducted to investigate methods of physically stabilizing deteriorating lace specimens.
6. Research be conducted to determine types and use of lace found on childrens' garments contained in the historic costume collection.

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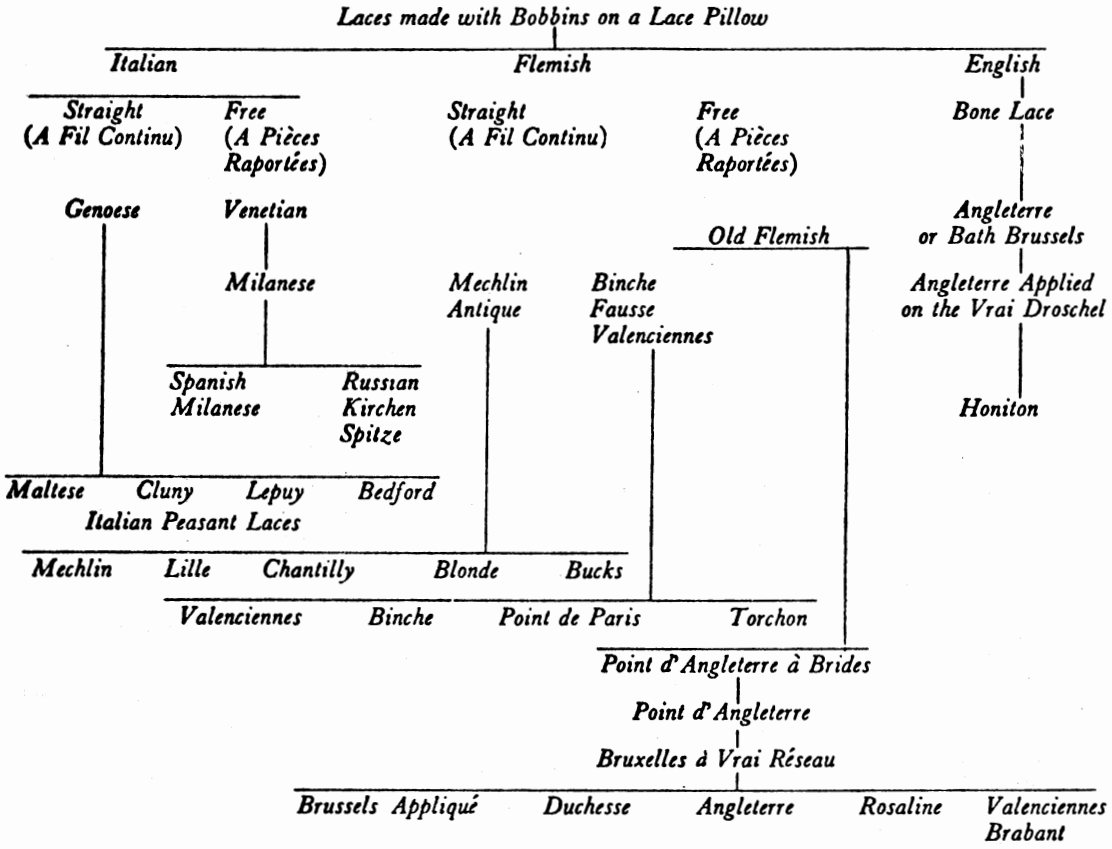
APPENDIXES

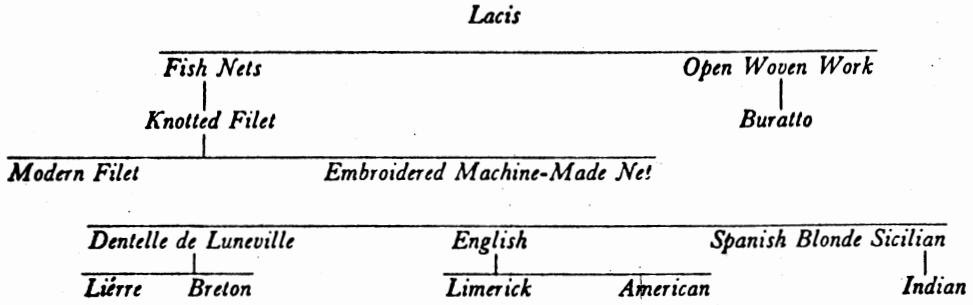
APPENDIX A

PEDIGREES OF LACE

PEDIGREE OF PILLOW LACES

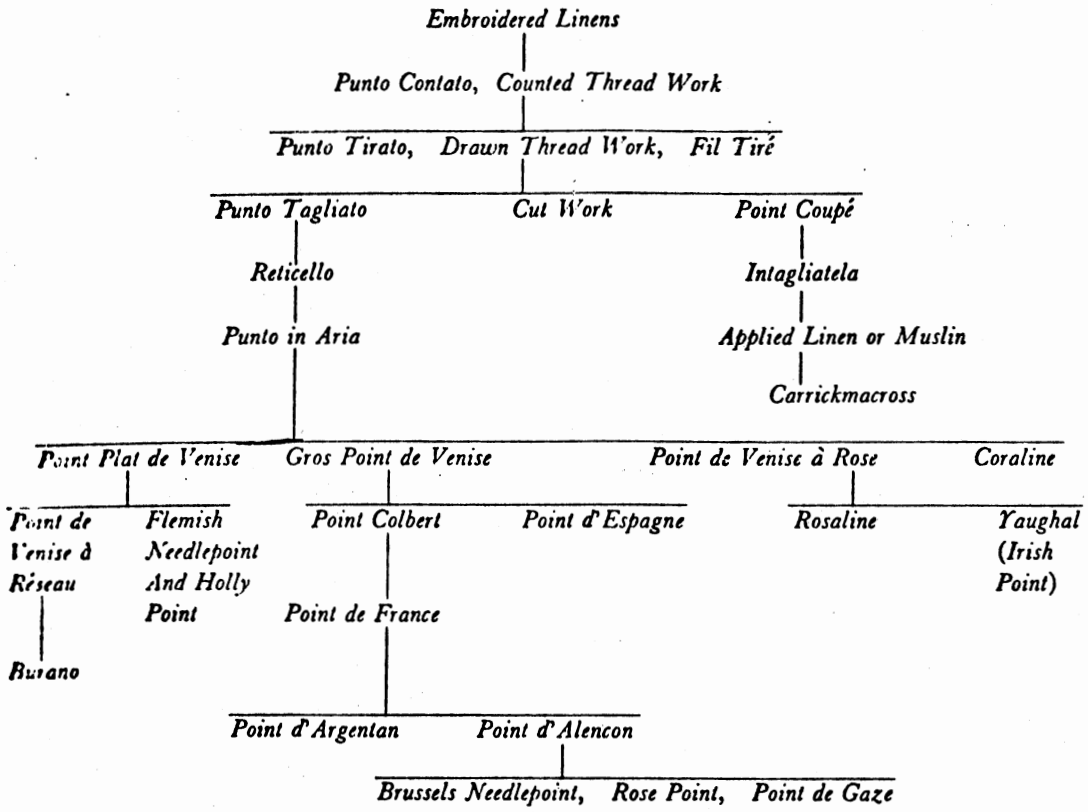


PEDIGREE OF DECORATED NETS



From: Powys, M. Lace and Lace Making. Boston: Charles T. Branford Company, 1953, p. 8.

PEDIGREE OF NEEDLEPOINT LACES



From: Powys, M. Lace and Lace Making. Boston: Charles T. Branford Company, 1953, p. 7.

APPENDIX B

GENERAL RULES FOR HANDLING TEXTILES AND COSTUMES

General Rules for Handling Textiles and Costumes

1. Keep all sharp objects and fountain pens away from textiles and costumes.

2. Always avoid creasing a textile or costume item.

3. When folding textiles or costumes use several layers of tissue paper in such a way that the tissue is the inner part of the fold.

4. When unpacking costumes or textiles always unfold and uncrumple tissue paper and other packing materials before discarding it. Buttons and other unattached pieces can be lost if this precaution is not taken.

5. When packaging or bundling either textiles or costumes, if practicable put together only pieces of one kind.

6. Remove all pins and dress shields before packaging or storing costumes.

7. Never "pack" textiles nor costumes. They should be so loose in a container that they actually "float."

8. Always protect textiles and costumes from strong light.

9. All fabrics must be carefully guarded against damages by insects.

10. If size permits, unmounted textiles should be handled, carried and moved in a flat position. Many small textiles are routinely cared for in plastic mounts with heavy cardboard backings.

11. Always have clean hands when handling any costume material and when handling textiles. A museum collection of costumes and textiles is old and valuable. In most cases they cannot be subjected to dry cleaning processes. Soiled, damp hands cause cleaning damages.

12. With some textiles it is advisable to roll them on drums or cardboard tubes but care must be exercised that creases are not rolled into them.

13. When moving framed or mounted textiles use a piece of cardboard, or similar stiff board, under the frame or mount. The board should be the same size as the frame or mount. This precaution will lessen vibration.

14. Never open a container of costumes or textiles with a sharp object.

15. In the handling and movement of framed or mounted textiles, observe the same precautions afforded to framed paintings, prints and drawings.

16. Never, for any reason whatsoever, use tarlined paper for wrapping textiles or costumes. Warm, humid atmospheric conditions and vapor from insect repellents will cause the tar to melt or dissolve, resulting in serious damage to fabrics. Soft, transparent bags are often used for many items of costume material.

17. When in doubt about the safest methods for handling or moving textiles or costume materials, consult the curator in charge.

18. Report all damages immediately.

19. Relative humidity for textiles and costumes should be kept at 40 percent. Textiles should always be stored in ventilated rooms.

From: Fall, F. K. General rules for handling art museum objects. Museum News, 1964, 43 (1), 37-38.

APPENDIX C

REFERENCES USED FOR LACE IDENTIFICATION

References Used for Lace Identification

Bath, V. C. Lace. Chicago, Illinois: Henry Regnery Company, 1974.

Bigg-Wither, R. M. Cameos From a Lace Cupboard. London: National Libraries Publishing Company, 1936.

Blum, C. A. Old World Lace. New York: E. P. Dutton and Company, 1920.

Caplin, J. F. The Lace Book. New York: The Macmillan Company, 1932.

deDillmont, T. The Complete Encyclopedia of Needlework. Philadelphia: Running Press Incorporated, 1977.

Eveleth, E. L. Chart for Lace Identification and the Meshes of Hand-made Lace. Lithographed, B. D. Jeppson, 1974.

Roberts, E. H. How to Know Laces. New York: Dry Goods Economist, 1925.

Schwab, D. E. The Story of Lace and Embroidery and Handkerchiefs. New York: Fairchild Publications, Incorporated, 1957.

Sharp, M. Point and Pillow Lace. Detroit: Tower Books, 1971.

APPENDIX D

DEFINITIONS OF LACE NAMES AND TERMS

Definitions of Lace Names and Terms

Antique Filet Lace: An open-mesh lace, handmade, with patterns that are formed by filling specific squares of a knotted mesh with a darning stitch (Picken, 1957, p. 200). Antique Filet is distinguished from Plain Filet by the presence of a braidlike overlay connected loosely to the mesh (Caplin, 1932, p. 69).

Battenburg Lace: A lace formed from a straight machine made tape that is basted to a stiff paper in a particular pattern and then stitched together with fancy stitches that also serve to fill the open spaces in the pattern (Caplin, 1932, p. 104).

Border: An outer part or outside edge that is generally ornamental (Picken, 1957, p. 30).

Class of Lace: A specific category of lace determined by the method of construction of the particular lace, these being either bobbin, needle or miscellaneous.

Cluny Lace: A bobbin lace made of heavy linen or cotton thread (Picken, 1957, p. 199). The typical Cluny pattern is made up of wheatlike units that are arranged in crosses or like spokes of a wheel (Caplin, 1932, p. 57).

Cordonnet: The thread or cord which is used for outlining or emphasizing a lace design (Schwab, 1957, p. 58).

Crochet Lace: A lace that is made with a single thread and a hooked needle or crochet hook. The hook is used to pick up the thread and form loops, one at a time, that combine to form the design of the lace (Picken, 1957, pp. 199-200).

Drawnwork: An openwork constructed by pulling out threads of a fabric and then embroidering or hemstitching the edges in a decorative design (Picken, 1957, p. 101).

Embroidered Net: Embroidery of varying types and stitches which is done on a net ground (Picken, 1957, p. 114).

Ground: The background or base on which a lace design is formed.

Irish Crochet Lace: A crochet lace with designs of rose, shamrock or leaf motifs surrounded by a square mesh made of chain stitches. The meshes are often decorated with picots and the lace is generally finished with a scalloped edge (Picken, 1957, p. 201).

Knit Lace: A lace that is made by an interlocking series of loops that are made using a continuous thread and knitting needles. As the loops are made in a particular sequence the design is formed (Picken, 1957, p. 194).

Limerick Tambour Lace: A lace formed by a chainstitch made on a net ground. The net is stretched over an embroidery hoop and the looped stitches are formed with a hooked needle (Picken, 1957, p. 204).

Milanese Lace: A bobbin made lace in which the design is formed from a continuous braid, the background being filled with meshes (Bath, 1974, p. 169).

Plain Filet Lace: An open-mesh lace, handmade, with patterns that are formed by filling specific squares of a knotted mesh with a darning stitch (Picken, 1957, p. 200).

Point Venise Lace: A needle lace of a floral design with the design units placed close together and connected with bars often ornamented with picots (Roberts, 1925, p. 67).

Princess Applique Lace: A lace constructed of design units, of plain and fancy machine made braid, sewn by hand onto a net ground (Caplin, 1932, p. 102).

Princess Guipure Lace: A lace constructed of design units, of plain and fancy machine made braid, that are held together by sewing or with fancy needle stitches (Caplin, 1932, p. 102).

Punto in Aria Lace: A needle lace with mostly geometric designs (Eveleth, 1974).

Rose Point Lace: A needle lace of a floral design, the design being made separately and then assembled using a net ground made entirely of buttonhole stitches (Caplin, 1932, p. 106).

Sol Lace: A round lace motif with thread rays emanating from the center and patterns woven into the thread rays (Bath, 1974, p. 91).

Tatted Lace: A knotted lace made using the fingers and a shuttle which holds a single thread and is used to form loops which are the basic design unit (Picken, 1957, p. 204).

Torchon Lace: A bobbin lace with design units made of woven threads in either fan or diamond shapes. The lace is usually made of a heavy cotton or linen thread (Caplin, 1932, p. 111).

Tuscan Filet Lace: An open-mesh lace, handmade, with patterns that are formed by filling specific squares of a knotted mesh with a darning stitch (Picken, 1957, p. 200). It is distinguished from Plain Filet by the presence of extra threads, worked with a needle, that are used to outline design units or form scroll designs (Caplin, 1932, p. 69).

Venetian Lace: A needle lace in a floral design with the designs being connected by bars that are ornamented with picots (Picken, 1957, p. 205).

APPENDIX E

LACE WORKSHEET

Lace Worksheet

REGISTRATION NUMBER: ACCESSION DATE:

SIZE:

COLOR:

CLASS OF LACE: Bobbin___ Needle___ Misc.___ Machine___

NAME OF LACE:

DETAILED DESCRIPTION:

MOTIF: Pattern or design
Repeat of pattern or design
Size of pattern

GROUND: Type
Type stitch
Shape

CORDONET:

BORDER: Pattern
Repeat
Edge

OTHER:

REFERENCES:

Adapted from: Zearley (1964) and Stimson (1968).

APPENDIX F

A COMPLETED LACE WORKSHEET

Lace Worksheet

REGISTRATION NUMBER: B78.19.18 ACCESSION DATE: 6-78

SIZE: 24.5 cm square

COLOR: off-white

CLASS OF LACE: Bobbin___ Needle_X_ Misc.___ Machine___

NAME OF LACE: Rosepoint

DETAILED DESCRIPTION: Lace forms border on all four sides of a handerkerchief

MOTIF: Pattern or design - circular and stylized floral
Repeat of pattern or design - pattern at each corner is the same, border pattern between corners repeats every 4 cm
Size of pattern - corner pattern - 4.7 cm x 4 cm
border pattern - 4 cm x 1.5 cm

GROUND: Type - needle made, buttonhole stitch
Type stitch - gauze point mesh
Shape - hexagonal

CORDONET: present

BORDER: Pattern - scalloped, follows pattern of the floral design, finished with cordonet applied to the piece with a buttonhole stitch
Repeat - border on sides of handkerchief, between corners, repeats every 4 cm
Edge - outlined by cordonet attached to edge with buttonhole stitch

OTHER: Label reads "Brussels - Rose Point"

REFERENCES:

Caplin, J. F. The Lace Book, 1932, pp. 106-110.

Eveleth, E. L. Chart for Lace Identification and the Meshes of Handmade Lace, 1974.

APPENDIX G

LETTER OF INQUIRY

July 12, 1978

School of Textiles
North Carolina State University
Raleigh, North Carolina 27650

Dear Sir:

The Clothing, Textiles and Merchandising Department is currently attempting to catalog, identify and care for the many lace samples contained in the department's historic costume collection. At this time we are seeking specific information regarding cleaning, storage and display of lace.

We would greatly appreciate any information you would share with us concerning methods of cleaning, storage and display that you employ or have found particularly suited to lace samples. For your convenience in returning information to us you will find a stamped, self-addressed envelope enclosed.

We will look forward to hearing from you by August 10th or as soon thereafter as possible, and extend our appreciation to your for your time and efforts.

Sincerely,

Lavonne Matern, Ph.D.
Assistant Professor

Susan Crabtree
Graduate Assistant

APPENDIX H

NAMES AND ADDRESSES OF MUSEUMS AND PERSONS CONTACTED FOR LACE CONSERVATION INFORMATION

*School of Textiles
North Carolina State University
Raleigh, N.C. 27650

*Mr. Donald King
Keeper, Department of Textiles
Victoria and Albert Museum
London, England

*Ms. Doris Bowman
Division of Textiles
Smithsonian Institution
4204 MHT
Washington, D.C. 20560

*Ms. Elizabeth Ann Coleman
Curator of Costumes and Textiles
The Brooklyn Museum
Brooklyn, New York 11238

*Merrimack Valley Textile Museum
Textile Conservation Center
800 Massachusetts Avenue
North Andover, Mass. 01845

Mrs. Galor M. Edgeworth
Dept. of Textiles and Clothing
Florida State University
Tallahassee, Florida 32306

*Textile Study Room
Metropolitan Museum of Art
Fifth Ave. & 82nd Street
New York, N.Y. 10028

*Dr. Kathleen Musa, Curatorial Asst.
Helen Louise Allen Textile Collection
School of Family Resources and Consumer Sciences
University of Wisconsin
1270 Linden Drive
Madison, Wisconsin 53705

*Ms. Margaret A. Fikioris
Textile Conservator
Henry Francis duPont Winterthur Museum
Winterthur, Delaware 19735

*Curator of Textiles
Museum of Fine Arts
465 Huntington Ave.
Boston, Mass. 02115

Ms. Phillipa Lawrence
Director of Textile Conservation Rooms
Knole
Kent, England

Ms. Anne Lambert
Assistant Professor
Faculty of Home Economics
University of Alberta
Edmonton, Alberta, Canada

Mrs. Mary Ellis
P.O. Box 291
North Creek, N.Y. 12853

Mrs. Jo Bidner
c/o Dept. of Costumes and Textiles
The Brooklyn Museum
Eastern Parkeway
Brooklyn, N.Y. 11238

*Ms. Lucy Commoner
Conservator of Textiles
The Cooper Hewitt Museum
#2 East 91st Street
New York, N.Y. 10028

Curator of Textiles
The Denver Art Museum
West 14th Ave. at Acoma St.
Denver, Colorado 80204

*Indicates response

APPENDIX I

PHOTOGRAPHS OF SELECTED LACE SPECIMENS

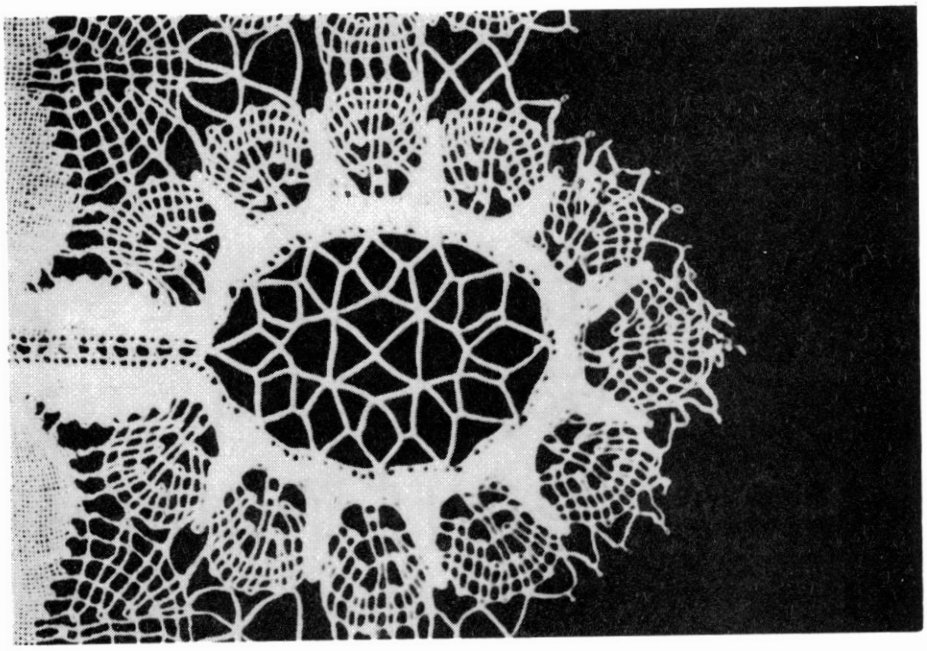


Figure 1. Detail of Bobbin Made Lace

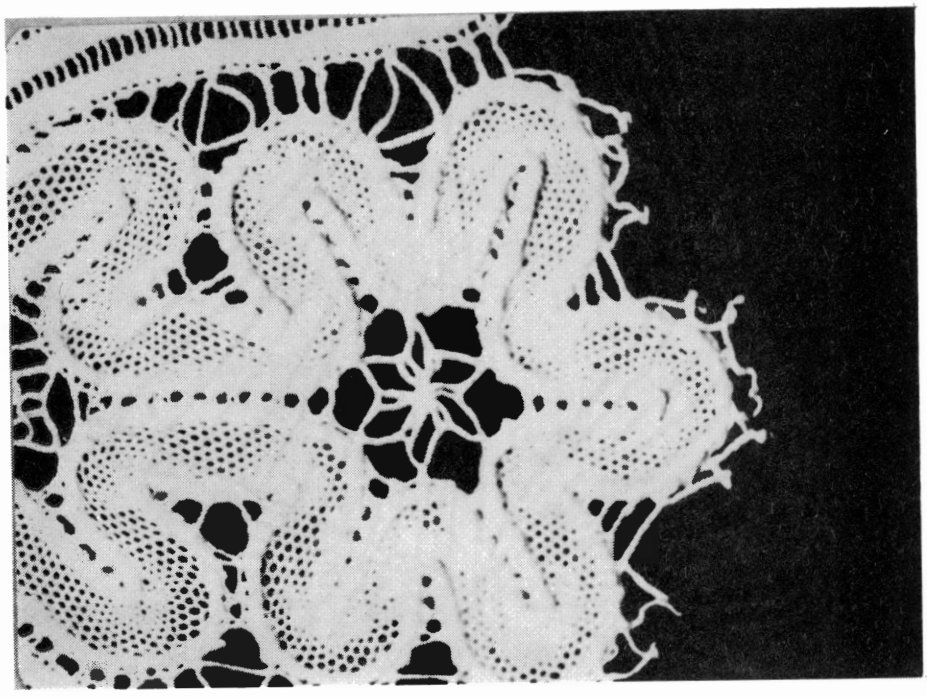


Figure 2. Detail of Bobbin Made Milanese Lace

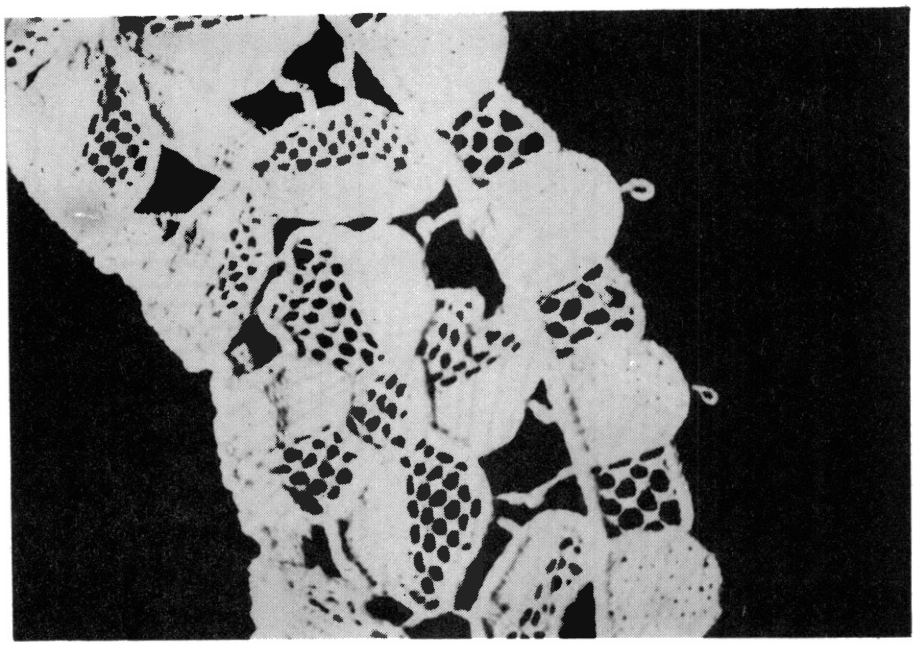


Figure 3. Detail of Needle Made Lace

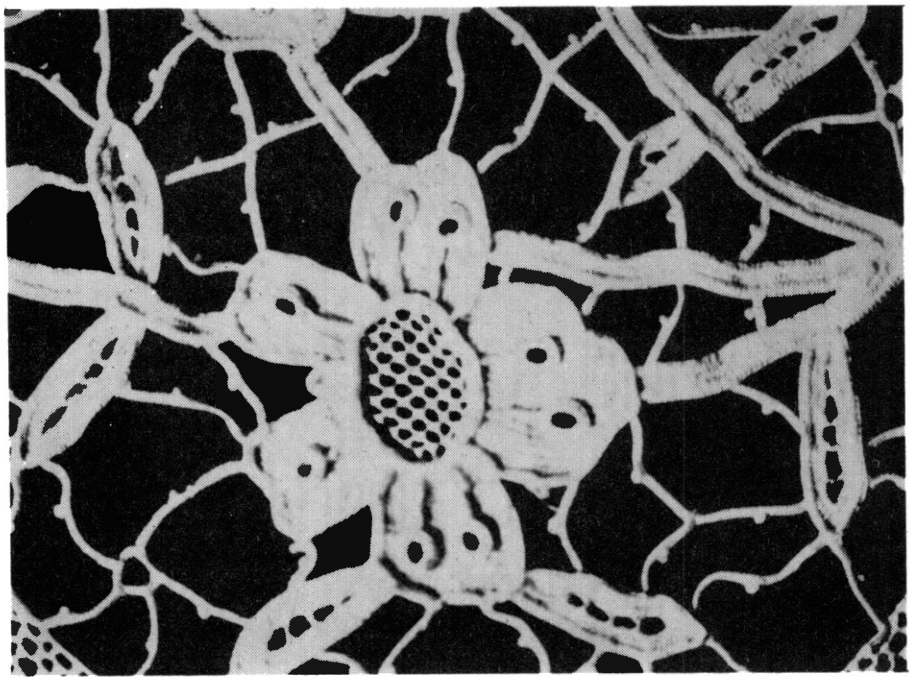


Figure 4. Detail of Needle Made Venetian Lace

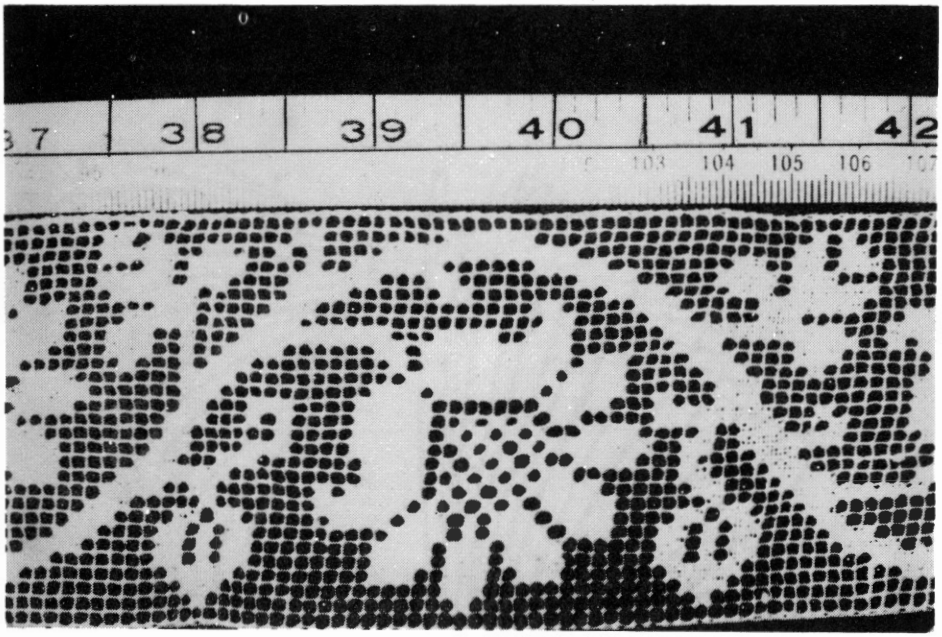


Figure 5. Plain Filet Lace

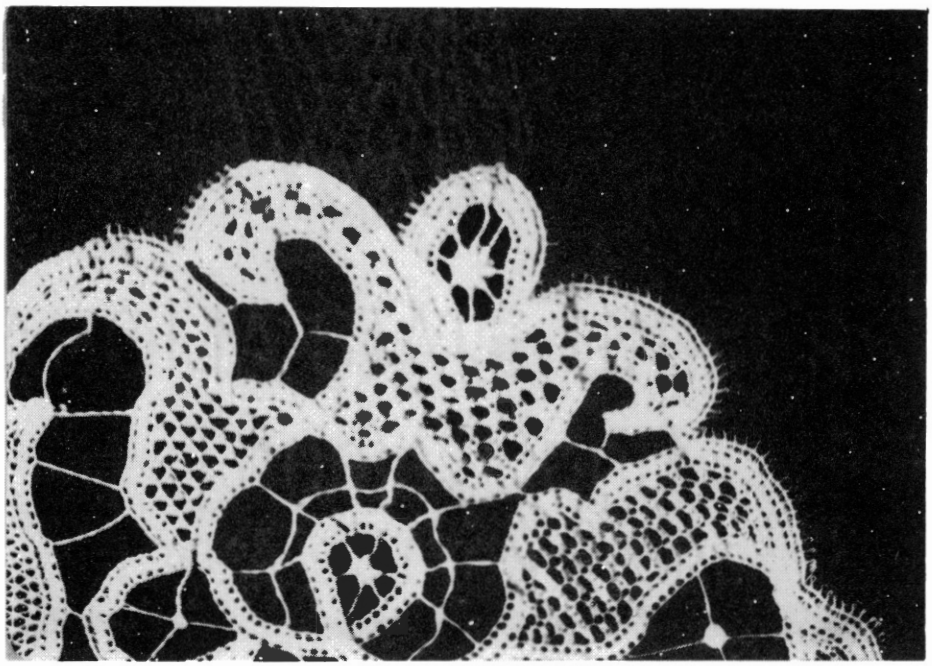


Figure 6. Detail of Battenburg Lace

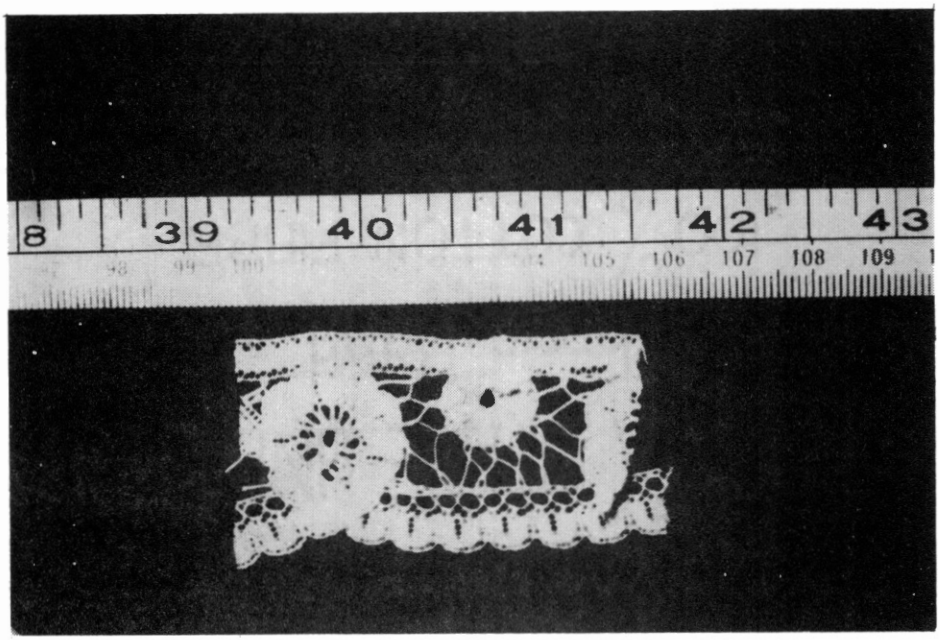


Figure 7. Princess Guipure Lace

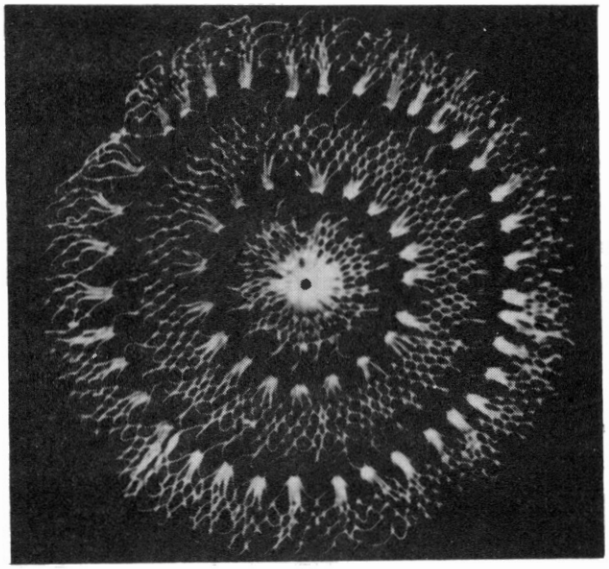


Figure 8. Sol Lace

VITA

Susan Elaine Crabtree

Candidate for the Degree of

Master of Science

Thesis: REGISTRATION, IDENTIFICATION AND CONSERVATION OF HISTORIC LACE SPECIMENS

Major Field: Clothing, Textiles and Merchandising

Biographical:

Personal Data: Born in Springfield, Missouri, June 21, 1955, the daughter of Mr. and Mrs. George W. Crabtree.

Education: Attended elementary and junior high school in Springfield, Missouri, graduated from Hillcrest High School, Springfield, Missouri, in May, 1973; received Bachelor of Art degree from Drury College, Springfield, Missouri, with a double major in Home Economics and Secondary Education, in May, 1977; completed requirements for Master of Science degree in May, 1979, at Oklahoma State University.

Professional Experience: Graduate Teaching assistant, Department of Clothing, Textiles and Merchandising, Oklahoma State University, 1978.

Professional Organizations: American Association of Textile Chemists and Colorists, American Association of University Women, American Home Economics Association, The Costume Society of America, Kappa Delta Pi.

Honorary Organizations: Alpha Lambda Delta, Phi Upsilon Omicron.