

Preserving Wood Features in Historic Buildings



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Preserving Wood Features In Historic Buildings

An Annotated Bibliography

Compiled by Erica C. Avrami

U.S. Department of the Interior
National Park Service
Preservation Assistance Division
Washington, D.C.

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Reading lists have been published by the National Park Service, Preservation Assistance Division, since 1975. Most are selected bibliographies rather than a comprehensive overview of a particular subject. Some of the reading lists are annotated. Comments or suggestions for additions to the Reading List should be sent to: Preservation Assistance Division, National Park Service, P.O. Box 37127, Washington, D.C. 20013-7127.

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Introduction

This bibliography addresses the many aspects of wood preservation and maintenance in historic buildings, from understanding timber construction to prescribing specific treatments. In order to properly evaluate both the significance and condition of wood features, it is necessary to analyze them both as crafted architectural elements and as organic matter, subject to various forms of deterioration. Thus, cited references include those related to construction practices of the past and present as well as works dealing with wood microbiology. In this context, information on the many types of timber decay is presented, along with texts on their causes, detection, prevention, and treatment.

A number of historical references dating from the eighteenth to the early twentieth century have been included so as to provide the necessary background for understanding how timber buildings and components of the past were crafted and maintained. In addition, contemporary texts which examine traditional construction methods and chart their evolution are included as analytical references on historic practices.

General volumes on wood chemistry, structure, and properties are included, along with those outlining timber construction and engineering technology, to provide the fundamentals of "wood, the forest product," and "wood, the building material." Along the same line, a section on wood pathology offers texts which discuss wood deterioration -- biological as well as mechanical, chemical, and physical -- and provide information on determining its causes both in the lab and in situ.

Texts pertaining to the maintenance and conservation of old buildings and specifically of wood are presented from a variety of angles, referencing the types of timber features, such as structural members, windows, floors, etc., as well as the forms of treatment.

Additional references are listed at the end of this *Reading List* for the benefit of the reader. Included are other bibliographies related to wood preservation, periodicals which publish information

on the topic, and organizations interested in preserving timber buildings and architectural features. Also provided in this section, located on page 61, is a key to the locations and sources of the works incorporated in this selected *Reading List*. (The key refers to the numbers in brackets, i. e. [2], following individual entries). Nearly all of the references are in the collections of the Library of Congress and/or the Avery Architectural Library at Columbia University, New York City. Sources of government publications and other hard-to-find texts are provided.

This selected *Reading List* is geared toward a range of readers, from preservation professionals to building owners and caretakers. Thus the resources cited cover the spectrum of wood preservation issues, from basic articles on curing squeaky steps to specialized treatises on structural epoxy repairs. Few texts encompass all of these issues, but some provide a more comprehensive summary of the history of timber technology and the care of wood today. Those recommended references are demarcated with an asterisk [*] at the beginning of an entry.

For the most part, publications regarding period styles of wood architecture and building components have not been included unless they pertain specifically to innovations in timber construction technology or to the history of timber use in America. The range of architectural styles and period trends is too vast for inclusion of such information in this *Reading List*. In addition, some technical works on wood microbiology and timber engineering have not been incorporated into this bibliography because of their highly scientific nature.

In many cases, references include information pertinent to a number of different categories within this *Reading List*. It is thus recommended that the reader consult all applicable sections.

Historical References

To fully appreciate the significance and technology of historic wood buildings and features, it is necessary to recognize and understand traditional craftsmanship and ideas. The following historical treatises on wood preservation, carpentry, joinery, woodworking and wood finishing are thus included to provide insight into the practices of the past.

Preservation and Maintenance of Wood

American Creosoting Company. *Pioneer Work in Modern Wood Preservation: Bethell, Boulton, Chanute*. New York, NY: 1929. [11]

This reference outlines the history of wood preservatives in the United States. Included is information on the development of formulae and treatment processes and their early applications.

Barnes, J. K., A. A. Humphreys, M. C. Meigs, O. E. Babcock. *Report on the Preservation of Wood*. Washington, DC: Surgeon General's Office, 1872. [11]

This is a report on a series of experiments performed with the best known preservative treatments of the time. Included is information on the fixation of various metallic salt and oil type processes in timber samples.

*Britton, Thomas Allen. *A Treatise on the Origin, Prevention, and Cure of Dry Rot in Timber*. New York, NY: E. & F. N. Spon, 1875.

This is a classic reference on the development of wood preservative treatments in the nineteenth century. Britton outlines the various experiments conducted in Europe and elsewhere, including information on formulae and application techniques. He provides more in depth information on the most successful

processes, including those of Margary, Boucherie, Bethell, and Burnett.

Chandler, W. H. *Appliances and Methods Employed for the Preservation of Wood*. Washington, DC: Government Printing Office, 1893.

This booklet provides a brief history of wood preservatives and of the development of the industry in America. Included is a listing of US preservative patents and their formulae from 1830 to 1890.

Chapman, William. *A Treatise Containing the Results of Numerous Experiments on the Preservation of Timber from Premature Decay and on the Prevention of Rotteness*. London, England: Archibald Constable & Co., 1817.

This is one of the early nineteenth century treatises on trials in wood preservation. Chapman's work and his experiments were referenced by a number of subsequent authors and scientists.

Gillmore, Lt. Col. Quincy A. for the Engineer Department. *Report of Experiments with the Seely and Bethell Processes for the Preservation of Timber, accompanied by Descriptions of these Processes and of the Hayford Process*. Washington, DC: Government Printing Office, 1879. [1]

This report provides a description of nineteenth century preservative formulae and treatment processes. It was based on testing undertaken by the Engineer Department of the Army (now known as the Army Corps of Engineers) at various batteries and forts.

Hooper, Charles Edward. *Reclaiming the Old House: Its Modern Problems and Their Solutions As Governed by the Methods of Builders*. New York, NY: McBride, Nast and Co., 1913.

This was a pioneer text on the preservation of buildings in the United States. It includes

period information and ideas on building elements, designs, and materials, as well as on their repair and maintenance.

Hubert, Ernest E. *The Diagnosis of Decay in Wood*. Washington, DC: Government Printing Office, 1925.

This booklet was reprinted from an article in *The Journal of Agricultural Research*, vol. XXIX, no. 11, December 1, 1924. It is a classic text on wood decay written by the scientist who is widely regarded as the father of forest pathology. It outlines the types of decay and their effects on the physiology of wood.

*Wallis-Taylor, Alexander J. *The Preservation of Wood: A Descriptive Treatise on the Processes and on the Mechanical Appliances Used for the Preservation of Wood*. New York, NY: Van Nostrand and Co., 1917.

This reference outlines the history and development of wood preservatives through the early twentieth century. Particular emphasis is placed on the successful methods developed by Boulton, Wolman, et al.

Carpentry, Joinery, and Woodworking

Bell, William E. *Carpentry Made Easy; or The Science and Art of Framing on a New and Improved System. With Specific Instruction for Building Balloon Frames, Barn Frames, Warehouses, Church Spires, etc.* Philadelphia, PA: J. Challen and Son, 1858. [2]

This builders' manual is one of the earliest known references addressing the technique of balloon framing. It is a classic carpentry text with illustrations. It was improved and enlarged repeatedly through 1875 and was still in print in 1900.

Benjamin, Asher. *The Works of Asher Benjamin, Volumes I-VII*. New York, NY: DaCapo Press, 1972.

Asher Benjamin's *The Country Builder's Assistant* was the first American architectural book. Previously, such manuals were republished from European editions. Benjamin published a series of illustrated manuals dealing with carpentry and architectural design which have been reprinted in this multi-volume set with introductions by Everard M. Upjohn. The seven volumes consist of the following:

The Country Builder's Assistant - Containing a Collection of New Design of Carpentry and Architecture, which will be particularly useful to Country Workmen in general. First published in 1797 in Greenfield, MA.

The American Builder's Companion or, A New System of Architecture Particularly Adapted to the Present Style of Building in the United States of America. First published in 1806 in Boston, MA. [3]

The Rudiments of Architecture: Being a Treatise on Practical Geometry, on Grecian and Roman Mouldings; Shewing [sic] the Best Method of Drawing their Curves, with Remarks on the Five Orders of Architecture, on Their General and Particular Parts and Embellishments; with Examples for Cornices, Base and Surbase Moulding, Architraves, and Stairs. First published in 1814 in Boston, MA.

The Practical House Carpenter. Being a Complete Development of the Grecian Orders of Architecture, Methodised [sic] and Arranged in Such a Simple, Plain, and Comprehensive Manner, as to be Easily Understood; Each Example Being Fashioned According to the Style and Practice of the Present Day. First published in 1830 in Boston, MA. [3]

Practice of Architecture. Containing the Five Orders of Architecture, and an Additional Column and Entablature, with all of their Elements and Details Explained and Illustrated, for the Use of Carpenters and

Practical Men. First published in 1833 in Boston, MA.

The Builder's Guide, Illustrated by Sixty-six Engravings, which Exhibit the Orders of Architecture and Other Elements of the Art. Designed for the Use of Builders, Particularly Carpenters and Joiners. First published in 1839 in Boston, MA.

Elements of Architecture, Containing the Tuscan, Doric, Ionic, and Corinthian Orders, with all their Details and Embellishments. Also the Theory and Practice of Carpentry. First published in 1843 in Boston.

Biddle, Owen. *The Young Carpenter's Assistant, or A System of Architecture, Adapted to the Style of Building in the United States.* Philadelphia, PA: Benjamin Johnson, 1805. [2]

Like Asher Benjamin, Biddle was an early author who attempted to break away from British precedents and document an American form of building. This reference originally contained forty-four plates. It was revised, enlarged, and republished repeatedly until 1858.



Restoration or replacement of deteriorated wood features usually requires the skill of a professional carpenter. *Photo:* Nebraska State Historical Society.

Brown, William. *The Carpenter's Assistant: Containing a Succinct Account of Egyptian, Grecian and Roman Architecture. Also, a Description of the Tuscan, Doric, Ionic, Corinthian and Composite Orders; Together with Specifications, Practical Rules and Tables for Carpenters, and a Glossary of Architectural Terms.* Rev. by Lewis E. Joy. 4th ed. New York, NY: Pratt, Woodford and Co.; A. S. Barnes and Co., 1851.

Brown published the first edition of this illustrated text in 1848. The original version primarily included plates of architectural details. Joy's revisions included the addition of plans and elevations of cottages and country houses, making it more of a pattern book.

Burn, Robert Scott, ed. *The Carpenter and Joiner being Practical Descriptions of Timber Work on the Large Scale, Floors, Partitions, Roofs, Bridges, and Scaffolding, the Work Known Generally as Carpentry, also Descriptions of the Methods Used in Forming and Fitting Together Wood Work on the Small Scale, as Doors, Windows, and the Exterior and Interior Fittings and Fixtures of Houses, Shops, etc., etc. Known as Joinery.* New York, NY: Ward, Lock, Bowden, and Co., 1892.

This highly informative classic is densely packed with text and illustrations for all aspects of wood construction. Included is historical information on joinery and carpentry as well as an appendix on stair building.

Ellis, George. *Modern Practical Carpentry.* London, England: B. T. Batsford, 1906.

Ellis' early twentieth century writings are considered authoritative texts on wood construction of the time. This publication has over 1000 illustrations and addresses all aspects of carpentry. Included is additional information on failures in construction, wood species used in carpentry, and a glossary of terms.

_____. *Modern Practical Joinery.* 7th ed. London, England: B. T. Batsford, 1928.

First published in 1902, this reference deals with joining by hand and by machine, giving full descriptions of tools, drawing instruments, and fasteners. It contains approximately 1400 illustrations as well as recommendations on the appropriate use of various types of joinery.

_____. *Modern Practical Stairbuilding and Handrailing.* Fresno, CA: Linden Publishing Co., Inc., 1990.

This is a reprint of Ellis' last great work: the 1932 combined edition of *Stairbuilding and Handrailing*. It is an extensive, illustrated text on methods of constructing various types of wood stairs in domestic and commercial buildings.

Hitchcock, Henry-Russell. *American Architecture Books: A List of Books, Portfolios, and Pamphlets on Architecture and Related Subjects Published in America Before 1895.* Reprint of 3rd rev. ed. New York, NY: DaCapo Press, 1976.

This is an indispensable index to historical references on architecture, building, etc. Only a portion of the early works on American architecture and carpentry are included in this selected *Reading List*; Hitchcock's bibliography is considered the authoritative source for such texts. It contains over 1500 entries, including builders' guides, philosophical writings, dictionaries, and periodicals from the Revolution to the turn of the twentieth century.

_____. *Late Victorian Architectural Details. An abridged facsimile of Combined Book of Sash, Doors, Blinds, Mouldings, Stair Work, Mantels, and All Kinds of Interior and Exterior Finish, a pattern book first published in 1871 and enlarged through many editions to this facsimile of 1898.* Watkins Glen, NY: American Life Foundation Study Institute, Library of Victorian Culture, 1978.

This extensive pattern book includes drawings of elevations and profiles for window sash, doors, mouldings, rails, balusters, etc.

Marwick, Thomas Purves. *The History and Construction of Staircases*. Edinburgh, Scotland: J. and J. Gray, 1888.

This concise reference provides a history of staircase construction in Europe, from Ancient times to the end of the nineteenth century. Although utilizing European examples, much of the technology is applicable to American stair construction from colonial times through the 1800s.

Nicholson, Peter. *The Carpenter's New Guide; Being a Complete Book of Lines for Carpentry and Joinery*. Philadelphia, PA: M. Carey and Son, 1818.

The 7th edition of this British text was republished in America from the 6th London edition and was enlarged and republished several times through 1867. Nicholson's work was widely known and was brought over from Britain long before its United States edition appeared. He was considered an authority on building construction at the time, and early American authors, including Asher Benjamin, drew heavily from his technical texts. His later works included *Encyclopedia of Architecture* and *The Mechanic's Companion*.

Norman, John. *The Town and Country Builder's Assistant*. Boston, MA: J. Norman, 1786.

Although an early American publication, Norman's text was actually a compilation of pirated British works. It includes the rules of the five orders and plates of details.

Pain, William. *The Carpenter's Pocket Dictionary*. Philadelphia, PA: J. H. Dobelbower and L. Thackara, 1797.

This British work was republished from an earlier London edition, as were Pain's other

texts, including *The Builder's Pocket Treasure* (US 1794, London 1763), *The Practical Builder; or Workman's General Assistant* (US 1792, London 1774, although the American edition was drawn from the 4th London edition of 1787), *The Practical House Carpenter* (US 1796, London 1788). Like Nicholson, Pain's works were widely known and well regarded in early America.

Small, Tunstall and Christopher Woodbridge. *Mouldings and Turned Woodwork of the 16th, 17th, and 18th Centuries*. Fresno, CA: Linden Publishing Co., 1987.

This is a reprint of a 1930 publication by the Architectural Press in London. It is a three part portfolio of mouldings of the Wren and Georgian periods, mouldings of the Tudor period, and architectural turned woodwork of the aforementioned centuries. It contains full size sections and details for dado moulds, skirting, handrails, etc. with references to British examples.

Swan, Abraham. *The British Architect: or, The Builders Treasury of Staircases. Containing, I. An easier, more intelligible, and expeditious method of drawing the five orders, than has hitherto been published...II. Likewise staircases...III. Designs of arches, doors, and windows. IV. A great variety of new and curious chimney pieces...V. Corbels, shields, and other beautiful decorations. VI Several useful and necessary rules of carpentry*. Philadelphia, PA: J. Norman, 1775.

This British text came out in London in 1745 and was the first architecture book to be published in the Americas. It contains extensive diagrams and drawings of architectural details.

Sylvester, William Allen. *Modern House Carpenter's Companion and Builder's Guide*. Boston, MA: A. Williams and Co., 1882.

This manual contains text and illustrations regarding all aspects of architectural design

and carpentry principles. It is considered one of the more significant post-Civil War publications of its kind.

Tredgold, Thomas. *Elementary Principles of Carpentry*. Philadelphia, PA: E. L. Carey and A. Hart, 1837.

This first American edition of what was commonly known as *Tredgold's Carpentry* was printed from the second London edition. (It was first published in Britain in 1820). It was revised, enlarged, and reprinted numerous times through 1892. It is an extensive technical treatise on all aspects of carpentry. Later editions include information on preservative treatments for wood as well as on joinery machinery.

Wood Finishing

Berry Brothers, Limited. *Natural Woods - and How to Finish Them*. New York, NY: Berry Brothers, Ltd., 1894.

This is a classic trade booklet on the clear finishing and polishing of woods. It is organized by species and includes brief sections on floor finishing as well as on interior and exterior finishes for wood.

Maire, Frederick. *The Modern Wood Finisher: A Practical Treatise on Wood Finishing in all its Branches, including Tools and Materials Employed, Preparation of Surfaces, Stains and Staining, Fillers and Filling, Shellacking, Varnishes and Varnishing, Rubbing, Polishing, French Polishing, Wax Polishing, Oil Polishing, etc., etc. Also a Full Description of the Woods Employed in Wood Finishing, Their Treatment, and the Finishing of Floors*. Chicago, IL: Press of the Western Painter, 1901.

This historical text discusses finishes for furniture, woodwork, floors, etc. Also

included is information on finishing tools, formulae, and application techniques.

Pratt and Lambert. *Specifications for Painting and Varnishing, being a Complete Form of Specification for Painting and Varnishing for the Aid of Architects and Builders in Preparing Contracts*. New York, NY: Pratt and Lambert, 1898.

This booklet includes specific information on finishing various species of wood, including ash, birch, cedar, cherry, mahogany, maple, etc. Also noted are treatments for various architectural elements such as front doors, interior woodwork, hardwood floors, etc.



Bridgeport Wood Finishing Co., 40 Bleecker St., New York, NY, ca. 1884. Reproduced in *Early Illustrations and Views of American Architecture*, Edmund V. Gillon Jr., New York, NY, Dover Publications Inc., 1971, p. 174.

General Wood References

In order to maintain wood and prevent deterioration, it is necessary to understand its basic chemistry, properties, anatomy, and dynamics. The principles of timber design, construction, and engineering are also imperative to a complete understanding of its uses and performance. The following entries cover these general topics.

Wood Anatomy, Chemistry, and Properties

Browning, B. L., ed. *The Chemistry of Wood*. New York, NY: Interscience Publishers, 1963.

Browning's work is a standard text on wood chemistry, structure, formation, etc.

Core, H. A., W. A. Côté, and A. C. Day. *Wood Structure and Identification*. 2nd edition. Syracuse, NY: Syracuse University Press, 1979.

This text is divided into two sections. The first provides background information on the basic principles of wood -- its anatomy, characteristics, and structure using explicit photos and diagrams. The second section outlines the means of identifying wood species based on micro and macroscopic features. A written key is provided for hardwoods and softwoods as well as an illustrated appendix of prepared samples, including black and white photos (most at 5x), with additional information on preparing and observing samples.

Henderson, Frank Young. *Timber: Its Properties, Pests and Preservation*. 2nd ed. London, England: Crosby Lockwood and Son, Ltd., 1944.

Although the sections on preservation are outdated, this text provides standard

information on the properties of wood, including structure, grain, texture, hardness, density, strength, etc.

*Hoadley, R. Bruce. *Understanding Wood: A Craftsman's Guide to Wood Technology*. Newtown, CT: Taunton Press, 1980.

Hoadley's comprehensive text provides a basic understanding of the principles and properties of wood, including structure, growth, density, movement, reaction with water, etc. A brief section on wood identification is included with good diagrams and black and white photos. Additional chapters deal with woodworking operations, such as machining, joining, finishing, and modifying (through the use of preservatives, plasticizers, etc.) wood. Information on the sources, grading, and types of raw materials is also provided.

Lewin, Menachen, and Irving S. Goldstein, eds. *Wood Structure and Composition*. International Fiber Science and Technology Series: 11. New York, NY: Marcel Dekker, Inc., 1991.

This compendium is a comprehensive text on the chemical composition, formation, and morphology of wood. It includes information on wood components (lignin, cellulose, etc.) and their properties and the composite nature of timber.

Meylan, B. A., and B. G. Butterfield. *Three-dimensional Structure of Wood: A Scanning Electron Microscope Study*. Ed. Wilfred A. Côté. Syracuse, NY: Syracuse University Press, 1972.

This book utilizes a collection of scanning electron microscope photos (black and white) to illustrate the structure of wood. Also included are sections on various wood features, such as pits, perforation plates, resin canals, etc. Lists of further readings are included at the end of each section.

Panshin, A.J., and Carl de Zeeuw. *Textbook of Wood Technology. Volume 1: Structure, Identification, Uses, and Properties of the Commercial Woods of the United States and Canada.* 3rd. ed. New York, NY: McGraw-Hill Book Company, 1970.

This indispensable text is a comprehensive resource covering the formation, anatomy, and properties of wood. It also includes descriptions of the most common North American woods by species and provides keys for their identification.

Rowell, Roger, ed. *The Chemistry of Solid Wood.* Advances in Chemistry Series: 207. Washington, DC: American Chemical Society, 1984.

This text is a series of articles providing information on the formation, structure, and chemistry of wood as well as on its properties and reaction with other materials. Included are chapters dealing with the chemistry of wood strength, the chemistry of weathering and protection, the interaction of preservatives with wood, the degradation of wood by chemicals, the biological decomposition of wood, and the chemistry of adhesion.

Tsoumis, George. *Science and Technology of Wood: Structure, Properties, Utilization.* New York, NY: Van Nostrand Reinhold, 1991.

This is a comprehensive reference on wood, including its structure, physical and chemical properties, mechanical and thermal properties, hygroscopicity, and degradation. Included is a section on its employ in product form, i.e. as veneer, plywood, lumber, etc.

Timber Construction and Technology

Allen, Edward. *Fundamentals of Building Construction Materials and Methods.* New York, NY: John Wiley and Sons, 1985.

This text deals with all types of construction materials, but does include several chapters devoted to wood and wood products, fasteners, and types of timber construction. A section on exterior finishes for wood roofing, windows, doors, and siding is also included.

American Institute of Timber Construction. *Timber Construction Manual.* 3rd ed. New York, NY: John Wiley and Sons, 1985.

This text is a standard reference on the design of timber members and their fastenings. Individual elements are addressed, such as columns, beams, etc. as well as overall framing systems. Information on the general structure and mechanical properties of wood are also provided.

Bodig, Jozsef and Benjamin A. Jayne. *Mechanics of Wood and Wood Composites.* New York, NY: Van Nostrand Reinhold, 1982.

This extensive and comprehensive text outlines the fundamentals of wood -- its structural properties, its dynamics and performance principles, means for determining its mechanical properties, etc. Information on the environmental modifiers of wood -- i.e. moisture, temperature, biodeterioration, etc. -- is also provided.

Faherty, Keith F. and Thomas G. Williamson, eds. *Wood Engineering and Construction Handbook.* New York, NY: McGraw-Hill Publishing Co., 1989.

This standard text on the design of timber elements and their fasteners also includes information on the seasoning, use, and

preservative treatment of wood. Of particular note is the section on the repair of damaged timber structures using epoxy adhesives which outlines repair techniques, factors affecting epoxy performance, etc.

*Forest Products Laboratory. *Wood Handbook: Wood as an Engineering Material*. Agricultural Handbook no. 72, rev. ed. Washington, DC: Forest Products Laboratory, Forest Service, US Department of Agriculture, 1987.

This text was first published in 1935. It was revised and reissued several times and was designated Handbook no. 72 in the 1955 edition.

It is a comprehensive source for wood information, including data on structure and other physical properties, fasteners, finishing, preservation, etc. as well as on wood composites.

Hoyle, Robert. *Wood Technology in the Design of Structures*. 5th ed. Ames, IA: Iowa State University Press, 1989.

This is a broad text on the various facets of wood construction. Included is information regarding the design of timber members and framing system, the properties of wood, timber fasteners, wood adhesives, etc.

Stalnaker, Judith J., and Ernest C. Harris. *Structural Design in Wood*. New York, NY: Van Nostrand Reinhold, 1989.

This is a standard text on the design of timber structures, with emphasis on the performance of members based on timber properties and engineering data. Information on fasteners and composites wood products is also included. A chapter entitled, "Wood Durability, Protection and Preservation" briefly outlines the causes of deterioration, preservative treatments, and the evaluation and repair of damaged wood.

Woodframe Houses: Construction and Maintenance. New York, NY: Sterling Publishing Co., Inc., 1981.

Although geared toward new construction, this reference provides good background information on framing, insulation, vapor barriers, ventilation, and finishing which is applicable to existing structures. The prevention of wood decay is also discussed.

Joinery

Blandford, Percy W. *Woodworking Joints: an Illustrated Handbook*. 2nd ed. Blue Ridge Summit, PA: TAB Books, 1990.

This extensive and well illustrated text provides information on all sorts of timber joints, including those for structural systems as well as for woodwork and cabinetry. It outlines the various joinery designs and their appropriate applications.

Jansson, Ingvar. *Timber Joints: A Selected Bibliography Based on Items at the TRADA-CIB Symposium on Joints in Timber Structures, held in March 1965 in London*. Stockholm, Sweden: National Swedish Institute for Building Research, 1965. [1]

This unannotated index lists international references on all aspects of joinery technology. Divided into subject categories, it includes information on nailed joints, bolted joints, connectors, glued joints, joints in relation to various types of timber structures, etc.

Tack, C. H. *Joinery*. London, England: Her Majesty's Stationery Office, 1971.

This text provides basic data on joinery used for structural work as well as for woodwork, such as mouldings, frames, etc. In addition to design and fabrication, it discusses issues such as the maintenance of joints, moisture

relationship, preservative treatments, etc. It also includes illustrations of details.

Woodworking

Douglass, J. H., R. H. Roberts, Forest L. Penny, Douglas L. Polette. *Woodworking Basics*. New York, NY: Van Nostrand Reinhold, 1980.

This is a revised edition of the 1973 publication, *Units in Woodworking*. It provides general information on wood and on the construction of wood products. Included are sections on wood characteristics, growth patterns, identification and selection of woods, preparation woodworking patterns, use of hand and power tools, etc.

Frid, Tage. *Tage Frid Teaches Woodworking: Shaping, Veneering, Finishing*. Newtown, CT: Taunton Press, 1981.

This extensively illustrated text outlines the fundamentals of woodworking, from bending, turning, veneering, carving, inlaying, to finishing. Frid deals with architectural features such as mouldings and balusters as well as wooden objects and furniture.

History of Wood Use and Construction

These contemporary references provide analyses of the use of timber in old buildings and of traditional construction methods. The evolution of American building technology, including carpentry, woodworking, tool use, etc., is charted in their examinations.

Traditional Construction

Bowyer, Jack, ed. *Handbook of Building Crafts in Conservation: A Commentary on Peter Nicholson's The New Practical Builder and Workman's Companion, 1823*. New York, NY: Van Nostrand Reinhold Co., 1981.

This analytical and historical reference includes Nicholson's original text and illustrations (including arches, frames, joints, sash, mouldings, etc.) along with critical commentary by Bowyer on Nicholson's ideas as well as on the history of wood construction.

Bowyer, Jack. *History of Building*. London, England: Crosby Lockwood Staples, 1973.

This is a concise history of structural technology, construction materials and components, and building craftsmanship and trades. Included is an outline of the evolution of timber frame construction and information on the various uses of wood in structures.

Bramwell, Martyn, ed. *The International Book of Wood*. New York, NY: Simon and Schuster, 1976.

This widely focused text provides general information on all aspects of wood -- its anatomy, properties, harvesting, etc. Of particular note are the superbly illustrated sections on the role of wood in architecture

and the development of construction technology.

Buchanan, Paul E. "The Eighteenth-Century Frame Houses of Tidewater Virginia." *Building Early America: Contributions Toward the History of a Great Industry*. Ed. Charles E. Peterson. Philadelphia, PA: Chilton Book Co., 1976. pp. 54-73.

Buchanan's article provides an excellent outline of the evolution and technology of frame house construction in the tidewater region. The information on and diagrams of framing, roofing, siding, etc. are applicable to other types of early American construction as well.

Carroll, Charles F. "The Forest Society of New England." *America's Wooden Age: Aspects of its Early Technology*. Ed. Brooke Hindle. Tarrytown, NY: Sleepy Hollow Restorations, 1975. pp. 13-36.

Carroll charts the use of wood by the early New England settlers. Information on framing techniques and building design is included as well as on wooden boats, objects, etc.

Cummings, Abbott Lowell. *The Framed Houses of Massachusetts Bay, 1625-1725*. Cambridge, MA: Belknap Press, 1979.

This is a classic and indispensable text on early wood buildings in America. Discussions of historical precedents, construction technology, design evolution, and regional trends are accompanied by excellent illustrations.

Fitch, James Marston. *American Building: The Historical Forces that Shaped It*. 2nd ed. New York, NY: Schocken Books, 1973.

Fitch's authoritative text on the stylistic and technological development of American buildings is an indispensable reference.

It provides a concise summary of early wood construction in the United States and its evolution.

Hansen, Hans J., ed. *Architecture in Wood: A History of Wood Building and Its Techniques in Europe and North America*. Trans. Janet Seligman. New York, NY: Viking Press, 1971.

Although the majority of this text is devoted to European architecture, there is a chapter on seventeenth, eighteenth, and nineteenth century wood structures in North America. Included are various building types (homes, churches, etc.) as well as commentaries on stylistic developments.

Hindle, Brooke. "Span of the Wooden Age." *America's Wooden Age: Aspects of its Early Technology*. Ed. Brooke Hindle. Tarrytown, NY: Sleepy Hollow Restorations, 1975. pp. 3-12.

Hindle presents an overview of the use and importance of wood in American history. Included is a brief outline of the evolution of wood use and design in architecture.

Isham, Norman M., and Albert F. Brown. *Early Connecticut Houses*. 1900. New York, NY: Dover Publications, 1965. [3]

This text on construction methods in Connecticut from the earliest settlements to 1750 is considered a classic on early American building techniques.

Jandl, H. Ward, ed. *The Technology of Historic American Buildings: Studies of the Materials, Craft Processes, and the Mechanization of Building Construction*. Washington, DC: Foundation for Preservation Technology, 1983.

Included in this compendium is a chapter by Paul E. Sprague on the evolution of balloon

framing. The article provides an excellent overview and includes historical references and quotations regarding this construction innovation of the time.

Jelley, Gordon A. "The Balloon Frame." Diss. California State University, Dominguez Hills, CA, 1985. [2]

Jelley's dissertation provides an analysis of nineteenth century wood framing techniques as well as an outline of the evolution of balloon framing in terms of materials, engineering, and design.

Jordan, Terry G. *American Log Buildings: An Old World Heritage*. Chapel Hill, NC: University of North Carolina Press, 1985.

Jordan analyzes the role of log structures in the history of the American built environment as well as the technology of log construction. Included are discussions of precedents from north Europe, Germany/Alps regions, and the German-Slavic borderland.

Kelly, J. Frederick. *Early Domestic Architecture of Connecticut*. 1924. New York, NY: Dover Publications, Inc., 1963. [3]

Although this timeless reference focuses on Connecticut architecture from 1650 to the end of the eighteenth, Kelly charts the historical practices derived from European ancestry as well as the development of early American house types. His analysis of construction materials and technologies applies to many styles and regions of the period.

*Morrison, Hugh. *Early American Architecture: From the First Colonial Settlements to the National Period*. New York, NY: Oxford University Press, 1952. [3]

A comprehensive and definitive text on the history of American architecture from the seventeenth century to the early nineteenth



Wood was used not only for the pointed log stockade, but also for the majority of the structures erected in the 1840s at Fort Wilkins in Copper Harbor, Michigan. Most of the garrison buildings are constructed of hewn logs, covered with clapboards. Photo: National Park Service files.

century. All regions and styles are incorporated along with extensive illustrations.

Multhauf, Robert P. "America's Wooden Age." *Building Early America: Contributions Toward the History of a Great Industry*. Ed. Charles E. Peterson. Philadelphia, PA: Chilton Book Co., 1976.

This text is a very concise, illustrated discussion of the historical use of wood in early America, including its employment in

architecture (homes, windmills, etc.) as well as for objects and furniture.

Peterson, Charles E., ed. *Building Early America: Contributions Toward the History of a Great Industry*. Philadelphia, PA: Chilton Book Co., 1976.

This compendium was published for the Carpenters' Company of the City and County of Philadelphia. Included are articles on early building history and information on building preservation.

Shurtleff, Harold R. *The Log Cabin Myth: A Study of the Early Dwellings of the English Colonists in North America*. Ed. Samuel Morison. 1939. Gloucester, MA: Peter Smith, 1967.

Expelling the myth that early American settlers all lived in log cabins, Shurtleff explores the various types of seventeenth century dwellings found in British colonial North America. Included is information on construction as well as design.

*Sloane, Eric. *A Reverence for Wood*. 1965. New York, NY: Henry Holt and Co., 1990.

Sloane's classic text is an historical novel incorporating the evolution of wood use in America from the seventeenth century on. Significant attention is paid to its role in the development of architecture and construction techniques. The text is accompanied by excellent drawings by the author.

Tarule, Rob. "The Mortise and Tenon Timber Frame: Tradition and Technology." *Tools and Technologies: America's Wooden Age*. Eds. Paul B. Kebaran and William C. Lipke. Burlington, VT: Robert Hall Fleming Museum, University of Vermont, 1979. pp 28-42.

Tarule provides an historical overview of the evolution of the mortise and tenon timber frame with specific reference to its design and construction.

*Upton, Dell. "Traditional Timber Framing." *Material Culture of the Wooden Age*. Ed. Brooke Hindle. Tarrytown, NY: Sleepy Hollow Press, 1981.

This is an excellent reference on the development of the timber frame in America based upon European traditions and influences. Upton provides text on and illustrations of various types of framing for walls, roofs,

and entire structures dating from the seventeenth to the mid-nineteenth century.

Waterman, Thomas Tileston. *Dwellings of Colonial America*. Chapel Hill, NC: University of North Carolina Press, 1950.

Waterman's work is a classic reference on the history of early American dwellings through the Georgian period.

Wilbur, C. Keith. *Homebuilding and Woodworking in Colonial America*. Old Saybrook, CT: The Globe Pequot Press, 1992.

This is essentially a sourcebook for seventeenth and eighteenth century construction practices. It is well illustrated with line drawings and includes historical information of felling and carrying timber, framing techniques, joinery, tools, shingles and boarding, flooring, finishes, etc.

Wilcox, R. P. *Timber and Iron Reinforcement in Early Buildings*. London, England: The Society of Antiquaries of London, 1981.

This occasional paper on the historical use of timber and iron discusses intramural timber reinforcement (embedded in the walls of structures), foundation reinforcement using timber, and the use of wood members on building interiors as a form of reinforcement. Although geared toward British architecture, it provides historical information on traditions carried over to America.

Yeomans, David. "18C Timber Construction." *Architect's Journal*. Vol. 194, Nos. 1-8 (1991).

This six part article outlines all aspects of eighteenth century timber construction in Britain, providing information on techniques brought over to America. The sections are as follows:

I. "Trade and Materials" 10 July 1991, pp. 51-56.

II. "Floor Structures" 17 July 1991, pp. 46-51.

III. "Roof Structures" 24-31 July 1991, pp. 45-50.

IV. "Walls and Partitions" 7 August 1991, pp. 43-36.

V. "Joinery" 14 August 1991, pp. 36-41.

VI. "Stair Building" 21-28 August 1991, pp. 43-47.

Youngquist, Waldemar G., and H. O. Fleischer.
Wood In American Life: 1776-2076.
Madison, WI: Forest Products Research
Laboratory, 1977.

This book outlines the history of wood use in America, incorporating architecture as well as other industries such as railroads, shipbuilding, fuel, furniture, etc. The impact of various architectural styles on the use of wood in buildings is discussed along with other social and economic factors.

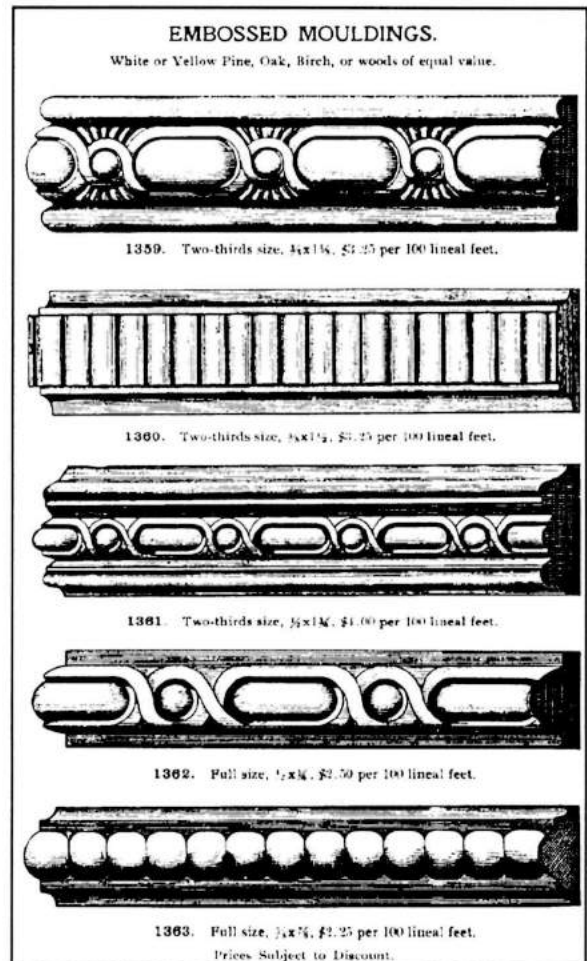
Architectural Elements

Cotton, J. Randall. "The Bare Facts About Early Floors." *Old-House Journal*. Vol. 16, No. 2 (March/April 1988), pp. 36-41.

Cotton's article outlines the history of wood floors from the seventeenth to the late nineteenth century and provides information on construction techniques as well as on regional styles. Floor treatments and their history are also discussed.

Fisher, Charles E. "Windows Through Time: American Windows from the 1630s through the 1930s." *The Construction Specifier*. (July 1991), pp. 126-36.

Fisher's article outlines the evolution of window design and construction from colonial times to the early twentieth century. Included is information on muntin profiles, glass, frames, etc. as well as data on materials and manufacture.



Decorative wood trim advertised in the *Radford Universal Design and Official Moulding Book*, Shatlock and McKay, Printers, Chicago, IL, 1904. Radford was a wholesale manufacturer of wooden sash windows, doors, blinds and other types of millwork.

Karp, Ben. *Ornamental Carpentry on Nineteenth-Century American Houses*. New York, NY: Dover Publications, Inc., 1981. [3]

This is a revised edition of Karp's *Wood Motifs in American Domestic Architecture*, published in 1966. It includes 186 black and white photographs of wood carvings, ornaments, brackets, finials, etc.

Kelly, J. Frederick. *Early Connecticut Stairs*. Portland, ME: The Walpole Society, 1943.

Although this classic text by Kelly deals strictly with Connecticut examples, it provides insight into early American stair development in general. Included is information on construction techniques and designs for runs, baluster, rails, etc.

McNulty, George F. "Henry C. Mercer and Dating by Mouldings." *Association for Preservation Technology Bulletin*. Vol. 10, No. 4 (1978), pp. 3-19.

This article is a commentary on Henry C. Mercer's *The Dating of Old Houses* and his recommended use of door panel mouldings to do so. McNulty, in critiquing Mercer's work, provides a great deal of information (including illustrations) on the evolution of door panel mouldings, their design and construction.

Swiatosz, Susan. "A Technical History of Late Nineteenth Century Windows in the United States." *Association for Preservation Technology Bulletin*. Vol. 17, No. 1 (1985), pp. 31-37.

This paper describes the construction of wooden, Victorian residential buildings, primarily in the northeastern United States. It includes window types, sizes, shapes screens and hardware.

Weil, Martin Eli. "Interior Details in Eighteenth Century Architectural Books." *Association for Preservation Technology Bulletin*. Vol. 10, No. 4 (1978), pp. 47-66.

Weil's article describes the representation of interior woodwork in publications from 1669-1805 and the use of such publications by craftsmen and builders of the time. An appendix lists the historic books pertaining to such interior details.

Yeomans, David T. *The Trussed Roof: Its History and Development*. Brookfield, VT: Ashgate Publishing Co., 1992.

Yeomans' comprehensive text outlines the history of the trussed roof and of roof types preceding its development. He discusses the issue of carpenter/architect in the design evolution as well as the impact of new material that replaced timber. Included are very good illustrations and an extensive bibliography.

Tools and Technology

Bealer, Alex W. *Old Ways of Working Wood*. Barre, MA: Barre Publishers, 1972.

Bealer's text outlines the history of woodworking and provides descriptions and illustrations of the various aspects of the craft - from felling trees to planing and turning.

Englund, John H. "An Outline of the Development of Wood Moulding Machinery." *Association for Preservation Technology Bulletin* Vol. 10, No. 4 (1978), pp. 20-24.

The development of moulding machinery during the first half of the nineteenth century is outlined in this article. Information on and illustration of various types of equipment, including planing machinery, vertical spindle moulding machines, etc., are provided, giving an understanding of how designs were impacted by technological advancements.

Kebabian, Paul B., and William C. Lipke, eds.
Tools and Technologies: America's Wooden Age. Burlington, VT: Robert Hall Fleming Museum, University of Vermont, 1979.

This book is a compendium of articles dealing with the historical development of woodworking tools and technology. A number of historical illustrations are included as well as information on the woodworking technology of today.

Mercer, Henry Chapman. *Ancient Carpenters' Tools, Illustrated and Explained Together with the Implements of the Lumberman, Joiner, and Cabinet Maker in Use in the Eighteenth Century*. 3rd ed. Doylestown, PA: Bucks County Historical Society, 1960.

This extensive text outlines the tools used for felling, sawing, moving, measuring, and gripping wood. In addition, woodworking equipment used for planing, fastening, etc. is also explained.

Roberts, Kenneth D. *Wooden Planes in 19th Century America*. 2 vols. Fitzwilliam, NH: K. Roberts Publishing Co., 1978-1983.

Volume one of this excellently illustrated work provides an overview of planes and planemaking during the eighteenth and nineteenth centuries. Volume two concentrates on planemaking by the Chapins at Union factory from 1826-1929.

*Salaman, R. A. *Dictionary of Woodworking Tools c. 1700-1970*. 1975. Newtown, CT: Taunton Press, 1989.

This tremendous resource encompasses tools of all wood related trades, including carpentry, joinery, sash making, etc., as well as those of such crafts as clog making and coffin making. Entries are concise and are accompanied by superb illustrations.

Wood Pathology

Imperative to the proper diagnosis of the condition of wood members and features is the proper identification of wood species and of the type and cause of decay. The following texts deal with examining wood, its deterioration, and the means of investigation.

Identification

Constantine, Albert J., Jr. *Know Your Woods: A Complete Guide to Trees, Woods, and Veneers*. 1959. Rev. ed. Harry J. Hobbs. New York, NY: Charles Scribner's Sons, 1975.

This is a classic guide to woods and veneers, tracing them from the forest to crafted form. It outlines tree species, names, planting, felling, etc. and tracks wood to its processing at the sawmill through to its final uses. Information on the behavior of wood and its physical appearance is also included.

Core, H. A., W. A. Côté, and A. C. Day. *Wood Structure and Identification*. 2nd edition. Syracuse, NY: Syracuse University Press, 1979.

This text is divided into two sections. The first provides background information on the basic principles of wood -- its anatomy, characteristics, and structure using explicit photos and diagrams. The second section outlines the means of identifying wood species based on micro and macroscopic features. A written key is provided for hardwoods and softwoods as well as an illustrated appendix of prepared samples, including black and white photos (most at 5x), with additional information on preparing and observing samples.

Edlin, Herbert L. *What Wood is That? A Manual of Wood Identification*. New York, NY: Viking Press, 1969.

Edlin's work provides a history of wood use and a section on the factors involved with the identification of wood species, including grain structure, rays, bark, leaf shape, weight, smell, etc. Edlin describes in detail forty common trees and their timbers. Removable veneer samples ($\frac{3}{4}$ " x 3") of the forty timbers are included in the book.

Forest Products Laboratory. *Wood Colors and Kinds*. Washington, DC: Forest Service, US Department of Agriculture, 1956. [1]

This concise pamphlet contains descriptions of the thirty-two most common hardwoods and softwoods available in the United States. Included is information on geographical range, properties, characteristics, and uses as well as actual size color photos and a glossary.

Gregory, M. *Wood Identification: An Annotated Bibliography*. Leiden, Netherlands: International Association of Wood Anatomists, 1980. [1]

This annotated reading list includes an international selection of wood identification texts arranged geographically (by location of a wood species). Another section is categorized by gymnosperms and angiosperms, with information organized alphabetically by family. Annotations include information about the content of the text, the inclusion of photos, magnification of photos, number of species addressed, etc.

*Hoadley, R. Bruce. *Identifying Wood: Accurate Results with Simple Tools*. Newtown, CT: Taunton Press, 1990.

Hoadley's comprehensive work describes, in depth, the systematic approaches to identifying over 180 wood species. Included is information on the anatomy and structure of

woods as well as on physical and chemical properties. Hoadley outlines the means of collecting samples and identifying in situ with accompanying microscopic photos (color and black and white) at various magnifications.

Howard, Alexander L. *Studies of the Identification of Timbers with a Note on the Seasoning of Wood*. London, England: Macmillan and Co., Ltd., 1942. [1]

Black and white photomicrographs (10x) of 504 of the timber most commonly used throughout the world are included in this album. Photos are arranged alphabetically by species.

Ilic, Jugoslav. *CSIRO Atlas of Hardwoods*. Bathurst, NSW, Australia: Crawford House Press in Association with CSIRO, 1991. [1]

This is a two part atlas with macro and micro keys. The macro section encompasses the main species covered by the CSIRO identification computer database, providing color photographs of species for identification with a 10x hand lens. The micro section contains 1754 species (mostly commercial tropical hardwood species), providing black and white photographs at higher magnifications.

Lincoln, William A. *World Woods in Color*. Fresno, CA: Linden Publishing Co., Inc., 1986.

This illustrated guide contains descriptions of over 250 of the most common commercially available wood. Descriptions consist of species name, family, commercial name, description of color, graining, texture, mechanical properties, uses, etc. accompanied by large color photographs at actual size from polished specimens of veneer or solid timber. Also provided are indices of standard, vernacular, and botanical names along with a table of wood uses.

Miles, Anne. *Photomicrographs of World Woods*. London, England: Her Majesty's Stationery Office, 1978.

Similar to the *CSIRO Atlas*, Miles' work consists of black and white photomicrographs of hardwoods and softwoods, illustrating the anatomical features and typical structure of the woods. Most photos are at a magnification of x25 or x60.

Record, Samuel J. *Identification of the Economic Woods of the United States*. New York, NY: John Wiley and Sons, Inc., 1919.

This classic text on the identification of American woods includes discussions of the structural and physical properties of wood and contains a limited number of black and white photomicrographs (50x). The first part of this text describes the properties of wood with accompanying diagrams. The second part consists of a key to wood identification based on those properties.

White, Marshall S. *Wood Identification Handbook: Commercial Woods of the United States*. New York, NY: Charles Scribner's Sons, 1980.

This is a concise handbook for identifying wood. It includes basic information on the composition of wood, how woods are classified, and how to determine the species of a wood. Written descriptions of the most popular woods are provided, along with data regarding its geographic range and common uses. There is also a condensed key with 5x black and white photos.

Deterioration - Causes, Prevention, and Control

General Deterioration References

Carey, Janice, Roger Berry, and John Bricknell. "Construction Risks and Remedies: Timber Decay." *The Architects' Journal*. Vol. 184, Nos. 41-42.

"Part 1: The Risks." 8 October 1986, pp. 57,59,60,63-65.

The first part of this two-part series outlines the various types of fungal decay, insect attack, weathering processes, and constructional causes of decay.

"Part 2: The Remedies." 15 October 1986, pp. 69,71,73-76, 78, 80, 83.

This concluding article details various types of preservation options, including pretreatment, remedial treatment, treatment of joinery, etc. and cautions about the health and safety issues involved with preservative use.

Cartwright, K. St. G., and W. P. K. Findlay. *Decay of Timber and Its Prevention*. London, England: Her Majesty's Stationery Office, 1958.

This comprehensive text summarizes the general causes of decay, including fungi, insects, mechanical wear, etc., with particular attention paid to wood-inhabiting fungi -- their physiology, effects, and likelihood of attack in various timber types. Included are diagnostic tables and descriptions of causal fungi commonly found in timber structures as well as a discussion of pesticidal treatments.

*Nicholas, Darrel D., ed. *Wood Deterioration and Its Prevention by Preservative Treatments, Vol. I: Degradation and Protection of Wood*. Syracuse, NY: Syracuse University Press, 1973.

The first volume of this two-volume compendium consists of chapters on the history of wood preservation as well as on wood deterioration. Included are discussions on the various types of decay (insect, microbiological, thermal, etc.), their chemistry, their effects on wood structure, and control methods.

Verrall, Arthur Frederic, and Terry L. Amburgey. *Prevention and Control of Decay in Homes*. Washington, DC: US Government Printing Office, 1980. [5]

This reference outlines the various causes of deterioration, including physical defects, chemical damage, fire, etc., but focuses on bacterial, fungal and insect decay. It discusses the means of preventing decay in foundations and substructures as well as of protecting buildings from moisture. Preservative treatments (materials and methods) are discussed along with proper maintenance techniques. Good bibliographies are included at the end of each chapter.

Biodeterioration

Beal, Raymond H. et al. *Subterranean Termites-Their Prevention and Control in Buildings*. Washington, DC: Forest Service, US Department of Agriculture, 1989.

This illustrated handbook describes the habitats of termites around the country, prevention methods and treatments.



Water damage is evident at the wood cornice return and porch box beam on the Asa May Plantation House, a 19th century antebellum farmhouse in Capps, Florida. *Photo:* National Park Service files.

Bletchly, J. D. *Insect and Marine Borer Damage to Timber and Woodwork: Recognition, Prevention and Eradication*. London, England: Her Majesty's Stationery Office, 1967. [1]

Bletchly's work furnishes descriptions of an extensive number of woodboring insects and marine borers, including information on the type of damage they cause, the appearance of the adult, methods of prevention, and remedial treatment. A brief section on inspecting buildings for attack is also provided.

Bravery, A. F., R. W. Berry, J. K. Carey, D. E. Cooper. *Recognising Wood Rot and Insect Damage in Buildings*. Aylesbury, England: Building Research Establishment, 1987. [6]

This is a very concise and comprehensive text on identifying and treating wood-rotting fungi and wood-boring insects. It includes helpful charts for determining the type of insect or fungus as well as photos and diagrams of insects and deteriorated wood. A brief section on preservatives and remedial treatments is also included.

Briscoe, Frank. "Wood-Destroying Insects." *Old-House Journal*. Vol. 19, No. 2. (March/April 1991), pp. 34-39.

In this article, Briscoe describes the more common wood destroying insects; termites, carpenter ants, and wood boring beetles; prevention of infestation; inspection and monitoring; and treatments.

Butcher, John Alan. *A Practical Guide to Fungal Damage of Timber and Wood Products*. Wellington, New Zealand: New Zealand Forest Service, 1974. [1]

This booklet briefly outlines the biology, causes, effects, classification, and identification of wood attacking fungi, including molds, sapstains, etc. Black and white photos and an identification key for the

main fungi are also provided. A brief section on prevention, control, and eradication through chemical treatment is incorporated.

Coggins, C. R. *Decay of Timber in Buildings*. East Grinstead, England: Rentokil Ltd., 1980.

This compact resource includes information on wood structure and decay, concentrating on wood-rotting fungi -- their history, detection, and treatment. There is also a limited discussion of wood-boring beetles.

Diamant, R. M. E. *Rust and Rot: What to Do and How to Treat Two Major Enemies of Modern Living*. London, England: Angus and Robertson, 1972.

Diamant's text deals with both metals and wood. In the case of wood, he outlines the various types of fungi, insects, and animals which can deteriorate timber and the means by which to prevent attack. Included is a brief description of preservative treatments, control techniques and maintenance recommendations.

Dillon, Robert M., ed. *A Study of Protection Against Decay and Termites in Residential Construction Conducted by the Building Research Advisory Board for the Federal Housing Administration*. Washington, DC: Building Research Institute, Division of Engineering and Industrial Research, National Academy of Sciences - National Research Council, 1956. [1]

This brief report discusses the means of preventing decay with supporting information on common geographic areas of various insects and fungi and the characteristic of their attacks. Also included is information on soil treatments, termite shields, ventilation recommendations, etc.

Eriksson, Karl-Erik, R. A. Blanchette, and P. Ander. *Microbial and Enzymatic Degradation of Wood and Wood Components*. New York, NY: Springer-Verlag, 1990.

This very technical work describes the types of fungi that attack wood and how different wood components (i.e. cellulose, hemicellulose, lignin, etc.) are affected.

Findlay, Walter P. K. *Timber Pests and Diseases*. New York, NY: Pergamon Press, 1967.

Findlay's work summarizes the fundamentals of the nature of wood and the causes of its deterioration. In detail, it discusses the various causes of decay, including fungi and insects, and their characteristics. Also included is information on the decay of timber in various situations, i.e. in the forest, in buildings, in ships, etc. and the means of eradication.

Goble, H. W. *Powder Post Beetles, Termites, and Carpenter Ants*. Toronto, Canada: Ontario Department of Agriculture and Food, 1970.

This pamphlet summarizes the effects of wood-boring insects on timber and their control through pesticidal treatment. It also outlines design considerations for attack prevention and means of detecting infestations.

Hickin, Norman E. *The Dry Rot Problem*. 2nd ed. London, England: Hutchinson and Co., 1972.

Hickin provides a brief summary on the nature of wood and the causes of decay, then goes on to outline the evolution, biology, and physiology of wood-attacking fungi with special reference to dry rot. He discusses where and why such fungi are found in timber buildings, how to detect them, and the means by which to prevent and eradicate them.

_____. *The Insect Factor in Wood Decay*. 2nd ed. New York, NY: St. Martin's Press, 1975.

This is a comprehensive account of the insects which damage wood in buildings. Although it deals specifically with infestations in Great Britain, it provides basic information on the nature of wood and factors of decay. It then launches into a detailed description of insect families and species (including 280 drawings and photos) which attack wood and the nature of the damage caused by them. Incidence and means of control are discussed as well.

_____. *The Woodworm Problem*. London, England: Hutchinson and Co., 1972.

This text deals with woodworm, otherwise known as the larval or immature state of certain wood-boring beetles, and their infestation in timber buildings. Background information on what woodworm is and how it affects wood is provided, along with information on the adult beetles and means of controlling attacks.

Higuchi, Takayoshi, ed. *Biosynthesis and Biodegradation of Wood Components*. New York, NY: Academic Press, 1985.

This very technical reference deals with the decay of wood by microorganisms and how various wood components (i.e. cellulose, lignin, extractives, etc.) are affected.

Hupp, A. J. *Save That House: A Homeowner's Guide to Controlling Decay, Termites, Carpenter Ants, Powder Post Beetles*. Shelton, WA: D&J Publishing Co., 1983.

The principle forms of biodeterioration and the insects and fungi involved are summarized in this text. In addition, common problem areas in the home are identified -- such as wood steps, slab floors, wooden posts, etc. -- and means of improving conditions, so as to prevent attack, are outlined.

Jennings, D. H., and A. F. Bravery, eds. *Serpula Lacrymans: Fundamental Biology and Control Strategies*. New York, NY: John Wiley and Sons, 1991.

This book contains a series of articles on *Serpula lacrymans*, commonly known as dry rot. Discussions cover growth characteristics, physiology, identification, and eradication strategies.

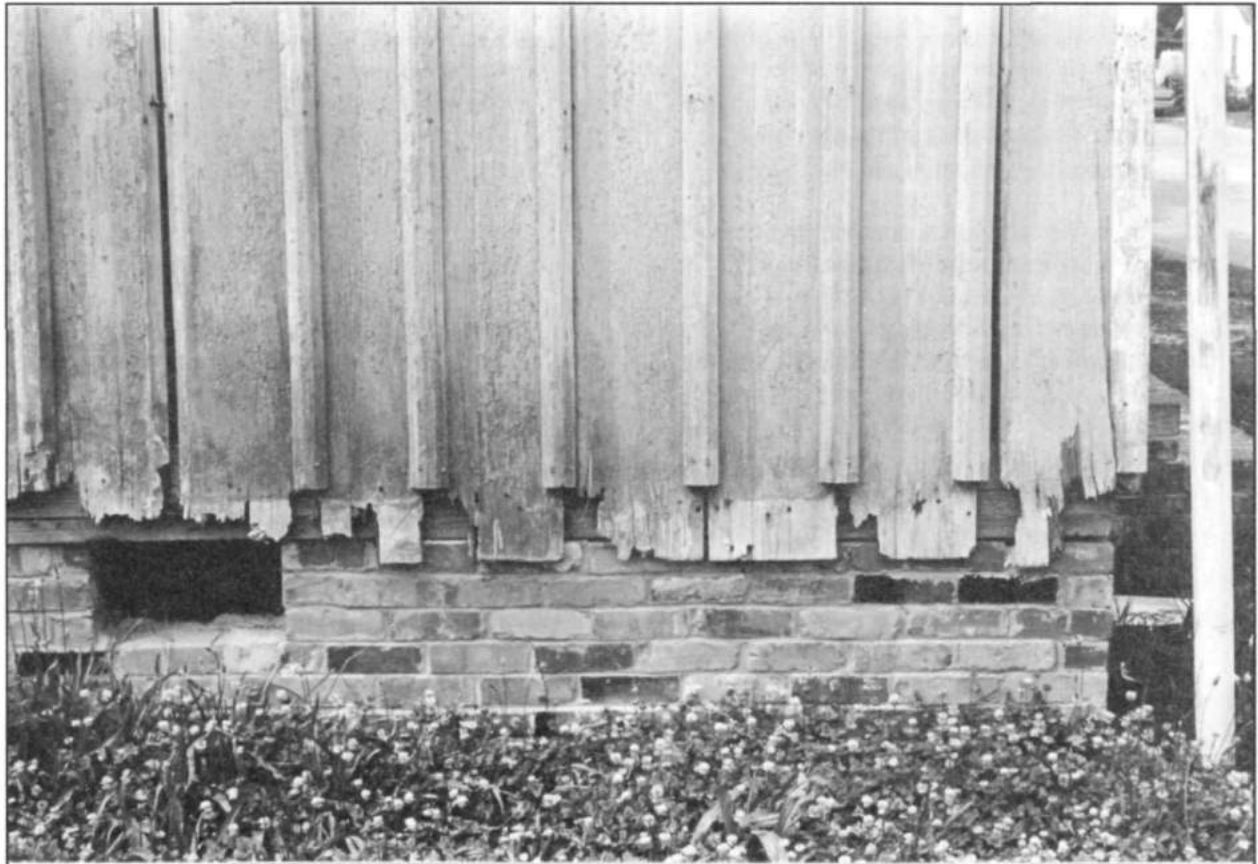
Labine, Clem. "Insects That Eat Houses." *Old House Journal*. Vol. 9, No. 6 (June 1981), pp. 129-132.

This article describes the damage that can be caused by termites, wood boring beetles, and

anobiid beetles. Control treatments are given for each type of insect.

Levy, Martin P. *A Guide to the Inspection of Existing Homes for Wood-Inhabiting Fungi and Insects*. Washington, DC: Office of Policy Development and Research, U.S. Department of Housing and Urban Development, nd.

This article describes various surface molds, sapstain fungi, rot, and a variety of wood damaging insects with color illustrations. A series of very helpful inspection checklists are also included.



Biodeterioration is evident at the lower section of this board and batten siding. Photo: Ed Turberg, North Carolina Division of Archives and History.

Merrill, William. *Wood Deterioration: Causes, Detection and Prevention*. American Association for State and Local History Technical Leaflet 77. [As printed in *History News*. Vol. 29, No. 8 (August 1974)].

This brief leaflet on wood decay focuses on fungal attacks such as bluestain, soft rot, mold, etc. It describes the types of fungi, common locations of attack, and means of controlling infestations.

Moore, Harry B. *Wood Inhabiting Insects in Houses: Their Identification, Biology, Prevention and Control*. Washington, DC: US Department of Agriculture, Forest Service and the Department of Housing and Urban Development, 1979. [1]

Two chapters of this publication are devoted to termites -- their biology, identification, prevention, and control through good design and construction practice, inspection, chemical treatments, and mechanical alterations. There are additional chapters on wood-boring beetles and wood-attacking wasps, ants, and bees including information on their characteristics and control.

Rambo, George W., ed. *Wood Decay in Structures and Its Control*. Dunn Loring, VA: National Pest Control Association, 1988.

This reference provides basic information on the general properties of wood as well as more specific information on wood-inhabiting fungi. It outlines the means of inspecting for wood deterioration in structures -- including the necessary equipment, the types and purposes of moisture meters, areas to inspect, etc. Recommendations are also made as to how structures can be modified to prevent or control attack, i.e. through removal of grade stakes and soil at foundations, replacement of damaged wood, ventilation of crawl spaces, waterproofing, etc.

Raynor, A.D.M., and Lynne Boddy. *Fungal Decomposition of Wood: Its Biology and Ecology*. New York, NY: John Wiley and Sons, 1988.

This is a comprehensive reference on the fungal decay of wood. It includes historical data on the development of wood decay research as well as information of the activity of wood-destroying fungi, the ecological roles of organisms, development cycles, breeding, etc.

Ridout, Brian. "Keep It Dry." *Traditional Homes*. Vol. 2, No. 1 (October 1985). pp. 91-92.

This article briefly discusses the furniture beetle, the death watch beetle, dry rot, and wet rot and the means of controlling attacks without large-scale replacement or toxic chemicals.

St. George, Raymond Alexander. *Protecting Log Cabins, Rustic Work, and Unseasoned Wood from Injurious Insects in Eastern United States*. Farmers' Bulletin No. 2104. Washington, DC: US Department of Agriculture, 1970. [1]

This pamphlet outlines the principle wood-destroying insects and the types of damage they cause. In addition, it addresses preventive treatment (pre-construction) and remedial treatments such as chemical insecticides and heat.

Scheffer, T. C. and A. F. Verrall. *Principles for Protecting Wood Buildings from Decay*. Madison, WI: Forest Products Laboratory, Forest Service, US Department of Agriculture, 1973. [7]

This publications deals primarily with decay caused by fungi and its effects on exterior structural timber. It focuses on problems of moisture and the areas of buildings most commonly infested. Preservative treatments for wood are discussed and routine maintenance stressed.

*Zabel, Robert A., and Jeffrey J. Morrell. *Wood Microbiology: Decay and its Prevention*. New York, NY: Academic Press, 1992.

This is one of the most up-to-date and extensive texts on the organisms which cause decay in wood and the changes undergone by attacked timber. It provides good historical information on wood pathology and discusses the new "field" of wood microbiology, which incorporates a variety of disciplines related to the decay process. Also included are in depth discussions on various fungi and bacteria and their effects, means of detecting decay, and problems facilitating attack.

Mechanical, Physical, and Chemical Deterioration

DeGroot, Rodney, C. Influence of Climate Upon Hazard for Wood Decay." *Proceedings of the Second International Conference on the Durability of Building Materials and Components, September 14-16, 1981*. Gaithersburg, MD: National Bureau of Standards, 1981. pp 288-294.

This paper discusses the effects of climate on the effectiveness of pest control systems for residential structures so as to better predict comparative performance of alternative protection strategies in given environments.

Feist, William C. "Weathering of Wood in Structural Uses." *Structural Use of Wood in Adverse Environments*. Eds. Robert W. Meyer and Robert M. Kellog. New York, NY: Van Nostrand Reinhold, 1982. pp. 156-178.

Feist discusses the changes in exposed exterior wood caused by photodegradation by UV light, leaching, hydrolysis, and shrinking and swelling by moisture and heat. The means of protection against weathering, such as coating with water repellents, paint, varnishes, stains, preservatives, etc, are presented and suitable

treatments for various types of wood elements (i.e. siding, millwork, etc.) are recommended.

Miller, E. R., and H. Derbyshire. "The Photodegradation of Wood During Solar Irradiation." *Proceedings of the Second International Conference on the Durability of Building Materials and Components, September 14-16, 1981*. Gaithersburg, MD: National Bureau of Standards, 1981. pp. 279-287.

The photodegradation of wood exposed to sunlight is discussed in this paper along with its effects on the durability of finishes, such as varnish, stain, paint, etc.

Wilcox, W. Wayne, and Allen F. Rosenberg. "Architectural and Construction Deficiencies Contributing to Decay of Wood in Buildings, or How Not to Build with Wood and Why." *Structural Use of Wood in Adverse Environments*. Eds. Robert W. Meyer and Robert M. Kellog. New York, NY: Van Nostrand Reinhold, 1982. pp. 246-355.

This work summarized the nature of wood decay and outlines the potential failures of wood due to poorly designed systems, poor construction, and the ineffectiveness of accompanying materials, such as moisture barriers, wall covering, etc. Recommendations are made as to the conditions which should be avoided in the design of timber structures.

Moisture

Cargocaire Engineering Corp. *The Dehumidification Handbook*. Amesbury, MA: Cargocaire Engineering Corp., 1984.

Dealing with all materials and buildings as well as objects, this handbook outlines the various means of measuring humidity, determining its sources and effects, and dehumidifying.

Coleman, G. R. *Guide to Identification of Dampness in Buildings*. Sherborne, England: Remedial Technical Services, Ltd., 1986.

This handy pocket guide summarizes the methods for identifying moisture content and sources of moisture in building materials, including timber. It contains information on the tell-tale signs of water-related problems and typical forms of damage and outlines methods of investigation using electric moisture meters, carbide meters, visual inspection, etc.

DeGroot, Rodney C., *Your Wood Can Last for Centuries*. Washington, DC: Forest Service, US Department of Agriculture, 1976.

This is a basic informational leaflet on wood in houses and moisture-related conditions affecting it. Such problems as soil contact, rain seepage and splashing, plumbing leaks, etc, are discussed with accompanying color photos and diagrams.

de Guichen, Gaël. *Climate in Museums: Measurement*. Rome, Italy: ICCROM, 1984. [4]

Although geared for museums, this booklet provides essential information on measuring humidity in any older building. Descriptions of humidity measuring equipment, such as psychrometers, hygrometers, hygrographs, etc. are provided along with information on their use and applications.

Grattan, David W. "Permanent Probes for Measuring Moisture in Wood." *Association for Preservation Technology Bulletin*. Vol 21, Nos. 3-4 (1989). pp. 71-78.

This article deals primarily with wooden artifact monitoring, but the types of meters and investigative methods described are also applicable to timber in buildings

Oliver, Alan C. *Dampness in Buildings*. Boston, MA: BSP Professional Books, 1988.

This very detailed treatise addresses all aspects of dampness in buildings, its causes, and its cures. All building materials are addressed, including wood and the effects moisture has on promoting decay in timber. There are additional discussions on various building components, such as roofs, joinery, etc., the common problems affecting them, and their treatment.

Verrall, Arthur F. *Building Decay Associated with Rain Seepage*. Technical Bulletin no. 1356. Washington, DC: Forest Service, US Department of Agriculture, 1966.

This bulletin address moisture problems which affect exterior woodwork and their symptoms, including staining, coating failure, buckling, etc. It provides basic information on fungi and outlines methods for surveying buildings and identifying moisture-related problems. It makes suggestions as to their correction.

Wetterman, T. A. "Control of Moisture Migration in Light Frame Walls." *Moisture Migration in Buildings*. Eds. M. Lieff and H. R. Trechsel. Philadelphia, PA: American Society for Testing and Materials, 1982. pp. 102-109.

This paper outlines the need for and means of controlling moisture in light frame wall construction. It summarizes the efficacy of moisture barrier systems which are continuous by design or method of installation and systems which allow free passage to the exterior.

Investigation and Diagnosis

Addleson, Lyall. *Building Failures: A Guide to Diagnosis, Remedy and Prevention*. Boston, MA: Butterworths, 1989.

Investigative and diagnostic techniques regarding building failure inspection are

described in this text. Contextual information for common problem areas, such as flat timber roofs, window openings, etc., is provided along with data on the causes and mechanisms of failure, including condensation, capillary action, infestation, etc.

American Society of Civil Engineers. *Guideline for Structural Condition Assessment of Existing Buildings*. New York, NY: American Society of Civil Engineers, 1991.

This ASCE manual is a standard for assessing the structural condition of existing buildings of various materials, including concrete, metals, masonry, and wood. It provides recommendations on investigative techniques, testing methods, and condition report format. Included is a section on the condition assessment of wood, which provides general information on the types of wood products and their properties.

Association for Preservation Technology Foundation. *Structural Assessment*. Washington, DC: Association for Preservation Technology Foundation, 1986.

This booklet provides information on the structural assessment of various building materials and contains a chapter devoted to timber. It outlines problems related to structural wood, such as shrinkage, deflection, etc., and delineates testing methods and equipment. An appendix on wood-inhabiting organisms is also included.

Bowyer, Jack. *Guide to Domestic Building Surveys*. 4th ed. Boston, MA: Butterworth Architecture, 1988.

Bowyer's work is a step-by-step guide to investigating buildings. It contains details on analyzing the condition of timber doors, joinery, floors, finishes, roofs, joists, weatherboarding, windows, etc. as well as a checklist for problem indications.

Brenner, William, David Hattis, Richard Stephan, Ken Frank, and Gerard Diaz. *Residential Building Systems Inspection*. Washington, DC: Association for Preservation Technology Foundation, 1986.

This handbook summarizes the problems associated with various materials and components of residential construction. A section on wood structural systems deals with such conditions as sagging, sloping, cracking, etc. and their causes.

Carbognani, Maurice. *Photogrammetry Applied to Surveys of Monuments and Historic Centres*. Rome, Italy: ICCROM, 1989. [4]

This French and English text provides a concise and easily understood description of photogrammetry and its application in architectural surveys.

Gilmore, Andrea M. "Dating Architectural Moulding Profiles - A Study of Eighteenth and Nineteenth Century Moulding Plane Profiles in New England." *Association for Preservation Technology Bulletin*. Vol. 10, No. 2. (1978), pp. 90-117.

This article serves as an illustrated guide to the dating of mouldings based on profiles. It outlines the means of investigation and analysis; a list of plane makers from the era is also included.

Hart, David M. *X-Ray Examination of Historic Structures*. Washington, DC: Office of Archeology and Historic Preservation, Heritage Conservation and Recreation Service, US Department of the Interior, 1975. [5]

Hart explains the use of x-ray technology to probe and investigate historic buildings nondestructively.

Nelson, Lee H. *Nail Chronology as an Aid to Dating Old Buildings*. Technical Leaflet no. 48. Nashville, TN: American Association for State and Local History, 1968.

The various types of nails used historically in America are described in this leaflet. Information is provided as to their period of employ and means of manufacture so as to facilitate the dating of timber buildings.

Robson, Patrick. *Structural Appraisal of Traditional Buildings*. Brookfield, VT: Gower Publishing Co., 1991.

This text encompasses all building materials and the causes of structural damage. The basic principles for investigating older buildings are outlined, followed by chapters on specific techniques and methods for collecting data, such as visual inspection, historical research, testing, etc. A chapter devoted to timber frames is included.

Ross, Robert J., and Roy F. Pellerin. *Nondestructive Testing for Assessing Wood Members in Structures: A Review*. Madison, WI: Forest Service, Forest Products Laboratory, US Department of Agriculture, 1991. [7]

This report examines the fundamentals of nondestructive testing (NDT) of wood and wood products. It interprets the results of a sample investigation which explored the use of NDT for in situ assessment and makes recommendations for further research.

Teutonico, Jeanne Marie. *A Laboratory Manual for Architectural Conservators*. Rome, Italy: ICCROM, 1988. [4]

This handbook provides general information on laboratory science and the analysis of building materials. A section devoted to wood contains information on its structure, shrinking and swelling properties, means of identification, test loading, etc.

Weaver, Martin E. "The Investigation and Recording of Moulding Profiles." *Association for Preservation Technology Bulletin*. Vol. 10, No. 4 (1978), pp. 88-92.

This article concisely outlines the procedures for recording and analyzing mouldings. Included is information on the necessary equipment, recording techniques, and common causes of inaccuracies.

Wilson, Forrest. *Building Materials Evaluation Handbook*. New York, NY: Van Nostrand Reinhold, 1984.

Encompassing all materials, this book does provide specific information on wood characteristics, wood decay, and the damage caused by decay. It also reviews the means of detecting and recognizing decay through visual inspection, probing, radiography, and the use of moisture meters, ultrasonic equipment, stress-wave propagation equipment, etc.

Conservation, Repair, and Maintenance

This section encompasses texts on preserving and maintaining old buildings as well as those dealing with specific wood conservation issues. The first category lists references on the preservation and maintenance of old wood buildings in general which contain information on timber elements. Subsequent categories deal specifically with wood components and various treatment methods. A final section addresses wood finishes and finishing.

Historic Wood Buildings

*American Society of Civil Engineers, Subcommittee on Evaluation, Maintenance, and Upgrading of Timber Structures of the Committee on Wood of the Structural Division. Alan Freas, Chairman. *Evaluation, Maintenance and Upgrading of Wood Structures: A Guide and Commentary*. New York, NY: American Society of Civil Engineers, 1982.

The extensive and authoritative text covers the causes of deterioration, means and equipment for inspection, evaluation of conditions, repair, and maintenance of existing timber structures. It includes a good overview of the history of timber construction, with a section on Military Structures from the WWII era. Also discussed are the special considerations necessary for historic buildings as well as US case studies of recycled wood structures.

Ashurst, John and Nicola. *Practical Building Conservation, Vol 5: Wood, Glass and Resins and Technical Bibliography*. New York, NY: Halstead Press, 1988.

This manual is part of the English Heritage Technical Handbook Series. It includes information on structural and decorative wood in buildings, outlining wood-destroying fungi

and insects, preservatives, construction failures, structural repairs, cleaning, and the use of substitute materials. Also included is an extensive technical bibliography incorporating all topics of the series.

Auer, Michael J. *Preservation Briefs No. 20: The Preservation of Historic Barns*. Washington, DC: Preservation Assistance Division, National Park Service, US Department of the Interior, 1989. [5]

Auer outlines barn types and materials in this *Brief* and offers advice on maintenance, repair, and rehabilitation.

Belle, John, John Ray Hoke, Jr., and Stephen A. Kliment, eds. *Traditional Details for Building Restoration, Renovation, and Rehabilitation*. New York, NY: John Wiley and Sons, Inc., 1991.

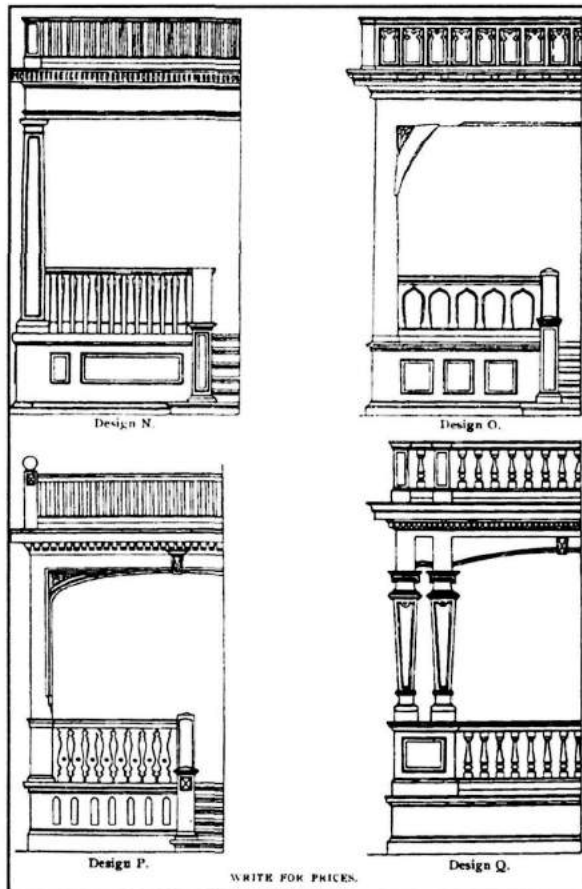
This is a Ramsey/Sleeper publication containing extracts from the 1932-1951 editions of *Architectural Graphic Standards*. It includes details for wood doors, bookcases, columns, timber framing, moulding, joints, stair, siding, etc.

Bomberger, Bruce D. *Preservation Briefs No. 26: The Preservation and Repair of Historic Log Buildings*. Washington, DC: Preservation Assistance Division, National Park Service, US Department of the Interior, 1991. [5]

This *Brief* deals with various log construction types, their preservation, repair, and maintenance. Included is information on splicing techniques, the use of epoxies, replacing chinking and daubing, etc.

Bowyer, Jack. *Vernacular Building Conservation*. London, England: The Architectural Press, Ltd., 1980.

Although this text addresses all building materials, it includes very informative sections on timber framing as well as on timber decay



Wood porch designs from the *Radford Universal Design and Official Moulding Book*, Shattock and McKay, Printers, Chicago, IL, 1904.

and the various means to solve problems caused by it. It outlines repair techniques for beams, weatherboard, timber roof, etc. and provides general conservation information for doors, frames, windows, paneling, and staircases.

Bullock, Orin M., Jr. *The Restoration Manual: An Illustrated Guide to the Preservation and Restoration of Old Buildings*. New York, NY: Van Nostrand Reinhold Co., 1983.

This general manual is geared for use by preservation professionals. It provides

information on historical research, archaeological research, methods of documentation, inspections techniques, dating techniques, preparation of working drawings and specifications, salvaging materials, and planning for maintenance. It includes specific information on analyzing timber building elements, including floorboards, joists and other framing members, and woodwork.

Byrne, Richard O., Jacques Lemire, Judy Oberlander, Gail Sussman, and Martin Weaver, eds. *Conservation of Wooden Monuments: Proceedings of the ICOMOS Wood Committee, IV International Symposium, Canada, June 1982*. Ottawa, Canada: ICOMOS Canada and the Heritage Canada Foundation, 1982.

This dense series of papers covers the spectrum of preserving wood in old buildings. Topics range from forest conservation to repair techniques to investigative methods. Although concentrating on Canadian forests and building styles, the information is applicable to American situations.

Chambers, J. Henry. *Cyclical Maintenance for Historic Buildings*. Washington, DC: Office of Archeology and Historic Preservation, Interagency Historic Architectural Services Program, National Park Service, US Department of the Interior, 1976. [8]

This handbook outlines the steps for preparing and implementing maintenance plans for buildings. It addresses some specific maintenance techniques for interior uncoated wood, wood floors, windows, etc.

Charles, F. W. B. *Conservation of Timber Buildings*. London, England: Hutchinson and Co., 1984.

This three-part text deals with wood properties and the history of timber construction, the means of inspecting timber buildings for deterioration, and British conservation case studies.

*Feilden, Bernard. *Conservation of Historic Buildings*. Boston, MA: Butterworth Scientific, 1982.

This is a comprehensive and extensive guide to the conservation and maintenance of various building types, materials, elements, etc., including wood beams, joinery, trusses, shakes, etc. It includes information on the causes and cures of biodeterioration and mechanical decay in timber.

Findlay, W. P. K., ed. *Preservation of Timber in the Tropics*. Boston, MA: Martinus Nijhoff/Dr. W. Junk Publishers, 1985.

Findlay provides general information on the nature and durability of tropical timbers and the causes of their decay. The methods and materials effective in their conservation are discussed, such as drying techniques, preservative chemicals and treatments, etc.

Hickin, Norman E. *The Conservation of Building Timbers*. London, England: Hutchinson and Co. Ltd., 1967.

Hickin provides detailed accounts of insect and fungal damage based on extensive regional surveys of houses, factories, churches, etc. in Great Britain. The means of addressing damage and infestation are presented through information on preservative treatments and maintenance/preservation techniques.

_____. *Wood Preservation: A Guide to the Meaning of Terms*. London, England: Hutchinson, 1971.

This is essentially a dictionary of terms used in wood preservation literature and in the industry. Included are chemical references regarding preservatives and the toxicology of preservative chemicals.

Insall, Donald W. *The Care of Old Buildings Today: A Practical Guide*. New York, NY: Watson-Guption, 1974.

This well illustrated and easily understood manual encompasses a number of building materials and styles, outlining potential problems and repairs. Although it focuses on British construction and styles (it was first published in Britain), much of the information is pertinent to American structures.

*Jackson, Albert, and David Day. *The Complete Home Restoration Manual: An Authoritative, Do-It-Yourself Guide to Restoring and Maintaining the Older House*. New York, NY: Simon and Schuster, 1992.

This comprehensive and well illustrated manual is geared for the homeowner and craftsman alike. Although it addresses all house materials, it includes information on the typology and repair of wood siding, shingled roofs, doors, window, paneling, mouldings, flooring, etc. It also provides a directory of suppliers for replacement goods.

Johnson, Sidney M. *Deterioration, Maintenance, and Repair of Structures*. New York, NY: McGraw-Hill, 1965.

Johnson discusses a variety of building materials and types. Included is a chapter on timber structures -- the cause of decay, shrinkage, repair/replacement techniques, structural reinforcement, and preservative treatments.

Kitchen, Judith L. *Caring for your Old House: A Guide for Owners and Residents*. Washington, DC: Preservation Press, 1991. [9]

This is a very general source that is useful to the homeowner/occupant. It discusses financial issues, planning, and technical matters. Included is information on wood, structural and non-structural, and how its decay is prevented. It contains only limited discussions of repair techniques.

Labine, Clem, and Carolyn Flaherty, eds. *Old-House Journal Compendium*. Woodstock, NY: Overlook Press, 1980.

This compilation of articles from *The Old-House Journal* includes a great number of pieces from 1973-1977 dealing with wood preservation and restoration. Some of the pertinent articles are as follows: "Roofing with Wood Shingles," "Sealing Leaky Windows," "Restoring Rotted Window Sills," "Curing Problems in Double-Hung Windows," "Detecting and Defeating Rot," "Surgery on a Staircase," "Sagging Floors," "Repairing Old Wood Floors," "Plugging Cracks Between Floorboards," "Making Wood Mouldings the Old Way," "Remedies for 'Dark, Ugly' Woodwork," etc.

Labine, Clem, and Patricia Poore, eds. *The Old-House Journal New Compendium*. Garden City, NY: Dolphin Books, 1983.

This sequel to the previous entry includes similar articles (pre-1983). It is divided into sections, including those dealing with wood roofs, floors, siding, windows, stairs, etc. Some of the pertinent articles are as follows: "Combatting Decay in Shingle Roofs," "Maintenance of Gutters," "Talk to Me of Windows," "Repairing Wood Stairs," "How to Make a Wainscot," "Removing Woodwork for Paint Stripping," "Restoring Porch Latticework," "Exterior Wood Columns," etc.

Meadows, Robert E. *Historic Building Facades: A Manual for Inspection and Rehabilitation*. New York, NY: New York Landmarks Conservancy, 1986.

This handbook addresses all materials and styles, but contains specific sections on the historical development of timber facades, their deterioration, analysis, and repair.

Melville, Ian A., and Ian A. Gordon. *The Repair and Maintenance of Houses*. 1973. London, England: Estates Gazette Ltd., 1984.

This extensive manual is geared toward materials and construction that are common in Great Britain. However, sections dealing with timber problems, as well as the evolution of timber construction, are pertinent to the preservation of American structures as well.

Mills, Edward D., ed. *Building Maintenance and Preservation - A Guide to Design and Management*. Boston, MA: Butterworth, Inc., 1980.

This compilation of articles by leading British preservation professionals deals with the conservation of recent and older buildings. Included are sections on timber repairs, in situ preservative treatments, plastic fillers, etc.

Ministry of Public Building and Works. *Notes on the Repair and Preservation of Historic Buildings: Timberwork*. London, England: Her Majesty's Stationery Office, 1965. [2]

This booklet outlines the typical problems occurring in wood framed structures, such as insect and fungal infestation, weathering, distortion, etc. and means of repair for both structural and non-structural timber.

Morton, W. Brown III, Gary L. Hume, Kay D. Weeks, and H. Ward Jandl. *The Secretary of the Interior's Standards for Rehabilitation with Illustrated Guidelines for Rehabilitating Historic Buildings*. Rev. ed. Washington, DC: Preservation Assistance Division, National Park Service, US Department of the Interior, 1992. [5]

This is essentially the federal government guidebook for the rehabilitation of old buildings. It makes recommendations as to responsible methods and materials employed during the restoration process.

National Park Service and The National Trust for Historic Preservation. *Respectful Rehabilitation: Answers to Your Questions About Old Buildings*. Washington, DC: Preservation Press, 1982.

This question and answer reference text covers topics such as wood siding, shingles, windows, doors, etc.

Preservation and Conservation: Principles and Practices. Proceedings of the North America International Regional Conference. Washington, DC: Preservation Press, 1972.

These proceeding cover a broad range of preservation issues, including information on planning, technical data, etc. Two papers, one by George L. Wrenn III, and the other by Harold Tarkow, deal specifically with wood, its investigation, and its preservation.

Proceedings of the Furniture and Wooden Objects Symposium, 2-3 July 1980. Ottawa, Canada: Canadian Conservation Institute, 1980.

Although this series of papers deals specifically with furniture and objects, several articles are pertinent to timber in buildings. They cover such topics as the anatomy of wood and its biodegradation, consolidants and adhesives used to repair wood, and means of restoring wood finishes.

Sandwith, Hermione, and Sheila Stainton. *The National Trust Manual of Housekeeping*. New York, NY: Viking Penguin Inc., 1984.

Although this text focuses on objects in house museums, it contains valuable information on the maintenance of wood floors, furniture, etc.

Scott, G. A. *Deterioration and Preservation of Timber in Buildings*. London, England: Longmans, Green and Co. Ltd., 1968.

Scott's text provides basic information on the composition, structure, and chemistry of wood

as well as on how/why wood deteriorates. Specifics on fungal and insect attack are given, and an extensive discussion regarding preservative and pesticidal treatments is included.

Sherwood, Gerald E. *How to Select and Renovate an Older House*. New York, NY: Dover Publications, Inc., 1976. [3]

This is a reprint of Agricultural handbook no. 482, *New Life for Old Dwellings*. Although it covers a variety of materials, it includes some practical information on appraising structural wood components, siding, trim, doors, etc. as well as recognizing decay. However, many of the treatments suggested by the author are not appropriate for historic buildings and may destroy their historic character.

_____. "Technology of Preserving Wood Structures." *Building Performance: Function, Preservation, and Rehabilitation*. ASTM STP 901. Ed. G. Davis. Philadelphia, PA: American Society for Testing and Materials, 1986. pp. 121-135. [7]

This paper includes information on the fundamental properties of wood and on factors that influence serviceability, such as loading, temperature, moisture, chemical, and weathering. Methods and practices for repairing deteriorated wood and preventing decay are summarized, including preservative treatments and structural repairs. It also contains an extensive bibliography.

Stahl, Frederick A. *A Guide to the Maintenance, Repair, and Alteration of Historic Buildings*. New York, NY: Van Nostrand Reinhold, 1984.

This is a comprehensive guide for building maintenance and repair. Topics covered include inspection, evaluation, recordkeeping, etc. Specific information on wood deterioration and treatment is also provided.

Swindells, David J. *Restoring Period Timber-Framed Houses*. North Pomfret, VT: David and Charles Inc., 1987.

Although this was originally published in Britain, the information applies to US conditions as well. There is an extensive outline of the types and history of timber framing, with additional information on floor construction, joinery, etc. Restoration and repair work is addressed by architectural element, such as wall panels, roof timbers, joints, weatherboarding, sill, etc.; traditional repair techniques as well as new epoxies and fillers are discussed. Also included is a chapter on wood-destroying fungi and insects and a glossary of timber construction.

Sabo, T., and J. K. Shields. "Simple Remedial Treatment of Deteriorated Wood in Heritage Homes." *Association for Preservation Technology Bulletin*. Vol. 11, No. 2 (1979), pp. 17-25.

This brief article outlines the various means of addressing the problem of deteriorated wood in timber homes, including preservative treatment, replacement, and repair.

US Department of the Army. Headquarters. *Historic Preservation Maintenance Procedures*. Technical Manual TM 5-801-2. Washington, DC: US Department of the Army, 1977.

This military booklet describes the general guidelines followed by the Army for preserving historic properties and their original building materials through maintenance.

*Weaver, Martin E., with Frank Matero. *Conserving Buildings: A Guide to Techniques and Materials*. New York, NY: John Wiley and Sons, Inc., 1993.

This comprehensive and authoritative text covers a variety of building materials and styles, but contains an extensive section on the repair and restoration of wooden structures.

Included is information on identification, the nature of wood, causes and symptoms of deterioration, and preservative treatments. Weaver gives step-by-step instructions for carrying out a timber survey and also outlines systems for repairing wood, including consolidation, mechanical reinforcement, and partial/complete replacement.

Structural Wood Components

Christenson, Tim. "Problems and Possible Solutions in the Repair of Deterioration in Wood Structural Members." *Structural Use of Wood in Adverse Environments*. Eds. Robert W. Meyer and Robert M. Kellog. New York, NY: Van Nostrand Reinhold, 1982. pp. 483-85.

Christenson briefly discusses the various repair procedures for deteriorated structural wood members, including replacement (entire and partial), reinforcement in situ, and preservative treatments.

Jowers, Walter. "Beam Repair Basics." *Old-House Journal*. Vol. 12, No. 8 (October 1984), pp. 175-78.

Jowers discusses methods for repairing and replacing load-bearing wood members in old buildings with accompanying illustrations.

Lanius, Ross M., Jr. "Evaluating Residual Strength and Repair of Structures." *Structural Use of Wood in Adverse Environments*. Eds. Robert W. Meyer and Robert M. Kellog. New York, NY: Van Nostrand Reinhold, 1982. pp. 436-50.

Lanius outlines the methods used to assess the strength of existing building members and provides a step-by-step description of how to carry out a structural evaluation. He also briefly discusses methods for repairing and reinforcing structurally unsound buildings and their members.

Nash, George. "Replacing Rotted Sills." *Fine Homebuilding*. No. 53 (April/May 1989), pp. 77-79.

This article describes the process of replacing a timber sill atop a stone foundation wall buttressed with concrete. Water seepage due to lack of flashing or drip cap caused deterioration of the sill and necessitated replacement. Nash outlines the means of probing to determine condition, supporting the structure during removal/replacement, and inserting the new member.

Richards, Peter. "Treat with Care." *Traditional Homes*. Vol. 2, Nos. 1-3.

This three part article included the following:

(October 1985, pp. 56-7, 59-61). This first article outlines the common types of timber repairs and the causes of deterioration, such as damp, infestation, settlement, etc.

(November 1985, pp. 58-61). This second section discusses the precautions which should be taken while performing structural timber repairs, such as protection from the elements, proper shoring, eradication of infestation, etc.

(December 1985, pp. 66-69). This concluding segment provides advice for cleaning timbers.

Rockhill, Dan. "Structural Restoration with Epoxy Resins." *Association for Preservation Technology Bulletin*. Vol. 20, No. 3 (1988), pp. 29-34.

Rockhill describes the fundamentals of the WER (wood epoxy reinforcement) system using the case study of Lane University in Lecompton, Kansas. He shows how the system was implemented and discusses its successes and downfalls.

Stumes, Paul. "Structural Rehabilitation of Deteriorated Timber." *Structural Use of Wood in Adverse Environments*. Eds. Robert W. Meyer and Robert M. Kellog. New York, NY: Van Nostrand Reinhold, 1982. pp. 467-71.

Stumes summarizes the use of the WER system for repairing structural timbers while maintaining a maximum degree of the natural appearance of beams, columns, etc. so that engineering standards are met without destroying historic integrity. Stumes also discusses the development of the WER system and its possible applications.

_____. "Structural Rehabilitation of Deteriorated Timber in Historic Buildings." Tokyo National Research Institute of Cultural Properties. *International Symposium on the Conservation and Restoration of Cultural Property - Conservation of Wood - 24-28 November 1977, Tokyo, Nara and Kyoto, Japan*. Tokyo, Japan: Organizing Committee of International Symposium on the Conservation and Restoration of Cultural Property, 1978.

As in the previous article, Stumes discusses the WER system and its means of implementation under certain conditions. He also provides information on the non-destructive means of testing structural timber for soundness and strength.

_____. "Testing the Efficacy of Wood Epoxy Reinforcement Systems." *Association for Preservation Technology Bulletin*. Vol. 7, No. 3 (1975), pp. 2-35.

This extensive article examines testing procedures to insure the success of WER repaired timbers. Trials regarding strength, preservative effectiveness, heat expansion, fire rating, etc. are reviewed.

Suter, Gerhard T. "Evaluation of In Situ Strength of Aged Timber Beams." *Structural Use of Wood in Adverse Environments*. Eds. Robert W. Meyer and Robert M. Kellog. New York, NY: Van Nostrand Reinhold, 1982. pp. 472-79.

Suter summarizes the nondestructive load test methods for the assessment of load-carrying timber members in existing buildings. He also discusses the use of a deflection test to measure stiffness and a strength test. Included is information on performing tests as well as evaluating the results.

Weaver, Martin E. "Restoring Structural Wood." *The Construction Specifier*. (July 1990), pp. 115-26.

Weaver summarizes the basic types of timber structural systems, i.e. log structures, balloon framing, etc., and outlines the nature of wood and its deterioration, biological and otherwise. He then provides instructions for carrying out a timber defects survey and describes the various means of preserving/repairing decayed members through replacement, consolidation, mechanical reinforcement, etc. Weaver also discusses the use of pesticides and preservatives to eradicate and prevent infestation.



This 19th century, fire-damaged covered bridge reveals the method of cross-braced wood planks used to stabilize the vertical walls. Photo: Hugh T. Henry, Vermont Division of Historic Sites.

Non-Structural Wood Components

Exterior Woodwork

Auer, Michael J. *Preservation Briefs No. 25: The Preservation of Historic Signs*. Washington, DC: Preservation Assistance Division, National Park Service, US Department of the Interior, 1991. [5]

Although Auer addresses the spectrum of signage types and materials, some information is provided on the preservation of wood signs, their repair, and their maintenance.

Goodall, Harrison. "Exterior Woodwork No. 3: Log Crown Repair and Selective Replacement Using Epoxy and Fiberglass Reinforcing Rebars." *Preservation Tech Notes*. Washington, DC: Preservation Assistance Division, National Park Service, Department of the Interior, 1989. [8]

Using the case study of Lamar Barn in Yellowstone National Park, this *Tech Note* describes the replacement of deteriorated crowns in a log barn for buffalo. This repair technique eliminated the need for entire log replacement; its advantages and the installation procedure are discussed.

Jagger, Allan. "Exterior Woodwork." *Landmarks Observer*. Vol. 13, No. 1 (January/February 1986), p. 8.

This brief article discusses the means of detecting fungal and insect decay in exterior woodwork and eradicating infestation through the use of preservatives and pesticides. Brief mention is made of dutchman repair techniques.

Jones, Larry. "Wood Cornice Restoration and Repair." *Old-House Journal*. Vol. 13, No. 7 (August/September 1985), pp. 141-47.

Jones outlines the basic types of wood cornices and how to inspect them for damage. He

discusses typical problems, symptoms, causes, and means of repair through design changes, partial replacement, flashing installation, etc.

Jones, Thomas H. "Repairing Exterior Jambs and Thresholds." *Mechanix Illustrated*. Vol. 79 (December 1983), pp. 32, 34.

In regards to jamb repair, this article discusses the use of epoxy consolidants and fillers and application techniques. For sills, it outlines the replacement of such elements and the options involved.

Kahn, Renee, and Ellen Meagher. *Preserving Porches*. New York, NY: Henry Holt and Co., 1990.

This two-part text provides a great deal of historical information on various porch styles and construction from the colonial era through the eclectic revivals. The second section includes information on researching a porch, maintaining it, and undertaking repairs for floors, stairs, railings, aprons, etc. A bibliography, glossary, and list of suppliers of replacement parts are also included.

Labine, Clem. "Parts for a Romantic Porch." *Traditional Building*. Vol. 3, No. 2 (March/April 1990), p. 17-18, 21-22.

This article discusses briefly the issue of replacing millwork on porches and provides an extensive list of suppliers of such parts.

Park, Sharon C., AIA. *Preservation Briefs No. 16: The Use of Substitute Materials on Historic Building Exteriors*. Washington, DC: Preservation Assistance Division, National Park Service, US Department of the Interior, 1988. [5]

A variety of materials are discussed in this *Brief*, including wood. Park weighs the options and outlines the pros and cons of various substitute materials.

Siding

Barnhart, Roy. "Repair Damaged Siding." *Home Mechanix*. Vol. 83 (May 1987), pp. 90-93.

Guidelines for the partial replacement of clapboards are discussed and illustrated in this piece. Included is information on the various types of siding and shakes available.

Bock, Gordon. "Clapboards: Technical Answers on Horizontal-Wood-Siding Types and Details of Their Installation." *Old-House Journal*. Vol. 17, No. 3 (May/June 1989), pp. 32-41.

This comprehensive article includes an extensive amount of information on clapboards -- their history, a glossary of styles, information on fabrication, and manufacturing data (historical as well as contemporary). Bock makes recommendations as to wood selection, nail selection, installation, exposure, etc.

Branson, Gary. "How to Renew Weathered Wood Siding." *Family Handyman*. Vol. 37, No. 9 (September 1987), pp. 66, 68-73.

This extensively illustrated article shows how to removed dark stains from cedar and redwood siding using laundry bleach as a pressure wash.

Curtis, John Obed. "Salvage of Original Clapboards." *Old-House Journal*. Vol. 13, No. 7 (August/September 1985), pp. 135, 156-58.

Using his own house as a case study, Curtis outlines the removal of 1950s asbestos siding and the subsequent removal, repair, and replacement of the original nineteenth century clapboards behind. He discusses methods for numbering, nail removal, epoxy repair, etc.

Gladhart, Emily. "Low-cost Facelift: Recycle Your Siding." *Family Handyman*. Vol. 33, No. 4 (April 1983), p. 56.

This article briefly discusses the removal, reversal, and reinstallation of redwood siding which would not take a finish because of multiple underlayers of old paint. Rather than stripping, the owner removed the boards, insulated the house, ripped the bottom drip edge of the clapboards, and reinstalled them.

Jones, Larry. "Minor Repairs of Clapboards." *The Old-House Journal*, Vol. 12, No. 4 (May 1984), pp. 78-79.

This brief article outlines the methods of repairing or replacing damaged clapboard siding. It includes information on removal methods and nailing techniques.



Only those areas of the wood siding that have deteriorated beyond repair should be replaced, as shown here on this wood clapboard house in West Virginia. Photo: Anne Grimmer.

Myers, John H. Revised by Gary L. Hume. *Preservation Briefs No. 8: Aluminum and Vinyl Siding on Historic Buildings: The Appropriateness of Substitute Materials for Resurfacing Historic Wood Frame Buildings*. Washington, DC: Preservation Assistance Division, National Park Service, US Department of the Interior, 1984. [5]

This *Brief* discusses the problems inherent to the substitution of wood siding with vinyl or aluminum. The issue of architectural integrity is reviewed along with problems related to moisture, fire, etc.

Vila, Bob. "Old House Restoration: Clapboards." *Popular Mechanics*. Vol. 167, No. 12 (December 1990), pp. 74, 76.

Vila briefly discusses the history of clapboard siding in America, noting popular wood species and means of sawing. He also outlines the general techniques for repairing old clapboards.

Wiles, Robert. "Decently Clad." *Traditional Homes*. Vol. 5, No. 9 (June 1989), pp. 157-60.

Wiles provides step-by-step instructions for repairing weatherboarding through partial replacement. Included is information on the diagnosis of problems, reinstallation of boards, and refinishing.

Roofs

Bock, Gordon. "Wood-Shingle Roof Care." *Old-House Journal*. Vol. 18, No. 3 (May/June 1990), pp. 36-38.

Bock summarizes the general maintenance and cleaning techniques for wood-shingle roofs. He also provides information on various treatments, including bleaches, preservatives, and growth control treatments along with product information.

Labine, Clem. "The Romance of Wood Shingles." *Traditional Building*. Vol. 4, No. 2 (March/April 1991), pp. 27-28.

A brief overview of wood shingle and shake replacement is provided in this article along with a sourcelist of replacement suppliers.

Leeke, John. "Making Wood Shingles Last." *Old-House Journal*. Vol. 18, No. 3 (May/June 1990), pp. 39-41.

Leeke discusses the various types and causes of deterioration and defects in wood shingles, including checks and splits, weathering, curbing and cupping, etc. He offers general information on how to prevent or solve such problems.

Park, Sharon C., AIA. *Preservation Briefs 19: The Repair and Replacement of Historic Wooden Shingle Roofs*. Washington, DC: Preservation Assistance Division, National Park Service, US Department of the Interior, 1989. [5]

Park discusses the history of wood roofing, its maintenance, and repair. In addition to partial replacement and coating treatments, Park outlines substitute materials for wood shingle roofs and their upkeep.

"Wood-Shingle Roofing Specs." *Old-House Journal*. Vol. 18, No. 3 (May/June 1990), pp. 34-36.

This article outlines specifications for the selections of materials (shingles and nails), installation, and air circulation when repairing wood-shingle roofs.

Windows and Doors

Branson, Gary. "Window Moisture Damage." *Family Handyman*. Vol. 33, No. 2 (February 1983), pp. 48-49.

This very brief article discusses the elimination of condensation on windows and the repair of damage caused by it through refinishing.

_____. "Restore Your Old Double-Hung Windows and Save Money." *Family Handyman*. Vol. 33, No. 9 (September 1983), pp. 40-44.

Branson provides information on channel replacement and power lifter installation as a means of upgrading old wood windows without replacing entire sash or frames.

Carlsen, Gregg, and Kathleen Childers. "Repairing Stubborn Windows." *Family Handyman*. Vol. 41, No. 2 (February 1991), pp. 40-44.

This article provides general advice on tune-ups for casement and double-hung windows. It includes information on removing paint build-up, checking for swelling problems, lubricating and repairing hardware, replacing sash cords, inserting butterflies, etc.

Closs, Christopher W. "Windows No. 16: Repairing and Upgrading Multi-light Wooden Mill Windows." *Preservation Tech Notes*. Washington, DC: Preservation Assistance Division, National Park Service, US Department of the Interior, 1986. [8]

This *Tech Note* describes the repair and upgrade to the double hung wooden windows for the rehabilitation of Sawyer Mills in Dover, New Hampshire for use as apartments.

Dunbar, Michael. "Doors and Windows." *Early American Life*. Vol. 22, No. 3 (June 1991), pp. 66-69.

This article provides a brief historical overview of doors and windows in America along with general information on dealing with the repair or replacement of these old elements.

Feist, William C. "Windows No. 4: Replacement Wooden Frames and Sash: Protecting Woodwork Against Decay." *Preservation Tech Notes*. Washington, DC: Preservation Assistance Division, National Park Service, US Department of the Interior, 1984.

This *Tech Note* describes the use of wax as a safer alternative to water-repellent chemical preservatives for treating wood.

Fossel, Peter V. "Repair Historic Windows." *Americana*. Vol. 16, No. 6 (January/February 1988), pp. 12-15.

This article provides basic information on the repair of sash and frames using clamps, fillers, etc., the eradication of rot, and refinishing.

Halda, Bonnie J. "Doors No. 1: Historic Garage and Carriage House Doors: Rehabilitation Solutions." *Preservation Tech Notes*. Washington, DC: Preservation Assistance Division, National Park Service, US Department of the Interior, 1989. [8]

This *Tech Note* employs three examples of garage and carriage house doors to illustrate the means by which original wood doors can be rehabilitated without sacrificing architectural integrity.

Jones, Thomas H. "Correcting Door Problems." *Mechanix Illustrated*. Volume 79 (November 1983), pp. 24, 30, 32.

Jones discusses ways of determining the causes of and repairing sticking doors. He addresses

hinge problems, settling foundations, sagging partitions, humidity, etc. and the methods of correcting problems.

Labine, Clem. "Revival of the Wood Window." *Traditional Building*. Vol. 2, No. 5 (September/October 1989), pp. 7-12.

This brief piece provides general information on the replacement of wood windows. It includes a checklist for premium quality when searching for replacement products as well as a source list of manufacturers.

Myers, John H. *Preservation Briefs No. 9: The Repair of Historic Wooden Windows*. Washington, DC: Technical Preservation Services Division, Heritage Conservation and Recreation Service, US Department of the Interior, 1981. [5]

This *Brief* discusses the evaluation of historic windows considering both physical condition and architectural significance. It also outlines the various repair classes, including routine maintenance, stabilization of decayed

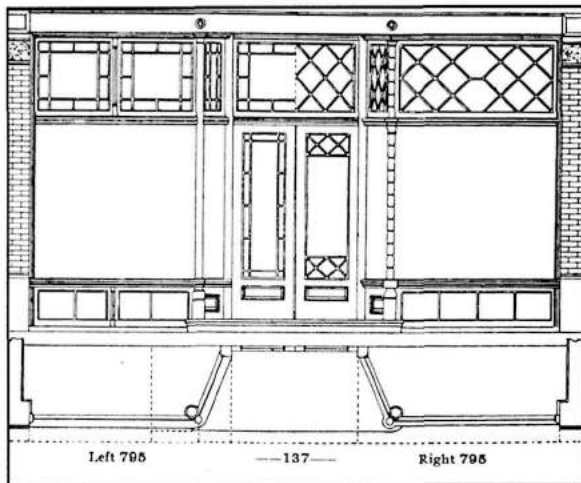
components, and partial replacement (dutchman repairs). Weatherization and full replacement are also mentioned.

New York Landmarks Conservancy. *Repairing Old and Historic Windows*. Washington, DC: Preservation Press, 1992. [9]

This is a comprehensive reference on window preservation. Included is an historical overview of window styles and construction in America from 1620 to 1950. Information is provided on how to evaluate conditions and problems as well as on how to repair, replace, and retrofit when necessary. A good glossary is also included.

O'Donnell, Bill. "Troubleshooting Old Windows." *Old-House Journal*. Vol. 14, No. 1 (January/February 1986), pp. 16-23.

O'Donnell summarizes the causes and remedies for the most common problems associated with old double-hung wood windows, including sash sticking, counterweight and cord problems, draftiness, and refinishing.



Wood storefront design from the *Radford Universal Design and Official Moulding Book*, Shattock and McKay, Printers, Chicago, IL, 1904.

Poore, Jonathan. "How to Fix Old Doors." *Old-House Journal*. Vol. 14, No. 5 (June 1986), pp. 222-27.

Poore discusses common door problems related to swelling, paint build-up, settling, etc. and ways of improving conditions.

Princes Risborough Forest Products Research Laboratory. *Maintenance and Repair of Window Joinery*. Princes Risborough, England: Forest Products Research Laboratory, 1968.

This booklet discusses the causes of decay in window joinery and the means of prevention and treatment.

Stumes, Paul, P. Eng. "Windows No. 14: Reinforcing Deteriorated Wooden Windows." *Preservation Tech Notes*. Washington, DC: Preservation Assistance Division, National Park Service, US Department of the Interior, 1986. [8]

This *Tech Note* describes the restoration of the wooden frames of large stained glass windows in situ. Crumbling wooden sash parts were saturated and consolidated with a commercially available epoxy.

Vila, Bob. "Old House Restoration: Dealing with Old Windows." *Popular Mechanics*. Vol. 165, No. 9 (September 1988), pp. 42,44.

This brief and very general article discusses the option of restoring vs. replacing and how to determine the best solution. Information on improving old windows is also provided.

**The Window Handbook: Successful Strategies for Rehabilitating Windows in Historic Buildings*. Washington, DC: National Park Service; and Atlanta: Georgia Institute of Technology, 1986. [10]

This compendium of articles and papers on window restoration includes a number of *Preservation Tech Notes* dealing with old wood windows, including: *Reinforcing Deteriorated Wooden Windows*, *Repairing and Upgrading Multi-Light Wooden Mill Windows*, *Thermal Retrofit of Historic Wooden Sash Using Piggyback Storm Panels*, *Installing Insulating Glass in Existing Wooden Sash Incorporating the Historic Glass*, *Replacement Wooden Frames and Sash*, *Replacement Wooden Sash and Frames With Insulating Glass and Integral Muntins*. The references are contained in a three-ring binder and can be updated.

The Window Workbook for Historic Buildings. The Window Conference and Exposition for Historic Buildings, December 1-4, 1986, Boston, MA. Washington, DC: Historic Preservation Education Foundation, 1986. [10]

This is a compendium of papers given at the aforementioned conference with additional reprints of historic and current materials on windows. Included is information on the repair and replacement of wooden frames and sash, double-glazing existing windows, insulating windows, etc.

Windows and Doors. New York, NY: McGraw-Hill Continuing Education Center, 1987.

This concise text is geared toward the homeowner/occupant and provides information on the various types of windows and doors and their repair and replacement.

Interior Woodwork

Auer, Michael J., Charles E. Fisher, Thomas C. Jester, and Marilyn E. Kaplan, eds. *The Interiors Handbook for Historic Buildings, Volume 2*. Washington, DC: Historic Preservation Education Foundation, 1993. [10]

This compendium was generated by the Interiors Conference held in Washington, DC, in February 1993. It includes papers on the repair and restoration of wood floors and woodwork as well as reprints from *The Old-House Journal* addressing similar issues.

Ball, Norman R. "Reproducing Historic Wooden Mouldings." *Association for Preservation Technology Bulletin*. Vol. 10, No. 4 (1978), pp. 101-03.

Ball provides a brief guideline for the selection of replacement wood mouldings, including

such considerations as thickness, wood species, shrinkage allowance, etc.

Blackburn, Graham. *Floors, Walls and Ceilings: How to Finish, Refinish, and Repair Interior Surfaces*. Mount Vernon, NY: Consumers Union, 1989.

This reference deals with all materials and forms of construction, but it does contain specific information on hardwood floors, stairways, panelling, and trim, including ideas for assessing conditions, repairing, and refinishing.

Bock, Gordon. "A Bay Comes Back." *Old-House Journal*. Vol. 19, No. 6 (November/December 1991), pp. 34-38.

Using the case study of an 1880s window bay, Bock demonstrates the methods employed to restore the woodwork. Included is information on dutchman repairs, filling, and finishing techniques.

_____. "Construction Details and Repairs: Wainscot." *Old-House Journal*. Vol. 18, No. 1 (January/February 1990), pp. 30-36.

This article briefly outlines the history of wainscot design and fabrication. It goes on to provide information on installation and repair techniques for horizontal boards, vertical boards, and panels.

_____. "Duplicating Short Moulding Sections." *Old-House Journal*. Vol. 16, No. 6 (November/December 1988), pp. 26-32.

Bock describes the various means of reproducing sections of mouldings using piecing methods, shaping techniques, and scratch beading. Also included is a list of suppliers of historic wood mouldings.

_____. "Removing Interior Woodwork: Clever Ways to Avoid Destroying Your Trim." *Old-House Journal*. Vol. 13, No. 5 (June 1985), pp. 108-11.

Bock explains how to remove, store, and reinstall woodwork during a restoration project so as to avoid damage.

_____. "Reviving Railings." *Old-House Journal*. Vol. 18, No. 4 (July/August 1990), pp. 45-46.

This brief article offers advice on the repair of foot rails, hand rails, and balusters and outlines the common problems necessitating repair.

Cameron, Christina. "Selecting an Appropriate Vernacular Moulding." *Association for Preservation Technology Bulletin*. Vol 10, No. 4 (1978), pp. 80-87.

Cameron outlines a methodology based on historic research, documentation, etc. which can be implemented in the dating and selection of vernacular mouldings.

Childers, Kathleen. "Reviving Your Home's Woodwork." *Family Handyman*. Vol. 40, NO. 1 (January 1990), pp. 39-41.

Childers discusses the means of reviving clear-finished woodwork by cleaning with mineral spirits or sanding. She stresses the importance of proper ventilation, proper materials handling, and use of an organic vapor respirator.

Dunbar, Michael. "Floors, Walls, and Ceiling." *Early American Life*. Vol. 22, No. 5 (October 1991), pp. 72-73, 80, 82.

Although though this article deals primarily with plaster walls and ceilings, it provides some general information on wood floors, specifically linoleum removal, sanding, and the use of fillers.

Fisher, Charles E., Michael Auer, and Anne Grimmer, eds. *The Interiors Handbook for Historic Buildings*. Washington, DC: Historic Preservation Education Foundation, 1988. [10]

Generated by the Interiors Conference of 1988, this handbook includes papers on the repair and maintenance of parquet floors, woodwork restoration, moulding replication, wainscot conservation, finish conservation, etc. It contains an excellent bibliography.

*Johnson, Ed. *Old House Woodwork Restoration: How to Restore Doors, Windows, Walls, Stairs, and Decorative Trim to Their Original Beauty*. Englewood Cliffs, NJ: Prentice-hall, Inc., 1983.

This is a comprehensive guide to the restoration of woodwork in the home. Information is provided on various architectural elements, including balusters, paneling, floors, etc. as well as advice on stripping and refinishing. The text is well illustrated and includes a number of pertinent case studies.

Labine, Clem. "A Study in Architectural Panelling." *Traditional Building*. Vol. 3, No. 6 (November/December 1990), pp. 9-10, 12, 14, 16.

Labine discusses the various types of panelling, their installation, and finishing. The article includes an extensive source list of manufacturers.

Lief, Judith Siegel. "Architectural Millwork: Enriching Detail." *Traditional Building*. Vol. 4, No. 2 (March/April 1991), pp. 13-24, 16, 18.

This is a very brief article on the evaluation of millwork quality for replacement parts. An extensive list of suppliers is included.

_____. "As the Wood Turns." *Clem Labine's Traditional Buildings*. Vol. 4, No. 5 (September/October 1991), pp. 10, 12, 14.

Lief discusses the materials and finishes for turned wood components and the differences between hand turned and machine made products. A source list of manufacturers is included.

Nelson, Lee H. "Simplified Methods for Reproducing Wood Mouldings." *Association for Preservation Technology Bulletin*. Vol. 3, No. 4 (1971), pp. 53-62.

This brief illustrated article outlines step-by-step the means of reproducing mouldings using various power and hand tools.

Poore, Jonathan. "Woodwork Repairs: How to Remedy All the Minor Messy Problems You're Bound To Find After You Strip, to Prepare Woodwork for a Clear Finish." *Old-House Journal*. Vol. 15, No. 3 (May/June 1987), pp. 32-37.

Poore provides information on repairing woodwork that has been stripped in preparation for a clear finish. Repairs focus on warping, veneer damage, stains, cracks and open joints, etc.

Samuels, Steve. "Re: Architectural Woodwork." *The Construction Specifier*. (July 1991), pp. 139-141, 143-146.

Samuels discusses the options of repairing, refinishing, and replacing architectural woodwork and the means of determining the most appropriate action. He makes specific recommendations regarding refinishing and old finish removal and discusses the various types of solvents and new finish products.

Seale, William. *Recreating the Historic House Interior*. Nashville, TN: American Association for State and Local History, 1979.

This text provides very general information on restoring and refinishing interior elements, including walls, floors, etc., with particular emphasis on assuring historical accuracy.

Shivers, Natalie. *Walls and Molding: How to Care for Old and Historic Wood and Plaster*. Washington, DC: Preservation Press, 1990. [9]

Shivers' extensive reference outlines methods of diagnosing, cleaning, repairing, and reconstructing wood panels and mouldings. Historic information on woodwork designs is provided along with recommendations for "reviving" old finishes.

Floors and Stairs

Barnhart, Roy. "Help For Hardwood." *Home Mechanix*. Vol 84, No. 722 (June 1988), pp. 50, 52, 54-55.

This article provides helpful hints for reviving and repairing hardwood floors. Included is information on removing/blending spots, inserting new planks and dutchmen, cleaning, and waxing.

Berkeley, Bernard. *Floors: Selection and Maintenance*. Chicago, IL: Library Technology Program, American Library Association, 1968.

Berkeley's text covers all floor types and materials and includes a chapter on wood floors. He discusses their properties, design, construction, use of various wood species, the grades of lumber, and finishing options. Some general information is provided on maintenance techniques.

Bock, Gordon. "Those ?*+!\$#! Cracks." *Old-House Journal*. Vol. 16, No. 6 (November/December 1990), pp. 34-35.

Bock outlines the causes and remedies of "gappage" between floorboards. Remedies include increased humidity, paste fillers, fibrous fillers, elastic caulks, wood strips, and relaying.

Borgemeister, Peter. "Structural Repair Under an Old Floor." *Old-House Journal*. Vol. 20, No. 2 (March/April 1992), pp. 36-40.

This article employs the case study of a sagging floor in a nineteenth century farmhouse to demonstrate ways of repairing such problems. Included is information about jacking the floor and adding supports, installing shims, laying a new floor, etc.

Branson, Gary and Carl DeGroot. "The Guide to Squeaky Floors: Causes, Cures." *Family Handyman*. Vol. 37 (November 1987), pp. 34-38, 42, 44.

This is a well illustrated, comprehensive guide to curing squeaks caused by water, gaps between floorboards and subfloor/joists, nails, etc.

Capotosto, Rosario. "Curing Squeaky Stairs." *Family Handyman*. Vol. 33, No. 2 (February 1983), p. 52.

This very brief piece discusses the ways of eliminating stair squeaks by securing loose treads with the use of glue, nails, and/or wedges.

Edwards, J. K. P. *Floors and Their Maintenance*. London, England: Butterworths, 1972.

This text deals with all floor types and materials, but contains specific information on wood floors, their characteristics, maintenance, and cleaning.

Fulton, Kathy, and Gordon Bock. "Repairing Antique Floors." *Old-House Journal*. Vol. 16, No. 2 (March/April 1988), pp. 43-45.

Fulton and Bock discuss ways to repair damage in pre-1850 floors. Included is information on finding replacement lumber, removing damaged sections, and installing replacement boards. There is also a sub-article on dutchman repairs.

Johnson, Duane. "Repairing Rotted Floors." *Family Handyman*. Vol. 41, No. 7 (July/August 1991), pp. 60, 62-64.

Using the example of flooring surrounding a sweaty toilet, Johnson explains methods of joist reinforcement, subfloor patching, and replacement for moisture damaged timbers.

Labine, Clem. "The Many Ways to Climb to the Top: Staircases and Parts." *Traditional Building*. Vol. 3, No. 4 (July/August 1990), pp. 27-28, 30, 32.

This article provides general information on replacement parts for stairs, including railings, balusters, treads, skirts, etc. A list of manufacturers is also provided.

Leeke, John. "Fixing Hardwood Floors: How to Remove and Replace Tongue-and-Groove Floorboards." *Old-House Journal*. Vol. 18, No. 6 (November/December 1990), pp. 30-33.

Leeke makes recommendations as to planning a project, selecting materials, and making repairs to subflooring. He also provides step-by-step instructions for board replacement.

McComb, George. "Reclaiming Your Hardwood Floors." *Family Handyman*. Vol. 33, No. 1 (January 1983), pp. 64-66.

This brief article discusses the removal of carpeting and the refinishing of a wood floor below. Included is information on sanding, filling, staining, and finishing.

Nelson, Lee H. "Notes on Historic Flooring: An 18th Century Method for Making High Quality Wooden Flooring from Boards of Irregular Thickness." *Cultural Resource Management Bulletin*. Vol. 13, No. 4, pp. 27-28. [12]

Nelson explains the traditional procedures used to create a fine timber floor without hand planing or sanding.

"Patch a Hardwood Floor." *Family Handyman*. Vol. 34, No. 2 (February 1984), pp. 60-61.

This is a brief article on infilling hardwood floors when a wall or fireplace has been removed.

Poore, Patricia. "Replacing a Stair At Our Old House." *Old-House Journal*. Vol. 10, No. 2 (February 1982), pp. 27, 44-47 and "Fixing Our Balustrade." *Old-House Journal*. Vol. 10, No. 3 (March 1982), pp. 58-62.

These companion articles describe the repair of a rickety late nineteenth century staircase through tread repair, balustrade repair, and new replacement.

_____. "Restoring a Parquet Floor." *Old-House Journal*. Vol. 12, No. 1 (January/February 1984), pp. 28-29.

In this brief article, Poore discusses the sourcing of replacement material as well as the cutting and installation of new pieces and repairs to existing portions.

_____, and the Old House Journal Technical Staff. "Fixing Old Floors - A Three-Part Series." *Old-House Journal*. Vol. 9, Nos. 2-4.

This series of articles consists of the following topics:

(January 1981), pp. 7-10: "How to Deal with Sagging, Sloping, Squeaking Floors."

(February 1981), pp. 48-50: "Construction Types and Sub-floor Repairs."

(March 1981), pp. 61-63: "Repairing and Replacing Floorboards."

Thompson, Mark. "Quiet a Squeaky Step." *Family Handyman*. Vol. 37, No. 4 (April 1987), p. 41.

This very brief piece provides some text and illustrations for wedging treads and risers and using wood blocks and nails to prevent squeaking.

Villa, Bob. "Old House Restoration: Restoring Wood Floors." *Popular Mechanics*. Vol. 168, No. 5 (May 1991), pp. 102-3.

Vila provides very general information on restoring wood floors, with some specifics on period finishes and repair techniques for planks and parquets. A list of wide-board flooring suppliers is included.

Consolidants, Fillers, and Adhesives

Avent, R. Richard. "Design Criteria for Epoxy Repair of Timber Structures." *Journal of Structural Engineering*. Vol. 112 (February 1986), pp. 222-40.

_____. "Factors Affecting Strength of Epoxy-Repaired Timber." *Journal of Structural Engineering*. Vol. 112 (February 1986), pp. 207-21.

This pair of article covers nearly all aspects of the epoxy repair of structural timbers.

_____, Raja R. A. Issa, and James T. Baylot. "Weathering Effects on Epoxy-Repaired Timber Structures." *Structural Use of Wood in Adverse Environments*. Eds. Robert W. Meyer and Robert M. Kellog. New York, NY: Van Nostrand Reinhold, 1982. pp. 208-18.

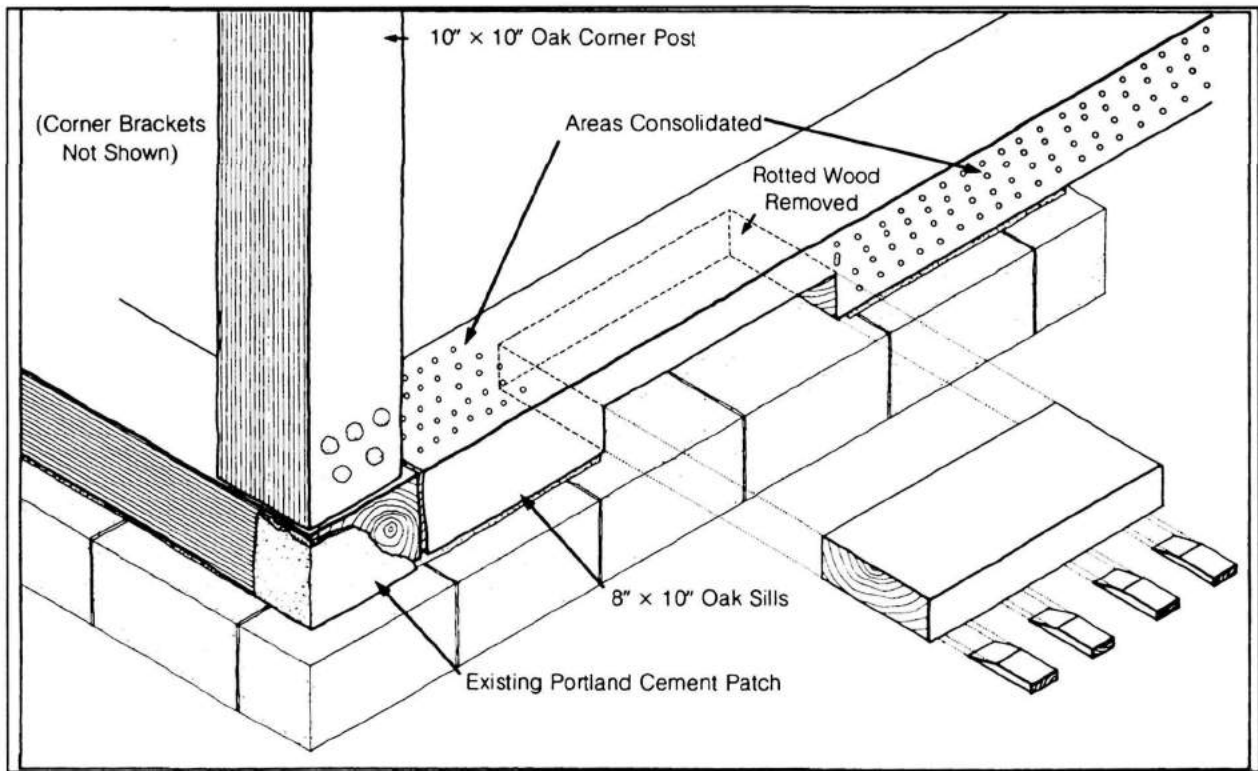
This is a report of experimental results on the effectiveness of the epoxy repair techniques for structures exposed to natural weather conditions. Two aspects are explored: the feasibility of repairing timber structures previously exposed to severe weathering, and the effect of exposing epoxy-repaired timber structures to continued weathering. The report concludes that weathered joints can be repaired successfully and that repaired joints have significant resistance to continued weathering.

Capotosto, Rosario. "How to Use Wood Fillers." *Popular Mechanics*. Vol. 163, No. 8 (August 1986), p. 54.

This is a brief piece on the various types of wood fillers and putties, and their application and use.

Gillespie, Robert H., ed. *Adhesives for Wood: Research, Applications, and Needs*. Park Ridge, NJ: Noyes Publications, 1984.

This text was generated from the proceedings of the 1980 symposium by the same title. It is a technical reference consisting of a series of papers dealing with all aspects of wood adhesives, including the various types, the evaluation of their durability, and new research.



This isometric drawing of the framing at the SE corner post and sill of the 1759 Longfellow House in Cambridge, Massachusetts, indicates the decayed areas that have been drilled in preparation for epoxy consolidation. *Illustration:* Judith E. Selwyn.

Higuchi, Seiji. "Consolidation and Restoration of Damaged Wooden Materials with Synthetic Resins." Tokyo National Research Institute of Cultural Properties. *International Symposium on the Conservation and Restoration of Cultural Property - Conservation of Wood - 24-28 November 1977, Tokyo, Nara and Kyoto, Japan*. Tokyo: Organizing Committee of International Symposium on the Conservation and Restoration of Cultural Property, 1978, pp. 23-32.

Higuchi discusses the various types of resins used to restore wood artifacts and structures, including acrylic and butyryl resin solutions, prepolymer methacrylate, epoxy resin, etc.

Horie, C. V. *Materials for Conservation: Organic Consolidants, Adhesives, and Coatings*. Boston, MA: Butterworths, 1987.

This technical reference provides information on the above compounds and their use in all realms of conservation. Information on filler, epoxies, acrylic resins, natural resins, etc. is included.

Kahn, Eve M. "Wood Restoration: Epoxies Fill in the Gaps." *Traditional Building*. Vol 4, No. 5 (September/October 1991), pp. 16, 18, 20, 22.

This brief article provides a basic introduction to epoxies and includes a list of manufacturers and wood repair craftsmen.

Leeke, John. "How to Use Epoxies to Repair Rotted Exterior Wood." *Old-House Journal*. Vol 17, No. 3 (May/June 1989), pp. 22-26.

Leeke outlines the methods for performing epoxy repairs. Included is information on materials, application, mixing, consolidating, filling, and gluing. Leeke also provides safety information, a list of tools, and a list of suppliers.

Phillips, Morgan W., and Judith E. Selwyn. *Epoxies for Wood Repairs in Historic Buildings*. Washington, DC: Office of Archeology and Historic Preservation, Heritage Conservation and Recreation Service, Technical Preservation Services Division, US Department of the Interior, 1978. [8]

This study deals essentially with the repair of wood using low-viscosity epoxy consolidants that can be soaked into rotted wood and epoxy pastes for filling holes and cracks. General information on and recommendations for epoxies are provided along with results from an NPS epoxy testing program.

Prestly, Don. "Repairing Rotted Wood." *Family Handyman*. Vol 40, No.1 (January 1990), pp. 50-53.

This article outlines the means of repairing non-structural rotted wood using liquid consolidants and paste fillers. It is well illustrated and uses the examples of a window sill and storm window frame.

Provey, Joseph P., ed. "New Life For Damaged Wood." *Mechanix Illustrated*. Vol. 80 (July 1984), pp. 50-52.

The use of epoxy consolidants and fillers is discussed in this piece. The use of filler blocks/dutchmen with epoxies to avoid extensive use of expensive epoxy compounds is also explained.

Preservatives and Pesticides

Barnes, H. M. "Innovative Approaches to Wood Protection." *The First International Symposium on the Development of Natural Resources and Environmental Preservation*. Seoul, Korea: Institute of Natural Resources and Environment, Korea University, 1992.

Barnes summarizes the latest preservative treatments and research, concentrating on new formulae which are less mammalian- and bio-toxic than some traditional preservatives. Discussed are the advantages and disadvantages of the various alternative treatments.

British Wood Preserving Association. *Timber Preservation*. London, England: British Wood Preserving Association and High Wadcombe: TRADA, 1975.

This concise booklet outlines the durability of timber, the causes of deterioration, and preservative treatments. Included is information on preservative types, requirements, factors affecting penetration, methods of application, etc.

Childers, Kathleen. "Guide to Preservative Treated Wood." *Family Handyman*. Vol. 37, No. 5 (May/June 1987), pp. 94, 96.

This article offers a brief guide to the types of preservative treatments on the market, typical brands, and their use. Included also are the American Wood Preservers' Association ratings.

Graham, Robert D. "The Role of Fumigants in Log Preservation." *Association for Preservation Technology Bulletin*. Vol. 15, No.1 (1983), pp. 20-21.

This very brief article advocates the effectiveness of fumigants when restoring logs with epoxies. It warns against the toxicity of

some preservative treatments and warns caution in handling.

Hamel, Margaret, ed. *First International Conference on Wood Protection with Diffusible Preservatives*. Madison, WI: Forest Products Research Laboratory, 1990.

This book is a compilation of papers given at the conference, which was held in Nashville in November of 1990. It is a comprehensive resource for diffusible preservatives and contains information on remedial and in situ treatments for historic structures, the use of borates to treat soil, the history of diffusion treatments, coating performance over borate-treated wood, etc.

*Hunt, George M., and George M. Garrat. *Wood Preservation*. 1938. New York, NY: McGraw-Hill, 1968.

This authoritative text is a classic reference on wood preservation through preservative treatments. Included is information on chemical constituents, application techniques, efficacy evaluation, etc.

Jones, Larry. "Wood Woes." *Old-House Journal*. Vol. 14, No. 7 (September 1986), pp. 325-27.

This article deals both with the problems associated with finishing yellow pine and with the use of treated timber. Jones offers thirteen tips for choosing, finishing, handling, etc. treated timber.

*Nicholas, Darrel D., ed. *Wood Deterioration and Its Prevention by Preservative Treatments, Vol II: Preservatives and Preservative Systems*. Syracuse, NY: Syracuse University Press, 1973.

The second volume of this two-volume compendium outlines preservative systems. It includes information on their chemical and physical properties, factors influencing

effectiveness, treatment processes and equipment, pollution abatement, and the properties of wood which affect its treatability.

Prudon, Theodore H. M. "In-Situ Injection of Wood Preservatives." *Association for Preservation Technology Bulletin*. Vol. 11, No. 1 (1979), pp. 75-80.

Prudon summarizes the use of an in-situ pressure system for the preservative treatment of wooden members in historic structures. Injection nozzles are installed in the wood at regular intervals to allow the preservative to be injected under pressure. Prudon advocates the use of this method for large wooden building members.

*Richardson, Barry. *Wood Preservation*. New York, NY: The Construction Press, 1978.

This is an extensive reference which covers all aspects of wood preservatives. Included is information on the history of preservatives, their chemical development, means of application, means of evaluating systems, and the employ of preserved wood. Brief appendices provide information on how to choose a wood preservative system and on wood-destroying fungi and insects.

Stahli, Alfred M. "The Preservation of Logs and Heavy Timbers in Historic Buildings by Using Volatile Chemicals: A Preliminary Report." *Association for Preservation Technology Bulletin*. Vol. 15, No. 1 (1983), pp. 22-26.

Stahli discusses the use of readily available (at the time) soil fumigant chemicals for use as preservatives for wood poles, logs, and large timbers. He warns against the hazards of VOC use. Included is an extensive bibliography.

Thompson, R., ed. *The Chemistry of Wood Preservation*. Cambridge, England: Royal Society of Chemistry, 1991.

This compendium of articles serves as the proceedings of a symposium hosted by the Society in 1991. It includes papers on the history of preservatives, diffusion treatments, organic solvent preservatives, waterbased preservatives, efficacy assessment, termite control, etc. and discusses the future of the industry in the production of treatments with lower mammalian- and eco-toxicity.

Weaver, Martin E. "Chemical Warfare." *The Construction Specifier*. (July 1991), pp. 74-80, 85-91.

Weaver provides a comprehensive reference on preservatives and pesticides. Included is information on the various types of pesticidal chemicals and products, their toxicity, and their regulation.

_____. "Getting the Bugs Out: Poisons, Pesticides, and Preservatives." *Canadian Heritage Magazine*. (June 1980), pp. 45-48.

Weaver outlines the four major categories of pesticides giving cautionary advice in regards to mammalian toxicity, handling, reactions, composition, etc.

Worthing, Charles R., ed. *The Pesticide Manual: A World Compendium*. 9th ed. Farnham, England: The British Crop Protection Council, 1991.

This is an extensive catalog of pesticides and pesticidal ingredients for use in crop protection, although information is provided on those used in wood treatment also. Data included consists of nomenclature, development, properties, formulation, uses, toxicology, and analysis.

Finishes

Finishing and Refinishing

Baron, Brian. *The Techniques of Traditional Woodfinishing*. London, England: B. T. Batsford, 1987.

Although this text is geared toward furniture finishing, it includes valuable information on the history of shellac, materials, brushes, etc. It also includes a chapter on finishing faults and their remedies, such as flaking, crazing, fading, etc.

Brushwell, William, ed. *Goodheart-Willcox Painting and Decorating Encyclopedia: A Complete Library of Professional Know-how on Painting, Decorating, and Wood Finishing in One Easy-to-use Volume*. South Holland, IL: The Goodheart-Willcox Co., Inc., 1982.

This reference provides good background information on coatings for wood and their components, i.e. pigments, resins, solvents, driers, urethanes, etc. Additional information and diagrams explain the use of tools and the techniques for preparing surfaces and applying finishes.

Engler, Nick. *Finishing: Techniques for Better Woodworking*. Emmaus, PA: Rodale Press, 1992.

Although geared toward first time finishing, this reference provides invaluable information on safety, ventilation, hazardous chemicals, etc. associated with the finishing process. There is also a section on reproducing antiques finishes, and protecting finishes.

Finishes and Finishing Techniques: The Best of Fine Woodworking. Newtown, CT: Taunton Press, 1991.

This is a compilation of articles from *Fine Woodworking* magazine. The forty articles range from providing information on chemical

hazards to explaining techniques for marbleizing and ebonizing.

Frank, George. *Wood Finishing With George Frank*. New York, NY: Sterling Publishing Co., Inc., 1988.

This is a general text on wood finishes and finishing. Information on how finishes protect wood, the types and ingredients (i.e. dyes, chemicals, etc.), and their polishing is included.

Newell, Adnah Clifton. *Coloring, Finishing, and Painting Wood*. 1930. Rev. William F. Holtrop. Peoria, IL: Chas. A. Bennett Co., Inc., 1972.

This is a revised and updated version of Newell's classic text on wood finishing. It includes historical information as well as material on the types, composition, application, and use of stains, fillers, varnishes, paints, and lacquers. Other topics include the particulars of refinishing wood and appropriate coatings for interior and exterior applications.

Newell, Don. *Fine Wood Finishing: A Comprehensive and Creative Guide*. New York, NY: Prentice Hall Press, 1986.

Although this handbook deals primarily with furniture, it contains sections on the finishing and refinishing of woodwork, floors, and panelling.

Oughton, Frederick. *The Complete Manual of Wood Finishing*. New York, NY: Stein and Day, 1982.

Although geared toward the cabinet/furniture maker and restorer, this text includes information on an extensive range of finishes. A good glossary is provided along with information on the history of finishes. Several chapters are also devoted specifically to finish restoration.

Scharff, Robert. *Complete Book of Wood Finishing*. New York, NY: McGraw-Hill, 1974.

Scharff provides general information on various types of wood finishes, including varnishes, sealers, waxes, oils, etc., and their application. Included is a chapter on reviving old finishes marred by scratches, stains, cracking, etc. as well as a chapter on refinishing wood floors. A good glossary of wood finishing terms and materials is provided.

**Wood Finishing and Refinishing*. Passaic, NJ: Creative Homeowner Press, 1982.

This is a comprehensive text dealing with wood refinishing. It addresses small issues involved with refinishing, such as repairing loose joints, unsticking windows, removing stains, repairing veneers, etc., as well as larger matters, such as stripping millwork, panelling, and floors. Information on how to choose, apply, and create one's own finishes is provided along with very good illustrations.

Cleaning and Stripping

Alvarez, Mark. "Stripping Trim." *Fine Homebuilding*. No. 16 (August/September 1983), pp. 66-69.

This article describes the process of removing paint from interior woodwork using chemical solvents. The procedure is explained step-by-step, with added cautionary advice regarding materials handling.

Grimmer, Anne. *Preservation Briefs No. 6: Dangers of Abrasive Cleaning to Historic Buildings*. Washington, DC: Technical Preservation Services Division, Heritage Conservation and Recreation Service, Department of the Interior, 1979. [5]

This *Brief* outlines the problems inherent to sandblasting building materials, including

wood. It discusses the variables, alternative cleaning methods, testing techniques, and means of mitigating the effects of abrasive cleaning.

O'Bright, Alan. "Exterior Woodwork No. 2: Paint Removal From Wood Siding." *Preservation Tech Notes*. Washington, DC: Preservation Assistance Division, National Park Service, Department of the Interior, 1986. [8]

This *Tech Note* employs the case study of the Harry S. Truman Home in Independence, MO, to demonstrate paint removal methods. Severe paint failure necessitated the removal of the paint and refinishing, the discussion of which outlines the means of investigating a structure to determine which method of removal is best.

O'Donnell, Bill. "Flow-on Paint Stripping." *Old-House Journal*. Vol. 14, No. 6 (July/August 1986), pp. 279-81.

O'Donnell describes the shop method of flow-on stripping, also known as the cold-tray method, for wood elements. He discusses the advantages over hand-stripping and dip-stripping.

_____. "After You Strip...Before You Finish." *Old-House Journal*. Vol. 15, No. 1 (January/February 1987), pp. 43-47.

O'Donnell discusses the methods used to prepare wood for finishing after using a heat gun to remove paint layers. He advises subsequent use of a chemical stripper and gives advice on type, solvent rinses, picking out residual paint, removing stains, filling holes, etc.



Photo: Doyle Photo, Utica, NY. National Park Service files.

Exterior Finishes

Cassens, Daniel L., and William C. Feist. "Durability of Exterior Wood Finishes Depends on Proper Selection and Application." *Workbench*. Vol. 46 (March/April 1986), pp. 86-89.

This article weighs the advantages and disadvantages of paints, solid color stains, and water repellents for exterior wood finishing. It also discusses the means of applying the various options.

_____. *Finishing Wood Exteriors: Selection, Application, and Maintenance*. Agricultural Handbook No. 647. Washington, DC: Forest Service, US Department of Agriculture, 1986. [5]

This work provides general information on the properties, physiology, and manufacture of

wood as well as on construction practices and weathering characteristics. It more specifically discusses the finishing of exterior wood using paint, stains, transparent coatings, preservatives, etc. -- the types, means of application, refinishing consideration, and common problems associated with each.

Feist, William C., and R. Sam Williams. "Why Bother to Paint Wood Before It Weathers?" *American Paint and Coatings Journal*. (November 18, 1991). [7]

This brief article discusses the role of weathering in coating adhesion failure. It advocates the prompt finishing of exterior wood so as to avoid further deterioration.

Jessop, A. S. "Prospects in Terms of Service Life for a) Pigmented Coatings; b) Clear Coatings." *Paint and Protective Coatings for Wood: Symposium Proceedings, 2-3 November 1965, Auckland*. Auckland, New Zealand: New Zealand Timber Development Association, 1965.

This paper outlines the reasons for coating exterior wood and explains how coatings can fail, i.e. because of molds, shrinkage/swelling, moisture, ultraviolet light, etc.

Park, Sharon C., AIA. "Exterior Woodwork No. 1: Proper Painting and Surface Preparation." *Preservation Tech Notes*. Washington, DC: Preservation Assistance Division, National Park Service, US Department of the Interior, 1986. [8]

Using the case study of "Ole Jim," an 1881 gymnasium at Gallaudet College in Washington, DC, this *Tech Note* investigates the problem of paint failure and its causes. Also discussed are various remedies, including removal of undercoats of paint, partial wood replacement, caulking, etc.

Stayton, Charles L. "Beat the Weathering Problem." *Log Home Guide for Builders and Buyers*. Vol. 11, No. 3 (Summer 1988), pp. 48-49.

This brief article gives advice on cleaning weathered logs and finishing them with preservative and or pigmented finishes to maintain an unweathered appearance.

US Department of Agriculture, Forest Products Laboratory. *Surface Characteristics of Wood As They Affect Durability of Finishes*. Madison, WI: Forest Product Laboratory, US Department of Agriculture, 1966.

This two-part booklet deals with the surface stabilization and the photochemical degradation of wood. In Part I, the behavior of wood surfaces in exterior conditions is discussed with the focus of improving the durability of clear finishes applied to them. In Part II, the chemical changes in wood caused by exposure to light are explained.

Weeks, Kay D., and David W. Look, AIA. *Preservation Briefs No. 10: Exterior Paint Problems on Historic Wood*. Washington, DC: Technical Preservation Services Division, Heritage Conservation and Recreation Service, US Department of the Interior, 1982. [5]

The various problems associated with painted wood exteriors, i.e. mildew, staining, crazing, blistering, etc., are discussed along with their causes and repair options in this *Brief*. For severe problems, paint removal methods (abrasive, chemical, and thermal) are outlined.

Clear Finishes and Water Repellents

Collier, Ken. "Wood Preservatives." *Family Handyman*. Vol. 39, No. 3 (March 1989), pp. 50-51.

Despite its name, this article discusses three brush-on/soak finishes for wood, including

water repellents, water-repellant preservatives, and clear wood finishes. Included is information on their advantages/disadvantages and their application.

Deller, Craig. "Versatile Varnish: A Reliable Finish for a Small Shop." *Fine Woodworking*. No. 77 (July 1989), pp. 64-67.

This article provides a good overview of the various types of varnishes -- i.e. spirit, fossil-resin, synthetic alkyd resins, etc. Their means of application and repair techniques for defects and fisheye are discussed.

Dresdner, Michael. "Finishing With Oil: Modern Products for an Age Old Process." *Fine Woodworking*. No. 75 (March 1989), pp. 45-47.

This article offers a general discussion of oil finishes, their curing, application, repair, and refinishing.

Feist, William C., James K. Little, and Jill M. Wennesheimer. *The Moisture-Excluding Effectiveness of Finishes on Wood Surfaces*. Madison, WI: Forest Service Products Laboratory, Forest Service, US Department of Agriculture, 1985. [7]

This report consists of a study of ninety-one moisture-excluding finishes on ponderosa pine sapwood. The study includes an evaluation of moisture-excluding effectiveness by finish type, number of coats, substrate type, sample size, and time of exposure.

Feist, William C., and Gary Peterson. "Protecting Wood from Humidity - Lab Tests Show Which Finishes Work, Which Don't." *Fine Woodworking*. No. 64 (May 1987), pp. 59-61.

This is a summary of the previous report done by the Forest Products Laboratory on ninety-one moisture-excluding finishes.

Flexner, Bob. "Demystifying Wax - Cleaning Up Some Cloudy Questions About An Ancient Finish." *Fine Woodworking*. No. 70 (May 1988), pp. 66-68.

This article provides a good introduction to waxes, both natural and synthetic. It outlines the protection provided by wax, its application, and the means of reviving wax finishes.

Jones, Larry. "The Hand Rubbed Finish." *Old-House Journal*. Vol. 14, No. 2 (March 1986), pp. 70-74.

Jones outlines in detail the means of perfecting the hand rubbed finish. The article includes information on sanding, brush maintenance, finish application, waxing, etc.

Labine, Clem. "Restoring Clear Finishes: Reviving is Easier and Cheaper than Total Stripping." *Old-House Journal*. Vol. 10, No. 11 (November 1982), pp. 221, 238-41.

Labine cautions that total stripping is not always necessary in order to produce a "restored" finish. He advocates such options as cleaning and provides information on removing unsalvageable finishes.

_____. "Selecting a Clear Finish for Paint-Stripped Woodwork." *Old-House Journal*. Vol. 12, No. 9 (November 1984), pp. 197-99.

Labine discusses the variables involved in selecting a clear finish, such as gloss, available time, historic precedents, maintenance, etc. He provides a table of various types of finishes, their properties, and typical brands.

Landrey, Gregory J. "The Finish Crack'd: Conservator's Fix for a Fractured Film." *Fine Woodworking*. No. 49 (November 1984), pp. 74-76.

Using the case study of a 200-year old varnished mahogany dressing table affected by

yellowing, crazing, and film shrinkage, Landrey discusses the types of finishes with which conservators must deal, how to identify them (using a hand lens, lab analysis, etc.), how to clean and repair them, and how to polish them.

Newell, Don. "Water-Based Varnishes: How They Compare to the Old Favorites." *Fine Woodworking*. No. 47 (July 1984), pp. 65-66.

This article provides a brief discussion of five water-based varnish products, including comparisons of application, performance, and durability.

Papa, Byron. "Clear Wood Finishes." *Fine Homebuilding*. No. 48 (August/September 1988), pp. 74-78.

Byron discusses the advantages and disadvantages of various clear finishes for use on interior woodwork. He also outlines techniques of using finishes to mask defects such as nail holes and putty filler.

Williams, Donald C. "Shellac Finishing: A Traditional Finish Still Yields Outstanding Results." *Fine Woodworking*. No. 71 (July 1988), 56-59.

Williams provides a good overview of the use of shellac -- its history, processing, properties, and application. He also discusses the pros and cons of using it.

Floor Finishes

Beyer, Bill. "PM's Guide to Refinishing Wood Floors Like a Craftsman." *Popular Mechanics*. Vol. 160, No. 1 (January 1983), pp. 100-103.

This article offers step-by-step guidelines and illustrations for sanding and refinishing wood floors.

Bock, Gordon. "Floor-Finish Options." *The Old-House Journal*. Vol. 18, No. 6 (November/December 1990), pp. 22-25.

Bock explores traditional and modern floor finishes and summarizes their advantages and disadvantages. Included are such finishes as bare wood, paint, wax, oil, shellac, oil varnishes, and polyurethanes.

Fossel, Peter V. "Refinish An Old Floor." *Americana*. Vol. 13 (September/October 1985), pp. 85-88.

Fossel provides general information on stripping wood floors of paints, clear finishes, and/or linoleum using chemical strippers. He also discusses the filling of gaps between boards.

McComb, George. "Reclaiming Your Hardwood Floors." *Family Handyman*. Vol. 33, No. 1 (January 1983), pp. 64-66.

The brief article outlines the removal of carpeting and the subsequent refinishing of an old wood floor below. Information is provided on sanding, filling, staining, and finishing.

O'Donnell, Bill. "Reconditioning Floors." *Old-House Journal*. Vol. 13, No. 10 (December 1984), pp. 218-219.

O'Donnell outlines the means of "reviving" an old or partially eroded floor finish without total refinishing. The process includes cleaning, lightly sanding in areas where necessary, varnishing, and waxing.

Wilson, Craig C. "The Conservation of Floor Finishes: In Particular the Conservation of Earth-Plaster and Selected Timber Floor Finishes." Diss. Institute of Advanced Architectural Studies, University of York, England, 1981. [2]

This dissertation provides information on some basic properties and characteristics of wood

and wood flooring, on the history and use of timber flooring, and on the problems inherent to wood floors. The various types of timber floors and solutions to such problem as finish deterioration, damage, etc. are also discussed.

Miscellaneous Finishes

Arnold, Martin, William C. Feist, and R. Sam Williams. "Effect of Weathering of New Wood on the Subsequent Performance of Semitransparent Stains." *Forest Products Journal*. Vol 42, No. 3 (1992), pp. 10-14.

This is a report on a study undertaken to determine the effects of short-term weathering of new wood on the performance of semitransparent stains applied subsequently.

Bigelow, Deborah. *Gilded Wood: Conservation and History*. Madison, CT: Soundview Press, 1991.

Generated by the proceeding of the Gilding Conservation Symposium held in Philadelphia in October of 1988, this reference contains a series of article pertaining to gilded artifacts and architectural elements alike. Discussions include information on new conservation research, various types of conservation treatments, documentation, and investigative techniques.

Boesel, Jim. "Gel Stains: Producing Even Color with Less Mess." *Fine Woodworking*. No. 81 (March 1990), pp. 73-74.

This article provides a basic introduction to gel stains that have been employed successfully in matching old finishes for wood replacement work. Information is provided on the pros and cons, their application, and their composition.

Frank, George. "Old Fashioned Wood-Coloring: Reviving the Dyes of Yore." *Fine Woodworking*. No. 66 (September 1987), pp. 52-55.

Frank discusses extractive dyes and mordants used in traditional wood dyes. He explains how to mix them, the various types of mordants, the equipment needed, and how to apply them.

Mustoe, George. "Wood Stains: Five Ways to Add Color." *Fine Woodworking*. No. 55 (November 1985), pp. 82-83.

This article provides a concise description of transparent dyes, oil stains, tinted penetrating oils, varnish stains, and chemical stains. The pros and cons of each are discussed.

Sheetz, Ron, and Charles Fisher. "Museum Collections No. 2: Reducing Visible and Ultraviolet Light Damage to Interior Wood Finishes." *Preservation Tech Notes* Washington, DC: Preservation Assistance, National Park Service, US Department of the Interior, 1990. [8]

This *Tech Note* provides some advice for controlling light and its exposure to interior wood finishes in museum collections. The finishes discussed are primarily stains and clear coatings.

Additional References

The following information is intended to supplement the references thus cited in the *Reading List*. Included is a listing of sources for cited materials, periodicals and organizations, and additional bibliographies related to the topic of wood preservation and maintenance in buildings.

Sources of Information Listed

- [1] **Library of Congress**
Washington, DC 20540
- [2] **Avery Architectural Library**
Columbia University
New York, NY 10027
- [3] **Dover Publications, Inc.**
31 East 2nd Street
East Mineola, NY 11501
- [4] **ICCROM**
Via di San Michele 13
I-00153 Rome RM, Italy
- [5] **Superintendent of Documents
Government Printing Office**
Washington, DC 20402-9325
- [6] **Building Research Establishment**
Publications Sales
Garston, Watford WD2 7JR
Great Britain
- [7] **Forest Products Laboratory**
One Gifford Pinchot Drive
Madison, WI 53705-2398
- [8] **US Department of Congress
National Technical Information Service**
5285 Port Royal Road
Springfield, VA 22161
- [9] **The Preservation Press**
1785 Massachusetts Avenue, NW
Washington, DC 20036

- [10] **Historic Preservation Education
Foundation**
P.O. Box 27080
Central Station
Washington, DC 20038
- [11] **New York Public Library**
455 Fifth Avenue
New York, NY 10018
- [12] **National Park Service
Preservation Assistance Division**
P.O. Box 37127
Washington, DC 20013-7127

Dictionaries

- *Corkhill, Thomas. *The Complete Dictionary of Wood*. New York, NY: Dorsett Press, 1979.
- Harris, Cyril M., ed. *Dictionary of Architecture and Construction*. New York, NY: McGraw-Hill, 1975.
- Harris, Cyril M., ed. *Illustrated Dictionary of Historic Architecture*. 1977. New York, NY: Dover Publications, 1983. [3]
- Hickin, Norman. *Wood Preservation: A Guide to the Meaning of Terms*. London, England: Hutchinson, 1971.
- Salaman, R. A. *Dictionary of Woodworking Tools c. 1700-1970*. 1975. Newtown, CT: Taunton Press, 1989.
- Scott, John S. *The Penguin Dictionary of Building*. 3rd Ed. New York, NY: Viking Penguin, 1986.
- Sturgis, Russell, et al. *Sturgis' Illustrated Dictionary of Architecture and Building*. 1901-02. New York, NY: Dover Publications.

Bibliographies

Amburgey, Terry L. *Annotated Bibliography on Prevention and Control of Decay in Wooden Structures (including Boats)*. Gulfport, MS: Southern Forest Experiment Station, Forest Service, US Department of Agriculture, 1971.

This bibliography is an extensive listing of pre-1971 sources on the deterioration of wood in structures. It is divided into basic categories, including sections on wood destroying fungi, moisture and condensation, hazardous building practices, etc.

Boden, Catherine. *Historic Buildings Conservation: A Select List of Material*. London, England: Departments of the Environment and Transportation, 1978.

Although Boden lists primarily British references, a number are applicable and available in the United States.

Carlsson, Ingrid, and Ingmar Holmstrom. *Care of Old Buildings: An Annotated Bibliography*. Stockholm, Sweden: Statens Institut for Byggnadsforskning, 1975. [1]

This extensive listing includes over 200 titles from a number of countries. It is divided into three sections: Conservation /Types of Buildings, Building Materials/Techniques, and Causes of Damage/Mean of Prevention and Repair.

**Catalog of Historic Preservation Publications*. Washington, DC: Cultural Resources Program, National Park Service, US Department of the Interior, 1992-94. [5]

This booklet provides an annotated listing of preservation documents published by the federal government.

Cockcroft, R. *An Index to IRG Documents, 1969-1990*. Stockholm, Sweden: IRG Secretariat, 1990.

This is a listing of papers and reports published by the International Research Group on Wood Preservation.

Great Britain, Property Services Agency. *Current Information on Maintenance*. London, England: Property Services Agency Library, 1972-1975. [1]

This six-part annotated bibliography deals primarily with British references. Pertinent topics include Design and Maintenance, Deterioration and Weathering of Materials, and Preservation and Restoration of Buildings.

Gregory, M. *Wood Identification: An Annotated Bibliography*. Leiden, Netherlands: International Association of Wood Anatomists, 1980.

This annotated bibliography of wood identification resources is arranged geographically (by location of wood). Another section is systematic including information organized by gymnosperms and then angiosperms, with data organized alphabetically by family.

Hitchcock, Henry-Russell. *American Architecture Books: A List of Books, Portfolios, and Pamphlets on Architecture and Related Subjects Published in America Before 1895*. 3rd rev. ed. New York, NY: Da Capo Press, 1976. [2]

This classic guide contains over 1500 entries, including builders' guides, pattern books, dictionaries, philosophical writings, and periodicals. Microfilm collections of the sources listed are available.

Index to Historic Preservation Periodicals. Boston, MA: G. K. Hall, 1988 and 1992 supplement.

This index is generated by the National Trust Library at the University of Maryland. It is not annotated.

International Index of Conservation Research. Rome, Italy: ICCROM, 1988.

This is a listing of ongoing, unpublished research as of 1988. Information on the topic of research, location, and researchers is included.

Kyle, Frederec Ellsworth. *Rehabilitation of Historic Buildings: An Annotated Bibliography.* Washington, DC: Technical Preservation Services Division, Heritage and Conservation and Recreation Service, US Department of the Interiores Division, 1980. [5]

This annotated bibliography is an updated version of *A Selected Bibliography on Adaptive Use of Historic Buildings*. It includes sources regarding general rehab practices, building regulation and code compliance, technical design information, etc.

Markowitz, Arnold L. *Historic Preservation: A Guide to Information Sources.* Detroit, MI: Gale Research Co., 1980.

This extensive resource contains annotated entries regarding preservation legislation, historical resources, technical information on conservation, periodicals, etc.

Massey, James C. *Readings in Historic Preservation: An Annotated Bibliography to the Key Books and Periodicals.* Washington, DC: National Preservation Institute, 1986.

This is a revised version of the *Guide to Preservation Literature* published in 1979 by the Historic House Association of America. It covers a broad range of topics in preservation, with only limited technological references.

Park, Helen. *A List of Architectural Books Available in America Before the Revolution.* Los Angeles, CA: Hennessey and Ingalls, 1973.

This listing of 106 references includes information on the locations of the texts listed. It was originally published in the *Journal of the Society of Architectural Historians*.

Roos, Frank J., Jr. *Bibliography of Early American Architecture: Writings on Architecture Constructed Before 1860 in Eastern and Central United States.* Chicago, IL: University of Illinois Press, 1968.

This guide contains over 4000 book and article references, mostly organized by historic period or geographic location. It includes information on architects, other bibliographies, and general references, including those pertaining to restoration.

Ross, Norman A. *Guide to Architectural Trade Catalogs From Avery Library, Columbia University.* Frederick, MD: UPA Academic Editions, 1989.

Contained in the Avery Architectural Library at Columbia University is an extensive collection of trade catalogs, including those for woodwork/millwork, lumber, doors, windows, etc. The catalogs are too numerous to include in this *Reading List*, but most are available on microfiche, for which this guide serves as an index. It is organized by Sweets categories with additional alphabetical, geographical, and chronological listings of manufacturers.

Seehann, Günther, and Bryan M. Hegarty. *A Bibliography of the Dry Rot Fungus, Serpula Lacrymans.* Stockholm, Sweden: IRG Secretariat, 1988.

This international bibliography on dry rot also includes information on other wood-destroying fungi. It is not annotated.

Smith, John F. *A Critical Bibliography of Building Conservation: Historic Towns, Buildings, their Furnishing and Fittings*. London, England: Mansell, 1978.

This is an extensive and comprehensive annotated reading list on building conservation. The majority of references cited are British publications, but a number are readily available in the US.

US Department of Agriculture, Forest Service, Forest Products Laboratory. *Forest Products Laboratory List of Publications on Wood Preservation*. Madison, WI: Forest Product Laboratory, 1967.

This FPL listing includes categories on deterioration, preservatives, products (i.e. millwork, lumber, etc.), and general literature on wood preservation. The list has been regularly supplemented in subsequent years. At present, *Dividends from Wood Research* provides updated information on recent literature and its availability.

Vance Bibliographies. Monticello, IL.

A number of Vance Bibliographies deal with topics associated with wood preservation. Most are fairly brief and limited in scope and none are annotated.

Coppa and Avery Consultants. *An Architectural Guide to Wood Construction, Preservation, Conservation, Restoration, and Framing*, 1985.

Dyal, Donald H. *An International Bibliography of Doors and Doorways*, 1982.

Goodman, Nancy A., and Richard L. Graham. *Bibliography of Over 400 Titles in the Field of Historic Preservation/Conservation*, 1980.

Vance, Mary A. *Architectural Decoration and Ornament: Monographs, 1970-1987*, 1988.

_____. *Building Rehabilitation: A Bibliography*, 1982.

_____. *Colonial Architecture: Monographs, 1970-1987*, 1988.

_____. *The Conservation and Restoration of Buildings: Monographs in the English Language, 1978-1988*, 1988.

_____. *Covered Bridges*, 1986.

_____. *Dampness In Buildings*, 1986.

_____. *Domestic Architecture: Recent Monographs in the English Language*, 1987.

_____. *The Framing of Buildings: A Bibliography*, 1982.

_____. *Historic Buildings: Monographs Published since 1970*, 1985.

_____. *Historic Preservation: Monographs*, 1985.

_____. *Maintenance and Repair of Buildings: A Bibliography*, 1983.

_____. *Monographs on Architecture and Climate*, 1988.

_____. *Paneling: A Bibliography*, 1981.

_____. *Pesticide Laws and Regulations: Recent Publications*, 1990.

Vance, Mary A. *Remodeling: A Bibliography*, 1980.

_____. *Structural Frames: Monographs*, 1984.

_____. *Trusses: A Bibliography*, 1982.

_____. *Vernacular Architecture: Monographs Published 1976-1987*, 1987.

_____. *Victorian Architecture: Monographs Published 1976-1987*, 1987.

_____. *Walls: A List of Periodical Articles*, 1986.

_____. *Windows and Window Frames: A Bibliography*, 1981.

_____. *Wood Construction: A Bibliography*, 1983.

_____. *Wood Preservation: A Bibliography*, 1983.

_____. *Woodwork: A Bibliography*, 1981.



The interior wood framing of the conical roof of the Lawson Water Tower, 1900, in Scituate, Massachusetts. *Photo:* Jack E. Boucher, HABS Collection.

Periodicals

AIC Newsletter and Journal

American Institute for Conservation of Historic and Artistic Works
1400 16th Street, NW
Suite 340
Washington, DC 20036

Americana

29 West 38th Street
New York, NY 10011

APT Bulletin and Communique

Association for Preservation Technology
P.O. Box 8178
Fredericksburg, VA 22404

Architects' Journal

Architectural Press Ltd.
9 Queen Anne's Gate
London SW1H 9BY England

Architecture

American Institute of Architects
1130 Connecticut Avenue, NW
Washington, DC 20036

Art and Archaeology Technical Abstracts

Getty Conservation Institute
4503 Glencoe Avenue
Marina del Rey, CA 90292

Building Renovation

600 Summer Street
P.O. Box 1361
Stamford, CT 06904

Traditional Building

Historical Trends Corp.
69 A Seventh Avenue
Brooklyn, NY 11217

Commercial Renovation

20 East Jackson Boulevard
Suite 700
Chicago, IL 60604

The Construction Specifier

Construction Specifications Institute
601 Madison Street
Alexandria, VA 22314

Early American Life

6405 Flank Drive
Box 4200
Harrisburg, PA 17105-8200

The Family Handyman

Home Services Publications, Inc.
7900 International Drive, Suite 950
Minneapolis, MN 55425

Fine Homebuilding

Taunton Press
63 South Main Street
P.O. Box 5506
Newtown, CT 06470

Fine Woodworking

Taunton Press
63 South Main Street
P.O. Box 5506
Newtown, CT 06470-5506

Forest Products Journal

Forest Products Research Society
2801 Marshall Court
Madison, WI 53705

Home Mechanix (formerly Mechanix Illustrated)

Times Mirror Magazines, Inc.
2 Park Avenue
New York, NY 10016-5601

Historic Preservation and Preservation News

1785 Massachusetts Avenue, NW
National Trust for Historic Preservation
Washington, DC 20036

International Woodworking Magazine

Woodworking Association of North America
Glove Hollow Press
Route 3 and Cummings Hill Road
Box 706
Plymouth, NH 03264

Journal of Structural Engineering
American Society of Civil Engineers, Structural
Division
345 East 47th Street
New York, NY 10017-2398

Log Home Guide for Builders and Buyers
1 Pacific
Ste. Anne de Bellevue, PQ
Canada H9X 1C5

Old-House Journal
2 Main Street
Gloucester, MA 01930-5726

Popular Mechanics
224 West 57th Street
New York, NY 10019
(212)649-3076

Technology and Conservation
One Emerson Place
Boston, MA 02114

US/ICOMOS Newsletter
1600 H Street, NW
Washington, DC 20006

Victorian Homes
P.O. Box 61
Millers Falls, MA 01349

Wood and Fiber Science
Society of Wood and Science Technology
One Gifford Pinchot Drive
Madison, WI 53705

Wood and Science Technology
International Academy of Wood Science
Springer-Verlag
Heidelberger Platz 3
D-1000 Berlin 38
Germany

Workbench
KC Publishing Inc.
4251 Pennsylvania Avenue
Kansas City, MO 64111

Organizations

**American Institute for Conservation of Historic
and Artistic Works**
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Suite 340
Washington, DC 20036

American Institute of Architects
1735 New York Avenue, NW
Washington, DC 20006

American Institute of Timber Construction
11818 SE Mill Plain Boulevard, Suite 415
Vancouver, WA 98684

American Society of Civil Engineers
1015 15th Street, Suite 600
Washington, DC 20005

American Wood Preservers' Association
P.O. Box 286
Woodstock, MD 21163-0286

Association for Preservation Technology
904 Princess Anne Street
P.O. Box 8178
Fredericksburg, VA 22404

Council on America's Military Past
P.O. Box 1151
Fort Myer, VA 22211

Forest Products Research Laboratory
2801 Marshall Court
Madison, WI 53705

**International Research Group on Wood
Preservation**
IRG Secretariat
Box 5607
S-114 86 Stockholm, Sweden

National Trust for Historic Preservation
1785 Massachusetts Avenue NW
Washington, DC 20036

National Wood Flooring Association

11406 Manchester Road
St. Louis, MO 63122

National Wood Window and Door Association

1400 East Touhy Avenue, No. G54
Des Plaines, IL 60018

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Antiquities**

141 Cambridge Street
Boston, MA 02114

Society of Wood Science and Technology

One Gifford Pinchot Drive
Madison, WI 53705

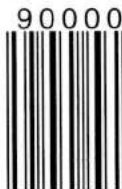
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