



Wallpapers in Historic Preservation

Office of Archeology and Historic Preservation

National Park Service

U. S. Department of the Interior



CATHERINE LYNN FRANGIAMORE

Wallpapers in Historic Preservation

*Technical Preservation Services Division
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As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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FOREWORD

Under Executive Order 11593, signed May 13, 1971, the Secretary of the Interior was given the responsibility for developing and disseminating "to Federal agencies and State and local governments information concerning professional methods and techniques for preserving, improving, restoring and maintaining historic properties." To meet the Secretary's responsibilities, the Technical Preservation Services Division, Office of Archeology and Historic Preservation, National Park Service, is preparing a series of publications on the technical aspects of historic preservation for use by administrators, architects, and others at the Federal, State, and local levels involved with the preservation and maintenance of cultural resources.

This preliminary report, "Wallpapers in Historic Preservation," was written by Catherine Lynn Frangiamore, Curator of The Atlanta Historical Society, Georgia, formerly Assistant Curator of the Decorative Arts Department at the Cooper-Hewitt Museum of the Smithsonian Institution, New York.

Two staff members made substantial contributions toward the publication of this report as part of the Preservation Handbook series: Carole L. Perrault, Architectural Historian, who assisted in developing the initial subject outline and editing of the first draft; and Sarah M. Sweetser, Architectural Technician, who worked with Mrs. Frangiamore in the development of the manuscript into its published form. The final manuscript was copy edited by Betty J. Berry, Writer/Editor, National Register Division.

Comments and suggestions regarding additions or changes prior to final publication are encouraged and should be sent to Lee H. Nelson, Preservation Handbook Editor, Technical Preservation Services Division, Office of Archeology and Historic Preservation, National Park Service, U.S. Department of the Interior, Washington, D.C. 20240.

W. BROWN MORTON III
Departmental Consultant for Historic Architecture
Chief, Technical Preservation Services Division



Introduction

The papered and bordered wall was an important feature of American interiors during the 18th, 19th, and early 20th centuries. Paper hangings, both imported and of domestic manufacture, were more widely used than many of our restored buildings might lead us to believe. In the late 17th and early 18th centuries, not only were American walls whitewashed, painted, and "wainscoted," but they were also hung with a variety of materials. An English visitor of 1750, James Birket, commented on the number of rooms in Newport, Rhode Island, that were hung with printed canvas and paper.¹ There is also documentation in the 18th century for the use of leather and textile wall hangings in this country.

As early as 1700, wallpapers were recorded among the stock of a Boston merchant, and by the late 18th century, paper hangings were available to the middle class as well as to the rich. American advertisers claimed that "the low prices at which they will be sold will make papering cheaper than whitewashing." Easily transported, papers were available at surprisingly early dates not only in the seaboard urban centers, but also in the back country.

During the 1840's, industrialization transformed the business of producing wallpapers and made them affordable in the average household. An appetite for papers was stimulated by manufacturers: their advertisements in this period promoted wallpaper for use in churches, banks, and offices, as well as in houses. The resulting popularity of patterned walls is reflected in statistics of soaring production. In 1840, observers of the

industry reported that this country produced two million rolls of paper. By the 1880's paper was the standard wall finish and production rose to 100 million rolls in 1890. This wallpaper craze continued until World War I, for almost every imaginable use, from nursery to butcher shops. Architects increasingly specified wallpapers for their designs, and many examples of the late 19th-century period survive both on site and in photographs.

Today, wallpaper is rarely given adequate consideration in the restoration of interiors. However, it should be remembered that 18th- and 19th-century owners, architects, and builders may have visualized certain spatial effects of light, warmth, mood, and proportion dependent on the use of wallpaper—effects which are completely distorted when the walls are painted a solid color. Therefore, attempts to create rooms in restored houses require careful consideration of the appropriate interior wall finish. The likelihood that wallpaper may have been used should be recognized and investigated. Whether the objective is to accurately restore an interior to a specific date, or to convey the feeling of a period, wallpaper can contribute positively to the overall success of a restoration.

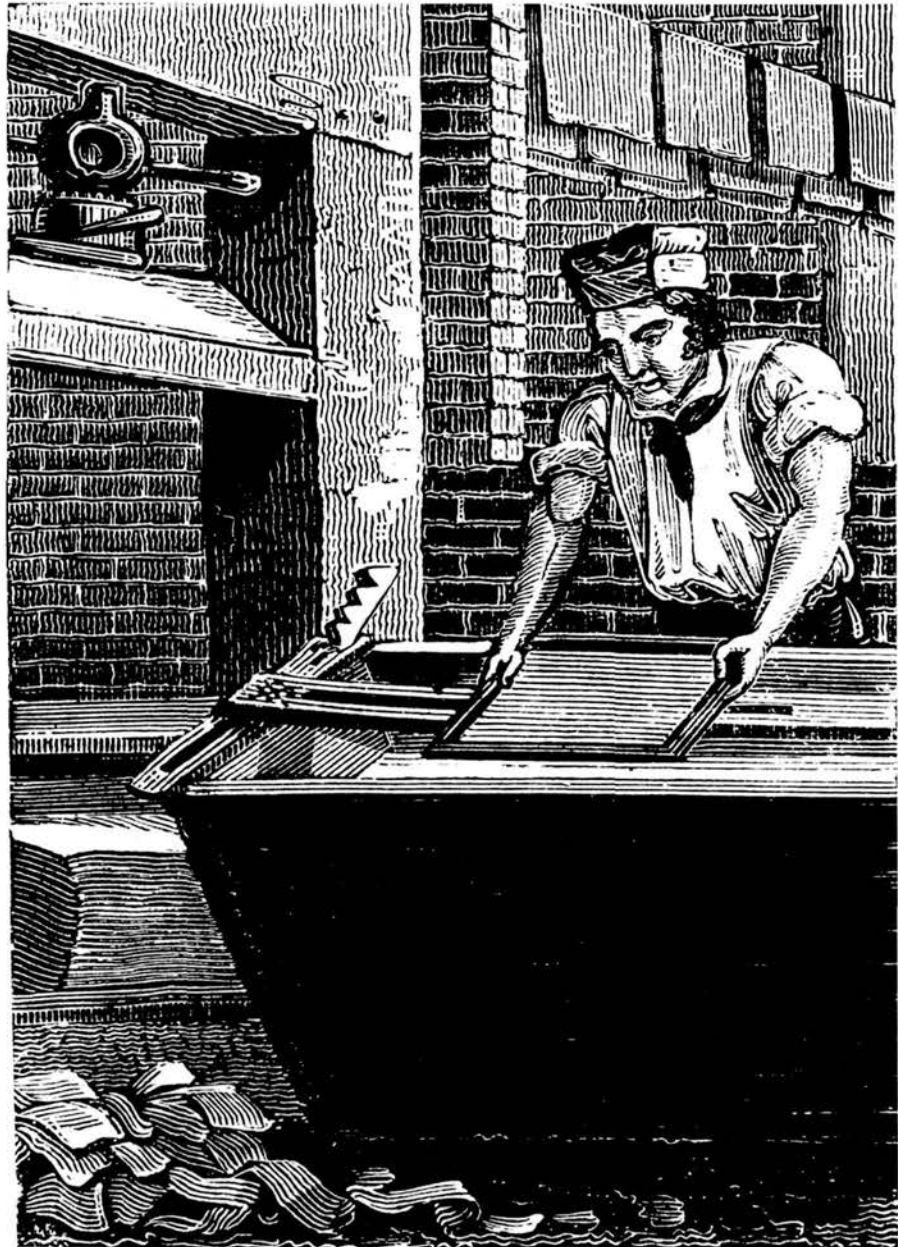
Striving for an accurate restoration, a high level of objectivity must be maintained and the evidence carefully considered. There are some pitfalls to avoid in choosing the paper. Not just any paper will achieve the proper historical ambience, and finding the proper documented paper is not always easy. Many expensively restored late 19th-century rooms have been unwittingly papered with reproductions of distinctly 18th-century

¹James Birket, *Some Cursory Remarks Made by James Birket in his Voyage to North America, 1750-1751*. (New Haven: Yale University Press, 1916), p. 8. (Reprint from original manuscript in the Library of Congress).

patterns which were readily available. The personal tastes of the board of directors, local decorators, influential donors or volunteer committees can pose great problems. Often, after professional research reveals the actual paper that was used in a room, the results are ignored by members of an influential committee who consider the paper ugly and therefore “inappropri-

ate.” The impulse to decorate in conformity with 20th-century taste is commonly allowed to prevail, but should be suppressed. If paper is to be hung, patterns consistent with any evidence found *in situ*, or contemporary to the restoration target date and the type of room, should be carefully chosen.

Figure 1: Making Paper—An English engraving printed for F.C. and J. Rivington in 1821 shows a papermaker plunging his mold into a vat filled with pulp made from old rags, water and other ingredients. He is about to scoop a small quantity of pulp and water onto the wire surface of the bottom half of the mold known as the “frame.” The “deckle” or top half of the mold will then hold the pulp mixture in place while the water drains out and the pulp has dried. The product will then be further dried, pressed, and flattened in the press seen at the left, and finished as paper. In this process, the mold could be no larger than the papermaker could handle and that, in turn, restricted the finished size of a sheet of paper.



Historic Wallpaper Technology

In determining the age of wallpaper, the most reliable clues are the signs of the technology used to make it. Distinguishing handmade paper from machine-made, and traditional block printing from machine printing can help determine the date a paper was made. Information about the age of a wallpaper can, in some cases, help to establish the date of a wall or of architectural changes within a building.

HANDMADE PAPER

Wallpaper manufactured before ca. 1835 consisted of small sheets of paper, pasted together to form the length long enough to extend from floor to ceiling. The special class of paper known as "hanging paper" was described in the 18th century as "made from the coarsest and cheapest rags and woolen stuff." It was rarely bleached white, but by modern standards it was of high quality and strong. The size of handmade paper was limited by the size of the mold. The mold was made up of two parts, a deckle and a frame, and was limited to a size that could be easily handled (figure 1).

The individual sheet that made up a "piece" or a roll of wallpaper were not uniform in size, but usually were smaller than 22 by 32 inches. Early in the 18th century, most paper "stainers" printed sheets which were then pasted individually to a wall. But by mid-century, the sheets were usually pasted together to form rolls before any coloring was applied. The standard length of a "piece" of joined wallpaper, formed from the individual sheets, was established by English excise officials at 12 yards and most were 23 inches wide.

Horizontal seams in a length of wallpaper are good evidence of handmade paper (as described above) and likely suggests that it predates ca. 1835. Such seams are the first item to look for, and this can be done by shining a strong beam of light, held close to the wall, horizontally across the surface. Under this raking light almost any irregularity on the wall should become apparent in the resulting shadows. Indications of seams between the sheets and between the lengths of wallpaper could appear, even under a coat of paint. However, if subsequent layers of paper have been applied over a handmade paper, evidence of seams could be hidden by the smoother surfaces.

If an edge of the paper can be uncovered, evidence of the handmade process might be indicated by the slightly ruffled or "deckle edge" caused by the uneven drainage of the water from the top half of the mold (called the deckle). Although for stationery and other fine papers, deckle edges are sometimes imitated on machinemade products, there is no evidence that this was ever done on hanging papers.

If only small fragments of paper are found, examination under magnification will distinguish between the multidirectional patterns of the fibers characteristic of the handmade process, or the regular vertical alignment of machine-made paper. The paper should also be examined over a strong light for the imprint of the wires that made up the surface of the frame on which the pulp was pressed under the deckle to form the sheet. Other characteristics of handmade paper which might appear include watermarks, sometimes visible in areas where opaque coloring has not been thickly applied to the paper, and tax stamps. A royal in-

Figure 2: Stenciling with Block Printing—An early 18th-century French pattern printed in black with stenciled washes of red, green, yellow and blue, is shown here in a piece 14 inches wide and 20¾ inches high.

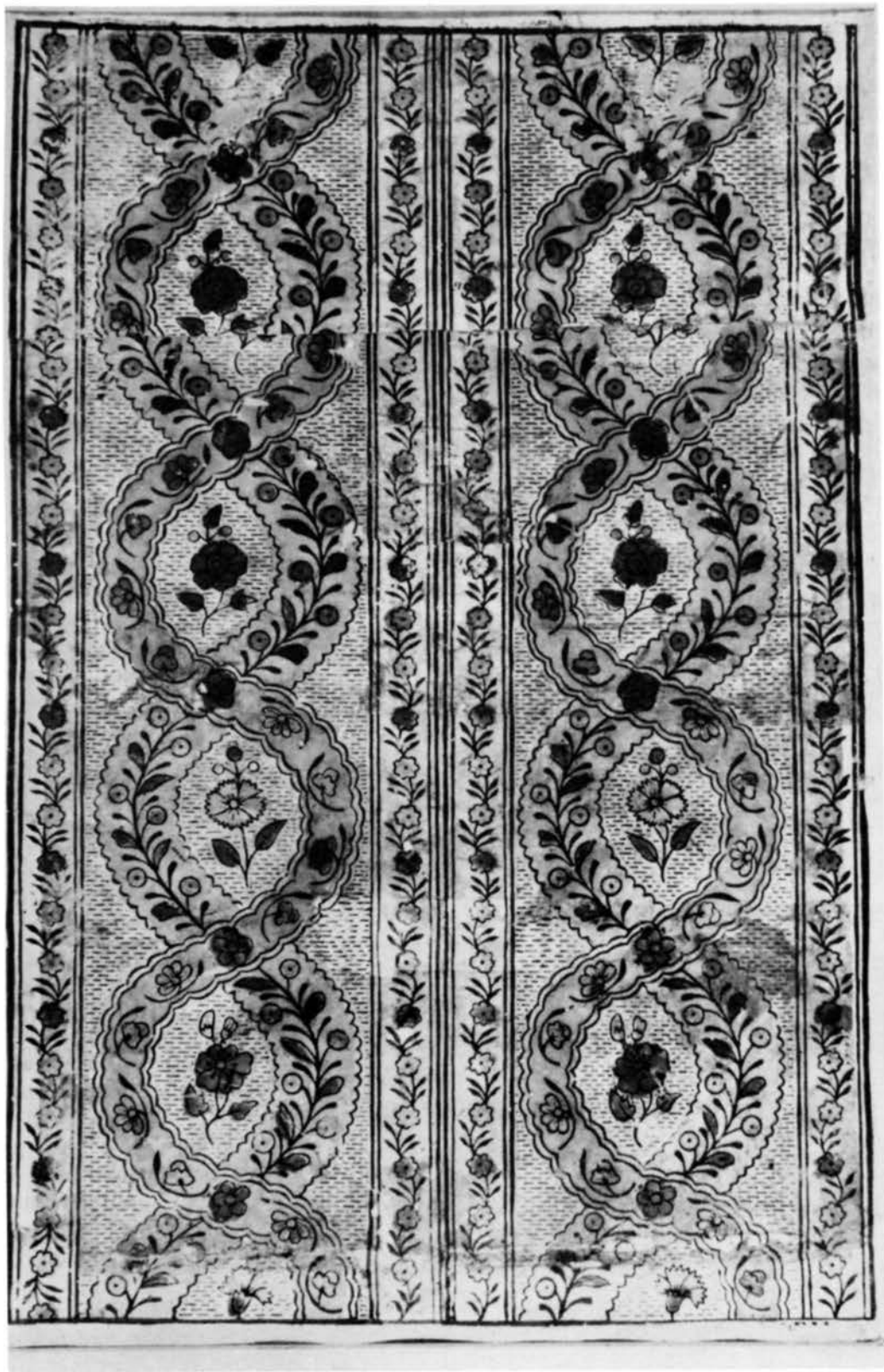
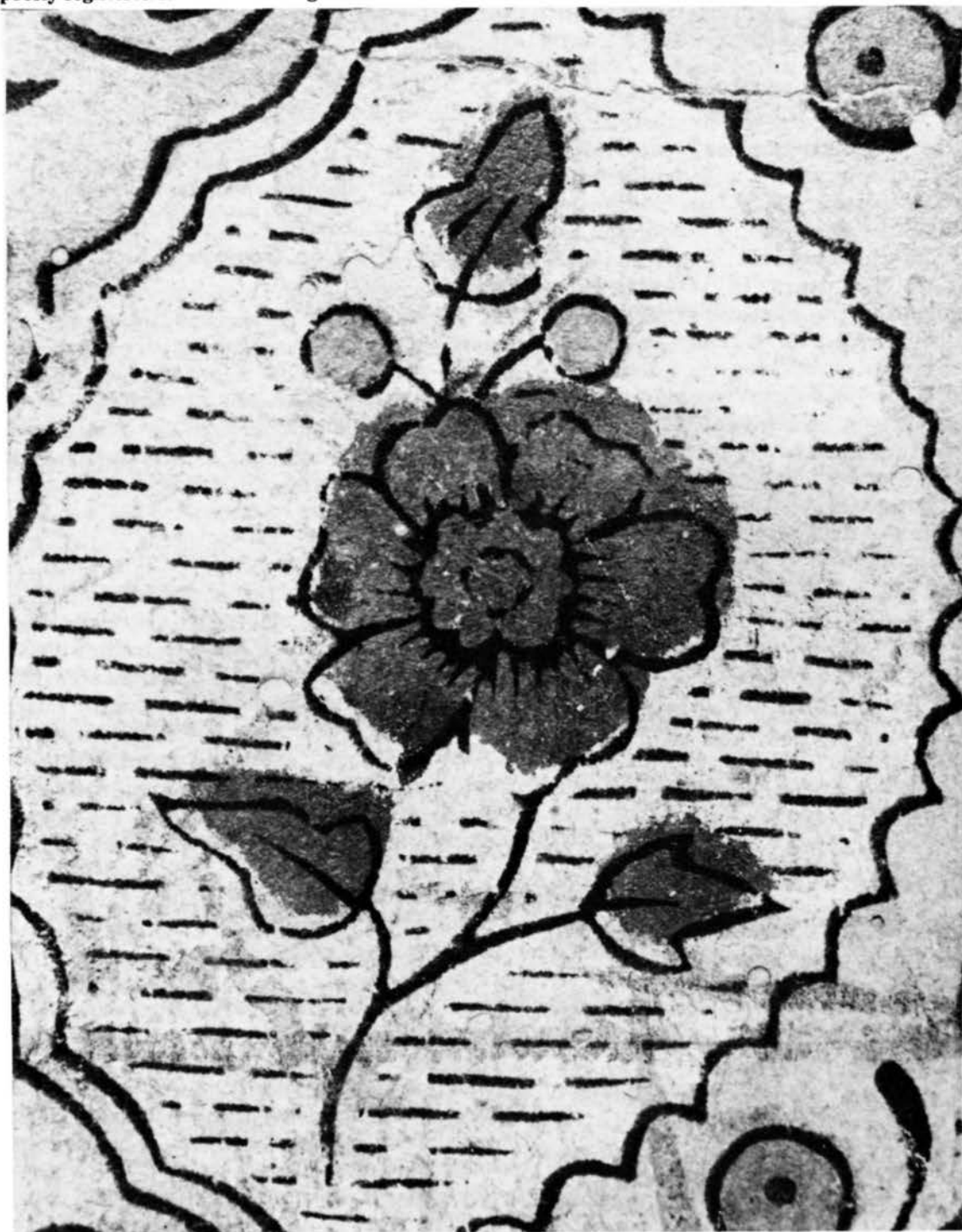


Figure 2A: Detail of the early 18th-century French wallpaper shown in 2, which shows the thin-bodied, poorly registered stenciled coloring.



signia would indicate that the paper had been printed in England previous to the repeal of the tax laws there in 1832 (figure 13).

MACHINE-MADE PAPER

Machines for producing "endless" paper were the important innovation of the early 19th century that made possible the industrialization of wallpaper making. Developments in England included the Fourdrinier machine of 1799 that used a cylinder to form paper. In 1817, the first machine-made paper was produced in America by Thomas Gilpin in Delaware. Though wallpaper manufacturers would have been the logical early users of the new endless paper, they do not seem to have adopted it in France until 1820, in England until 1830, and in this country not generally until 1835. The widths of machine-made paper varied from country to country. By the 1850's the standard width of French paper was 18 inches, of English paper 21 inches (20 inches when hung) and of American paper 20 inches. Despite standardization, papers from all these have been found in widths varying from 18 to 40 inches.

Early handmade papers were composed of textile fibers and were generally heavier and more durable than later machine-made papers. The introduction of wood pulp for making paper was first commercially successful in England in the 1850's, and was introduced to America in 1855. By the 1880's, the bulk of commercial hanging paper stock had been greatly cheapened by the introduction of wood pulp, straw, and other less expensive ingredients. Such paper is now characteristically brittle, and browned from the acids present in the wood pulp. Superficial examination usually serves to distinguish cheap, machine-made papers from the handmade, that is; machine-made paper will tear in a neat line and the browning and brittleness are often all too apparent. But further microscopic examination may be required to determine if a fragment of higher quality paper with a high rag content is machine-made or handmade.

PAINTED PAPERS

A few wallpapers, generally the more expensive

ones, including Chinese papers, have been hand painted through all of wallpaper history (figure 17). The brush strokes were executed in water-base colors. Stylistic analysis, rather than a knowledge of technology, will be of the greatest help in dating painted papers. Chemical analysis of the pigments used in the paints might serve to pinpoint datable pigments (some of which are discussed in the following section on block printing).

STENCELED AND PRINTED PAPERS

Ordinarily, in analyzing the wallpaper, a restorationist will be called upon to distinguish among the various methods of mass-producing pattern, that is: (1) stenciling, (2) block printing, (3) machine printing, introduced in the 19th century, and (4) silk-screen printing, which became common after the Second World War.

Stenciling

Early 18th-century wallpaper makers in France produced pattern outlines from woodblocks using black ink. The black ink was thin bodied, unlike the thick distemper colors of most 18th- and 19th-century wallpapers. In early examples, the black printed outlines were filled in freehand, or with the aid of stencils, in thin, transparent water colors. This stenciling can be recognized by the presence of multidirectional brush strokes, ending abruptly at the edges of solid-colored pattern shapes, where outlines of color often collected and streaked. Stenciling appears in cheaper wallpaper of the mid to late 18th and early 19th century, but was not a common feature of wallpapers of the best quality.

Block Printing

The use of woodblocks with the printing surfaces carved in relief has been standard in making fine wallpapers. A separate block is required for printing each color. During the mid-18th century, a tradition of fine craftsmanship in this skilled work developed in France and survives today in spite of the development of many alternative methods for mass producing wallpaper.

Distemper colors were normally used for color printing from woodblocks. To make distemper

colors, pigments were mixed with water and glue size to produce the thick-bodied, opaque, chalky colors still favored in fine wallpapers. Occasionally, oil-based mediums were used to produce glossy accent colors, but sometimes they were also used for ground colors.

Naturally occurring organic and inorganic pigments were used to make the distemper colors of the 18th century. A list of the standard colors "proper to be used for paper hangings" was published in London in 1758 by Robert Dossie in his *Handmaid to the Arts*. Dossie's list of colors includes archaic words and color names that are fully analyzed by Rosamond D. Harley in *Artist's Pigments ca. 1600-1835* (New York: American Elsevier Publishing Company, 1970). Dossie's list and Harley's study of early color nomenclature and history should be consulted by any researcher undertaking chemical analysis of the pigments present in old wallpapers.

In dating papers, chemical analysis of wallpaper colors may be helpful. The presence of some of the "new" colors discovered and developed in the late 18th and early 19th century may be evidence for the earliest possible date that a wallpaper could have been made. For example, the presence of Chrome Yellow (PbCrO_4) indicates a date after 1809. Chrome Yellow was discovered in 1797, but the formula was not published until 1809, and not widely available until after 1820. By mid-19th century, it was used by many wallpaper makers. Sheele's Green-Copper Arsenite is another new color commonly used in the wallpaper trade after its discovery in 1775. Another, Schweinfurt Green-Copper Aceto Arsenite was first produced commercially in Schweinfurt in 1814; the first publication of a method for making the color followed in 1822. A still later color, "Artificial Ultramarine" was discovered in 1826, but its formula was not published until 1828, and the earliest known mention of its use in the wallpaper business was in the year 1864.

In the standard 18th-century wallpaper manufactory, thick distempers were used both for "grounds" and for printing the patterns (figures 4 and 5). After the individual sheets of paper had been "joined"—pasted together—to form a roll of hanging paper, a coating of coloring or of white

was applied with wide brushes. This ground color concealed both the joints and any discoloration in the paper stock itself. Multidirectional brush strokes applied by hand are often apparent in the grounds of early papers. Grounding was one of the first processes in wallpaper making to be mechanized. Machines for rotating long cylindrical brushes that applied an even coating of ground color were introduced to the trade by the early 19th century. The uniformity of vertical streaking is sometimes apparent in grounds applied by this mechanical process.

Once the ground coat had dried, the pattern could be printed. The craftsman pressed his block (figure 3; figure 4 just left of center; figure 5, center) against a pad, which had been coated with a layer of the liquid distemper color. Then he lifted his block and let it strike the paper, sometimes tapping it with a mallet to make a firm impression. It was almost like marking a letter with a rubber stamp. The block met the paper in a straight up and down motion. Close examination of the coloring in pattern elements that have been block printed will reveal multidirectional "veining" within pattern shapes that have sharply defined outlines. The veining will often take the form of little sunbursts, formed as the block came down, pressing the color out in all directions. Also visible in the areas of solid coloring may be little holes from the bubbles created during the moment of pressure and release of the block (figure 6A).

Machine Printing

In the 1820's, as textile printing was being mechanized using engraved copper cylinders, experiments were made for incorporating this technology in the printing of wallpaper. The Zuber Factory in Alsace produced papers in this manner using thin-bodied, glossy coloring. But the resulting patterns were composed of thin lines, similar in character to engravings, and the venture was of limited commercial significance. Evidence of their use in the United States has not yet been found.

In the 1840's a significant commercial impact of machines on wallpaper printing occurred (figure 8). Steam-powered machines were developed

BLOCK PRINTING

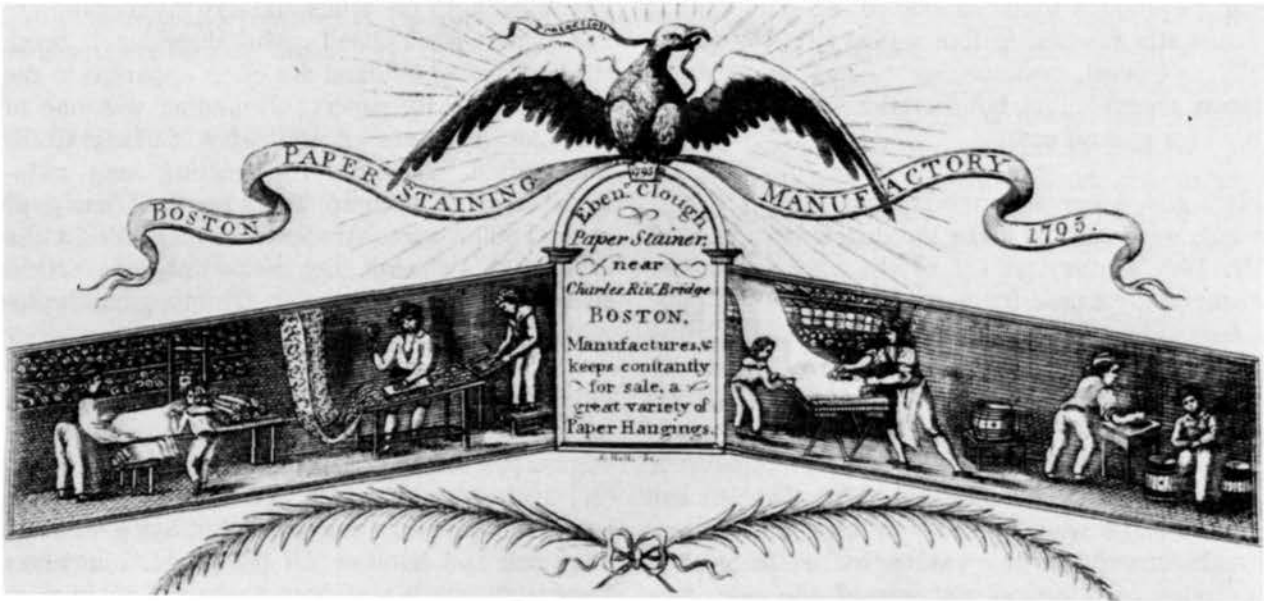


Figure 4: An engraving at the top of a billhead illustrates the basic steps in making wallpaper during the 18th century. On the far right, two craftsmen mix colors in barrels. The gentleman wielding a large brush in either hand is laying on ground color. Immediately to the left of the tablet describing the business, a printer with his left hand under the handle on a carved woodblock raises a mallet with his right hand to strike a firm impression. The boy standing to his left prepares the color between each impression, spreading it on a pad. The man on the far left, with the assistance of yet another boy, is probably rolling and trimming paper in standardized lengths for sale.



Figure 3: Block Printing—Three wooden printing blocks shown here are each about 8 inches high, 24 inches long, and 1½ inches thick. Each was used in France during the 19th century to print a different color in a “swag” border pattern. The one at the bottom was used to print the first color, forming large areas of patterning. After that first color had dried, the second block was used to print more detailed parts of the pattern over the first color. Fine details were added last, over the first two colors, using the block at the top. The raised printing surface is formed of carved wood in the first block, of wood and bits of metal in the second, and in the third, all of the printing area is formed of bits of metal driven into the block.

Figure 5: A page from an 1860 edition of Charles Tomlinson’s *Illustrations of Trades*, printed in London, indicates that block printing continued relatively unchanged well into the 19th century. The use of carved blocks with raised printing surfaces has been improved: a wooden structure with levers carries the weight of the printing block in the central vignette, so the workman has only to guide it. Mechanization has also simplified the basic process of color grinding and mixing.

THE PAPER STAINER AND PAPER HANGER.

41



302, 303. PAINT BRUSHES.



304. DRUM FOR LAYING ON FLOCK.



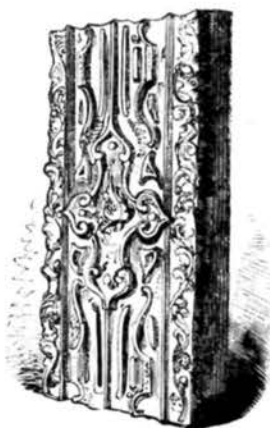
305. COLOUR DRUM.



306. PAINT POT.



307. SIZE CAN.



308. FRONT OF PRINTING BLOCK.



309. PRINTING PRESS.



310. BACK OF WOODEN BLOCK FOR PRINTING.



311. HAND BRUSH.



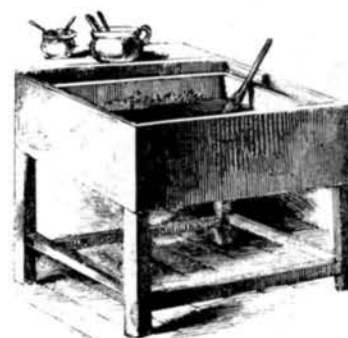
313. LADLE.



314. CRUTCH.



315. COLOUR-GRINDING MACHINE.



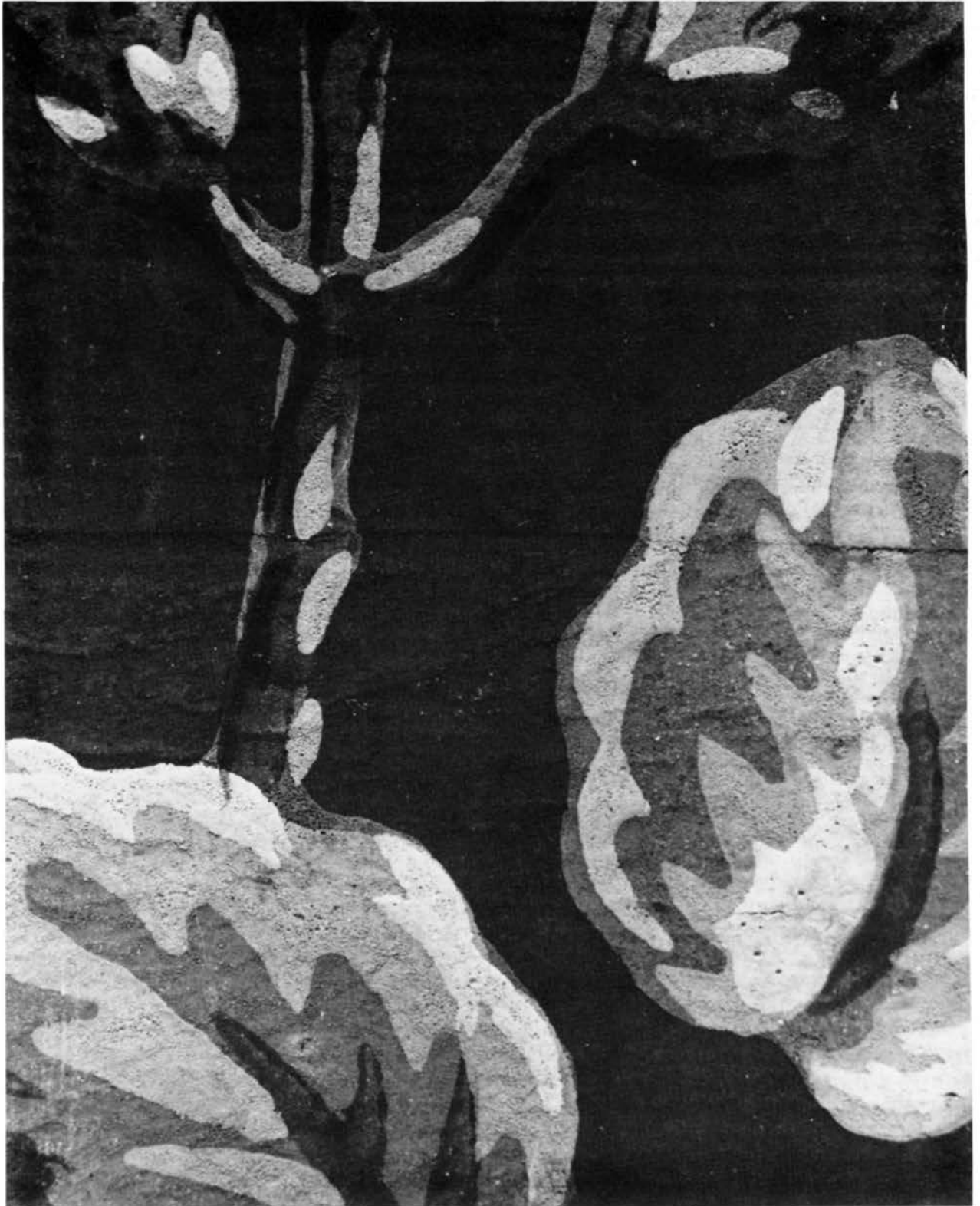
316. COLOUR SIEVE.

G

Figures 6 and 6A: Block Printing—To make this French paper of the late 18th or early 19th century, a series of woodblocks was used to print opaque layers of thick, chalky distemper colors in pastel shades over a brown ground color on a sheet 23½ inches wide. The impressions made by stamping with carved woodblocks



are characteristically sharp edged. Little bubbles formed in the process of printing with the thick liquid have left tiny holes in the surface of the color. The ground as well as the printed colors have been applied over the horizontal joint between two handmade pieces of paper which appears at the center of the detail.



MACHINE PRINTING

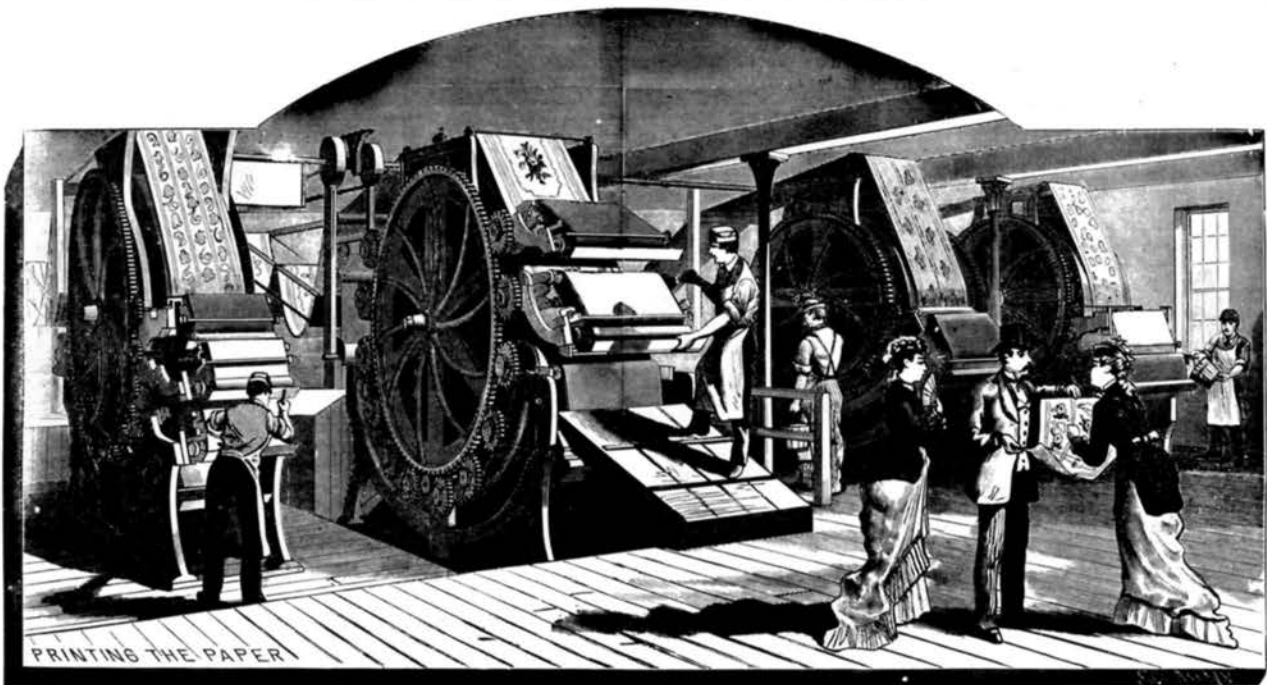


Figure 7: Machine Printing—Four machines for printing wallpaper are shown in the factory of Christy, Shepherd and Garrett in New York as illustrated in the July 24, 1880 issue of *Scientific American*. The largest machine, second from the left, was equipped to produce patterns in 12 colors, printed from 12 cylinders or rollers ranged round the giant central drum on which the paper was carried. The workman's left hand rests on the color trough, while with his right hand he adjusts the belt that feeds color to a printing cylinder.

with efficient systems for feeding color to cylinders that printed from *raised*, rather than engraved surfaces, employing the conventional principle of the woodblock. The standard cylinder had a wooden core with the raised printing surfaces, formed by strips of brass which were tapped into the wood core and made cloisonne-like raised outlines of shapes. Inside of these little walls, felt was tightly stuffed to carry the colors for the solid areas of patterning (figure 9). Details such as lines and dots were printed by appropriately shaped brass pieces. The cylinders were placed on a machine that had at its core a large revolving drum, or giant cylinder, upon which the blank paper rode while it engaged in sequence a series of the smaller cylinders, each of which had a raised surface to print one color of the pattern. Each printing cylinder was coated

Figure 8: Machine Printing—A cylinder or roller for printing wallpaper, used by the F. E. James Company during the mid-19th century. Cylinders like this, each adding details in different colors, would have been used on machines like those pictured in figure 7. On the wooden core of the roller, 19 3/4 inches long, the raised printing surface has been built up by hammering in strips of metal (usually brass) which form little walls standing out about a fourth of an inch from the wooden core, and appear here as the dark outlines around solid shapes. Those shapes are filled with felt, which carries the colors. The circumference of this cylinder is 16 inches, the measurement that dictates the repeat length of the printed pattern.

with its individual coloring by a roller fed belt from a trough that held the appropriate color.

Old papers that bear the impression of these raised-surface cylinders of machine printing cannot safely be dated before 1841. The little metal outlines filled with felt left a distinct impression: an outline of thicker coloring around the edges of each shape combined with traces in colored areas of the unidirectional streaking caused by the constantly rotating cylinders (figure 10 and 10A). The colors used on the machines were thin bodied for quick drying. These characteristics of machine printing are particularly easy to recognize in cheaper papers.



Silk Screening

Silk screens are sophisticated stencils carried on very finely woven silk textile screens, stretched over wooden frames. Patterns produced from these screens can often be recognized with the aid of magnification. The crisscrossing of the woven threads of the textile leave their mark, especially along curves and diagonals. The fact that the coloring material has passed through a woven fabric is indicated by minute little "stair steps" that form the edges of shapes. Silk-screened wallpapers, which have become particularly popular for the more fashionable and expensive patterns produced since the 1940's are often marketed as "hand prints."

Flocking and Metallic Colors

Wool and silk flocking were added to many 18th-century papers. From the 17th century to the present, chopped colored shavings of silk or wool have been spread over areas of patterning printed (or stenciled) in adhesive varnish on wallpaper (figure 7). Occasionally, powdered mica or isinglass was added to 18th-century papers, and in the late 19th century, became very popular wallpaper decorations. Metallic colors, gold and silver, are found in papers of the 18th century, as well as in later wallpapers. Because their use was so long lived, the presence of any of these textured decorations does not in itself provide a basis for dating a paper.

Hanging Techniques

The development of the methods by which wallpapers were fixed to the wall provide further dating guidelines. During the early 18th century, the English used tacks to hang wallpapers and evidence for this practice in America has been found as early as 1741.²

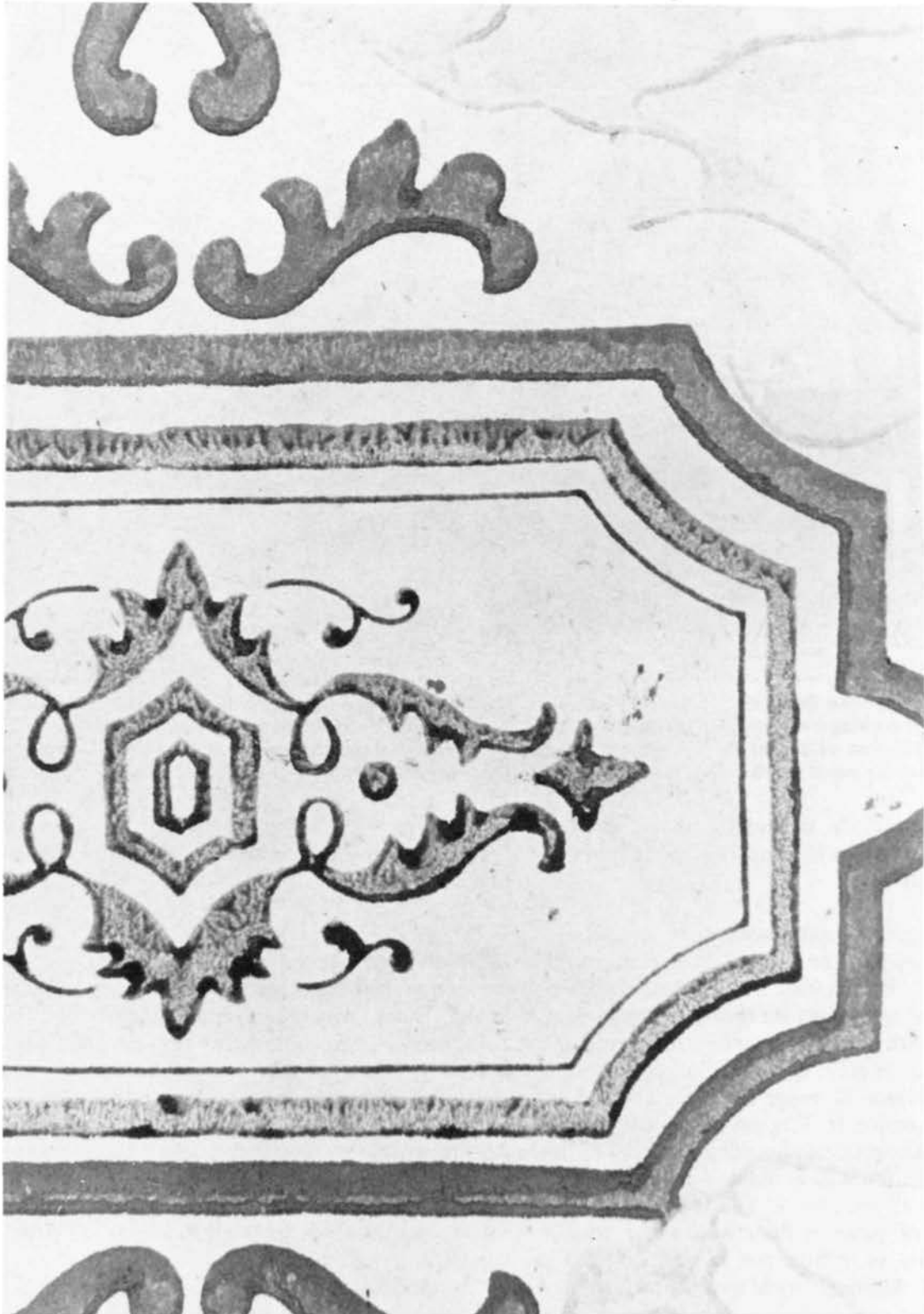
The tacks used along the edges of paper were covered with borders, which were also tacked to the walls. English instructions of 1700 for tacking

² Walter Kendall Watkins, "Early Paper-Hangings in Boston," *Old Time New England*, Publication of the Society for the Preservation of New England Antiquities, vol. 12, no. 3 (Boston, 1922), p. 110.

Figures 9 and 9A: Machine Printing—The 20 inch wide sample is probably American, of about 1840-1850. Marbled effects have been machine printed in pale gray on an off-white, ungrounded stock; other elements in the pattern are printed in red and blue. The enlargement shows the imprint



of the metal outlines used to form printing surfaces on rollers for machine printing. The thin-bodied pigments are characteristically transparent, giving a grainy texture in which all the streaking runs in a vertical direction, the direction in which the printing rollers were turning.



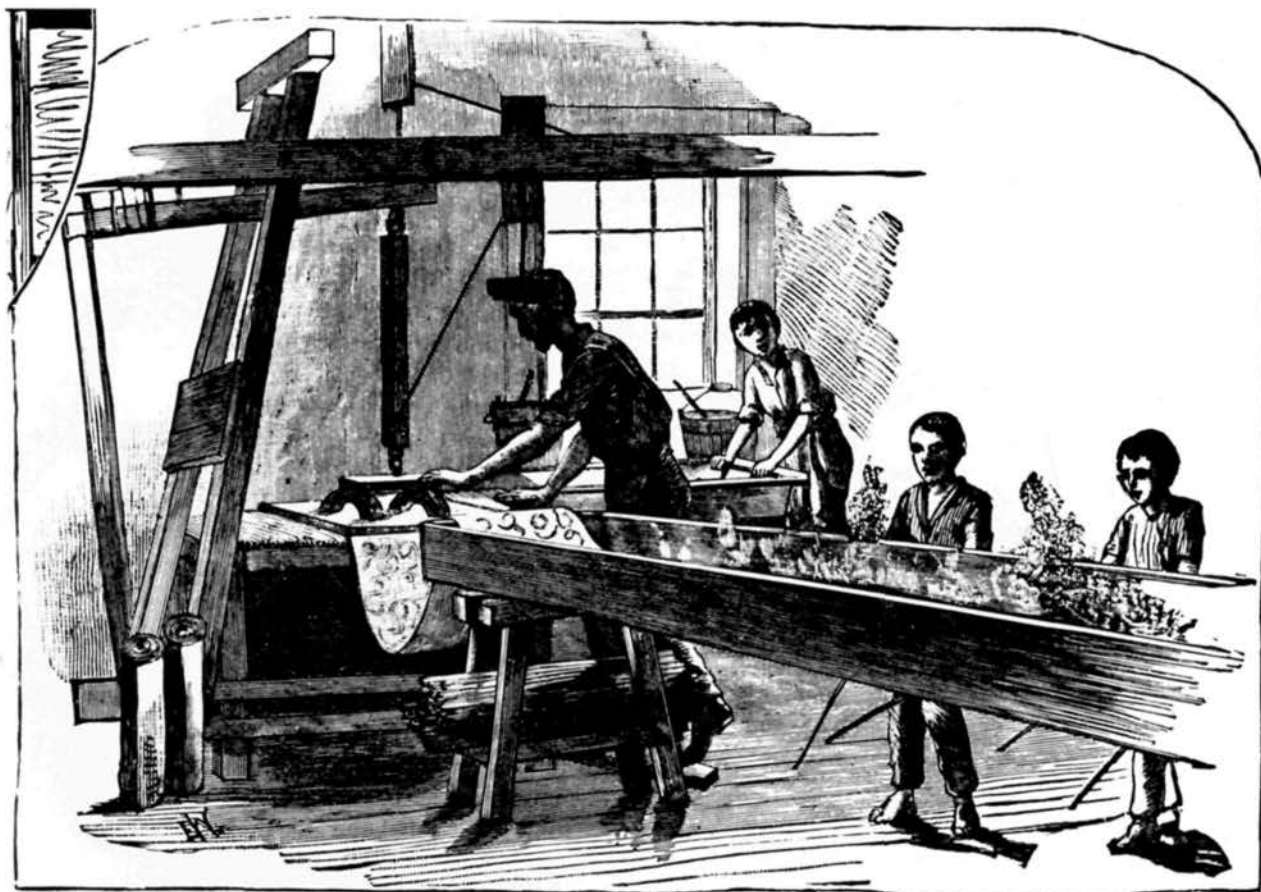


Figure 10: Flocking—An illustration of the 1880's shows the principle for flocking was little changed from the 17th century. The man on the left block prints a pattern in varnish on paper which is then fed into

the flocking trough with its flexible, drum-like bottom. Boys beating on that bottom raise clouds of finely powdered wool shavings to spread them evenly over the surfaces printed with the adhesive varnish.

up wallpaper include the advice that the back side of the paper first be gently wetted to make it hang smoothly.

Early 18th-century wallpapers were sometimes pasted sheet by sheet to the wall. American references indicate that papers were sometimes fixed to fabrics and canvas before they were hung. But by the mid-18th century, papers were more commonly bought in rolls, and pasted directly to the walls. An invoice of paper hangings shipped in 1799 from London to Virginia was accompanied by a note: "The process of putting up paper hangings is to have the wall as smooth as possible and then to be well sized over. The ingredients used for making of paste is flour and water with a small quantity of Allum put in and boiled till quite thick." Although such water-soluble pastes

were the most common, not all paper was put up with water-soluble adhesives. (In salvage operations one finds that some pastes resist all chemical solvents!)

In spite of smooth plastered walls being recommended as the proper surfaces on which to paste papers, early papers are sometimes found in American houses pasted directly on unfinished boards (figure 20). Skills of paper hangers, as well as budgets of homeowners dictated the methods used. A common practice, intriguing to the researcher, was that of simply pasting new papers on layers of older ones (figure 1). During the late 19th century, textile liners were used to prepare a smooth surface on the wall to which the paper was then pasted.

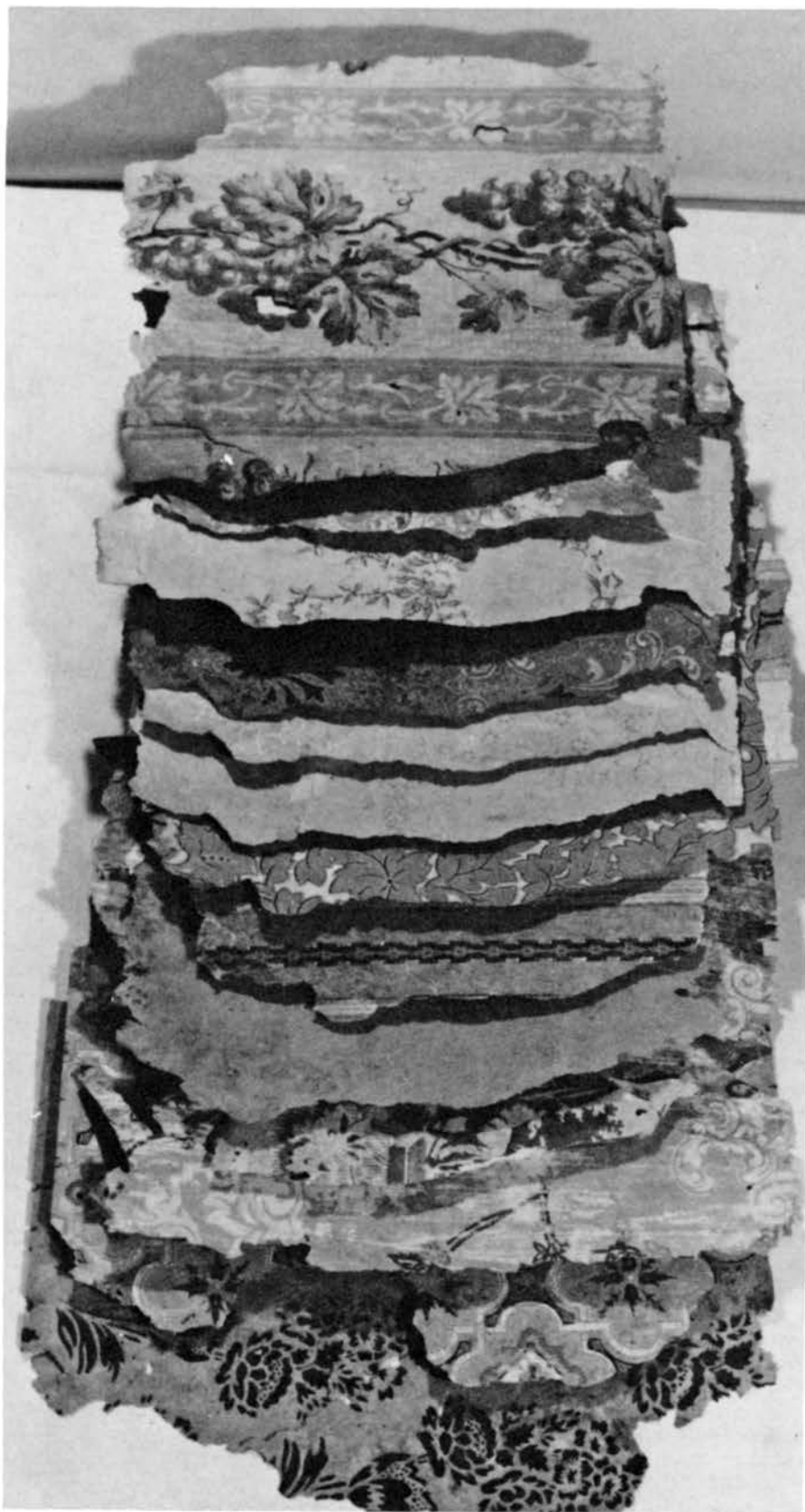


Figure 11: Thirteen layers of wallpaper which have been steamed apart are here arranged in the sequence they were pasted, one covering another, on one wall of the Nathan Beers house in Fairfield, Connecticut. The earliest pattern, shown at the bottom, dates from the first decade of the 19th century, while the stripe with grapes, shown at the top, was probably pasted over its predecessors about the turn of the 20th century.

History of Wallpaper Styles and Their Use

In the following section, an introduction to wallpaper styles and history of their use will emphasize stylistic characteristics as further clues to the age of wallpapers, and provide guidance in choosing replacement patterns for buildings from which any evidence of the design of papers has disappeared.

GENERAL HISTORY

Traditionally, wallpapers have imitated more expensive materials, such as architectural details, painted wall decorations, wood grains, marble, and, most often, textiles. General stylistic trends,

paralleling those of other furnishings and decorative arts can be traced in wallpapers.

Prior to the Revolution, English papers dominated the American market. Flocking was a specialty of 17th- and 18th-century English paper stainers, and its popularity was reflected in American houses. English flocked paper and canvas, with patterns of strapwork and scrolls, were used here in the 17th century. Floral patterned papers with flocking reflected 18th-century textile styles; formal symmetrical bouquets in flocked hangings were derived from damask-woven patterns, and

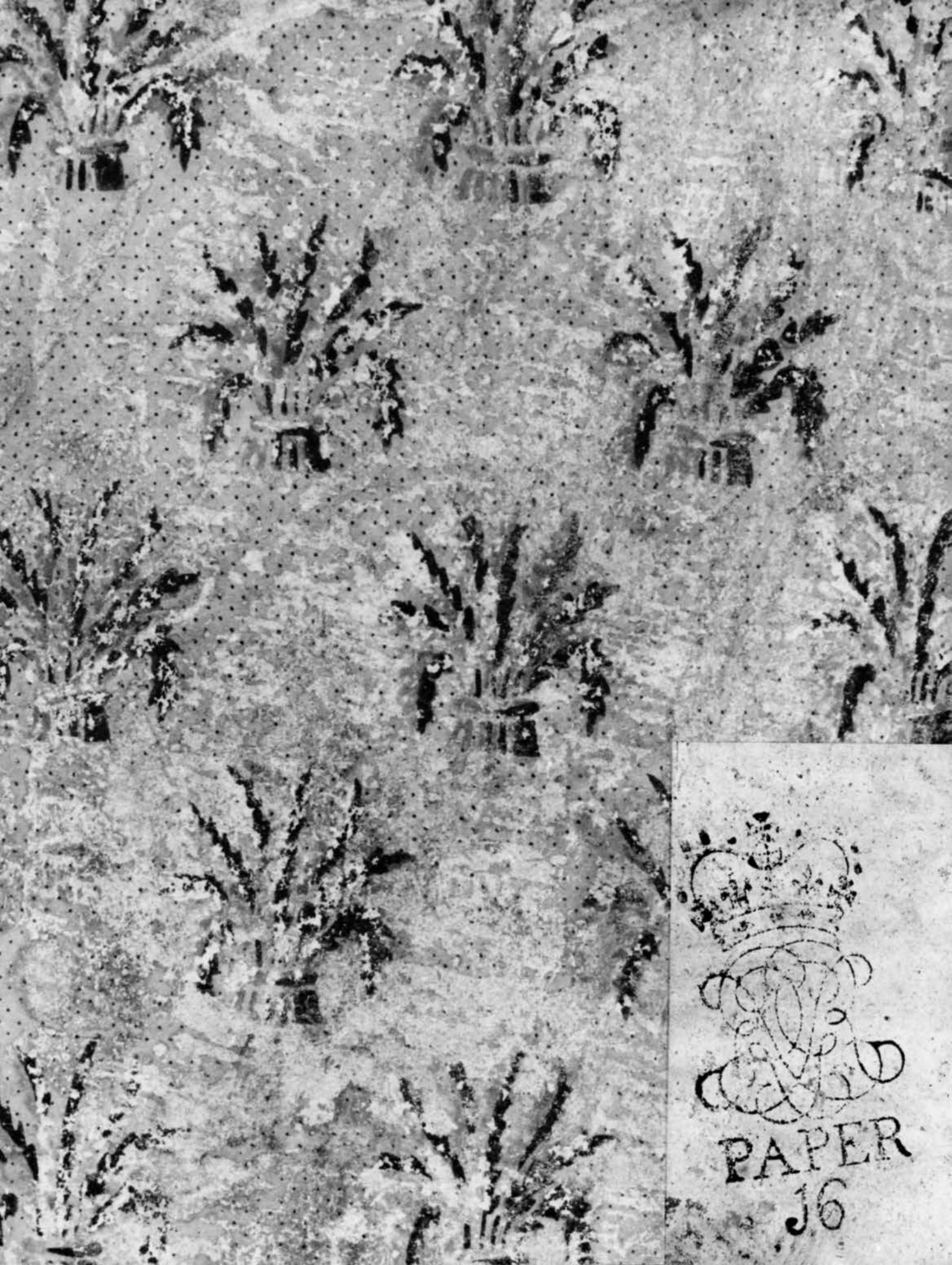
Figure 12: A red flocked version of an English flowering vine with diaper pattern survives from its 1781 installation in the Webb House built in 1752 in Wethersfield, Connecticut. The enormous size of the repeat, 72½ inches long and 38½ inches wide, contrasts with the narrow border, just under 2 inches wide. The scale is unexpected in a low-ceiled bedroom. Many of the horizontal as well as vertical seams between individual sheets of handmade paper, each about 21 inches wide and 24 inches long, are apparent in this photograph.



Figure 13: This paper with tax stamp found on the reverse side (shown in inset) was retrieved from the General Philip Schyler House near Albany, New York. Both are shown in full scale. Such a stamp, with the insignia “GR” (for “George Rex”) could have appeared on any English wallpaper from the reign of King George I until the death of King George IV in 1830. It would be nearly impossible to determine the country of origin for such a simple repeating pattern without the English tax stamp.

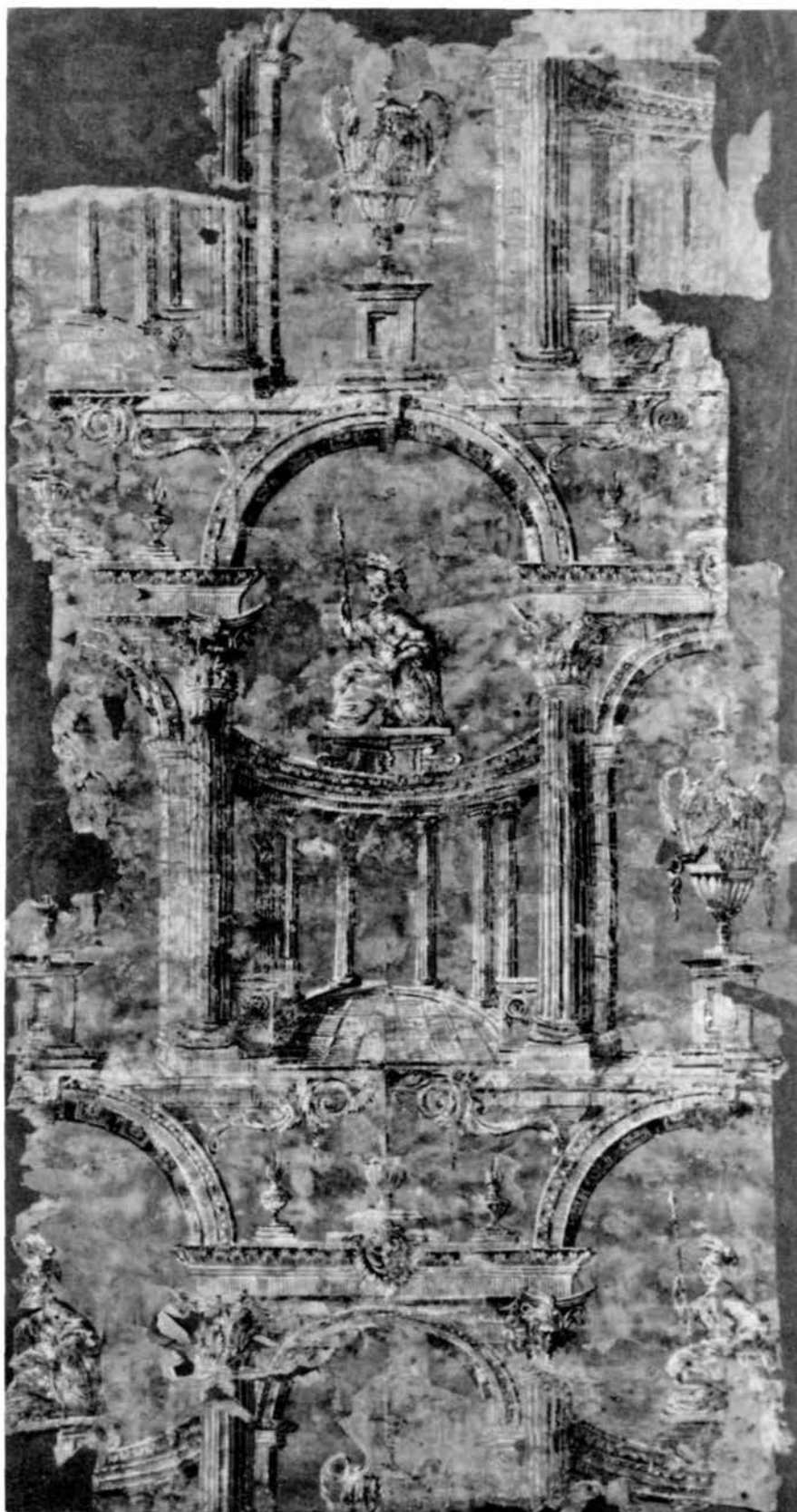
The face side of the paper was designed with a field of gray covered with greenish-blue sheaves of wheat. This design could date as early as 1795–1805.

The meaning of the marking “J6” is unknown.




PAPER
J6

Figure 14: Block printed in black and white on a gray ground, this English paper was probably the original wallcovering used in the Samuel Buckingham House, built in 1768 in Old Saybrook, Connecticut. The remnant illustrated is about 24 inches wide. Such relatively large scaled neo-classical "Pillar and Arch Figures" were advertised for use in hallways. A copy of this pattern, which differs from this one only in that the figures and every detail is exactly reversed, bearing the mark of a Hartford, Connecticut paper stainer of the 1790's is also preserved in the Cooper-Hewitt collections, illustrating the American practice of imitating imported papers.



patterns formed of branching stems putting forth flowers and leaves over backgrounds of diaper patterning were executed in flocking, as well as in distemper colors (figure 12). Other English floral patterns included some that featured flowing ribbons among the flowers, and floral stripes. Examples of each of these styles of 18th-century English wallpapers have been found in American houses.

Hand-painted, rather than printed, English wallpapers with large-scale nonrepeating views depicting ruined architecture are known to have been used in at least three important American mansions of the 1760's: the Philip van Schuyler and Stephen van Rensselaer Houses in Albany, New York, and the Jeremiah Lee House in Marblehead, Massachusetts. The elegant views were surrounded by wallpaper "frames."

A distinctive English pattern type was made of "pillar and arch patterns" (figure 14). These were recommended especially for use in hallways. These and many other 18th-century English wallpapers were generally monochromatic and subdued in palate compared to the French papers of the same and later periods. Many examples of grey papers, some with sparsely applied highlights of color have been found in this country bearing English tax stamps (figure 13).

The end of British colonial trading restrictions cleared the way for a dramatic increase in the importation of French wallpapers to this country. Yet it was not until the 1790's that American advertisements began to feature the French paper hangings. Most distinctive of the French styles were the Arabesque patterns first popularized in Paris by Jean Reveillon (figures 15 and 16), and particularly admired in this country by Thomas Jefferson and his contemporaries during the 1780's and 1790's. Through the use of many individual blocks to print the large number of colors within a single pattern, Reveillon was able to develop a clarity of color and a subtle combination of brilliant and pastel shades that distinguish his wallpapers and those of his successors.

Both the English and French styles were influenced by hand-painted nonrepeating papers exported from China to the West from the 17th century onward (figure 17). The expensive

Chinese papers can be generally grouped into three basic types: flowering trees bedecked with birds and insects, landscapes, and processional. Chinese papers were only hung in the houses of the richest Americans, but this trend filtered down; the incorporation of chinoiserie motifs in wallpapers printed by all the Western wallpaper manufacturing countries was common during the 18th century.

The earliest documentation known to the author for the printing of wallpaper in America appeared in the 1756 advertisement of a dyer and scourer "lately from Dublin," one John Hickey, who announced in the *New York Mercury* on December 13, 1756, that he "stamps or prints paper in the English manner and hangs it so as to harbour no worms." In 1765 another New Yorker, John Rugar, is recorded as having begun a wallpaper manufactory, and in 1769 Plunkett Fleeson, a Philadelphia upholsterer who had been in business at least since 1739, first announced that he had for sale "American Paper Hangings manufactured in Philadelphia . . . not inferior to those generally imported." The American paper stainers based their patterns on imports, but despite their claims to excellence, they seem to have been held in low esteem by most consumers. The advertisement of one paper hanger published in 1785 is revealing: he offered to hang "any paper, from the most elegant imported from the East Indies or Europe, to the most indifferent manufactured in this country."

A late 18th-century style that lasted far into the 19th century featured the use of a plain solid shade of coloring applied to wallpaper, usually in green or in blue but available in a wide range of other colors as well. These papers were called "plain papers" and were usually advertised with "rich" or "elaborate" borders (figures 18 and 19). Walls painted in a solid color were also embellished with wallpaper borders; the "plain papers" had one advantage over paint—they hid the cracks.

French styles dominated the American wallpaper trade during the first 70 years of the 19th century. In the early part of the century bright, strongly colored, even gaudy, Empire styles (figure 21) vied for attention with the spectacular nonrepeating "views" and "landscape" papers (figure 20).

In the scenic papers, French block printers refined their skills in creating realistic imitations of paintings. In other wallpaper decorations, printers imitated drapery, sculpture, ornamental carving, plasterwork and other architectural detail. Simpler repeating patterns and stripes enjoyed steady popularity, and the French patterns served as models for American manufacturers. Bright powdery pastel shades were featured in many of the simpler patterns during the early part of the century (figures 22 and 23).

During the 1820's the Zuber factory in Alsace developed a printing technique that became a style in itself, widely imitated by European and American factories well into the 1840's (figure 24). The technique was one for printing subtle, blended color effects, called "irisée" by the French, and advertised as "rainbow papers" in this country. They resembled the ombré textiles of the same period, which were printed or woven with graduated alternating dark and light bands of the same or various colors. Factory records preserved in Alsace, document the dealings during the 1820's of the Zuber factory with a hundred American importers from Maine to New Orleans. The Zuber rainbow papers have survived in houses in New England, as well as the South.

From the middle years of the century, elaborate Rococo Revival styles were peculiarly characteristic among the thousands of patterns annually of-

Figure 15: This panel of wallpaper, after a design by Jean-Baptiste Fay, was block printed in the Parisian manufactory of Jean-Baptiste Reveillon about 1788. The Arabesque pattern shown here was rendered in multicolors on a cream ground. Vertical panels like this with its curious mixture of grotesque and naturalistic elements, all branching symmetrically from a central stem, reflected contemporary neo-classical styles. Designers of the Arabesque wallpaper panels like this one, apparently relied heavily on the wall decorations like those painted at the Vatican by Raphael.

Figure 16: Oliver Phelps had this paper and an intricate combination of borders hung in the hallway of a new wing he added to his Suffield, Connecticut House in 1795. The principal pattern was made in the manufactory of Jean Baptiste Reveillon, perhaps under the direction of Reveillon's successors, Pierre Jacquemart and Eugene Bernard. The incorporation of architectural elements and its large scale make this pattern comparable to English pillar and arch designs also popular for American hallways.

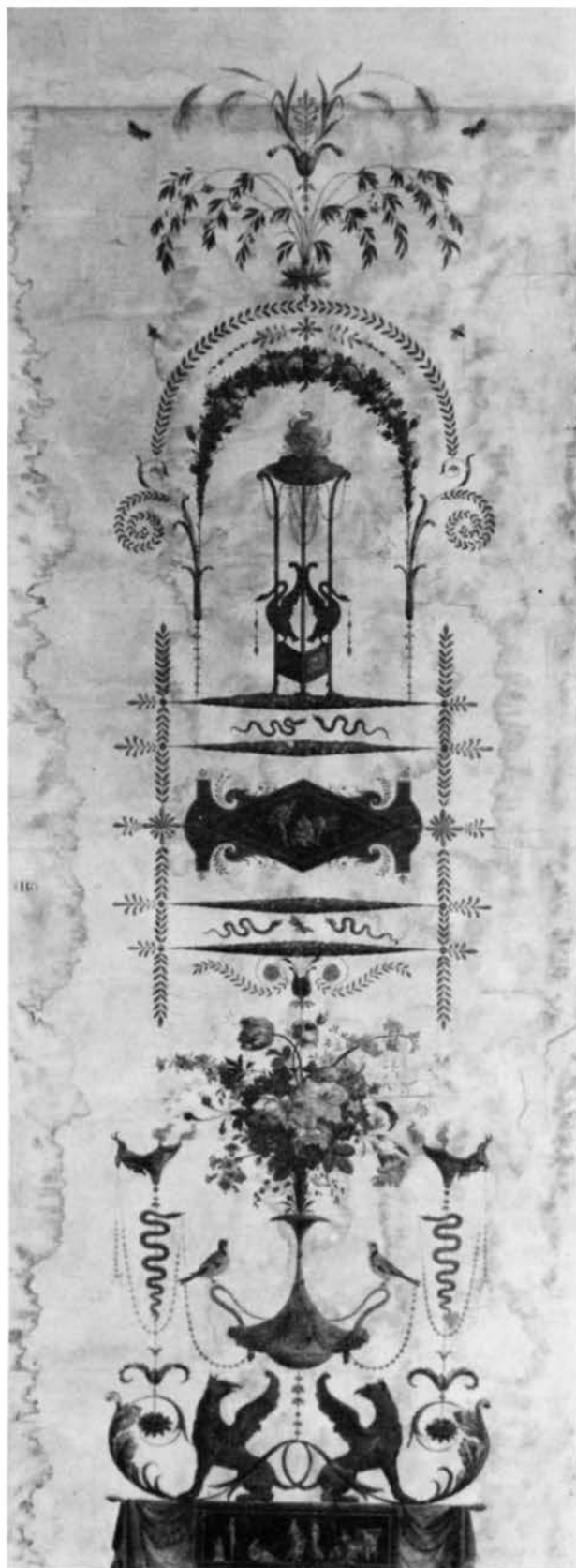




Figure 17: Chinese craftsmen painted panels like this one in sets for export to the West where they were used as wallpapers. The rich of America made them particularly fashionable during the middle and later years of the 18th century. Elegant Chinese papers have been influencing Western taste in wallpaper design and craftsmanship since the 17th century, as they continue to do. The late 18th century example, which is shown here (43 inches wide), displays white and pale yellow blossoms over a pale green ground.



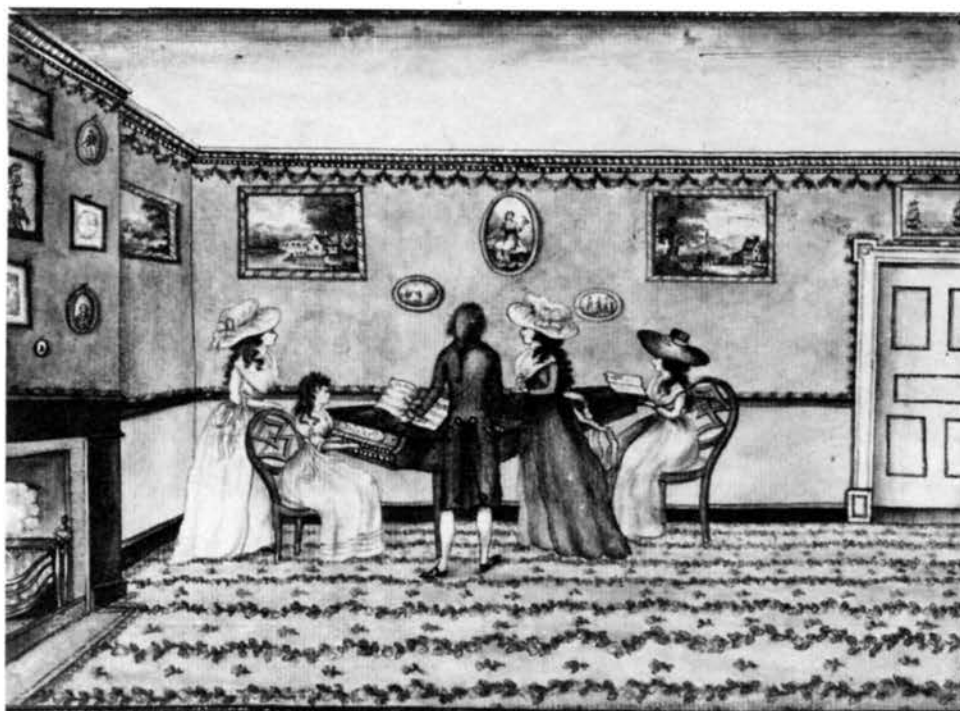


Figure 18: The watercolor *Piano Recital at Count Rumfords, Concord, New Hampshire* was painted about 1800 by Benjamin Thompson (Count Rumford). The plain green walls embellished with wide festoon borders at cornice level, and narrow edgings at chair rail level and around the door, were probably papered. They certainly illustrate the late 18th century taste for the plain colored wall with contrasting borderings, a fashion that lasted well into the 19th century.

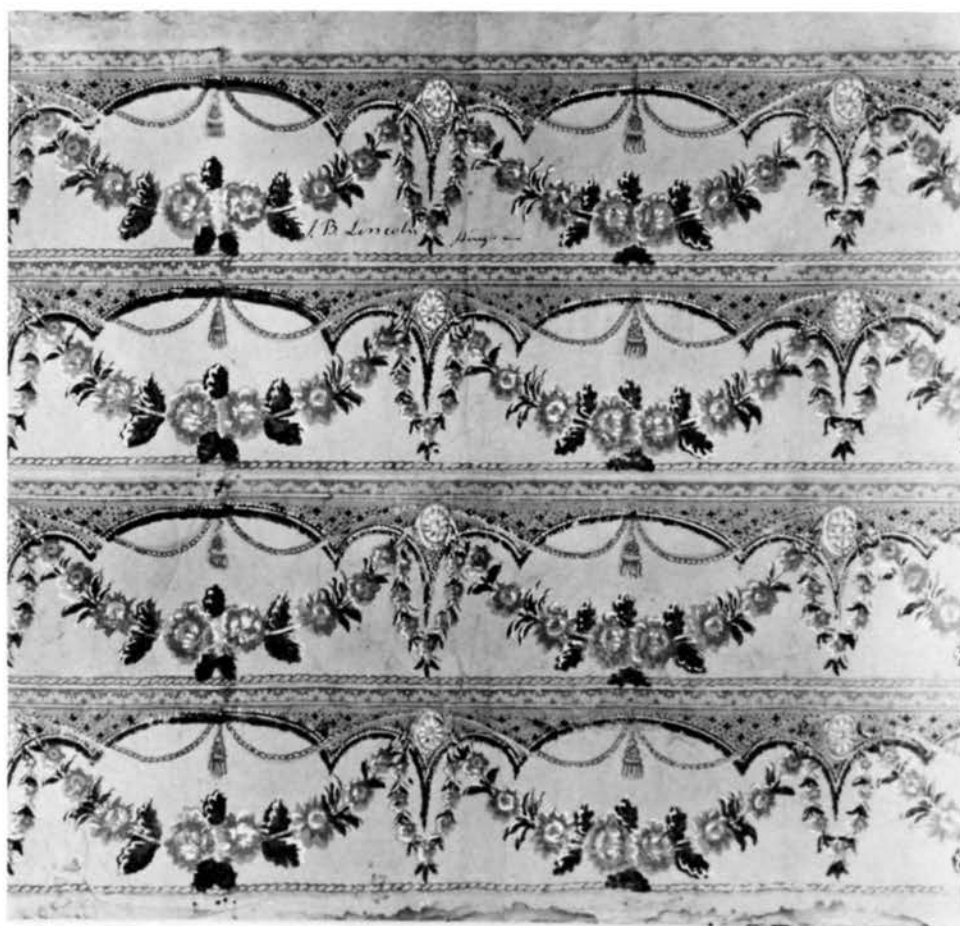


Figure 19: Four lengths of festoon border survive uncut, side-by-side, as the paper stainer block printed them. They correspond closely to a border pattern illustrated on a late 18th-century bill head of Appleton Prentiss of Boston who perhaps made them. Printed in orange, white, green, and pink on a gray ground, each border is 5¼ inches wide. Duplicates of the pattern in a variety of colorings, including one embellished with mica "spangles," have been found in New England houses.



fered by hundreds of manufacturers (figure 25). Using wallpaper, the Gothic Revival found its way into numerous domestic interiors during the 1840's and 1850's, while in many cases exteriors remained chastely classical. During this period, combinations of vivid green with grey, strong harsh red with brown, or a brilliant shade of blue paired with brown were particularly popular. Shiny, polished satin finishes for wallpaper had

also grown in popularity since the beginning of the century (figure 26).

Scrollwork and miniature scenes appeared in profusion on wallpapers of the mid-19th century. Renaissance Revival styles competed with patterns of the other revival movements. Realistic flowers blossomed on many mid-Victorian walls (figure 27). There were also patterns for more sober tastes: in the 1850's and 1860's, papers featuring small embossed gold motifs, evenly spaced over grey or off-white grounds were considered very tasteful. Many of these embossed papers were imported from Germany.

In the 1870's, English styles pushed the French ones aside and regained dominance of the fashionable wallpaper trade. Turning away from the elaborations and realistic painterly effects of French papers, Americans accepted the abstract and stylized flower patterns introduced by the English, and praised in Charles Eastlake's newly popular book, first published in 1868, *Hints on Household Taste* (figure 28). The impact of these new Eng-

Figure 20: In the bedroom of a North Carolina house, this early 19th-century French "View" survived until the early 1940's when it was photographed in this lamentable state of repair. Though battered, it can be identified easily by comparison with Joseph Dufour's annotated illustrations published in 1804-1805 as the paper first made by Dufour in Macon, France. This celebrated paper depicted the voyages of Captain Cook, here shown on the Island of Tongatabo. It is apparent that the paper was hung directly on unfinished boards, a fact which contributed to its deterioration. The use of floral borders and of a paper imitating a coffered ceiling in conjunction with the scenic paper is particularly interesting.

The restoration of this paper to preserve it in place would have been so demanding and expensive as to render it impractical. It would probably have required that the paper be faced for removal, while a proper backing was prepared before it could have been rehung. Then a great deal of in-painting would have followed, so that the end result would have been little more than a newly painted reproduction. The alternative of replacing it with an antique copy of the same Captain Cook paper would have been the more practical and economical.

Figure 21: Shades of gray foil, vivid yellow and bronze shades in this bold French wallpaper dado which is 22 inches wide. It survived in a New Orleans House. A duplicate pattern with the drapery in blue can still be seen in the dining room at "Prestwood," a house near Clarksville, Virginia, where it was hung in 1831 on the lower part of a wall that boasted an elaborate scenic paper above the chair rail.



lish designs was strongly felt at the Centennial Exposition in Philadelphia.

American taste-makers continued to endorse the stylized artistry of Englishmen like William Morris, Christopher Dresser and Walter Crane during the last quarter of the 19th century. The subdued, grayed palates of their patterns were particularly admired. In 1882 Oscar Wilde toured America, popularizing the English ideas about decorative design that included admiration for the exotic

styles of Japan and the Middle East. In the wake of his visit, American wallpaper manufacturers popularized Moorish motifs, and a style known as "Anglo-Japanese" (figure 30). The patterns were rendered commercially in metallic golds, maroon, olive, black, and creamy yellow-beiges. Even on the most commercial level during the 1880's a degree of self-conscious interest in "good" flat pattern design and in abstraction was manifested that had never before been apparent and was soon to disappear.

Figure 22: The French wallpaper that was hung when the French-Robertson House was built about 1820 at Mille Roches on the St. Lawrence River in Canada survives in the house. The pattern of alternating motifs between widely spaced stripes (like that in figure 23) is typical of the early 19th century as is the use of borders at cornice and chair rail levels, and

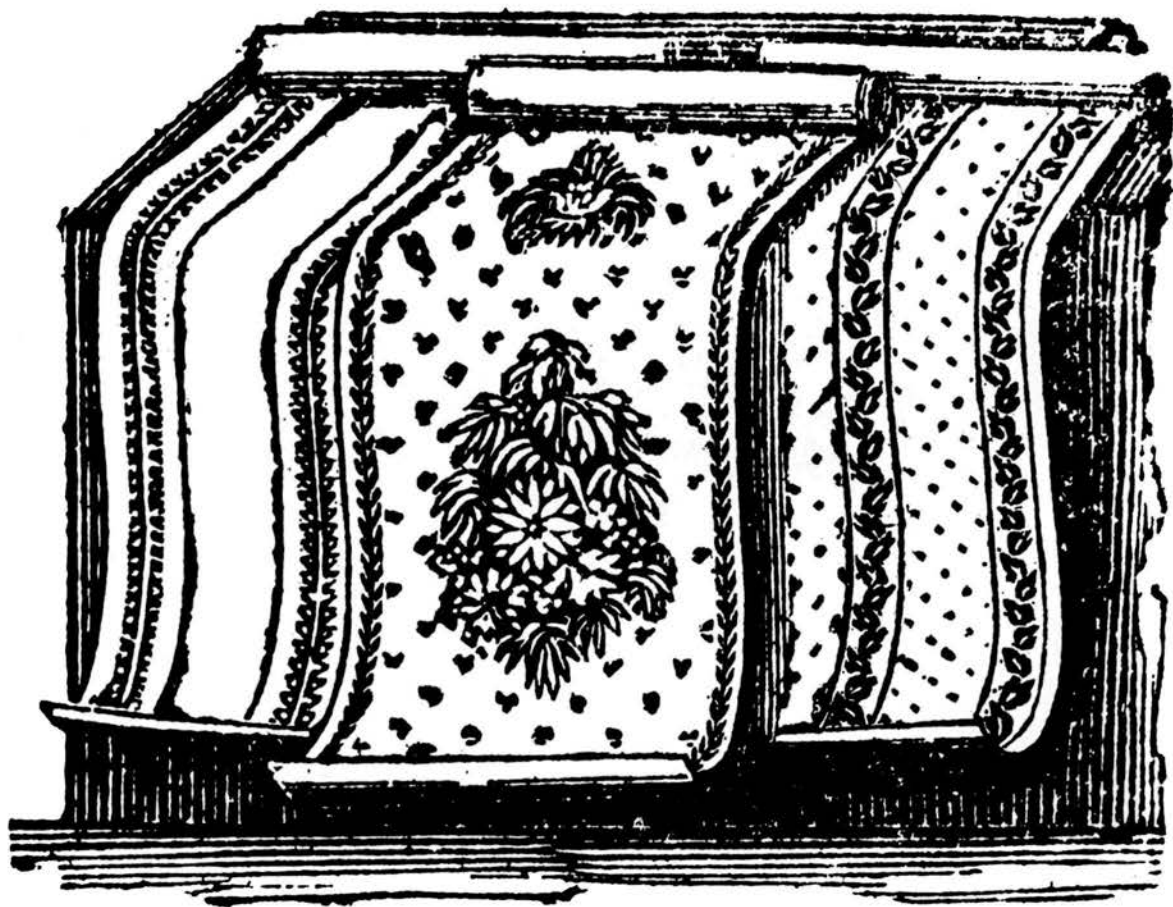
outlining the mantle. Some paper hangers' manuals suggest that borders served practically as well as decoratively: they covered up any gaps or irregularities should a length of paper be cut improperly, and helped to hold down the paper at the top where it might have begun to peel away from the wall.

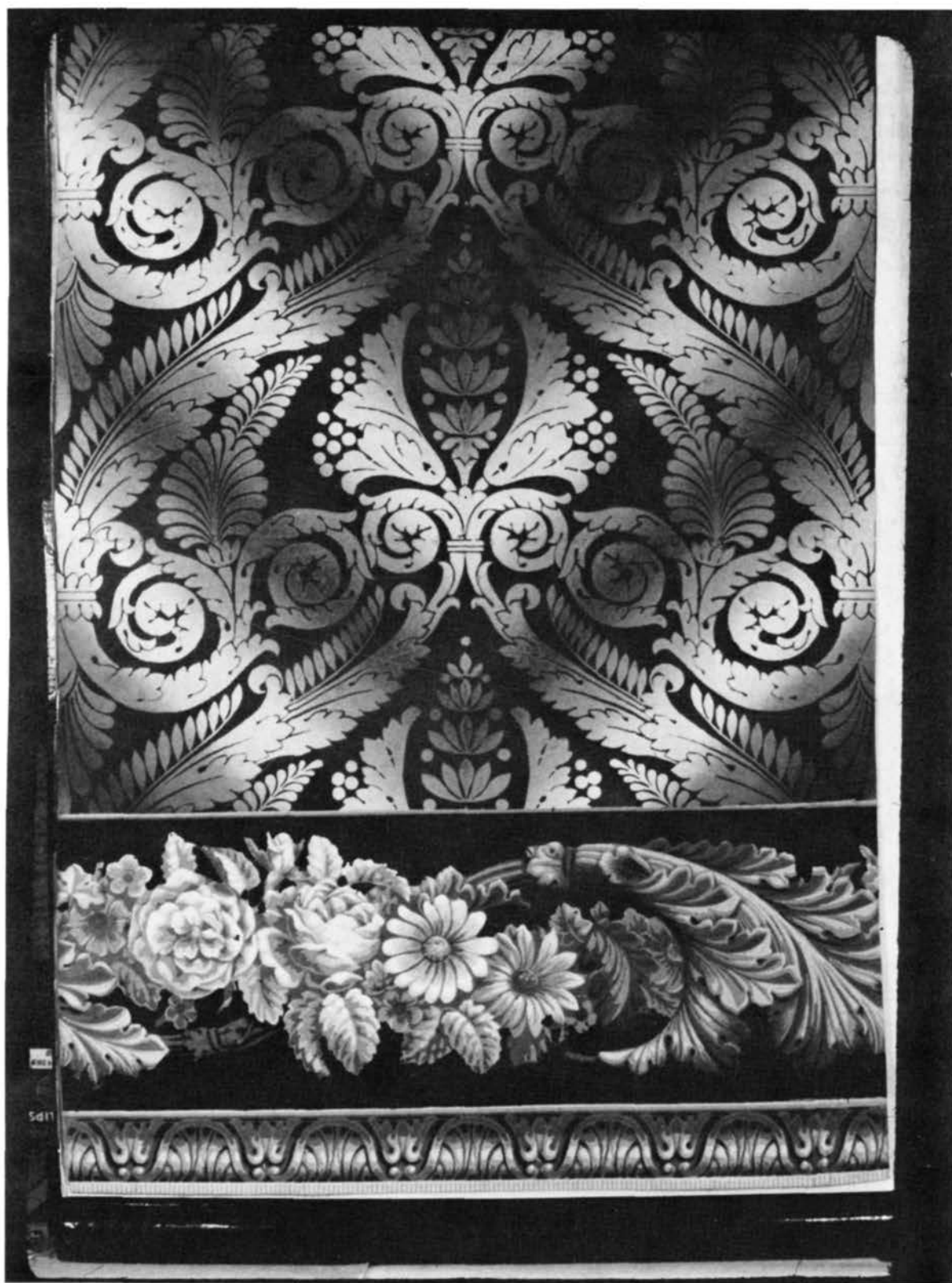


Figure 23: An advertisement that appeared in a Hartford, Connecticut newspaper of 1821 shows simple stripes, closely akin to French papers from which they were doubtlessly derived. The simpler stripes flank another French wallpaper pattern type that was popular in America and copied by manufacturers here through the first 35 years of the 19th century. This

central paper is also a stripe: the vertical lines of patterning at the edges of the paper width formed borders for a field of spotted, small-scale motifs which were the background for two larger motifs. These larger motifs, here flowers, alternated vertically over the entire length of paper.

PAPER-HANGINGS.





Three special types of late 19th-century wallcoverings were very popular. The first is "Lincrusta-Walton," an invention of the 1870's made by an Englishman, Frederick Walton. Lincrusta is a composition, which like linoleum, is based on linseed oil. Very thick and strong, and patterned in high relief, it was sold both colored, and plain, to

Figure 24: The shadowy chevrons of alternating darker and lighter tones shown in the repeating pattern above the floral border are deliberately contrived color shadings in tones that range from white, through yellow-gold to green. The color-shading technique introduced by Zuber et Cie, a manufacturing firm in Alsace, was very popular in this country during the 1820's-1840's. The Zuber Company, which is still in business, shipped these patterns to America in quantities. This pattern, found in a samplebook of 1828-1829 which is preserved in the factory archives, duplicates the paper found in the Calhoun house in Clemson, South Carolina. Sold here as "rainbow paper," the Zuber prototypes had many imitators.

be painted after hanging (figure 29). In 1882 a company was organized to manufacture the English invention at Stamford, Connecticut. It was advertised during the 1880's as "The Indestructible Wall Covering," and had many imitators.

The second of these wallcoverings especially popular during the late 19th century was Japanese "Leather Paper." The final appearance of this product was so realistic that it fooled many a connoisseur into accepting it for actual leather. The

Figure 25: An 1849 lithograph shows a Philadelphia wallpaper store with a wide selection of patterns ranging from scenes in the Gothic Revival taste, to Rococo Revival panels featuring elaborate scrollwork, to floral stripes and diaper patterns. Close inspection of the illustration will reveal that the diamond diaper pattern which forms the border background around the storefront in fact depicts rolls of wallpaper stored on a diamond grid of shelving.





heavy gauge paper was highly embossed and varnished, and featured richly colored and gilded decorations. It was not only hung on walls, but also frequently used to decorate the bamboo and imitation bamboo furniture that was popular during the period.

Finally, a third category of papers popular into the 1920's was "Ingrain" paper. According to the 1877 patent, the paper was to be made from

mixed cotton and woolen rags, which were dyed before pulping. The process gave a thick, roughly textured "ingrained" coloring. Similar papers with rough grainy surface were known in the trade as "oatmeal papers."

Innovative flat patterns in the Art Nouveau taste had limited impact in America around the turn of the century. Some English designs continued to be bought by the design conscious avant-garde in

Figure 26: On a mid-19th century stripe, realistic flowers were printed in bright blue, pink, and orange, shaded with maroon over scrollwork in gray, blue, and gold, all on a polished white satin ground. Typical of French imports of the period, this 22 inch wide paper was used in the Early House in Lynchburg, Virginia.

Figure 27: Panel sets like the one shown here divided the walls of a room into vertical segments. They became fashionable in the mid-19th century. This

engraved mid-19th century illustration shows a set by the Parisian firm Delicourt, a firm whose papers were prominently advertised in New York. Fragments of this design found in a house in Camden, Maine, are preserved at the Society for the Preservation of New England Antiquities. Panel sets were called "fresco papers" in the advertisements, and elaborate decorations in wallpapers like these are preserved in houses from New England to Mississippi.

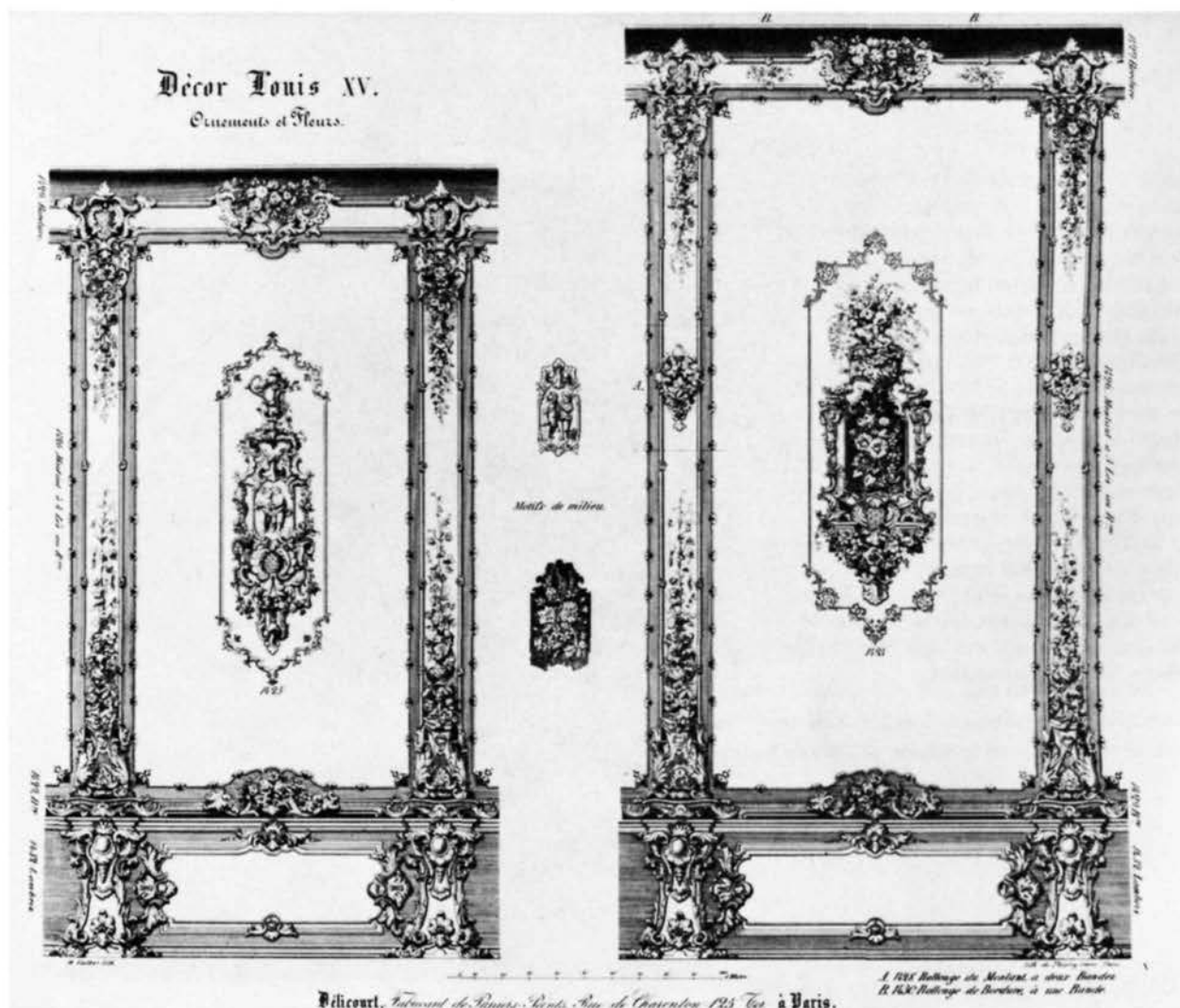


Figure 28: The Englishman William Morris (1834–1896) designed this “Willow” pattern in 1874. It was one of the most successful of the stylized flat patterns—as contrasted to the naturalistic 3-dimensional patterns (like that of figure 26)—that won a generation of taste conscious Americans away from French designs. Morris papers inspired “artistic” imitations by American wallpaper manufacturers. Morris himself designed a total of 41 wallpaper patterns between 1861 and his death in 1896, and 5 patterns for ceilings. Because each was registered by name and number with accompanying sample at the English Board of Trade, and because these records are preserved in the British archives, the dating and identification of the designs of Morris, and of many other well-known British designers, can be quite precise.



Figure 29: “Lincrusta-Walton” of the 1880’s was preserved from the dining room of the John D. Rockefeller House in New York. In the thick, linseed-oil based composition material, highly embossed gold flowers on a dull red ground are stylized in the flattened abstracted “Aesthetic” manner that originated in London during the 1870’s. Advertised as the “Indestructible Wall Covering,” Lincrusta-Walton was first patented in England, and became so popular that its producers established a factory at Stamford, Connecticut. “Lincrusta” has lived up to its advertising, surviving in remarkably good condition in many stylish patterns in diverse settings: a log cabin in Leadville, Colorado, a Gothic cottage in Woodstock, Connecticut, and Mr. Rockefeller’s New York mansion.





Figure 30: In a commercialized American version of the “Anglo Japanese” style, owls, fish, and flowers are all arranged in a strange asymmetrical configuration considered “artistic” in its day. Printed in maroon, yellow, light green, black, and olive on an olive green ground, this pattern is typical of quantities produced by American factories during the 1880’s and into the 1890’s.

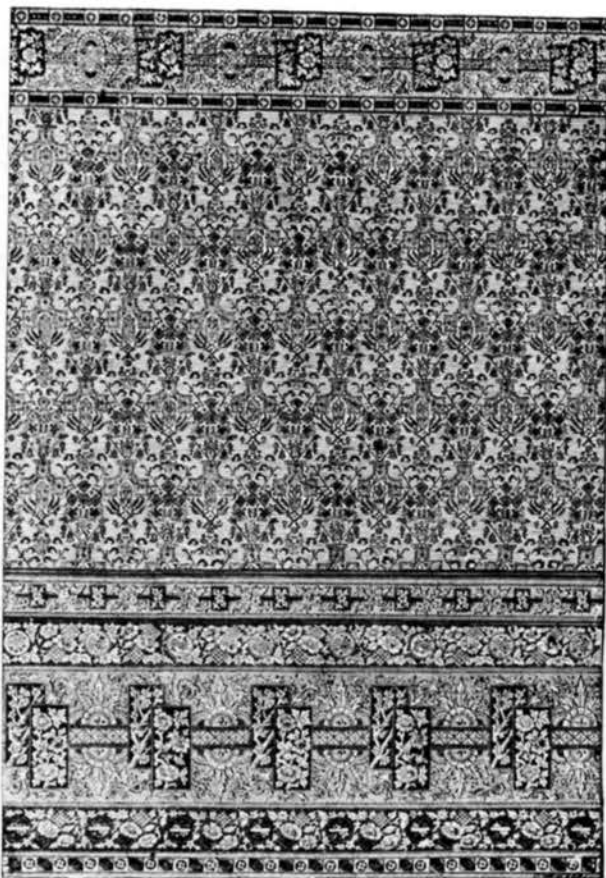


Figure 31: "A Characteristic Treatment in Moderate Priced Papers," this illustration from *Carpentry and Building* for December 1880 shows the favorite scheme of the day for dividing walls into three horizontal sections: frieze at top, fill below, and dado below chair rail, all marked off by borders.

America. But the 1890's witnessed a general return to commercial production of scrollwork and naturalistic styles not far removed from those of the mid-century. Commercial manufacturers leaned heavily on palates that featured saccharine pastel shades, and color blendings.

BORDERS, FRIEZES, AND DADOS

Through the 18th and 19th centuries particular attention should be paid to the styles in wallpaper borders. Borders were not originally used for decoration alone, nor were they a refinement used only by the stylish. They commonly served the function of simplifying the paperhanger's job by concealing and fastening the cut ends of pieces of wallpaper. They could also serve to hide any tacks

used, or to fill the gaps if a paper were trimmed too skimpily.

In the late 18th century, narrow 2-inch borders were often used to outline interruptions in a wall: windows, doors, fireplaces, cabinets, pilasters; slightly wider borders, 4 to 5 inches, were used in combination with the narrower ones, usually on the horizontal at the cornice and chair-rail level (figures 12 and 16). This practice was continued past the turn of the century (figure 22). In the early 19th century, the French produced, and Americans used an abundance of 15 to 30-inch-wide friezes at the tops of walls and dados below chair rail level in combination with narrow and wide borders along the vertical edges of walls (figure 21).

By mid-century, the use of borders diminished slightly: they grew narrower, and were for the most part confined to the tops of walls. But in the 1850's and 1860's a French fashion for dividing the wall into vertical panels, formed by border papers or by wallpaper "pilasters," again focused fashionable attention on wallpaper borders (figure 27). These panel decorations, many of which included elaborate dados imitating architectural panelling and carving, were known as "fresco decorations," and required clever hanging to be fitted on a wall.

With the English patterns of the 1870's and 1880's came the preference for dividing the wall into three clearly differentiated horizontal sections: frieze at top, fill below that, and dado below chair rail (figure 31). These areas of different patterning were marked off by border patterns. The scheme was often carried up stairways in dados and friezes printed with diagonally oriented patterns.

In the 1890's, friezes became even wider, dominating the whole wallpaper scheme (figure 33 and 33A). A great favorite of the first quarter of this century was the "Crown Hanging" in which vertically oriented designs, usually flowers, rose in widely spaced stripes up the wall to join a dominant design that ran horizontally across the top of the wall.

CEILINGS

Wallpapers were frequently used on ceilings. Paper designs imitating plasterwork medallions were common during the early 19th century. But some more ambitious designs imitated large ceiling paintings of gods and goddesses in the cloudy heavens. Borders were frequently used around the

edges of ceilings, and papers imitating architectural ornaments of coffered ceilings have been found in this country. Overall patterning was increasingly used on late 19th- and early 20th-century ceilings. Many ceilings of the 1880's were elaborately segmented by wallpaper borders into many areas of different patterning (figure 32).

Figure 32: Elaborate wallpaper decorations for ceilings, incorporating borders, centers, and fill patterns were illustrated in the December 1880 issue of *Carpentry and Building*. Paper decorations had been used for ceilings all through the 19th century. Medallions imitating plasterwork or providing floral embellishment

for the point from which a lamp or chandelier was hung were particularly popular. In the mid-1870's, decorators and manufacturers began to popularize elaborate schemes for ceilings which captured middle class taste during the 1880's.

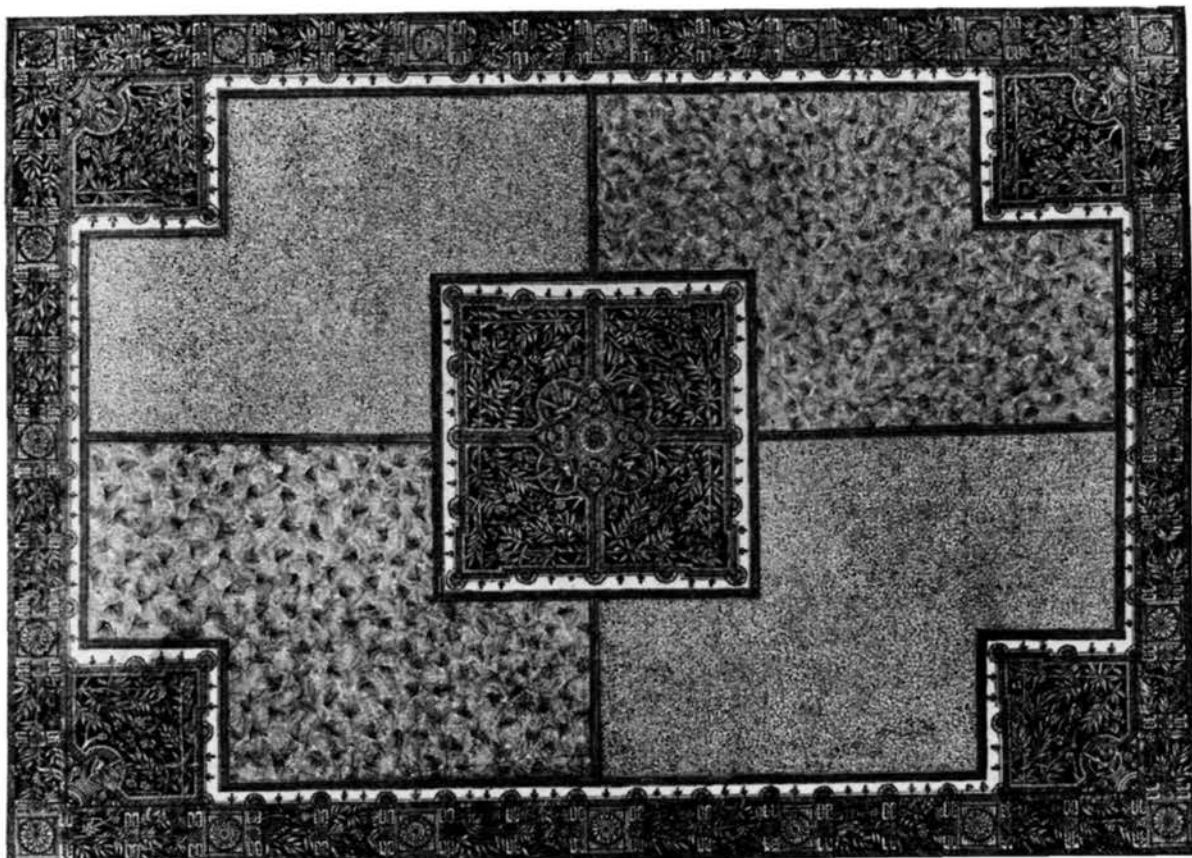
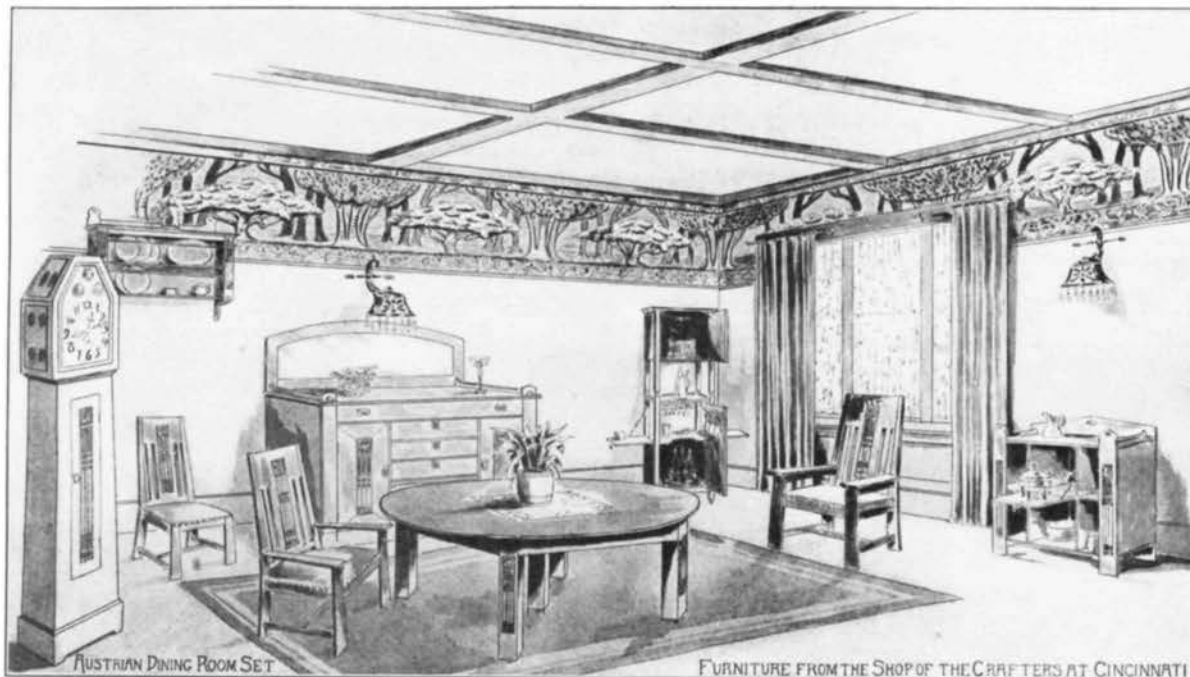


Figure 33 and 33A: A wide wallpaper frieze dominates the walls of this room illustrated in the January 1904 issue of *The Wallpaper News and Interior Decorator*. The frieze illustrated is shown below as a sample of actual wallpaper in the Cooper-Hewitt collection. It is the 22½ inches wide “May Tree Frieze” by Walter

Crane (1845–1915), designed in 1896, and printed in shades of tan, blue, green, and yellow. Crane, an illustrator, had a strong influence on his contemporaries, and the abstracted landscape, flattened by the strong outlines is typical of turn of the century stylization.



A M O D E R N D I N I N G - R O O M

The May tree frieze is from a famous English wall-paper factory.



Figure 34: An Art Nouveau design of about 1905 by an American designer, Albert Ainsworth, of Hackensack, New Jersey relies heavily on English models. It was printed in green and mustard colors on a grainy yellowish “ingrain” or “oatmeal” paper. The pattern was used in a Brooklyn house.



Wallpaper Within a Restoration Project

PLANNING FOR WALL TREATMENTS

Planning for wall finishes should begin early in a project and should be predicated on solid research on the specific building to be restored. Basic, potentially expensive decisions about painting and/or papering should only be made after careful examination of the physical evidence in the building, documentary descriptions of the historic interiors, as well as more general written sources. This thorough research should be done before the start of any demolition or restoration work.

Outside expertise may be needed for identification of any wallpapers found during a restoration project. There are a number of museums with wallpaper reference collections that may be contacted to solicit their interest in offering professional assistance in identifying samples (see appendix A). If so, then duplicate samples accompanied by good clear slides of the room and wallpaper would be appropriate to send for examination. Preliminary, generalized, and brief statements of opinion about the date of a wallpaper, may be given free of charge, though many museums may set a minimal fee.

If more extensive information and research is required or requested, consultants' fees may be charged. On-site examination of wallpaper is often necessary, in which case, most of the listed museums can recommend consultants. Travel expenses and fees vary and may seem high on first consideration, but expertise is invaluable in planning the preservation of valuable wallpapers and can prevent costly mistakes.

RESEARCH

Many kinds of expertise are needed in researching the various historical and physical aspects of an old building. Architect, engineer, architectural historian, historian, curator, and other trained personnel may all be needed. Ideally, personnel experienced in restoration work should do the preliminary research, both in documents and in the physical structure, and set the scope for the total restoration project.

In determining the appropriateness of wallpaper, there are some specific points to be covered. Part of the examination of a building should begin with any extant records of the business, institution or family connected with it. These should be studied for any references to wallpaper or other interior finishes. Diaries, business journals, bills of sale, public documents and construction contracts should be searched with care. Old photographs and portraits should be examined for visual evidence of patterned walls in the background. If there is evidence that specific rooms were papered, the physical examination of those rooms should be particularly diligent.

If an architect designed the house, his records and/or library might yield clues. Many wallpaper patterns were published in late 19th-century architectural journals. Studying the house-owner's library for publications on furnishings might reveal his taste in interiors, but can hardly be relied upon as conclusive evidence. On the other hand, scrapbooks, bookmarks, drawer linings, shelf paper, were often made from the remnants of wallpaper rolls. Even the clothes of paper dolls and the walls of family owned dollhouses should not

be overlooked. Search in old pieces of furniture and under the linings of mirrors, prints, and paintings. Ends of rolls of paper may be still hidden in the attic under the eaves, and old wallpaper sample books have been preserved in these areas as well. Old boxes, trunks, hatboxes, and bandboxes should be examined with particular care, as they were frequently covered and lined as well as recovered and relined with leftover bits of wallpaper. The researcher should check for earlier layers under the topmost layer. Storage areas also may contain "fireboards," rectangular pieces of wood, large enough to cover a fireplace opening. During the 18th and 19th centuries, some fireboards were decorated with wallpaper to match the rest of the room. Many fireboards were stored and forgotten. Again, these objects should be checked for more than one layer of paper. If possible, any furniture or documents related to the building, but now in the hands of descendants, should be checked for any information helpful in the restoration.

Before repair, demolition, or restoration begins, a search should be made for wallpaper still on the walls in the structure itself. In examining a building, painted walls should be carefully scrutinized under a raking light before test scraping for early paint, to see if the paint covers early paper. Sometimes the horizontal seams in early handmade hanging papers are discernable through layers of paint, as are the vertical edges of later papers. Rooms that have been stripped to what appears to be the bare plastered walls should be illuminated with black light and walls carefully studied for elements of early patterning. Chemical traces of coloring matter printed on papers have sometimes leached through the wallpaper paste and left an impression on the walls which, though invisible to the unaided eye, will appear under ultraviolet illumination.

All closets, which are frequently additions in old houses, should be searched carefully. Sometimes old wallpapers are preserved on the walls of closets with nothing more hiding them than a closet door. Search behind anything that has been added over the years: from paneling and partitions to large mirrors, paintings, and bathroom cabinets and from stairs, doors and window frames to moldings, and baseboards. Such exam-

ination should continue as the demolition work proceeds, especially with the removal of later additions.

It is not enough to look for wallpapers in only one part of a wall. All edges and outlines, all openings in the walls should be checked carefully for border papers often used with the major patterns. If one pattern is found above the chair rail, the search should begin for a different pattern below chair rail level, and at frieze level, as well as for the borders that may have divided them one from another. Ceilings should also be checked for overall patterns, borders, and center medallions.

When a wallpaper is discovered, measured elevations of the walls and plans of the ceilings should be drawn and coded notations made indicating where the evidence was found. In turn, each area of paper should be photographed in place using black and white as well as color transparency film, carefully including a scale and coding to correspond with the measured drawings.

Within a restored building, preservation *in situ* of old papers in good condition is the preferred procedure, not only as a responsible course within a conservationist's frame of reference, but also frequently, as the simplest and least expensive. Even if a room is to be adapted for some heavily trafficked use, original papers can be retained as is, behind Plexiglas or other protective covering.

But rarely will an old building retain original papers in presentable condition. If a papered room is found, the paper frequently requires extensive, skilled, and therefore expensive restoration (figure 20). If such restoration cannot be undertaken immediately, the paper could be carefully covered over with plasterboard so that the old papers can be preserved while the room is redecorated and used for whatever purpose until funding and time for proper restoration is available.

Often the old paper, or the supporting walls, are in such poor condition that in the interest of preserving and using a room, the paper must be removed. Before removal begins, the papered room should be thoroughly documented with a set of photographs as described above. Samples including full widths and repeat lengths should be nu-

merically coded in pencil to correspond with any evidence drawings and, only then, should be carefully removed from the wall. It is essential, despite any ensuing research, that a copy of each type of sample be retained by the preservation project.

UNCOVERING AND REMOVING SAMPLES OF OLD WALLPAPER

If a fine early paper is discovered, or if a large expanse of old paper appears which may be salvageable, an expert paper conservator should be called in to investigate the possibility of preserving it. The job of uncovering a quantity of paper that has been covered by later papers, or by paint, is not one for amateurs, nor should anyone, without long experience, be entrusted to remove a large expanse of paper and remount it for reuse.

In making paint scrapings, paper may be discovered under layers of paint. Removal of paint that has been applied directly to the paper is difficult, as often the paper has absorbed the paint. By testing on a few small areas, a solvent may be found that will remove the paint without disturbing the paper, allowing exposure of a representative area of the pattern. Sometimes, the paper layer from the desired historic period may lie beneath the painted paper. Lifting the later layer by steaming and loosening the water-soluble wallpaper paste is usually a simpler process than removing paint.

Walls bearing many layers of paper are frequently encountered in old houses (figure 11). The easiest way to examine the successive layers is to find an inconspicuous area where the whole "sandwich" of layerings has been loosened from the wall, and to remove the whole patch by carefully working a spatula behind it. Then the layers can be steamed apart on a horizontal surface, using a hand steamer (figure 36). To separate layers, the jet of steam should be directed at the paste on the underside of each successive layer until the paste is moistened, separating two layers which can then be pried apart with a spatula. As the paper becomes moist and weakens it should be supported with screening or with blotters.

Figure 35: During the restoration of this building, the removal of a partition has exposed a vertical strip of French scenic paper over a dado with a border paper. This type of evidence is a fortunate find. Information on the building and its alterations can help date the paper or, as in this case, knowledge of the paper will contribute to the understanding of the history of the structure. The scenic and the dado can be precisely identified, by comparison with pristine complete examples in museum collections, as French examples of the 1830's and 1840's.

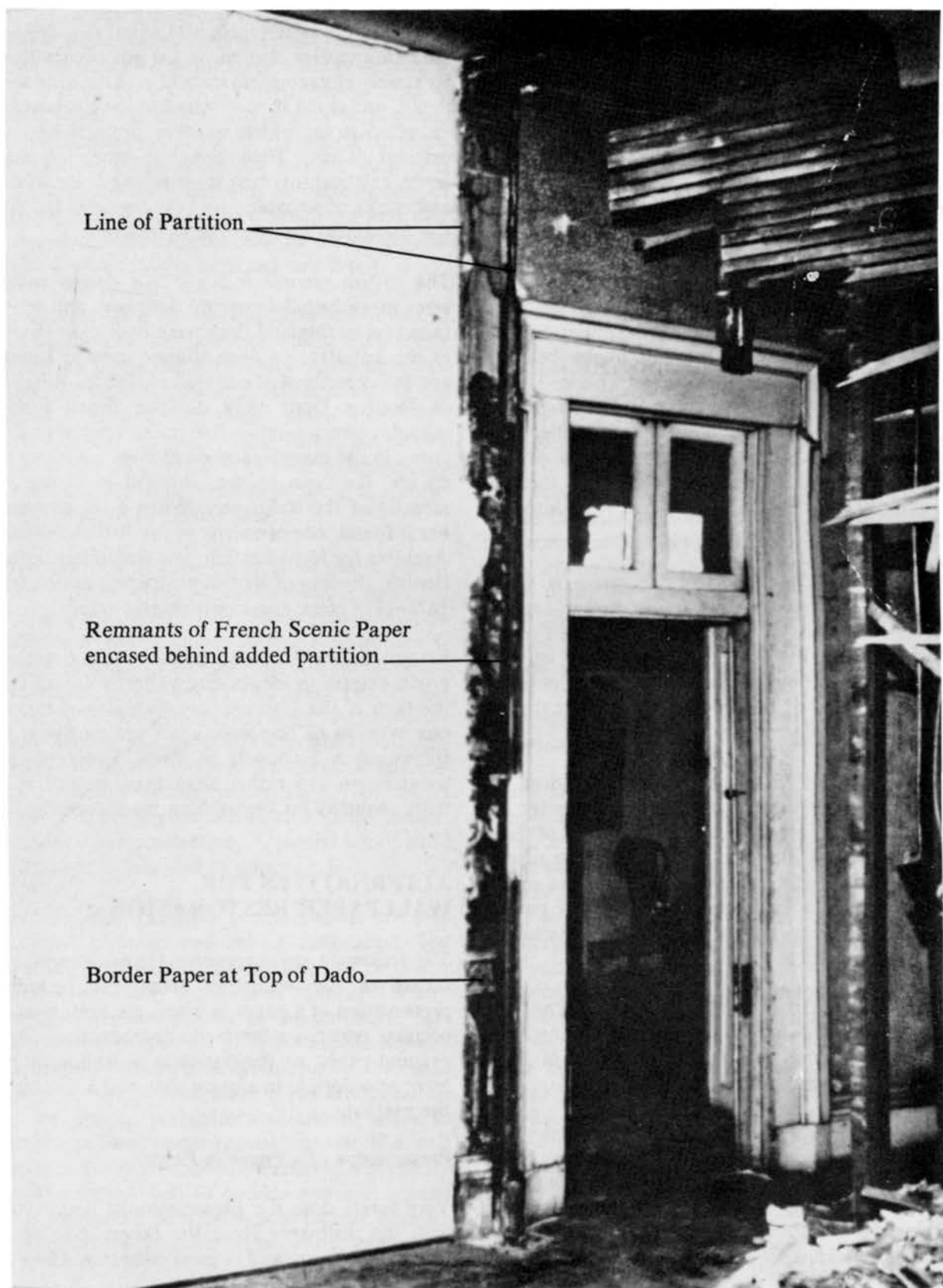
If steaming proves difficult, and if quantities of duplicate paper are available to back up a loss, the whole "sandwich" of wallpaper layers may be submerged in lukewarm water. When the paste begins to soften (which usually happens before the water-soluble colors begin to run), a spatula may be inserted under the topmost layer, and as the paper loosens, a piece of screening can be slipped under it for support and lifted from the water. After most excess water is removed, the individual layers can be transferred to glass or to waxed paper to complete the drying. Do not dry the papers on newspaper, toweling, or another surface to which the old paste might adhere. Successive layers can be removed in the same manner. There will be more color loss with this method, but it is usually quicker and easier than steaming.

Since there is usually little hope for restoring paper which has been covered over and abused, the goal is to preserve samples as records upon which to base reproductions. Steaming is the easiest way to preserve good samples without sacrificing the colors that would be lost in submersion. However, the steaming process should only be done if duplicate repeats of the papers are available, as successive top layers will have to be sacrificed in uncovering a good sample of each pattern.

IDENTIFYING SAMPLES

Physical examination of the wallpapers for evidence of the paper and coloring technology is the most important starting point in determining an approximate date. But in narrowing down the time frame, this process alone is of limited help. At some point, documentary and stylistic evidence must be examined.

The bibliography to this report provides guidance toward publications helpful in recognizing early



wallpaper styles. But these volumes are rare and difficult to consult outside of major research libraries. Because literally thousands of patterns in hundreds of "color ways" (or schemes) were annually introduced by numerous manufacturers throughout the 19th century, no publisher could afford to illustrate all the available patterns and colors. The most elaborate and expensive high-style papers, especially the 19th-century scenic papers, are the ones most likely published and identified. Searching for more ordinary repeating patterns in publications is usually a fruitless task.

As mentioned previously, any of the museums with wallpaper reference collections might be consulted for assistance. Also, at the Cooper-Hewitt Collection there are color slides and photographic prints of thousands of dated and identified patterns with which the researcher can compare his findings. In addition, sets of color slides showing wallpapers of a given period can be ordered by mail.

Once the general period of the paper is determined, if precise identification of maker and designer is wanted, patent illustrations from France, England, and the United States could be consulted. Illustrations of the official documents are being gathered at the Cooper-Hewitt, but the archive is far from complete.

Rarely, makers' marks are found stamped on the backs of early papers, but more frequently are found printed along the front margins of later 19th- and early 20th-century papers. These marks, along with English and French excise tax marks (figure 13), can help in precise datings of papers. Files of makers' names and working dates are being assembled at the Cooper-Hewitt.

The National Archives of Britain, France, and the United States include design patents and registers of designs which provide useful means of identifying some old wallpapers.

The earliest American wallpaper design patent on file in the Patent Office in Washington, D.C., dates from 1866; and these records include an interesting array of designs through the turn of the 20th century. However, a relatively small proportion of all wallpaper patterns actually produced in

this country are found in these records, as design patents offered such little protection to a designer or manufacturer that most did not obtain them. By simply changing the scale of a pattern, or some detail, one could have claimed to have invented a "new" pattern, which was not protected by the original patent. Therefore, the time, inconvenience, and cost involved in searching these records and stacks of uncategorized photographs for positive identification might be to no avail.

The British records indicate that design patents were more heavily used by designers and manufacturers in England than were their counterparts in this country. In deep storage outside London are the records of the Board of Trade, Registers of Designs from 1839 onward. Since English manufacturers printed the registry number of a paper in the margin, and since these numbers are on file, they can be most helpful in dating and identifying the wallpapers. When a registry number is found, one can write to the British National Archives for identification. For American restorationists, the files of British wallpapers dating from 1875-1915 often prove particularly helpful.

French wallpaper design patents most frequently prove helpful in identifying patterns dating from the turn of the 19th century. Samples of marvelous patterns of Napoleon's era are on file at the Bibliotheque Nationale in Paris. However, personal inspection rather than mail inquiry is usually required for researching these records.

ALTERNATIVES FOR WALLPAPER RESTORATION

The following are suggestions for assessing the alternatives for wallpaper treatment including: preservation of a paper in place, restoration of the original paper, custommade reproduction of the original paper, or the purchase of wallpaper patterns appropriate to a given date and available on the market.

Preservation of a Paper in Place

Very rarely does the preservationist find a room with the wallpaper from the target date of the restoration *in situ* and in good condition. Once the

identity and the date of the paper have been verified, preservation in place is the most ideal, and possibly the cheapest solution. Superficial cleaning of the paper by vacuuming, while protecting it with fine nylon screening, may be all that is needed. Cleaning with a draftsman's vinyl cleaning pad is most effective on horizontal surfaces, but may also be tried on the vertical wall. It is very important that these only be used on smooth surfaces of wallpaper in good condition and that all residue be thoroughly cleaned off by careful brushing with a very soft camel hair brush.

If a number of layers of wallpaper are found, a basic decision should be made within the context of the goals of the overall project regarding which of the wall finishes should remain exposed. In the case of a 19th-century paper found in a 18th-century house, careful consideration should be given to the validity of removing a historically significant layer of decoration in favor of returning the room to an earlier date.

If the decision favors removal of the topmost layers of paper, every attempt should be made to: (1) check that even earlier layers that should be preserved do not lie under the desired finish layer, and (2) arrange in advance for the preservation of whatever papers have to be removed. Do not dispose of the wallpapers, but notify local preservation interest groups of the availability of such papers or advertise in one of a number of publications circulated among preservation projects. A project in need of your extra paper could finance its removal and restoration. A partial list of such publications is included in appendix B.

Preservation of wallpaper *in situ* involves not only superficial cleaning and minor restoration, but also a careful check of the condition of the walls behind it, especially for areas of moisture. If any alterations are to be made to the structure, particular care should be taken to protect the papered walls during construction from damage by man-made or natural causes. During any alterations to the roof, special precautions should be made to protect a papered room against leakage. If a wall or wing is removed suddenly exposing a formerly interior papered wall to outside weather, special protection should be constructed. Drastic changes of temperature and humidity could prove dis-

astrous to wallpaper that has been well protected from the elements.

Because pigments used to color wallpapers are light-sensitive and subject to fading, ultraviolet filtering Plexiglas should cover windows, and artificial lighting should be kept to a level of 15 foot candles using incandescent lights. Installation of shades or blinds may prove necessary if a papered room has too much direct sunlight. A further safeguard is constant temperature and humidity control, which will help preserve the life of the papers, pigments, and adhesives.

Some basic practices to avoid: **DO NOT** use Scotch tape, rubber cement or Duco cement to repair minor tears. Instead, use only chemically pure wallpaper paste to readhere torn papers to the walls. **DO NOT** varnish or shellac the paper or spray it with a fixative, as these tend to darken and discolor the paper as well as add a glossy sheen, uncharacteristic of wallpapers. If protection is needed for old papers, especially near doorways where visitors will be tempted to touch them, cover the papers with sheets of Plexiglas, mounted on blocks that hold it about one-fourth inch or so from the wall, allowing circulation of air and preventing condensation under the plastic.

Removal and Rehang of Large Areas of Wallpaper

Skill and experience are required to successfully remove and rehang whole walls of paper. An experienced paper conservator should be consulted and any subsequent work carefully supervised. The techniques for removal may be as complicated as facing the paper with a strong tissue on which it can be held together while it is lifted from the wall and carried, or as simple as carefully scraping the paste away from underneath already loosened paper to coax it off the wall.

Once removed, the paper should be cleaned, backed with acid free lining paper, and mounted on chemically pure muslin before it is rehung. One source for this lining material is Charles Gracie, at 979 Third Avenue, New York (1977). If it must be stored before hanging, every effort should be made to avoid rolling the paper. For long periods of storage, it should be laid flat on

blotters or on good acid free paper with masonite or plywood boards underneath to keep it flat. When papers are rolled, the thick pigments on the surface can easily be dislodged and flake off.

In rehanging, only very pure water soluble paste should be used. An alternative would be to simply tack the already carefully backed wallpaper to the wall so that it can be easily removed for cleaning or rehanging at a later date.

In some cases, papers pasted directly on unfinished boards resist removal even by the most skilled paper conservator. If the patterning is to be preserved at all, then the board itself must be removed and stored, ideally in a dark, temperature and humidity controlled storage area. One sample of a full repeat might be left on display in the room to be restored.

Consideration for the aesthetic appearance and for the teaching possibilities of leaving worn paper exposed next to the new reproduction should be assessed in deciding whether or not to leave samples of the paper on display *in situ*. Sample areas can be preserved in place under ultraviolet filter-

ing Plexiglas covers and will not detract from the general appearance of the room, if they are in inconspicuous locations. However, the sample can probably be preserved with the least amount of color fading and future deterioration if it is removed from the wall and stored as described below. Unless there is great difficulty in removal, this probably is the preferred procedure.

When paper is removed from a wall, samples including a full repeat of any patterning should be preserved, layers separated, cleaned, and then encapsulated in polyester film following the procedure developed by Peter Waters at the Library of Congress (figure 37 to figure 39). A very similar method is described in a two-page instruction briefing on the encapsulation process used by George Cunha at the New England Documentation Center, North Andover, Massachusetts and is available from the center.

The relatively simple procedure using tape to seal paper samples between two layers of a polyester film, polyethylene terephthalate, which is most widely known under the brand name Mylar, has many advantages over old methods for matting

Figure 36: By starting at a corner using a steamer and a spatula, the author begins the process of separating a thick "sandwich" of many layers of wallpaper, pasted one on top of another. As work proceeds, the jet of steam will be directly aimed at the paste on the back of the topmost layer, while the small flat spatula is used to coax the layers apart when the paste softens.





Figure 37: A length of early 19th-century wallpaper, printed with two duplicate border patterns, is shown as it rests on top of one sheet of Mylar, a plastic film of polyethylene terephthalate. Paper weights hold flat the sample as this particular piece has been rolled since it was made. A second layer of the clear plastic film is being placed on top of the sample.



Figure 38: A special double-faced tape is used to seal the paper between the two layers of plastic. Here, protective coating is peeled away from the tape which is fixed in place bordering the sample.



Figure 38A: Once the upper layer of Mylar is in place, a squeegee is used to force out all excess air before sealing in the paper. Use of the squeegee also reinforces the bonding of static electricity which holds the paper immobile between the plastic layers.

paper samples. Encapsulation protects papers very well, so that they can be handled safely for study, allowing full view of both sides of the paper. Because static electricity holds the paper sample firmly in place, and the plastic supports it completely, it is not necessary to mend tears in samples. In addition, the paper can be very quickly removed from the Mylar if there is any need to do so by simply cutting through the film.

Both the Mylar and the tape (3-M product, Tape #415) have been tested and subjected to accelerated aging tests, and should last indefinitely if stored and handled properly. When they are not in use or under study, the encapsulated samples should be kept in light-free storage, with constant temperature and humidity control.

Great care should be exercised in repairing damaged papers. Crucial to this is the selection of a competent worker chosen on the advice of a reputable paper conservator and who would work within clearly established guidelines which dictate choice of materials and procedure. Repairs to valuable papers important to a historic restoration should be undertaken only by an experienced paper conservator.

The most common problems are: (a) adhesive breakdown, that is: wallpaper falling off the wall, (b) flaking colors, (c) lost colors and areas of pattern, and (d) waterstaining. The following suggestions apply to restoration as well as to subsequent maintenance procedures.

Frequently, old wallpaper paste will lose its adhesive strength due to either excessive dryness or moisture. Moisture may indicate that the wall behind the paper is wet, in which case mechanical and structural causes for this should be investigated and corrected.

Before readhering paper which has been separated from the wall, the surface of the wall should be carefully cleaned, and all old paste should be removed from the wall and from the wallpaper. This can usually be done by delicately scraping with a small knife that has a curved blade. Paper in good condition, only partially loosened from the wall, can be readhered with first quality water

soluble wallpaper paste. Paper in weakened condition, worn and frayed, should probably be removed, mounted on lining paper and rehung with first quality paste.

Fine wallpapers printed in distemper colors over a ground coat of thick distemper color are subject to flaking, due to an inherent weakness in the bonding capabilities of the color to the paper. Do not employ the ruinous 19th-century varnishing method for remedying this problem and do not simply attempt to spray with a fixative. Not only will an undesirable shiny finish be created by either of these methods, but neither will serve to properly readhere the pigments to the surface of the paper.

To readhere flaking colors, cautiously brush and/or flow a synthetic adhesive over the affected area, gently forcing the liquid behind the flakes. As they become moistened and relaxed, cover a small area with glassine and mechanically stroke, pressing the loose pieces back against the paper. This is painstaking, meticulous work which must almost be done flake by flake by a careful, patient, and skillful hand.

The correct synthetic adhesives to use will vary according to the color, thickness and surface appearance of each area of flaking paint. They may include polyvinyl alcohol of varying viscosities, one or two percent methyl cellulose dissolved in water, polyvinyl acetates of varying viscosities in toluene or Acryloid B-72 (a polymethacrylate) in xylene.

Where colors and pattern elements have been lost, in-painting may be undertaken using Windsor and Newton watercolors or gouaches. Samples of the colors should be allowed to dry so that they may be compared with the areas to be in-painted before they are used. Particular attention should be given to the gloss of paints to be used.

When in-painting, every effort should be made to reproduce the block printed effect of the buildup of layers of flat opaque colors in shapes that have strong edges. Solid areas of coloring in block printed wallpapers have none of the brushstroked qualities of shaded easel painting. Of course, by



Figure 39: In a temporary wallpaper storage-study area at the Cooper-Hewitt Museum, a researcher, seated at the table, is viewing color slides showing the wallpaper samples, with the assistance of Ann Hysa Dorfsman of the museum volunteer staff, who photographed and supervised the organization of the collection. Hundreds

of samples can be speedily reviewed using the slides as an index. Then, when the researcher finds among the slides a pattern needed for close study, it can be retrieved from storage files like those shown on the right. Duplicate copies of the slides may be ordered from the Museum.

the same logic, if in fact the paper is hand painted, brushstrokes are in order, and an attempt to reproduce the look of machine printing should be made when machine printed papers are being in-painted.

With repeating patterns, it is relatively easy to reproduce missing elements. With nonrepeating scenic papers, every effort should be made to secure a good clear photograph of the missing area from a duplicate set of the paper, and to reproduce the missing elements as they appeared originally. Illustrations of scenic papers may be available from the Cooper-Hewitt Museum in

New York, from the Musée des Arts Decoratifs in Paris, or in several published sources (see bibliography).

There are a number of methods available to an experienced and skilled conservator for removing water stains from paper, when working on a horizontal surface. One of the simplest is to place a blotter or a little Fuller's earth under the paper, then to work with water, tamping or rolling this solution with a cotton swab so that the solution passes through the paper. It is then followed by pure water, which is tamped through the paper in a similar manner to washout the bleach. A more

difficult method involves using an etherial solution of hydrogen peroxide (equal volumes of hydrogen peroxide and ether), and again tamping with a cotton swab. But this method is physically dangerous, and it is suggested for use only by the very experienced.

The removal of water stains presents a wide variety of conservation problems. This, coupled with the difficulties of working on a vertical surface with water-soluble colors on wallpaper, suggest that in-painting or over-painting might be a more practical solution to unsightly waterstaining.

Custom-made Reproduction of Original Wallpapers

When physical or documentary evidence indicates the need for a wallpaper pattern that is not currently available commercially, custom reproductions can be silk screen printed. Unless there is a particular interest in reproducing the early processes of block printing or paper making, such expensive refinements as the carving of printing blocks and the handmaking of small sheets of paper to be glued together to form rolls for hanging, can be bypassed in good conscience. Most restorationists agree that it is not necessary to repeat the original printing process as long as the finished appearance of the reproduction matches as closely as possible that of the historic paper. Also, in the long run there would be no confusion as to the paper being a reproduction.

The cost of silk screen reproduction depends on the number of colors included in the pattern to be reproduced, as a separate screen must be cut for each color. To make the screens (which are sophisticated stencils), a full-size repeat of the pattern is needed. A pristine sample of wallpaper can serve, but most often carefully painted renderings of a complete pattern repeat must be made at full scale. Because these images are usually transferred photographically to the screens, the *character* of the artwork is crucial to the success of the finished product. Details indicating the original production process should be skillfully included. A rendering of a block printed paper should reproduce the strong edged, thick opaque shapes as closely as possible, with no suggestion of a brushstroke visible. A rendering of a machine printed wallpaper

should reproduce the thin-bodied character of the colors, the sharp lines around shapes, and the vertical graining produced by the rollers. If you have only one sample of an old wallpaper for an artist to copy, protect that sample carefully. Do not simply send it to the artist or manufacturer. Either require that the artist come to the sample, or accompany the sample and supervise its use. Allow no markings or tape to be used which will deface a unique sample of paper. It is a document which should be carefully preserved as part of the restoration project.

The restoration supervisor should review the artwork carefully and critically and insist on having proofs of the printed product to compare side-by-side with a sample of the original. Do not settle for fuzzy generalizations of pattern elements that are distinct and crisp in the original. If working from worn discolored fragments, or from photographs, colors may be checked against pristine samples in museum collections that date from the same period as the paper being reproduced. Most colors should be chalky and matte but in some early papers, highlights were printed in shiny, oil-based colors, and this quality should be reproduced. Mica, "spangles," flocking, and other textural additives on patterns of the 18th and 19th centuries should be reproduced if they were incorporated in the original models, as well as any embossed elements. When the screen printer is not prepared to emboss, firms can be located that are able to do such unusual and specialized work.

Appendix C includes a list of firms that have done successful screen printed custom reproduction work. The papers were produced in close conjunction with curators, architects and the administrators of the restoration projects. The success of the product depends on the careful and critical supervision of a demanding and observant customer.

Because wallpaper firms normally deal in large volumes, time-consuming customwork means little profit and the charges for producing a special design will be high. In some cases, the cost can be reduced by selling the firm the exclusive rights to the pattern, and allowing the use of the restoration project's name in their commercial advertising.

Any wallpaper manufacturing firm equipped to do

screen printing, and willing to undertake the scrupulous task of duplicating an antique pattern, should be able to reproduce an old wallpaper. Essential to this operation are: exacting specifications and a competent artist, either from the staff of the manufacturer or the restoration, to execute the renderings and oversee the work.

Another source for reproducing wallpaper may be a local artist skilled in the art of screen printing. With some time and ingenuity, a pattern can be printed on a one-time basis in a studio, often at reduced expense. If custom reproductions are made, it is advisable to order slightly more than double what is actually needed. The duplicate rolls should be carefully preserved for repairs and for future renewal when necessary.

In addition to having silk screened reproductions made, there is the chance that one of the very few extant block printing wallpaper companies in France or England may still have the original woodblocks and would be able to make new paper in the style needed. As noted before, the Zuber Factory (68 Rixheim, Alsace, France) exported quantities of paper to this country during the early 19th century and retains many, though not all, of its original printing blocks.

Two English firms, Cole and Son Wallpapers, Ltd. (18 Mortimer Street, London W 1) and Sanderson and Sons, Ltd. (Post Office Box 31, 100 Acres Oxford Road, Oxbridge, Middlesex, UB81 JT, England), retain quantities of blocks for printing high style late 19th-century designs and many from the early 20th century. If such patterns would be appropriate, inquire about special printings, perhaps sending photographs of the kinds of designs you seek.

Many antique dealers occasionally handle room-lots of wallpapers, and the house restorer may happen upon an important old paper in an unusual shop. But several dealers regularly stock antique papers and should be visited if an antique paper is wanted. Antique Chinese papers, and the French scenic papers of the 19th century have commanded a steady market and the prices might range as high as several thousand dollars. If fragments of a specific scenic paper are discovered in a house but are beyond restoration, or if docu-

mentation indicated a particular scenic paper that has long since disappeared, there is a good chance of replacing it with an original antique duplication since these elaborate showpieces of the block printer's art were produced in multiples. The best known American dealers in antique papers are:

A. L. Diament and Co., 2415 South Street, Philadelphia, PA 19146
Charles W. Gracie and Sons, 979 Third Avenue, New York, NY 10022

Purchase of Appropriate Wallpaper Patterns

A careful study of the published information on the wallpapers used at a given date should precede any selection of commercially advertised "period papers" for a restoration. If possible, the photographic files of the Cooper-Hewitt Museum should be consulted first hand. Otherwise, copies of color slides showing patterns of appropriate dates can be ordered through the mail.

A number of wallpaper companies include in their commercial lines adaptations of early wallpaper patterns based on samples of old papers. The old samples are known in the trade as "documents." Frequently in making the reproductions the scale of the original pattern is altered, colors are eliminated to cut printing costs, and of course, modern color schemes are used, though often the "document color" is offered as one alternative among several color ways.

If you want to use a pattern which is a straightforward reproduction of an early wallpaper ask for the "document color," and compare the reproduction with the original sample, which should be retained by the manufacturer or in the collections of the historic house or museum for which it was produced. Check for variations in scale and for color adaptations.

There are many late 18th-century and early 19th-century patterns reproduced and commercially available, but there are very few from the Victorian era, and almost none from the early 20th century. Again, the two English companies, Coles and Sandersons, may be able to supply later 19th-century designs which are carried in their lines.

Wallpaper companies' statements about the dates of their papers must be checked for accuracy. Many adaptations of 19th-century patterns are sold as "colonial." If you find a commercial paper that purports to be of a given date, confirm the

validity of the claim through publications and museum collections, or through the expert advice of a qualified person who has made a special study of wallpaper.

Conclusion

This report has been only suggestive at best. As is true for any phase of restoration work, it is impossible to give broad generalized instructions for wallpaper care and replacement that will always be applicable. Cautious and inquisitive testing of techniques is always necessary.

It is equally impossible to adequately illustrate all of the types of wallpaper patterns, even in generalized terms, which were used from the 18th

through the early 20th centuries in this country. Hopefully, the report has provided elementary guidance about where to go for identification of samples and for advice about patterns appropriate to a given house, as well as guidance to expertise in restoring and replacing papers. At the very least, it will sensitize more restorationists to the importance of looking for and preserving wallpaper as part of any preservation project.

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Paris, France

**Museum of Art, Rhode Island
School of Design**
224 Benefit Street
Providence, Rhode Island 02903

**Print Department
Victoria and Albert Museum**
Exhibition and Cromwell Roads
London SW1, England

**Society for the Preservation of
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144 Cambridge Street
Boston, Massachusetts 02114

Stowe-Day Foundation
77 Forest Street
Hartford, Connecticut 06105

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List of publications circulated among preservation projects:

American Association For State and Local History, *History News*

Antiques

Antiques Monthly

Association for Preservation Technology, *Communique*, and *Bulletin*

The Brownstoner

The Old House Journal

Museum News

National Trust for Historic Preservation, *News*

Newsletter of the Society of Architectural Historians

The Bulletin of the Victorian Society in America

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