



# The Old-House Journal

Restoration and Maintenance Techniques For The Antique House

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NEXT MONTH.....Wet Basements

## The Crack Detective

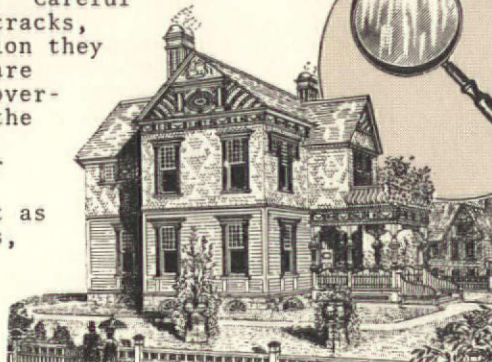
### Part I: Beginning The Investigation

By Wm. Ward Bucher, Architect

**ONE** THING old houses all seem to have in common is cracks. Sometimes they are just part of the charm of an old house, and sometimes they mean your back wall is about to collapse. By playing Sherlock Holmes, you can decide which cracks are important, what is causing them, and what to do about them. All cracks are caused by movement of the parts of a house. A crack detective uses the cracks as clues to find the cause of the movement. Then a judgement can be made as to whether or not it is necessary to try to stop the movement.

**TWO** THINGS a crack detective doesn't need are a gun and a magnifying glass. Shooting a dangerous house won't kill the cracks and cracks too small to see without a magnifying glass aren't a problem. However, there are several simple tools that are useful.

**EYES** ARE the most important tool for this part of the investigation. Careful observation uncovers the cracks, and tells you what direction they are going and where they are widest. Look too at the overall pattern of cracks in the room and throughout the house. When searching for suspects, other circumstances become significant as well. Note sloped floors, bulging walls, doors that don't fit, and related evidence that shows the house has moved over time.



**FOR** INFORMATION on his suspects, the enterprising detective uses stool-pigeons. In the seamy underworld of cracks, these are called TELLTALES. A telltale is a simple device that tells the detective whether the crack is still moving, and at what rate.

THE SIMPLEST TELLTALE is made by drawing two parallel lines, one on each side of the crack. The distance between the lines is measured at six-month intervals and recorded: If the crack is getting larger, the distance between the lines will obviously increase. This distance would be charted on a graph to see whether the rate of movement is increasing or decreasing. Since crack movement is slow, use a ruler marked off in 64ths of an inch.

**GLASS AND PLASTER** telltales will more immediately reveal continuing movement. Neither glass nor plaster can take much tension before breaking, so you'll soon know that a crack is widening if a glass telltale breaks or if a new crack appears in a plaster one.

THE PLASTER TELLTALE--which can only be used indoors--is made by filling a portion

(cont'd on p.114)



Perspective...

## Is This House Significant?

To The Editors:

Enclosed is a photograph of our house--built in 1908. We would love to know: (a) What style it is; and (b) If it has any significance. Thank you.

Georgia McGuire  
Indianapolis, IN

**T**HE STYLE QUESTION is easier to deal with--keeping in mind that assigning a "style" to a house is often an arbitrary process. There are few examples of "pure" styles. Some houses and buildings show tendencies and influences that allow them to be assigned to a particular school or style. Others show the effects of compromises by designers and builders that make them candidates for those classic weasel words: "Transitional" and "Eclectic." Still other buildings bear the idiosyncratic stamp of the original designer and are a style unto themselves.

IN THIS CASE, the house shows influences of the Queen Anne style. However, it is the English Queen Anne--as popularized by Richard Norman Shaw--rather than the American version of Queen Anne that is seen in thousands of variations across the U.S. The architectural Queen Anne movement in England was a reformist movement, which had its counterpart in the interiors of William Morris and others of the Arts & Crafts and Aesthetic Movement. Shaw's goal was to avoid applied ornament. Rather, he achieved architectural expression through pleasing shapes and masses--usually in brick.



BECAUSE Shaw-style Queen Anne is relative rare in this country, the house is architecturally significant...and worthy of careful preservation on that basis alone.

**B**UT THIS RAISES the larger question of what makes an old house "significant". What of the thousands of vernacular houses (like mine) that aren't architecturally or historically significant? What determines whether such a structure is "worthy" of preservation?

I SUBMIT there are three other yardsticks to apply to vernacular structures:

- Is it in sound physical shape? In an era of limited resources, we can ill afford to waste sound buildings.

- Is it connected in people's minds with a landscape, streetscape or neighborhood? Would people miss it if it disappeared? That being architecturally significant is a building that can be understood by a handful of architectural historians. But the people who live near or pass by a building can tell you if they like it. Isn't that enough? These vernacular landmarks give stability and a framework to our daily routine.

- Is it beautiful or visually entertaining? Given the sterility of so much of modern construction, we should cherish beautiful old buildings that bring joy to our lives.

**A** HOUSE OR BUILDING that fulfills even ONE of these criteria is a structure that should be taken seriously...and is worthy of attention from everyone who cares about what kind of world we live in.

--Clem Labine



### The Old-House Journal®

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Editor .....	Clem Labine
Managing Editor .....	Patricia Poore
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Contributing Editors .....	R. A. Labine, Sr. Tom H. Gerhardt, Barbara Schiller

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Old-House Living...

## Reviving a Greek Revival

By Barbara Schiller

**T**HE HOUSE AT 5 Crown Street is a classic example of a Greek Revival home. It is also a classic example of how a dilapidated house can be successfully restored. This beautiful restoration is the result of the concerted efforts of the Worcester Heritage Preservation Society, public and private agencies, and homeowners Val and Rory O'Connor.

THE INITIAL WORK was performed by the WHPS, an independent, non-profit corporation formed in

1969 "to preserve sites, structures, and artifacts significant to the culture, history, and architecture of Worcester." Working with city agencies, neighborhood groups, and private citizens, the WHPS has restored houses in Worcester's rough inner-city neighborhood of Oxford-Crown. Through various fund-raising events, the WHPS purchased and restored its first house. This house was sold at a profit, the funds were invested in restoring a second house, and the procedure was repeated.



This is how the house at 5 Crown Street looked before the Worcester Heritage Preservation Society began exterior restoration.



This is the house after exterior restoration. Note the removal of the second-floor bathroom window. (Photograph by Tony Schneider.)

## Restoring Number 5

**T**HE RESTORATION of this house began in 1974. Originally built in 1848, the house had fallen upon bad times in the last few decades and required extensive work. Over the years, it had been seriously "remuddled," and these offensive graftings, such as a cellar addition and the second-floor bathroom window, were among the first things to go. The kitchen addition was also amputated, as were the dormer and a bathroom. Removing this bathroom revealed the old granite stairs that led to the cellar, and so a bulkhead was added to the house.

OTHER WORK performed by the WHPS included shingling the roof, adding a porch deck, refurbishing the columns that grace the front of the house, replacing clapboards, installing support columns, painting the exterior, and landscaping. By 1975, 5 Crown Street was being offered for sale. The WHPS created and rented out a studio apartment in the rear ell of the house. Besides providing security for the unrented house, this rental offered a financial incentive for prospective buyers.



Here is the same added bathroom as seen from inside the house.



After the removal of the bathroom, the door was replaced with a period window.



This view of the house was taken immediately after the added bathroom was torn down. Note the exposed cellar stairs visible at the lower left.



As part of its restoration, the WHPS added this bulkhead above the stairs.

**T**HE O'CONNORS PURCHASED THE HOUSE in 1976 and used the rent from the ell to help finance the interior renovation that the house still required. A good deal of work was needed even before they could obtain a mortgage. The main structure had been formerly occupied as two apartments, and was now badly in need of cleaning. The O'Connors removed the rotted carpeting and scrubbed down the grimy woodwork and the filthy bathrooms and kitchens. The house was eventually made presentable for the bank, but a new problem arose: State law demanded that the house be free of lead paint. The usual solution to this problem is to cover the offending surfaces with plastic imitation-wood paneling. The O'Connors, refusing to ruin the interior of their home, decided to strip the lead-based paint themselves. This procedure always involves a health hazard, and this case was no exception: Even though the O'Connors followed official instructions for de-leading the house, their six-month-old son required medical attention for lead poisoning.

ONCE THEY SETTLED MATTERS with the bank, the O'Connors resumed their renovation--a project that was to occupy them for five years. The main rooms of the house were covered with anywhere from six to ten layers of wallpaper which proved totally resistant to the rented steamer, and so Rory O'Connor had to come up

with his own method of removing them. He carefully covered the floors with plastic sheeting and then dipped a paint roller in boiling water and rolled it over the papered surfaces. Three passes were required to thoroughly saturate all the layers, but then a putty knife was all that was needed to remove the many generations of wallpaper.



The kitchen addition, pictured left, was not part of the original house. It would have been kept, but its poor construction and maintenance rendered it unsalvageable.

added with less expertise. Rory put in ducts and then installed squirrel-cage vents to direct the hot air into and up the ducts. In the winter of 1980-81, with record-breaking cold weather, the O'Connors had to use their back-up oil furnace on only four days in order to maintain the sixty-degree temperature that they find adequate for comfort.



These before-and-after photographs of the kitchen addition also provide a glimpse of the dormer, which the WHPS deemed historically inaccurate and therefore removed.

THE REST OF THAT FIRST YEAR was devoted to insulating the house. Custom storm windows were required for the oversize first-floor front windows, but second-hand aluminum storm windows were sufficient for the rest of the house. While putting in the attic insulation, the O'Connors discovered a serious case of rot--due, they surmised, to a lack of ventilation in the attic. Cross ventilation was installed to arrest the problem.

IN THE THIRD YEAR, they were able to hire professionals to wallpaper the house and repair the damage that carpenter ants had done to the porch. The following year, they restored the mouldings in the living room and dining room--which were in four different styles and at varying heights--to one authentic style and height. In their fifth year, the O'Connors restored to working order the sliding doors between the living room and dining room, and installed a fireplace.

### Four More Years

A GOOD PART OF THE SECOND YEAR was spent stripping woodwork. This tedious task happily revealed that the brown-painted handrails and pink-painted balusters were actually made of fine mahogany. Along with rescuing the staircase, Rory also improved upon the house's heating system. A large wood/coal stove had been professionally installed in the basement, but the vents in the upstairs rooms had been

TODAY, 5 CROWN STREET is in the National Register of Historic Places. For Val and Rory O'Connor, this successful restoration "is not an individual issue, but rather a joint effort which profits from neighborhood cooperation with public and private agencies." Practicing what they believe, the O'Connors are officers of the Crown Hill Development Committee, a group that works with the city planning board and is eligible for federal, state, and municipal grants.



This drawing of the restored houses of Crown Street was made for the WHPS letterhead by Tony Schneider. Number 5 is pictured in the center.

# Restorer's Notebook

## Repairing Cracked Wood

**WE FOUND** what we think is a good way to repair cracks in wood: Use two-part auto body filler. This substance is easier to work with than "plastic wood," it cures fast, and it blends smoothly with the surrounding wood. We've used it in restoring woodwork in our old house and on both interior and exterior doors. It can be grained to match the wood, and it takes paint beautifully. Auto body filler is sold as a kit--a can of plastic cream and a tube of hardener--and it's quite economical. You mix up only the amount you'll need so there's no waste. It's sold at department stores in the auto supplies section.

Emma Geneja  
Fraser, Mich.

## Goodbye Steel Wool

**ANOTHER PAINT-REMOVAL HINT:** Steel wool is almost universally recommended for use with chemical paint stripper, yet anyone who's tried it knows its shortcomings. We've discovered that green nylon kitchen scouring pads (e.g., Scotch-Brite) do the job as well as steel wool with several benefits. The pads last longer than steel wool, are easier on rubber gloves, and don't shed steel splinters.

**MOST IMPORTANTLY,** nylon pads do not raise the wood grain or get snagged on rough spots. The pads seem to smooth the wood while cleaning it. If rinsed out occasionally, one scouring pad will last through a good ten hours of hard scrubbing.

Anita Genger  
Madison, Wisc.

## Document Your Home

**LET ME FIRST** say that the OLD-HOUSE JOURNAL has proved very helpful in the restoration of our late 1800's farmhouse. Perhaps other readers would be interested in a habit I've acquired; it takes only minutes and I think it's so worth the time:

**SINCE IT'S INTERESTING** to discover the history of each room in our house during the restoration, I keep a notebook in which I record any changes we come across, as well as any changes we are making. I keep a small swatch of each layer of wallpaper we uncover, too (up to seven layers in some rooms). It's a good place to keep "before" and "during" photos too.

**SHOULD WE DECIDE** to move after completing the project, I would leave this documentary notebook for the next owners, who I'm sure would be old-house people and would appreciate the record.

Joyce Delke  
Hampshire, Ill.

## New Storm Windows

**AFTER MY FAMILY AND I** moved into our 1913 house, the first problem we tackled was to provide our home with a good storm window system. Almost half of our windows are casement windows that open out. We made sure that these windows closed well and were weatherstripped, and then salvaged all of the inside screens that went with them, replacing those that were missing.

**I ORDERED** aluminum-framed window inserts that were the same size as the screens and clipped them to the back of each screen. In the fall, they act as storm windows. In the spring, I simply remove them and presto! summer screens! The clips are permanently screwed into the back of the frame of the screen and are not visible from the outside. (The screens may require more weatherstripping, depending on their fit.)

Judith Terrizzi  
Evanston, Ill.

## Preventing Exterior Mildew

**RECENTLY,** I came across an interesting method for preventing paint from mildewing. Mr. Carleton White of Millen, Georgia, had to repaint his wooden church. It is surrounded by live oak trees and so has always had a severe mildew problem. He used oil-base white paint and added three ounces of Bravo 500, a common agricultural fungicide, to each gallon. (Home-owners might be more familiar with a turf fungicide called Daconil, which also comes as a liquid in gallon containers. Fertilome Broad Spectrum Fungicide is at half-strength, so one would have to use six ounces per gallon.)

**HE SHOWED ME** the little church, and it looked freshly painted. I was startled to learn that I was looking at a three-year-old paint job! There was not a speck of mildew anywhere.

George Stritikus  
Montgomery, Ala.

### Got Any Tips?

Do you have any hints or short cuts that might help other old-house owners? We'll pay \$15 for any short how-to items that are used in this "Restorer's Notebook" column. Send your hints to: Notebook Editor, The Old-House Journal, 69A Seventh Avenue, Brooklyn, N.Y. 11217.



# Defeating Decay

By Clem Labine

**Y**OUR HOUSE can be kept free from decay providing three requirements are met: (1) The house is properly designed; (2) The correct construction materials have been used; (3) A consistent maintenance program is followed. You as an old-house owner, however, face a special dilemma. Even if you are zealous about maintenance (and few of us are), items (1) and (2) were determined years ago by the original designer and builder. If any errors were made back then, you're stuck with a maintenance headache. If the mistakes were minor, all it may mean is that you have to make repairs a little more frequently. If the original errors were major, however, you may actually have to make some design changes on the house.

THE SECRET to preventing decay in architectural woodwork can be summed up in three words: KEEP IT DRY! Obviously, there are many subtleties that underlie this general rule. Before getting into the elements of design that help keep wood dry, let's look at the enemy itself: Rot fungi.

## The Rudiments Of Rot

**T**HERE ARE THREE types of fungi that will feed on wooden houses: (1) Mold fungi; (2) Stain fungi; (3) Decay fungi. Mold and stain fungi, while unsightly, generally don't cause severe structural damage. And the measures that control decay fungi usually control molds and stains also. So this article will concentrate on the most destructive of the three--decay fungi.

DECAY FUNGI are commonly divided into two groups based on the type of decay they cause: Brown rot and white rot.

BROWN ROT FUNGI feed upon the cellulose of the wood cell walls. Since cellulose is the main component that gives strength to wood, brown-rotted wood undergoes a rapid loss of strength. The decayed wood is brown and, upon drying, tends to crack across the grain, shrink and collapse (see photo). In the final stages of decay, dried brown-rotted wood can be easily crumbled into a fine powder.

WHITE ROT FUNGI, on the other hand, consume both the cellulose and lignin of wood cell walls. This results in a gradual--but steady--loss of strength. Wood decayed by these fungi usually appears to be bleached and, in the final stages, feels spongy. Frequently the



Brown rot occurs most often in softwood --and thus is the rot most often seen in exterior woodwork. Brown rot is characterized by cracks and checking across the grain.

bleached and non-bleached areas are separated by black lines. Unlike wood decayed by brown rot, wood attacked by white rot doesn't develop checks across the grain.

BROWN ROT FLOURISHES primarily in softwoods, whereas white rots are most common on hardwoods. Since most exterior building components are softwood, it is brown rot that causes most of the structural damage to old houses.

## To Make A Fungus Happy

**D**ECAY-CAUSING FUNGI are propagated from microscopic spores in the air around us ...everywhere...all the time. All they require to take root and start growing is three basic elements: (1) Food; (2) Oxygen; (3) Moisture. Remove any one of these elements and the fungus will not grow.

YOU CAN'T REMOVE the food supply--that's your house. And normally it's impossible to do anything about the oxygen supply, since your house is surrounded with air. However, in special situations restriction of oxygen can be used to preserve wood. For example, you can retard or prevent decay in green logs by storing them

### THE SECRET: THIRSTY FUNGI

The most effective way to eliminate rot fungi is to eliminate the source of water that allows them to grow. When wood dries, the fungi die or become dormant. Spraying wood with chemicals is not an effective way to control decay. Keeping wood DRY is.

in ponds or under water sprays. And untreated pilings driven completely below the water table give centuries of service (as in Venice). But if the water table falls, any part of the piling no longer saturated with water will decay.

THAT LEAVES MOISTURE as the one vital ingredient that you CAN control. Decay fungi cannot colonize wood with a moisture content below the fiber saturation point (28 to 32%). That means that decay will not develop in wood moistened solely by water vapor from a saturated atmosphere. Rather, the wood has to be wetted (but not saturated) by liquid water.

PUT ANOTHER WAY, the way to control rot in buildings is to keep wood dry. As a rule of thumb, it is recommended that the moisture content of construction wood should be below 20%.

### Ways That Wood Gets Wet

**W**ATER THAT IS NEEDED to start the decay process in buildings can come from several sources: (1) The original water in green wood; (2) Rainwater; (3) Condensation; (4) Ground water; (5) Piped water; (6) Water released by the decay process itself (water-conducting fungus). Since this discussion is confined to old buildings, the role of green lumber is not a major factor. But any or all of the five remaining water sources could be contributing to decay in your house.

WOOD EXPOSED on a building's exterior can be wet by (1) Rainwater being driven directly against it; (2) Roof runoff; (3) Splashing from the ground or any protrusion below the eave. Wind is a major culprit; velocities in excess of 40 m.p.h. can drive rainwater through joints, particularly lap joints in siding. It also reduces the effectiveness of the roof overhang and gutters by driving rain directly against building walls.

PAINT CAN REDUCE rainwater wetting, but seldom offers total protection. Fine checks develop in finishes at joints--particularly butt joints where end grain meets a lateral surface, such as siding to trim or window trim to sill. These checks provide points where water can enter the end grain through capillary action.

GREATEST DANGER of decay is at such points as: Roof edges, porches and exterior stairs, and exposed structural members where the end grain is vulnerable to water penetration. Other elements that have a lot of butt joints--such

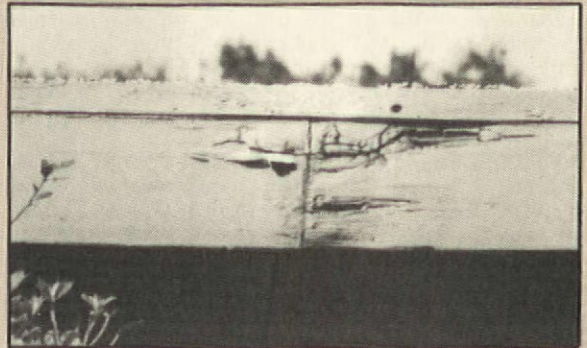
as sash, trim, shutters and balustrades--are also decay-prone.

DECAY OF SIDING and sill plates can also be caused by roof runoff splashing off the ground, a lower roof, or sidewalk. Gutters can be helpful here, by diverting water to less harmful locales.

### Learn To Read Your Building



HOUSE THAT is experiencing excessive wetting will show tell-tale signs--such as staining and peeling paint--before any extensive decay sets in. Your task is to learn how to read the signs on your house so that you can catch small problems before they develop into major ones.

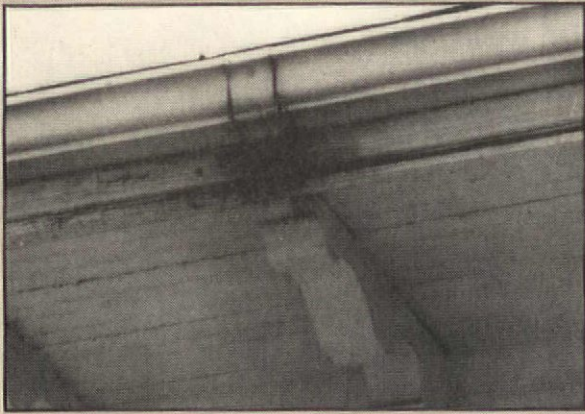


Wind-driven rain penetrated the seam in the butt joint on this fascia board. Result: Rot is working its way into both boards from the ends.

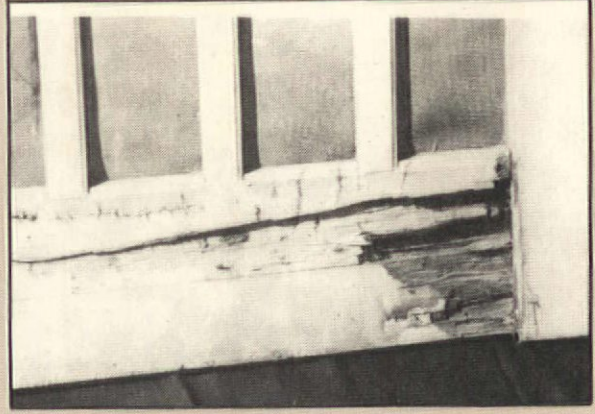


Peeling paint denotes major moisture problem, in this case from a clogged gutter. With wetting of this magnitude, rot will not be long in coming.





Staining tells you that the joint in this gutter is leaking, starting the rot process in the fascia board and the decorative bracket below it.



Water running down this screen door has been entering butt joint at bottom rail, where it was sucked up into the end grain. Result: Decay.

SHORT OF MAJOR DESIGN changes, you have relatively few options open to you to cut down on wetting of exterior wood. As mentioned, gutters can reduce splashing. But they have to be kept free of clogging debris. Otherwise, they can overflow and cause problems more serious than if you had no gutters at all.



Peeling paint tells the story: Porch roof diverts water against the side of the house. Note decay starting where siding meets window trim.

### Preservatives & Sealants



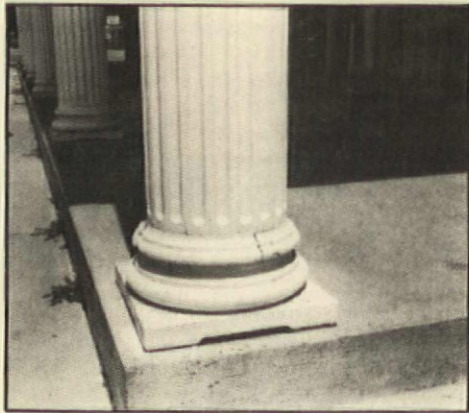
**C**HEMICAL WOOD PRESERVATIVES can be of limited value in combatting rot. Most commercial brands contain two major components: (1) A water repellent (a waxy material) and (2) A fungicide. The most common fungicide is pentachloro phenol ("penta"). Penta is a toxic material and should be used with great caution--following all label directions. Better yet, use a preservative that doesn't contain penta.

MAXIMUM DECAY RESISTANCE is imparted if construction lumber is pressure-treated with preservative before installation. But what do you do when confronted with an existing structure built of untreated timber? Vulnerable points, such as butt joints, can be flooded with preservative by brush application or spraying. This allows preservative to be absorbed into decay-prone end grain. (Be sure wood is totally dry before starting treatment.) Surface application is nowhere near as effective as pressure-treating--but it's better than nothing.

CAULKS can also be used to keep water out of end-grain areas to a certain extent. (See "Talk About Caulk," OHJ Sept. 1980, pg. 113). For maximum sealing effectiveness, a joint

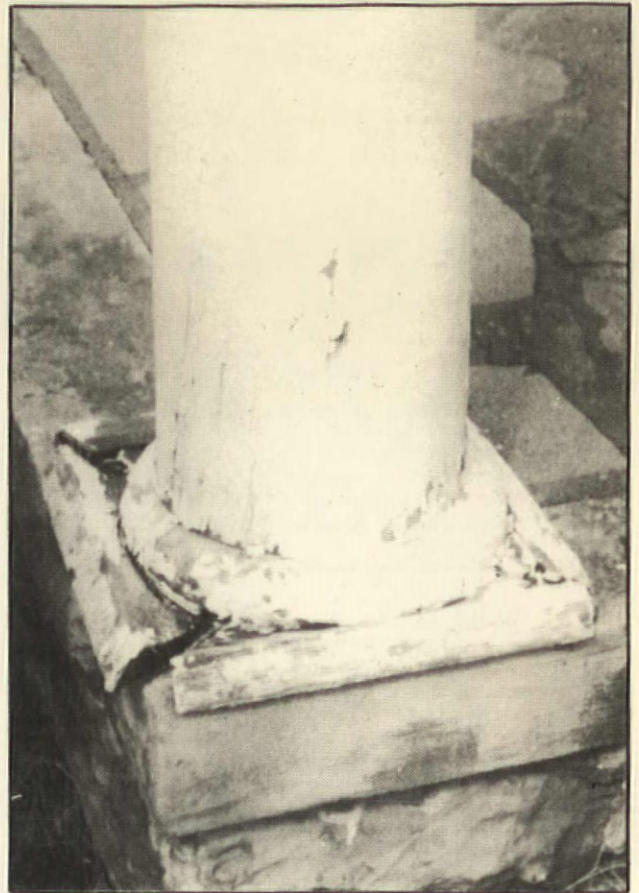
#### THE MYTH OF "DRY ROT"

All rot-causing fungi require water for growth. Thus the term "dry rot" is quite misleading. It is usually applied to brown rot in a board that has subsequently dried out--and thus appears dry. But if the board is rotted, it means that it was wet at some time in the past--which allowed the brown rot to grow. All rot is really a form of "wet rot." If the wood is now dry, it will not support any further growth of rot fungi.



## Wooden Columns

WOODEN COLUMNS and pedestals have a lot of vulnerable end grain--and thus are likely to absorb water and rot out (see right). One solution is ventilated metal bases (above). Another step to inhibit further decay is to flood the column base with a water repellent/preservative solution applied with a brush or spray. A more effective (but longer) method is the wicking process. An absorbent cotton string is tied around the column base, and the other end is placed in a container of preservative. The solution--over a period of several days--moves along the string and into the column base by capillarity.



should be about  $\frac{1}{4}$  in. wide and  $\frac{1}{4}$  in. deep in order for caulk to adhere properly. Most joints in wooden houses are narrower and deeper than this, thereby limiting the role that sealants can play in decay control. On joints that show signs of water absorption--and which are too narrow to caulk--you'll have to rely on water-repellent preservatives. 🏠

This article is based on a report, "Prevention And Control Of Decay In Homes," prepared for the Dept. of Housing and Urban Development by Arthur F. Verrall and Terry L. Amburgey. This excellent report, together with a companion report on wood-inhabiting insects, is expected to be published within the next few months.



## The Creeping Menace

**T**HE FURRY-LOOKING light-colored growth creeping up the wall in the left side of the photo is a water-conducting fungus--the most insidious of all decay-causing fungi. Starting in a damp basement or crawl space, the fungus will spread across dry wood, bringing the water it needs for its metabolic processes. Water is conducted through tube-like structures called rhizomorphs (shown in photo). The fungus will creep through hollow wall partitions and under floors--often going unnoticed until the attack is quite advanced. Thus a house that is otherwise totally dry can become completely infected with rot. Fortunately, this type of fungus is rare in the U.S. Control involves scraping all the rhizomorphs off walls and other surfaces, then painting with a fungicide such as pentachloro phenol. In addition, steps should be taken to dry out the place where fungus originated. Replace any decayed wood with pressure-treated lumber. Allow all infected areas--such as interiors of wall partitions--to air-dry thoroughly.

# Picking A Floor Finish

By Patricia Poore

**M**ODERN FLOOR FINISHES, so consistently sold today, are usually recommended with all good intentions. But old floors--mellowed, patinaed, and previously refinished--demand special consideration, as much for practical as for aesthetic reasons.

WE'LL ASSUME in this article that stripping and refinishing is the right decision. Sometimes, an old finish can be renewed with turpentine, steel wool, paper towels, and elbow grease. (If you haven't made that decision yet, see "Refinishing Floors" in the Feb. '81 OHJ.) There is no "best" finish for an old floor, but your options are fairly clear. We'll attempt to sort them out. Two facts, anyway, emerged while we researched this article: (1) Polyurethane, while it has a place and can be a useful, practical material, is most definitely not the long-awaited maintenance-free finish. (2) Some of the "old-fashioned" finishes are remarkably versatile.

## Prologue

**C**HANCES FOR SUCCESS using any finish are improved by applying it to a squeaky-clean surface according to the manufacturer's explicit instructions in as dust-free an environment as possible. Since the room should be both ventilated and warm, best not to finish floors during cold weather. Don't refinish on a particularly humid day. (If you live in a humid locale, use a dehumidifier or at least a fan). DO NOT walk on a naked surface; pad around in stocking feet as you finish sanding (or put socks over your shoes) and, if time passes between sanding and finishing, close off the room or lay building paper on the floor for protection. THE FLOOR SHOULD BE THE LAST PROJECT IN THE ROOM--after plastering, after finish painting, after wallpapering.

HERE ARE THE STEPS to follow: (1) Vacuum every inch of the room. Go over the floor with a tack rag immediately prior to each step. (2) Stain if desired. (3) Put on sealer (if applicable) or first coat of finish. Varnishes can be thinned in the first coat per label directions. (4) Fill with paste wood filler if you feel it necessary on open-pored wood like oak. (It usually isn't necessary on an old floor, and filler cannot be used under polyurethane or the Swedish systems.) Also, now's the time to fill nail holes etc.--with one coat of finish already down, any excess will wipe off. (5) Apply second coat of finish (or first coat of urethane that's used without a sealer). (6) Apply additional finish coats according to label recommendations and your preference. (7) Apply a paste wax if desired.

**S**TAIN IS PROBABLY APPLIED more often than it needs to be. The finish will darken your floor to an extent (a greater extent with penetrating finishes, a lesser extent with urethane), and the years will darken it even more. If you want to change the color for decorating reasons or to match other floors or woodwork, experiment with the color on a scrap. Most commercial stains are too colorful, but you can start with one of these and bring it down by adding burnt umber or black universal tints or artists' colors-in-oil. (A little at a time.) Or start with a neutral ("natural") stain and bring up the color with reds, oranges, or raw umber.

ONCE THE COLOR is right, play with the tone by thinning the mixture with mineral spirits or turpentine. On the test scrap, apply it in various thinned-down versions, and experiment with the amount of time it's left to soak in before wiping. Keep a record of what you made for future reference.

THE SOLVENT in the stain must be the same as the solvent in the final finish or you can have a mess on your hands. It's always best to use a "system" of products, all by the same manufacturer.

## The Big Choice

**T**HE ONE BIG DECISION you have to make is whether you want a surface finish--shellac, oil varnish, synthetic-resin varnish, polyurethane, "gym" finish, Swedish treatment--or a penetrating finish--linseed oil, tung oil, or proprietary penetrating-resin finishes. Basically, it's an aesthetic choice, because neither is really more "resistant": The surface finishes will protect by taking scratches and stains, but then will look the worse for it. As a general principle, penetrating finishes are the more renewable and fixable; surface coatings are more reversible (albeit by stripping, which ranges from easy for shellac to much more difficult for the modern types).

LET'S START WITH penetrating oils and resins as a group. A drying oil is the operative ingredient in all of these recipes and products... usually linseed or tung oil. Old recipes were usually based on one of these oils, with added solvents and sometimes wax. I see no reason today to use the oil itself, unless you enjoy mixing up old recipes (nothing wrong with having fun) or you're following an historical imperative. The commercial "penetrating resins" or "penetrating oil finishes" are an improvement, in that the oil has been chemically changed into a resin, improving its "drying" qualities and predictability.

THE BIGGEST, clearest advantage of penetrating finishes is that they are renewable. Simply clean off wax and dirt, and reapply. Some penetrating resins can be built up by multi-coat application (buffing in between) to come close to the surface resistance of an on-top-of-the-floor finish. This is usually true of the finishes that contain a high proportion of tung oil. Penetrating oils may give very blond woods a greyish cast that some people would prefer to avoid. (This is more true for new light wood.) Varnishes will do less to change the color of wood. Watco, Daly's, Minwax, and others make fine penetrating-resin finishes.

### Surface Finishes

**V**ARNISH CHEMISTRY is very complicated, mostly because of the variety of resins (oil, alkyd, phenolic, plastic...) used in different formulations. It's more important that you use a varnish specifically formulated for floors, than that you know what resin it contains.



#### MOST UNUSUAL METHOD

Mrs. Walker Reaher wrote: "On a recent trip to Manila I saw beautiful clean shiny bare floors. The maid used coconut shells split in half. She placed her toe on top of the inverted shell, and in sweeping arcs, pushed the shell across the floor...she lightly swept the floor with a grass broom. I learned to balance and rhythmically "wax" the floor too. It lightly adds coconut oil...."

OLD-FASHIONED OIL-BASED "soft" long-drying varnishes, including spar varnish, have all but been replaced by polyurethane varnish. Application is a bit more fussy, since old-fashioned varnishes aren't self-leveling like urethane, and it takes patience to put up with the long drying time. The biggest complaint seems to be that the "softness" of varnish causes it to become embedded with dirt. At the risk of sounding insolent, I suspect this may result from a lack of attention to preventive maintenance (i.e., sweeping).

MY ONLY EXPERIENCE with varnish was with the spar varnish we fastidiously applied to my parents' strip-oak floors. It is maintained by daily sweeping or vacuuming and a very light waxing about every nine months. Two cats and an occasional dog skittering over the floor have not marred it in three years. And it looks absolutely beautiful.

SPIRIT VARNISHES are a different class, comprising shellac and the quick-dry varnishes. Instead of polymerizing, the finish dries,

#### THE SUBSCRIBER NETWORK SPEAKS

**G**O TO just about any hardware store and ask what you should put on your sanded floor -- they'll recommend polyurethane varnish. The whole country stoutly believes in new-improved, "no-maintenance" products. And not many people use wax, or follow any other maintenance regimen, these days.

SO WE WERE SURPRISED at the response from subscribers. (I had asked for personal experiences with floor finishes back in the Nov.'80 issue.) The chart below is a summary of what OHJ subscribers have to say about the subject. The survey was not particularly scientific, and some interpretation is necessary. For instance, I suspect the lack of anti-varnish sentiment was a reflection of the fact that few people had used it at all. But I still believe that actual experience in a real old house is more telling than recommendations from laboratories that test the products on new wood, under controlled conditions.

PRODUCT OR SYSTEM	% OF THOSE WHO MENTIONED IT	% OF ALL RESPONDENTS
Pro-Wax	67%	31%
No Wax	33%	15%
Pro-Urethane	20%	12%
Anti-Urethane	47%	20%
OK with reservations*	33%	19%
Pro-Varnish†	80%	15%
Anti-Varnish	0	0
OK with reservations	20%	4%
Pro-Penetrating Oil	100%	42%
Anti-Penetrating Oil	0	0

\*Reasons cited:

- (1) Only good when kept waxed.
- (2) Only with a penetrating oil underneath.
- (3) Only in low-traffic areas (because it scratches too easily).
- (4) Only on hardwoods (because it's too inflexible for softwood).

† Old-fashioned OR quick-dry: All types.

WE DON'T have room to list all the people who wrote-but Thank You! from the editors and the novice floor-restorers who will benefit from your experience.

Patricia Poore

hardens and bonds by evaporation of a solvent. While they tend towards brittleness, they are relatively easy to blend-patch if worn or damaged. The solvent in the patch-coat of a spirit varnish or shellac will partially dissolve the previous layer and a good bond is likely. (Oil varnishes have to be sanded to provide "tooth" for a new coat--and edges of a patch are more noticeable.) Fabulon by Pierce & Stevens Chemical is a good choice for quick-dry varnish, if you should choose this system. Don't use quick-dry varnish or shellac on a softwood floor...it's not flexible enough.

IN DEFENSE OF SHELLAC (which "nobody uses on floors anymore"), I must say that the most beautiful old oak floors I've ever seen belong to my grandmother...and she still shellacks them herself. When they look dull, she washes them with warm water (hand dried afterward), then applies a new coat of clear shellac over the existing finish. (She doesn't wax anymore, but if she did, the wax would be removed first.)

ABOUT EVERY 20 YEARS she strips the floors with HOT water and a strong solution of Spic n Span or Beatsol, a wax remover. Then one

coat of clear shellac goes on, and two days later a second coat. Note: The shellacked rooms are upstairs bedrooms that don't see traffic, spills, or water. Downstairs the rooms are carpeted or covered with linoleum.

THE SWEDISH FINISHES are the most difficult to apply, but may be the most resistant and maintenance-free yet. Because of the conditions to be met in application, and because they are urea-formaldehyde based, professional application is recommended. The best-known such product in this country is "Glitsa." (For more information, write Glitsa, 1921 First Ave. So., Seattle, WA 98134.)

IT'S A TWO-PART SYSTEM: First, a layer is applied that impregnates the wood. Then the second coat provides a long-wearing and extraordinarily resistant surface. I won't say I'm unconvinced about its breakthrough durability on new floors--but I wouldn't fool with it on an old floor. Even the manufacturer's literature says that for old floors, wood must be removed down to below previous wax, dirt penetration, fillers, and finish to assure bonding and proper curing. And since it's

## Maintaining Your Floor

YES, THE OLD-HOUSE JOURNAL is going to come out in favor of wax. But regardless of whether you wax or not--or whether you've used oil or varnish--the single most important maintenance task is keeping the floors grit-free.

DUST AND DIRT AND SAND are tracked in on shoes, and get ground in when we walk around. The finish is literally abraded away. There are two obvious ways to minimize the damage: (1) Track in less dirt; (2) Clean the floors daily or weekly to remove the abrasive grit.

THE BEST ANSWER is to ask family and visitors to remove their shoes upon entering the house. This may be seen by some of your friends as a compulsive quirk, however. A plastic mat outside the door and a straw or carpet mat inside will pick up a lot of grit. Beyond that, a regular sweeping or vacuuming regimen is a must. Wood floors should really be vacuumed with the brush attachment on the vacuum cleaner wand.

YOU SHOULDN'T USE water or a water-based cleaner on wood floors. Dampness may get under the finish and seep between boards, causing discoloration

or even warping. A dustmop treated with a little oil finish or a spritz of Endust works fine. Scuffs and many light stains will come out if you rub a bit with 00 steel wool--especially if there's wax on the floor.

### Ahh...Wax

A GOOD WAX can be used on bare wood, as well as over any finish. Wax should just fill in the minute roughness of the surface--not sit as a layer on top of the floor. The wax will neither make the floor appreciably more slippery, nor will it build up, if you:

- Use a relatively hard paste wax, like Trewax;
- Apply it sparingly and usually no more than twice a year;
- Buff it well after applying;
- Remove scuff marks and stains with steel wool or a liquid cleaning-wax before re-waxing.

OF COURSE WAX may get scuffed. But the whole idea is that the scuff will come out by just buffing the wax--it's not in the floor. Wax also adds a lustre and a delightful smell.

PASTE WAX is recommended because it's tough, long-wearing, and lustrous. Although you

have to apply it by hand, it can be renewed without adding more: Just buff it again, even months later.

BESIDES PASTE WAX, there are liquid buffable waxes and liquid "self-polishing" waxes on the market. Some people prefer the liquid to paste because of ease of application. But it's not as durable as paste and it's easier to overdo the amount you use. "Self-polishing" waxes are no good for wood floors. They lack durability, and their lustre can only be renewed by reapplication. This is what causes waxy buildup. Also, most are water-based and therefore not the best for wood, despite what the labels say.

### Applying It

THE FLOOR to be waxed must be clean. Go over it with a tack rag. The common mistake is to apply wax over a "dingy" surface--this will just embed the dirt or scuff marks in the wax. Instead, buff the floor before re-waxing, and rub out scuffs with steel wool dipped in mineral spirits or wax remover.

PUT A FEW tablespoonfuls of wax in a cloth towel, fold the towel over it, then rub the floor until wax comes through. Go over the whole floor (or a section if the room is large). Let the wax dry for five min-

chemically bonded inside the wood, you can't change your mind.... Don't confuse Swedish treatment with Danish oil, which is a penetrating finish and therefore very different indeed.

## What About Polyurethane ?

**P**OLYURETHANE FLOOR FINISH is essentially a varnish with a plastic resin. I have no doubts regarding its advantages on new wood for those who want a low or high gloss surface finish. It's probably the most stain-resistant finish, it is hard and smooth enough (in the best of applications) to not require waxing, and it's easy to put down. But when it comes to refinished floors, I worry about its unpredictable bonding characteristics.

PLEASE NOTE that polyurethane cannot be applied over shellac, most previous surface finishes, or a paste wood filler (often used in the past on oak floors). So it's pretty much out of the

question unless the floor has been thoroughly sanded. Even then, results can't be guaranteed.

THE BEST RESULTS with urethane seem to be obtained by using a recommended and compatible sanding-sealer first. (See label directions.) Also, urethane must be applied in thin coats; a thick coat is almost sure to peel. The amount of time between coats is crucial: Too little and the finish may be cloudy, too much time and you have to sand between coats, then pray it'll bond. Follow the manufacturer's guidelines for timing, but remember too that humidity and temperature affect the set up.

WHILE POLYURETHANE isn't generally recommended for softwood floors because of its hardness and relative inflexibility, some subscribers reported using it successfully on splintered softwood. Since it is a surface finish that can be built up in layers, it will of course smooth out a rough floor by covering it. Perhaps this is a good use for it if one is set on keeping and exposing a softwood floor.

utes, then polish it with an electric floor polisher. A machine with a single disc, 13 to 16 inches in diameter, is best. Buff until the floor isn't slippery.

IF THE FLOOR is badly scuffed and the marks won't buff out, it's probably time to strip the floor of wax. Depending on your maintenance regimen and attention to renewing scuffed and worn spots as they occur, stripping may be necessary every 3 to 10 years. Use a commercial solvent-based wax remover, mineral spirits, or naphtha. Pour the solvent on the floor, rub with 00 steel wool, and scoop up the softened wax with paper towels or rags. Careful: Naphtha, especially, is very flammable. You can renew a shellac or oil finish now, while the wax is off.

REMEMBER...the wear and tear the wax takes would have been absorbed by the finish itself if the wax wasn't there. And stripping varnish is a lot less fun than stripping wax.

### About Stains

**S**TAINS WILL OCCUR very rarely if you maintain the finish on your floor. On shellacked floors, just rub out the stain with steel wool, dipping it in denatured alcohol (shellac solvent) if necessary. Then brush new shellac mixed 1:1 with solvent onto the spot, feathering

the edges into the existing shellac. Rub it down, then reapply straight shellac; rub again.

**STAINS IN** soft varnishes, wax, and oil-finished floors can often be removed by rubbing with a mixture of rottenstone and vegetable or mineral oil. Rottenstone, available at the hardware store, is a super-fine abrasive.

**FOLLOWING** are some specific procedures for removing certain stains and spills:

**SCUFF MARKS** As mentioned, scuff marks in wax will usually come out if you rub them with 00 steel wool. If that doesn't work, or it's an unwaxed floor, you may have to use fine sandpaper, then reapply oil or wax.

**CIGARETTE BURNS** Rub fine steel wool in a wet bar of soap, then rub the burn mark with the steel wool. Deep burns, of course, will have to be sanded.

**WAXY OR GOOEY SUBSTANCES** Chewing gum, crayons, and candle drips should be made brittle with ice, then crumbled off the surface. Any remaining deposit will come off if you allow a liquid floor cleaner to seep under the edges of the spot. Use a plastic spatula to lift it.

**OILY OR GREASY STAINS** Use brown kitchen soap (lye soap).

If the stain is stubborn, saturate drugstore cotton with hydrogen peroxide and lay it on the stain; then put ammonia-soaked cotton over that. This will draw the stain out of the finish.

**ALCOHOLIC BEVERAGES** Rub with paste wax and steel wool, or try silver polish, boiled linseed oil, or a rag with a bit of ammonia in it. You'll have to re wax after this.

**ANIMAL MESSES** New stains may come out with a floor cleaner or mineral spirits, or may be rubbed with steel wool or sanded. A whole article about removing cat odors and stains appeared in the March 1980 issue of OHJ.


**STANDING WATER** The worst stains will be from standing water. (House plants are a real hazard to a wood floor.) If the wax has turned white, remove it from the affected area and rub with steel wool, then re wax. Try lightly sanding other finishes. If these methods don't work, you may have to bleach the floor; the finish in the area will have to be completely removed. Apply household bleach or oxalic acid, let it stand an hour, rinse, and sand. Sometimes nothing will remove a water stain. After bleaching, the finish has to be patched in (including stain, if any). Too bad if it's urethane, which won't bond to itself.

BUT KEEP IN MIND that some softwood floors-- particularly fir in secondary rooms--were not meant to show. A hardwood overlayment, linoleum, or wall-to-wall carpeting (which was used in the 19th century) may have once been the finish floor. If you have to encase a splintery softwood floor in a modern plastic finish to make it useable, maybe the floor was not originally meant to show. On the other hand, it's up to you whether you want to expose it now; sometimes that's the least expensive and lowest-maintenance alternative.

### In Summary...

**A**LL OF THESE OPTIONS may be more immobilizing than helpful. The comments from our "panel of experts" on the following pages should help because they're about real-life applications.

SURROUNDED BY technical literature, replies from subscribers, and the case histories of lots of floors, and having re-examined my own experiences, I'm feeling bold enough to outline what I would use on a floor. Here goes:

- ON AN OLD but well-maintained hardwood floor in a low-traffic (no pets!) room, I'd be tempted to try shellac and wax. Looks good, and it can be fixed or removed with no damage to the floor.
- ON LIGHT OAK strip flooring, I'd use a semi-gloss or gloss oil-based varnish, also with a light waxing occasionally. I personally feel that the "modern" narrow-width oak flooring is too bland to benefit from the subtle sheen of a penetrating oil. A gloss on such a floor gives it clarity; for softness I'd use area rugs on top. (Rubberized mats sold by carpeting stores save the finish underneath the rug, and keep the rug from travelling.)
- ON ANY REALLY old floor (worn and patinaed), and on a pine floor, a penetrating oil would be my only choice. I'd cover or replace a floor that give me splinters.
- ON PARQUET FLOORING, I'd go with a penetrating oil finish in most rooms. In a turn-of-the-century parlor or other formal public room, varnish would be more appropriate. If the floor was tight and in good shape, gloss or semi-gloss varnish would look terrific. But a worn or uneven floor looks worse with a glossy surface, so I'd be back to oil, or perhaps matte varnish.
- WOULD I EVER USE a quick-dry varnish? Probably not. If I was willing to put up with low wear-resistance and brittleness to get a shine and renewability, I'd go with shellac. And although it's tempting to use a faster drying varnish, the greater life you get from old-fashioned polymerizing varnish is worth the time and trouble it takes to put it down.
- WOULD I EVER USE polyurethane? Probably, if I wanted good resistance to wear and knew it was in a place that wouldn't get proper maintenance (summer house, children's room). I'd buy the most expensive urethane (there IS a difference between \$10/gal and \$25/gal urethane) and follow the label religiously. Since it can't be touched up, I'd take the trouble to apply four thin coats at the outset. 

## A Symposium In Print

THE FOLLOWING PEOPLE were invited to give us their "very personal preferences and prejudices" regarding floor finishing practices. We present this as a symposium of their current views only. Refinishing an old floor that's been through who-knows-what is tricky.

*DR. FREDERICK HERMAN is a restoration architect and former Chairman of the Virginia Historic Landmarks Commission. His thoughtful pre-amble to this article ("Refinishing Floors: Think Twice Before Sanding", Feb. '81) was well-received by readers.*

"ON A VERY PERSONAL BASIS, my favorite floor finish is an oil and wax finish. I feel about this the same way I do about candles. Beeswax candles have a mellow light and odor which other types just do not duplicate. In the same way, an oil and wax finish gives wood an appearance that nothing else will match. It penetrates into the wood and adds to the patina. Shellacs, polyurethanes, and varnishes are all surface films which give a finish with a high degree of gloss. They tend to reflect light so, in extreme cases, they act like a mirror and do not allow you to see the character of the wood.



"OIL AND WAX FINISHES take more work, unfortunately, even though they are easy to touch up, so one has to compromise. If you want ease of maintenance, a polyurethane finish, if properly applied (and if it isn't, it will separate from the wood), by professionals, is the best bet. Beyond that, everyone has his own favorite recipe for a floor finish, and his own story of some disaster using some product or method."

*JIM DALY, a long-time friend of OHJ, is the President of Daly's Wood Finishing Products, 1121 N. 36th St., Seattle, WA 98103.*

"WHILE THERE IS NO CLEAR ANSWER, we firmly believe that the penetrating oil treatments are better suited for what most restorers would be needing. There are many brands. The drying oils are, without a doubt, the best.



"IT MAY be noted that we have a subjective view, since we have an oil finish for floors called 'Floor-Fin.' However, we also market every other conceivable product for floors including: Shellac, waxes, standard oil varnishes, polyurethane, complex 2-part Swedish finishes...

"AS WE SEE THINGS, the problem with polyurethane is that it is crusty (brittle) and might not bond to an older floor. Because it is brittle, it is

not suited for pine and other softwood floors ('might not bond' should read 'probably will not.')

This is fairly scuff resistant. The same can be said for the Swedish finishes. Swedish finish is best suited for relatively new surfaces--too many conditions to meet to assure a problem-free finish on an older floor. However, this product is very scuff resistant, which is its long suit.

"THE STANDARD oil varnishes, such as McCloskey's 'Gym-Seal,' bond well to shellacked surfaces, something polyurethane will not do (neither will Swedish treatment). Shellac plus wax is traditional, mostly because it was the only thing available. A person will certainly find it an easy system to put down. The 'look' is hard to duplicate with other treatments BUT moisture will spot it badly and it has poor scuff resistance....

"THE REASON we have promoted penetrating finishes is that they compromise all of the above. The features:

- Easy to apply--no special tools.
- Relatively low odor and little problem with dust.
- Easy to repair--probably the biggest point we make about this system. Since no product will outlast the house, an eye toward maintenance must be considered. Polyurethane will not stick to itself, thus a repair coat may peel. Couple this problem with the situation that the urethane might not bond in places: You can have a real disaster on your hands.
- Looks good! Not too glossy (unless you want it that way) and not too dull either. Can be used anywhere--kitchens included.

"SO....All old floors should be oiled."

---

*RON PILLING is a Baltimore homeowner and long-time subscriber whose careful restoration projects have been featured in several past Journal articles.*

"LET ME TELL YOU right off that I am a big fan of polyurethane. For our old pine floors urethane has simply worked the best. Once struck by great guilt about using plastic substances, my wife and I decided to finish one room in oil and Butcher's Wax. We sanded away twelve layers of paint, mixed turpentine and linseed oil, and rubbed the stuff in. It dried nicely in a day or two, and we waxed. Here was our problem: The grain on many of the floorboards is wide open and full of knots.

"THE POLYURETHANE (especially after four or five coats) sort of glues all the split, loose, and cracked grain together. I've found that the satin urethane doesn't look offensive. We have used two brands and liked both. The first was 'Dura-Seal' and 'Dura-Gym.' We've also used one made by Lenmar Lacquers (2411 West Fayette St., Baltimore 21223).

"ANOTHER BENEFIT is the ease of maintenance. We have 4000 sq.ft. of wood floors, all the typical dark, 'pumpkin'-patinaed pine. Dust shows up on them, and with the urethane finish we can run our 3-ft. wide industrial dust mop over the floors.... Anyway, it wasn't long before we removed our Butcher's Wax and put several coats of urethane on the bedroom floor. It may not be too historically accurate, but it's better than some things and we can live with it."

*JOHN O. CURTIS is the director of the Curatorial Dept. at Old Sturbridge Village in Massachusetts. Besides supervision of projects at Sturbridge, Mr. Curtis' knowledge comes from hands-on experience working on his own 18th century house.*

"FOR HIGH-TRAFFIC AREAS, there is no known finish that will endure and provide lasting protection and beauty. Two decades of experimentation by the maintenance staff at Old Sturbridge Village have demonstrated that any and all of the highly touted wonder finishes...the polyurethanes, the deck paints, and the epoxies...simply wear away under heavy traffic. This situation is, admittedly, an extreme case. As many as 500,000 visitors pass through...in the course of a year.... No homeowner will be faced with such a floor maintenance problem.



"A STAINED AND FILTHY pine floor may be successfully scrubbed clean using what an old-time painter described to me as 'strong water.' This is nothing more than water heated to the point of being nearly unbearable, and a good hefty dollop of household ammonia...not the soapy kind. Use rubber gloves. I have cleaned a perfectly disgusting soft pine ex-summer kitchen floor upon which countless generations of rats had nested using 'strong water' and a 3M scrubber. Such a scrubbing will in all probability raise the grain. Allow the floor to dry for several days; drying can be accelerated with a fan or a dehumidifier. Then hand sand it using a fairly fine paper or 00 steel wool.

"NEVER, NEVER USE AMMONIA on a hardwood floor such as oak or chestnut. One of the nadirs of my consulting career was when I blithely advised a client to use ammonia and water to clean his stained floor and neglected to ask if the floor was pine or hardwood. Alas, it was oak, and it turned, irrevocably, black.

"WHAT TO USE for a finish? In a low-traffic area such as a second-floor bedchamber, I have used no finish whatsoever. The scrubbing and polishing with steel wool left a smooth and subtly glossy surface, so it seemed unnecessary to start the finish build-up syndrome.

"MY EXPERIENCE with 'modern' finishes has been limited to one essay, in the previously alluded-to ex-summer kitchen, now transmogrified into a laundry/utility room. Here, after expunging the indiscretions of ancient and not-so-ancient rats, and allowing the pine floor to dry thoroughly, I applied three coats of low-sheen 'Zip-Guard' polyurethane varnish. Polyurethane is a somewhat controversial finish due, one cannot help but suspect, to the unpredictability of its behavior. Ambient temperature, humidity level, and the quality of surface preparation all will have a significant bearing upon drying time and consequent success.... Follow manufacturer's instructions religiously. The floor has held up well and there has been no discernible wear after four years' worth of, admittedly, rather limited traffic."



*DANIEL MEHN is a civil engineer who has participated in the restoration of three old houses. Formerly with IBM, he's now President of Wizard Ventures, a New Orleans design, consulting, and production firm.*

"WITH ADDED TIME and experience, my thoughts are reaffirmed--for my kinda living and my outlook on materials and approaches:



- It oughta be easy to care for;
- It oughta look good to those who live there, and to those who 'visit';
- Unless the edifice is of major historic or other significance, the purest of 'authenticity' (whatever that is) should be of only partial consideration to what is work-

able in the times and styles and approaches of today...this is not 1881 or 1781 (thanks be...).

(1) Shiny floor surfaces ('You can see your face in it') are not desirable--they show every scratch... are usually too slick, and demand waxing for maintenance of their appearance. I don't like any demands--most especially by inanimate objects.

(2) Waxing is to be avoided, if at all practicable--

- It takes too much time, and collects more dirt;
- It builds up in untrafficked areas, and eventually has to be stripped (read 'laboriously removed');
- It makes things too slick;
- Judging from the patina on truly old homes, I'm not sure wax was used that heavily...a lesson from the past that I like;
- You can't avoid wear, anyway.

(3) Floors with a sheen ('well-loved, well-cared-for, well-worn') are desirable. Dull and dingy is bad, but a sheen (some call it satin) is good...

(4) The natural wood color is most effective--

- As the surface wears (which it will) there is no problem of matching the stain in the future;
- The natural wood darkening (what some people call a 'patina'--basically from the ultra-violet of sunlight) makes things more mellow, anyway;
- I don't believe one wood should masquerade as another, and I don't really believe that it can (where it is subject to traffic).

(5) Polyurethane varnishes, while perhaps 'hard enough to skate on' are, in my opinion, NG (no good):

- They yellow rather rapidly under direct sun... the yellowing is obvious--and not mellow;
- They show every bump and scrape in a magnified sense. As this is, essentially, a liquid plastic, I can understand that: Like acrylic furniture and items, 'til scratched, they're beautiful. Like acrylic, the scratch is deep, so it refracts light. The appearance is like that of a plastic coating on a surface, which indeed, it is...don't like it.

(6) A penetrating resin (or 'oil finish') for my money and lifestyle, is ideal: Low maintenance, low sheen, easy refurbishing, and spot touch-up....

The finish is in the wood, not on the wood. It waxes (if you really have that much spare time that you don't mind waxing). Other finishes can be applied over it (for Someone in the Future Who Wants Something Different).

"AS TO specific materials: Watco, distributed by the Watco-Dennis Corp. One might think bad things about the Watco regarding spills, since it is an 'in the wood' rather than an 'on the wood' finish. Sorry, I still say good things. Spills, including red wine, have cleaned right up. No stain. I should note, however, that I apply the stuff rigorously, ensuring that more is applied on successive days, until not any more soaks in.

"OTHER PENETRATING FINISHES: I have tried Flecto penetrating resin, which, on close reading of the label, they tout as 'penetrating' the wood and hardening into a plastic in the wood. I have not used it on floors. But once I used it on an exterior door, and it discolored and peeled. Finish appearance is not equal to the Watco...."

*DAVE HARDINGHAM is an engineer-turned-craftsman who insists he has "a deeply ingrained suspicion of any expert" and therefore claims not to be one, although his experience in restoration is diverse and considerable. He lives in Reidsville, NC, and this photo was taken during World War II.*

"OVER A PERIOD of many years I have redone floors in about seven houses, hardly enough to become expert, or even competent. Five of the above were



hardwood throughout, two were old pine of random width and uncertain pedigree, i.e. here and there would be a piece of poplar or gum, hickory or whatever else happened to be handy when they were cutting trees.

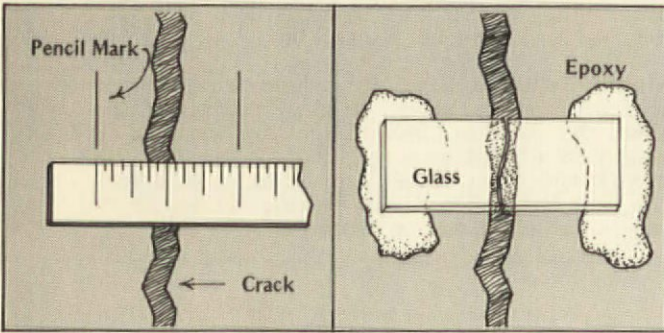
"I USED VARNISH on the pine, polyurethane on the hardwood.

The pine, which was 200+ years in place, was left in its natural color but sealed first with thin lacquer. If this isn't done, the old stuff will turn red on you when varnished. I don't think U'thane would have this effect, but I'm guessing. But I think U is too hard for pine anyway. On oak, ash, teak, and other hardwoods found in parquet floors, U has worked out very well for us. I used it atop oil stains (which had several days drying time) and it penetrated and held up beautifully. But these all were designed to be satin finishes. We don't like gloss and we don't fool with it.

"THE VARNISH on pine was done because the wood is soft and varnish is reasonably flexible. And shellac, which was used a lot when I was a kid, is definitely too hard for pine. Every time furniture was moved across it, a white line appeared where it cracked. The only redeeming feature was that a bit of wood alcohol rubbed over the spot would get rid of the whiteness...."

of the crack with plaster or spackling compound. Write the date on the dried plaster as a reminder of when the telltale was applied.

OUTDOORS, use a glass telltale. Use a small piece of single-strength window glass to bridge over the crack; a microscope slide is the perfect size. Epoxy the ends of the glass to the brick or stone on either side of the crack. Do this in an inconspicuous spot, because epoxy is hard to remove. (This type of telltale often doesn't work when applied to wood, because the glass pulls the paint off rather than breaking).



IT IS ALSO POSSIBLE to discover crack movement by simple observation of the area around the crack. For instance, cracks may have been patched several times in the past. If the patch has a crack in it, then the building has moved since the patch was made.

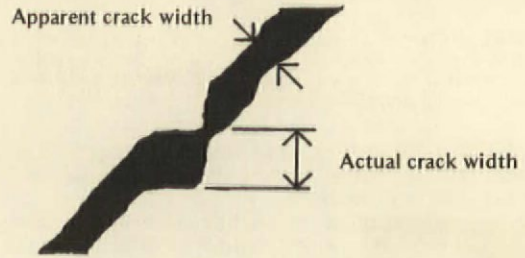
### Evidence

**W**HEN investigating cracks and their causes, compare all your evidence before judging what movement is causing the cracks. The size of a crack is an important clue to its severity. Very small cracks are not worth worrying about, while large ones may mean that you should move out of the house.

TO MEASURE the true width of a crack, you must measure the distance between two points that were originally touching. The temptation is to measure the width perpendicular to the sides of the crack, but this is rarely the right distance. Often the sides of the crack will slide relative to one another while making only a narrow crack. By measuring between two easily identifiable places (for example, where the crack makes a sharp turn), the total distance of travel can be determined.

CRACKS THAT HAVE already been patched are sometimes difficult to measure. When possible, try to identify the original sides of the crack before it was patched. Then the total distance the building has moved can be measured rather than just the width of a fresh crack.

## Crack Measuring



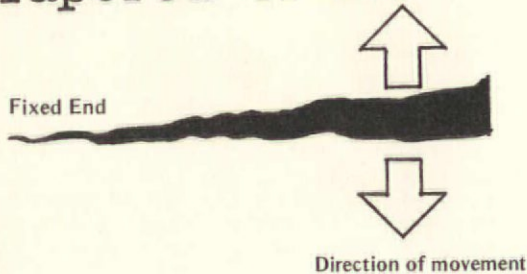
THE CRACK WIDTH can be used as a guide to the severity of the building's problem. Small cracks up to 1/64th of an inch are of no concern structurally, and, unless they are extensive, will probably not even be noticed. Cracks up to 1/16th of an inch begin to cause aesthetic problems on the interior of a house. And on the exterior of a building, they will allow water penetration which may eventually cause a structural problem. This size crack is easy to spot on the outside of a brick building, but very difficult to see on a wood one. As the cracks increase in size to a quarter of an inch, think about structural repairs.

THE SHAPE OF THE CRACK is also important when measuring its width. Cracks frequently taper from open on one end, to closed on the other end. When using the crack chart, the measurement of the widest part of a tapered crack should be considered.

Class of Crack	Crack Size	Degree of Damage	Effect on Structure & Building Use
C-0	HAIRLINE	INSIGNIFICANT	NONE
C-1	HAIRLINE TO 1/64"	VERY SLIGHT	NONE
C-2	1/64" TO 1/32"	SLIGHT	MOSTLY AESTHETIC; ACCELERATED WEATHERING ON THE EXTERIOR
C-3	1/32" TO 1/16"	SLIGHT TO MODERATE	
C-4	1/16" TO 1/4"	MODERATE	PLASTER BEGINS TO FALL AND BUILDING BECOMES UNSTABLE AS SIZE INCREASES
C-5	1/4" TO 1/2"	MODERATE TO SEVERE	
C-6	1/2" TO 1"	SEVERE TO VERY SEVERE	
C-7	GREATER THAN 1"	VERY SEVERE TO DANGEROUS	BUILDING IS DANGEROUS

© 1980 Wm. Ward Bucher, Architect

## Tapered Crack

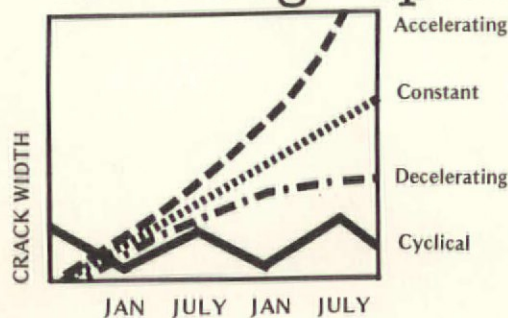


**C**RACKS which are not moving are clearly not a structural problem. Often the best way to treat them is to leave them alone. The same is true of cracks which are moving but DECELERATING (moving apart less and less each year). Eventually a decelerating crack will stop moving and then it can be patched. A crack that is moving at a CONSTANT rate is more difficult to deal with. If it is moving so slowly that it won't become dangerous for a hundred years, then it is often best to leave it alone.

A SMALL CRACK which has just appeared is of more concern than a large crack which hasn't moved for fifty years. Movement of the parts of the house can affect both the length and width of a crack. This is why it's important to chart the rate of movement--you'll want to know if it is getting faster or slowing down.

SOMETIMES THE MOVEMENT of the building is spread over the length of the wall or floor rather than just happening at one spot. When this occurs, many small cracks will appear rather than one large crack. In this case, continuing movement is assumed when new cracks appear parallel to the old ones. The total width of all these small cracks should be used to chart the rate of movement.

## Cracking Speed



HOWEVER, if the crack is lengthening and/or widening rapidly, try to discover the reason for the crack and take corrective action. (We'll go into the reasons and cures in later installments.) ACCELERATING cracks indicate that the structural stability of the house is being threatened and that the problem will continue to get worse. Action should be taken before the acceleration approaches that of a falling object (for example, the plaster ceil-

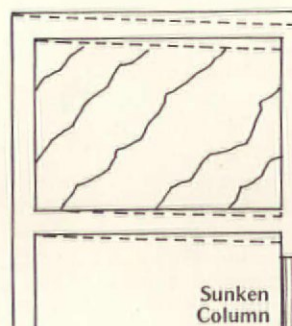
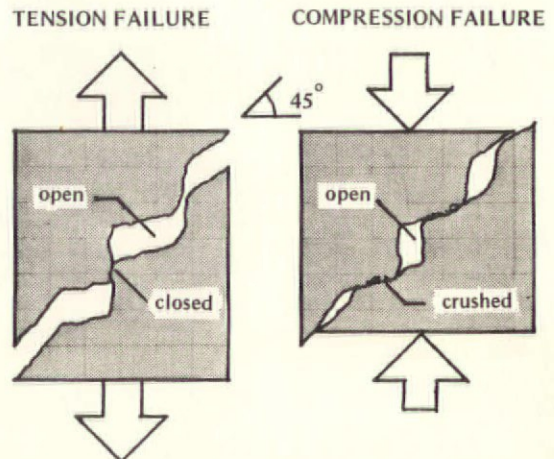
ing in the dining room). A fourth type of movement is CYCLICAL, where the crack opens and closes in different seasons. The solution here again is to do as little as possible since this type of crack rarely causes structural problems.

## The Plot Thickens

**T**HE DIRECTION of a crack is another good clue to its cause. Horizontal and vertical cracks of small size (C-3 or less) are rarely any cause for concern. Diagonal cracks always indicate that the house is, or has been, in movement and one part of the house has shifted relative to another part.

A DIAGONAL CRACK in an old house is almost always at a 45° angle to the floor or wall. This is the result of a phenomenon called SHEAR. When a solid material is pulled or pushed enough, it shears or breaks along a 45° angle, and slides to a new position. Brick walls, plaster-covered stud walls, and plaster ceilings all can act in this way.

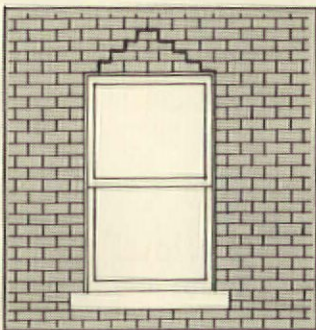
## Shear Cracks



THOUGH it's hard to imagine a wall being pulled apart, tension cracks are very common in old houses. Tension is a result of one part of the building staying in place while another part sinks. For example, a column may rot at its base and sink while an outside wall stays in place. One end of the wall above

will then drop relative to the other end. Since the plaster on the wall can't move far without breaking, it shears along the familiar 45° angle.

THE TOP of a tension shear crack points toward the end of a wall which has dropped from its original position. If, instead of the column sinking, the outside wall had settled, the crack would slant the opposite way.

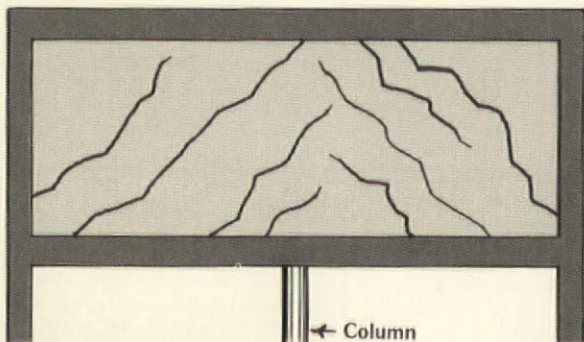


ANOTHER EXAMPLE of a tension crack is the result of lintel failure in brick or stone walls. If the arch or piece of stone or wood at the top of a door or window stops doing its job, the brick above the lintel starts to drop. As the brick is pulled down by gravity, the wall on the side of the opening is pushing up. This tension creates two shear cracks which run from the top corners of the opening to form a triangle above the door or window. Since the mortar is often softer than the bricks, the cracks tend to follow the pattern of the brickwork, creating a stepped pyramid appearance.

### More Clues

**C**OMPRESSION SHEAR CRACKS are less common than tension shear cracks. They are easily identified because there will be some crushing of the material along the line of the crack. This kind of crack is the result of one part of the building pushing down on another part.

ONE KIND OF compression shear crack occurs when the outside of a building settles into the ground while an interior bearing wall or column stays in its original position. In this case, the column is pushing up while the exterior walls are pushing down. A wall which is above the column will shear in compression, causing 45° diagonal cracks whose tops slant toward the column.



← Column  
COMPRESSION SHEAR CRACKS

BOTH TENSION AND COMPRESSION shear cracks set up an overall pattern which can be readily observed. Frequently these cracks come in groups which literally point to the cause of the problem. Since houses are usually divided up into many rooms, it is not possible to see the entire pattern at one time. The direction of cracks should be noted in each room and mentally added together like a jigsaw puzzle. It is helpful to start at the top of a house and work down floor by floor, checking rooms and halls on the way. One of the best places to look for cracks is in closets, since they are often not patched and painted with the other spaces.

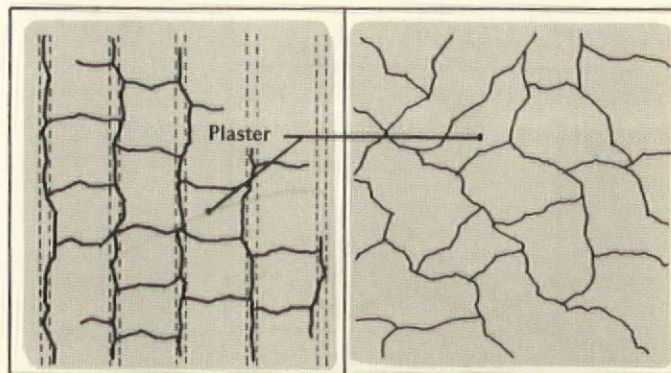
WHEN YOUR MENTAL PICTURE of the crack pattern is complete, you should be able to determine the location of the cause. Sometimes the cracks will only be found in one corner of one room. This would indicate a localized abuse, such as a rotten beam end. Other times every room in the house may have been affected by cracking. By observing which way diagonal cracks slant and which end of vertical or horizontal cracks is wider, you can determine which part of the house has moved from its original position. The key to finding the cause of a crack is discovering the movement pattern of the house.

### False Leads



HERE ARE SOME PATTERNS of cracking which do not necessarily indicate structural problems. The first of these is ALLIGATORING of plaster walls and ceilings. This pattern is an interconnected grid of small cracks in a roughly rectangular form. On close inspection, one direction of the cracking can be seen to follow the lines of studs in the wall, or joists above the ceiling; the other direction of cracking is a bit more random, but follows the line of the spaces between the wood lath behind the plaster.

THE ALLIGATOR PATTERN may develop after the plaster has been in place 50 or 60 years. As cracking continues, the plaster will eventually fall down. The solution is to replace the plaster or repair it. (Techniques for plaster repair have been described in OHJ: Oct. '80, Jul. '77, Jun. '77.) This cracking is caused by a failure of the finish material, not by a structural problem. A similar pattern is called MAP CRACKING. Here, the cracks form enclosed areas surrounded by cracks, like a map with a lot of countries on it. This may be caused by the plaster's finish coat flaking off the base coats of plaster. This is, again, a failure of the finish, not the structure of the house.



ALLIGATORING

MAP CRACKING

MAP CRACKING is sometimes seen on an outside wall, or on a ceiling that has had a water leak. The cracks have a puffy deposit of plaster sticking above the original surface, and are usually accompanied by peeling paint. Before you patch, the water penetration must be stopped. Although this map cracking pattern is not directly caused by a structural problem, the area around the cracking should be checked for possible wood rot due to the water.

## Corroborating Evidence

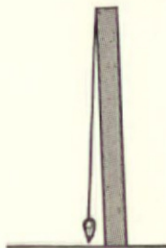


URTHER CLUES to understanding cracks are found by observation of the way the building has changed shape. In most cases, older houses were made as straight as their builders could manage. Over time, though, they bend, bulge, and sag (just like people). Even when the builder wasn't able to make things truly square or rectangular or circular, he usually could manage to make them reasonably straight and plumb and level: The walls were parallel, and the floors were perpendicular to the ground. Over time, many houses move out of plumb--which then causes cracks.



TO CHECK the plumb of walls, use one of the world's oldest measuring devices--a plumb line. This is essentially just a weight on a string. A plumb bob (the weight) can be bought at a hardware store, but any small heavy piece of metal will do in a pinch. While standing on a ladder, hold the plumb line next to the wall.

TO CHECK exterior walls, hang the plumb line from the roof or out a window on a windless day. By sighting along the string you can see if the wall leans outward or inward. To measure the amount of lean (if it is substantial), have someone measure the distance from the string to the wall at both the bottom and the top. Generally, the most important thing is to note the direction of the lean.



LOOK AROUND room perimeters to check the levelness of floors. There is often a space below the baseboard trim where the floor has dropped. Sometimes this gap is so large, a new shoe moulding has been used to cover it up. Note which way the floor slopes. A marble can be dropped at several places around the room to see which way it rolls. The levelness can also be checked with a carpenter's level: Set it on a long board, and lift the low end of the board until the bubble is in the center of the level. Measure the distance between the end of the board and the floor to determine the slope of the floor.

LOOK AT other parts of the house which were originally horizontal to see if they are still

WARD BUCHER is an architect who maintains a private practice in Washington, D.C. His firm (listed in the OHJ Catalog) provides architectural design services for renovations and restorations of residential and commercial buildings. Mr. Bucher is a good friend of The Journal.

level. The easiest to see are the tops of doors, window sills, and stair treads. The important thing is to note the general pattern of movement. For example, all of the doors may slope down toward the center of the house, or perhaps toward one side of the house. This knowledge helps the detective uncover the culprit which is causing the cracks.

## Don't Overlook The Obvious



ENERALLY, the newer the building is, the straighter it started out in life. This is the result of greater and greater use of machines in the manufacturing process. Lumber from the sawmill, milled steel and machine-made bricks all are much straighter than broadaxed beams, wrought iron, and sand-cast bricks. Therefore the age of the house should be kept in mind when evaluating movement clues.

THE AGE of the building is important for another reason. Brick and wood are relatively stiff materials if you try to bend them quickly, but after carrying the load of a building for long periods of time they act differently. Beams can sag or deflect incredible distances under continuous heavy loads without ever breaking. Brick walls can slowly bow outward without cracking on the outside. The older the building is, the more likely it is to have been bent by its own weight.

THE WEIGHT on a floor or roof makes the joists or rafters sag in the middle. A small amount of sag always happens, but too much can cause falling plaster and in extreme cases collapse of the floor. By sighting along the ceiling you can often see a visible sag, usually in one direction. Holding a flashlight next to the ceiling will create a shadow which will emphasize the bend of the ceiling.

IDEALLY, THE AMOUNT of floor sag when the building is full of furniture and people will be small enough that the plaster ceiling below will not crack. Over the short term (one day), the amount the floor deflects divided by the length of the joists should be less than 1/360. For example, this would be a deflection of about 3/8-inch over a 12-ft. length. Ceilings with drywall can sag more without cracking (1/240). House floors with this amount of deflection (or less) are usually very safe.

OVER THE LONG TERM, a loaded floor can continue to sag very slowly without cracking the plaster on the ceiling below. Eventually this deflection can be so great that you feel like you're running down hill as you enter the room. Unfortunately there is no easy rule to determine if such a floor is safe. An architect or engineer familiar with old houses should be contacted for advice. After measuring the length and size of the joists, an architect can determine whether they are stiff enough and strong enough to carry the weight.

NOW THAT YOU have carefully gathered all the clues of the case, the next step is to line up your suspects. In the coming installments, we'll discuss the probable and possible causes of building movement and cracks. Once guilt has been established, we'll talk about rehabilitation.

# Ask OHJ

## Marble Slabs

SEVERAL OF OUR ROOMS have hot-water radiators, and the floorboards under them are severely warped and cracked. I was thinking of cutting out the boards in these areas and inserting some kind of waterproof stands. Is this ever done? If so, what kind of stand would you recommend?

--David Fay Chicago, IL

GOOD RESULTS CAN BE OBTAINED by using a slab of marble. Just cut away the damaged section of the finished flooring and set the marble in on top of the sub-flooring--this way, you won't even need a thick slab. It'll look great and last forever--and then you can get around to fixing those leaky radiators!

## Saving Your Graining

HELP! We recently purchased a 100-year-old house and would like to salvage the graining on the interior doors and some of the woodwork. Most of the doors are badly checked and considerably darkened. I have used denatured alcohol with 0000 steel wool on some inconspicuous spots and wiped this off almost immediately, and found that the graining is still visible, but so are the small 'checking' lines.

IS THERE ANY METHOD we can use to remove the old varnish without the graining?

--Emily R. Boudreaux Opelousas, LA

UNFORTUNATELY, ANY SOLVENT that will remove the clear varnish will also remove the graining underneath. Occasionally, graining was protected with a layer of shellac instead of varnish. If this is the case, the shellac can be removed with alcohol and fine steel wool without damaging the graining. You can then recoat with a new layer of either shellac or varnish.

IF ALCOHOL AND STEEL WOOL DON'T WORK, you might try cleaning the varnish without removing it. The Hope Co., listed in the OHJ Catalog, makes a finish reviver that cleans and restores the existing finish.

## Nailing Shingles

WHAT TYPE OF NAIL IS BEST SUITED for the installation of cedar siding or shingles?

--Harry Piehl van den Kerkhoff Augusta, GA

HOT-DIPPED GALVANIZED NAILS are best in this situation. The following specification is appropriate for eighteen-inch shingles:

3d hot-dipped galvanized nails, two nails per shingle not more than 3/4 inch from the edge of the shingle at each side and as near as possible to the butt line of the covering course without exposing the head--drive flush, do not crush wood.

Larger shingles would require longer nails. More information can be obtained from the Red Cedar Shingle & Handsplit Shake Bureau, Suite 275, 515 116th Ave. NE, Bellevue, WA, 98004.

## Houses In Motion

MY HOUSE, BUILT IN 1851, has settled considerably. I would like to jack it from the basement and repair the supporting stone piers. What is a safe rate at which to proceed in order to avoid damage to the building?

--Amos Carter Boise, ID

OUR FEBRUARY '81 ISSUE contains an article on the use of jack posts. If the reason for settlement in your house is failure of the foundations, then you will certainly want to support the floor on columns while you repair the stone piers. As a general rule, a quarter-turn on the screw column every three or four days is a safe rate. Make sure to watch for cracking walls or separating trim during this procedure.

KEEP IN MIND, HOWEVER, that you will probably not be able to return everything in your house to a true and square position. A certain amount of crookedness is to be expected in an old house, and providing it is structurally sound, it is better to live with some settlement than to attempt correcting it all.

## Attacking Tacks

CAN YOU RECOMMEND A GOOD TECHNIQUE for removing hundreds of tacks from hand-planed pine walls? The tacks were used to hang wall-paper and are flush with the surface. I have tried using a small wedge-shaped tool to pry them out but that gouges the surface.

--Robert I. Doyal Atlanta, GA

YOU MIGHT TRY USING a pair of diagonal-cutting pliers (the kind with the pointed tips). Insert the points under the head of the tack, squeeze gently, and rock the handles back. The leverage from the handles should lift the tack out. If you find the heel of the pliers denting the wood, slip a thin piece of sheet metal underneath.

OF COURSE, THIS IS STILL RATHER TEDIOUS, and when you get through you'll have a lot of holes to putty. Depending on the size of the tacks, it might be easier and faster to set them with a nail punch and putty over with wood filler. Try a small area first and see how it looks.

## Prize Doors

**M**Y HOUSE HAS A LOT OF interior doors, with several styles present. Most are panel doors, on which one side is rather decorative while the other side is rather plain. Should the more decorative side of a door face the hall or the room? I suppose the decorative side should face the hall, but the doors in my home give us a choice depending on the installation.

--John Ruch Ironia, NJ

**A** VERY UNSATISFYING "IT DEPENDS" ANSWER is the best we can give you. If a door is normally closed, then we prefer to see the plain side facing the hall, and the decorative side facing the inside of the room. If a door is normally open, however, then we prefer to have the decorative side facing the hall. That way, with the door open and folded back against the wall, the decorative side shows.

OF COURSE, WE ALL TEND TO BE A LITTLE LAZY here at the JOURNAL, and if one of our doors didn't meet these criteria, most of us wouldn't go through the trouble of re-hanging it!

## Keeping Your Lath

**I** NEED TO REPLACE INTERIOR PLASTER in my 1851 house. When I had the plastering contractor in to estimate the job, he said I would have to replace the sawn wood lath with rock or wire lath. I would like to retain the old lath if possible, feeling that it is part of the original fabric of my house. Is it really necessary to replace it?

--Dick Perkins Freeport, IL

**M**OST PLASTERERS, not without reason, are wary of replastering directly on old wood lath. The dry lath will absorb water out of the plaster before it has cured, causing a weak set, and the resultant expansion of the wood can cause cracking of the plaster. (In the original application this problem was avoided by soaking the lath before it was used.) As a result, most contractors opt for wire lath, which is either fastened directly to the joists or studs or simply tacked over the wood lath.

STILL, IF YOUR ORIGINAL LATH is sound and attached firmly, there's no reason for not re-using it. Just make sure that it's thoroughly damp before the plaster goes on. This can be done with a simple pump-spray bottle. Start a day or two ahead of the first plaster coat; this gives the wood time to absorb the water and expand a little. The lath shouldn't be dripping, just not drinking up the water anymore.

THE OTHER ALTERNATIVE is to coat the lath with a masonry bonding agent, available from most supply houses. This is a fast-drying latex which brushes on easily. It forms a firm bond with the plaster and seals the wood from absorbing water.

## Exposed Bricks

**O**UR HOUSE HAS AN ADDITION that was built late in the nineteenth century. We'd like to expose the brick on those back walls. Is this a good idea?

--Cynthia Smollowitz Dayton, OH

**N**OT REALLY. If the brick was originally covered, then it probably is not of a quality that merits showing. Moreover, it is almost impossible to remove all the covering material without damaging the brick surface and mortar joints. There's one more problem too: Everyone we know who has stripped down walls in an addition has regretted it because of cold-air infiltration. So don't do it unless you're prepared to put up with a lot of drafts.

## Paint Overhead

**T**HERE'S A PAINT BUILD-UP PROBLEM on the ceiling of my old farm house. Layer after layer of paint was applied over the years, and it's now peeling and hanging overhead. If the loose paint is scraped the ceiling looks like it had a bad case of chicken pox. Paint stores say to put up gypsum wallboard; other people say to apply a coat of sand paint. What is the answer?

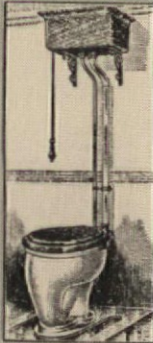
--Judy Clapp Pottersville, NJ

**A**LAS, THERE IS NO EASY ANSWER. If there's nothing wrong with the ceiling but the paint, then it's wasteful to cover it over with gypsum wallboard. Sand paint or texture paint will only make matters worse: It will cling heavily to the peeling paint and just cause more of it to drop off. Similarly, if you scrape only problem areas and fill them in, your troubles won't be over: Old peeling paint is old peeling paint, and the untouched portions of the ceiling will continue to deteriorate.

THE BEST THING TO DO is strip or scrape all the old paint from the ceiling. You can use any of a variety of methods--none of them will harm plaster (just be careful not to gouge it when scraping). But it'll be hard work. One word of caution: One of those old layers may be a lead-based paint. Inhaling or ingesting that dust can make you very sick, so be sure to wear a mask when removing the paint; also, avoid eating in the dusty room, and clean up thoroughly after each round of work.

## Do You Have Questions for OHJ?

Send your questions with pictures or drawings, if possible. (We prefer black & white photographs.) We cannot promise to answer all questions personally, although we will try to answer all questions from current subscriber/members. Questions of general interest will be answered in print. Write: Questions Editor, Old-House Journal, 69A Seventh Ave., Brooklyn, NY 11217.



# In Search Of The Short Hopper Clamp...

## Replacement Parts For High-Tank Toilets

By Joseph V. Scaduto, Lynnfield, MA

**I** HOSE OF YOU who own a Victorian pull-chain toilet have probably by now learned the difficulty of trying to buy replacement parts for them. I have for the past several years owned a 12-unit apartment house in the Boston area. All 12 of the units have pull-chain toilets. Originally, when I purchased the building, I had intended to replace these ancient warriors. As with most of my good intentions, nothing was changed and all 12 pull-chain toilets are still in the building.

WHAT REALLY brought the problem home was the time I had to replace a bowl for one of my tenants. In attempting to secure the new bowl to the waste pipe, I found that the metal clamp had deteriorated and would also have to be replaced. This metal clamp is referred to as a "short hopper clamp."

I CALLED SEVERAL local plumbing supply firms trying to purchase a replacement clamp. My frustration mounted as I learned that NONE of these firms kept this item in stock. Some of the younger clerks I spoke to had never even HEARD of a short hopper clamp.

**I** WAS STARTING to get desperate. It was a Saturday and most suppliers closed early. My tenant was getting nervous. Finally, the last supplier I called had a few in stock. This was Circle Supply--a dealer located in the Roxbury section of Boston. I immediately drove over to the store and purchased the three remaining clamps he had in stock.

IN SPEAKING TO THE OWNER of the store about my plight, I learned that a few dealers still stock parts for high-tank toilets. These suppliers, like Circle Plumbing Supply, are usually located in the inner core of the city--areas that still have old buildings with ancient plumbing.

I DECIDED THEN AND THERE that I would not get in a similar predicament again. I asked the store owner, Martin Sidell, to put together an order for me that would give me at least two replacement parts for each major section of the pull-chain toilet.

NOW, whenever I need a replacement part I have it at hand--and there's no panic. As I use a part from my inventory, I place an order with Circle Plumbing Supply for a replacement. For the convenience of other OHJ readers, I have prepared a list of the various parts I use--along with typical cost in the Boston area. 🏠

ITEM	TYPICAL COST
WOODEN HIGH TANK BOX..... (Unit that houses water tank + valves)	\$7.50
COPPER BOX LINER.....	\$19.00
HIGH TANK BALLCOCK..... (Metal valve that regulates flow of water into the high tank)	\$25.00
FLOAT ARM..... (Connects float to high tank ballcock)	\$.75
FLOAT BALL.....	\$2.00
FLUSH VALVE..... (Unit that allows water to flow down through tailpiece pipe into bowl)	\$17.00
TAIL PIECE..... (Pipe that connects high tank box to bowl)	\$21.00
SHORT ELBOW..... (Unit connecting bowl to tail piece)	\$3.00
SPUD..... (Unit in bowl connecting to short elbow)	\$4.00
BOWL..... (Note: Old model short hopper bowl is no longer manufactured. It can only be obtained from second-hand plumbing suppliers.)	\$50.00
GASKET SEAL..... (Makes watertight seal at base of bowl)	\$2.00
BOWL (HOPPER) CLAMP..... (Unit that fastens bowl to waste pipe)	\$3.75

WARNING: These prices are typical of late 1980. Expect prices to increase at least 10% per year.

### SOURCE FOR HIGH-TANK TOILET PARTS

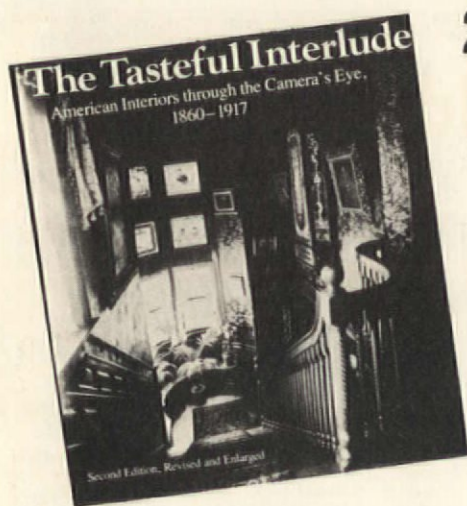
If you are having difficulty locating parts for high-tank toilets in your area, you can contact the same supplier used by the author. Contact:

Martin Sidell  
Circle Plumbing Supply  
2407 Washington Street  
Roxbury, MA 02120  
(617) 442-7750

Mr. Sidell will quote latest prices over the phone or by letter. You can then send him an order that will be shipped via UPS COD.



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#### About The Author:

William Seale, historian & award-winning author, is Adjunct Professor of Architecture at Columbia University, and former editor of *19th Century* magazine. Seale consults on restoration projects throughout the country, & is presently writing a scholarly history of the White House.



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# The Old-House EMPORIUM

## FREE ADS FOR SUBSCRIBER/MEMBERS

Classified ads are FREE for current member/subscribers. The ads are subject to editorial selection and space availability. They are limited to one-of-a-kind opportunities and small-lot sales. Standard commercial products are NOT eligible.

Photos of items for sale are also printed free—space permitting. Just submit a clear black & white photograph along with your ad copy.

Examples of types of ads eligible for free insertion: 1) Interesting old houses for sale; 2) Architectural salvage & old house parts for sale; 3) Restoration positions wanted and vacant; 4) Hard-to-find items that you are looking for; 5) Trades and swaps; 6) Restoration and old house services; 7) Meetings and events.

Free ads are limited to a maximum of 50 words. The only payment is your current OHJ mailing label to verify your member/subscriber status.

Deadline will be on the 5th, 2 months before the issue. For example, ads for the December issue are due by October 5th.

Write: Emporium Editor, Old-House Journal, 69A Seventh Ave., Brooklyn, NY 11217.

## WANTED

**DOVE COTE.** Need an old dove cote or else plans for same. Elsie Monroe, 618 Pecan, Texarkana, AR 75502.

**HELP WITH CISTERNS.** Several members have asked for help with either: (1) Reactivating an old cistern, or (2) Dealing with water problems caused by water collecting in an old unused cistern in the back yard. For an upcoming Workshop-In-Print, the editors would like to hear from any members who have had experience with cisterns. Write: Technical Dept., Old-House Journal, 69A Seventh Ave., Brooklyn, NY 11217.

**PLASTER ORNAMENT MOULDS** wanted for collection. Send clear photos. Willing to pay good price for perfect units; less for damaged moulds. Contact Dean Russell, Rt. 1, Box 243A, Mattituck, NY 11952. (516) 765-2481.

## BOOKS & PUBLICATIONS

**METALS IN AMERICA'S HISTORIC BUILDINGS—**Extensively reviewed in the March 1981 issue of OHJ. Presents both historical survey of metals and methods for preservation. Now out of stock at Government Printing Office, but still available for \$5.95 from: Friends of Cast Iron Architecture, 235 East 87th St., 6-C, New York, NY 10028.

**MORE ABOUT OCTAGONS:** Hard cover book on octagon and round buildings. Discusses changes in the art of building from 1800-1850 and evolution of modern balloon frame. List and description of all octagons in U.S. and Canada. Privately printed by the authors, Carl Schmidt and Philip Parr. Send \$19 to: Philip Parr, 3179 McCorkindale Rd., Caledonia, NY 14423.

**CONFRONTING THE OLDER HOUSE—A HOMEOWNER'S GUIDE:** Reviews architectural possibilities of older houses and streetscapes. Contains general descriptions of purchase, remodelling, restoration and renovation that will help preserve architectural heritage and character of older neighborhoods. Send \$3.60 to: Utah Heritage Foundation, 355 Quince St., Salt Lake City, UT 84103.

## FOR SALE

**40 ASSORTED STAINED GLASS WINDOWS—**all in sash frames. Sizes range from 8 in. by 18 in. to 2 ft. by 4 ft. All in pairs; some very plain, others colorful. \$3,500 or best offer. Paul Feldman, P.O. Box 487, Quincy, MA 02169. (617) 471-4118.

**ORNATE PINE WOODWORK** from older home. Over 217 ft. of milled facings; over 32 ft. of plainer facings, 64 ft. of plain baseboard; 16 base blocks. Still lacquered, in fair to good condition. \$150. Dennis Newby, 307 E. 7th, Maryville, MO 64468. (816) 582-4003.

**ANTIQUE BARN SIDING** and hand hewn beams. Chestnut flooring and chestnut beams. (203) 355-2217 or (518) 943-9234.

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**HAVE AN OLD BED IN YOUR HOUSE.** Illustrated brochure for making queen and king size headboards out of junk solid wood beds. \$3.00 from: Victorian Bed, 121 Parkins Lake Rd., Dept. J., Greenville, S.C. 29607.

**AGED CHERRY WOOD—**Approx. 1,000 running board ft., random cuts (up to 10 ft.) and thicknesses, not milled. Aged 60 years. Available at Columbia Co. store house. Appraised market value plus handling. Geof Eldridge, 281 Garth Rd., Scarsdale, NY 10583. (914) SC3-3094.

**PAIR OF SMALL GREEK REVIVAL PINE MANTELS** from ca. 1845 house. Also one larger mantel (ca. 1845) and one very large pine Federal mantel (ca. 1815). Large selection of electric bell-shaped glass shades and some original gas-light shades. Lots of old hardware. Robert Brown, R.D. 1 Dundee-Himrod Rd., Dundee, NY 14837. (607) 243-7781.

**5 TONS OF PETRIFIED WOOD.** Fossil wood grain beautifully preserved. \$160 per ton. F. G. Carter, P. O. Box 122, Calvert, TX 77837. (713) 364-2313.

**ANTIQUE WATCHES—**Would a pocket watch help express your interest in things antique? I've collected a wide range of (mostly) American watches (all in the bank), which must go to pay for restoring my house. Cheerful replies to all inquiries. Steve Levy, 615 22nd St. NW, Washington, D.C. 20037.

**BRASS STAIR CORNER DUST COVERS—**Antique, never used. Available mill finish @ \$1.50 ea., or machine polished (not lacquered) @ \$2 ea., with nail. Quantity: One to 30 per order, please. Brian Kane, 1141 Winner's Circle, Libertyville, IL 60048.

**SOLID BLACK WALNUT NEWEL POSTS—**\$50 to \$150. Also: Black walnut handrail—12 ft. 5 in.; 9 ft. 3 in. 25 black walnut balusters; 16 oak balusters. A. Gaal, 41 Washington Ave., Irvington, NJ 07111. (201) 399-3760.

**WEATHERSTRIPPING:** Unique design for doors and windows. Easy installation avoids defacing old houses. Highest quality EPDM material for long life. Send \$1 for brochure and sample (refundable with purchase). R. Richardson, P.O. Box 741, Athens, WV 24712.

**TRANSOM HARDWARE.** New old stock. Transom operators of several types. \$35 each. Gerry Dahl, 1851 W. Wabansia, Chicago, IL 60622. (312) 772-1673 eves.

**WOODWORK—**ca. 1910, including buffet with 2 leaded doors and full-length bevelled mirror, 6 ft. 7 in. long. Swinging kitchen door complete. Baseboards, mouldings, interior doors, Hoosier pantry cabinet. Oak entry door with 9 bevelled lights. 3 over 1 double-hung windows; push-button electric switches with brass plates. (312) 654-3393.

**CRINKLY WAVY GLASS** and frames from double-hung windows ca. 1886. \$5 per window; 8 available. 313 Scott, San Francisco, CA 94117. (415) 861-1795.

**TRANSOM OPERATORS** ca. 1895, copper washed finish. Vertical rod is 3 ft. long; all hardware included. 5 sets; 2 are painted. Prefer to sell all 5 for \$50. Paul Schoenharl, 2393 Kemper Ln., Apt. 9, Cincinnati, OH 45206. (513) 961-8383.

**OLD BARN BOARDS—**different widths and lengths; one black walnut tree to be taken down. A few old, inside doors. Ann Bartlett, 11 Hall Rd., Oxford, MA 01540. (617) 987-5084.

**INTERIOR/EXTERIOR DOORS, MANTELS:** Stained/leaded glass, bannisters, misc. old-house parts, decorative artifacts. New Boston Wrecking Co., 84 Arsenal St., Watertown, MA 02172. (617) 924-9090.

**12 x 12 BEAMS** and assorted smaller beams from 123-year-old church steeple. Assorted rounded shingles 3 ft. and under. Dismantling and purchase of materials negotiable. Madeleine or John Peterson, United Church of Christ, Oswego, NY 13126. (315) 342-0133.

**WIDE PINE BOARDS** approx 20 in. wide. Also wide oak boards. Dale Carlisle, Rt. 123, Dept. RPN, Stoddard, NH 03464. (603) 446-3937.

**COMPLETE TRANSOM HARDWARE.** Sash locks, ornate hinges, door knob sets, sliding door hardware, and just about everything needed in house hardware line. All original. Happy to help match patterns. Reasonable. Grandpa Snazzy's Hardware, 1832 S. Broadway, Denver CO 80210. (303) 935-3269 or (303) 778-6508.

**ROPER GAS OVEN,** ca. 1940, 40 in. x 36 in. x 27 in. deep. White porcelain, Art Deco vents, timer, clock, double broiler, good condition. Asking \$500. J.P. Design Development, N. Y. (212) 381-6236 evenings until 11:30.

## REAL ESTATE

1836-1857 GREEK REVIVAL. Handsome "Dumbarton Mansion," curving mahogany staircase; 5 original marble fireplaces. Beautifully landscaped acre; panoramic view. Listed by Maryland Historical Society. Baltimore suburbs; 1 hr. to Washington DC. \$325M. William J. Byrnes Realty, 300 Allegheny Ave., Towson, MD 21204. Carroll Stewart (301) 828-4673.

BALMVILLE, NY—Built in 1875, 15-room Dutch Colonial on 1.2 landscaped acres. 7 bedrooms, 4½ baths, 5 working fireplaces, large living room, dining room, library, sewing room, 2 kitchens & servants' wing. 2+ car detached garage. Magnificent Hudson River views; 90 min. NYC. \$100M. Principals only. Call (516) 239-8627 weekdays after 6 p.m.; weekends anytime.



1869 ITALIANATE COUNTRY VILLA near Pella, Iowa. Walnut open staircase circling 3 flights to cupola. 15 rooms; transoms above doors, some with etched glass. Porcelain knobs; 2 balconies, 1 with French doors. Good condition, new roof. Must be moved. Owner willing to sell 1-2 acres nearby. (515) 626-3036.

JIM THORPE, PA—Townhouse, ca. 1845, no. 29 on "Stone Row" in "Old Mauch Chunk" on the National Register. Original doors, windows, pine floors. Versatile layout, new plumbing, roof, electric, gas, hot water heat. \$37.5M. Two additional Race St. properties for \$22M. V.F. Gilotti, Box 176, Rte. 4, Leighton, PA 18235. (215) 377-5944.

FEDERAL FARMHOUSE SUMMER RENTAL. Ca. 1830 charming, well-equipped house in a mountain valley on the edge of a peaceful town. 5 bedrooms, 2 baths. Woods, stream. Lovely quiet spot near lots to do. \$700/mo.; \$1,800/season. For photo and more information, write: Box 92, South Londonderry, VT 05155.

LITCHFIELD COUNTY, CT—8-rm. renovated home (ca. 1740's-1805) in proposed historic district. Commuting distance to Hartford or Danbury (2 hrs. to NYC). 3 working fireplaces, woodstove. Hand-stencilled walls; raised panelling, new mechanicals & electrical, fully insulated, new kitchen with built-ins. Large lot. Assumable 8¼ mtg. \$115M. (203) 485-1975.

MOUNT BRADDOCK—Meason House (ca. 1802), Georgian-style stone mansion on 4 acres listed on National Register. 15 rooms, 12 fireplaces, outbuildings—smokehouse, servants quarters & barn in good restorable condition. 95% original. Hot water heat, 2 new boilers. 50 mi. south of Pittsburgh. Asking \$300M. Peter A. Kriss, Box 203AA University Dr., Lemont Furnace, PA 15456. (412) 628-2905.

TURN-OF-CENTURY house owned by descendants of Texas pioneer land surveyor, Ferdinand Carroll. 6-room frame, several wideboard floors, 2 porches, fireplaces. Needs some repairs. On 2-acre, corner lot, fine shade trees. Overlooks Hwy. 10. Small town NE of Dallas. \$14.5M. Agent: Glenn Irvin (214) 885-6666.

OAKMONT. An impeccably restored farmhouse, ca. 1820. Located in historic Schooley's Mountain area of Morris County, N.J. 11-room house has 4 working fireplaces, 6 bedrooms, 4 baths, 27-ft. living room, stone foundation, porch, more. 4.89 acres featuring bass-stocked pond, pastureland, woodland. \$225M, Centennial Real Estate (201) 876-9020, Patricia Lyons (201) 852-1726.

RESTORED CONVERTED small historic brick factory/home. 3 BR, 2 baths, every imaginable luxury. Elec. heat/stoves, entire floor for hobbies/home industry. Completely equipped woodworking shop. Attached showroom/store. Overlooks mill pond, waterfall. Turbine to reactivate. Southern New Hampshire. \$130M firm. P.O. Box 244, Cape Porpoise, ME 04014.

CHOICE VICTORIAN ON STATEN ISLAND. Silver Lake area. 2 family; 5 over 4; large plot. Overlooks park & 2 lakes. Bus in front; golf, tennis & pool within stone's throw. 10,000 sq. ft. plot; 3 stone garages, basement above ground with windows; aluminum siding & storm windows. Near ferry. \$89M; financing available. (212) 442-1827.

SEATTLE—3-storey Landmark built 1903 on level ¼ acre in Oroville, WA. Open stairs, 2 fireplaces, 5 bedrooms, 2 baths, den, kitchen opens to closed porch & pantry. Includes 20 x 20 detached workshop. Well preserved, recently occupied, convenient location. \$74.5M. Paul Ballew, 1020 SW 164th St., Seattle, WA 98166. (206) 242-8131.

OLD BARN, ca. 1828, approx. 32 ft. x 33 ft. Two thirds, two levels. Important architectural details. Part of the Pendexter House, master carpenters. Buyer dismantle. Best offer. K. Robinson, 176 Central Ave., Dover, NH 03820. (603) 742-6532.

NEVADA GHOST TOWN near Reno, Virginia City. Abandoned RR center, still breathing. On new highway. Old store, bar and RR active. Rebuild old schoolhouse and live in it or build character frame around mobile home. Details, pictures on request. Mr. Budd, Box 89, Sparks, NV 89431.

SOUTHERN OHIO, near historic Lebanon. Country properties protected by covenants for historic preservation. Victorian farmhouse, 1880, 10 rooms, 1½ baths; 4 acres and pond. 2 smaller homes restored in authentic detail. Acreage to 10 acres with restored old barn. Good financing available. Mrs. Clayton Wright, 8489 Rossburg Rd., Morrow, OH 45152. (513) 877-2212.

## WARNING

PRESERVATION RESOURCE CENTER, Essex, N.Y. is listed in the 1981 OHJ Catalog and has been written up in past issues of OHJ. Several subscribers have reported serious difficulties with this firm and we have been unable to contact the proprietor to obtain any explanation. Therefore, we advise our members not to send any money to this company.

## RESTORATION SERVICES

GENERAL CONTRACTOR specializing in building restoration and adaptive use of historic structures. Registered in Virginia. D. J. Gibson, Jr., Home Preservation, Inc., P.O. Box 371, Charlottesville, VA 22902. (804) 293-9308.

STONE MASONRY—Architectural restoration, re-pointing, rebuilding of stone buildings, steps, and fireplaces. Consulting. N.Y.S. Historical Assn. references. Have trowel, will travel. William H. Parsons, Jr. and Associates, 19 Eagle St., Cooperstown, NY 13326. (607) 547-9639 or (212) 724-2742.

PRESERVATION/RESTORATION CONTRACTOR for 18th and early 19th century domestic architecture is seeking interesting projects for the coming year. Knowledgeable, skilled craftsmen from structural repair to finish details. Timber Frame Co., RFD 2, Orange, MA 01364. (617) 249-4643.

GARDEN RESTORATION DESIGN by qualified, registered landscape architect. Nine years professional experience. Pam-Anela Messenger, Landscape Architect, 867 Valencia St., San Francisco, CA 94110. (415) 647-1519.

VINTAGE HOUSE RESTORATION SPECIALISTS. Design capabilities, construction, renovation and interior decorating capabilities. We would be delighted to discuss the restoration of your vintage home. Call us at (512) 479-8979. Or write: Associated Construction Coordinators, P.O. Box 14348, Austin, TX 78761.

MILLWORK & CABINETS. 18th, 19th and 20th century millwork, cabinets and custom work in hardwoods reproduced to your sample or requirements. Mouldings, turnings, doors, curved work, staircases & parts, kitchen cabinets, shutters, overmantel mirrors, etc. Albany Street Woodshop, 533 Albany St., Boston, MA 02118. (617) 338-8011.

CHIMNEY & HEATING SERVICE: Old heating systems renovated, restored. Professional chimney sweeps clean & repair fireplaces, flues, chimneys. Wood & coal furnaces sold & repaired. Insured installation; custom design & fabrication on request. We specialize in old-house chimneys. Old World Sweeps, Lynnville, TN. Serving mid-Tennessee and northern Alabama. (615) 527-3987.

JOINERY—We design, or will work with your architect or designer to supply such items as: Turnings (up to 22 in. dia. by 20 ft. in length), newel posts, balusters, fireplace mantels, windows, doors, stained glass, gingerbread, fretwork, wainscoting, cabinet doors and decorative scrollwork. North Pacific Joinery, 76 West 4th St., Eureka, CA 95501. (707) 443-5788.

## MEETINGS & EVENTS

MANSION HILL neighborhood house tour in Newport, KY—just blocks from downtown Cincinnati. Turn-of-century architectural haven. 20 houses open June 20-21. Advance tickets \$3. June Dyas, P.O. Box 356, Newport, KY 41072.

HOUSE RESTORATION AND ANTIQUE SHOW—June 5-7, Kansas City Trade Mart, Old Municipal Airport Bldg., Kansas City, MO. For booth space, write or call: Dolores Wagner, Mgr., Wagner Promotions, Rt. 2, Box 152, Plattsburg, MO 64477. (816) 532-0194 or 539-3305.

REHAB/TECH—Annual meeting of Association for Preservation Technology (APT) will be held in Washington, DC, Oct. 7-10 1981. Program will focus on common problems encountered with rehabilitation of historic buildings. Topics include: Energy Conservation, Health & Safety Problems, Difficulties With Large Rehab Projects, Use of Computer Technology. For program information write: REHAB/TECH, c/o Mary Oehrlein, Suite 301, 1555 Connecticut Ave. NW, Washington, DC 20036.

HISTORIC PRESERVATION COURSES—Short courses (3 to 5 days) for preservation professionals will be held from May 8 through Nov. 13 on the campus of The Campbell Center, operated by the Restoration College Association. Topics include: Stone Working; Pest Control; Historic Woodcarving Methods; Remedial Engineering; Preserving Historic Landscapes; Historic House Paints; Historic Preservation Maintenance; Restoration of Decorative Painting; Masonry Cleaning; Ornamental Plaster. For program details write: Margery Douglass, Registrar, Campbell Center, Box 66, Mt. Carroll, IL 61053. Or call (815) 244-1173.

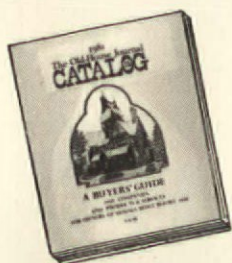
HISTORIC PRESERVATION WORKSHOPS at Eastfield Village from June 1 through Oct. 11. Courses range from 2 to 5 days. Topics include: Tinsmithing; Housewrighting; Wall Stenciling; Cabinetmaking. Students are encouraged to bring their own tools. For details, contact: Eastfield Village, Box 145 R.D., East Nassau, NY 12062. (518) 766-2422.

GALLIER HOUSE, 1118-32 Royal St., New Orleans, LA. (504) 523-6722. A museum and house restoration of the mid-19th century lifestyle and culture of New Orleans. French Quarter townhouse of James Gallier, Jr., architect, built in 1860. Exhibits include architectural photographs by Richard Koch and techniques for researching and restoring an historic landmark.

## 8th Annual Back-To-The-City Conference June 25-28, Milwaukee, Wis.

The 8th conference on urban and neighborhood revitalization will feature five half-day workshops: (1) Management of Not-For-Profit Neighborhood Organizations; (2) Back-To-The-City Movement and the Minority Community; (3) Financing the Acquisition & Rehabilitation of Older Housing & Commercial Structures; (4) Neighborhood & Smaller City Commercial Revitalization; (5) Community & Neighborhood History as a Catalyst for Urban Revitalization.

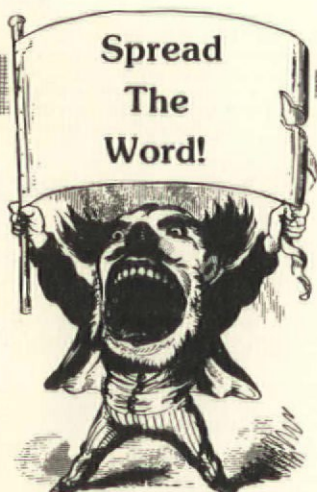
For full program details contact: Dept. of Urban Planning, School of Architecture, Univ. of Wisconsin—Milwaukee, P.O. Box 413, Milwaukee, WI 53201. Tel. (414) 963-4014.



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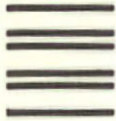
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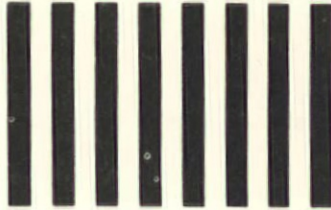
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**NOTE:** If your order includes a Catalog, Heat Gun or Back Issues, we need a **STREET ADDRESS**—not a P.O. Box number. We ship via United Parcel Service, and they cannot deliver to a P.O. Box.

Allow 4-5 weeks for delivery

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**Cut out this page and fold as indicated on reverse side. It will form its own envelope. Just enclose your check and mail. No postage needed.**

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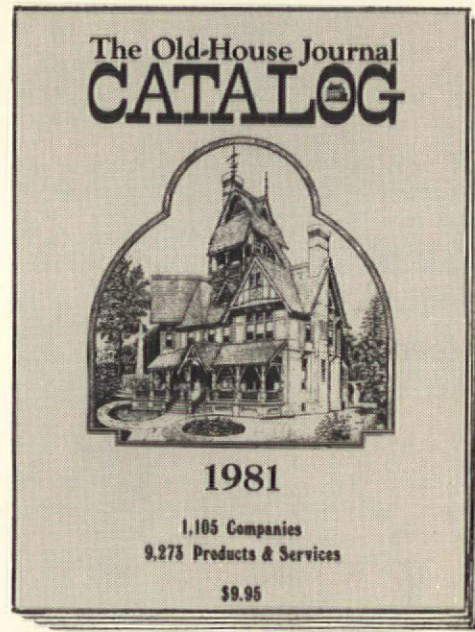
New!

# 1981 Catalog

## Take Advantage Of 33% Subscriber Discount

**P**RACTICALLY EVERYTHING IS NEW about the 1981 Old-House Journal Catalog: New companies... new listings...and new information about old companies. Here's a partial list:

- More pages--40% more than the 1980 edition;
- 328 companies were added--ones that did not appear in the 1980 Catalog;
- More than 1,100 companies are listed;
- 74% of the companies who are repeating from the 1980 Catalog have changed addresses, phone numbers, product lines or literature prices;
- 53 companies were deleted because they have gone out of business, or because they didn't return the verifying questionnaire, or because they didn't live up to the editors' service standards;
- 18 entirely new categories were added to the Product & Service Directory;
- 1,640 new listings will be found in the Product & Service Directory.



USE ORDER FORM in this issue, or send \$7.95 (price to non-subscribers is \$9.95 + \$1 postage) to : The Old-House Journal, 69A Seventh Ave., Brooklyn, NY 11217. Catalogs are shipped via United Parcel Service, so give a street address--NOT a P.O. Box number. Allow 4-5 weeks for delivery.

## HEAT GUN...THE EASIEST, CLEANEST WAY TO REMOVE PAINT

The electric heat gun softens paint in a uniform way so that it can be scraped off with a knife. Some clean-up with chemical remover is required, but the volume needed—and the mess—is vastly reduced.

Heat Gun is safer: It avoids the hazards of methylene chloride vapors present in paint removers. Operating temperature is

lower than a propane torch, avoiding danger vaporizing lead. See article in November 1979 OHJ for operating details.

The Master HG-501 Heat Gun is #1 in paint removing. More than 6,000 are in use by OHJ subscribers...and the testimonials to its effectiveness come in every day. It is a heavy-duty industrial tool operating at 500-700 F. and draws 14 amps at 120 volts. Rugged all-metal construction; no plastics!

There's a two-month replacement guarantee: If the unit should fail for any reason within 60 days of purchase, return it to The Old-House Journal and we'll provide a free replacement.

Price of \$64.95 includes: (1) Pedestal stand worth \$6.75; (2) Shipping via United Parcel Service; (3) The Old-House Journal replacement guarantee. Telephone orders also accepted on VISA or via COD (there's a \$2 charge for COD).



### ORDER FORM

Enclosed is \$64.95. Please send one Master Heavy Duty HG-501 Heat Gun. Allow 4 weeks for delivery.

NOTE: • N.Y. State residents must include applicable sales tax;  
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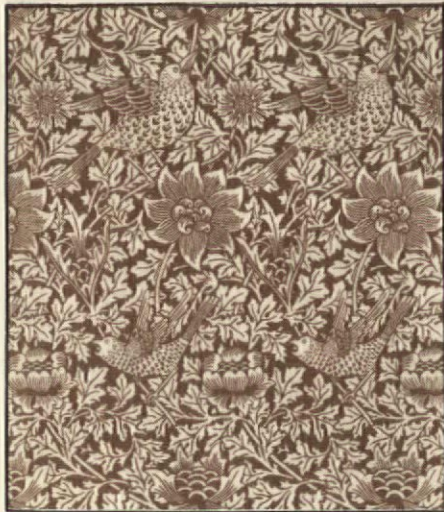
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# Products For The Old House



## Affordable Victorian Wallpaper

**BRUCE BRADBURY** has just announced an event we have been waiting for for a long time: The commercial availability of his new line of wallpaper.

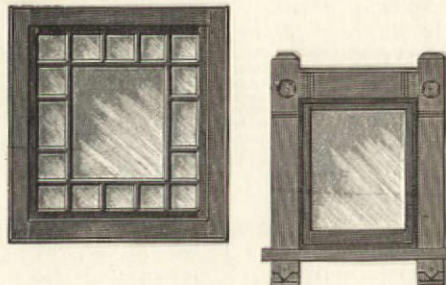
**BRUCE**, a longtime OHJ subscriber, has spent five years researching and perfecting his line of late 19th century wallpaper. He has reproduced papers of William Morris, Christopher Dresser, C.F.A. Voysey and Augustus Pugin--plus an anonymous Gothic Revival paper found in a house in California.

**BRUCE** now runs what he calls "America's smallest wallpaper

company." Each paper is hand-printed to order, and all workmanship is guaranteed. Since he sells direct to the customer, the prices are amazingly affordable for hand-printed paper: \$18 to \$22 per roll, plus shipping.

**TWELVE PATTERNS** are available, in four colorways each. (Shown above is William Morris' "Bird and Anemone.") Most of the Bradbury & Bradbury patterns have not been available before --and thus are a great help to anyone decorating a late 19th century home.

**BROCHURE**, available for \$1, shows the 12 patterns. Bruce will also send sets of each pattern in its different colorways for \$1 additional per set. Contact: Bradbury & Bradbury Wallpapers, Dept. OHJ, Box 155, Benicia, CA 94510.



## Custom Millwork & Joinery

**AS INTEREST** in restoration and sensitive rehabilitation has soared, so has the demand for skilled woodworking services. It has been most gratifying to see people begin again to make

things that "they don't make anymore."

**THERE ARE** many skilled woodworkers around the country--if you know where to find them. Two fine shops that have come to our attention are:


**ARKTYPE FINE CABINETS**--Builds custom cabinetry as well as architectural fabrications including custom doors, circular and oval wood windows, custom wood stairs, complete period interiors. No literature. Arktype Fine Cabinets, 858 Humbert St., Dept. OHJ, San Luis Obispo, CA 93401 (805) 544-7166.

**PERIOD PRODUCTIONS, LTD.**--Makes interior and exterior architectural millwork. All work custom-manufactured to order. Price estimates from customer's drawings or specs. No literature. Period Productions, 1823 W. Main St., Dept. OHJ, Richmond, VA 23220. (804) 353-5976.

## Historic Markers

**THE FINISHING TOUCH** for many restorations is a plaque or marker denoting significant dates. Many historical markers today are made from cast aluminum--and one of the leading suppliers of these is Lake Shore Markers. A weatherproof vinyl coating--available in several different colors--can be applied. The firm also does custom ornamental castings in aluminum.

**CATALOG 178** is available free. Contact: Lake Shore Markers, Dept. OHJ, 654 W. 19th St., Erie, PA 16512. (814) 456-4277.



**The Old-House Journal**<sup>®</sup>

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