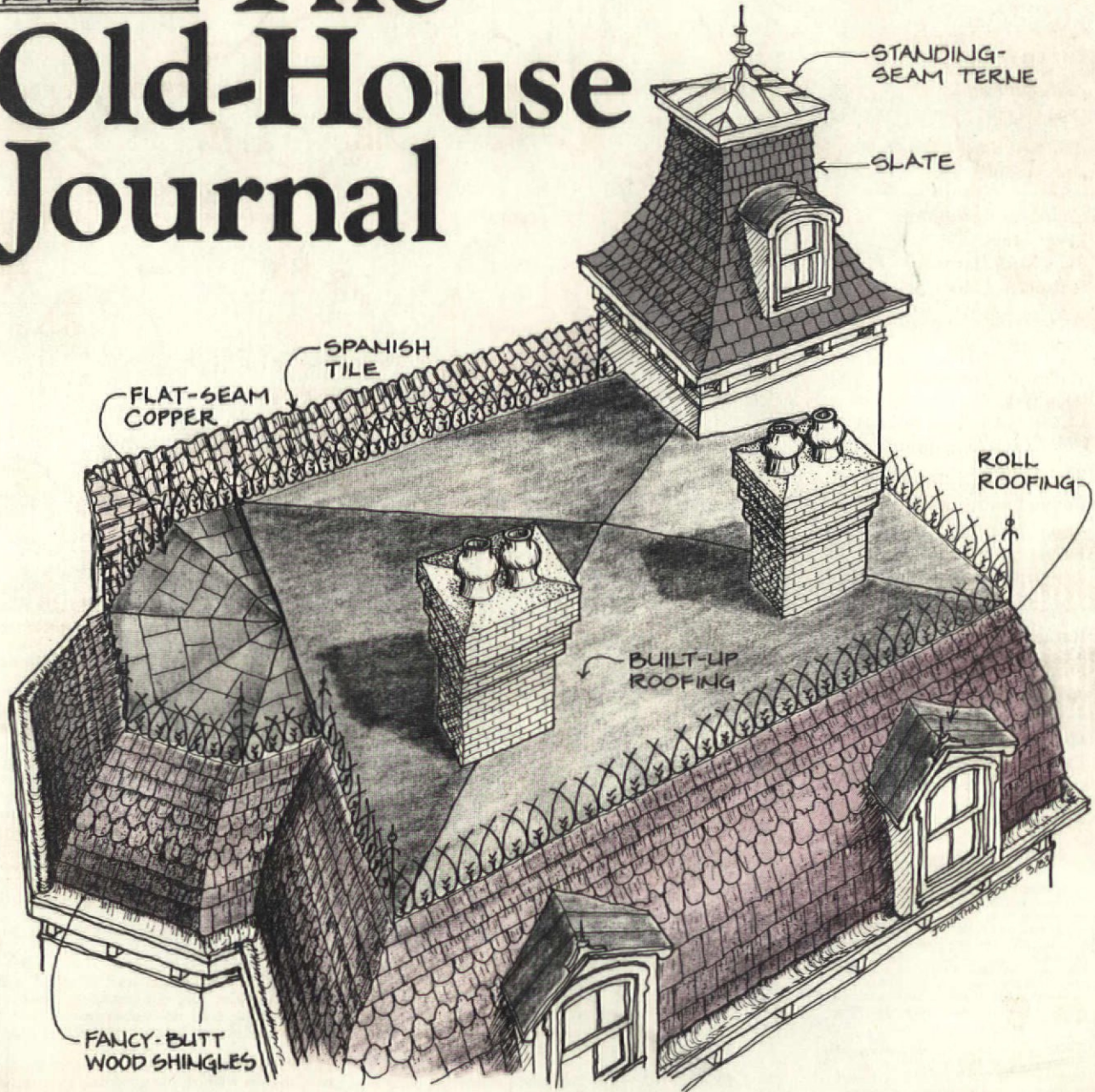


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SPECIAL ROOF ISSUE

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Restoration and Maintenance Techniques For The Antique House

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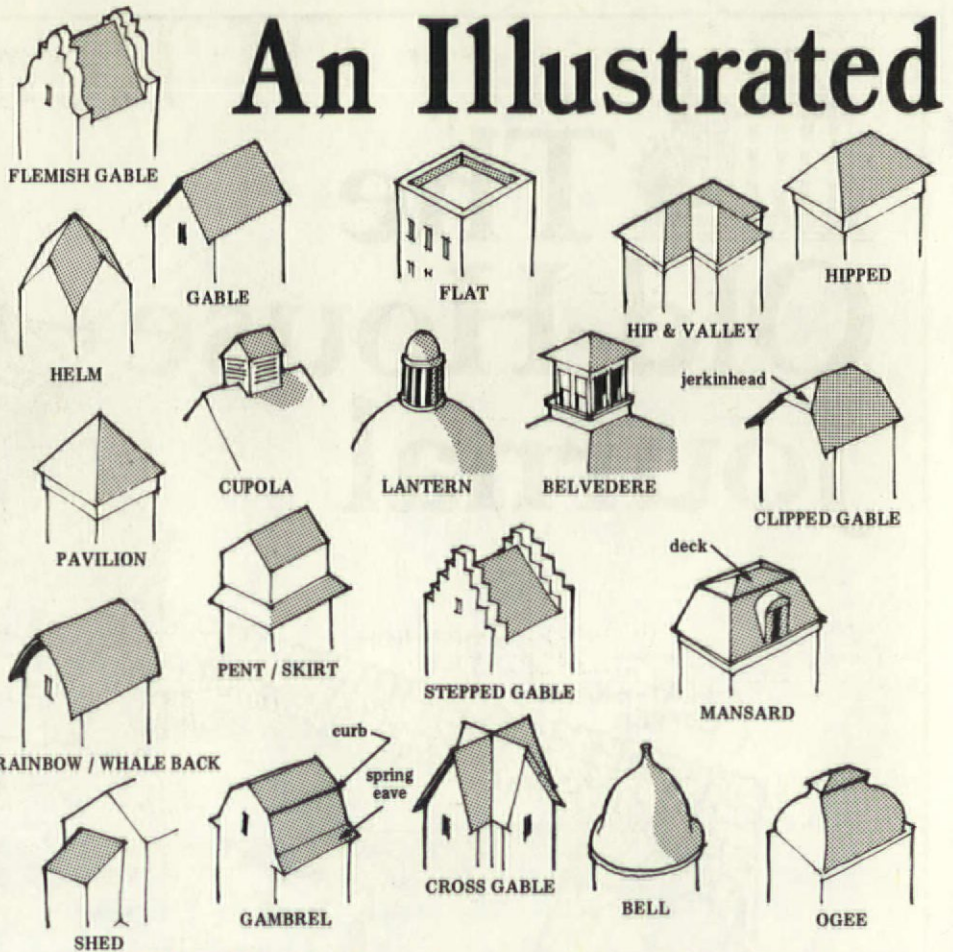
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BUILT-UP ROOFING (BUR) — Most often used on nearly-flat roofs. Successive layers (plies) of roofing felt and moppings of hot tar or asphalt are built up and topped by a mineral-surfaced cap sheet or gravel embedded in asphalt. It is easily patched, and a good job can last 50 years. Also called a hot-tar roof, composition roofing, or multiple-ply roofing.

BUTT — The bottom edge of a shingle at the widest point of taper. The butt end is the exposed part of the shingle.

EXPOSURE — The length of a shingle, slate, or tile which is exposed to the weather, or not covered by the next course above. It's expressed in inches, i.e., "7½-inch exposure" means the same thing as "7½ inches to the weather."

FELT — Also called asphalt-impregnated felt, rag felt, roofing felt, felt paper, and sheathing felt, this is tar-, asphalt-, or chemical-impregnated felt that is laid over the sheathing and under the roof covering to act as a dampness barrier, minor insulator, and cushion. This term is often also applied to roll roofing.

FLASHING — An impervious material, separate from the main roof covering, placed on a roof to prevent water penetration or to provide water drainage. Flashing is usually metal — copper, tin, galvanized steel, or aluminum. Flashing for use with built-up or roll roofing is simply heavier-weight felt. Flashed areas include those around projections, such as chimneys and vents, and wherever two surfaces having different slopes meet, such as valleys, hips, & roof curbs.

HIP — The external angle formed by the junction of two sloping sides of a roof.

LAP — In shingling, that amount overlaying the shingle two courses below. Also called headlap.

LOAD — The weight, force, or system of forces

to be carried by a roof. Roof structure must be designed to take both dead and live loads. Dead loads include sheathing and roof-covering material; live loads include snow and wind.

RED ROSIN PAPER — A cheap, heavy, durable building paper laid under metal roofing to provide a low-friction surface for movement due to expansion and contraction of the metal with temperature changes.

ROLL ROOFING — A relatively inexpensive asphaltic-felt roofing available in roll form. It is made by saturating felt with asphalt, then coating the saturated felt with a fine mineral, fiberglass, or asbestos. Granule-surfaced material can be used as the cap sheet for built-up roofing.

SHAKE — Current meaning is a hand-split wood shingle.

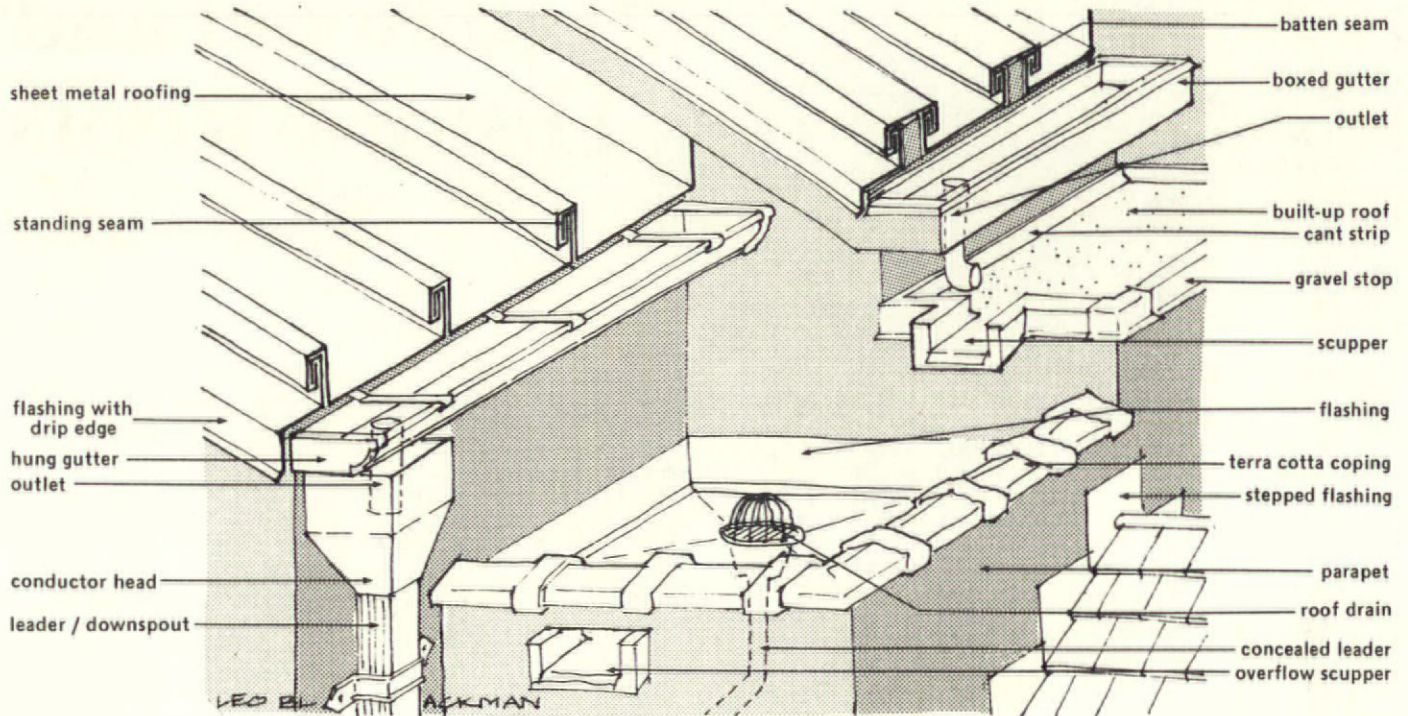
SHINGLE — A roofing unit of wood, asphaltic material, slate, tile, concrete, etc., cut to stock lengths and sold in dimensional or random widths. Thickness is measured at the butt.

SLOPE (PITCH) — The angle of inclination the roof makes with the horizontal. It is usually described in terms of vertical rise (in inches) to each foot of horizontal run, as in "8 in 1"; or it can be described in terms of the total rise (height) of the roof to its total span, as in "1/4 pitch."

SQUARE — The standard market measure for roofing materials. One square equals the number of slates, shingles, or tiles needed to cover 100 sq.ft. of plain roof surface when laid with the customary lap.

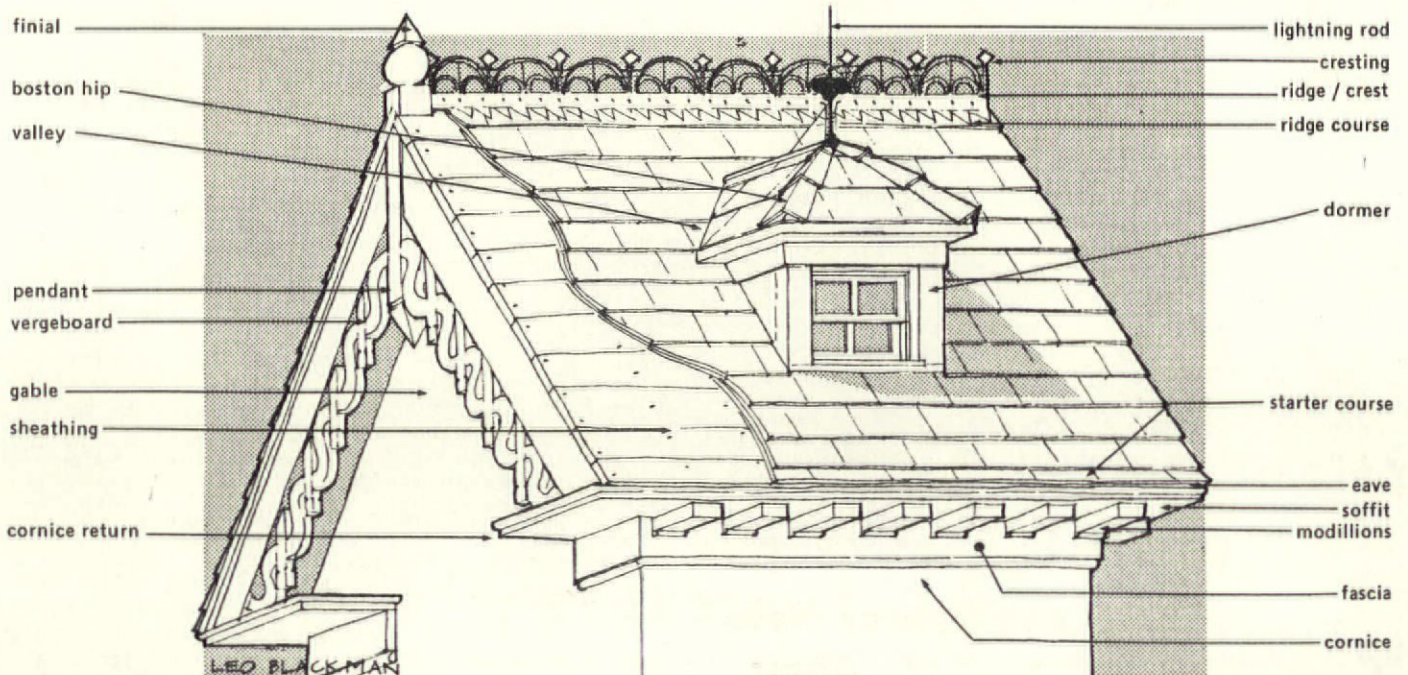
VALLEY — The depressed (inside) angle formed by the intersection of two inclined sides of a roof. In an open valley, the metal flashing is exposed. In a closed valley, the metal flashing is covered.

Dictionary Of Roofing

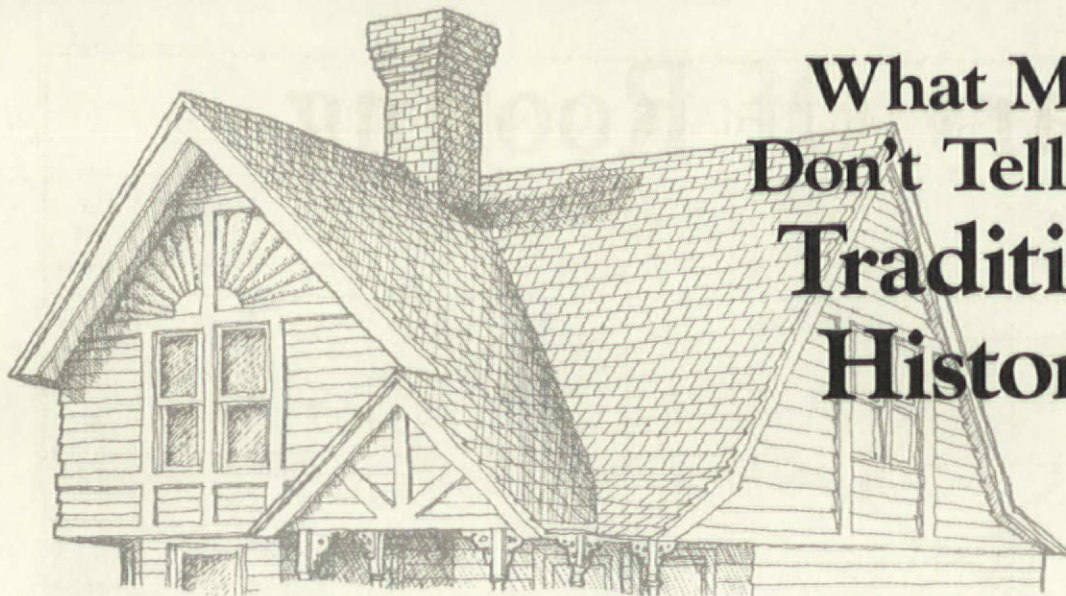


Drainage Systems

Parts Of A Roof



Drawings by Leo Blackman



What Most Roofers Don't Tell You About Traditional and Historic Roofs

by Patricia Poore

WHEN THE KITCHEN LINOLEUM is shot or an appliance wears out, you go to a showroom and pick out a new one. Not so with roofing. Manufacturers market their products to the trade, not to homeowners. If you're not a roofer, you probably don't know what all your options are, or how to compare cost and appearance of different materials. This issue introduces roofing repair and replacement options to homeowners, the people who have to pay the bill and live with the roof. Below, a couple of things most roofers won't tell you....

About Real Costs

OLD-HOUSE OWNERS tend to look at things long-term. Roofing is a good place to apply that kind of thinking. Look at the chart: The more you pay for a roof, the longer it lasts and, generally, the less maintenance it needs.

WE HAVEN'T IGNORED the magnitude of the costs involved in roofing, however. We stress maintenance and do-it-yourself repairs in this issue, so that total roof replacement can be forestalled. It is indeed very expensive to completely replace a slate, clay tile, or copper roof, especially on a large old house. Sometimes, despite best intentions, the cost is prohibitive for an individual owner.

THERE'S NO simple answer to the bottom-line cost dilemma. But we can offer a couple of contingency plans that take more imagination than the average roofer has to sell. First, three things to keep in mind:

- A special roof is a major architectural feature of an old house. You could be bitterly disappointed in the way your building looks if you replace the roof with an inferior or vastly different material.
- A high quality, architecturally pleasing roof adds to the real value of your home.
- A high quality job with good materials will last far longer and require less care than a job which costs less up front.

About Contingency Plans

TWO ALTERNATIVES to immediate and complete replacement have worked for some homeowners and preservationists around the country.

• **YOU CAN CREATE** a Roof Replacement Fund, saving up while you maintain and repair your old roof for as long as you can. A checklist on p. 72 will help you find trouble spots. If problems are still repairable, you can refer to the repair article on page 64. Another temporary measure is to cover the old roof with inexpensive roll roofing while you wait for a loan or good luck.

• **IT MAY BE** possible to put your money where it's most visible. Replace roofing on the street sides with the material that was used originally, but go to a less expensive close match out back or in hidden areas. (This works for recycled materials, too. For example, all salvageable old slate can be relaid on the sides of the building that show.) This plan calls for good judgement. If the materials are obviously different from each other and a view is possible where both of them show together, the roof may look worse than if it were all covered in the less expensive material.

About Materials

ILLUSTRATIONS and specifications for most roofing materials can be found in Architectural Graphic Standards. This is the architect's standard reference; it's in most libraries. Manufacturers' specs and sales brochures tell most of what you and your roofer need to know. Here are a few comments you might not find:

• **WOOD** -- Shingles and shakes are available in three grades. Always buy #1 Blue Label for residential roofs; these are 100% clear edge-grain heartwood. Don't use copper flashing or nails with red cedar, because red cedar corrodes copper. Fire-retardant shingles have a nationwide reputation for brittleness and shortened life, though the reputation seems worse in areas with very cold winters. In our opinion, paying for fire-retardant wood shingles makes sense only on a public historic building where nothing else would be appropriate and fire codes have to be satisfied.

WOOD SHINGLES and shakes should be laid on open sheathing: nailers, not a solid deck. This is not possible in a heated building that has no headroom or attic upstairs and therefore must be insulated at the rafters. If you are thus forced to use closed sheathing for insulation purposes, we would not recommend the use



ROOFING MATERIALS COMPARED



MATERIAL	DESCRIPTION	COLOR/TEXTURE	BUTT THICKNESS	MINIMUM SLOPE (inches of rise per ft. of run)	WEIGHT/SQUARE (pounds)	FIRE RATING	COST/SQUARE (materials only)	AVG. LIFE (years)
Asbestos-cement	Twin Lap	Green, black, white, gray, red, and cedar	5/32"	3 to 5	250-265	B	\$60-90	25-40
	Slatelike	Convincing bevelled slate texture in gray, red, green, black	1/4"	4	500	A	\$140	40+
Slate	Virginia	Gray-black, micaceous luster	3/16-1/4"	4	700-800	Non-combustible	\$350	175
	Vermont/N. Y.	Weathering & unfading green, light purple, mottled, gray, gray-black, red	"	"	"	"	\$185-\$1200	100
	Pennsylvania	Blue-gray to blue-black	"	"	"	"	\$250	40-50
Wood	Handsplit/resawn shakes	Rough—not tight on roof	1/2-1 1/4"	4	200-450	C (if fire retarded)	\$50-138 \$140-354 (fancy butt)	30
	Machine-sawn shingles	Thinner & flatter than handsplit; no "channels"	3/8"	"	200	"	\$45-92	15
Concrete	Forms resembling Mission tile, slate, and wood shingles	Neutral and various terra-cotta colors; glazed and unglazed	1" (woodlike)	2 1/2	950-1300	Non-combustible	\$48-180	50-75
Asphalt	Top-of-line wood look	Three-dimensional appearance in variety of colors	1/8"	4	330	C (wind resistant)	\$70	20-25
Asphalt-fiberglass	Random overlay tabs	Three-dimensional; mottled wood-like colors	1/8"	2" for special applications	290	A	\$78	20-25
Copper	Batten-, standing-, and flat seam	16 oz. and 20 oz. used	—	1/4" flat; 2 1/2" standing seam	125-155	Non-combustible	\$200 (approx. for 16-oz. matl.)	60+
Lead-coated copper	Batten-, standing-, and flat seam	16 oz. and 20 oz. used	—	1/4" flat; 2 1/2" standing seam	140-170	Non-combustible	\$230 (approx. for 16-oz. matl.)	60+
Tin/terne (coated steel)	Batten-, standing-, and flat seam	0.12 – 0.15" thickness	—	1/4" flat; 2 1/2" standing seam	62-76	Non-combustible	\$72	†
Terne-coated stainless	Batten-, standing-, and flat seam	26 gauge	—	1/4" flat; 2 1/2" standing seam	71	Non-combustible	\$147	†
Metal shingles (prefinished steel)*	Victorian pattern	Interlocking, late-Victorian and early 20th cent. style	—	5	103	Non-combustible	\$100-140	†
	"Spanish tile"	Interlocking shingle that mimics Spanish tile	—	6	120	"	\$125	†
Clay tile	Flat Georgian shingle	To look like wood shingles; red, gray, black, mossgreen, cedar, and terra cotta	3/8 - 1"	4	1400	Non-combustible	\$700 (large orders)	75+
	English interlock (Williamsburg)	Flat interlocking	3/4 - 7/8"	4 1/2	800	"	\$250	100+
	Spanish	Interlocking; installed without nailing batten	1/2"	4 1/2	850	"	\$219	100+
	Barrel	Half-cylinders installed on nailing battens	"	4 1/2	1350	"	\$392-432	100+

* Approximate cost per square in other materials: Terne-coated steel, \$181; Stainless steel, \$375; Terne-coated stainless, \$397; Copper, \$516.

† Copper and lead-coated copper, as well as modern self-healing alloys such as 'Galvalume,' don't need to be painted. Factory-applied finishes are guaranteed by the manufacturer, usually for a period of 20 years. Traditional metals such as tin- and terne-plate will last indefinitely only if they are kept painted.

of a wood roof, unless your budget allows replacement every decade or so. Handsplit shakes must be interlaid with 18-inch strips of felt, but they still go on over open sheathing.

● **METAL** -- Metal roofing comes in a few shingle designs (including 'barrel tile') as well as sheet roofing, which is laid with flat, standing, or batten (ribbed) seams. Copper and lead-coated copper are considered superior. Also available are tin- and terne-coated steel, lead, zinc, stainless steel, galvanized steel, aluminum alloys, and various alloy- and enamel-coated versions. Labor is much of the cost of a metal roof, so it makes sense to choose the best material you can afford. Copper, lead, 'self-healing' alloys, and factory-finished metals don't need maintenance, but other traditional metal roofs will last indefinitely only if they are kept painted.

● **SLATE** -- Vermont and Virginia slate last indefinitely, so if your slate roof leaks, look first for missing slates, nails letting go, and gutters and flashings that need repair. An unscrupulous roofer may tell you to replace a roof just so he can resell the reusable slate! If the slates themselves are not delaminating or crumbling, they can be relaid with new nails and flashings (copper strongly preferred). Pennsylvania slate may begin to fail after 40 or 50 years. But if your roofer recommends tearing off your slate roof, ask to see examples of failure in bad slates.

● **CLAY TILE** -- Tile ranges from moderately to very expensive, and it's among the heaviest of roofings. But it will last well over 100 years (manufacturers claim 350). Like slate, tile is brittle. Don't walk directly on it. Lots of moulded shapes are available, as well as flat tiles. And to clear up a common confusion:



About Hiring a Roofer

REROOFING IS time-consuming, laborious, hazardous, and boring," says a popular how-to book, in reference to do-it-yourself roof work. We agree. Some roofs are more easily handled by the homeowner than others, of course. But most people will hire a roofing contractor for major jobs.

TALK ABOUT RISKY! A new roof may be the most extensive and expensive old-house investment you'll ever face. You've got to hire smart. The best recommendation would come from a satisfied previous client with a roof similar to yours. If such a recommendation is unavailable, you start with the Yellow Pages.

THERE ARE different types of roofers: commercial, residential, those who specialize in gutters, leaders, and flashing, and roofers with specialties such as copper, slate, asphalt, or built-up roofing. If framing and

sheathing need work, you might be better off with a general contractor or a carpenter for that part of the job.

● **GET THREE BIDS**...more if you have serious doubts about any of the first three. Avoid an inexplicably low bid as much as an overly high one: You're probably not going to get the same service. If all else is equal, it makes sense to take the lowest bid. First, though, you have to find out if all else is equal.


● **COMPARE APPLES WITH APPLES**. One bid may be for over-roofing alone. Another roofer may be planning to remove the existing shingles. The price bid by the third may include replacement of flashings as well as roof covering. Always inquire whether flashing and drainage (gutters, leaders) are to be repaired or replaced, and with what.

● **INSIST ON AN ACTUAL SAMPLE** of the roofing material being suggested: Everything looks good in a brochure. Know the type, color, weight, manufacturer, estimated quantity, and guaranteed or estimated life of the material.

● **GET REFERENCES**. Because all new roofs look good, be sure to check on one that's been in service for at least a year or two. "It seems like every time the factory lays off 50 workers, ten new roofers appear," warns one of our consulting roofers. Hire a roofer who has been in business in your locality for a good while. Check with the Better Business Bureau and the county consumer agency to see if any complaints have been filed against your potential roofer.

● **WORRY ABOUT INSURANCE**. It's not a problem if you pick a reputable roofer, but check anyway. The contractor should carry liability coverage, worker's compensation, and a license (if required locally). Also, you'd best have a comprehensive homeowner's policy yourself.

● **SIGN A COMPLETE CONTRACT**. It should include completion dates, specific materials to be used, insurance coverage, how cleanup is to be handled and by whom. If you're doing some of the work yourself and the contractor is doing the rest, be sure this is explicitly spelled out. Sharing the work may save you some money, but it's the riskiest deal contractually.

IF YOU NOTICE a job in progress or a recently laid roof much like yours, don't hesitate to go to the door and ask the house owners who did the work. An unusual or noticeably superior job shows that the owners spent time and money. If it were your house, wouldn't you be delighted that a stranger had noticed? 

A THANK YOU TO SOME SPECIAL ROOFERS

Much of the information in this Special Roof Issue comes not from previously published books and articles, but from the recommendations of manufacturers and roofers themselves. In addition to contributors acknowledged later in this issue, we'd especially like to thank Jeff Alte, Alte Roofing Inc., Somerville, N.J.; Frank Bogardus, Manlius, N.Y.; and Andrew Buckner, Blackmore and Buckner Roofing, Indianapolis, Indiana.

Wood-shingle ingenuity — *If you're a roofer, a building historian, or a homeowner with one of these roofs (intact or buried in asphalt), this article may be a revelation. The rest of us nevertheless find it a delightful curiosity. And the discovery of these lost roofs is more evidence that so-called 'plain' post-Victorian residential architecture is full of surprises!* — Ed.

AMERICAN 'THATCH'

by Larry Jones
Utah State Historical Society

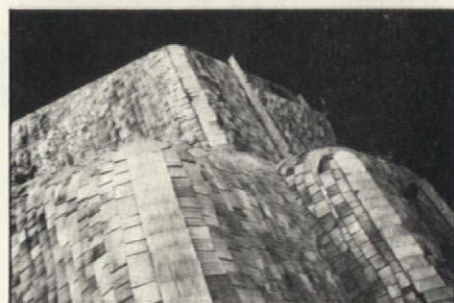
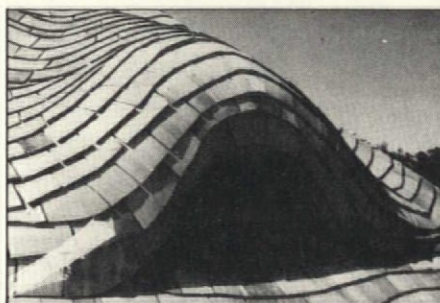
CONFRONTED WITH his first example of wood 'thatch,' roofer Gary Cooke said it "looked like a big Hershey kiss that melted and was dripping off the edges." The asymmetrical, rounded shapes of these roofs are so contrary to the flat, sharp-edged roofs we're accustomed to that they draw a lot of attention -- especially during a sensitive reroofing job. And those are rare indeed: The methods are largely a mystery, and the cost is well over twice that of a traditional wood-shingle job.

THERE ARE, however, a few innovative contractors who can't say no to such a creative challenge. These people have taken it upon themselves to relearn, if not reinvent, ways of bending and laying these peculiarly American roofs.

'THATCH' ROOFS are an outgrowth of the popularity of English Tudor and cottage designs early in this century. As early as 1912, building magazines showed examples of wood shingles persuaded to look like thatch. But the style was most popular in the 1920s and '30s, due in part perhaps to the advertising of the Creo-Dipt Company of North Tonawanda, New York, manufacturers of wood shingles. This firm, as well as Minnesota's Edam Company, began national marketing of special pre-bent, stained shingles.

THOROUGHLY DETAILED instructions, framing illustrations, and specifications for their products were found in Sweet's Architectural Catalogs. To further simplify the complex and novel process of designing roof framing and estimating shingles, the firm offered free reviews of architects' and builders' plans.

ROOF FRAMING was specified to have open shingle lath to allow shingles to dry. Rounded gables, eaves, and valleys had to be designed with a

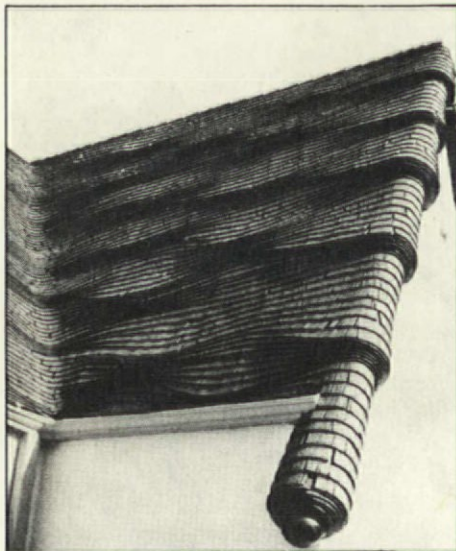


Views of a new wood-shingle thatch roof in Sioux Falls, South Dakota, laid by C & H Roofing. The original, unique roof structure, together with a rediscovered shingling method, create a roof that is the major architectural feature of the English cottage-style house. Can you imagine such a roof covered with any modern material?

20-inch radius to properly accept the factory-bent shingles. Creo-Dipt warned that, while shingles could be formed lengthwise (with the grain) to any radius desired (to 5 inches), they could not be bent against the grain to a radius of less than 20 inches.

TODAY'S ROOFERS tackling a reroofing job must not only replicate the original roof patterns, but also reinvent the machinery for softening and bending the shingles. Alas, pre-bent ones can no longer be ordered from Creo-Dipt!

THE SAME SOLUTION to the perplexing problem, "How do you bend the suckers?", seems to have been arrived at independently by each modern roofer. Steam bending is almost always the answer. Salt Lake City roofer Kraig Clawson found that boiling shingles in water often caused them to turn black or break. Gary

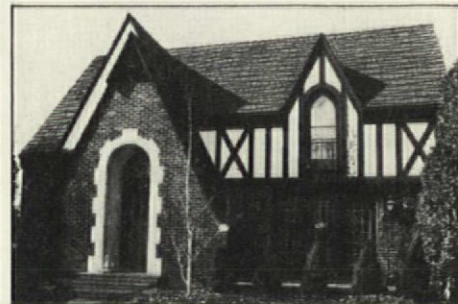


Carefully designed wave courses, closed valley, and wrapped gable end on an original roof.



The sad but common condition of 'thatch' roofs today: Cheap, clumsily applied asphalt shingles never look worse than on these undulating roofs.

This original roof in Utah proves not all designs had rolled gables and eaves.



Cooke in Sioux Falls settled on steaming after failing with an ammonia-water soak and boiling.

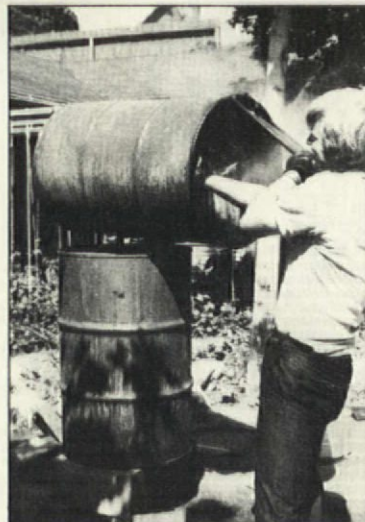
ONCE SOFTENED, shingles are immediately placed in a metal break, pressed, and allowed to cool. Kraig Clawson now uses a simple yet sophisticated air-powered press to bend shingles. The press was designed by a talented machinist friend named Verl Perry, who incidentally made parts for the University of Utah's famous artificial heart.

BOTH Clawson's Great Basin Roofing and Cooke's C & H Roofing produce most of the standard required shingle shapes in their shops, stockpiling them for current and future projects. But special bends typically have to be accomplished at the job site. The most difficult are compound curves, such as the bowl-shaped shingles shaped to wrap a corner.

APPLICATION of the shingles requires artistry and a lot of time. Photography is used by both companies to document the original shingle pattern before the old roof is torn off. Each roofer has so far developed slightly different methods of laying the shingles, based on the roofs each has been hired to replicate.

APPARENTLY, these 'thatch' roofs were laid in several ways. The Creo-Dipt preferred method was to lay the shingles much like a standard roof, with shingles laid straight up and down with vertical joints. This method required specially shaped butt ends...but there is no factory supplying such cuts. So Kraig Clawson has created several templates to mark the necessary wave patterns onto the shingles. Then he uses a small, four-inch circular saw, set to a shallow depth, to freehand-cut each course of already-laid shingles along the template line.

OTHER WOOD THATCH ROOFS were laid randomly, using regular square-butt shingles. This process, used by Gary Cooke, requires that the shingles be tilted out of vertical to give those horizontal waves; the butts remain flat. But for the shingles to fit close together, their sides must be tapered. Gary and his partners have coined names for these shingles,



Shaping the shingles: Great Basin Roofing's first propane steamer looked like a backyard still. Water is boiled in the bottom barrel. Steam passes through a pipe to the upper barrel, which has a steaming shelf inside. If a hot shingle is not shaped and pressed within seconds, it'll break when pressed. Right, a shingle cooling in a C-clamped metal form.



now produced by the thousands in their shop. 'Ups' are shingles tapered from the butt, making the head smaller; 'downs' are tapered down from the head to make the butt smaller.

OTHER, still-anonymous roofers have undoubtedly tackled such a roof. Perhaps someone has come up with better steaming, bending, or shingling methods. Please let us hear about it: Information shared might save a roof someday. 🏠

A thank-you goes to Gary Cooke, Barry Huber, and Mike Lieneman of C & H Roofing, and to Kraig Clawson and Clark Whetten of Great Basin Roofing. In hopes of stimulating interest in American 'thatch,' this enthusiastic bunch is eager to share their hard-won knowledge. Contact C & H Roofing, 1713 South Cliff Ave., Sioux Falls, SD 57105, (605) 332-5060; Great Basin Roofing, 5704 Highland Drive, Holladay, UT 84117, (801) 277-6813. Also, OHJ will send out a packet of the information that we didn't have room for here to roofers and homeowners who are seriously considering the restoration of one of these roofs. Write to 'Thatch,' The Old-House Journal, 69A Seventh Ave., Brooklyn, NY 11217. Please enclose \$1.00 to cover photocopying and postage.

Substitute Roofings - Credible Stand-Ins For Clay Tile, Slate, and Wood

A brief review of materials available, and a summary of the fireproof wood-shingle imitations used at Colonial Williamsburg.

by Patricia Poore

with special thanks to Thomas H. Taylor Jr.
Chief Architectural Conservator
Colonial Williamsburg Foundation, Virginia



Two outbuildings in Colonial Williamsburg: One of these wood shingle roofs is an impostor. Can you tell which one is the real wood shingle roof? *

UNLIKE ALUMINUM SIDING and plastic beams, substitute roofings are tolerated, even embraced, by preservationists. For two good reasons, I think: There are times when resorting to imitation roofing is an inescapable necessity. These roofings are sold because they offer advantages over "the real thing." And second, a few of them are quite convincing in their simulation of a more traditional roof.

THREE MATERIALS are most often imitated: slate, terra-cotta tile, and wood. The overwhelming reason for choosing an imitation over slate or tile is cost. A secondary reason is weight, especially in the case of metal shingles standing in for heavy, breakable, harder-to-lay clay.

COST IS NOT the primary reason for seeking an alternative to wood shingles. Because of fire codes and concern for safety, fireproof shingles imitative of wood have been sought since the 1920s. Real wood shingles that have been chemically fire retarded are not only costly, but also suffer from brittleness and a shortened life due to the treatment. On the other hand, wood-shingle substitutes developed in clay, cement-asbestos, and reinforced concrete are extremely durable. A concrete tile, say, can last 75 years, longer even than first-growth, hand-split cypress, and certainly far longer than today's red cedar.

ONLY A FEW COMPANIES manufacture substitute roofings; we believe we've listed all the appropriate ones in this issue. (See pages 75 and 77.) Supradur's slate-like asbestos-cement shingle is 63% the weight of real slate, and costs from about one-half to one-tenth as much as Vermont slate, depending on the color. Monier's concrete "slate" is cheaper still, though heavier than slate itself.

TERRA-COTTA TILE is mimicked by Monier's glazed concrete tile, and by W.F. Norman's metal barrel-tile shingles. Again, concrete tiles are heavy but far less expensive than clay. The metal barrel tiles are somewhat less expensive than clay, lighter in weight, and easier to ship and handle. They may also

be more sensible than real clay for northern climates. (Metal barrel-tile roofing is nothing new. Many of those 1920s Spanish Colonials and Mission Bungalows you see have painted metal--not clay tile--roofs!)

WOOD HASN'T BEEN as easy to imitate. To this day, you'll see advertisements for wood-look shingles in concrete, clay tile, asbestos-cement (called 'mineral fiber'), asphalt or asphalt-fiberglass, even metal. Some, like those shown in this article, are successful imitations. Others have the right spirit but lack credibility, such as the top-of-the-line wood-look shingles in asphalt. A few (not listed in this issue) are ludicrous, presumably arising from the same grotesque aesthetic that gave us wood-grain vinyl siding.

THE REST of this article deals with the search for a fireproof, long-lasting, and accurate wood-shingle substitute in Williamsburg. Imitative roofing there is intended to fool the eye, no question about it. The materials they have used have been custom-specified and produced in special lots. They were also more expensive than wood shingles. That is to say, they cost much more than asphalt shingles.

SO IT ISN'T FAIR to compare such premium roofing materials to wood-look asphalt shingles. Low cost is the overriding consideration in the manufacture of asphalt shingles. People choose them over wood because they are cheaper to buy and install.

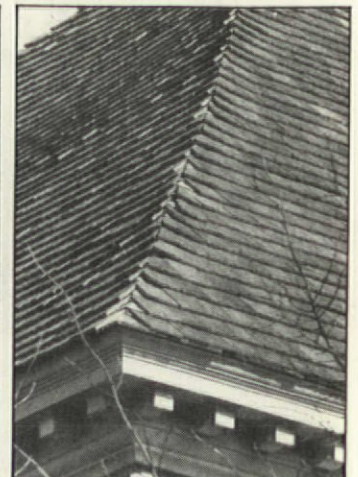
THERE'S A DIFFERENCE between simulated materials--custom copies--and materials which are merely sympathetic to the original design. Despite the impression you may get reading manufacturers' brochures, asphalt "wood" shingles aren't designed to fool anybody. Rather, these shingles, usually among the best of the line, can be seen as more sympathetic than cheaper production shingles in suggesting the color, texture, and shadow lines of wood.

The woodshed on the left has a wood shingle roof; on the right are asbestos-cement shingles. *



Clay shingles are fairly convincing on this small building, a stable in the historic area compound.

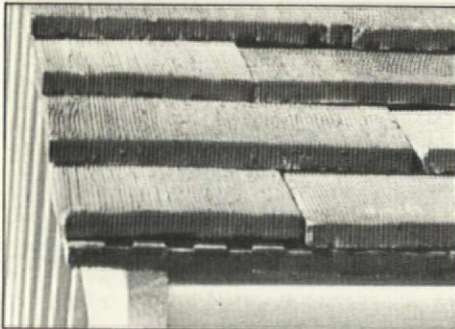
Zoom lens shows cut red edges on clay hip tiles, which roofers had to wire on with difficulty.



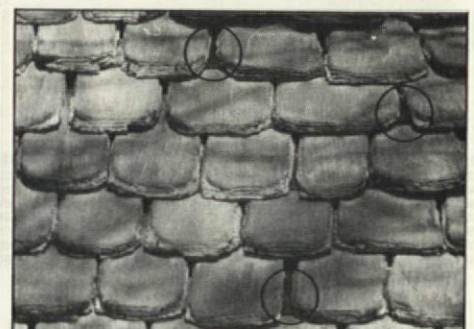
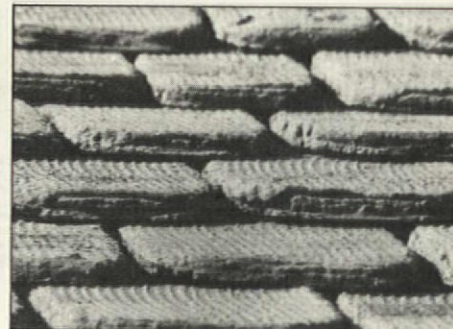
Even up close, square-butte clay tiles are admirable wood stand-ins. But all broken tiles show tell-tale red. Tabs hold replacements.

A butt-end view not usually apparent. Actually, color, size, ridges and eaves are all good wood simulations on these new concrete tiles.

Not as successful, these recent concrete tiles are too big — and strips of copper between courses are visible from across the street.



Tile disadvantages: Starter courses at eaves and regularly-scored surfaces give clay away when viewed close to eye level.



ASPHALT SHINGLES have never been considered at Colonial Williamsburg; therefore, I won't discuss them any further here. We're not dismissing or disparaging asphalt shingles, though. They may be the only conceivable choice for some homeowners. For early 20th century houses, they may be quite appropriate. Two good sources are listed on page 74.

Through the camera's eye, a closeup of concrete tiles. Varied sizes and texture simulate wood, but broken corners are a give-away.

Concrete tends to look 'big,' but this roof fools most people. . .perhaps because mossiness and moisture staining look like wood rot!



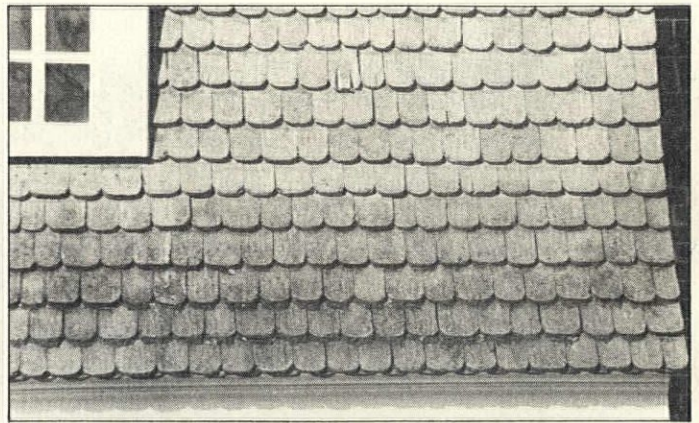
COLONIAL WILLIAMSBURG has used three wood-shingle substitutes in the historic area. The photographs describe the clay tiles, reinforced concrete tiles, and cement-asbestos shingles which have been used.

THE CLAY TILE used in 1931 and again in the '50s was made by Ludowici-Celadon in 5-, 6-, and 7-in. widths. Today, they offer a production tile called the Williamsburg, 8½ inches wide, but this interlocking tile is only an adaptation of those used in the restoration. A little-known fact: Ludowici will still produce the original overlapping tiles, now called the Georgian, in lots as small as 100 pieces. Colors, green, gray, cedar, and black, are quite good. Georgian weight is 1400 pounds per square, while the so-called Williamsburg tiles weigh 800 pounds per square.

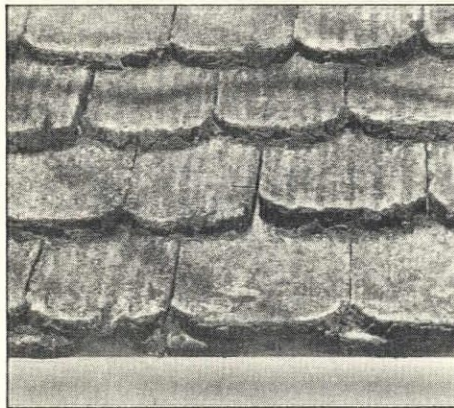




These asbestos-cement shingles would not arouse suspicion in the average visitor to Colonial Williamsburg.



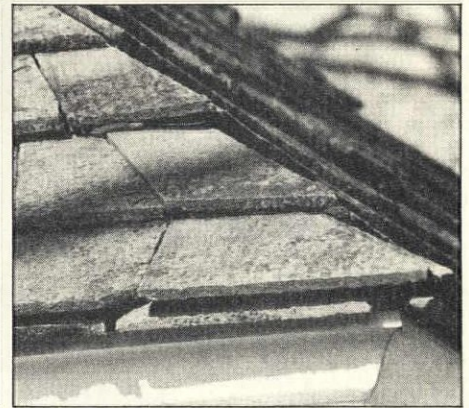
A closer look reveals the secret to successful mimicry: variation. Note the apparent randomness of shingle widths, and their different textures. A few shingles were even fabricated with 'splits.'



Up close, these asbestos-cement shingles still show a remarkable resemblance to old, weathered wood shakes.



Here, the real thing. If these pictures were in color, you'd see that the moss growing on cement is different from that on wood.



Butts and cut edges on cement-asbestos are more convincing than those on clay tile, or even on concrete.

SQUARE-BUTT CONCRETE TILES from Hendricks were first used on two buildings between 1934 and 1940. These tiles are still in place and show little deterioration or rusting of the reinforcing rods. Commercially available tiles are sold today in both square and round butts. Square-butt tiles come in widths of 6, 7, and 8 inches; round-butt have widths of 5, 6, and 7 inches. (The original Williamsburg concrete tiles were produced--not easily--in 3- to 6-inch widths.) The Hendricks "fine-grained" texture is the one to choose of three offered.

HENDRICKS CONCRETE tiles are unglazed; the mixture contains water-absorption inhibitors. Moss and fungal growth on some concrete roofs suggest that they do retain moisture, yet rusting of the steel reinforcing bars has never been noted as a serious problem. Tile color comes from a pigmented cement slurry set on the still-wet concrete during production. Customers can order any of the neutral woodlike hues offered, or specify mixed-color tiles. In addition, moss-effect tiles are produced which have had a green pigment "salted" on during manufacture. Different color tiles can be laid randomly on the roof for a naturalistic effect.

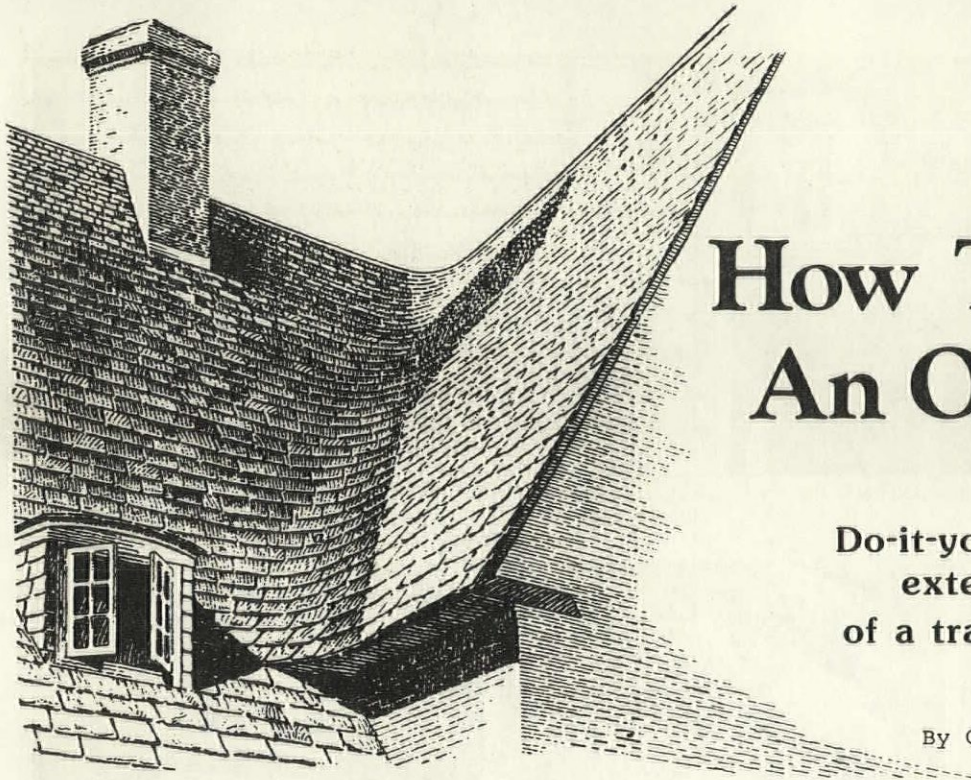
AFTER CONSIDERABLE time spent examining the substitute shingles at Colonial Williamsburg, my conclusion is that the cement-asbestos shingles are the best copy. They're also lighter in weight and extremely durable.

Such a conclusion, shared by people at Williamsburg, makes us sad, because the shingles are not sold today. They were manufactured by the Mohawk Asbestos Shingle Company, which went out of business around 1941. Colonial Williamsburg subsequently bought their machinery and, before it finally wore out, produced a stockpile which is now nearly depleted.

TODAY, ONE COMPANY makes asbestos-cement shingles which are technically okay but unacceptable visually. (Perhaps that's because a major customer for them has been not Williamsburg, but McDonald's restaurants. They would not be looking for accurate wood reproduction.)

THE ASBESTOS used in the manufacture of these shingles clearly presents problems with government regulation and public acceptance, besides the potential health hazard. The asbestos is a fireproof, long-weathering reinforcement for the concrete. A likely modern substitute for it is fiberglass. Unfortunately, fiberglass imparts a reflectivity (shine) that makes the shingles less convincing.

OTHER POSSIBILITIES EXIST. Some manufacturers have considered using polypropylene fibers to do what asbestos used to do. A market would seem to exist for a fireproof, rot-proof, long-lasting, and plausible wood substitute, both for historical restorations and homeowners. Is anybody listening?



How To Repair An Old Roof

Do-it-yourself ways to extend the life of a traditional roof.

By Clem Labine

MOST ROOFING CONTRACTORS specialize in one kind of material. And for 99% of today's roofers, that material is asphalt shingles. That's why, when you call your friendly neighborhood roofer and ask him to repair your slate (or tile, or metal, or wood shingle) roof, he's likely to say: "You can't repair that. You'll have to replace with asphalt shingles." But beware: When a roofer says, "It can't be fixed," he may simply be telling you he can't fix it.

ON THE OTHER HAND, every roofing material does have a natural lifespan. When that life is up, you are better off replacing the old roof rather than spending time and money patching material that's worn out. This article is not about roof replacement, however. Rather, we'll focus on do-it-yourself repair methods that will allow you to get extra years of life out of your traditional roof. By eking out, say, four extra years from your existing roof, you could build up enough money in your Roof Replacement Fund so that you can replace with an appropriate material that will preserve the character of the house.

TECHNIQUES FOR REPAIRING asphalt shingle roofs have been amply described in the do-it-yourself books,* so we won't deal with them here.

Locating The Leak

LOCATING THE LEAK is often the hardest part of a repair job. With a flat roof, the source of the leak will usually be found directly over the spot on the top floor ceiling. But with a steeply pitched roof, water can travel many feet along roof boards and rafters before showing up as a stain on the ceiling.

* For example, there's a good section on asphalt roof repair in the book "Modern Roofing," which is part of the three-book set listed on page 77E.

IF YOU CAN SEE the underside of your roof from the attic, observe the roof during a rainstorm. You should be able to see where the water is coming from. If there's a hole clear through the roofing or flashing, push a wire up through the hole to mark it from the top.

IF IT'S NOT POSSIBLE to push a wire through the roof at the source of the leak, you'll have to mark its location by measuring from the nearest convenient reference point, such as a chimney, skylight, or vent pipe.

THE MOST DANGEROUS part of the repair job is getting to the source of the trouble safely. You'll find safety tips on page 69.

The Black Goop Solution

BECAUSE TRACING the precise source of a leak is very time consuming, roofers who are called in to make repairs often resort to "the black goop solution." Rather than find the exact source of the leak, they instead spread copious quantities of roofing cement in every suspicious area. In some cases, an entire roof will be coated with roofing cement.

A DAB OF ROOFING CEMENT is a perfectly acceptable repair for roll roofing and built-up roofs. There, both the roofing and patching material are the same, and there's no visual clash. However, on other roofs such as slate, tile, wood shingles and metal, "the black goop solution" puts black pimples all over the roof.

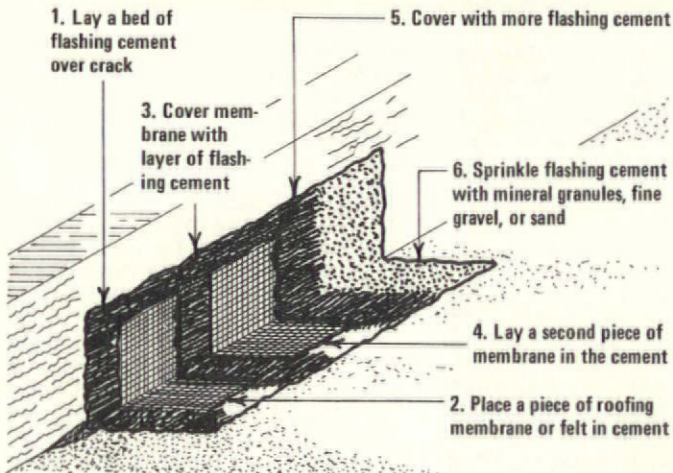
BESIDES LOOKING TERRIBLE, patches of roofing cement are only temporary. Roofing cement will dry, crack, and curl after exposure to the sun. Once the patch loosens, water can get trapped under the roofing cement--and actually hasten roof deterioration. In addition, some asphaltic materials can corrode certain metals.

ONCE YOU PUT on a roofing-cement patch, you've let yourself in for another maintenance program. The patches should be inspected twice a year to make sure they aren't cracking. The only time when roofing-cement patches make sense on a non-asphalt roof is as a frankly temporary measure to nurse a few extra years out of a roof prior to total replacement.

Roll Roofing

MOST CITY ROW HOUSES have mineral-surfaced roll roofing. A few still have the older type of built-up roofing, which is discussed separately. The mineral granules on roll roofing reflect the sun's rays, and thus prolong the life of the asphalt felt underneath.

REPAIRING A CRACK IN ASPHALT FLASHING



MOST LEAKS IN FLAT ROOFS occur where the roof meets a vertical element, such as a parapet wall, skylight or vent pipe. Cracks and tears in asphalt flashing can be fixed as shown in the diagram above.

THE LAPPED JOINTS in roll roofing sometimes open. Frequently it's possible to force some

BLACK GOOP GLOSSARY

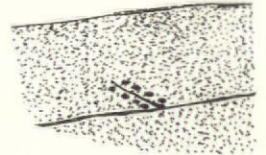
The black substances used in roofing work are referred to by an astonishing number of terms. There are, however, only three basic types of asphaltic materials (usually sold in one- and five-gallon pails) that the homeowner is likely to come across:

PLASTIC ASPHALT CEMENT—A trowelable - consistency black asphaltic mastic used for flashing and roof repairs. It contains fiber additives to make it sufficiently thick so that it won't run down vertical surfaces. The added fibers used to be asbestos, but today most brands are made without asbestos. Also called roofing cement, flashing cement, asphalt cement, plastic cement, roofing tar, bitumen, and elastic cement.

LAP CEMENT—Not as thick as plastic asphalt cements, lap cement is used to make watertight joints between lapping elements of roll roofing.

ROOF COATING—Thin enough to be applied with a long-handled brush, roof coating is used to resurface roll roofing and built-up roofs that have begun to dry and crack. Also called roof paint.

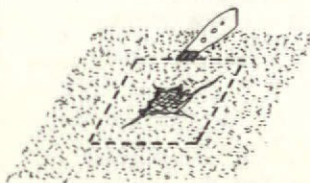
flashing cement under the seam and re-seal it by stepping on it. If the seam won't stay bedded and keeps popping up, slit it and nail on both sides of the slit. Then cut a patch of 90-lb. roofing felt that overlaps the nailheads at least two inches. Coat the back of the patch with flashing cement and press it in position. Secure by nailing with roofing nails one inch apart. Cover the nailheads with flashing cement, and sprinkle fine gravel or sand over the patch.



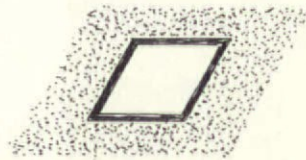
Built-Up Roofing

BUILT-UP ROOFS consist of sheets of roofing felt bedded in layers of asphalt, with gravel spread over the top. Built-up roofing costs about 25 to 30% more than roll roofing, so you don't often see it used on houses these days. Yet built-up roofs last 30 or 40 years --twice as long as roll roofing--so they can be a very good investment.

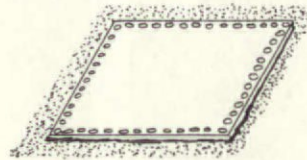
Replacing A Damaged Section In Built-Up Or Roll Roofing



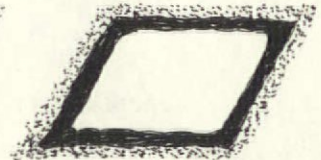
1. Cut out damaged area with a knife. Be careful not to slice any of the underlying roofing felts. On a built-up roof, scrape away gravel with a shovel before cutting. Pick a cool day so that gravel doesn't stick to the roofing.



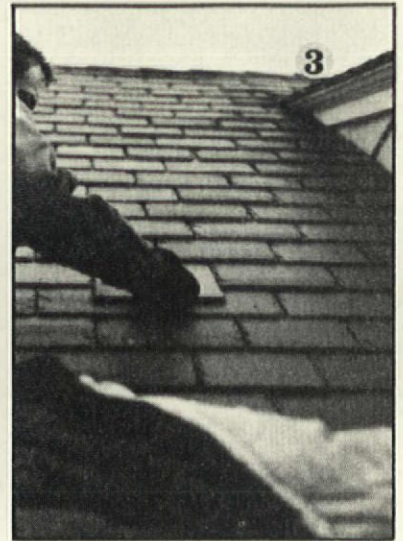
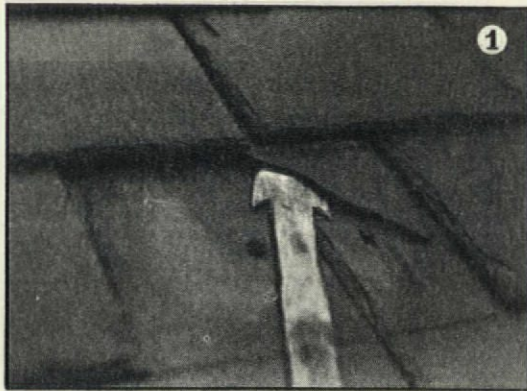
2. Force flashing cement under all edges of the cut. Coat the entire cut-out area with flashing cement. Cut patch from 90-lb. roofing felt that just fits into the cut-out, and press firmly into the cement.



3. Cut a covering patch from 90-lb. roofing felt that overlaps the cut-out two inches on all sides. Coat bottom of the patch with flashing cement and press it into place. For additional security, fasten the edges with roofing nails every inch.



4. Cover the nailheads with a coating of flashing cement. For longer service life, sprinkle the flashing cement with mineral granules, fine gravel, or sand. The mineral coating reflects the sun's rays and helps prevent cracking.



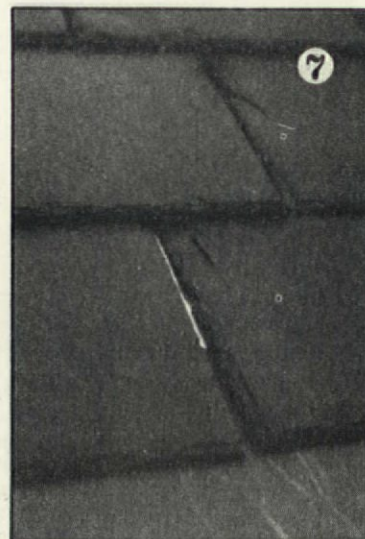
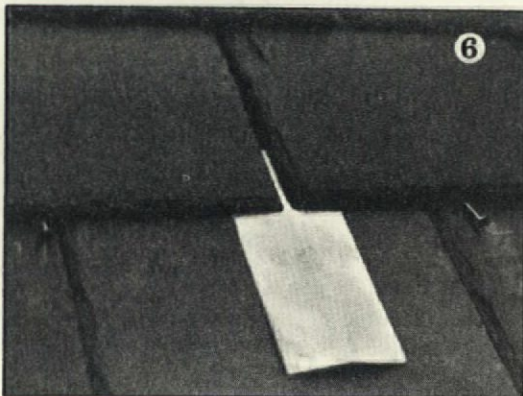
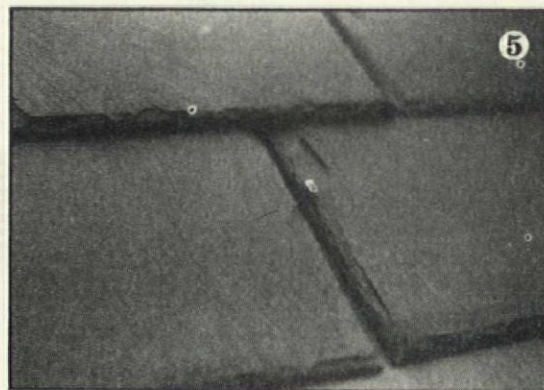
Replacing A Slate

FIRST PRIORITY is to work safely on the roof. Use a ladder hook that hooks securely over the ridge of the roof and helps spread your weight. Putting a heavy blanket under the ladder prevents mechanical shock that could break additional slates. Next, remove any of the remaining broken slate by using the slate ripper (1). Slip the thin end under the broken slate and hook it on one of the two nails holding that slate. By hammering downward on the handle of the ripper (2), you should be able to cut through the nail. Cut the other nail in similar fashion. Now, all of the broken slate should

slide out. If the adjacent slates are bearing too heavily for you to get the slate ripper into place, force nails gently under the edges of the slates to wedge them up. (Or you can try using the ripper like a shoehorn.) Slide the replacement slate into position (3). After aligning it carefully, use a nailset to punch a hole right below the slot of the two covering

slates (4). Make sure that you punch the hole above the double coverage; you want a hole ONLY in the new slate—not in the one below it. If you are hesitant about punching slate, mark it and drill it on the ground.

HOLD THE NEW SLATE with a slater's nail—a heavy gauge copper wire nail with a large flat head. Its length should be twice the thickness of the slates plus one inch. 3d nails are appropriate for standard-thickness slates. DO NOT use common wire nails or shingling nails. Drive the nail (5) between the covering slates. In the photo, the head of the nail has been clipped to allow it to pass between the slates. Alternately, you could chip a little out of each adjoining slate. Use a nailset to drive the nail down to the surface of the new slate. The slate should hang on the nail; if you drive the nail too tightly you may break the slate.



BEND a strip of copper about 2 in. wide and 6 in. long into a slightly concave shape to make a cover for the exposed nailhead (6). (Some roofers call this cover a "baby.") Slide the cover up so that its bottom edge is 2 in. below the nailhead. If necessary, tap a screwdriver against the cover to push it up, or use nails as wedges as shown in the photo. Friction holds the cover in place (7), keeping rain out of the nail hole. If the cover is placed concave side up, it will channel rainwater better than placing the convex side up as shown in the photo.

IT IS ALSO POSSIBLE to hold a replacement slate with the copper tab method shown on the opposite page. These repair methods are worthwhile if only random slates are breaking. However, if slates are letting go because iron nails were used instead of copper in the original installation, you would be better off taking up the whole roof and re-laying it with copper nails.

FLASHINGS are the weak point on built-up roofs. When torn or cracked, they should be patched as shown in the diagram on the previous page. The patch of roofing membrane and flashing cement should extend at least six inches on all sides of the crack.

IF THERE ARE BARE SPOTS where the gravel has weathered away, sweep the area clean, then apply a coating of brushable roof coating. Sprinkle the coating with a layer of gravel. (You can usually scavenge gravel from another part of the roof where it has piled up.)

Slate

ALTHOUGH SLATE is a long-lasting material, a few slates may break, either from freeze/thaw cycles, or from mechanical shock, such as falling tree branches or someone walking on the roof. Replace slates as shown on the opposite page.

SLATES MAY ALSO be falling if the nails are rusting away. This occurs when the original installer tried to save money by using galvanized nails instead of copper. In this situation, there's no really satisfactory solution short of taking all the slates down and re-laying them using copper nails.

SLATE GRANULES washed off the roof can erode metal flashings. It's possible to solder patches on metal flashing, but the odds are that the entire flashing is a candidate for replacement. When replacing flashing, you have to lift some slates. Putting them back will require the special nail-and-cover technique shown at the left.

A TEMPORARY PATCH for eroded flashings can be made by inserting a piece of 15-lb. roofing felt under the slates and bedding it in flashing cement. The felt should project far enough over the flashing so that it covers the holes. This is only a short-term expedient, however. For more details about slate roofs, see the May 1980 issue of OHJ.

Wood Shingles

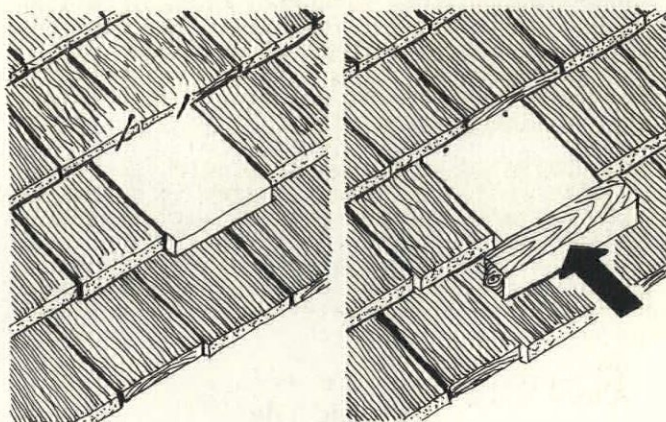
WOOD SHINGLES may curl and split, or may become thin through weathering. If it's only a random shingle here and there, replacement is a relatively simple do-it-yourself job. If the number needing replacement approaches 10-15%, however, it's time to think about replacing the entire roof.

TO REPLACE a wood shingle, remove the damaged unit by splitting it with a chisel into several smaller pieces until all parts are free of the nails. Cut the heads off the nails, either with a slate ripper, or with a hacksaw blade that's inserted up under the shingles. The replacement can be held with a copper tab, or the special nailing technique shown.

A TEMPORARY REPAIR for a split wood shingle can be made by inserting a piece of sheet metal under the damaged shingle.

PAY SPECIAL ATTENTION to the flashings. Rain can leach tannic acid out of wood--especially

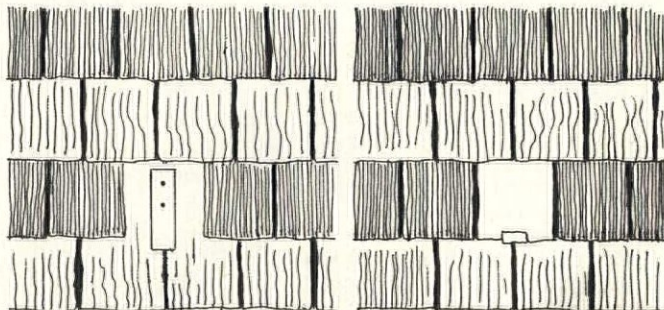
Two Ways To Fasten A Replacement Wood Shingle



THE HIDDEN NAIL METHOD

1. After removing damaged shingle, slip in replacement. Let it protrude $\frac{1}{4}$ in. below other shingles in the course. Toe-nail two finish nails immediately below upper course.

2. With hammer and wooden block, strike the end of the new shingle, driving it up level with the other shingles. This bends the nails and puts heads below upper shingles.



THE COPPER TAB METHOD

1. Nail a strip of 1-in. copper (20 oz.) in area of missing shingle. Use copper roofing nails.

2. Insert new shingle and bend tab up. Trim off any excess so sliding ice and snow won't loosen tab.

red cedar--and the acid can corrode copper and other metals.

Cement-Asbestos Shingles

CEMENT-ASBESTOS shingles (also called mineral-fiber shingles) are made from asbestos fibers embedded in portland cement. They make an attractive and durable roof; we've seen them last 50 years and longer. Having a gray color, cement-asbestos shingles are sometimes mistaken for slate.

OLD CEMENT-ASBESTOS shingles absorb a fair amount of water during a rain, and thus stay damp for a while. As a result, on some cement-asbestos roofs you'll find moss and other organic growth. Normally, this isn't a problem until the moss builds up to a point where it acts as a small dam, causing backup of water on the roof. These accumulations should be re-

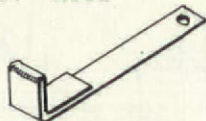
moved by hand scraping when they build up to troublesome proportions.

LIKE SLATE AND TILE, cement-asbestos shingles are brittle, and thus some will break from time to time. Replacement technique is the same as for slate: Use either the nail-and-cover or copper tab methods. You have to be careful when working on a cement-asbestos roof not to break additional shingles.

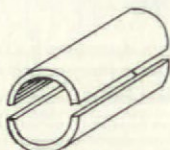
TO FIND MATCHING replacement shingles, check your attic and outbuildings to see if a thoughtful roofer left a batch of extra shingles for you. If not, check roofers in the Yellow Pages to see who might have salvage material. As a temporary expedient, you could cut a piece of sheet metal or roofing felt to the appropriate shape and paint it to match.

Ceramic Tile

BROKEN CERAMIC TILES are replaced fairly easily. As with slates, the hardest part is getting to the trouble spot without breaking more tiles. See the tips in the slate section. If any damaged tile remains, remove it by breaking it up with careful hammer blows. Cut the nail with a slate ripper, or insert a hacksaw blade under the covering tile. Hold replacement tile with a copper tab as shown below. Use a double thickness of copper at the end of the tab. This extra stiffness helps keep the tab from getting unbent from the weight of the tile or the force of descending ice and snow. Finding replacement tiles that match can be a problem. You may get lucky and locate a dealer in salvage roofing. If you just need a couple of pieces of barrel tile, you can fake it. Get a piece of PVC drain pipe, slice it in half, and paint to match.

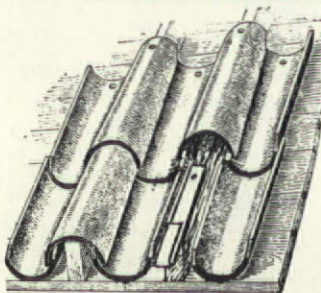


Use double thickness at bent end of copper tab.

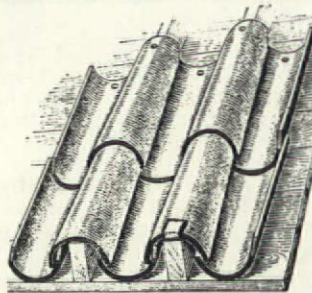


Replacement barrel tile can be made by splitting a section of PVC pipe.

REPLACING A BROKEN BARREL TILE



1. After removing broken tile, fasten copper tab to nailer strip. Use a copper nail.



2. Slip new tile in place and bend copper tab up to hold the tile in position.

Sheet Metal Roofing

A POPULAR FIX-IT BOOK has this to say about repairing sheet metal roofs: "Leaks are stopped by coating with roofing cement or asphalt paint." This is breathtakingly bad

advice! Refer to page 64 for the dangers of "the black goop solution."

IF SOLDERED SEAMS are broken, they can be re-soldered. The cause of the breaks, however, was probably faulty design or installation. Expansion and contraction of the metal sheets strained the joints so that they opened. Even though you re-solder them, odds are they'll open up again unless expansion joints are installed that allow for movement in the roof (no small task!).

TIPS ON SOLDERING METAL ROOFS

1. With chemical paint stripper, remove any paint from the metal surrounding the patch. If there's any roofing tar, remove it by scraping, followed by scrubbing with kerosene, gasoline, or mineral spirits. (Caution: These solvents are VERY flammable.)
2. Clean both the roof and the patch piece by scouring with a wire brush or steel wool.
3. For soldering copper: Apply muriatic acid for 60 seconds to dissolve any oxides. Wash and wipe dry. Paint on liquid soldering flux (zinc chloride). Apply flux ONLY where you want solder to go. Pre-tin the area by heating with a soldering copper and applying a thin coating of solder. Apply patch and hold in place with heavy weight, or fasten it mechanically with two copper rivets or nails. Solder as indicated below.

For soldering galvanized steel: Apply muriatic acid as in step number 3 above. The muriatic acid will also serve as the flux, so after 60 seconds leave acid in place, apply patch, and solder as indicated below.

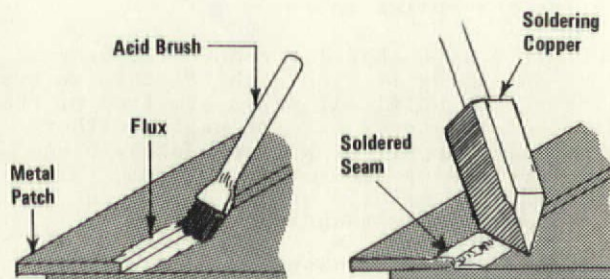
For soldering lead-coated copper, terne, and tin plate: Apply liquid flux (zinc chloride). Apply patch and hold in place with weight or nails. If nails are used, be sure they are of the same metal as the roof. (Otherwise, you risk galvanic corrosion.) Solder as indicated below.

4. Use bar solder that's 50% tin and 50% lead. For roofing work, you'll need a large soldering copper (1-1½ lb. or bigger). A home workbench soldering iron won't transmit enough heat to the roof to get solder to flow under the patch.

5. A well-tinned copper is a must! (If you don't understand about tinning, get a book on sheet metal work out of your library.) You want to heat the metal as well as the solder, so that solder flows into the seam. Since most of the heat is in the base of the tip, hold your soldering copper as shown. If you held the patch with nails, be sure solder covers the nailheads.

6. When soldering is complete, rinse off all excess flux with water and wipe dry. If patch is galvanized, terne, or tinplate, paint patch to match rest of roof.

SAFETY NOTE: Beware using flame tools for soldering on the roof. The danger of setting the roof on fire is always present.



1. Apply flux only where solder should flow.

2. Use base of the soldering copper tip to heat the entire seam.

YOU CAN'T REPLACE a damaged sheet in a metal roof that has interlocking joints. Therefore, patching is the only option. Soldered patches are preferred. If soldering is beyond you, use one of the "cold" patching methods discussed below. These cold patches don't last long, however, and have to be maintained regularly.

Metal Shingles

METAL SHINGLES of galvanized or terne-coated steel will last indefinitely if kept painted. Painting should not be put off until rust spots appear. If there are any rusted areas, wire-brush and apply an iron oxide metal primer before the finish coat is applied.

IT'S VIRTUALLY IMPOSSIBLE to replace a damaged metal shingle because of the way they interlock. The best repair is a soldered patch (see preceding page).


IF YOU CAN'T MANAGE a soldered repair, there are a number of commercial sealing products used for patching metal gutters, such as gutter tape, that you can use for a "cold" patch. Such patches are strictly TEMPORARY.

YOU CAN ALSO make a temporary patch with sheet-metal and flashing cement. Clean the metal with a wire brush or steel wool. Cut a sheet-

metal patch that overlaps the hole at least 3 inches on all sides. Coat the back of the patch with flashing cement. Press the patch firmly into place--just hard enough so that the cement doesn't ooze onto the roof. Paint the patch to match the rest of the roof.

Flashing Repairs

CAP FLASHING may come loose from the reglet in a chimney or other vertical wall. Repair by re-wedging and sealing the reglet. (See pages 70-71 for details on how to wedge a cap flashing.) The reglet can be filled with mortar (preferred) or a high-quality sealant, such as urethane caulk.

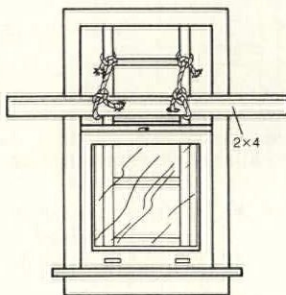
HOLES IN COPPER FLASHING are best repaired with a soldered patch. Aluminum flashing is difficult to solder, so holes would have to be covered by one of the "cold" patching methods discussed in the section on sheet-metal shingles. These patches are strictly temporary, however, and should be inspected at least twice a year to make sure they are still holding. 

SPECIAL THANKS for technical assistance to Mr. Russel Watsky of Westal Contracting Corp., Ossining, N.Y. Westal is a roofing contractor specializing in the installation and repair of metal roofing of all types.

A little apprehension helps keep you safe, but terrified people don't belong up on a roof. If you have any doubts about your abilities or your equipment (ladders, scaffolds, brackets), hire somebody else to do the work. It's tempting to ignore annoying safety warnings. ("It's such a small job - I don't need a harness.") But conjure with this: Every year, healthy and competent people do indeed fall off roofs. We're not talking about statistics, we're talking about OHJ subscribers and contributors. Please, please be careful.

Ladder Safety

1. Inspect the ladder before using it; clean it of any dirt or oil. Do not use the ladder if it's in need of repair. Be sure you use a ladder rated for your weight plus the weight of any tools or supplies you'll be carrying.
2. Don't place the ladder near any electrical lines unless it's a fiberglass model suitable for such use. If you are working near power lines, be careful not to touch them yourself.
3. Don't stand the ladder in front of a door opening. If you must, lock the door or obstruct it and post a warning.
4. Double check the locks on an extension ladder before climbing. Overlap extension ladders at least 3 feet for 36-foot lengths, 4 feet for 48-foot lengths, and 5 feet for 60-foot lengths. Be sure the top section is outermost. Never try to extend the ladder when you're on it.
5. Angle the ladder correctly against the building. The distance from the base of the ladder to the building should be equal to about one-fourth the height of the ladder.
6. Be sure to place the ladder on firm ground. If you can't get someone to hold it as you climb, drive stakes at the bottom of the ladder to prevent the legs from kicking out. The ladder should also be tied at the top, as in the illustration. Extend the ladder a minimum of



from *Modern Roofing*

three feet above the roof edge, but never stand on those top three rungs.

7. When climbing up or down, always face the ladder. Use its handrails rather than gripping the rungs as you climb. Don't load yourself down with too many tools or supplies; make several trips if you have a lot of equipment.

On The Roof

1. Wear rubber-soled shoes that have non-slip tread (preferably sneakers with a high top for good ankle support). Avoid wearing loose clothing.
2. Wear a safety belt or harness and secure it to the chimney (if it's in good shape) or to a window on the opposite side of the house (as in the illustration). Leave only enough slack so you can work comfortably in one area, and adjust the slack as you work on other sections of the roof.
3. Be sure the roof is clear of debris and water. Avoid stepping on damaged or crumbling roofing materials.
4. Use a rack to hold your tools and supplies. Do not stand on it unless it's a scaffold specially designed to support you as well. (See the January 1982 OHJ for more details about constructing and using a roof rack.)

Flashing A Chimney

A Do-It-Yourself Solution To A Common Problem

By Jonathan Poore

Consultant: Russel Watsky,
Westal Contracting

FLASHING makes watertight joints at junctions between roof and walls, around chimneys, skylights, vent pipes, and in valleys and hips where two planes of a roof meet. Often, the flashing develops leaks before the roofing material does.

This Design File shows the most complex flashing problem: making a watertight joint between a chimney and a shingle roof. Chimney flashing is often damaged, badly installed, or missing altogether. Installing proper chimney flashing is within the capability of the competent do-it-yourselfer. Although special roofer's tools make the job go faster, we've adapted the procedures to tools that many homeowners have.

(1) **LAYOUT**—Study this series of drawings to determine what measurements you'll need. If you have an existing chimney flashing that was done correctly, just save the old pieces and use them for patterns. You might also have a cricket, a water-diverting ridge in the roof right behind the chimney. If so, follow the old flashing as a pattern.

Some over-all layout guidelines: Base flashing must extend under the shingles a minimum of 4", and also up the chimney a minimum of 4". Counter (cap) flashing must overlap the base a minimum of 4". Go around corners 2" for double overlap.

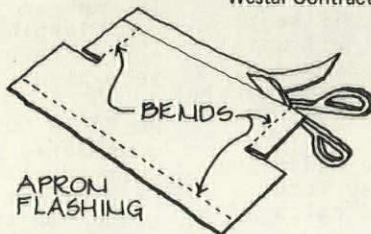
(2) **MATERIALS**—A professional roofer would usually use cold-rolled copper for this job. He has special bending tools that will handle this stiff material. However, you're not sacrificing much if you use the easier-to-work 16-oz. soft-tempered copper. Copper isn't much more expensive than other metals, and if you're doing all the work, there's no reason not to use the best material. If you're worried about green stains from the copper, use lead-coated copper.

Roofing felt should be laid on the roof decking beneath the base flashing if none exists. Use only copper nails with copper flashing (size nails so that you get at least 1" penetration into roof deck).

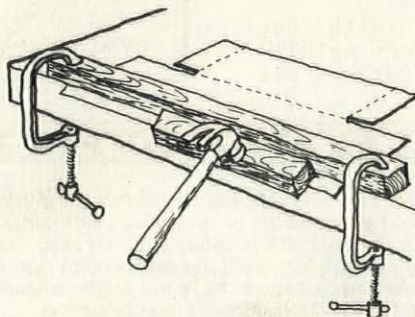
(3) **CUTTING & BENDING**—Mark all bends, cuts, notches. If you have to cut and bend pieces yourself, regular metal cutting shears can cut 16-oz. copper.

If all measurements are taken beforehand, or if you're using old flashing as a pattern, you may be able to get the shop where you buy the copper to cut and bend it for you.

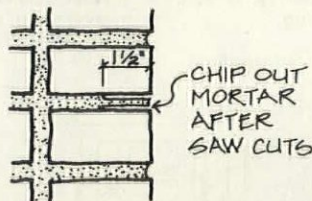
To form pieces without having to buy bending breaks, tongs, etc.: Clamp a 2x4



over the flashing piece, with the bending line at the edge of the work table. Use an additional piece of 2x4 as a block to place against flashing. Bend by striking with a hammer. This will give a 90-degree bend. Where necessary to create a hem, unclamp and continue hammering against a 2x4 to bend metal edge over.

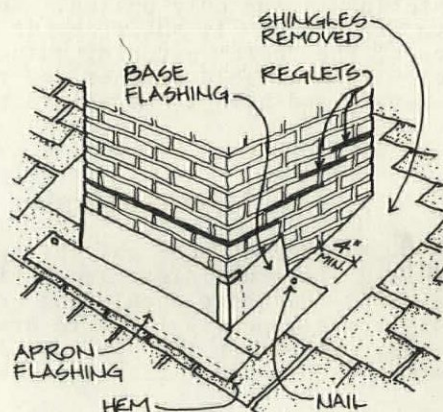


(4) **REGLET**—The reglet is the slot cut in the chimney to hold the cap flashing. The reglet goes straight across the front, is stepped along the two sides, and goes straight across the back (assuming there's no cricket). Use a diamond blade with a water spray attachment in a hand-held circular saw; or a portable grinder with a masonry blade. A circular saw with a carbide masonry blade will work, but not as fast as a grinder. In many cases, a cold chisel is really all you need.



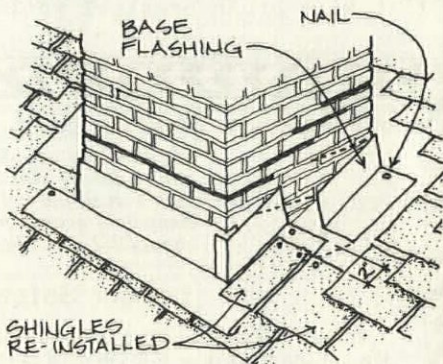
Make two passes in the mortar joint with the blade set at 1 1/2". Then use cold chisel to knock out mortar between cuts.

(5) **BASE FLASHING: APRON**—Remove shingles on three sides of chimney. Remove to next full shingle beyond the 4" minimum. Don't remove any shingles on the down side.



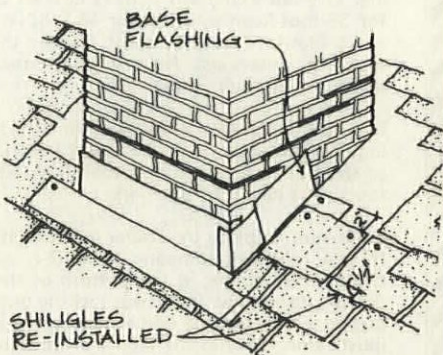
Install apron flashing over shingles on lower slope. There should be a hem at the bottom edge. Place one nail at each top corner where it will be covered by first piece of side base flashing.

(6) **STEPPED BASE FLASHING**—Install base flashing on sloped sides. Note placement of single nail in flashing and two nails in covering shingle. First piece of side base flashing comes around corner to overlap apron, so there's double coverage at each corner.



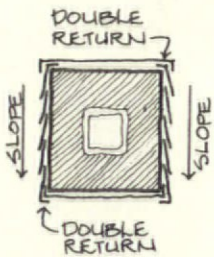
Allow 2" of base flashing to extend above top of covering shingle. Flashing should be 1/2" above where butt end (bottom) of covering shingle will be.

Continue to interweave base flashing, then shingle. Be sure that shingle covers nail in base flashing, and next piece of flashing covers nails in previous shingle. Note dimensions of overlap.



Restoration Design File #14

Length of each piece of base flashing is determined by the length and headlap of the shingles. Relay shingles with the same lap

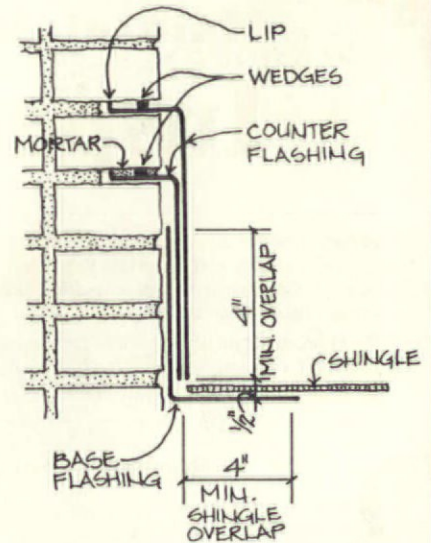
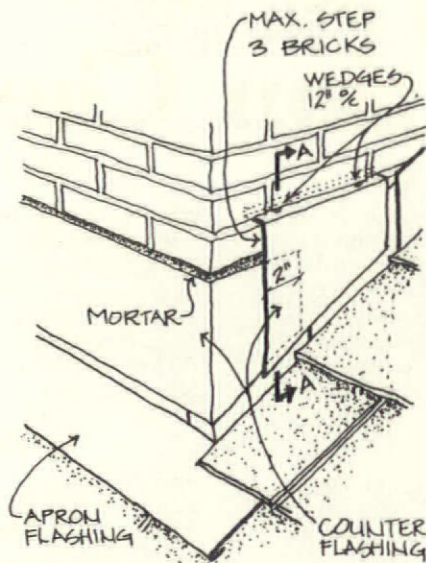
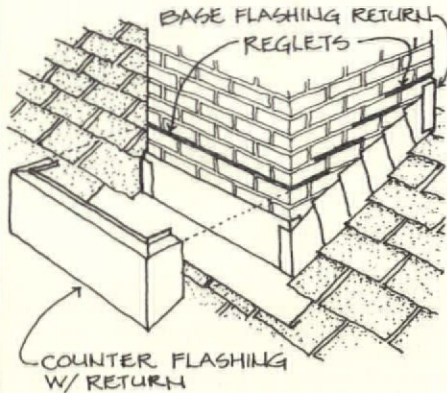


BASE FLASHING PLAN

that they had. Continue up slope on each side of chimney.

Then install continuous strip of base flashing on the up-slope side of the chimney, much like the apron flashing at the bottom, except that this piece goes *under* the shingles that were removed earlier. Create a return at each corner of this flashing to overlap the base flashing. Replace the shingles on the up-slope side of the chimney.

(7) COUNTERFLASHING APRON—All base flashing is counterflashed with cap pieces let into the reglet. All cap pieces have a 1/2" lip on the edge inside the reglet. A hem at the bottom of the cap flashing will stiffen the edge, but if it's too difficult



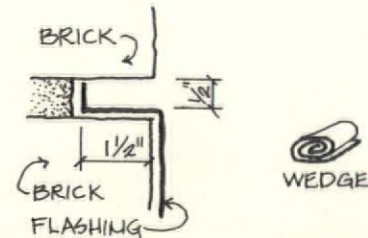
SECTION A-A

to bend, it's not necessary. Note how the apron counterflashing returns around corners. The apron counter (cap) flashing can extend all the way down the vertical surface.

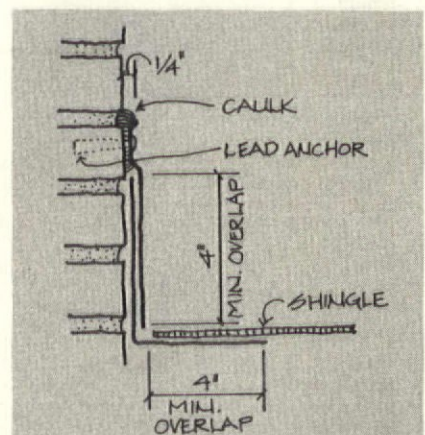
Use rolled metal wedges (either lead or copper) no more than 12" apart to hold cap flashing in the reglet.

Place metal wedges every 12" in reglet, a minimum of two for each piece of stepped flashing. Cap flashing must overlap base flashing at least 4", but it can come all the way down the vertical wall if desired. Each piece of stepped flashing overlaps the previous one 2" on the vertical seam.

(9) REMORTARING—Repoint the reglet with a mortar that matches the original in composition, color, and shape of joint. Alternately, caulk can be used, but this will require annual inspection and maintenance.

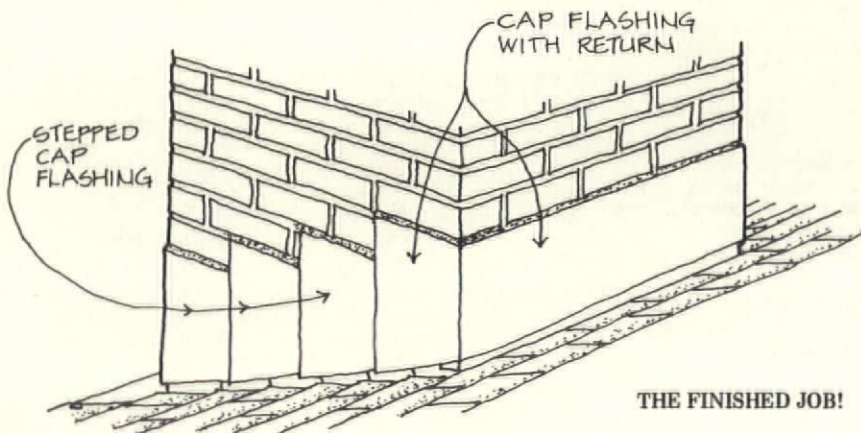


(8) STEPPED COUNTERFLASHING—Install each piece of stepped counterflashing according to the drawings. Maximum step-up between pieces is 3 bricks. If slope is very steep, cut more (and narrower) pieces to compensate.



ALTERNATE CAP FLASHING

Sometimes it's impossible or undesirable to cut a reglet in a vertical wall. You can make a surface-mounted cap flashing as shown. The flashing is held with brass screws driven into lead anchors in the masonry. Top of the cap flashing is flared 1/4" and sealed with caulk. This solution requires annual inspection and maintenance of the caulk seal. . . obviously less desirable than the more durable cap-in-reglet flashing.



THE FINISHED JOB!

Maintaining Your Roof: Inspection Checklist

A roof, traditional or not, is all that stands between the interior of your house and the terrible weather outside. Consider the case of the homeowner who couldn't bear to put his limited budget where it wouldn't show: toward a leaky old flat roof.

Temporary tar patches worked for a while . . . but then, in a late winter rainstorm, disaster struck. Water poured into an exterior wall, ruining newly patched plaster a full storey below

the roof. Closer inspection revealed rotted window heads and sash on the top floor, caused by months of water seepage.

The moral? Resist the temptation to spend money first on something more fun than your roof. It's money wasted if you don't have a well maintained roof overhead. Roofing, flashing, and gutters should be inspected twice a year, before and after the harsh weather of winter.

Roofing Materials

ASPHALT SHINGLES: Pay particular attention to shingles on ridge, hips, and at roof edges; they get the hardest wear. Also look out for lumpiness that indicates a new roof has been applied over old shingles; all sorts of damage could be covered up that way.

- Mineral granules almost totally worn off shingles.
- Mineral granules collecting in gutters and at base of downspouts.
- Edges of shingles look worn.
- Nails popping up.
- Roof looks new but lumpy.
- Mold or moss forming on shingles.

CLAY TILES: Clay tiles will weather well, but are prone to breakage from mechanical shock, such as a falling tree limb or people walking on them.

- Broken or missing tiles.
- Nails popping up.
- Mold or moss forming on tiles.

METAL: If the metal isn't copper, your primary task will be to fight rust by keeping the roof painted.

- Rust or corrosion spots.
- Signs of previous "tar pot" patch jobs.
- Punctures in metal.
- Joints and seams broken.

SLATE: A properly laid slate roof should last a century or more. Vermont, New York, and Virginia slates tend to be more durable than Pennsylvania slates, which eventually delaminate from pollution or weather.

- Broken or missing slates.
- Slate flaking apart.
- Slate particles collecting in valley flashing.
- Nails letting go.

WOOD SHINGLES AND SHAKES: Shingles are machine sawn; shakes, handsplit. For maximum roof life, both require proper air circulation underneath so they can dry after a rain. Therefore, they should be laid on open sheathing. If yours were laid improperly, you can help them dry by providing adequate ventilation in your attic.

- Moss or mold forming on wood.
- Cupping or warping of wood.
- Deep cracks and splits in wood.
- Wood has become uniformly thin from erosion.

FLAT ROOFS: Water collects easily on a flat roof, so give a close look to the flashing around all the projections: chimney, skylight, ventpipes, etc. Also, be sure the roofing is flat and tight to the decking below.

- Bubbling, cracking, and/or separating in the asphalt or roofing felt.
- Roofing feels loose and squishy underfoot.
- Water ponding on roof.
- Mineral granules or gravel has all weathered away.
- Roofing felt looks dry and cracked.

Roofing Elements

PROJECTIONS: Anything that breaks through the roof surface, such as a chimney or ventpipe, offers an excellent entrance for water and so must be adequately flashed. Check that no projection or ornament is so weak or damaged that it could topple and smash roofing materials.

- Connections around projections are improperly flashed.
- Mortar joints of chimney have weathered to a point where they admit water.
- TV antenna, lightning rod, weather vane, etc., is loose and wobbly.

GALVANIC ACTION: Corrosion of roof metals can be caused by galvanic action.

- Ferrous metals touching dissimilar metals, such as galvanized nails in copper flashing.

CORNICE: Roofs frequently fail first at the edges and admit water into the cornice.

- Moisture causing paint to peel on cornice, especially at the underside.

UNDERSIDE OF ROOF: Pay particular attention to projections and at eaves. Inspect on a rainy day to see if water stains are a current or past problem.

- Water stains on rafters or roof boards.

FLASHING: Flashing is usually made of thin metal, such as copper, aluminum, or galvanized steel. It should be installed completely around every protrusion through the roof, and at every joint where a vertical wall intersects the roof.

- Flashing is loose, corroded, broken, or missing.
- Daubs of roof cement on flashing hide leaks that may not have been corrected.
- Uncaulked openings at the tops of flashing permit water to enter.
- Vertical joint doesn't have both base flashing and counterflashing.

GUTTERS AND LEADERS: Leaking gutters can cause extensive damage to the entire house, not just the roof. Pay special attention to built-in gutters, which can feed hidden leaks directly into the cornice and down into the main structure.

- Gutters are clogged with debris or ice.
- Gutters are rusty or corroded.
- Gutters are loose, tilted, or missing.
- Seams are broken in metal linings of built-in gutters.

PORCH CEILINGS: Moisture problems in a porch ceiling are indications of faulty drainage from the roof above. You'll have to inspect the roof to make sure water isn't entering the main structure of the house as well.

- Peeling paint and/or rotted or curled boards in the porch ceiling.



Some roofing products were deliberately left out of this issue as inferior or inappropriate. Lists like this one usually bring forth the worthwhile companies we missed, however: We look forward to readers pointing out any oversights! Company addresses are in an alphabetical list at the end of this section.

— Joni Mommich

Slate Shingles

We've listed the few quarries still preparing roofing slate. With quarries in the three major U.S. slate regions — Vermont/New York, Virginia, and Pennsylvania — you can nearly always find replacement slate to match your roof.

Often you can have a local stone supplier order for you. But even when you have to contact the quarry directly, shipping may cost less than you think. For slate shipped from Vermont to NYC, the cost is approximately \$10-20 per square, or \$25-40 per square from Vermont to St. Louis.

High-quality Virginia slate in blue-black or Oxford-gray is offered by Buckingham-Virginia Slate Corp. It's guaranteed not to fade or deteriorate. Prices vary depending on the order.

The primary source for Pennsylvania roofing slate is Structural Slate. Slates are available only in standard, rectangular shingles in the characteristic Pennsylvania blue-black color. The cost is approximately \$250 per square.

Slater's tools as well as Vermont slate is provided by the Evergreen Slate Co. Colors are semi-weathering gray-green, royal purple, unfading green, unfading mottled green and purple, blue-black, unfading mottled gray, unfading red, and Vermont black. Prices begin at \$200 per square.

Granville, New York, is the source for that most expensive and decorative U.S. slate: red. Hilltop Slate also quarries black, green, purple, mottled purple, and weathering green and gray slate. Prices range from \$185 to \$1150 per square, depending on color.

Founded in 1869, Rising & Nelson supplies Vermont slate in all the area colors. Prices range from \$300 to \$400 per square and include shipping to the New York City area.

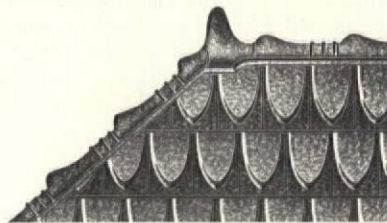
Vermont Structural Slate produces slate shingles from its own quarries in a full range of Vermont colors, including unfading green, unfading mottled green and purple, unfading purple, and Winchester black. Prices begin at about \$300 per square. This company also sells the indispensable book *Slate Roofs*, a 1926 reprint on the history and installation of slate roofs. The handbook is \$7.95 ppd.

For just a few replacement slates, your best and least expensive bet may be salvaged shingles. Mr. Slate in Vermont will match your samples. They keep on hand a large selection of colors, and will do custom cutting. Prices begin at \$160 per square. They also sell newly quarried New York and Vermont slate, with prices beginning at \$225 per square.

Metal Roofing

Here we list sources for metal shingles in Victorian patterns as well as sheet roofing for flat-seam, standing-seam, and batten-seam roofs. Copper roofs, especially, are very long lasting.

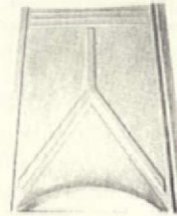
The people who've brought back fancy metal ceilings, W.F. Norman, also manufacture copies of 1908 metal shingle patterns. They're offered in 28-gauge galvanized steel or solid copper. In galvanized steel, *Victorian Style A* and *C* are \$195.75 per square, while the *Normandie Style* is \$108.80 per square. Reproduction metal trimmings for ridges and hips begin at \$1.15 per foot.



Style A shingles on roof are available with matching ridge and hip tile.

Follansbee Steel is the manufacturer of terne and terne-coated stainless steel roofing used on many historic buildings. They offer both standing- and batten-seam in 30-, 28-, and 26-gauge metal. The basic material cost for 28-gauge is \$72 per square for terne and \$147 per square for terne-coated stainless steel. The material can be purchased for fabrication on site, or pre-formed to your specs.

A commercial manufacturer of metal roofing, Berridge Manufacturing Co., has just added another Victorian style shingle to their selection. The new *Classic II* is a smaller version of the *Classic* (pictured here). Other styles include the *Victorian*



and *Fish-Scale* shingles. They also fabricate standing- and batten-seam roofing. These products are available in copper, terne-coated stainless steel, or Galvalume (a "self-healing aluminum-zinc alloy"). Shingles and sheets can be factory finished with your choice of 12 baked-on colors; this optional finish is guaranteed for twenty years against peeling, cracking, or fading.

Patterned metal shingles, in 28-gauge galvanized steel, aluminum, 16-oz. copper, terne, and micro-zinc (a "self-healing" rust proof alloy) can be ordered from Conklin Tin Plate & Metal Co. Prices range from about \$100 to \$500 per square depending on the metal you choose.

Clay Tile Roofing

Say "terra cotta tile" and most people think of barrel or Mission tile. But clay tile roofing comes in many styles and colors, including flat tiles and several different interlocking shingles.

The major U.S. manufacturer of clay roofing tiles since the 1890s is Ludowici-Celadon. They offer nine styles including *Spanish*, *French*, and *Norman* (a flat tile, mottled in color for an aged effect). The average cost for their tiles is about \$225 per square. They will also manufacture custom styles and colors to your specifications.

Gladding, McBean & Co. is another well-established maker of clay roofing tiles, since 1875. They offer two styles, the flat interlocking and the barrel tile, in traditional red or a mottled red color. Prices begin at \$125 per square.

Mission- and Spanish-style clay tiles from Germany are imported and distributed by Midland Engineering Co. They are available in red, black, or brown. Prices range from about \$205 to \$230 per square.

Wood Shingles

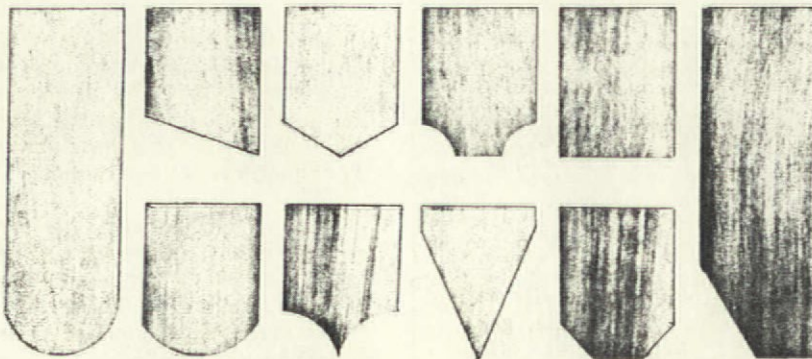
Wood shingles, shakes, and fancy-butt shingles are available from sources on both east and west coast. They weigh 200 to 450 pounds per square. Prices on wood shingles depend on the source, wood type, size of order, and market fluctuations. Approximate cost is \$45 to \$92 per square for plain sawn cedar shingles; \$50 to \$138 per square for shakes; \$140 to \$354 per square for fancy-butt shingles. Pressure-treated or fire-retardant shingles can cost up to twice as much.

Reasonably priced hand-split and resawn shakes, up to 16 inches long, and shingles, up to 24 inches long, are sold by Puget Sound Shake Brokers. The manufacturer claims that their roofing is produced from no. 1, old-growth red cedar. Fancy-butt shingles, also in red cedar, are offered in nine patterns.

Red cedar fancy-butt shingles in nine patterns are sold nationwide by Shaker-town. Fire-treated shingles may be ordered for an additional charge. This manufacturer also markets *shingle panels*, individual shingles bonded to a 16-3/4 in. x 48 in. wood backing. The panels are time-saving in installation. They may save labor costs on large jobs, but many carpenter-roofers we consulted have doubts about the relative ability of the panels to expand and contract.

Specialists in ornamental shingles, South Coast Shingle offers seven patterns. They also offer hand-split and resawn shakes, up to 24 inches long, and shingles up to 16 inches long. All shakes and shingles are red cedar; pressure-treated wood is offered.

Most shingles sold today are western red cedar, but Southington Specialty Wood Co. stocks eastern white cedar, up to 16 inches long, as well as red cedar shingles, up to 18 inches long. Hand-split and resawn shakes in red cedar are available in 18-, 24-, or 26-inch lengths.



Post-Victorian Roofing

These modern shingles are nevertheless authentic roofing for early-20th-century houses. And they are more attractive than run-of-the-mill asphalt and fiberglass shingles.

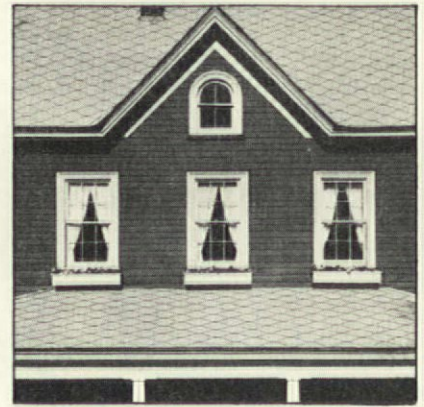
The *Twin Lap*, *Dutch Lap*, and *Hexagonal* are three asbestos-cement shingles offered by Supradur. With a Class B fire-rating, the shingles weigh about 250 lbs. per square. The price range is \$60 to \$90 per square. The *Twin Lap* comes in seven colors. The *Dutch Lap* and *Hexagonal* are available only in black or white.

Two common turn-of-the-century patterns, in fiberglass, are made by Owens-Corning. The *Glaslock* shingle, under \$40 per square, is available in eight colors. Weight is 235 lbs. per square, and there's a twenty-year warranty. It's available everywhere except California. The *French Method* is an organic felt shingle that's used for re-roofing. It has a fifteen-year warranty, a weight of 150 lbs. per square, and a choice of five colors. The suggested retail price is \$30.15 per square. This

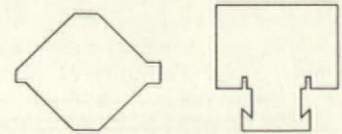
Fire-retardant shingles and shakes can be ordered from Koppers. Shingles and shakes, in red cedar or newly introduced white cedar, are stocked up to 24 inches long; they will do special sizes. Treated fancy-butt shingles can be ordered, also.

The only source we know of for redwood shingles is Mad River Woodworks. They also offer red cedar shingles; both are 5 inches wide x 16 inches long. Fancy-butt shingles, in ten patterns, and shakes are also stocked. Pictured below are the 10 Victorian patterns of redwood shingles. Top row: Round, Diagonal, Hexagon, Halfcove, Square, and Sawtooth. Bottom row: Fish Scale, Arrow, Diamond, and Octagon.

shingle is currently available only in the South and the Midwest.



Above: The elegant look of a house with French Method shingles.
Below: Patterns of French Method and Glaslock shingles.



Eastern white pine shingles up to 16 inches are manufactured by Shingle Mill. They also have fourteen patterns of white pine fancy-butt shingles in 3-, 4-, or 6-inch widths. Custom orders, including those for shakes up to 18 inches long, are accepted.

Hand-split shakes are considered superior to sawn shingles. That's because they're split on the wood's natural grain lines, cutting down on any tendency to split or warp. Some suppliers offer hand-split shakes in stock sizes. But for those of you matching unusual sizes on a historic building, here are two sources for custom orders.

To date, the longest shakes split by Essex Tree Service were 31 inches long. They can produce red cedar shakes and shingles to meet almost any specifications. An average price for a custom tapered 24-inch shake is \$80 per square.

Mr. Thibault and his partner at Homestead Supply will hand-split white cedar shakes up to 16- or 18-inches in length for about \$60 per square. A throwback to the itinerant carpenter, they'll come and split shakes on your site; you supply the wood along with room and board. The charge is no more than \$40 per square. They'll even leave behind two shaving horses.

Roofing Stand-Ins: Simulating Traditional Materials

Wood Substitutes

Let's face it, nothing looks as much like a wood shingle as a shingle made of wood! But fire codes and dissatisfaction with the longevity of today's cedar shingles have led people to look for substitutes that match wood in color, size, and texture. Here are the best of the lot — and please remember: True wood shingles are not overly rough, nor are they laid with staggered butts.

A concrete shake roof tile is offered by Monier in colors called chestnut brown, char gray, and weathered shake. These tiles weigh 950 lbs. per square, and cost \$52.20 per square. They're guaranteed for fifty years.

Terra cotta 'wood' shingles are made by Ludowici-Celadon. Not in their brochures but still available on custom order is the *Georgian*, the actual tile used in Williamsburg. This overlapping shingle tile weighs 1400 lbs./sq. They'll produce widths 2 to 8 inches and take orders for batches as small as 100 pieces. Hip and ridge tiles can be made. Their *Williamsburg* tile, 8¼ inches wide, is an interlocking tile adapted from the *Georgian*. A square weighs a more average 800 lbs. and costs \$250.

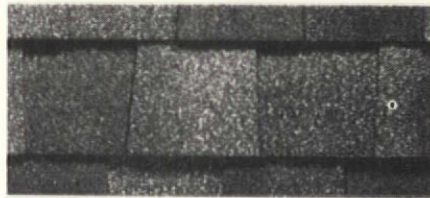
Steel-reinforced concrete tiles made by Hendricks Tile Manufacturing Co. have been used on several historic buildings. Offered in three textures, *fine grain* (pictured below), *coarse grain weathered*, and *hand-split shake*, these tiles are available in 6-, 7-, or 8-inch widths, with an exposure of 7½ inches. They're custom-colored in variants of gray to brown, with your choice of rounded or squared butts. The cost is about \$180 per square. Note: They weigh 1300 lbs. per square.



Hendricks and Ludowici tiles were originally manufactured as imitation wood shingles for historic buildings. They were designed to deceive the eye, and so are as faithful as possible to the look of wood. The asphalt and fiberglass shingles listed below are not imitative in

the same way (not as expensive, either). These manufacturers try to capture 'the color, warmth, and texture of real wood,' not necessarily to fool anyone. As a sympathetic rather than a substitute roofing, these products are quite acceptable.

Several lines of fiberglass shingles designed to imitate wood are produced by Johns-Manville. The top of the line, *Woodlands*, is a heavy-weight, random overlay tab sheet that gives a three-dimensional effect. It's offered in rustic colors (pictured below, *Weathered Bark*). In the New York area, *Woodlands* costs \$72.95 per square.



The *Timberline* is GAF's wood look alike. The heavy-duty asphalt version (330 lbs. per square) is available in the Northern U.S., while a similar fiberglass shingle is sold in the South. They cost \$45-70 per square, and are installed with a lifetime guarantee. You can choose from charcoal-, cedar-, heather-, redwood- or weathered-woodblend.

We don't recommend the stock lines of mineral-fiber shingles currently marketed as wood substitutes. In our opinion, they're overly gross in their representation of wood. Even worse are the metal shakes, whose comically deep and mechanically regular striations are truly awful.

Slate Substitutes

Maintaining a slate roof is a labor of love that'll pay off for you. But putting on a new roof of real slate requires a remarkably long-term commitment to your building: It's very expensive. These sources manufacture roofings that imitate slate. They're both less expensive (one's even lighter in weight). These products have a Class A fire-rating.

With this concrete tile, you'll save money but not weight: A square of Monier slatelike tiles costs about \$65 but weighs a hefty 950 lbs. Its striated color pattern comes in slate, gray, or brown. The manufacturer offers a 50-year guarantee.

A convincing facsimile is Supradur's *Supra-Slate* (pictured below), which is made of asbestos fibers embedded in cement. We've seen cases where all the salvageable slate on an existing roof was relaid on the street side of a house, and the rest of the roof was covered in *Supra-Slate* shingles. A slightly myopic OHJ editor even suffered minor embarrassment once when she couldn't tell the difference between the real and the imitation slate from the ground. These mineral-fiber shingles weigh only 500 lbs. per square. The cost is about \$140 per square, and they're guaranteed for 30 years against rot and warping. They are available in four rather convincing slate colors: red, green, black, and gray.



Tile Substitutes

Tile roofing is convincingly imitated in both metal and cement. The galvanized shingle, of course, has to be painted for durability and to make them resemble clay. Metal and concrete shingles were often used even in the 1920s and '30s as substitutes for tile roofing on Spanish Colonial Revival houses and California bungalows.

Two barrel style tiles are fabricated by W.F. Norman in 28-gauge galvanized steel or solid copper. The *Spanish* is \$124 per square; the slightly larger *Mission* shingle is \$191.80 per square. Complementing ridge, hip, and valley tiles are offered.

Concrete *Mission 'S'* tiles are made by Monier in three colors — mission red, terra cotta, and burnt terra cotta. These tiles are a little hefty, 900 lbs., but they are guaranteed for fifty years. The cost is \$47.85 per square.

Related Roofing Elements

Lightning Rods

For years, the decorative lightning rod was a thing of the past. But Victorian Reproductions sells the eye-catching rod shown here. They offer two complete kits, but individual parts, including those hard-to-find glass balls, can be purchased separately as replacements or to create your own design.

Model LR101 (shown) is \$59 and 30 inches high. Model LR102 is a combination weathervane and lightning rod, ranges from \$148.68 to \$152.60, and stands 5 feet tall. Both models are fabricated from a copper rod with a nickel plated tip, galvanized iron leg braces, topped with a bronze-finished aluminum star and ornamental glass ball in your choice of red, blue, amber, white, or green. For safety, the rod should be properly grounded. Send a blueprint of your house and this company will design the proper system, including a list of materials, free of charge. Materials and installation of a functional system will probably cost about \$500 to \$1000.



Gutters

If you can't order traditional wood gutters from your local lumberyard, Windham Millworks can help. They make rounded gutters in Douglas fir for about \$7 per linear foot. Gutters are stocked up to 20 feet long, but they're happy to do custom orders, matching shape, size, and length.

Another source for wood gutters is Mad River Woodworks. They have the capability to produce redwood or red cedar gutters. According to the company, the cost for small replacement sections may be prohibitive for most homeowners.

Most local sheet-metal workers will fabricate gutters for you in the metal of

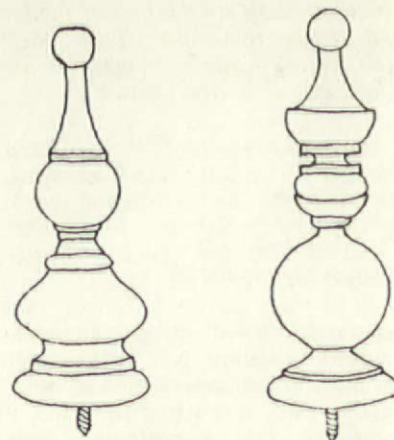
your choice. But if you have difficulty finding someone to tackle your job, A.J. Wagner will custom-make gutters in galvanized metal or copper. We met Mr. Wagner in Chicago last year, and he convinced us that there's no good reason to choose galvanized over copper when you're looking for work that will last. Most of the cost is labor, which is the same regardless of the metal. And the difference in materials is surprisingly small, about \$9/ft. for galvanized and \$14/ft. for solid copper.

Conklin is another source for roof-drainage equipment in a variety of metals. The selection includes half-round and ogee copper gutters.

Wooden Finials

We've recently had quite a few people asking about a source for wooden roof finials. Renovation Products stocks four roof finials. Two are simple, turned, 10-inch high hemlock spires, priced at \$9.99 each (pictured right). The other two styles are more complex, with fretwork

brackets supporting tapered finials. One is 37½ inches high (\$73.50); the other is 16½ inches high (\$68.50). These two are made of a combination of white and yellow pine. Finials can be reversed to act as pendants. The company will also create wooden replacements by custom order. Call for prices and waiting time.



Finials 31/53 and 32/52 are both 3-3/8 inches in diameter and 10 inches high.

Roof Cresting

It's too bad that cast-iron roof cresting rarely got the maintenance it needed, because it's the ultimate Victorian embellishment for a roof.

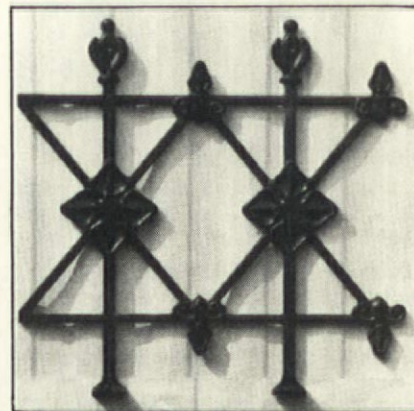
Galvanized steel cresting comes from W.F. Norman; their *Style A* is shown below. You can order it by 18-foot lengths at \$16 per section. Their selection also includes small gable and hip finials, and ornamental ridge tiles for use with their roofing shingles — nearly extinct bits of decoration!



Above: Block Finial No. 1 with Style "A" Ridge Cresting, available from W.F. Norman.

Right: The "Rosson" pattern, available from Robinson Iron for \$21 per panel.

If your cresting is missing or damaged, Robinson Iron can help. They offer five stock patterns with panel sizes ranging from 17½ to 25 inches tall, and 15¼ to 28¼ inches wide. The iron is preprimed. Prices range from \$20 to \$41 per panel. Matching finials and custom castings are also available.



Address Directory Of Companies Listed

Berridge Manufacturing Company, 1720 Maury, Dept. OHJ, Houston, TX 77026. (713) 223-4971 or (800) 231-8127. *Metal shingles are sold through nationwide distributors. Free brochure.*

Buckingham-Virginia Slate Corp., Box 11002, 4110 Fitzhugh Ave., Dept. OHJ, Richmond, VA 23230. (804) 355-4351. *High-quality Virginia slate sold through distributors. Free literature.*

Conklin Tin & Plate Co., PO Box 2662, Dept. OHJ, Atlanta, GA 30301. (404) 688-4510. *Metal roofing shingles sold direct. Complete product catalog, \$5; roofing information, \$3.*

Essex Tree Service, PO Box 158, Dept. OHJ, Stevenson, WA 98648. (509) 427-5345. *Red cedar shakes and shingles in custom sizes sold direct. No literature.*

Evergreen Slate Co., 68 East Potter Ave., Dept. OHJ, Granville, NY 12832. (518) 642-2530. *Vermont & New York slate sold direct. Also slater's tools. Free brochure.*

Follansbee Steel, State St., Dept. OHJ, Follansbee, WV 26037. (800) 624-6906. *Standing- and batten-seam metal roofing sold through distributors. Free brochure.*

GAF Corp., Building Materials Group, 140 W. 51st St., Dept. OHJ, New York, NY 10020. (212) 621-5000. *Asphalt shingles sold through distributors. Free literature.*

Gladding, McBean & Co., PO Box 97, Dept. OHJ, Lincoln, CA 95648. (916) 645-3341. *Clay roofing tiles sold through distributors. Free roofing brochure.*

Hendricks Tile Manufacturing Co., Inc., PO Box 34406, Dept. OHJ, Richmond, VA 23234. (804) 275-8926. *Concrete roofing tiles designed to imitate wood are sold direct. Free brochure.*

Hilltop Slate Co., Rt. 22A, Dept. OHJ, Middle Granville, NY 12849. (518) 642-2270. *New York and Vermont slate sold direct and through distributors. Free brochure.*

Homestead Supply, PO Box 689, Dept. OHJ, Wilton, ME 04294. (207) 645-3709. *Hand-split white cedar shakes sold direct or made on your site. No literature, call for details.*

Johns-Manville Corp., Ken-Caryl Ranch, Dept. OHJ, Denver, CO 80217. (303) 978-2000. *Fiberglass roofing shingles designed to resemble wood sold through distributors. Free literature.*

Koppers Co., 1900 Koppers Bldg., Dept. OHJ, Pittsburgh, PA 15219. (412) 227-2000. *Fire-retardant shingles, shakes, and*

fancy-butt shingles can be ordered through your local lumberyard or roofer. No literature.

Ludowici-Celadon Co., PO Box 69, Dept. OHJ, New Lexington, OH 43764. (614) 342-1995. *Clay roofing tiles in traditional patterns and imitation wood are sold direct and through distributors. Free product sheets on each style.*

Mad River Woodworks, PO Box 163, Dept. OHJ, Arcata, CA 95521. (707) 826-0629. *Red cedar shingles and fancy-butt shingles are sold direct and through distributors. Specify the "Shingle Brochure," \$1, for details.*

Midland Engineering Co., Attention: Hubert Gockel, PO Box 1019, Dept. OHJ, South Bend, IN 46624. (219) 272-0200. *A major distributor for roofing products including German clay tiles and Vermont slate, sold through roofers and direct. Free brochures on all products — specify your interest.*

Monier Co., PO Box 5567, Dept. OHJ, Orange, CA 92667. (714) 538-8822. *Concrete tiles designed to imitate wood and terra cotta are sold through distributors. Free literature.*

Mr. Slate — Smid Inc., Dept. OHJ, Sudbury, VT 05733. (802) 247-8809. *Salvaged slate is sold direct. Call for details.*

W. F. Norman Corp., PO Box 323, Dept. OHJ, Nevada, MO 64772. (417) 667-5552 or (800) 641-4038. *Metal shingles in 1908 patterns sold direct and through distributors. Specify "Norman Roofs" for free literature and price sheet.*

Owens-Corning Fiberglass Corp., Fiberglass Tower, Dept. OHJ, Toldeo, OH 43659. (419) 248-8000. *Turn-of-the-century style fiberglass shingles sold through distributors. Free brochure.*

Puget Sound Shake Brokers, 12301 218th Place S.E., Suite 711, Dept. OHJ, Snohomish, WA 98290. (206) 668-6642. *Red cedar shakes and shingles sold direct. Free information sheet.*

Renovation Products, 4230 Main St., Dept. OHJ, Dallas, TX 75226. (214) 827-5111. (Note: This is a new address.) *Wood finials and pendants are sold direct. A catalog with current supplement is \$2.*

Rising & Nelson Slate Co., Dept. OHJ, West Pawlett, VT 05775. (802) 645-0150. *Vermont slate is sold direct. Free brochure.*

Robinson Iron Corp., Robinson Road, Dept. OHJ, Alexander City, AL 35010. (205) 329-8484. *Cast iron cresting is sold direct. Complete product brochure,*

\$3; cresting literature, free.

Shakertown Corp., PO Box 400, Dept. OHJ, Winlock, WA 98596. (206) 785-3501. *Fancy-butt red cedar shingles are sold direct and through distributors and roofers. Free literature.*

Shingle Mill, 6 Cote Ave., PO Box 134, Dept. OHJ, S. Ashburnham, MA 01466. (617) 827-4889. *White pine shingles and shakes are sold direct. Also fancy-butt shingles. Free brochure.*

South Coast Shingle Co., 2220 E. South St., Dept. OHJ, Long Beach, CA 90805. (213) 634-7100. *Red cedar shingles, shakes, and fancy-butt shingles are sold direct. Free brochure.*

Southington Specialty Wood Co., 100 W. Main St., Dept. OHJ, Plantsville, CT 06497. (203) 621-6787. *White and red cedar shakes and shingles sold direct. Free brochure and current price list.*

Structural Slate Co., 222 E. Main St., Dept. OHJ, Pen Argyl, PA 18072. (215) 863-4141. *Pennsylvania slate sold through distributors. Free brochure.*

Supradur Manufacturing Corp., 122 E. 42nd St., Dept. OHJ, New York, NY 10168. (800) 223-1948 or in NY (212) 697-1160. *Asbestos fiber embedded in cement roofing tiles designed to resemble slate; also three turn-of-the-century patterns. All products are sold through distributors. Free brochure and samples.*

Vermont Structural Slate Co., PO Box 98, Dept. OHJ, Fairhaven, VT 05743. (800) 343-1900 or in VT (802) 265-4933. *Vermont roofing slate sold direct and through distributors. Free brochure.*

Victorian Reproductions Enterprises, Inc., 1601 Park Ave. South, Dept. OHJ, Minneapolis, MN 55404. (612) 338-3636. *Reproduction lightning rods and replacement parts sold direct. Catalog, edition 2, \$3.*

Albert J. Wagner & Son, 3762 N. Clark St., Dept. OHJ, Chicago, IL 60613. (312) 935-1414. *Custom fabricated gutters in galvanized metal or copper, sold direct in the Chicago area. Will travel for large installations. No literature.*

Windham Millworks, PO Box 720, Dept. OHJ, N. Windham, ME 04062. (207) 892-4055. *Douglas fir gutters in stock and custom sizes sold direct. No literature.*

Old-House Emporium



INNS & HISTORIC HOUSES

NANTICOKE Manor House — Bed & breakfast at Victorian brick house, c. 1861, on Nanticoke River in Maryland's eastern shore county of Dorchester. Walking tour of our historic town of Vienna. Near Blackwater National Refuge. Spiral staircase, fireplaces, Victorian furnishings. PO Box 156, Vienna, MD 21869. (301) 376-3530 or 282-3279.



BED & BREAKFAST in the Rocky Mts at the foot of Pike's Peak. This charming 1885 Victorian home is set into the mountainside and offers an unequalled view of the valley below. The Nippersink, 106 Spencer, Manitou Springs, CO 80829. (303) 685-9211.

BED & BREAKFAST in 1880 Dunbar House, a home with historical designation. Located in Murphys, CA, Queen of the Sierras, the site of some of the richest gold claims. Five warmly decorated rooms, expanded continental breakfast, flowers, and sherry await your pleasure. Dunbar House, PO Box 1375, Murphys, CA 95247. (209) 728-2897.

POSITION OFFERED

MATURE SINGLE person or couple with no children wanted to manage mountain guest house from June 1 to October 1, 1983. Free room plus some salary. Deadline for application is May 1. Send reference to Baker's Manor Guest House, Ouray, CO 81427.

FOR SALE

HANDCRAFTED reproduction of slave-made table. 27 in. high, 16 in. deep, 25 in. wide. 1 drawer. Yellow pine in natural finish as the original pattern on local plantation. Limited Edition — \$250, plus shipping. Old House Plantation, Edisto Island, SC 29438. (803) 869-2445.

RELIEF wood carving of your old house or building. Approx. 18 in. x 12 in., \$45 to \$65, depending on size and ornateness of house. Postage paid. Send SASE for photo sample of work. For estimate, send photo and phone number to Diane Clees, 2250 Faussett, Howell, MI 48843.

INTERIOR woodwork: Set of 16 ornate door/window surrounds (c. 1880) in oak and mahogany. Photos, detailed inventory, and measured drawing available. Steve Hirschberg, 325 West 93 Street, No. 24, New York, NY 10025. (212) 749-7411.

OLD gingerbread fretwork, ornate to simple. Several matched sets. Many coats of paint, repaired where needed. Also many French doors. Evelyn Croton Architectural Antiques, 51 Eastwood Lane, Valley Stream, NY 11581. (516) 791-4703.

EDISON cylinder phonograph, 1905, large morning glory horn, oak case, excellent condition, plays loud and clear. Nice accessory in a turn-of-the-century parlor. \$375. Also, collection of 18 early talking machines. For info, SASE. Michael Glicksman, 147 Highland Avenue, Middletown, NY 10940. (914) 343-0136.

1870s STAIRCASE, curves left at top, \$50. Complete Greek Revival doorway with 2-panel door & sidelights, grained inside, \$250. Also, doors, windows, and some moulding. Delivery may be available, finders service too. Jeff Finch, 8619 E. Genesee Tnkp, Fayetteville, NY 13066. (315) 686-6685 (best before 8 AM).

4 SETS red Art Deco theatre doors — Metal, overall dimensions 84 in. x 60 in. per pair. \$450. Request photo or info from The History Store, 418 N. Union, Wilmington, DE 19805. (302) 654-1727.

HISTORIC architectural photographs, commercial and residential. States included are ND, SD, Wisc., Minn., Iowa, Kansas, others. Mike Byrnes, 10300 SW 4th, Portland, OR 97219. (503) 244-0012.

OLD RADIO to complete the decor of your old house. Fully restored radios made from 1920 to 1940, priced from \$25 to \$200 plus shipping. Antique Radio Laboratories, RD 1, Box 41, Cutler IN 46920.

"U" SHAPE quarter-sawn oak stairway, complete. Oak panelling & hinge-top hall seat. 2 landings, 17 steps, 5½ newel posts. Mint condition. \$1500. Scherer's Antiques, PO 6305, Lincoln, NE 68506. (402) 423-1582.

VICTORIAN mantels: 1) 4 ft. 5 in. H, 2 ft. 6 in. x 3 ft. opening; 2) 4 ft. 10 in. H, 3 ft. 4 in. x 2 ft. 11 in. opening. Very good condition. \$125 each. Steam Radiators: Matched pair 6-tube, 3 ft. 2 in. H x 1 ft. 3 in. W x 7 in. deep. One 8-tube, 2 ft. 7 in. x 1 ft. 9 in. x 8 in. deep. \$25 each. Evenings, (201) 439-3529.

AUTHENTIC "period" furniture for your Craftsman Bungalow! Large, impressive 3-piece matched Mission Oak living room suite. Not Stickey but still fine quality. Beautiful quarter-sawn wood in excellent original condition; some joints need regluing. Set \$700. Maggie Polachek, 1407 Adams Street, Taylor, TX 76574. (512) 352-5896.

18TH- & 19TH-CENTURY architectural elements: spiral staircase, c. 1790, old green paint, 9 ft. rise, including bannister & landing railings — \$1150. Raised-panel fireplace surround, built-in barrel back cupboard with shaped shelves, narrow built-in step back cupboard, folding sideboard table. Call for details. Paul Ackerman Antiques, (207) 372-6204.

2 ROSEWOOD SQUARE GRAND pianos, grained cabriole legs. Emerson (1872, 88-note) & Steinway (1874, 85-note). Both reconditioned and refinished. C. 1860s Italianate Vermont marble mantel, slightly damaged but complete, with cast iron hood & firefront — 63 in. W x 46 in. H, round-arched firebox opening 30 in. x 30 in. Central OH, (614) 654-4308, PM.

REAL ESTATE

ANTEBELLUM cottage, c. 1840. Lovingly restored by owner during the past 9 years, over 4500 sq.ft. on 10 acres with a 2-acre pond. Also includes a restored two-story outbuilding. 1 hr. 45 min. outside of Atlanta. \$160,000. Dr. Michael D. Shinnick, (205) 826-5500, or 749-2460 PM.

STOCKTON, CA: Fox Theatre, 1929 Movie Palace on National Register. Seats 2200 plus 7 rented shops. Excellent condition, partially restored. Ideal location next door to courthouse; adjacent properties being renovated. \$700,000 for ¼ interest. Terms. (209) 465-7268.

ALLEGAN, MI — 1893 Queen Anne. Beautiful oak staircase, leaded & stained glass windows, fireplace, double parlors, 2 baths. Approx. 2800 sq. ft. \$52,500. John Busfield, Century-21 Koshar, 890 Marshall Street, Allegan, MI 49010. (616) 673-8094 or 673-7411.



ROYALSTON, MA — Beautifully maintained, all original, rambling 1823 house. 9 fireplaces (2 beehive), 9 rooms, wainscoting throughout, pantry, sunroom, attached garage and sheds. 11.2 wooded & open rolling acres, 800 ft. on huge beaver pond. Very private, all wildlife in area, sugar maples, gardens. Owner asking \$125,000. (617) 249-6452.

NEWTOWN, CT — 1725 Colonial on 5.9 acres, possible extra lot, approx. 2800 sq. ft. of living area. 5 fireplaces and 2 beehive ovens. Beamed ceilings, random-width floors, Batten doors, Indian doors. Stone terrace. Private setting amongst mature plantings. 1½ hrs. from NYC. Asking \$225,000. Elynn Gehrett, Realtor, Richard S. Jowdy, Inc., (203) 426-4413.

GRANVILLE, MA — Historic village home, c. 1860, 1 acre. Formerly "home" of famous Granville cheese. Remodelled country kitchen adjoining screened porch. 1½ baths, new heat, plumbing, electricity. Parlor, dining, library, 4 rooms up. Large studio/office. 30 mins. from Hartford, Springfield. \$125,000. Flo Leger, agent, Merrill Lynch Realty. (203) 688-7531.

1850s GREEK REVIVAL built by blockade-runner in historic Warrenton, NC. 9 rooms, 7 fireplaces, 40-ft. entry hall, heart-pine floors, original mouldings and shutters, window panes. 1.5+ acres, outbuildings, near lakes, 1 hr. to Triangle area. \$62,900 (assumable loan). J.R. Grabill, PO Box 909, Stanwood, WA 98292.

UNIQUE 10-room house built in 1872. Featured in the Chicago Tribune and Chicago Magazine. Large wooded lot, 3 working fireplaces, historic background, definite candidate for National Register. Suburban location but close to major expressways and public transportation. \$195,000. Edward Schmidt, 112 Charlton Ave., Willow Springs, IL 60480. (312) 839-5332.



ORANGE CO., NY: Early American (1765), National Register. Former Yelverton Inn (1765-1832), 9 rooms, 2½ baths, 7 fireplaces. Also 2-storey country store; large carriage house, all on 1.2 acres. Financing brochure. \$125,000. Wallace, Realtor, Goshen, NY 10924. (914) 294-6161.

DUTCH COLONIAL farmhouse, intact; original portion 240 years old. Listed on National Register. Must be moved to a new location from New Lots, Brooklyn. Option expires May 1. New York Landmarks Conservancy, 330 West 42 Street, New York, NY 10036. (212) 736-7575.

100-YEAR-OLD structurally restored home in Ozark Mts., 22 mi. SE of Fayetteville, AR. 2-storey, 1 bath, 4 bedrooms, 3 porches, full basement. Natural gas with wood furnace. 2½ fenced acres, creek, 4 outbuildings. \$44,000, possible financing. (904) 421-2887.

POCONO MTS. Stone, century-old Colonial, three fireplaces, very little remodeling. Barn, 60 acres, swimming pool, historic, rural area. \$350,000. Jack Muehlhan, Realtor, Stroudsburg, PA. (717) 421-8333.

"BRIDGE HOUSE" c. 1830s, Greek Revival with 6 over 6 windows, wall to wall carpeting on shop level, pine floors in 1-bedroom apt upstairs. Small lot but plenty of parking space. Electric heat up, oil down. Also, three period homes and an old theater-dance hall, presently antique shop — \$15,000. All buildings are in Buckfield, ME. Dave Field, Box 942, Scarborough, ME 04074.

1843 GREEK Revival mansion, "Carr-Osborn House." 16 rooms, National Register. Land 60,000 sq. ft.; house 13,000 sq. ft. 6-room antique store in servants' wing. Separate carriage house. Many original furnishings and fixtures. 1 hr. from Boston, 20 min. from Providence. \$250,000. Fall River, MA. (617) 678-7276.

ROMBERGER-STOVER House in Berrysburg, Dauphin Co., PA. On National Register. Queen Anne style, unusual in its richness. Asking \$79,500. JCT Realty, Inc., Real Estate, Millersburg, PA. (717) 692-2206.

MEETINGS & EVENTS

THE PROVIDENCE Festival of Historic Houses, May 6-8, 1983. The Festival will open 18th- and 19th-century homes & public buildings for Candlelight Tours & a Saturday House and Garden Tour. Festival weekend package available. Providence Preservation Society, 24 Meeting St., Providence, RI 02903. (401) 831-7440.

ARCHITECTURAL CONSERVATION summer session, West Dean College, England: Intensive week-long training session for professionals in architectural conservation & historic preservation. Well known and respected in USA & UK, bringing together enthusiastic lecturers & participants. Program includes discussion of different philosophies of conservation, papers on technical research, survey, & documentation, specific case histories, & the use of traditional building materials. Also insider's visits to Chichester & the Cathedral, Hampshire, East Sussex, Brighton Pavilion. Friday 29 July - Friday 5 August. Fee of 310 pounds Sterling includes lodging, meals and picnics, papers, arrangements, & entry fees. Payment & registration due 31 May. Gary T. Scott, 23 Q Street NW, Washington, DC 20001.

1 WEEK of courses in old buildings & furniture restoration while you live at a restored waterfront resort in N. Florida. Swimming, boating, fishing, or tennis also available. Courses start May 15 or May 22. Mrs. Massee at Club Continental, (904) 264-6070.

TARRYTOWN, NY - A conference on "Washington Irving, Sunnyside, and American Romanticism," scheduled for April 30-May 1 at the Tarrytown Hilton. The focus will be on Sunnyside, Irving's home from 1835 until his death in 1859, & Lyndhurst, the nearby estate designed by Alexander Jackson Davis (1803-1892). For information: Sleepy Hollow Restorations, 150 White Plains Rd., Tarrytown, NY 10591. (914) 631-8200.

SHOW HOUSE '83 / Buffalo: The Ransom House, 267 North Street, May 7-29. 37 areas will form a showcase of area decorators & landscapers. For further information: Junior League of Buffalo, 595 Delaware Avenue, Buffalo, NY 14202. (716) 884-8865.

THE FRIENDS of Independence National Historical Park will hold a series of tours in & about Philadelphia, April 29-May 8. Tour accommodations are limited, so make your reservations early. For brochures & information: Philadelphia Open House, 313 Walnut St., Philadelphia, PA 19106. (215) 928-1188.

HISTORIC PROPERTY Development (2 One-Day Seminars). Day 1: Acquisition, Finance, & Marketing. Day 2: Rehab, Preservation, & Maintenance. May 6-7. South End Neighborhood Housing Services, 328 Park Avenue, Bridgeport, CT 06604. (203) 367-7052.

1983 KING WILLIAM FAIR: Saturday, April 23, 11 AM-6 PM. San Antonio, TX. An official Fiesta event, the fair will feature tours of late-19th-century homes, arts & crafts sale, entertainment, food, & drink. Tickets & information: King William Assoc., 222 King William, San Antonio, TX 78204. (512) 227-8786.

VICTORIAN furniture lecture/clinic. Marc A. Williams, Director, Furniture Conservation Services, Haverhill, MA, will lecture and recommend treatment for your smaller pieces of furniture. April 23, 9 AM to noon. Fees: \$6, members; \$7.50 non-members. Mark Twain Memorial, 351 Farmington Ave., Hartford, CT 06105. (203) 247-0998.

SUCCESSFUL REHABILITATION
Technical Workshops on Rehabilitating Historic Buildings to be held in Baltimore, May 12-15; Pittsburgh, June 9-12; St. Louis, June 23-26. Sponsored by the National Park Service, the National Trust for Historic Preservation, & the Association for Preservation Technology.
Each workshop is given in two two-day units:
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One or both units may be taken. Costs: \$250 for 2 days; \$450 for 4. Enrollment is limited.
Contact Education Services, National Trust for Historic Preservation, 1785 Massachusetts Ave. NW, Washington, DC 20036. (202) 673-4092.

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SOLAR VICTORIAN house, cottages, garages, stables, studio or shop, sheds, playhouse, kennel, birdhouses, folk furniture, gazebos plus solar bay window. Inspired by Victorian styles - Gothic, Italianate, Queen Anne, Eastlake, Stick, & Colonial. Send \$5, receive free calendar (before May 1, 1983). Building Conservation, Box 89, Evanston, IL 60204.

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WHEELS: 8- or 9-in. barn door wheels for floor track. Send description or pictures and price to John Braithwaite, 77 Main St., Marshfield, MA 02050.

4-INCH black & white square linoleum tiles for checkerboard floor. Write to 403 N. Vine, Abilene, KS 67410. Call (913) 263-4755.

LAMP beads: Pink bugles, 2 in. x 1/16 in. Green, black, gold, crystal, pink - 1/16 in., faceted. Crystal teardrop, 1/2 in. Carol Northrop, 1016-8th So., Edmonds, WA 98020.

OLD GLASS before 1900. Various sizes needed. Cumberland, MD. (301) 777-0758.

FIREPLACE mantels: Marble, very good condition, ornate styles. David Roberts, 2608 Old Glenview Road, Wilmette, IL 60091. (312) 251-7193.

HISTORIC photographs and stereo views of Mackinac Island. Mackinac Island State Park Commission, PO Box 370, Mackinac Island, MI 49757. (906) 847-3328.

CLAWFOOT bathtub, reasonably priced, with excellent porcelain. Or recommendations and/or input from readers who have had bathtubs successfully resurfaced. Ed Minas, 602 13th Ave. W, Kirkland, WA 98033.

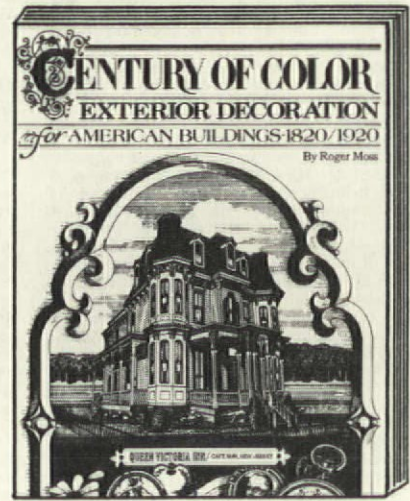
OLD PHOTOS of New Mexico architecture & scenery. Mike Byrnes, 10300 SW 4th, Portland, OR 97219.

STUDENT cabinetmaker needs following woodworking planes: Stanley No. 45 or 55 combination plane; & any other old wooden moulding planes. Bill Zucca, PO Box 2793, Boone, NC 28607. (704) 264-0779.

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CLAWFOOTED TUB, small. Maximum length 54 in., outside dimension; any width. Must be in excellent original condition. Fixtures a plus. R.A. McGeary, 322 Meadow Lane, Sewickley, PA 15143.

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The Old-House Journal doesn't feature articles on the basics of plumbing, wiring, and roofing because these problems aren't unique to old houses. Nevertheless, we're always receiving questions concerning these areas. So we set out to find good, basic how-to books that would be useful to our readers. Most of what we saw was awful: simplistic books written by freelance writers whose research consisted of ripping off other books by ill-informed freelancers.

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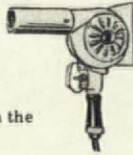
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From Picture Frames To Clocks... Now You Can Restore Your Antiques

From 1979 until just a few weeks ago, this book sat practically unopened on a dusty shelf in the OHJ library. It was while researching the answer to a subscriber's question that publisher Clem Labine came across it — and took a first serious look at it. He got beyond its extreme corniness and found it contained a wealth of accurate, well presented information. And so he convinced the rest of the staff that we should offer this book to our readers . . . despite chapter titles such as "Breaking Up Is Hard To Glue" or "How To Build Up Your Bust & Otherwise Keep Your Marbles." (Those chapters are about repairing furniture and marble, respectively.)

ANTIQUES & ART — CARE & RESTORATION is about how to repair and restore art objects and antiques. These are subjects we don't cover in the building-oriented Old-House Journal, but they're subjects our readers ask about. Author Edward Stanek has had a long career appraising, dealing, and restoring antiques. He has poured all this experience into ANTIQUES & ART — CARE & RESTORATION.

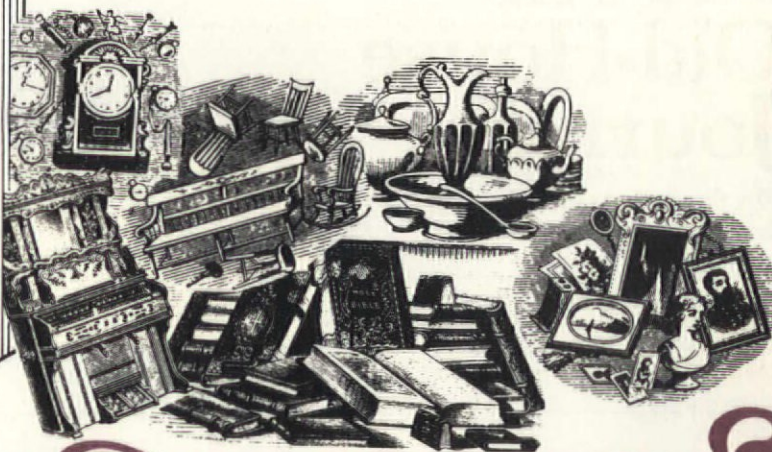
ANTIQUES & ART — CARE & RESTORATION does devote some space to the more common problems of furniture repair, caning, and reupholstering. But Dr. Stanek's main focus is on the unusual and, frankly, the scariest challenges that face any do-it-yourself restorationist. You know how many projects you have put off because you thought only an expert could do them

properly. Many of us have objects that aren't necessarily precious family heirlooms, but which we'd love to have restored without paying some high-priced conservator. This book will help you with the most delicate repair problems of glass, ceramics, and mirrors. It can teach you invaluable techniques of plating, stenciling, and gilding. It will show you how you can rescue old books and photographs; how you can make invisible repairs on marble statuary and oil paintings; how you can return to life an old clock and even a reed organ!

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Dr. Stanek's tone is breezy and unpretentious — actually, in places it's so corny you may wince. But his techniques are completely serious, and the results you'll get if you follow his directions will amaze you. ANTIQUES & ART — CARE & RESTORATION is a real sleeper of a book.



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opinion...
Remuddling of the month



THIS HOUSE was built in 1893 in Dubuque, Iowa. In 1973, it was damaged in a fire and condemned. Laurence Sommer, of Duluth, Minnesota, submitted these photos; he wrote that "a local real estate developer convinced the City Council that he would preserve and restore the historic house. He purchased ... and 'restored' it as shown in the photograph [below]."

THE TACKY BALCONY and bad fenestration are standard remuddling offenses. But what's truly shameless was the decision to shear off the third storey and leave what looks like a huge plank of plywood on top of the house. That 'alteration' represents the worst kind of penny-pinching and apathy: The developer felt no responsibility to the house or its future inhabitants. The most disturbing aspect of this remuddling is its cynicism.--Cole Gagne



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