WOOD TURNING DESIGNS

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By

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It would be a very long and tedious task to assemble and organize material for a production such as this--alone. It would also lack the quality that comes when two or more persons discuss the same information and exchange ideas. Accordingly, this paper is not the result of the work of one person.

Credit for many of the ideas of research work, for time devoted to conference, and for professional inspiration should go to Dr. DeWitt Hunt, four years my teacher and adviser at Oklahoma A. & M. College, and more years my friend.

My aunt, Miss Minnie J. Oliverson, a veteran of twenty-five years of teaching English, deserves thanks for proof reading the composition and for valuable minor suggestions.

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CHAPTER I

PURPOSES AND TECHNIQUES: A PREPARATORY STATEMENT

The form of the thesis, the unprecedented nature of the subject, the reference methods used and the use of illustrations make doubly necessary a prefatory statement for clarity in its reading. This chapter will also present reasons for making the study and benefits that should be derived from it.

Definition and Limitations of Thesis The study of wood turning designs in period furniture was made in an attempt to find what features made these old pieces such that they were taken care of so well that they exist and are still treasured today. It was believed that, if these pieces were kept so long, there must have been features of design that were exceptionally good.

Good design is elusive to define. Rules for design contain such principles as practibility, proportion, serviceability and appropriateness of materials. In this study, good design is generally classified as that which has passed the test of time. Of course, works of revered designers such as Duncan Phyfe, Sheraton, and the Brothers Adam were stressed.

Research was limited by the impractibility of personally examining the hundreds of turnings used in old furniture. It is believed, however, that satisfactory substitution has been made by the careful examination of museum photographs and authoritative drawings of museum pieces.

Search in the library of Oklahoma A. & M. College, Winfield, (Kansas) Public Library, professional librarian catalogues from the University of Kansas library produced no books dealing in any detail with this study. Most of the information was obtained from books on old furniture.

In the detailed study of turnings on these old pieces of furniture, an attempt was made to formulate reasons why parts were designed as they were. If these reasons or formulae were applied to modern design, along with the functional factors demanded today, and with the modern methods and materials, it is logical to conclude that furniture made today will be practical, useful and beautiful for both the present and the generations to come. These conclusions are restated in the final chapter.

The Purposes of the Thesis This study was begun with the intention of making an analysis of turned designs that would aid the writer and the reader in appreciating and producing well-formed turned work.

It is impossible to create anything without certain knowledge of associated topics. So, the research work presents historical notes on the furniture to give background to the actual turned designs. This stresses the importance of appropriateness, as we see how the early designers produced their works to meet special needs.

The examples of early turned designs and historical data, presented in this paper, should aid the Industrial Arts teacher and his students in a better understanding of design and help both to produce better turnings.

The Need for Such a Study At the beginning of the research an attempt was made to find other theses with a subject of similar nature to wood turning or wood turning design. Copies of the United States Office of Education bulletins entitled Bibliography of Research Studies in Education, were examined for similar subjects. In none of the pre-war issues (1931 to 1940) could topics of a like nature be found. The lack of books on related subjects, as noted in the paragraph entitled Definitions and Limitations of the Thesis show that little has been published on this subject.

Many Industrial Arts teachers express their weakness in designing good turned pieces, and their need for training in design. While this study does not entirely fulfill this need, it is believed that, because of its unprecedented nature, it will be beneficial to the profession.

Methods of Collecting Information An ideal method of gathering information on a topic of this kind would be the study, measuring and drawing of the actual museum pieces and household pieces of furniture that serve as a basis for the discussion. This was impossible and as a substitute, photographs, measured drawings, and descriptions of these pieces were studied with minute care. The original drawings and photographs were found in books listed in the selected bibliography and are referred to in the body of the thesis, when applicable. A valuable piece of equipment for this detailed study was an eye loupe, or "jeweler's eye," which provides large magnifications of small parts of photographs.

Several of the pieces of furniture which were studied were in the homes of friends of the writer. While these were not in the museum category, they were old enough to have their designs passed on by time, and could be considered good. Many of these pieces were brought west by the ancestors of these families, several generations ago.

Methods of Producing Illustrations for the Thesis The illustrations used in Appendixes A and B to the thesis were made by the writer. Line drawings in Appendix A were copied in pencil from photographs and measured drawings found in books contained in the bibliography. These drawings were then reproduced by copying on process type film. The drawings were not made to accurate scale, but were intended only to illustrate facts contained in the body of the paper.

Photographs of furniture shown in Appendix B were made with a Speed

Graphic camera, using 2¼ by 3¼ size film. The illustrations were enlarged on Eastman Kodabromide Type A paper.

Methods of Reference Reference made to illustrations in the appendix refers to the plate and the figure on the plate. This information is contained in parentheses in the body of the paper in this manner. (Plate III, figure b)

Credit to books and other written matter is given by the number of the publication in the bibliography, and the page of the reference, as follows. (4, pages 113-115)

Also referred to in the above manner are notes taken during a series of lectures given by Dr. Burl N. Osburn at the Third Annual Oklahoma State Industrial Arts Clinic held at Stillwater, Oklahoma, in May, 1947. These notes are listed under a number (12) in the bibliography in the same manner as a book.

The subject matter of the thesis, methods of reference, and the use of illustrations are not commonly employed in such a research work. It is hoped that these introductory paragraphs will prevent any confusion in the reading of the paper.

CHAPTER II

HISTORY OF WOOD TURNING

Wood turning is one of man's oldest trades, but the demand for the increased output and the cheaper unit price of mass production has produced machinery that is slowly replacing this ancient art.

Wood turning probably originated in Egypt and was transferred from there to the East, to ancient Greece, and then to Rome. (9, page 140) As a trade, it is unique in that it is the only one adopted by royalty as an avocation. Kings and princes and even queens and their ladies of high rank amused themselves by practicing wood turning during the seventeenth century. European museums feature examples of their handwork. (16, page 143)

The primitive lathe consisted of two tree trunks, each holding a pointed center, between which the wood stock was turned. A hand-held tool was used to cut it to shape. This elementary type has been used in the East since remote times, and is still used in India. Here, an assistant is required, who imparts a to-and-fro motion to the wood by pulling alternately at the ends of a cord wound around the work. The turner holds the turning tool between his toes and controls it with his hands. (5, page 741)

In early Europe, the pole lathe was used. This machine consisted of a unit to hold the stock, which was revolved by a cord passing around it. One end was attached to a treadle, and the other to an overhead elastic pole. (Plate IX)

The dictionary points out that the term is probably of Scandinavian origin, from the Danish word, drejelad, with the prehistoric origin

meaning a frame to hold something, and akin to the English, lade, meaning to load.

Early America had a part in the major improvement of the lathe after intermittent revolving had been replaced by constant turning. This was the Blanchard profile lathe, which turned irregular forms such as gun-stocks and shoe lasts. The machine was designed to follow a pattern automatically. A friction wheel followed the contours of a finished gun-stock and moved the cutting wheel in and out of the material to be cut at precisely the right point. One of the remarkable aspects of this machine was that it could reproduce a form from a pattern at any scale, so that a large object could be made from a small one with identical proportion. This was an invention of importance and was the basis of a large number of other machine tools such as a die-cutter. The same general principle, for instance, is used today in cutting linotype matrices. (2, page 416)

CHAPTER III

DESIGN IN TURNED PARTS OF FURNITURE

In this chapter, the portions of furniture that were wholly or partially turned will be described. Each part will be defined in a manner which should enable a novice in shop terminology to recognize the piece. A history will be presented to show origin and advances. In the paragraphs dealing with design and use, will be the description of the part and the use to which it is put.

Finials

The finial was an interesting component of many early pieces of furniture, because it was often used for decorative purposes only and so became an expression of the creative imagination of the worker or designer. It is used commonly in many modern designs.

Definition A dictionary definition of a finial is, in part, "the ornament that forms the upper extremity of a pinnacle, gable, or the like, especially in Gothic architecture." The term is also used in wood turning to refer to the part of the turning that extends beyond connecting members of the piece of furniture, especially in vertical turned parts. Designers and teachers who have used the term in this manner are Dr. Burl N. Osburn (12) and Halsey and Tower. (6, page 246)

History Finials have been used throughout the history of turnings. They were used on a Roman triclinium. (1, page 21) They appeared through the Tudor period, and were especially prevalent in Jacobean and Sheraton furniture.

Design and Use The finial in pieces of early furniture served two standards of design, functional and aesthetic. Finials serving functional purposes were placed within normal reaching distance of the user. This type of finial can be subdivided into classes, determined by the manner of touching by the user.

First of these, the vertical type followed, in most cases, the pear shape or the acorn design, although a cylindrical turning appeared in an oak Tudor chair dated around 1520. (Plate I, figure d) This finial was turned on the front leg and extended above the massive arm of the chair. The finial provided a comfortable rest for the hand of the user, and could serve as an aid to him in arising.

The other finial type, also appearing very often on chairs, followed a flat tendency, causing the user to rest his open or half-closed hand upon the top. A good example is one appearing upon a James I oak armchair, on the front leg and beginning immediately above the arm. (Plate I, figure b) A baby crib of the Jacobean period (Plate I, figure f), had six finials, extending above the cradle and consisting of a turned sphere. This tended to form a ball-and-socket with the hand, making a handle that was easily held, whether the person rocking the cradle were standing or seated. Bedposts were turned with different types of finials, sometimes consisting of intricate turnings, topped with a smooth curve of the flat type. (Plate III)

In almost every case where finials were used in low positions on furniture, it was evident that the designer had the safety factor in mind. No case was discovered where a low, vertical finial terminated with a point sharp enough to cause injury in case of violent contact.

The aesthetic finials, where the primary purpose was appearance, were always placed in positions normally out of reach of the user's hand.

The best examples of these are the urn- or the flame-type turnings in the center of the swan-neck pediment on highboys or on secretaries. (Plate I, figure e) These finials have pleasing appearance, but serve no functional purpose. They differ from the functional types in the smaller diameter at the top, tending toward a sharp point. (Plate I, figure a)

Special types of finials often appeared in early furniture in somewhat unexpected manner. Seventeenth Century "wainscot chairs" are greatly enhanced in value when finials were turned on the front legs. (6, page 246) Glass flame-type finials were used on a 1705 desk, on the two front corners and the center of the pediment. (3, page 188) Horizontal finials were used on one chair, where the cross member at the top of the back was turned on the ends which extended beyond the vertical members.

Transitions

The problem of changing from square to the round contour of turning will probably always be faced by the wood turner. However, the general designs of transitions can be classified into three general classifications.

Definition The transition, in turning, is the change from square to round. Transition means passage from one form to another, or change. In sheet metal terminology, transitions change the cross section shape, usually from square to round.

History It must be true that transitions must have been used as long as wood turning has been applied to the making of furniture. In most cases, flat places are needed to form good joints, and the easiest way to secure

this is to leave certain portions of the turned member square. In the history of English furniture, transitions began to appear in the Fifteenth Century in the form of bedposts. (3, page 13) From then on, they became plentiful, with the combination of turnings in complex furniture construction. However, the more interesting types of transitions appear in the early English furniture.

Design and Use The use of square sections in turned members is wholly functional. The square part of a leg made possible better joints with the rails. Stretchers on gate-leg tables require squares for the revolving joint of the gate. (Plate XIV) Thus, with the use of squares in conjunction with turned parts, the need of transitions was apparent.

Elements of furniture design for all ages can be broken down into a few components. Transitions provide an excellent example of the simplicity of separate parts of furniture design, in that only three types of transitions have been used in early furniture.

The least difficult of these types, from the processing point of view, is the straight shoulder produced by a single half-vee cut. In almost every example of this type of transition, the first turned part of the work is either a bead (Plate II, figure d) or a half bead with the curved part toward the square section.

The second transition is similar to the square shoulder, except that the corners are rounded to an extent that varies with the particular design. (Plate II, figure b) From a study of photographs of museum pieces, the rounding of the corner varies from almost square to a curve beginning at a distance equal to the width of the square from the turned section.

The most complicated of the three transition types, (Plate II, figures

a and c) is a combination concave and convex cut taken on the square, so that the line determining the intersection of the curved portion and the surface of the square follows an S-curve. This type of transition was favored in the middle of the Fifteenth Century, when English furniture used heavy turned pieces. The change from square to round was so great that more elaborate transitions were necessary.

Stretchers

The stretchers, at first strictly utilitarian, were solid footrests or tie-rails, but later became suitable for ornamentation.

History Of all discussions of stretchers which were studied, the one best presenting the evolution of the stretcher is here quoted. (8, page 200)

> In making a study of the evolution of the chair, the stretcher is an important factor. For obvious reasons ... no early chairs were made without the stretcher across the front, a serviceable piece of British oak to stand rough wear and tear. Gradually, keeping time with the march of comfort, the front stretcher begins to leave its old position near the floor, and in later examples it is half way up the front legs. It still had its use, and a very important one: it added considerable strength and solidity to the chair, and is nearly always found in chairs intended for use. ... Later, ... it united the two side stretchers, and crossed the chair underneath in the center at right angles to the side stretchers. Its purpose in adding stability to this class of furniture was never lost sight of.

Another bit of interesting history of the stretcher, as stated by this British author, Arthur Hayden, is that in the early days of drafty homes, the stretcher was used as a foot rest to keep feet off of cold, bare floors.

Design and Use A few typical examples of stretcher are described. A Yorkshire chair, (8, page 197) dated 1660, had a ball-turned front stretcher showing transition period to Charles II. Cromwellian chairs of

of the same date had similarly turned stretchers in front, but showed indications of the next period. A Cromwellian chair of 1650 period featured back and front stretchers placed rather high and a low H-stretcher, all bobbin-turned. (3, page 106) Good representatives of the 1660-1670 Restoration chairs (3, page 106) were designed with twisted stretchers.

The front stretcher of a beech chair, about 1690, employed Portuguese bulbs to match bulbs on front legs. (3, page 109)

A Louis XIII French manner chair (1, page 196) had no stretchers at all. One type had one stretcher connecting front legs.

A Louis XIV chair (1, pages 196 and 197) was provided with a stretcher invariably placed diagonally, which means a right front leg joined to a left back leg, and vice versa. (1, Plate XVII, b)

In a number of Queen Anne chairs, (1, page 215) made between 1702 and 1714, a simply turned H-stretcher was used.

Regency (1715-1723) chairs first followed the Louis XIV rule and these approached the Louis XV no stretcher mode. A Louis XV chair had legs so short they needed no stretcher.

A Massachusetts drop-leaf table of 1675 is interesting, because it utilized a dual type stretcher. (17, figure 63) First, close to the floor was a standard H-stretcher composed of spool turnings. As if the craftsman did not trust this structure, he placed a secondary stretcher on each side about half way up on the leg, consisting of the same pattern of turning.

A desk-box on frame (late Seventeenth Century) illustrated an example of duplicate design in wood turning. (6, figure 10) Turned stretchers, connecting four turned legs, were composed of a design of an elongated bead, a fillet and a small bead, repeated four times in the long stretcher

and twice in the short. The attractiveness of this design is largely attributed to the contour character of the elongated bead. A definite double curve of force provides this.

A unique combination of spiral and straight turning (8, page 73) appeared in a William and Mary table of about 1670. The stretcher, beginning with a square, has a standard transition to a bead, a cylinder and another bead. The turning then flows into a spiral occupying about one-fourth of the length of the stretcher. Then follow two beads and an elongated bead for the center. The stretcher is, of course, symmetrical about this center bead.

"Barley sugar" turned stretchers (8, page 99) were features of a 1670 gate-leg table. These stretchers provided ornament in a pattern form, when the table was extended. The two long and the two short stretchers formed a long narrow rectangle beneath the body of the table. Bisecting it was a short center stretcher, extended into a long straight line by stretchers of the two open gates.

In a Louis XIII and an English Cromwellian chair, (1, Plates XVI, a and b) there is a profitable comparison. (1, pages 150 and 197) The feature of the former is the bar H-stretcher reinforced by a front stretcher, as a rule spirally turned and often double, one bar immediately above the other. Derived from it, an English Cromwellian chair, in oak instead of walnut, was made with heavier spiral turned stretchers and became more popular.

An unusual stretcher serves to strengthen the structure of a late Nineteenth Century rocker, (Plate XVII) still in use. A turned column, screwed to the side of the oak seat, reaches from the arm to a point almost three inches below it. Connecting the two uprights is a plain, round stretcher extending, inconspicuously, under the seat.

A piano is supported by two typically Duncan Phyfe turned pedestals and curved legs. The two units are separated by a rather massive (for Phyfe) turned stretcher composed of two long convex curved sections separated by bead and cove breaks. The curved sections are fluted. (17, figure 85)

Legs

As in the study of finials, form, function and ornamentation were noted, so in similar fashion, a study of legs, another turned element, calls for recognition of form, use and decoration. Tradition had its way. English cabinet makers continuously followed old patterns. One by one, influences from the European continent crossed the seas and led native designers and craftsmen to modify their English patterns. Social conditions and ways of living forced some styles in and others out. Patterns crossed the Atlantic, developed in America and outclassed English adaptation. Turned legs in furniture exemplified all of these constructive forces.

History In England, a long period utilizing many types of leg was the Jacobean, including reigns of James I, Charles I, the Cromwellian Protectorate, and reigns of Charles II and James II.

At the close of Elizabeth's reign and the beginning of that of James I, the fine carving of the earlier Tudor era degenerated and furniture design declined. Craftsmen copied work of their predecessors with the result that the easier craft of wood turning was revived.

One writer goes so far as to place exact dates upon the various forms of turned legs which became the fashion. (1, page 157) He lists them as follows:

Bulb-turned 1575-1650
Column-turned 1590-1700
Bobbin-turned 1640-1665
Vase-turned 1645-1711
Baluster-turned 1645-1710
Spiral-turned 1660-1703
Inverted-cup-turned . . . . . 1689-1705 (Plate IV)

The first, third and fifth turnings were adaptations of typical Renaissance motives. Bulb and column were reproductions of the bead-and-piastre motives. Columnar turning came from the Henri II Tuscan column; the baluster, from the French type of balustrade.

Spiral turning was only coming in about 1660. The author quoting the previously mentioned chronology calls attention to the difference between lathe-turned spirals found under Louis XIII of France and Charles I of England and through the Commonwealth, between 1610 and 1660, and the hand-carved spiral twist, which came from China, via Bombay. The spiral twist did not survive the reign of Charles II (d. 1685), where it was succeeded by the long spindle, a feature of James II and William and Mary workmanship. The spiral turnings, occasionally found under William and Mary, were of Dutch origin.

The inverted-cup-turned leg was a simplification of the French pedestal, brought to England by Daniel Marot, the favorite cabinet-maker of Louis XIV. The style became unpopular before 1702.

The "cup-and-cover" bulb support first became thinner, then lost its original form. It gave way to turned vases and at times balusters, disappearing at the close of the century. After 1610 bulb-turned and then baluster legs replaced cup-and-cover bulb.

Spirally-turned legs characterized chairs up to Charles I (1649). Other chairs were in vogue throughout the Jacobean period, but legs were always turned.

The so-called Cromwellian chair, (1, pages 162 and 163, and 1, Plate XVI, b) a Louis XIII type, had a high seat and spirally-turned legs, supported by H-stretchers.

Early Charles II chairs had twisted legs, which gave way to the cabriole leg of the Eighteenth Century. The turned spiral leg differed from the twisted type. The latter was more graceful and beautiful, but the former, turned spirally on a lathe, was absolutely regular, the convex and concave portions being nearly equal.

Design and Use A late Seventeenth Century gate-leg table, (1, Plate LXI), with New York manner turning had a harmony of design in the matching legs and stretchers. The legs had unusually long square sections combined with two pear-shaped turnings separated by a single bead. The stretchers approximate this same design. (Plate VI)

Another rare late Seventeenth table (8, pages 93, 95, and 96) was designed with twelve egg-and-reel turned legs. A rare gate-leg table, (8, page 99) dated 1670, was distinguished by six fine "barley sugar" legs.

A gate-leg table that survived well into the Eighteenth Century was a good example of ball turning. (8, page 99)

Four inverted cup legs appear on an English highboy. (1, Plate XXIII, b) The inverted cup leg is the distinguishing feature of the William and Mary style. (1, page 204) Anything with it can be only William and Mary style. A fine example is found on a slope-top desk. (1, Plate XXVII) Cup-and-cover bulb legs support an Elizabethan court-cupboard, shown in the Metropolitan Museum. (1, figure 30)

The typical feature of Louis XVI furniture is the leg. (1, page 261) It is slender and tapering in chairs and is generally fluted. They are always straight and taper downward. Wheel-backed chairs made for

Robert Adam had round, fluted, tapering legs with drooping foliage at the top. (1, page 282) A beautiful Adam side-table had ten legs, tapering, broken up into sections including an inverted fern-like cup. (1, page 274)

No discussion of chairs is complete without inclusion of Windsor chairs. Rakishly set legs of the American Windsor is an echo of old Saxon furniture in England. The English Windsor had a wave of popular favor at coffee-houses, tea-gardens and other amusement places, until it fell back into service as a tavern or farmhouse seat. The English type was never graceful. The American type developed into a thing of charm, with widely splayed, smoothly-contoured turned legs.

Turnings as Surface Decoration

Flat surfaces have always been temptation to designers and craftsmen to indulge their creative imagination in decorative art. Its form may be decorated by carvings, inlays of wood, mother-of-pearl and metal, or by the application of the products of wood turning.

History In early cabinetmaking, carving would, in quantity, exceed turning. Large surfaces particularly test the ingenuity of the wood carver. Fluting, reeding and application of half-turnings are the chief varieties. These forms of surface decoration appear upon French cabinets, table legs, chests and cupboards.

Description and Use In the notable auction sale of the Leverhulme collection, (15, page 317) a valuable European collection that netted over one and one-quarter million dollars, was included a beautiful Adam side-table, painted by Angelica Kauffman. Her art beautifies the surface of the semi-circular top. Reeding adorned the severe simplicity of the four slender legs.

In the reign of Henri IV (1589-1610) a change of style began. (1, page 124) Toward the end of his reign came an innovation in furniture, (1, page 124) derived from architectural models in stone. A large cupboard-cabinet in the Metropolitan Museum, a typical Henri IV cabinet, illustrates this style with its long fluted columns.

Sheraton (1751-1806) favored general convexity in design, (1, pages 292 and 293) the exact opposite of Hepplewhite's preference for concavity. Sheraton's love of the convex showed in typical reeded legs; Hepplewhite used fluting. A typical Sheraton chair had slender reeded legs and his most typical side-board stood on tapering reeded legs. One tiny and unusual lady's writing desk of maple and mahogany stands on slender fluted legs of mahogany. (1, figure 169)

Louis XVI furniture was characterized by fluting, as shown in chairs and a rare twelve-legged "bureau-a'-cylindre." (1, Plate XXXVIII and page 262)

In the Metropolitan Museum of Art is a Jacobean court-cupboard of the Seventeenth Century, (15, page 202) a fine example of split spindle turning as applied surface decoration. On the three-drawer chest section are eighteen split turnings, arranged in groups of six. Two groups occupy the end positions and one group the center. Thus the slender split spindles give a semblance of three perpendicular, double lines on the front of the chest. Urn-shaped pillars for the canopy are topped by two split spindles, each containing the ascent of the parallel perpendicular lines. On either side of the middle door are two parallel split spindles, a little longer and somewhat more elaborate in design than the decorations used elsewhere.

A very decorative chest of oak was made near Hartford, Connecticut. (15, page 207) It was ornamented with applied spindles and egg-shaped

ornaments stained black.

Miscellaneous

A study of wood turning and its use in minor, but very important household furnishings, should include at least a few products of the artist-craftsman nowhere else mentioned.

History, Description and Use To insure brevity while providing adequate treatment of these, history, description and use are combined for each in its turn.

Spinning Wheel The spinning-wheel was a hand or foot-driven machine for spinning yarn or thread, in which a wheel drives a single spindle. To this day, (8, page 153) the spinning wheel is used in Scotland, and in other parts of the world. The companion piece was a wool or yarn winder, usually in windlass form with a large, six spoked wheel. The wood turning of these winders and the spinning-wheel itself resembles the spindles on spindle-backed chairs. The supporting structure consisted, sometimes, of three decoratively turned legs set aslant in the body. (Plate XX) Sometimes four such slant legs, also elaborately turned, were mounted on a quadrangle of turned stretcher pieces, (8, page 151) each corner supported by a ball foot. The wheel spokes and spool holders had individual turnings. The functional and ornamental finials were also turned.

The practice of the spinning craft was in the hands of British farmers' wives, great ladies and even the queen. (8, page 153) In American colonial families, (6, pages 37 and 38) women made thread on the spinning wheel, winding it into balls on the winder to provide material for clothing and such necessities as socks, mittens and caps.

Plate XX is a photograph of a spinning wheel brought to Kansas in 1869 by the writer's great-grandmother.

Bobbins Another domestic specimen of wood turning was the Buckinghamshire bobbin (8, pages 151 and 154) used in the pillow-lace-making districts. Each was individual in design, since the village turners would not duplicate a pattern.

Organ Stool A relic of the 1880's is an odd organ stool (Plate XXII) with a heavy pedestal, almost Elizabethan in its solid, bulbous turning. It receives the screws that attach the three black ornamental iron feet, and it supports the mechanical contrivance of screw that adjusts the organ stool seat. (See also, Plate XVI)

Candle Stand Along with a tinder box, whale oil lamps and candlemolds of the Metropolitan Museum, (17, Plate 316) is an adjustable candlestand. From a sizeable, small table-top descends a long, coarsely threaded wooden screw. It pierces a smaller square below and continues through a small third square. This firm looking mechanism provides means of adjustment of the height of the candle.

Attached to and descending from the middle plane are four vertical turned spindles. They resemble chair or table legs, each tapering from a double-bead center toward either end. These four spindles attach below to two heavy turned stretchers intersecting at a right angle. Each stretcher end is supported by a slim vertical foot topped by a finial, making these floor supports resemble strong pegs. A circular plate above the cross-lap joint joining the stretchers serves as a stop to the screw, when the table was adjusted to its minimum height.

Mortar and Pestle A curious bit of wood turning was shown the writer by a descendant of an early sea captain of Nantucket, Massachusetts. He sailed around Cape Horn to China in the very early 1800's. From Soutn America he brought the mortar and pestle shown in Plate XXI. Both pieces were smoothly turned from lignum vitae, an exceedingly hard, heavy tropical wood.

It is realized that not all turned parts of all furniture have been considered in this chapter. An attempt has been made to present only the most important, most significant phases.

CHAPTER IV

ELEMENTS OF WOOD TURNING

In the study of hundreds of photographs of museum furniture and of pieces of furniture themselves, it was noted that only four basic types of cuts were used. All turned designs, from the smallest finial to the largest pedestal, are composed of variations and combinations of (1) convex curves, (2) concave curves, (3) cylindrical sections and (4) tapers. These elements do not associate themselves with separate historical periods. In most cases, therefore, no historical resume will be given. When a characteristic of a type of design is one of the four types, this will be indicated in the discussion of the design. The four elements which constitute the basis of wood turning design will be discussed in turn.

The Convex Curve

The convex type of curve is probably used more often than any other type. It is used about as much as the concave cut, with the exception that the convex curve was used many times in the slightly curved, almost cylindrical pieces. (Plate XVIII) Other examples include the plain stretchers and similar constructions of the Windsor chair, where the curve gives a semblance of pleasing design, and structural strength in the places where breakage might occur. (See examples, Plate VIII)

Basic Type The basic type of the curve is commonly called the bead. In its true sense, the bead has a semi-circular cross section. Mathematically speaking, the proportion of the bead is, the width is equal to the difference of the diameters of the bead and the terminal points of the bead.

Variations From the basic bead, the variations of the convex element run the infinite cycle of curve from the imperceptible crowning of a stretcher, through the sphere, (Plate I, figure f) to the slight rounding of a corner. Half-beads are often used following the transition, (Plate 1, figure b) and are seen in the cup and the trumpet turnings. (Plate V) Curves found in the turnings of old furniture followed the "Curve of Force" rather than the radius curve, with the exception of the bead and cove.

Combinations The convex curve is often combined tangentially with the concave curve to form an S-curve and when well proportioned is very pleasing. (Plate XIII and Plate VIII) It is used on most sharp corners to avoid the hazard and unpleasant feeling of sharpness.

Method of Turning The most common method of hand turning a convex curve is with the skew chisel. This may be done by scraping or by a shearing cut, the latter being more desirable. Long curves are sometimes turned with the gouge, and a few craftsmen have been observed who prefer to turn any sized convex cut with the gouge.

The Concave Curve

The concave curve (Plate VIII) is used in similar manner to the convex curve. In volume of use, it is second to the convex cut.

Basic Type The basic concave curve is the cove, which is semi-circular in cross section.

Variations The concave curves vary as the convex turnings. They run from the basic curve to long, almost tapering curves. Extremely deep, narrow cuts with rounded bottoms are very rare. Perhaps the difficulty of processing, and the dust-catching qualities contributed to the

undesirability of these deep concave cuts.

Combinations As was mentioned, the concave and convex curves are often combined. The half-cove is used less than the half-bead. The long concave curve is very often broken with a bead which gives the appearance of being a ring slipped over the smooth turning.

Method of Turning Concave curves are nearly always turned with a gouge of appropriate size. They may be scraped with a round nose. One woodworker demonstrated his ability to turn coves with a skew chisel. Long concave curves are sometimes turned with a skew chisel, if the degree of curvature is small enough.

The Taper

The taper, (Plate VIII) is used for the most part as surface decoration in the form of small V-cuts. In definition, it is any section of turning where the contour is a straight line, and the end diameters are different.

Basic Type There is no basic type of taper. They fall into single tapers of varying lengths and degrees of taper, and double tapers in the forms of V-cuts and V-shaped rings.

Variations The simplest taper is the long surface forming the major part of a leg or similar member. The taper is terminated at the top (in the typical Sheraton leg) with several beads and the square, and at the bottom with a turned spade or similar type foot. This type taper is usually reeded. Small V-cuts are used to relieve monotony of a long smooth surface such as a large cup turning.

Combinations The taper, when forming the major portion of a turned member, is often relieved with reeding, fluting or carving. Another popular combination is with the convex and the concave.

Method of Turning The taper is turned with the skew chisel. V-cuts are cut with the toe or heel of the skew chisel, or may be scraped with a skew, a diamond-point or a parting tool.

Cylinders

The cylinder (Plate VIII) is the simplest of turnings in appearance and in construction. It is a cut with a straight contour and has equal diameters at the two ends.

Basic Type The basic type is simply a cylinder. It may be long in proportion to diameter, or very short as in the case of a fillet, or shoulder.

Variations With such a definite definition of this type of turning, there can be no variations, except in proportion.

Combinations When used as the largest portion of a single turning, the cylinder is sometimes decorated with reeding, fluting, or carving. One example of a Sheraton piece (Plate VII, figure 6) shows a cylindrical leg, enriched with a painted design. Short cylinders are used as terminations of beads or coves, in which case they are called fillets.

Method of Turning The cylinder is turned with a skew chisel, either cut or scraped. A skew may be employed to scrape the cylinder. A straightedge is usually employed to check the longer cylinders for straightness.

Although the elements discussed in this chapter are simple and elementary, they were included in the paper because they contribute to the simplification of wood turning design. If the woodworker will remember that all turned designs are composed of combinations and variations of these four elements, his tendency will be to design better turnings more easily.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

The three parts of the summing up of this discourse seem the natural outcome of such a paper. The three practical rules are elementary, but almost so simple that they are often forgotten in designing. The applications of material by the Industrial Arts teacher are recommended in a few suggestions which may be used intact or may indicate other uses. In any detailed study, factors are found which cannot be used in the work itself, but may, in turn, make research topics in themselves. A few of these are listed.

Three Practical Rules of Turning Design

In this study of the many designs that developed during the last few centuries, and the examination of the types that survived and are still popular, several observations can be made concerning the rules of good design.

Rule 1. Furniture should be designed in proper balance between plainness and ornamentation. The highly carved surfaces of the French periods and the unornamented puritanic surfaces of the stick-legged "milking stool" types are not so popular as the beautifully proportioned and balanced ornamentation of the Phyfe and Sheraton pieces. A psychological reason for this rule might be that the eye tires of looking at a piece entirely covered with carvings and gingerbread, so that it can find no place to rest. The eye becomes bored with looking at a piece of furniture that is so plain that only one glance is required to memorize its entire appearance. But, a piece such as a Duncan Phyfe table has plain

surfaces where the eye can rest, and a sufficient amount of varied curves and breaks, so that even, after years of living with the piece, new combinations of design are noted and enjoyed.

Sheraton often accomplished this effect by the use of highly figured woods and veneer combinations on large plain surfaces, which would have become monotonous if left in plain grained woods without ornamentation. This could apply to turned parts in that highly figured woods rely less on ornamentation and more on smooth, curved surfaces.

Rule 2. The functional parts of the furniture should be proportioned to insure a sense of stability and permanence without looking bulky. The loss of repose is mentioned by one author, (8, page 129) where the oak dresser he describes is nine and a half feet long, and is supported by only four rather small cabriole legs. On the other hand, Jacobean furniture had such massive structure that it would appear out of place in a present day home. The usage expected of the piece should be considered in determining the structural proportion. In early American history, a tavern table with legs turned the same size as the legs on a tea table in a plantation home would give the appearance of unsuitability and would be unsuitable. Furniture in a child's room should be light, but should have the appearance of being able to take sudden shock. A student of the writer's, a Catholic sister, made this statement when questioned as to the slender legs she had made for a table, "There will be no small boys to kick them off." In the home of a large family, such a table would have given a decided sense of uneasiness.

Rule 3. The character of the turnings should be of paramount importance in making fine furniture. So, the concluding rule is to practice perfection of turning. The fine pieces of turning stressed the feature,

that sharp corners (as in the intersection of bead and fillet, of cove and fillet, of half-bead and cover, and the like) were made sharp. This does not imply that turnings should be left uncomfortably sharp on corners. Furthermore, the rounding (as done by many amateurs) that eliminates character should be avoided. Even the older pieces, showing rounding of surface intersections, appear to have been originally sharp, but rounded by years of wear.

Also in producing turnings of character, this fact should be remembered. Different curves should intersect so that the tangents of the curves would intersect at either a straight line, or at a right angle.

Application

While serving with the navy in the last war, the writer made the observation that the personnel that were best at their work were those who took an interest and had some knowledge in subjects related to their specific work. This habit of broad interests should be followed by the Industrial Arts teacher. In like manner, this work contains matter related to design, such as historical background and indication of factors determining design in the early days, which should extend the outlook of the furniture designer and encourage him to study related material along with design. Suggestions for the application of this thesis are listed.

1. Study photographs of early furniture. Excellent illustrations of furniture of all types are contained in books such as those listed in the Selected Bibliography. Ideas of a general nature can be obtained, and detailed parts may be drawn by the use of a good magnifying glass. The drawings in Plates I and II were made in this manner. These designs may be changed, but serve as good basic patterns for the furniture being made.

2. Use the photographs and drawings in the appendixes as a basis for improved design. Many teachers would rather improve a design than originate one. The illustrations used in this paper cover many of the basic designs of turnings of furniture from the Fourteenth Century to the Nineteenth Century. These could be modernized and used in present day furniture. For example, the table in Plate XVI was made by reproducing a middle Nineteenth Century organ stool and substituting a drum top for the seat.

3. Use related material to enrich wood turning lectures. A study such as this, where historical and other related materials are considered, should make possible more interesting lectures that will broaden the students' conception of the work. Some data can be used directly from the thesis. Ideas for additional study by the reader might be suggested by this study.

Suggestions for Additional Research

Any research suggests similar study, which would be practical and interesting for the researcher or another student to make at a future date. A few ideas emerging from the preparation of this paper are listed.

Leg Designs of Early American Furniture The most extended part of this thesis has consisted of turned leg designs. Although many early American furniture legs were turned, some of the most interesting (cabriole, square taper, hand-carved single and double spiral) were not and could not be included in this paper. It is believed that a complete study of furniture legs would be of value to the Industrial Arts teacher.

Surface Enrichment in Furniture To a craftsman interested in wood carving, a study of surface enrichment in early furniture would prove

a full and interesting study. The furniture of the Jacobean period was often highly decorated with chip carving, deep carving, spiral carving, inlay, marquetry, and painting. Work of this nature is not often seen in the high school shop, and such a study might popularize this ancient art.

A History of Early Craftsmen To an Industrial Arts student interested in history, biographical material on early craftsmen might make an interesting report. The human nature of these distinguished men should prove an inspiration to any shop man.

A Survey of Museums Featuring Furniture A study that should prove intriguing, if material were fully assembled, has been suggested by casual references encountered in reading. It would have to do with efforts made by various countries to preserve their national history and tradition in furniture. Sweden has an open-air museum at Skansen, Stockholm in connection with the Northern Museum. Denmark has a similar project with the same patriotic purpose. Hayden proposes such an assemblage of furniture in Britain. (8, page 11) The American Wing of the Metropolitan Museum of Art has such an appreciative and far-seeing purpose. A report on these or on the American early homes, such as Mt. Vernon, the Hermitage and Monticello, could be made with emphasis on the furniture. Such a survey, in detail, would make good reading, profitable reference, and a traveler's guide. All should enrich the knowledge and inspire students in woodworking.

A study of design is an illusive topic. If one is not an artist, it is inappropriate to say, "This is a good design, that is a bad one." This paper has attempted to indicate factors of wood turned pieces that have survived criticism many years, and have been enjoyed by the users. It is hoped that the reader will gain a small amount of the pleasure and benefit that the writer has derived in this work.

APPENDIXES

Appendix A Plates I through IX

Appendix B Plates X through XXII

Appendix C A Selected Bibliography

Appendix A

Plates I through IX

Plate I

Finials

Figure a, Banjo clock, early 19th century. (13, pages 32-33)

Figure b, James I oak arm chair, on front legs. (3, page 88)

Figure c, Highboy, middle 18th Century, one of two finials extending down from the bottom front rail. (6, page 93)

Figure d, Oak Tudor chair of approximately 1520, finial on front leg above chair arm. (3, page 15)

Figure e, Highboy, middle 18th Century, finial on front corners and center of pediment. (4, page 93)

Figure f, Oak cradle, Jacobean period, of oak. (8, page 149)

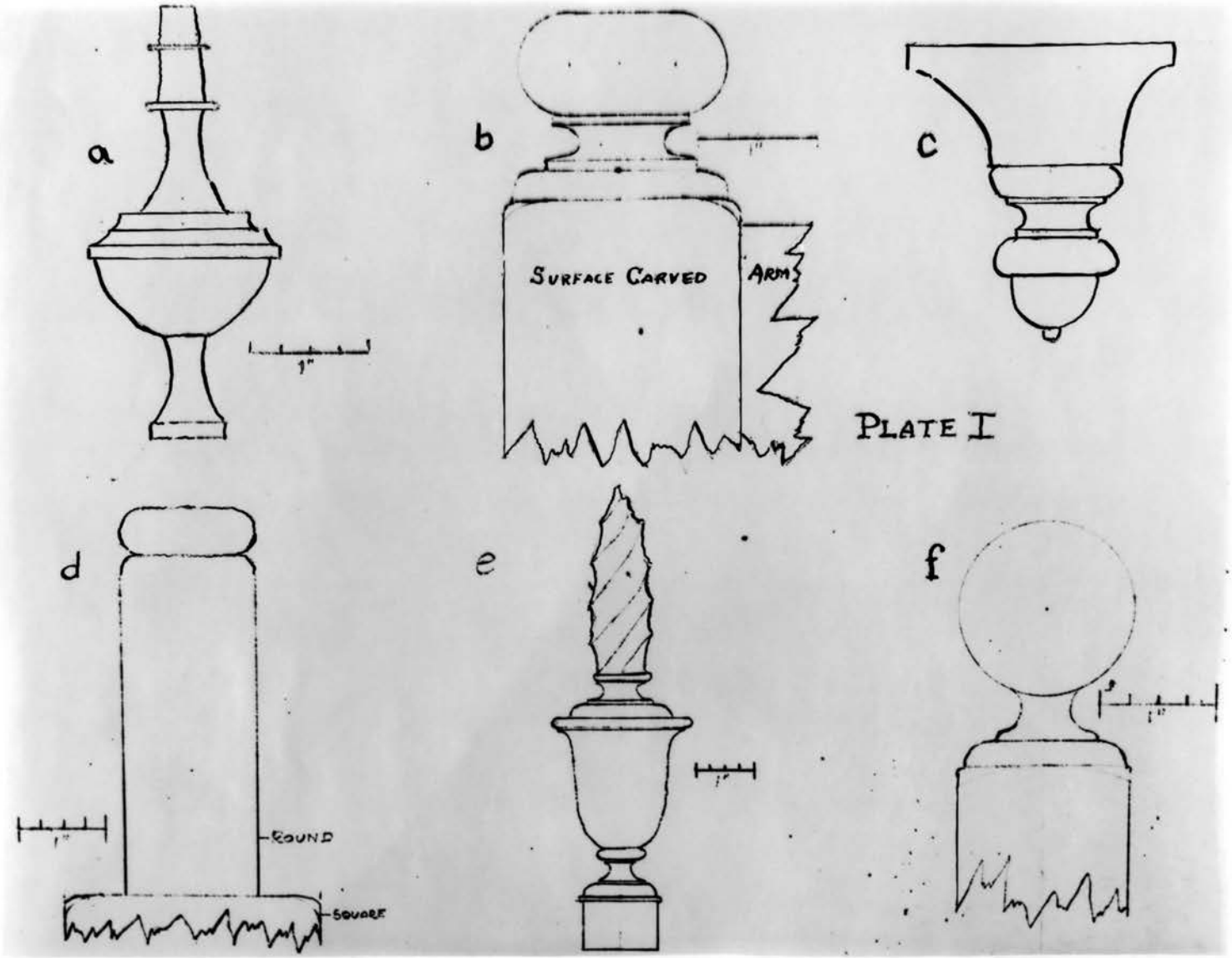

a
1"
b
SURFACE CARVED
ARM
c
PLATE I
d
ROUND
SQUARE
e
f

Plate II

Transitions

Plate II

Transitions

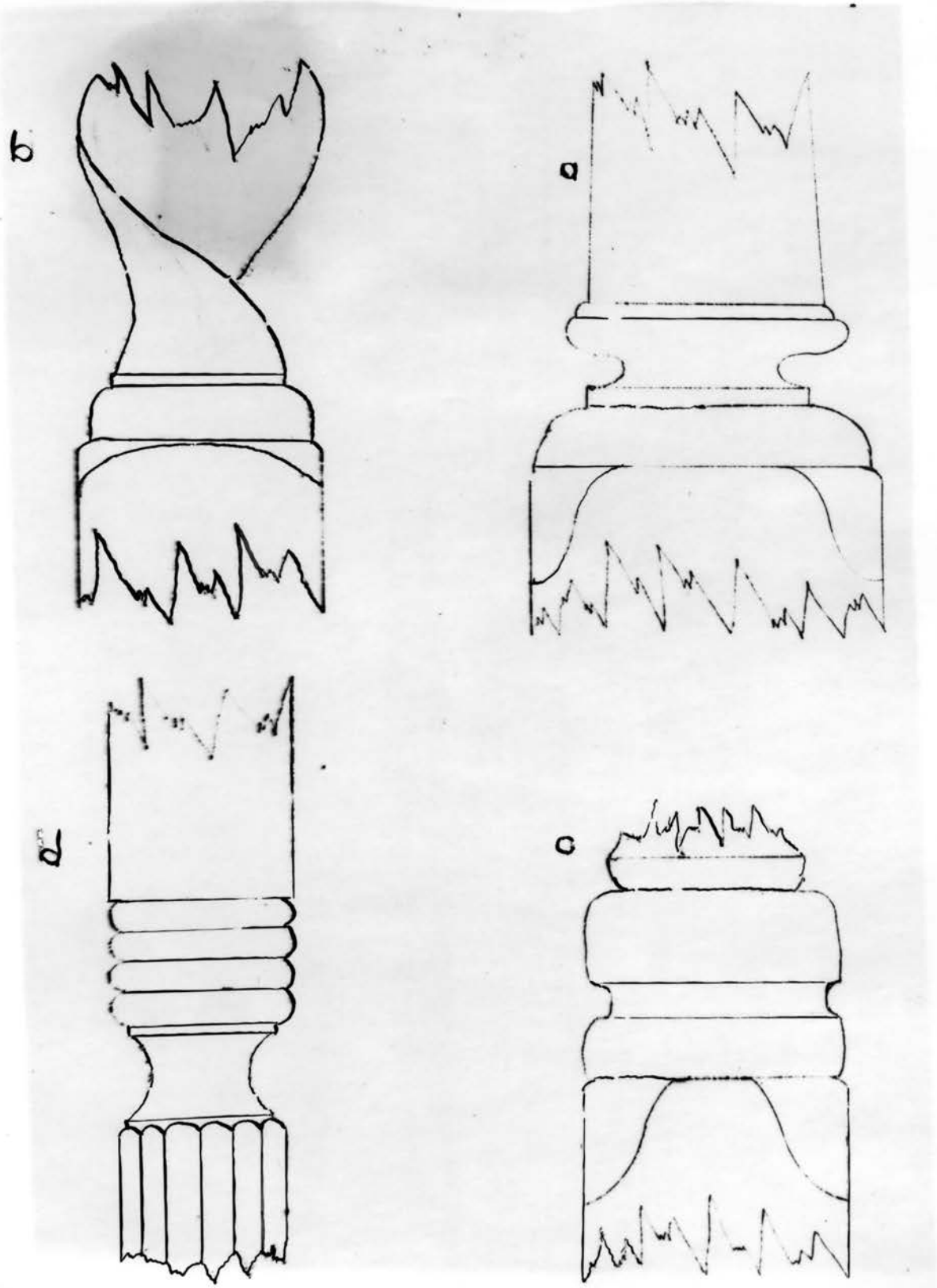

b
a
d
c

Plate III

A "pagoda" type finial seen on a bed in the motion picture, Margie.

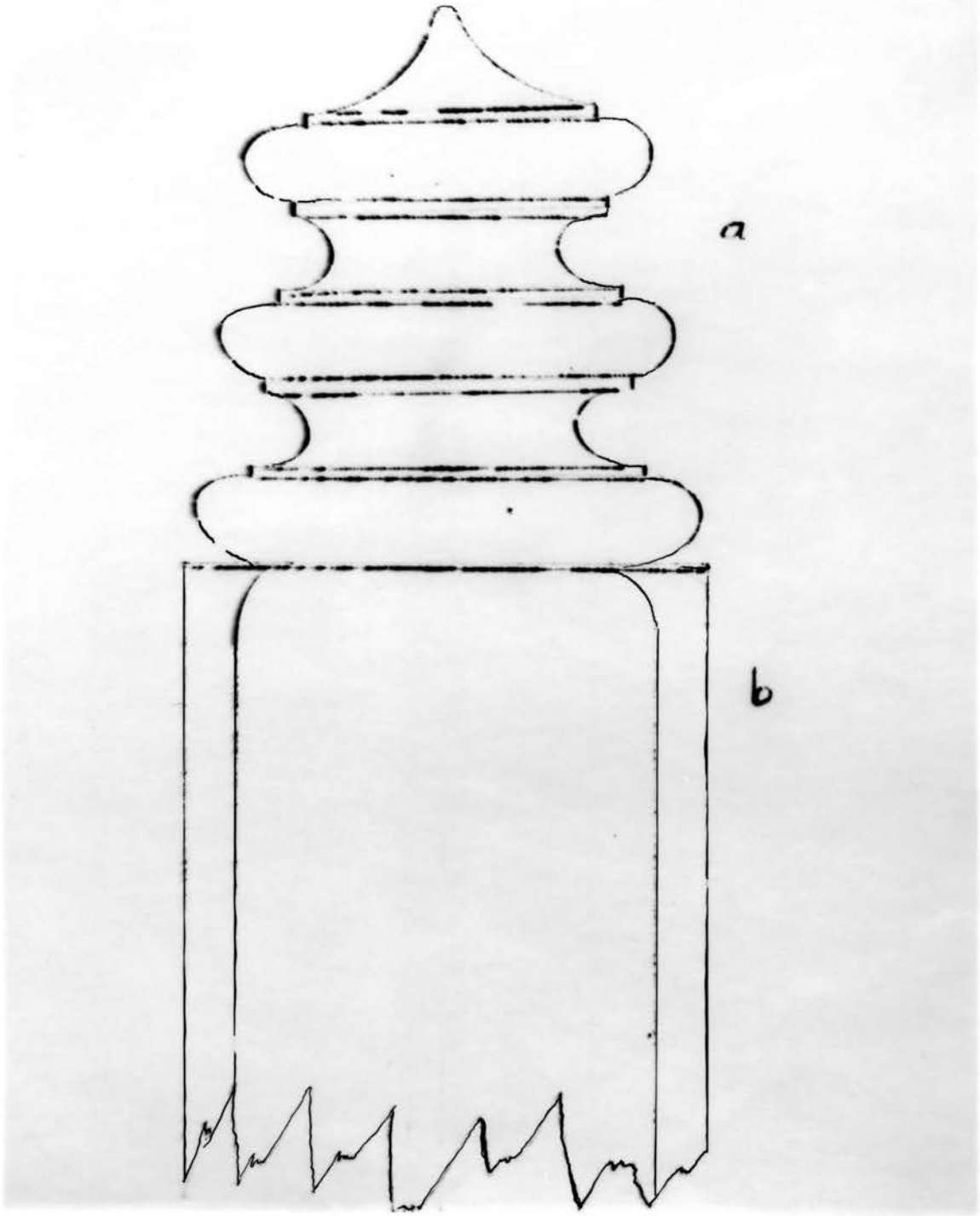

a
b

Plate IV

Different type legs, and the period to which they are attached. (1, page 157)

Figure a,	Bulb-turned	1575-1650
Figure b,	Column-turned	1590-1700
Figure c,	Bobbin-turned	1640-1665
Figure e,	Vase-turned	1645-1711
Figure f,	Baluster-turned	1645-1710
Figure g,	Spiral-turned	1660-1703
Figure h,	Inverted-cup-turned	1689-1705

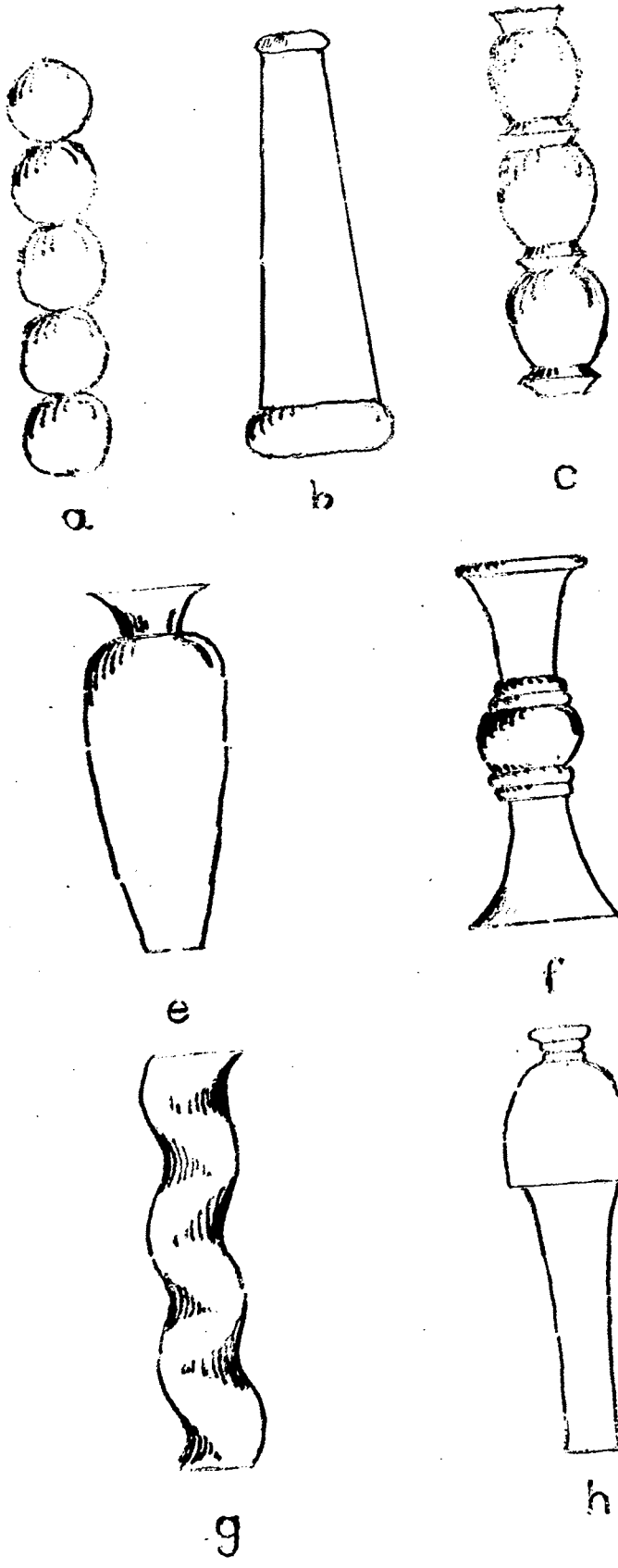

a
b
c
e
f
g
h

Plate V

Cup turning and Trumpet turning, on legs. (6, page 54)

Figure a, Cup turning

Figure b, Trumpet turning

Figure c, Ball with shoe, used with the cup and the trumpet turnings.

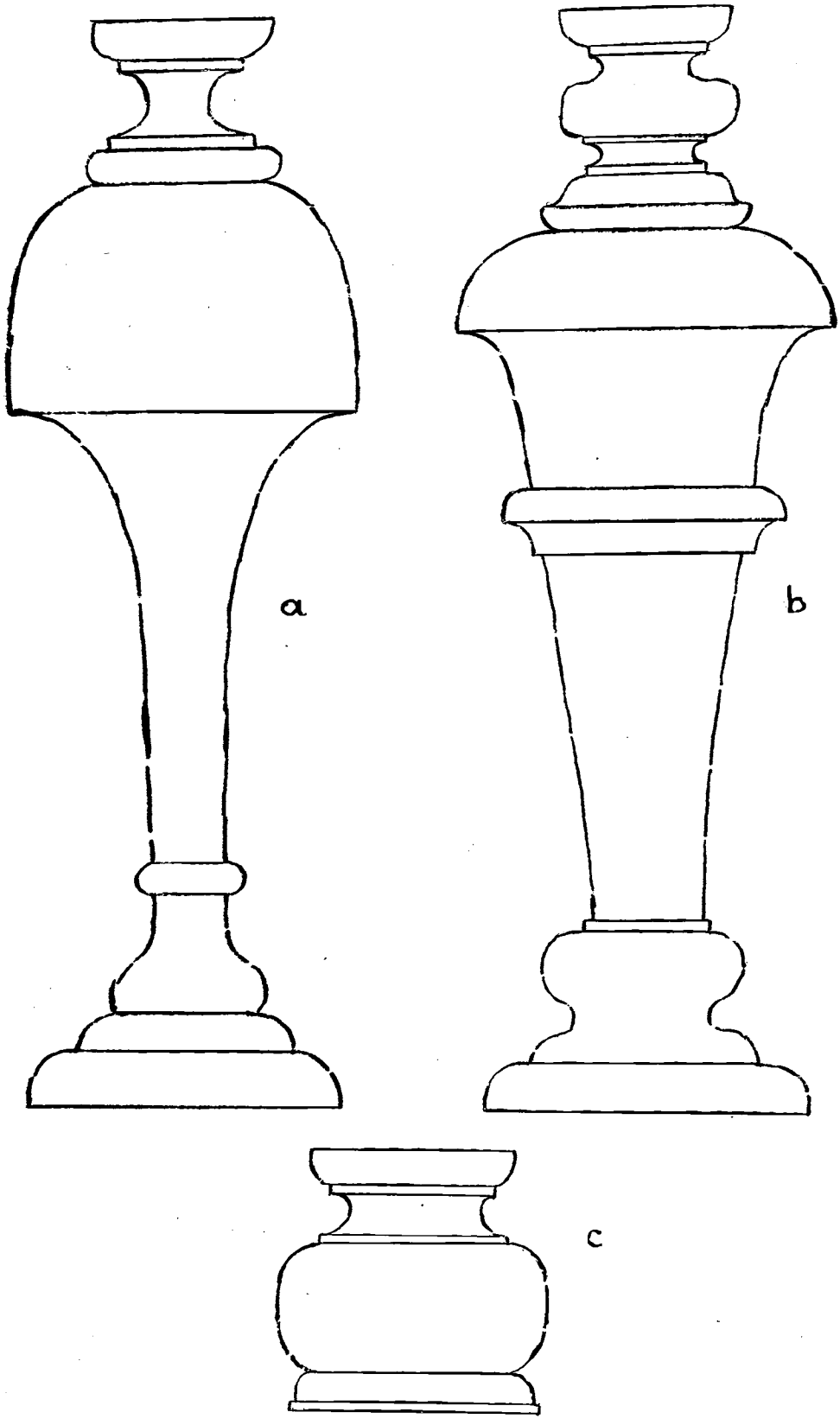

a
b
c

Plate VI

Small table legs.

Figure a, Leg from pine tavern table. (13, page 59)

Figure b, Late 17th Century gate-leg table leg with New York manner turning. (1, Plate LXI)

a

b

Plate VII

Differentiation between reeded and fluted turnings.

Figure a, Reeded leg. (6, page 182)

Figure b, Fluted and painted Sheraton leg.
(6, page 171, figure 134)

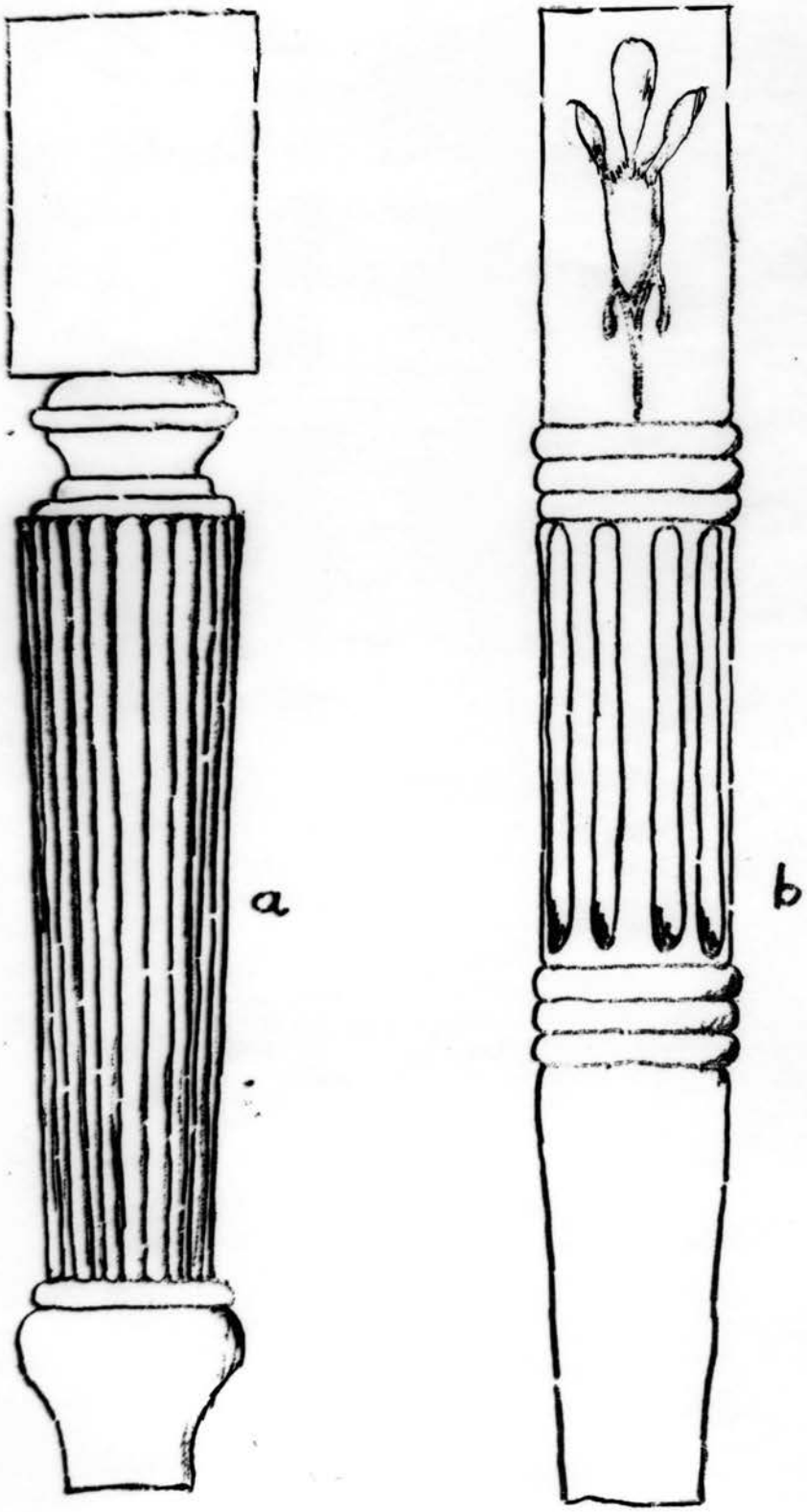

a
b

Plate VIII

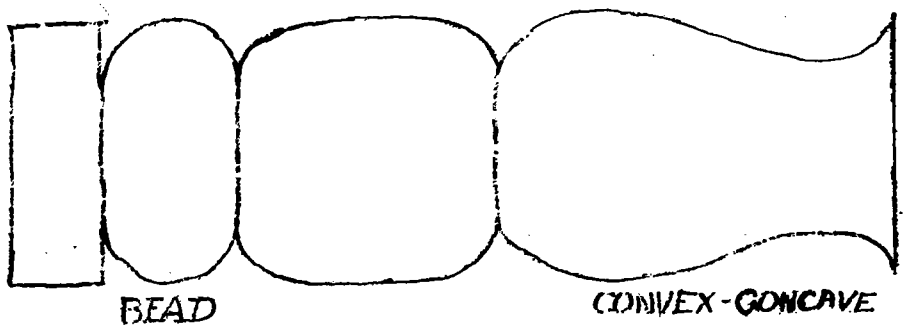
Basic turned designs

Figure a, Convex curves

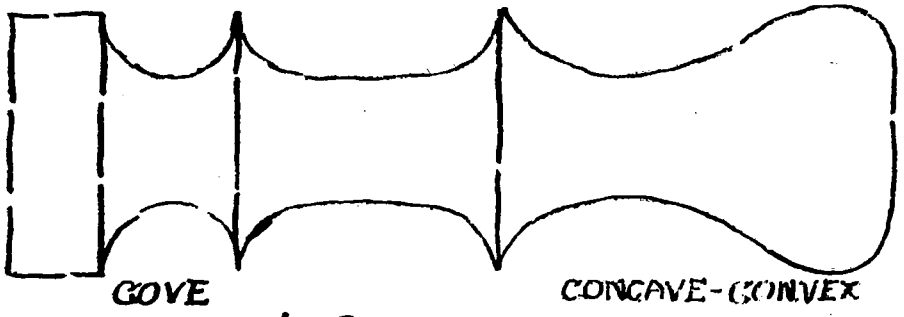
Figure b, Concave curves

Figure c, Tapers

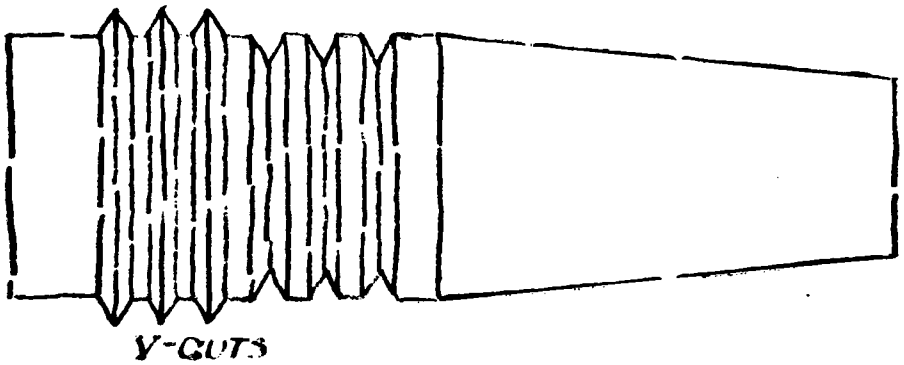
Figure d, Cylinders



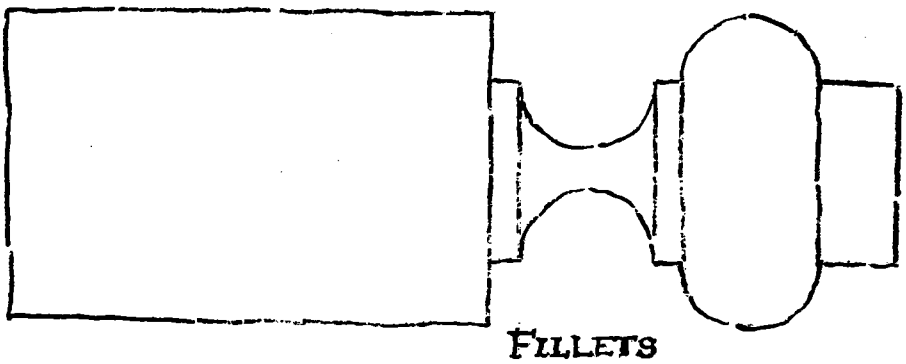
a. CONVEX



b. CONCAVE



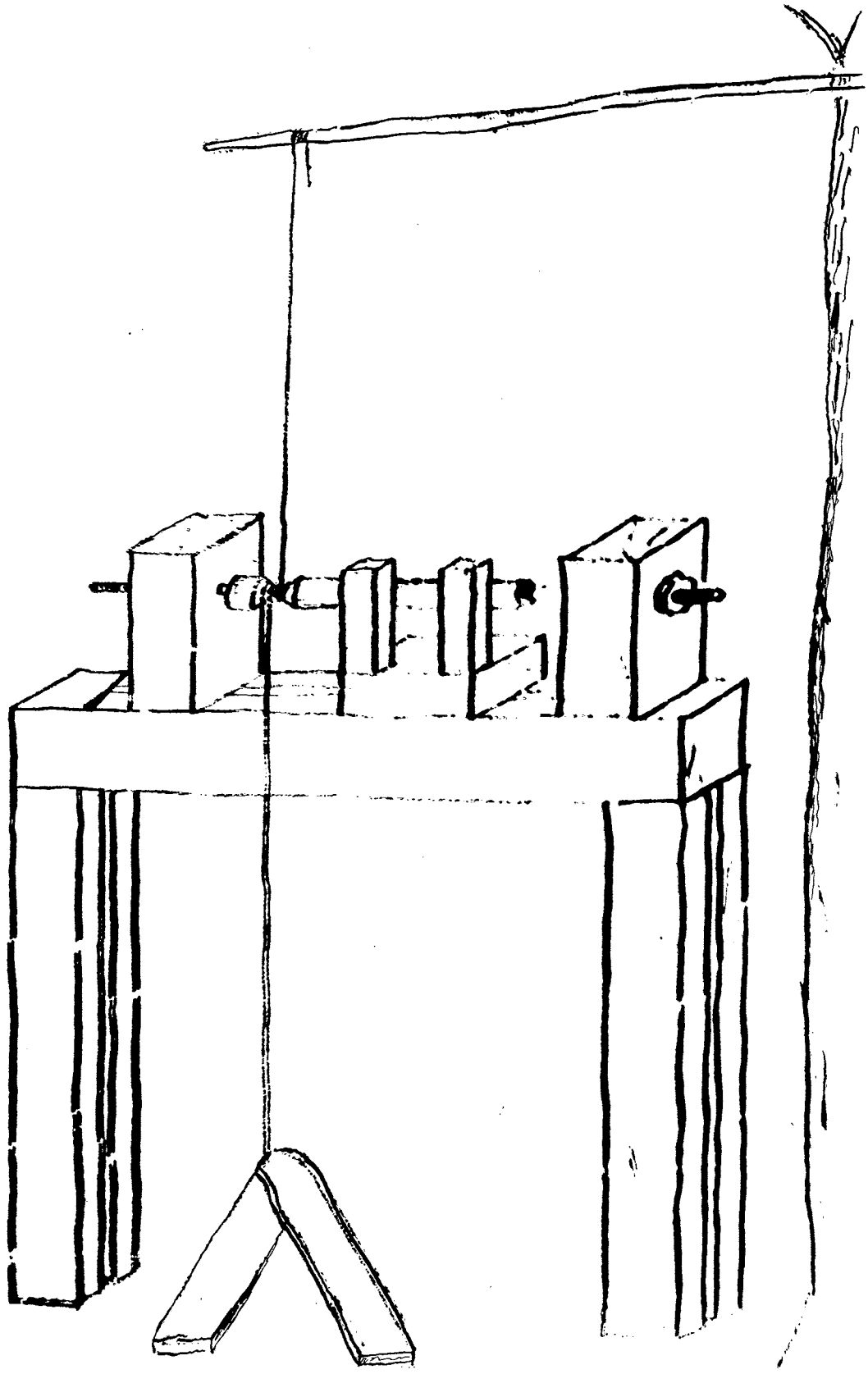
c. TAPER



d. CYLINDER

Plate IX

Early pole lathe. (2, page 420)



Appendix B

Plates X through XXII

Appendix B

Plates X through XXII

Plate X

A drop-leaf dining table made in walnut. The pedestal and legs are from measured drawings of a Duncan Phyfe table.

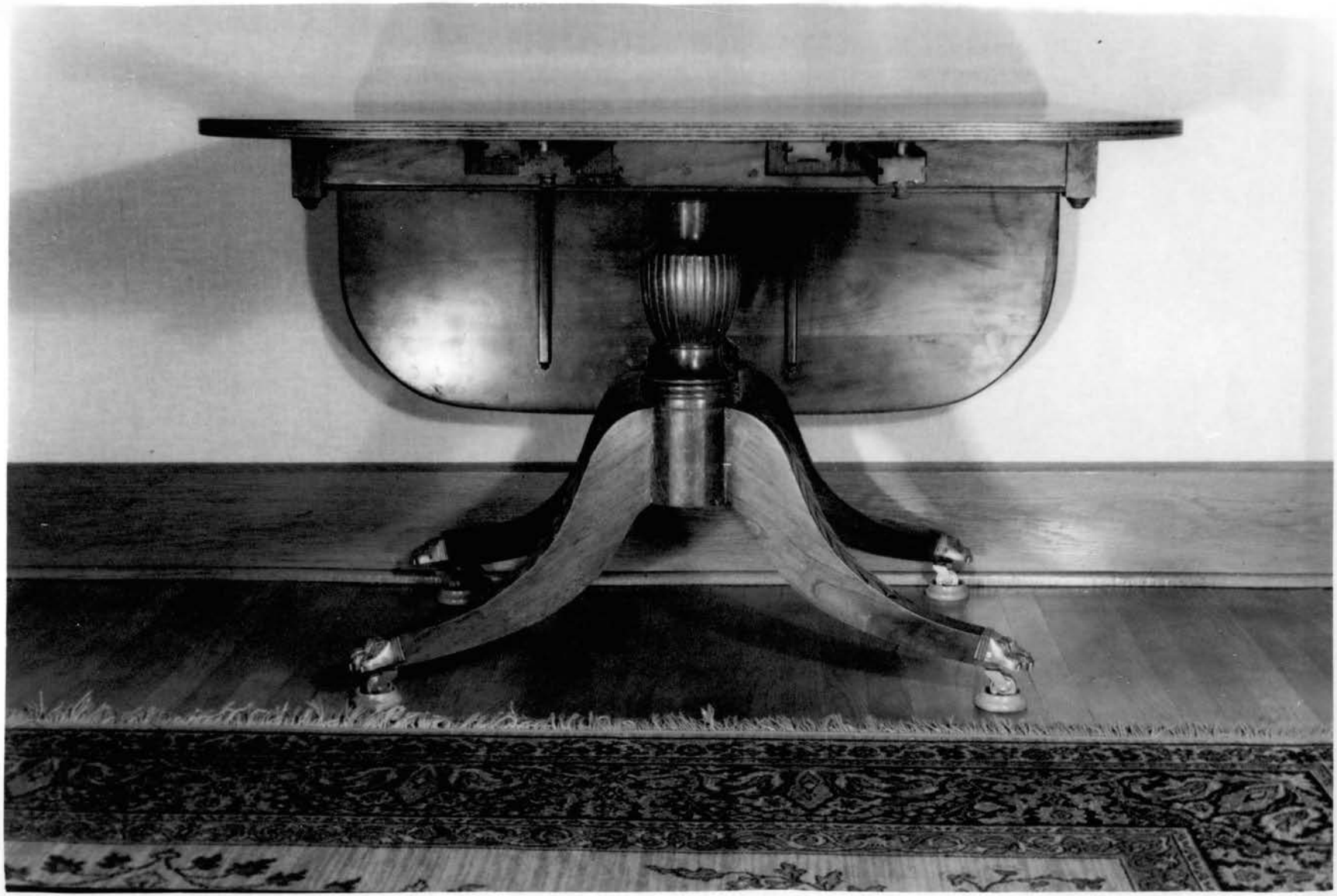


Plate XI

Another view of the table of Plate X.

Plate XI

Another view of the table of Plate X.

Plate XII

Two matching drop-leaf tables forming a large dining table. The tables are connected with brass fastenings and a fillet board to fill the rounded corners. The table was bought near or in New York in 1828, and is believed by the owner to be a product of Phyfe. Although the quality of workmanship is good, it does not seem up to Duncan Phyfe's perfection.

Plate XIII

A Duncan Phyfe style drum-top table. The entire top was mounted on a lathe and turned round. Veneer was applied to the rail-section of the drum top.

Plate XIV

A detailed photograph of the turning and the gate construction of a typical gate-leg table.

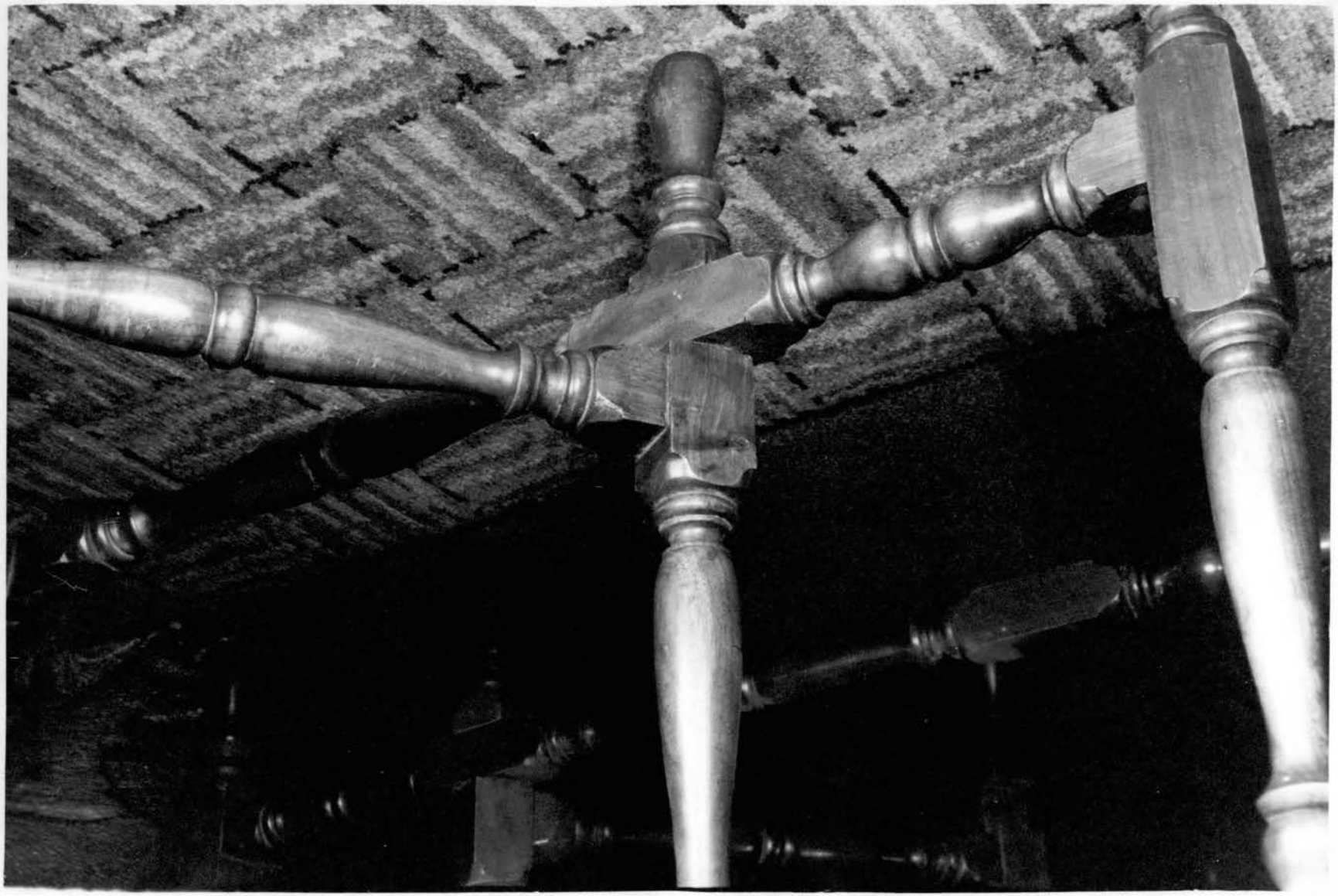


Plate XV

An occasional table of the latter Nineteenth Century, showing the turned center post and inverted tear-drop finial which were popular in this period.

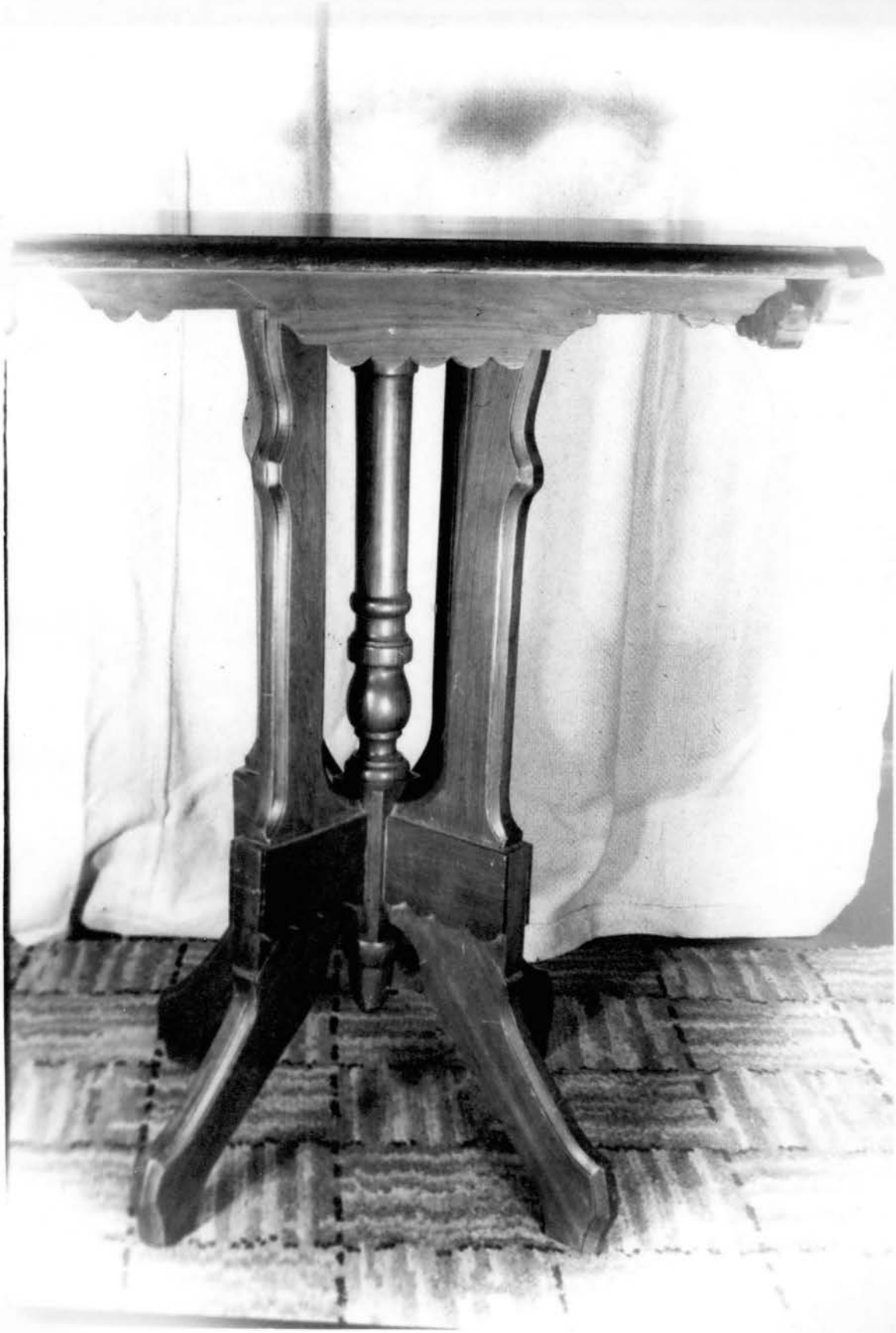


Plate XVI

An occasional table made after a typical Nineteenth Century organ stool. The base was made from measured drawings of the stool base, and the top added.

Plate XVII

An old oak rocker showing the turnings. The stretcher under the seat is inconspicuous and gives considerable rigidity to the structure.

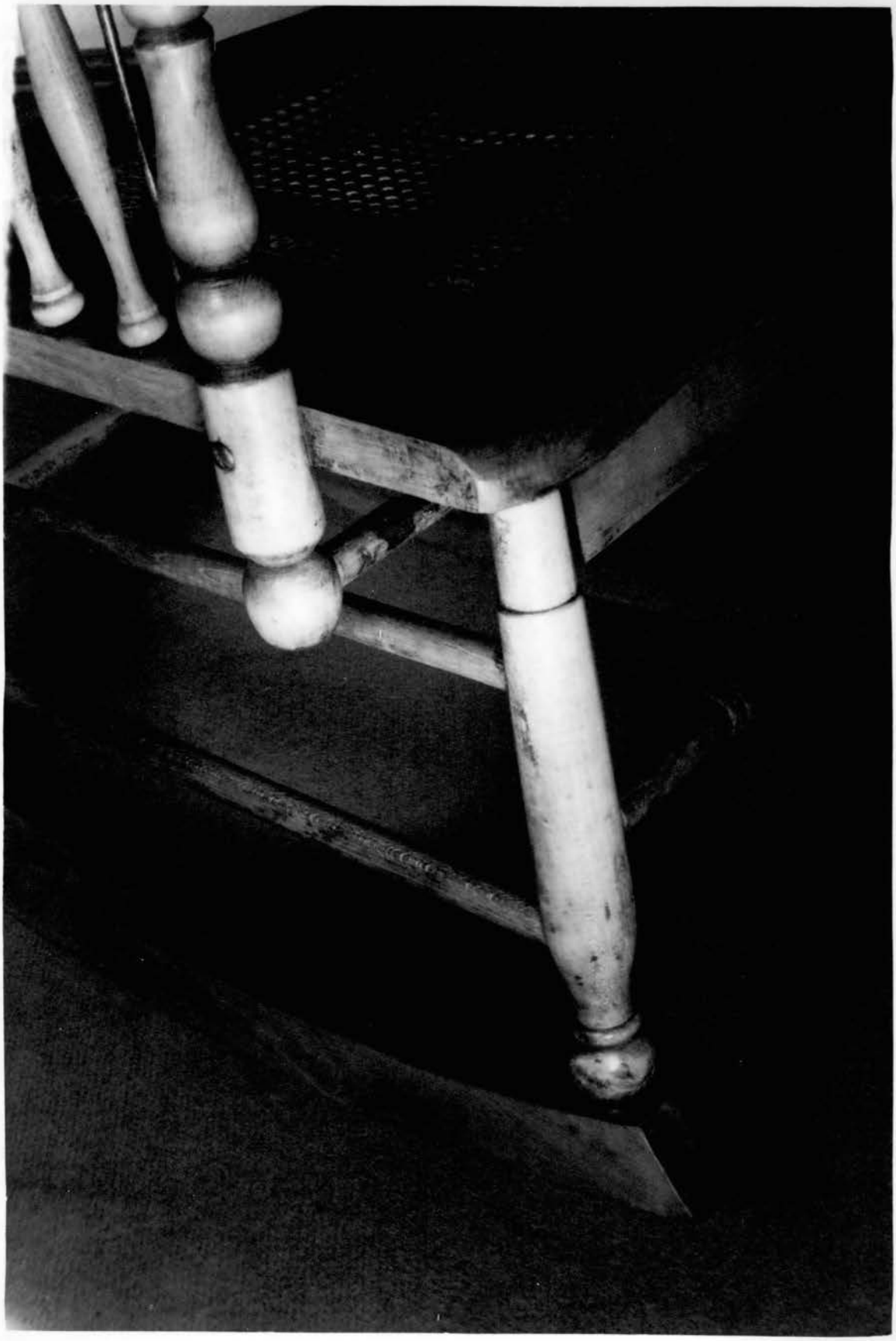


Plate XVIII

A child's rocking chair of almost complete turned structure. Excellent examples of cylindrical turnings are illustrated. Notice the finials at the tops of the back.

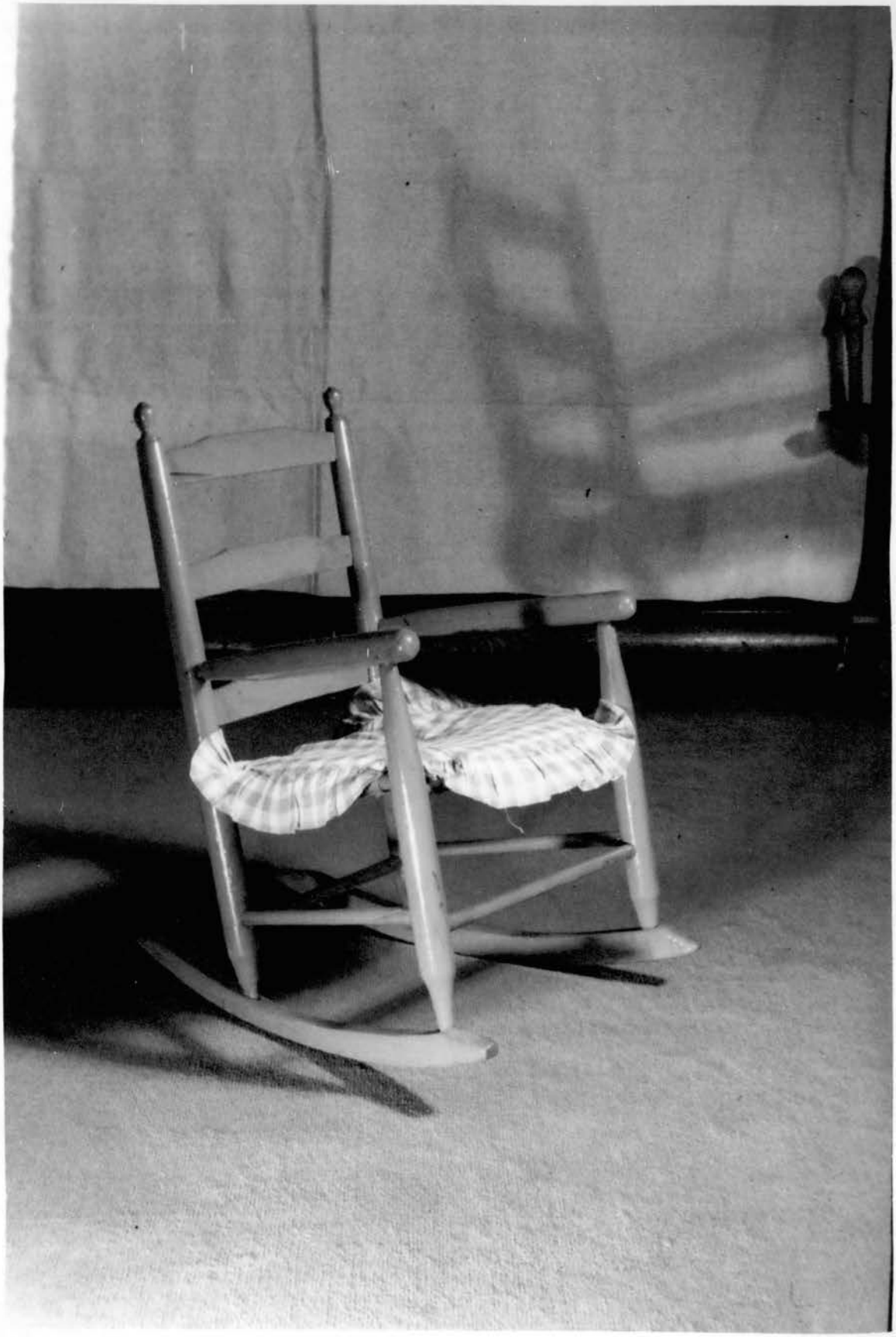


Plate XIX

The baluster and spindles on a stairway of about 1850, turned in walnut. The spindles show excellent workmanship and clean cut design. The baluster displays a fine example of the massive finial and carved surface decoration.

Plate XX

The spinning wheel is almost wholly a product of the lathe. Notice the finial at the left, which serves as a handle to aid in moving the wheel.

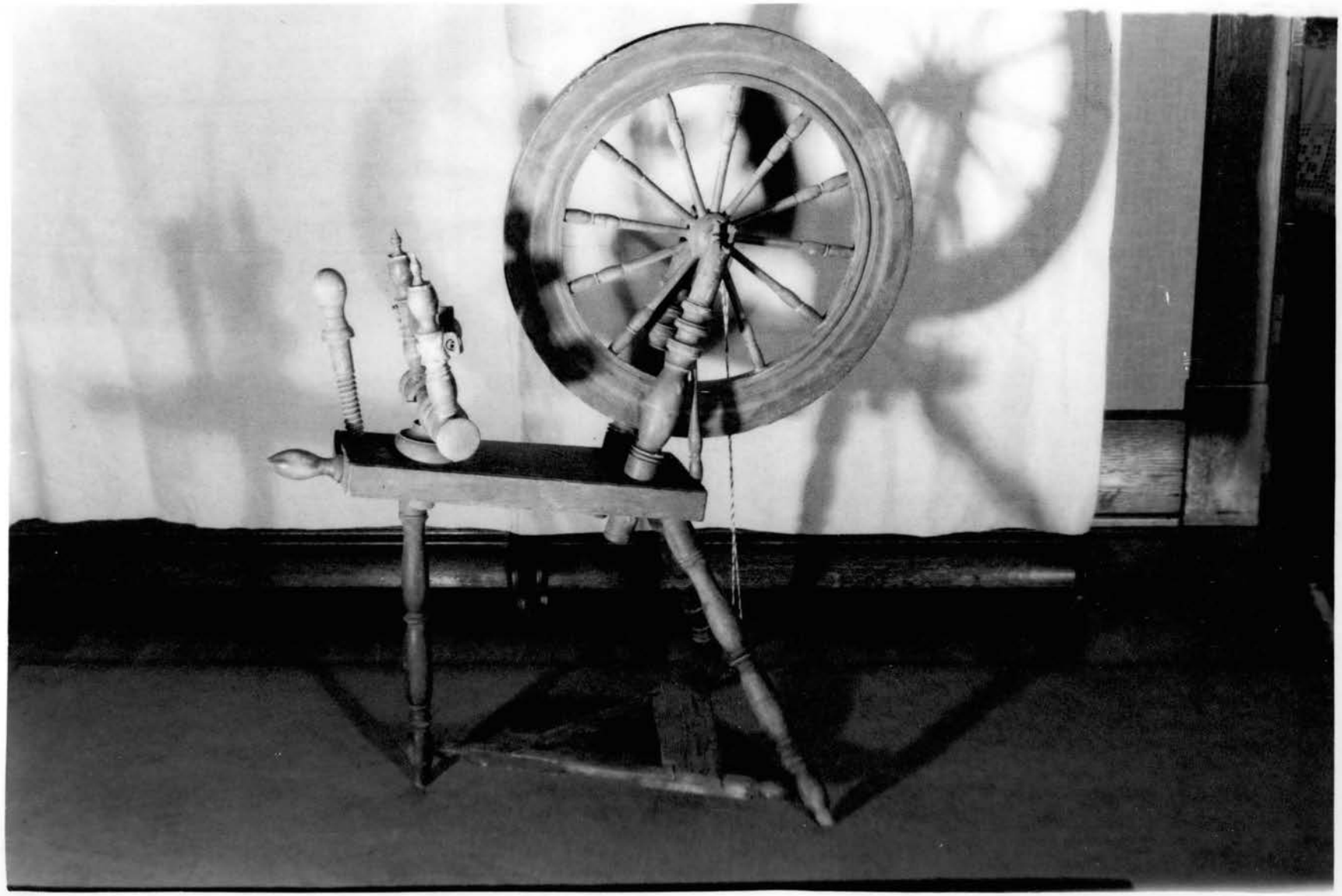


Plate XXI

A turned mortar and pestle of ligmum vitae. This implement was made and used in South America and came to southern Kansas by way of Nantucket.

Plate XXII

An old organ stool showing well proportioned turned portion and interestingly formed metal legs. The finish appears to be black Japan lacquer.

Appendix C

A Selected Bibliography

A SELECTED BIBLIOGRAPHY

The following list is not intended to furnish a general bibliography, but merely to suggest to the reader a selection of important works bearing on the problem under consideration and including works examined in the present study.

Material, non-applicable, has been excluded, as are books and articles that have been superseded by more recent work.

1. de Bles, Major Arthur, Genuine Antique Furniture, Garden City Publishing Company, Inc., Garden City, N. Y., 1929, 376 pages.

   This volume is a condensed practical study of antique furniture and the historical events which led to steady, forward-moving development in design.

2. Burlingame, Roger, March of the Iron Men, Charles Scribner's Sons, New York, 1938, 500 pages.

   A readable history of industrial development.

3. Cescinsky, Herbert, English Furniture from Gothic to Sheraton, Garden City Publishing Company, Inc., Garden City, N. Y., 1937, 406 pages.

   Issued in 1929 at a price of twenty-five dollars, the first edition sold out and the publishers reissued the book. It contains more than nine hundred illustrations. The author's preface is instructive and inspiring. Referring to his seven preceding volumes, the author says, "In this book, I have set down all I know on the subject in the most concise way."

4. Editorial staff of Popular Science Monthly, Amateur Craftsman's Cyclopedia, Grosset and Dunlap, New York, 1937, 342 pages.

   Contains a large number of crafts tricks, model making, plastics, furniture making, etc. Small amount of wood turning.

5. Encyclopaedia Britannica, Volume 13, Encyclopaedia Britannica, Inc., Chicago, 1946.

6. Halsey, R. T. H. and Tower, Elizabeth, The Homes of Our Ancestors, Garden City Publishing Company, Inc., Garden City, N. Y., 1937, 302 pages.

   The two authors emphasize value of American traditions and development of an American style of its own.

7. Harmes, Earl, Furniture for the Amateur Craftsman, The Bruce Publishing Company, Milwaukee, 1940, 79 pages.

A brief discussion of woodwork and finishing. Few small projects, mostly medium and difficult. Photographs and working drawings included. It is an attractive book, with excellent drawings and good designs.

8. Hayden, Arthur, Chats on Cottage and Farmhouse Furniture, T. Fisher Unwin Ltd., London, 1912, 350 pages.

A companion volume to "Chats on Old Furniture," the content of which begins with Renaissance on the continent. A delightfully readable work, specific in detail and well-proportioned in treatment of material. Abundance of illustrations.

9. Hjorth, Herman, Principles of Woodworking, The Bruce Publishing Company, New York, 1930, 307 pages.

Practical guide to technical problems, carefully illustrated. Chapter XIII on wood turning and Chapter XIV on surface decoration are specific in regard to use of wood turning tools and principles and methods of surface decoration.

10. Hooper, Rodney, Modern Furniture Making and Design, The Manual Arts Press, Peoria, Illinois, 1939, 160 pages.

Excellent photographs and good drawings of modern furniture of excellent design. Mostly large pieces are featured. Discussion of design of each style of furniture.

11. Klenke, William W., Selected Furniture Drawings, The Manual Arts Press, Peoria, Illinois, 1930, 66 pages.

A brief discussion of use of machines. Suggestions of design. Book mostly of projects including photographs and working drawings.

12. Osburn, Burl N. Lectures delivered at the Third Annual Oklahoma State Industrial Arts Clinic, Stillwater, Oklahoma, May 26-30, 1947.

13. Osburn, Burl N. and Osburn, Bernice, B., Measured Drawings of Early American Furniture, The Bruce Publishing Co., Milwaukee, 1934, 94 pages.

A book containing excellent drawings of representative and beautiful American furniture.

14. Shea, John Geral, Colonial Furniture, The Bruce Publishing Co., New York, 1935, 180 pages.

Photographs and working drawings of excellent colonial furniture designs. Good projects for high school wood turning classes in connection with cabinet making.

15. Singleton, Esther, The Collecting of Antiques, The Macmillan Company, New York, 1941, 338 pages.

Discussion of old china, silverware, glass, furniture,clocks, textiles, metal-work.

16. Wakeling, Arthur (edited by), Home Workshop Manual, Popular Science Publishing Co., New York, 1930, 502 pages.

A manual of all phases of shop practices. Has few good designs, but many short-cuts and kinks for shop work.

17. Williamson, Scott Graham, The American Craftsman, Crown Publishers, New York, 1940, 239 pages.

A late publication of crafts work, including such topics as furniture makers, Wedgwood, glass, weaving and bookmaking. Ample space is devoted to Duncan Phyfe. Outstanding are the author's social observations.

Typed by: Mrs. Ardis Montgomery