WOOD SIDING

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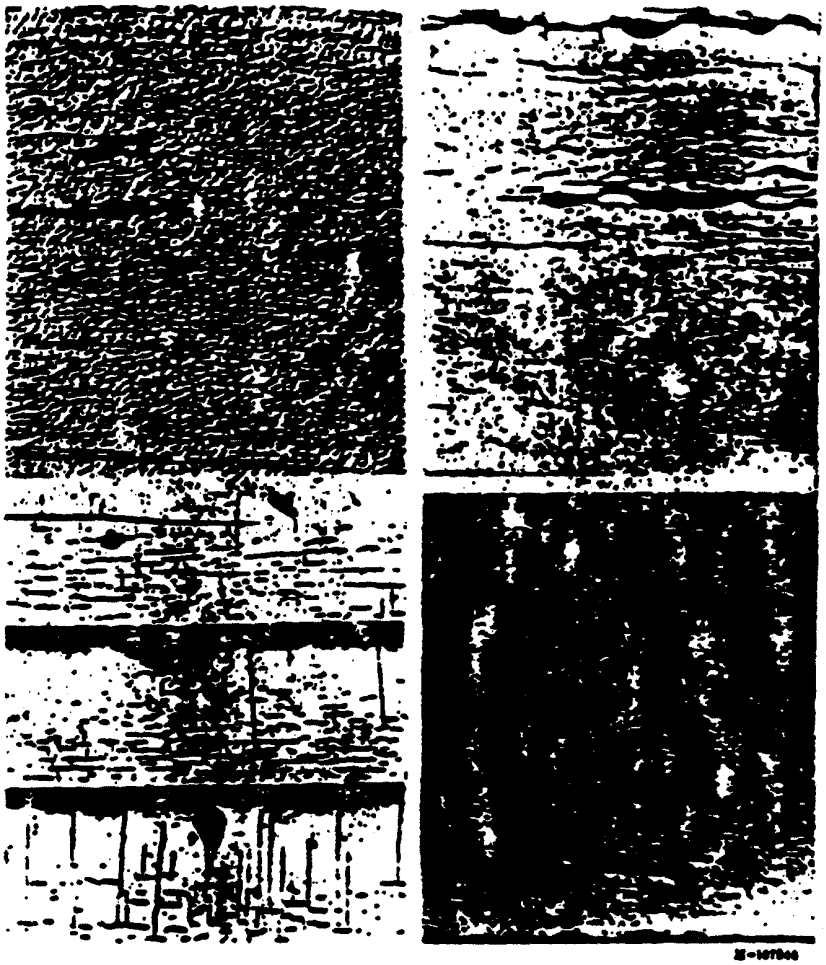

Types of normal and abnormal paint behavior. *Upper left*, typical checking and crumbling of white lead paint; *upper right*, cracking, curling, and flaking typical of most zinc-containing paints. In both cases, it is time to repaint. *Lower left*, cross-grain cracking, an abnormality that results when paint film gets too thick; *lower right*, blistered paint, an abnormality usually caused by moisture behind the paint film. Remove paint that has cross-grain cracking to the bare wood before repainting. Where moisture has blistered paint, find and eliminate the source of water and remove all blisters and loose paint before repainting.

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WOOD SIDING

How To Install It, Paint It, Care For It

By the Forest Products Laboratory, Forest Service

Wood siding is put on houses for many good reasons.

For one, it will keep the bright new "face" of any home attractive for many years to come. In fact, given reasonable care, wood siding will retain its beauty for centuries, as has been amply proved by houses that date back to early Colonial times.

There are sound design and structural reasons, too, for using wood siding. Its great flexibility and variety in patterns, sizes, and colors range from the captivating simplicity of Colonial clapboard to the equally charming board-and-batten siding of modern ranch and rambler houses. In between are many other varieties and combinations that produce distinctive and attractive effects.

Then there are the hard-headed dollars-and-cents reasons, such as wood's low initial cost and the ease and speed with which it can be sawed, fitted, and nailed into place. Also, its fuel-saving value, due to the millions of tiny hollow fibers that make it a good insulator, and its natural resistance to the ravages of weather make it desirable.

There are other reasons, too, such as wood's ability to hold a wide variety of finishes—clear ones that reveal and accentuate its natural beauty, stains that impart a rustic appearance, and paints of every conceivable color. Within limits, the color scheme can be changed periodically to give a home a fresh new appearance in keeping with changing times. So it's little wonder that wood siding has come to stand for warmth, comfort, security, beauty—all the things that spell "home."

Kinds of Wood Siding

There are many kinds of wood siding on the market today (fig. 1). All will give good service, provided they are used right. For houses, bevel siding is perhaps the most widely used. It consists of boards sawed in half so that one edge is thicker than the other. Drop siding is also used, especially on houses without sheathing. To make it, boards are patterned along the upper edge and grooved or lapped on the lower. Bevel and drop siding

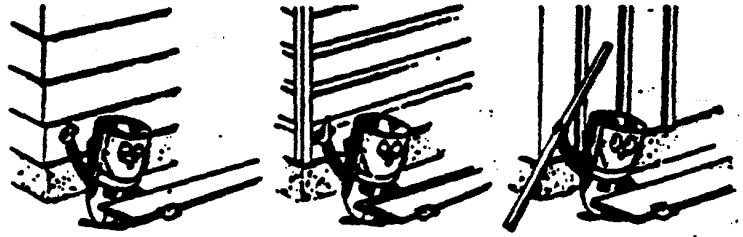

Figure 1.—Three types of wood siding. Left to right, bevel siding, drop siding, vertical board-and-batten siding.

are applied horizontally and tend to make a house appear lower and longer.

Vertical siding is increasingly popular on one-story houses. It consists of square-edged or tongued-and-grooved boards applied vertically, usually with narrow strips called battens nailed over the joints. Vertical siding tends to make a house appear taller.

The kind of siding chosen will depend on where the house is built, its price range, and the architectural effect wanted. A range of qualities is available, from clear, edge-grained lumber to flat-grained material with knots and other characteristics that should be given special finishing treatments, depending on the effects wanted (fig. 2).

Paints last longer and give better service on softwoods of low density than on those of high density, and on edge-grained than on flat-grained boards. On woods with broad summerwood bands, a special primer (first coat) is needed for good service, as described on page 9.

The House and Its Siding

Wood siding is a part of the house, and therefore its performance is vitally affected by the rest of the structure. The whole house must be well and properly built to insure long-lasting service.

Houses are built differently today and must serve under different conditions than in grandfather's day. Insulation, weatherstripping, and generally tighter construction have cut down fuel bills and made for greater comfort, but have also created some wintertime problems in our northern States, wherever proper precautions have not been taken.

Part of the water vapor formed within a house moves through the inner surfaces of walls because of differences in temperature between the inside and outside. Under certain temperature conditions, this water vapor condenses and collects as liquid water or frost back of the siding. And much more water or frost is likely to collect back of the siding of an insulated than an uninsulated house, because the outer skin of an insulated house is colder. With the return of warm weather, this moisture can—and often does—cause the exterior paint to blister.

The problem has been further accentuated by central heating plants and indoor plumbing, which have created a great deal more water vapor in houses—vapor that has less chance to escape to the cold outdoors than is the case in the older, less tightly constructed houses.

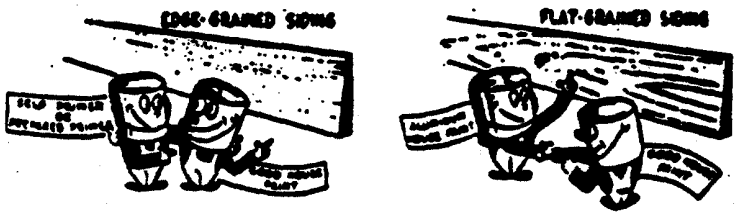

Figure 2.—Edge-grained (left), flat-grained siding.

There are a number of things that can be done to help keep moisture out of walls. One of the most effective is to put a good vapor barrier (fig. 3) under the plaster of exterior walls in every insulated house built where the average January temperature is 35° F. or lower. Asphalt-coated paper, aluminum foil, and polyethylene film make good vapor barriers.

Rain and snow water must be kept out too. Roof gutters must be sloped and have enough downspouts or they may overflow during rainstorms and let water seep into walls through joints in the siding. Likewise, the eaves must be well flashed. This helps keep out snow melt when gutters become clogged with ice.

Good roof overhangs help a lot and metal flashing is needed in roof valleys, along dormers, and around chimneys. Window and door frames also need adequate cap flashing. Joints should be snug where siding boards butt together and against window and door trim. But siding that is fitted against roof shingles, as on dormers (fig. 4) and roofed entryways, should be about 1 inch short. Otherwise, water can soak into the end grain and cause the paint to fail.

A comparatively new treatment for the siding itself helps keep moisture out of walls. Siding can be dipped in a water-repellent preservative before it is installed, or the water repellent can be brushed on after the siding is installed and before it is painted. These preservatives are sold by lumber dealers and some paint stores. They contain waxes, resins, and oils that cause water to slide off, instead of wetting the backs of the siding boards by working through the butt joints or crawling up through the lap by capillary action.

Installing Wood Siding

Wood siding is simple to install. It is precision-manufactured to standard sizes and is easily cut and fitted and fixed in place with ordinary tools.

Courses of siding should be spaced so that a single board runs continuously above and below windows and above doors without notching. Bevel siding 6 inches wide should have at least 1 inch of

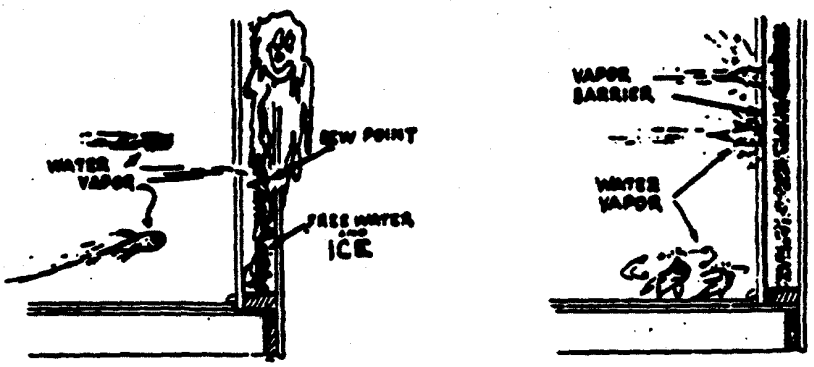

Figure 3.—How a vapor barrier prevents vapor from entering an insulated wall.

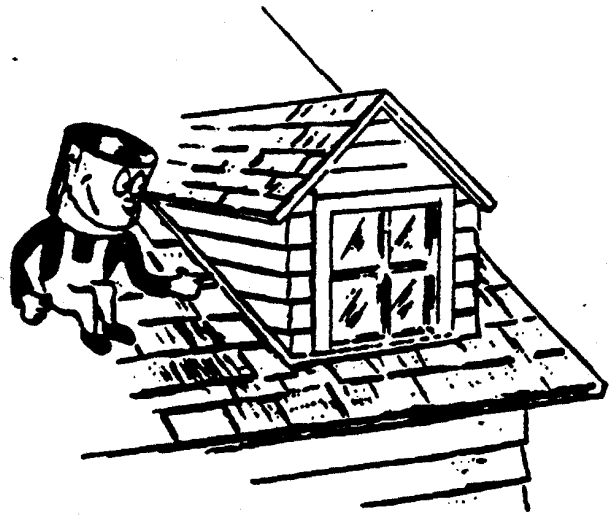

Figure 4.—Method of fitting dormer siding to roof to protect siding ends from water. Metal flashing extends back of siding and under shingles.

overlap between courses. Siding 8 inches or wider should overlap at least 1¼ inches.

Siding should be butted snugly and squarely against door and window casings, corner boards, and adjoining boards. (Corner boards should lie flat against the sheathing.) If metal corner covers are used, siding boards should be carefully cut to avoid leaving a hollow place under the corner cover where water could collect. Mitered corners should be precisely fitted for the same reason.

To fasten siding in place, zinc-coated, aluminum, or other noncorrosive nails are recommended. Plain steel-wire nails, especially the large-headed ones designed for flush driving, make unsightly rust spots on most paints. Even small-headed plain steel nails, countersunk and puttied, are likely to spot the finish with rust.

Wood Finishes

The first finishing job on a house is the most important one. It is the foundation for all subsequent finishing, and if all goes well it will remain there for the life of the house.

Selection of a finish must be made from among three broad classes: (1) natural finishes, (2) stains, and (3) paints. The choice, of course, will depend to a great extent on personal preference, considering the advantages and disadvantages of each class of finish.

Natural Finishes

Natural finishes either penetrate the wood or form a film on its surface. The penetrating finishes may be clear or pigmented; the film-forming type is usually clear.

Natural finishes of the surface-coating type give a lustrous, even

glossy coating. These are chiefly spar varnishes. A really durable natural finish of this type has yet to be developed.

The penetrating natural finishes leave little or no continuous coating on the surface. They include oil finishes, wood sealer finishes, and water-repellent finishes. The latter penetrate wood readily and completely, but the oil finishes and especially the sealer finishes may leave some excess on the surface. For best results, the excess should be wiped off from 5 to 10 minutes after application. All three types of penetrating finish look better and last longer if they contain some pigment.

Before a natural finish is applied, it should be tried on samples of siding to be sure the effect is what is wanted. If there is likelihood that a paint finish may be wanted later, a wood sealer or an oil finish should be chosen. Although the pigmented water repellents are among the better natural finishes, they contain more wax than the water-repellent preservatives recommended for the treatment of siding. They are likely, therefore, to interfere with the drying and adhesion of house paints, whereas the water-repellent preservatives do not.

Natural finishes are not nearly so durable as paint. Therefore, they must be renewed more frequently than paint, usually every year or, at the most, every two years. Even with such attention and care, the surface-coating types may ultimately need to be removed completely to restore a satisfactory finishing surface. In any case, they must be removed entirely before paint can safely be put on.

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Stains

Good shingle stains are inexpensive and much more durable than natural finishes, therefore requiring much less maintenance. They come mostly in dark browns, greens, reds, and yellows. Stains penetrate and color wood, obscuring its grain but leaving little or no surface film. Rough-sawed or weathered wood surfaces are especially suitable for stains. Good stains should last at least 5 years, and may last as long as 9 or 10. Even on planed surfaces, they will last at least as long as paint before needing renewal.

Since stains form little or no coating on the surface of the wood, they do not crack, curl, flake, or scale. Neither do they blister. Some stains, however, contain creosote, which may discolor light-colored paint applied over them later.

House Paints

House paint is the most widely used finish for wood siding and white house paint is the most popular. A good white house paint should last at least 4 or 5 years before it must be renewed; tinted paints, 5 or 6 years; and dark-color paints, 6 to 8 years (fig. 5).

House paint consists of two parts, a solid part (pigments) and a liquid part (the vehicle). The pigments include hiding (opaque) pigments and transparent (extending) pigments. The vehicle consists essentially of a drying oil (usually linseed oil), a thinner, mineral spirits or turpentine, and a small amount of paint drier or japan drier, necessary to make the paint harden promptly after application. The kind and quality of a paint are determined by the nature

Figure 3.—Expected service life of white, tinted, and colored paints.

of its pigment, the proportion of pigment in the vehicle, and the kind of vehicle.

House paints may be classified simply according to the pigments used in them. Using this system, there are six basic kinds or types of house paints: white lead, titanium-lead-zinc, titanium-zinc, titanium-lead, titanium, and dark-color.

Each type has some of the characteristics generally considered essential in good house paint. These include durability sufficient to last 4 to 6 years before needing renewal, a normal form of wearing that insures a good repaint surface with a minimum of preparatory work, and a normally fast rate of wear from the surface. This last is to prevent the accumulation of an excessively thick film of paint when a reasonable maintenance schedule is followed (a single coat every 4 or 5 years or 2 coats every 6 years). Paint should also have a clean, highly reflective color and ability to remain free from excessive dirt collection in service. It should be nonsensitive to moisture and should not be stained by metal corrosion. Nor should it be discolored by hydrogen sulfide or organic sulfides.

No one type of house paint on the market has all of these characteristics. All have some desirable features and some that are not so desirable. In order to select the type of paint that is likely to give the most satisfactory service, the homeowner should be familiar with the conditions to which house paints are subjected in his area. He must also know which types of paint will stand up best under these conditions—which of the various paint properties are important to him under the circumstances, and which are relatively unimportant.

In terms of years of use, white lead paint is the oldest. It has been used on houses in this country since Colonial times and it is still preferred by some painters and houseowners to the other types of house paints. However, it now accounts for only a very small fraction of the total volume of house paint used in this country.

White lead paint is a durable paint that normally fails by checking and crumbling. This pattern of failure leaves a good repainting surface that requires little preparatory work. It is also a comparatively soft paint that wears away at a faster rate than most other paints. This permits a flexible maintenance program with little risk of building the paint film to excessive thickness. White lead paint is available in ready-to-use form and as a paste that can be mixed on the job with linseed oil, paint thinner, and drier.

Because it has good tint retention, colors-in-oil may be added to make tinted paints. In addition, it resists staining by rusting metal. Probably the most important of its properties, however, is its nonsensitiveness to water. Even when exposed to water for a long time, it swells only about as much as wood does when wet. Consequently, it has little tendency to blister.

White lead paint also has some disadvantages, some of which have led many houseowners to prefer other types of house paint. For one, it has lower opacity, or hiding power, than the other types of house paint. Also, it has an off-white color that does not compare favorably with the intense, brilliant white of most other paints. One of the more serious objections is its dirt retention. Despite the fact that it wears away faster than other paints, it collects more dirt and retains it longer than most other types of paints. Another serious objection is its property of discoloring on contact with hydrogen sulfide and some organic sulfide gases that cause the formation of black lead sulfide. Because of this property, white lead paint and other paints containing lead pigment should not be used in areas where these chemicals are likely to be present in the atmosphere. Finally, white lead paint is slightly more expensive than other types of house paints.

Most paints are of the titanium-lead-zinc type. The lead and zinc content of such paints ranges from extremely high to very low, and the proportions of lead and zinc also vary widely. In general, paints of this type have a brilliant and highly reflective color, remain uniformly clean in service, and are durable. They are generally hard and wear away slowly.

Paints of this type, like most paints that contain zinc oxide, normally fail by cracking, curling, and flaking. With paints that fail in this manner, it is necessary to take certain precautions to insure a good repainting surface. The film of paint on the wood must not be permitted to become too thick and the failure must not be permitted to advance too far before repainting is done.

Zinc-containing paints have been found to swell much more than wood when wet, and must therefore be classified as moisture-sensitive. They blister more readily on contact with water than do the other types of paint. Under some conditions, contact with water may not cause zinc-containing paints to blister but may simply induce premature cracking, curling, and flaking. Precautions suggested on page 16 will help reduce contact of this type of paint with water.

Titanium-lead-zinc paints also are likely to become stained by nail rust and by the corrosion products of iron and copper screens. The lead in them accounts for their discoloration by hydrogen sulfide and certain organic sulfides.

House paints of the titanium-zinc type are sold in large volume, second only to the titanium-lead-zinc paints. Their properties are very similar to those of the titanium-lead-zinc paints. The most important difference between them is that the titanium-zinc paints do not discolor on exposure to hydrogen sulfide or organic sulfide gases, since they contain no lead or other pigments that react to form metallic sulfides of dark color. For this rea-

son they are often referred to as "fume-proof" paints and are recommended for use where sulfide discoloration is a problem.

Paints made with titanium and lead pigments, but without zinc oxide, have appeared on the market in recent years. Most of these are sold as "breather-type" paints. They contain—in addition to titanium and lead—a high proportion of transparent (extending) pigment to binder (the nonvolatile part of the vehicle). Paints of this type are characterized by their lack of gloss.

A few paints pigmented with titanium and lead are sold as "titanized white lead." Some paints of this type contain no extending pigments, but are made with a conventional ratio of pigment to binder and therefore have as much gloss as the zinc-containing paints.

Paints of the titanium-lead type are nonsensitive to moisture and therefore blister-resistant. They have high opacity and generally rate between white lead paint and the zinc-containing paints in color quality, resistance to soiling by dirt and staining by rusting metal, and the rate at which they wear away. They fail by checking and crumbling, and provide a surface that is easy to repaint. They are, however, discolored by sulfides.

Paints made of titanium pigment alone, combined with one of several special vehicles, are now available on the market. One of the vehicles used is a long-oil alkyd resin; another is referred to as a copolymer solution. Titanium paints are sold as "blister and stain resistant" paints. Like the "breather type," they have little or no gloss.

In opacity, color, and resistance to soiling by dirt and staining by rusting metal, titanium paints are like the titanium-lead paints. The titanium paints differ in that they are enamellike in their characteristics and resist sulfide discoloration. These paints normally fail by cracking, curling, and flaking, and indications are that they wear away at a rate similar to that of the titanium-lead paints.

Dark-color paints, sometimes called trim paints or trim-and-trellis paints, consist chiefly of dark-color pigments with little, if any, titanium dioxide, white lead, or zinc oxide. In most trim paints, the major part of the vehicle is varnish, usually an alkyd-resin varnish. Iron oxide paints—the familiar red barn paints—may also be classified as dark-color paints. Sometimes used on houses, they are very durable if properly made. In general, good paints of dark colors are more durable than any white or light-colored paint and less sensitive to water than are white or light-colored paints made with zinc oxide.

Paint Primers

Some paints can be used as self-primers, while others need a special primer for the first coat on new wood. The proper choice of primer can do much to insure a long-lasting, trouble-free paint job. In particular, a primer should be free of zinc pigments, even if a zinc-containing paint is used for the finish coat. Most paint makers provide special, zinc-free house-paint primers or undercoaters for use with their mixed-pigment paints containing zinc. As a rule, it is wise to use primer and finish paint of the same brand.

New wood that is to be finish-coated with white lead or titanized white lead paint can be primed with the finish-coat paint (called "self-priming") or with a zinc-free, prepared house-paint primer. "Breather-type" paints and titanium-alkyd resin paints are usually used as self-primers.

A special primer is needed for flat-grained wood with wide summerwood bands (fig. 6) and wood with knots. Aluminum house paint, sometimes called "aluminum paint for wood," has been found best. Paints applied over ordinary primers are likely to flake off the summerwood rapidly, leaving unsightly blemishes. Knot sealers, which minimize "bleeding," may be used over knots in wood having narrow summerwood bands.

Selection of a particular type of house paint requires careful thought. Where moisture troubles are widespread, a zinc-free paint is to be preferred. The experience of others in the neighborhood and city is helpful in finding out what types of difficulties with paints are common and which paints serve best. The construction of the house should also be considered. Does it have a wide roof overhang to shield the walls? Has it adequate gutters and downspouts and are they properly installed? Is there a good vapor barrier along with the insulation? If the answers are yes, a zinc-containing paint stands a fair chance of success (but only over a zinc-free primer). If there is doubt, one of the zinc-free paints is the wiser choice.

Finishing Wood Siding and Trim

Questions that arise regarding the job of applying finish include: When to paint? Where to begin? How many coats?

Finish can be applied with a brush, spray, or roller. A brush is generally used and, for purposes of this publication, brush application is assumed.

Finish is best applied during warm, dry weather when several weeks of sunshine can be expected. This creates a problem with regard to houses built during fall or winter, and often builders let them stand with a prime coat until spring before finishing the job. This procedure can result in trouble. The

Figure 6.—Applying aluminum house paint as the primer on flat-grained siding and wood with knots.

better practice in such cases is to brush water-repellent preservative on the siding, after which it can go without finish until spring.

Because water-repellent preservatives help keep rainwater out of house walls, the most effective time to apply them is before any other finish has been put on the siding. They are especially recommended for use under moisture-sensitive paints, natural finishes, or stains that contain no fungicide.

With natural finishes, 1, 2, or 3 applications may be required, depending on the type of finish used. The manufacturer's directions should be followed. In general, natural finishes are easy to apply.

Stains, too, are easy to apply. On planed wood surfaces, one application may be enough, but two applications usually result in a more durable job. Two applications are generally recommended on rough-sawed or weathered surfaces.

The answer to the question, "How many coats?" depends largely on the kind of paint selected. As a rule, a 3-coat job is recommended for new wood. Many builders apply only 2. A first paint job should be 4½ to 5 mils (thousandths of an inch) thick, which is about the thickness of a dollar bill. It is difficult, if not impossible, to apply that much by brush with 1 primer and 1 finish coat of today's average paints. In winter especially, 3 coats are needed. Exceptionally heavy coats, where paint is applied at a rate of 450 to 500 square feet a gallon, are likely to result in wrinkling, loss of gloss, and slow drying during cold weather.

With paint, an old craftsman's rule is: "Follow the sun around the house." This means that the north side should be painted early in the morning, the east side late in the morning, the south side well after noon, and the west side during late afternoon.

Morning dew or the water of a brief shower should be wiped off, and after half an hour of warm-weather sunshine painting can begin. After many hours of hard rain, however, a day or two of drying is needed.

The beginning painter can learn to gage spreading rates by applying a pint of paint evenly over a measured area. For example, at a spreading rate of 600 square feet to the gallon, a pint covers 75 square feet, or an area of 5 by 15 feet; at 700 square feet a gallon, a pint covers 87½ square feet, or an area of 5 by 17½ feet. The average beginner tends to spread paint out too thinly.

For modern paints of average composition, a total thickness of between 4½ and 5 mils results when 1 coat of house-paint primer is applied at 600 square feet a gallon and 2 coats of finish paint at 700 square feet a gallon each.

In warm, dry weather, each coat should dry a day or two before the next is applied. Cold or damp weather may make an extra day or two advisable, but more than 2 weeks between coats should be avoided.

Finish Maintenance

Hot summer sun, wind-driven rain and hail and dust, and winter snow and ice gradually take a toll of even the best finish. How frequently the finish should be renewed is governed by the rate at which it weathers away. Finishes vary considerably in this respect. The popular natural finishes need

renewal every year or two. Stains, on the other hand, are very durable and should not need to be renewed in less than 5 years. There is considerable variation among paints, also, but the types most commonly used on house siding weather away at fairly uniform rates, so that definite repainting schedules are practical.

Penetrating natural finishes are easy to renew. Fresh finish is simply applied when the old finish appears to need it. As with the first finishing job, any excess of sealer or oil should be wiped off, so that formation of a surface coat is prevented.

Natural finishes that leave a surface film are more troublesome to maintain than those which penetrate the wood. Difficulties arise mainly because the finish on certain areas of a wall, such as those under roof overhangs, remains in good condition longer than that on exposed wall areas. It is recommended, therefore, that only the more weather-beaten areas be renewed. This is sometimes difficult, because these finishes are not easily blended over worn and unworn areas to give a uniform appearance. If, on the other hand, the protected areas are renewed as frequently as the unprotected ones, excessively thick coatings will be built up and will require costly removal later.

Stain finishes can be renewed without difficulty when their appearance indicates the need for renewal.

As already pointed out, a paint maintenance program is determined by the kind of paint used in the first job. The basic rule is, paint only after most of the old paint film has weathered away. Always remember that coating thickness can build up dangerously if paint is applied too frequently, with resulting abnormal behavior that spells trouble and possibly costly removal of old paint by blowtorch or paint and varnish remover.

Assume the first 3-coat paint job was 4½ to 5 mils thick. As a rule, at least 4 years are required to wear away enough zinc-containing mixed-pigment paint to make room for 1 coat of new paint applied at 650 to 700 square feet per gallon, and 6 years for 2 coats applied at 700 to 750 square feet each. White lead paint wears away about half again as fast as the zinc-containing paints. The zinc-free, mixed-pigment paints are more like the other mixed-pigment paints than pure white lead in wearing rate. Dark-color paints, including iron oxide paints, wear away most slowly of all.

The wearing rate pretty well tells what to do: 1 coat not oftener than every 4 or 5 years, or 2 coats not oftener than every 6 years, for white and tinted paints. One coat every 6 years is enough for dark-color paints.

In repainting, good practice is to use the same type of paint originally applied on the house. A change to a different type of paint may result in early failure through incompatibility. If, therefore, a paint has given satisfactory service, it should be used in repainting. If a paint has given trouble, a change to a different type may be advisable. Even then, it is best to wait at least 4 years after the last repaint job before making such a change.

When color schemes are changed, a couple of simple rules should be followed. The best practice is always to use essentially the same

paint for repainting that was originally applied on the house. If white lead paint was used, a change from white to a tint may be made by adding colors-in-oil. However, colors-in-oil should never be added to white mixed-pigment paints. If such a paint has been used and a tint is desired, purchase the tinting-base paint made by the same manufacturer for this purpose. A change from a white or light-color paint to a dark-color paint may be made without too much risk of failure, but a white or light-color paint should never be applied over a dark-color paint.

Different paints, naturally, wear differently—and show wear differently. Paints that do not contain zinc oxide, such as white lead paint and the titanium-lead paints, normally begin to develop fine fissures, called checks, in a year or two. These slowly multiply and deepen, eventually reaching the wood, and the old paint crumbles away. Moreover, in a year or so some of these paints will soil quite noticeably. Later on, as the paint chalks and begins to crumble, the dirt will disappear; or, the surfaces can be washed with water and a cleansing agent sold by paint dealers.

Paints containing zinc oxide wear quite differently. They begin to crack through to the wood in occasional spots during the second or early in the third year, meantime having developed chalky surfaces that dull their luster. As time goes on, more cracks open, they widen and lengthen, and the paint around them curls back and flakes off.

Such normal paint behavior is best taken in stride. If possible, a repaint schedule of 1 coat every 4 or 5 years or 2 coats every 6 should be maintained. However, this may not always be practicable. If, for example, the original paint job wears away in 3 years to the extent that appreciable areas of siding are laid bare—as frequently happens with scanty 2-coat jobs—the owner will understandably want to repaint at that time. This can be done with reasonable safety because the original paint film was in all likelihood too thin to start with. All loose paint should be removed with a scraper and wire brush, the bare areas should be spot primed, and then 1 coat of topcoat paint applied overall. Thereafter, the more extended repaint schedule should be resumed.

Finish Troubles

Paint troubles arise from various causes. Most common are vapor troubles in tightly built, insulated houses lacking vapor barriers; rain or other water that gets behind siding; improper first priming of wood with wide summerwood bands; repainting too soon; or use of a different type of paint in repaint jobs. Evidence of paint trouble usually comes in the form of excessively fast wearing away of the paint, as blistering followed by peeling, or as premature or excessive cracking, curling, and scaling.

Once trouble has set in, the best course is to go slow. Premature repainting to cover up unsightly paint failure in the long run only makes matters worse. The coating will be built to dangerous thicknesses on places where paint didn't come off. Ultimately, the coating will get too thick, and an abnormality known as cross-grain cracking will set in. Once that happens, there is no recourse except remov-

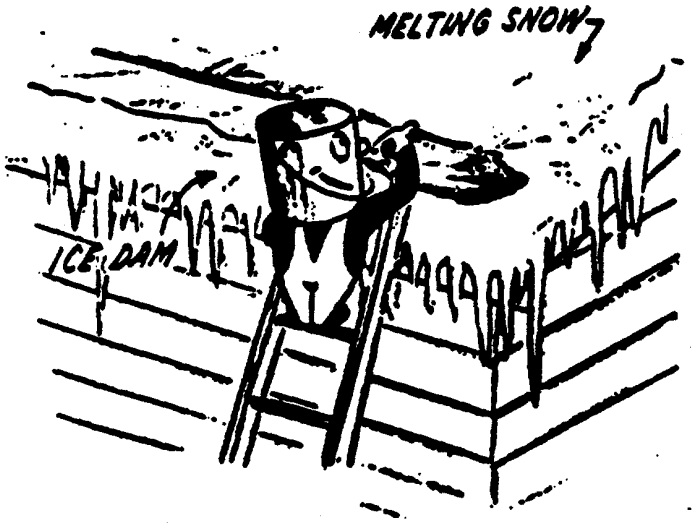

Figure 7.—How ice dams form. Snow water from upper roof freezes on cold overhang or in snow-clogged gutters, builds up dam.

ing all paint down to the bare wood and starting over.

Before any repainting is done, the probable cause of the trouble should be ascertained. If it is due to springtime blistering in the colder northern States, a better vapor barrier is probably needed. This can be obtained by painting the indoor side of the exterior walls. Two coats of aluminum paint plus 2 coats of decorative paint are best for sand-finish plaster. On smooth plaster, a primer and sealer and 1

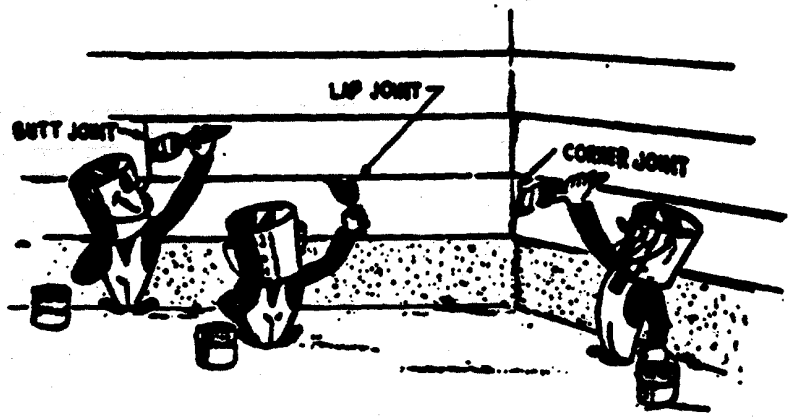

Figure 8.—Treating lap, corner, and butt joints in bevel siding with water-repellent preservative before repainting.

coat of decorative paint make a good barrier. For gypsum board, 2 coats of rubber-base paint appear to be effective. Shutting off humidifiers will also help.

Where the trouble is due to water that gets inside the walls from the roof, leaks should be found and the gutters examined and rehung lower if necessary, especially if the trouble is due to ice damming (fig. 7). If the gutters overflow during heavy rains, additional downspouts may be needed or the gutters may need to be pitched more. If water is getting through the joints of the siding, the lap and butt joints should be treated with water-repellent preservative (fig. 8) before repainting; this type of solution is highly penetrating and creeps well into the joints to seal them against future inroads of rainwater.

Whatever the cause, it should be found and corrected before the house is repainted. Then the repaint job should markedly reduce future recurrences of abnormal paint behavior.