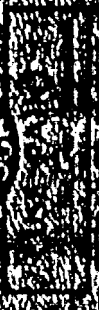


THE

HANDBOOK ON PAINTING



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Attention is called particularly to the directions for doing small jobs given on page 93. By the method suggested, white-lead can be mixed into paint in a jiffy and you are assured of the same durable lead-and-oil paint for the small jobs that is used for the big ones.

CHAPTER I

Some Paint Facts

Before taking up the actual mixing and the use of paint, it may be well to consider briefly the why and wherefore of paint. Whether it is an outside job or an interior job the *kind* of paint used is as important as the way it is used.

One thing is certain—when it comes to paint it always pays to use the best. After all, what you are seeking in a paint job is *paint life*. If the paint does not stand up properly you are being cheated. That is why it is never good business to put on a "cheap" paint. Not only does it fail to preserve its appearance for a satisfactory period, but it involves extensive surface preparation before repainting is done.

What is the Best Paint? The experience of the skilled painter has shown him that this question has but one answer—white-lead. Constant use has proved to him beyond the question of doubt that for economy, durability and long-lasting appearance there is no paint equal to pure white-lead.

The reputable painter cannot afford to guess when it comes to paint. His livelihood, his business future, his reputation as a craftsman all depend on *knowing* what paint will back up his every claim. Does it not speak for itself when this type of painter, the country over, recommends and uses white-lead?

White-lead Paint. White-lead, as you probably know, is sold in paste form—*concentrated* paint. Before this paste white-lead can be applied to a surface, there must be added linseed oil, turpentine and drier or, to make flat paint,

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just Lead Mixing Oil. It is important to understand that pure white-lead paint contains no other ingredients than these, aside from the oil colors that are needed to produce tints. Of course, if white is wanted, the paint is simply left uncolored.

This "made to order" characteristic of white-lead is important. For instance, paint for yellow pine should be mixed a little differently than that for cedar; humid climates require less oil in the final coat of paint; the undercoat should be so mixed that it will provide proper "tooth" for the top coat, and so on. All of these things add to the life of a paint job and with white-lead these variations can be easily, quickly and accurately made. In brief, white-lead really assures a custom-made paint specially designed to fit the conditions of a house.

In addition, white-lead can be tinted to a wide range of colors, just the tint or shade desired. No need to compromise on something approximately what you have in mind. Finally, and very important, is the fact that you can be sure of what's in the paint—the quality of every ingredient—the composition of every brushful.

Elastic Paint Necessary. The paint on a house should be designed to give a tough, highly weather-resistant coating and should retain its good appearance over a long period. The paint film, furthermore, should remain elastic. This also is important. Wood contracts and expands due to atmospheric changes. A paint film that is hard and unyielding, or that becomes so, cannot follow this alternate shrinking and stretching of the material to which it is applied. Consequently it pulls apart. In the film appear cracks that extend clear through to the wood beneath. Moisture entering these cracks gets under the paint;

causes it to scale from the surface leaving bare spots that grow larger as time goes on. The inevitable result is an expensive preparation job before any repainting is done.

A white-lead film is never subject to this defect. It remains elastic; conforms to the "give and take" of the surface beneath. Consequently it does not crack and scale and when repainting time comes around there is no old, scaly paint to be burned and scraped off—a job which sometimes costs almost as much as the actual repainting. And too, this removed paint must be replaced with an extra coat—three coats instead of the usual two for repainting.

White-lead paint wears by slow and gradual chalking. This advantageous quality permits the white-lead film to remain unbroken, smooth and even, providing efficient protection for the surface during the entire long life of the paint. And, a further consideration, this type of surface is ideal for repainting. A preliminary dusting off is all that a properly white-lead surface needs when repainting time comes.

Heavy Paste and Soft Paste White-lead. Dutch Boy and Carter white-lead are sold in two forms, heavy paste and soft paste. Both are pure white-lead. Both sell for the same price. Heavy paste white-lead has been used for many years. Soft paste is of more recent development.

The terms "heavy" and "soft" refer to the consistency of the white-lead. In fact, soft paste white-lead is simply heavy paste to which has been added a small amount of turpentine, thoroughly ground in at the factory with special mills. This produces a white-lead which can be thinned to paint more quickly and more easily than heavy paste. The resulting paint is exactly the same in either case so it is simply a matter

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of personal preference which form of white-lead shall be used.

Formulas covering both soft paste and heavy paste are given in this handbook. In mixing paint according to these formulas, be sure to follow those applying to the *kind* of paste you are using.

The Dutch Boy and Carter brands of white-lead, used by skilled painters everywhere, are of the highest grade—strictly pure, finely ground, excellent in spreading and hiding properties. It will pay you to use either one of these brands when you are ready to paint.

Dutch Boy or Carter white-lead may be obtained in the following size steel packages at practically any store selling paint: 100-pound kegs, 50, 25 and 12½ pound pails, 1 and 5 pound tins. The soft paste containers are plainly marked "Soft Paste".

Linseed Oil. Only linseed oil of the best quality should be used in white-lead paint. Linseed oil becomes a very important part of the paint film as it binds the white-lead particles together. If it fails prematurely, the paint film fails also.

We manufacture, under the Dutch Boy name and trademark, three types of linseed oil—raw, boiled and standoil type. All are pure linseed oil—nothing else—but they differ somewhat in their characteristics as explained below. All three kinds are put up in sealed containers—one-gallon cans and five-gallon drums. The seal, placed on the spout at the factory, is your guarantee that you are getting Dutch Boy linseed oil, the best that can be made.

Raw Linseed Oil. Raw linseed oil is obtained by crushing and pressing flaxseed. The oil is

aged for a certain length of time to allow the "foots" or impurities to settle out, after which it is packaged for sale. Of course, raw linseed oil is a natural product and, just as quality tobaccos and finest coffees come from selected crops, so also the best raw linseed oil is obtained by selecting the best seed from the flaxseed crop. The best assurance of getting this type of oil is to purchase from a reliable source.

Boiled Linseed Oil. Boiled linseed oil is made from raw oil by dissolving certain drying compounds into raw oil with the aid of heat. This heat treatment accounts for the term "boiled". Boiled oil is somewhat thicker than raw oil and since it has been partially oxidized in its manufacture has a quicker drying action than raw oil when used in paint. Consequently, little, if any, drier should be added to the paint when boiled oil is used as the vehicle.

Skill in manufacture is an important factor in the production of high quality boiled linseed oil. Not only must the best raw oil be used, but the right kinds and amounts of drier added and the whole mixture carefully heated for the proper period of time. It will pay the purchaser to insist on genuine boiled oil of a reliable brand.

Standoil Type Linseed Oil. This is pure linseed oil that has been specially treated to produce a bodied oil. This type of oil has long been used in the preparation of the best enamels and when mixed with white-lead will give improved gloss and better leveling qualities to the paint. It is also a help in correcting some of the difficulties caused by adverse weather and surface conditions. Because standoil type linseed oil is more viscous than raw linseed oil, more turpentine must be used with it in mixing finish coat paint.

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Drier. Although the amount of drier used in white-lead paint is small, its effect is powerful and therefore it is very important to use nothing but a high-grade liquid drier.

Because of the great importance of drier, Dutch Boy liquid drier was developed for use in white-lead paint. This product is the result of a careful study of the drying requirements of paint. It is an unusually strong drier of the best known composition—properly balanced to bring about efficient drying of the paint—always uniform in strength and quality. Dutch Boy liquid drier can be purchased wherever white-lead is sold. Comes in half-pint, pint, quart and gallon cans.

Turpentine. Turpentine is added to paint to reduce its consistency, making it easier to brush, without changing the relative proportions of pigment and linseed oil. A short time after application, the turpentine has completely evaporated from the paint film, leaving the correct proportion of oil and white-lead. It makes possible the spreading of a fairly flat, hard body coat and in the finishing coat its use, in the right amount, makes it possible to reduce the quantity of linseed oil, resulting in a harder, better wearing paint. Turpentine also assists the penetration of the paint, particularly in the priming coat on resinous woods.

Colors in Oil. White-lead, mixed according to the paint formulas in this book, makes white paint. However, it is a simple matter to tint this paint to any desired shade by adding what are known as colors in oil. This is discussed in detail in Chapter VI, Colored Paints, beginning on page 55.

Dutch Boy colors in oil, noted for their ease of use and high quality, can be obtained almost everywhere white-lead is sold. There are thirty-

eight different colors in the Dutch Boy line. They come in convenient packages—gallons, quarts, half-pints and most colors are also available in tubes.

Wall Primer. For the first coat on interior plaster, Dutch Boy wall primer is the best possible recommendation. Not only does it effectively stop the surface suction and seal fine fire cracks, but it hides the surface as well, providing an ideal foundation for the succeeding coats. It does all these things because it is an actual paint—not simply a sealing liquid—and made with a carefully prepared varnish type vehicle.

Dutch Boy wall primer—the “sealer and paint coat combined”—is sold in half-gallon and gallon cans, as well as five-gallon drums.

Lead Mixing Oil. Dutch Boy Lead Mixing Oil is designed especially for use with Dutch Boy or Carter white-lead. It produces a paint that seals, protects and beautifies all porous surfaces whether they be plaster, concrete, brick or stucco—interior or exterior.

Interior paint made with white-lead and Lead Mixing Oil may be used for all coats on new plaster or wallboard. In the priming coat, it effectively seals the surface, and in the final coat, it produces the soft, glossless finish commonly known as a “flat effect”. Its solid, smooth surface is not only beautiful but also sanitary and enduring as well. The hard tough film withstands frequent washing.

Dutch Boy Lead Mixing Oil with white-lead also makes a superior undercoater for enamels and an ideal ground for graining, etc. Some of its other uses are in stenciling and bronzing.

Exterior paint made with white-lead and Lead Mixing Oil is ideal for concrete and stucco. Such surfaces need a waterproofing paint to prevent

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dampness, cracks and surface staining. The sealing properties of Lead Mixing Oil result in a paint which successfully keeps out dampness and moisture. In the final coat, it produces a hard, durable surface which wears down slowly by gradual chalking leaving a perfect repaint surface. Lead Mixing Oil also makes a fine vehicle for red paint for brick.

Dutch Boy Lead Mixing Oil can be purchased where you buy your white-lead. It comes in one gallon cans and five gallon drums.

Red-lead. Red-lead occupies practically the same position in the field of metal painting that white-lead occupies in the field of house painting. It is the standard paint for the protection and preservation of iron, steel and other metal surfaces. Red-lead paint is insoluble in water, is not affected by ordinary atmospheric gases, sticks tightly to the surface it covers and is a true rust preventive.

Under the Dutch Boy trademark, you can obtain red-lead in paste form, mixed with pure linseed oil; or in liquid form, ready for the brush. The former is known as Dutch Boy red-lead and is sold by the pound in 12½, 25 and 50 lb. pails and in 100 lb. kegs.

The liquid red-lead is known as Dutch Boy Quick-Drying Red-lead Primer. It is a convenient and economical paint for use on metal surfaces about the home, such as tin roofs, gutters, iron fences, fire escapes, railings, etc. Not only does it give the long life and efficient protection of all pure red-lead paints but it gives the added convenience of quick drying. In from four to six hours after application, it can be recoated either with another coat of red-lead or with the finishing paint.

Quick-Drying Red-lead Primer comes only in

natural red tinted to different colors in oil cans, five-gal.

Red-lead is contained in different pails, in 100 lb. casks.

The Use described in the drier, turpentine, Lead Mixing Oil ingredients—whether on surface. Waxes and varnishes material should be used.

Paint must be properly mixed and applied a good application year of service.

As pointed out, it comes to you. Any correspondence, job. Beware! Only does it is false.

CHAPTER II

Exterior Wood Painting

The formulas on the opposite page are suggested as a guide for mixing white-lead paint for the painting of exterior wood surfaces. The discussion which follows will be useful in adjusting these formulas to meet the particular condition of the surface which is to be painted. See Chapter VI for directions on tinting white-lead paint. Formulas for making a one gallon batch of white-lead paint are given on page 96.

Adjustment of Formulas. The formulas on the opposite page have been carefully worked out to represent our best judgment as to sound painting practice for average conditions. In most locations and on most types of surfaces they will give excellent results. However, it is recognized that the *best* average formulas do not meet all conditions and it is one of the chief advantages of white-lead that paint made from it can be readily adjusted for best results. Experience is the best guide to this adjustment but a few general facts may be helpful.

The first coat of paint on a surface that has never been painted or from which all previous paint has been removed is known as the priming coat. It is the foundation for all succeeding coats of paint and therefore its proper formulation and proper application are particularly important.

A wood surface, as revealed through a microscope, is made up of countless small openings. In order to anchor paint properly to such a surface, the priming coat must enter these openings and key itself on the surface by filling the open

PAINTING

Form

Materials

Dutch Boy white-
or Carter white-
Dutch Boy linse-
Pure turpentine
Dutch Boy liqui-
Gallons of paint
Coverage (600 s

Form

Materials

Dutch Boy white-
or Carter white-
Dutch Boy linse-
Pure turpentine
Dutch Boy liqui-
Gallons of paint
Coverage (700 s

Form

Materials

Dutch Boy white-
or Carter white-
Dutch Boy linse-
Pure turpentine
Dutch Boy liqui-
Gallons of paint
Coverage (700 s

REPAIR

Form

Materials

Dutch Boy white-
or Carter white-
Dutch Boy linse-
Pure turpentine
Dutch Boy liqui-
Gallons of paint
Coverage (700 s

Form

Materials

† When boiled
* If the oil is
time to this form

wood cells. It must therefore contain enough linseed oil to satisfy the porosity and enough turpentine to bring about proper penetration.

Formula No. 1 is made up on this basis but woods such as cedar, redwood and white pine are more absorbent than yellow pine or Douglas fir, so the painter should adjust the linseed oil and turpentine to take care of these differences. For example, the latter types of wood require less linseed oil to satisfy porosity and more turpentine to penetrate the rather pithy surface.

The first coat of paint on repaint work (Formula No. 4) must also satisfy a certain amount of surface porosity although not as much as the first coat on new surfaces. In this case it is usually the dried-out old paint that soaks up the free oil. It will be noticed that there is more linseed oil and turpentine in the first coat on repaint work (Formula No. 4) than there is in the second coat on new work (Formula No. 2) to which, in function, it more or less conforms.

For very dry and absorbent old surfaces, however, some painters add spar varnish to their first coat. An appreciable quantity of spar varnish is necessary—from one quarter to one third of the total vehicle by volume. Other painters follow the practice of applying a paint of heavy consistency. They find that three gallons or less of total vehicle to a "hundred" of white-lead make a heavy enough paint to seal absorbent surfaces properly.

The body coat (Formula No. 2) is formulated to produce a fairly hard, semi-flat surface when dry. It has been found by experience that this is the best type of surface to provide a good foundation for the third and final coat. More linseed oil may be added at the discretion of the painter if it is felt that the priming coat has not entirely done away with the absorption. Care must be

taken, however, to keep the body coat harder and less elastic than the final coat.

The final coat (Formulas No. 3 and 5) contains enough linseed oil to give a satisfactory gloss without at the same time producing a soft film that collects dirt. For normal conditions not more than three gallons of oil to a "hundred" of white-lead are recommended. This proportion of oil should not be increased unless it is noticed that the body coat is exceedingly dry and hard. Putting too much linseed oil into the final coat may also cause premature chalking, particularly on southern exposures. It is a decided mistake to load up the final coat with linseed oil to make a high gloss. True, the immediate effect will be a somewhat higher gloss but it usually departs very quickly or collects so much dust and dirt that the surface is ruined. It is far safer to keep the linseed oil to a maximum of three gallons to a "hundred". In many cases it can be reduced to two and a half gallons with benefit to the life and appearance of the paint film. Such a paint may be harder to brush but the extra effort is well repaid, by the increased durability.

An adjustment of the formula for the finish coat is also necessary when Dutch Boy standoil type linseed oil is used since this oil is more viscous than raw linseed oil. To improve the brushing qualities, an extra quart of turpentine should be added to the amounts called for in Formula 3. This practice should be followed particularly in early spring and fall painting. If the weather is extremely cold, two extra quarts of turpentine may be used.

Mixing Paint from White-lead. It takes but a few minutes to make paint from soft paste white-lead. After stirring in whatever free oil may be on top of the lead when a keg is

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opened, all you do is pour the quantity of lead needed into a clean mixing tub and then mix in thoroughly the linseed oil, turpentine and drier called for by the formula. (See Page 17.)

Paint is made from heavy paste white-lead in exactly the same way as when using soft paste except that it must first be "broken up". This is done by stirring in the linseed oil a little

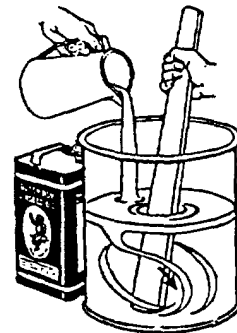


Figure 1

at a time until a workable or fairly soft paste is obtained. For the stirring, use a strong, smooth paddle and work up the lead from the bottom of the mixing tub or pail as illustrated in Figure 1, above.

Straining the Paint. After the paint is completely mixed, strain it through cheesecloth folded double or a fine wire screen. This will remove lumps and any foreign material that may have gotten into the paint, as well as improve the paint's brushing qualities.

A good way to strain the paint is to pour it

1, 2,



(2) Pour the so
into a mixing
pail



from the mixing tub or pail into the paint pots over which the strainer has been stretched. Clean, twenty-five pound white-lead pails make good paint pots, holding about three quarts of paint.

The Use of Drier. Drier should be added to all paint thinned with raw linseed oil as well as linseed oil of the standoil type. Under poor drying conditions, such as cool, damp or humid weather, the amount of drier should be increased, not to exceed twice the amount called for in the formulas. The addition of a small amount of drier is advisable even when boiled oil is used.

Preparation of the Surface. The surface to be painted should be smoothed down before the new paint is applied. If the old paint was white-lead and linseed oil only a light sanding and dusting off will be necessary.

How Many Coats. To insure satisfactory results, three coats should be applied on a surface that has not previously been painted—a thin, penetrating priming coat, a semi-gloss body coat and a glossy, elastic finishing coat. (See Formulas Nos. 1, 2 and 3.)

Two coats are sufficient for previously painted surfaces where the old finish is in reasonably good condition. (See Formulas Nos. 4 and 5.)

The use of two coats on new work or of one coat on repaint work is not recommended. In most cases, the dry, porous surface will not be satisfied with sufficient oil if the one coat is omitted. This may lead to such defects as spotting, fading and excessive chalking. (See page 97.) If an attempt is made to satisfy the surface by using more oil than the formulas call for, short-lived, poor drying, tacky paint coats will result.

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Mix Pies of paint, be have some you are usin waste, for cellar stairs odd jobs w material di left-overs n lampblack s shade.

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in winter if care is taken to choose periods when the temperature is favorable (not lower than 50° F.) and surfaces are dry.

Moisture. Painting should be done in dry weather on dry surfaces. Moisture under paint is almost sure to cause trouble. (See Figure 4, page 102.)

Application. Use plenty of "elbow grease". Brush the paint well into the pores of the wood and do not flow it on. It is doubly important to brush the priming coat in closely. (See Figure 7, page 104.)

Thickness of Coat. Two coats of paint, properly mixed and well brushed out, are always better than one thick, heavy coat. (See Figure 7, page 104.)

Knots. Knots and sappy streaks in new wood should be shellacked, after the priming coat is dry, with pure shellac varnish, brushed out very thin. (See Figure 8, page 104.) When the lumber is extremely knotty, less oil and more turpentine may be used than the formula calls for, as too much oil on the knots causes later coats to draw and check. (See Figure 1, page 100.)

Nail Holes. For putty, use only pure white-lead (either soft paste or heavy paste) thickened to putty consistency with dry whiting. With this putty fill all nail-holes, cracks, knot-holes, dents and other defects in the surface. These places should be filled tightly after the priming coat is dry. Putty containing petroleum and marble dust often mars an otherwise good painting job by showing yellow through subsequent coats.

Time Between Coats. Allow plenty of time between coats for the paint to dry. Outside work should be allowed to dry not less than three days (a week is still better). Be sure the previous coat is hard as well as dry, as painting over a

"soft" surface is likely to cause checking or alighting. (See Figure 1, page 100.)

Keeping Pigment Soft. Unused portions of a keg of white-lead (or red-lead) may be kept soft and free from skins by pouring water over the surface to the depth of an inch or more, and keeping the lid on the keg. First of all, however, the lead should be scraped down from the sides of the keg. When the material is to be used frequently it may be more convenient to cut a disk of paper to fit inside the keg and lay it on the lead.

How Much Paint? For those who do not want to trouble themselves with detailed measurements of a building and wish merely to know approximately the number of gallons of white-lead paint needed for the job, the following method of estimating will do:

Measure the distance around the building in feet and multiply by height in feet to the eaves or cornice. If there are gables, multiply their widest part in feet by half their height. Add these figures and divide the result by 700, which is about the number of square feet that one gallon of white-lead paint will properly cover.

This gives you the number of gallons of paint needed for the body of the building for one coat. Multiply the number of gallons by the number of coats to be put on and you have the amount of paint necessary for the job.

For the trim, figure on using a gallon of paint for each 300 feet of usual-width trim.

Square Feet to a Gallon. In figuring the number of square feet a gallon of white-lead paint will cover, a great deal depends on the surface to be painted; that is, the kind of wood, how dry it is, degree of roughness, etc. Some woods are more porous than others and absorb more paint. Much depends, too, on the way the

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paint is brushed out. Some painters brush the paint out more and thus cover more surface.

The priming coat, mixed according to instructions given on page 13, will cover, on the average, from 500 to 700 square feet to the gallon, one coat. Second and third coats on new work and first and second coats on old work will cover, on the average, 650 to 750 square feet to the gallon, each coat.

Painting Porch and Other Floors. The same precautions must be taken in preparing to paint a floor as in the preparation of any other surface. If the old paint is rough and scaly or thick and gummy, the floor should be cleaned down to the wood by planing, burning and scraping or by the use of a liquid paint remover. If a remover containing lye or other strong alkali is used, the surface must be brushed afterward with a coat of strong vinegar to neutralize all remaining traces of alkali and then thoroughly washed with water. Make sure that every part of the floor is firm and solid. After sandpapering and cleaning, the floor is ready for painting.

Priming Wood Floors. If the floor is of white pine, poplar, hemlock, or other soft wood, use the following formula for the first coat:

Formula No. 6—*Priming Coat

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead or Carter white-lead	100 lbs.	100 lbs.
Dutch Boy linseed oil	3 gals.	3 gals.
Pure turpentine	2½ gals.	2¼ gals.
Dutch Boy liquid drier	†1 pint	†1 pint
Gallons of paint	8½ gals.	
Coverage (600 sq. ft. per gal.)	5,100 sq. ft.	

† When boiled oil is used, reduce drier to ½ pint.

* If the floor is of hard wood—oak, maple, ash, yellow pine or walnut—use ¼ gallon less linseed oil in this formula.

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In applying and brush out paint is flowing not dry thorough too much

After the cracks, nail-holes filled with a g should be firm and smoothed the putty is en

Body and F second coat on new floors, wh use the two formulas should floors with two

Form

Materials

Dutch Boy white or Carter white-lead
Dutch Boy linseed oil
Pure turpentine
Dutch Boy liquid
Gallons of paint
Coverage (700 sq

Form

Materials

Dutch Boy white or Carter white-lead
Dutch Boy linseed oil
Pure turpentine
Floor varnish
Dutch Boy liquid
Gallons of paint
Coverage (700 sq

For porch floors a varnish should be used that will withstand outside exposure.

Two things to keep in mind throughout the work are: first, vigorous brushing to spread out each coat to the utmost; second, allowing each coat at least four days to dry.

Underside of Porch Floors. Porch floors require protection against moisture from the damp space beneath the porch. This space is frequently left without sufficient ventilation. If the soil is damp the porch floor cannot help absorbing a great deal of moisture, which is almost certain to cause blistering and peeling of paint. To prevent trouble of this sort give the underside of the floor, also the tongue and groove edges of the boards, a coat of paint mixed as follows:

Formula No. 9

(Underside Porch Floors)

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead or Carter white-lead	100 lbs.	100 lbs.
Dutch Boy linseed oil	3 gals.	3 gals.
Pure turpentine	1 quart	1 quart
Dutch Boy liquid drier	† 1 pint	† 1 pint
Gallons of paint	6 1/4 gals.	
Coverage (600 sq. ft. per gal.)	3,750 sq. ft.	

Painting Wood Shingles on Side of House.

For priming coat use Formula No. 1, page 13.

For the second coat use:

Formula No. 10—Second Coat

(Wood Shingles as Siding)

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead or Carter white-lead	100 lbs.	100 lbs.
Dutch Boy linseed oil	2 gals.	2 gals.
Pure turpentine	3/4 gal.	1 gal.
Dutch Boy liquid drier	1 pint	1 pint
Gallons of paint	6 gals.	
Coverage (600 sq. ft. per gal.)	3,600 sq. ft.	

† When boiled oil is used, reduce drier to 3/4 pint.

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Gray

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Deep Red

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Bright Red

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Permanent

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Fairly Perm

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Golden Bro

3/4

Seal Brown

1 1/2

Deep Brown

1 1/2

Note: V

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is very likely to cause trouble if the surface is painted in the future. Creosote stains beneath a coat of paint are apt to "bleed" through and cause discoloration and spoil an otherwise good job.

When a previously stained surface is to be painted, and the nature of the stain is not known, some white-lead paint should be applied to a portion of the surface as a test. If, after a few days, bleeding does not occur on this section, it is reasonable to assume that the entire surface may be painted without danger of discoloration. If discoloration does occur on the test portion, the shingles should be either re-stained or painted a very dark color that will make subsequent discoloration inconspicuous.

Department of Technical Paint Service and Decoration. If you have a special problem of a technical nature that is not covered in this book, address your inquiry to us and our Department of Technical Paint Service and Decoration will give it prompt and expert attention.

If you wish color scheme suggestions for the exterior of a house, please give us the information requested on page 112 so that we can more satisfactorily help you.

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possible to give a coverage figure that will be absolutely accurate in every case, but it will be found that 200 square feet per gallon for the priming coat, 400 square feet for the second coat and 600 square feet for the finishing coat are conservative averages.

THE DUTCH BOY SYSTEM FOR PAINTING STUCCO, CONCRETE, BRICK AND STONE—FLAT FINISH

Formula No. 11—Priming Coat

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead or Carter white-lead	100 lbs.	100 lbs.
Dutch Boy Lead Mixing Oil	‡4 to 5 gals.	‡4 to 5 gals.
Gallons of paint	7 to 8 gals.	
Coverage (200 sq. ft. per gal.)		

Formula No. 12—Second Coat

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead or Carter white-lead	100 lbs.	100 lbs.
Dutch Boy Lead Mixing Oil	‡3 to 4 gals.	‡3 to 4 gals.
Gallons of paint	6 to 7 gals.	
Coverage (400 sq. ft. per gal.)		

Formula No. 13—Third Coat

Same as Formula No. 12 above
(Coverage—600 sq. ft. per gal.)

It is strongly recommended that surfaces which have not been previously painted with oil paint receive three coats. If two coat work is attempted, however, mix the first coat on the basis of 3 gallons of Lead Mixing Oil to 100 pounds of white-lead. The regular finish coat, mixed according to Formula No. 12 should be used.

‡ The minimum quantities of Lead Mixing Oil should be used when the greatest amount of hiding is needed.

Alternate Priming Oil is not recommended

Formu

(Stucco)

Materials

Dutch Boy white-lead
or Carter white-lead
Dutch Boy boiler
Spar varnish
Pure turpentine
Gallons of paint
Coverage (200 sq. ft. per gal.)

Formu

(Stucco)

Materials

Dutch Boy white-lead
or Carter white-lead
Dutch Boy linseed
Pure turpentine
Dutch Boy liquid
Gallons of paint
Coverage (400 sq. ft. per gal.)

Formula No.

(Stucco)

Materials

Dutch Boy white-lead
or Carter white-lead
Pure turpentine
Spar varnish
Dutch Boy liquid
Gallons of paint
Coverage (400 sq. ft. per gal.)

Gloss Finish
apply priming
No. 11 followed
ing to Formula

* If pure boiler
raw linseed oil
† When boiled

30 Stucco, Concrete, Brick and Stone Painting

priming and second coats, No. 14 and No. 15. Finish with a paint mixed as follows:

Formula No. 17—Third Coat, Gloss Finish (Stucco, Concrete, Brick, Stone)

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead or Carter white-lead	100 lbs.	100 lbs.
Dutch Boy linseed oil	3 gals.	3 gals.
Pure turpentine	1 quart	1 quart
Dutch Boy liquid drier	†1 pint	†1 pint
Gallons of paint	6½ gals.	
Coverage (600 sq. ft. per gal.)	3,750 sq. ft.	

Semi-Gloss Finish. An excellent semi-gloss finish on brick, stone, concrete and stucco can be secured by modifying Formula No. 12. Use 1 gallon less Lead Mixing Oil and add 1 gallon of spar varnish. The alternate Formula No. 16 can also be modified by using ½ gallon less turpentine and adding ½ gallon more spar varnish.

Brick Red Finish. A good brick red finish can be prepared by reducing 1 gallon of Dutch Boy venetian red with 2 quarts of Dutch Boy Lead Mixing Oil or 1 quart of turpentine.

A lighter brick red can be made by reducing 1 gallon of Dutch Boy venetian red and 1 quart Dutch Boy french ochre with 2 quarts of Dutch Boy Lead Mixing Oil or 1½ quarts turpentine.

Dry venetian red with Dutch Boy Lead Mixing Oil does not produce as satisfactory a paint as does paste venetian red. If the dry form is used, however, the vehicle should consist of 1 part raw linseed oil, 2 parts Lead Mixing Oil and ¼ part turpentine.

Repainting Exterior Stucco, Concrete, Brick and Stone. Old work that has been previously painted with properly designed oil paint needs no special preparation or priming. Simply dry-brush the surface and apply two coats of paint

† When boiled oil is used, reduce drier to ½ pint.

Stucco, C

mixed according to formulas given.

If the old surface is scaling, it should be painted. For a small area, simply apply the repair and when the surface is dry.

If a water surface is to be painted is applied.

Painting priming coat (No. 14)—may be modified by Formula No. 16 for the spar varnish.

After the paint is applied, other defects may be putty. If the crack is into the crack, use a knife.

The second coat is applied to Formula No. 14. The following formula is given:

Form

Materials

Dutch Boy white-lead or Carter white-lead
Dutch Boy linseed oil
Pure turpentine
Dutch Boy liquid drier

Gallons of paint
Coverage (400 sq. ft. per gal.)

A high grade

finish coat. Either of the second coats suggested above may be used also as the third coat, if the floor is to be finished with a coat of wax or high grade floor varnish.

Two things to keep in mind throughout the work are: first, vigorous brushing to spread out each coat to the utmost; second, allowing each coat at least four days to dry. One cause of stickiness on floors is flowing the paint on so thick that it does not dry thoroughly underneath, and then hurrying too much with the other coats.

Department of Technical Paint Service and Decoration. If you have some special problem of a technical nature or wish suggestions in regard to some particular phase of decoration send your inquiry to us and our Department of Technical Paint Service and Decoration will give it prompt attention.

The same the painting for the paint applied in the of coats are differ due to is not exposed may be an immediate finish.

Before mix tions on pag paint, they paint except see "Helpful Paint" on pa

Preparing be sandpaper dusted clean

Old painte good condition no special pr

Old painte bad cracking stripped by r remover, and pentine. It s

Woodwork should be scr zine before p

Number o mended for i been painted has been rem body coat, ar wood has b

sufficient, the priming coat being omitted. The old paint, if in good condition, serves as a priming coat.

If a two-coat job on unpainted wood is desired, use Formula No. 20 as a priming coat and any one of the finishing coat formulas which follow. To make the two coats hide better, tint the first coat to approximately the same color as the finish coat.

Two coats cannot be expected to hide as well as three nor to give as fine a finish. Experience has shown that three coats are necessary for entirely satisfactory results. It is therefore best to play safe always by using three coats.

Estimating Quantity of Paint. Treat all doors as if they were plain rectangular shapes, multiplying height by width to arrive at the area. Divide the result by 800 (700 in case of the priming coat) square feet. The answer is the number of gallons of paint needed for one coat. For other woodwork, such as window frames, baseboard, molding, etc., simply figure about one pint of paint for every hundred running feet.

Painting New Interior Wood. The following formulas are for white paint. If the paint is to be colored, tint it as explained in Chapter VI. The amounts of tinting material needed for various interior colors will also be found in this same chapter.

Formula No. 19—Priming Coat
(New Interior Wood)

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead		
or Carter white-lead	100 lbs.	100 lbs.
Dutch Boy linseed oil	3 gals.	3 gals.
Pure turpentine	1 $\frac{3}{4}$ gals.	2 gals.
Dutch Boy liquid drier	1 pint	1 pint

Gallons of paint 8 gals.
Coverage (700 sq. ft. per gal.) 5,600 sq. ft.

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Materials
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Dutch Boy L

Gallons of pai
Coverage (800

Formula N

Material
Dutch Boy w
or Carter whi
Dutch Boy L

Gallons of pai
Coverage (800

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26 on page

Enamel
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second coat
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body for the application of the prepared enamel. Repainting Interior Wood. Two coats are enough in repainting interior wood when the old paint is not removed down to the wood. Simply apply one coat mixed according to Formula No. 20 and, when this is dry, put on a finishing coat based on Formula No. 21.

For an enamel finish in repainting, proceed as directed under "Enamel Finish" simply omitting the priming coat.

Antique or Old Ivory Finish for Interior Wood Trim. This effect is produced by brushing over an ivory colored ground a thin glaze composed of:

- 5 lbs. Dutch Boy white-lead
- 1 gal. Dutch Boy Lead Mixing Oil
- 1 quart pure turpentine
- 1/2 pt. Dutch Boy burnt umber

This glaze should be applied over a workable portion of the surface and before it has set up, it should be removed from the raised parts of the trim by wiping with a clean rag. The small amount of glaze remaining in the depressed portions gives the antique effect required.

Painting Furniture. Most wood furniture intended for painting is constructed of light, smooth-grained material. The surface should be sandpapered lightly and then primed with a paint consisting of equal parts (by volume) Dutch Boy white-lead and Lead Mixing Oil or with white-lead thinned with 1/3 linseed oil, 1/3 varnish and 1/3 turpentine. For the second coat use Formula No. 20, tinted to approximately the desired finishing color. One or two coats of high grade enamel will complete the job.

If the furniture has been painted before and the old paint is still in good condition, simply wash the surface well, smooth up with sand-

paper, and follow above directions, except to omit the priming coat.

If the old finish shows checking, cracking, chipping or similar blemishes, remove all the old paint with a good paint and varnish remover. Then scrub the wood thoroughly with a hot, strong, washing powder solution. Rinse surface carefully with warm water, permit it to dry completely and then proceed as with new, unpainted furniture.

If the furniture has been previously stained or varnished and it is desired to cover the old finish with paint, the procedure is the same as with old painted furniture. There is one caution, however. If the old finish is reddish in color, like cherry or imitation mahogany, this red color may "bleed" through and discolor paint applied over it. This may occur in a few days or a few weeks but it is safer to test it out by applying a dab of paint in some inconspicuous spot. There is no certain way of preventing "bleeding", although two or three thin coats of shellac varnish carefully brushed, will help to prevent this trouble.

Reed or willow furniture can be painted in the same way as other furniture except that the paint must be carefully brushed to avoid running or sagging.

Silver Gray Effect. A silver gray effect may be produced on open grained woods, such as oak and chestnut, which have definite depressions or checks that will retain colored filler. This treatment is not suitable for use on smooth or close grained woods. To produce the effect, the new wood should be given a coat of filler prepared as follows:

- 3 parts by weight Dutch Boy white-lead
- 2 parts by weight fine silica

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reduced to a thin paint by the addition of equal parts turpentine and good coach japan. After application, this paint should be permitted to set, but before it has hardened, the wood should be rubbed cross-grain with stiff felt or some other suitable material, to force the filler into the grain of the wood, removing all excess filler. The filler may be colored slightly to provide a grayish cast, by the addition of a small amount of Dutch Boy prussian blue or Dutch Boy lamp-black. When the filler has hardened, the work can be finished by oiling or waxing as desired.

Staining Interior Wood. In staining new interior wood a coat of liquid composed of equal parts of raw linseed oil and turpentine, particularly if the wood is soft, should first be applied to make an even foundation for the stain. If this precaution is not taken, the stain will strike in here and there, appearing dark in some spots and light in others. When this coat is dry, the stain should be applied over it. After the stain has been on the surface for 5 or 10 minutes wipe off the surplus with a dry cloth.

Stain Formulas

(Natural Wood)

- 2 quarts pure turpentine
- 2 quarts Dutch Boy raw linseed oil
- 1 quart Dutch Boy liquid drier

To this add Dutch Boy colors in oil, in the approximate proportions outlined below.

Cherry

- 1½ pts. Dutch Boy burnt sienna

Malogany

- 1 pt. Dutch Boy vandyke brown
- ½ pt. Dutch Boy rose lake

Vary the proportion of the depth desired.

Light Colors

1/4

1/4

Dark Colors

1/2

1/2

Old Mahogany

1/2

1/2

1/2

Walnut

1/2

1/2

1/2

1/2

1/2

If the color is more dropblack.

After the stain may be finished by other methods 42 to 43.

Graining. In the usual way prepared according to 21, pages 34 and 35. If the wood has been painted, it may be omitted, tinted, according to the amount of Dutch Boy added. The amounts are based on the usual

Ground Colors

Cherry

$\frac{1}{2}$ gal. Dutch Boy venetian red
 $\frac{1}{2}$ gal. Dutch Boy french ochre

Malogany

$\frac{1}{2}$ gal. Dutch Boy venetian red
 $\frac{1}{2}$ gal. Dutch Boy french ochre

Light Oak

$\frac{1}{2}$ qt. Dutch Boy french ochre
 $\frac{1}{2}$ pt. Dutch Boy med. chrome yellow

Dark Oak

$\frac{1}{2}$ gal. Dutch Boy french ochre

Old Maple

$\frac{1}{6}$ pt. Dutch Boy C. P. orange
 chrome yellow;

Walnut

$\frac{1}{2}$ qt. Dutch Boy raw sienna
 $\frac{1}{2}$ pt. Dutch Boy burnt umber

Before mixing with the paint, these colors should be brought to painting consistency with Lead Mixing Oil or turpentine and drier.

Graining Colors

For graining colors follow the formulas given under "Staining". The colors in oil should be thinned to brushing consistency with

3 parts pure turpentine
 2 parts Dutch Boy raw linseed oil
 1 part Dutch Boy liquid drier

This paint should be applied over the dry ground and, while still wet, should be dragged, combed, or otherwise figured, in imitation of natural wood graining. When dry, the work may be finished by waxing or varnishing. See "Special Finishing Directions" on the following pages.

Special Finishing Directions. While the directions that follow relate more or less specifically to floors, they apply equally well to the finishing of furniture and other hard wood surfaces. For hard wood that is not to be painted, four kinds of treatment may be named—oiling, shellacking, varnishing, and waxing. The processes vary somewhat according to the kind of wood.

Open-grained hard woods, such as oak, birch, ash or walnut, should be treated first with a good silux paste filler. Close-grained hard woods, like maple or cherry, require no filler. Yellow pine, owing to the pitch it is likely to contain, should first have a thin coat of shellac to prevent the pitch from blistering later coats.

Good silux paste fillers may be purchased ready to apply. Or an excellent one may be made by mixing the finest silux, or silica, with equal parts of pure linseed oil, pure turpentine and best japan drier, so as to form a medium paste. Reduce this paste to a fairly thin mixture with turpentine only, allowing the filler to stand for a time. In some cases it is possible to add the colors in oil, with which the wood is to be stained, directly to the filler. This is good practice. Brush across the grain of the wood with a stiff, stubby brush that will work the paste well into the pores. One coat makes a fair job, but two coats make a better one, filling up the checks which the first coat did not fill.

After the filler has dried for about an hour, rub briskly across the grain of the wood with coarse burlap or excelsior to remove surplus filler left on the surface.

The purpose in using fillers is to fill the pores of open-grained wood, and to prevent darkening by the excessive absorption of varnish or other material used for the finish.

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Oil Finish. Oiling, no doubt, is the most durable finish for a floor, though it requires frequent going over. One effect of oil is to darken considerably the natural color of the wood. For a floor oil use three parts of pure boiled linseed oil to one part of turpentine. When boiled oil cannot be obtained take four parts raw oil, one part turpentine and one part drier. Stir frequently while using; apply with a strong, stiff brush; rub well into the wood. Clean off all surplus oil not taken up by the wood. An oiled floor should be wiped frequently with an oiled cloth. Oily rags are liable to take fire spontaneously and should be burned after using.

Shellac Finish. This treatment gives a fairly lasting finish if the floor is not to have very rough usage. Three or four coats of shellac, thinned down with good quality denatured alcohol, are recommended for either soft or hard wood floors. Sandpaper very lightly between coats. Waxing over the final coat will add greatly to the durability of the finish.

Varnishing Floors. When a floor is to be varnished it is poor policy to try to save money on the varnish. Use only the highest grade floor varnish. Assuming that the wood has been suitably prepared as suggested above, and then sandpapered smooth, two or three coats of varnish should be applied, allowing ample time between coats for drying. If the film is thin it wears away too soon. The gloss of varnished floors can be reduced and the durability of the finish increased either by polishing with pumice stone and crude oil or by waxing.

Wax Finish. Get from any paint store a floor wax of good quality either liquid or paste and spread the wax on the floor in a thin coat. If the wax is too hard to spread, it may be reduced

easily by mixing with turpentine. A good method of application, where paste wax is used, is to place a small quantity of wax between two or three thicknesses of cheesecloth, forming a sort of bag. The wax will work through the meshes of the cloth as it passes over the floor, thus insuring a thin, even coat. Allow 15 minutes for drying, then rub to a polish with a clean, soft cloth, a weighted brush, or similar device. In an hour or two a second coat of wax should be applied the same as the first. To keep such a floor in prime condition requires frequent brushing or rubbing with a soft cloth, and a thin coat of wax about once a month. Waxing gives a beautiful finish, scratches on it are easily repaired and it tends to hide the grain. Waxed floors are smooth and likely to be slippery. Aside from this objection and the constant care they require wax is recommended as the handsomest of all floor finishes.

Refinishing Old Floors. The proper time to take care of a floor is when the first bare spot appears. Then all that is necessary is to scrub thoroughly, put a new coat on such places as show wear and, when dry, go over the entire floor.

To bring a badly worn floor back to its original state of perfection requires considerable work and ingenuity. Remove the old finish and then scrape the wood with a carpenter's steel floor scraper. This scraping and subsequent sandpapering brings the wood back to its original condition. It can then be finished as a new floor. This is a somewhat expensive proceeding, however, and many people prefer to do the work in the following way:

1. Apply a good liquid paint and varnish remover. Cheap soda solutions discolor the wood. Cover ten or twelve boards at a time, the entire

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width of the room. When finish has softened, remove most of the film with a broadknife, finishing up with coarse steel wool dipped in remover.

After the old finish has been removed, the surface should be washed thoroughly with a good soap powder solution and then rinsed clean. If bleaching is required, however, a hot saturated oxalic acid solution (as much acid as the quantity of boiling water will dissolve) should be applied over the entire floor. If there are some spots that do not bleach out after ten minutes, apply more of the hot solution to these places until the entire floor is uniform in color. Then, remove excess acid with warm water and sponge and allow to dry.

Sometimes, when there are only a few dark, worn places in the floor, it is only necessary to apply the bleaching solution to these spots, cleaning the rest of the floor in the usual manner.

2. Sandpaper with No. 1½ grade, rubbing with the grain of the wood. Wipe up the loose dust carefully and then refinish in the manner desired. (See pages 41 to 43.) It will not be necessary, of course, to use filler.

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If you wish color scheme suggestions for the interior of a house or other building, please give us the information requested on page 112.

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THE DUTCH BOY SYSTEM FOR PAINTING INTERIOR PLASTER

Formula No. 22—*Priming Coat

Dutch Boy Wall Primer

(Covers 800 sq. ft. per gal.)

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead	100 lbs.	100 lbs.
or Carter white-lead	100 lbs.	100 lbs.
Dutch Boy Lead Mixing Oil	‡4 to 5 gals.	‡4 to 5 gals.
Gallons of paint	7 to 8 gals.	
Coverage (800 sq. ft. per gal.)		

Formula No. 23—Second Coat

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead	100 lbs.	100 lbs.
or Carter white-lead	100 lbs.	100 lbs.
Dutch Boy Lead Mixing Oil	‡3 to 4 gals.	‡3 to 4 gals.
Gallons of paint	6 to 7 gals.	
Coverage (800 sq. ft. per gal.)		

Formula No. 24—Third Coat

(Flat Finish for Brushing)

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead	100 lbs.	100 lbs.
or Carter white-lead	100 lbs.	100 lbs.
Dutch Boy Lead Mixing Oil	‡3 to 4 gals.	‡3 to 4 gals.
Gallons of paint	6 to 7 gals.	
Coverage (800 sq. ft. per gal.)		

Formula No. 25—Third Coat

(Flat Finish for Stippling)

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead	100 lbs.	100 lbs.
or Carter white-lead	100 lbs.	100 lbs.
Dutch Boy Lead Mixing Oil	2 gals.	2 gals.
Gallons of paint	5 gals.	
Coverage (600 sq. ft. per gal.)	3,000 sq. ft.	

* This coat may be omitted on previously painted plaster.

‡ The minimum quantities of Lead Mixing Oil should be used when the greatest amount of hiding is needed.

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plaster.

Formula

Materials
Dutch Boy white-
or Carter white-le
Dutch Boy boiled
Floor varnish
Pure turpentine

Gallons of paint
Coverage (800 sq.

Formula

Materials
Dutch Boy white-
or Carter white-le
Pure turpentine
Floor varnish
Dutch Boy liquid

Gallons of paint
Coverage (800 sq.

Formula No.

Materials
Dutch Boy white-
or Carter white-le
Pure turpentine
Floor varnish
Dutch Boy liquid

Gallons of paint
Coverage (800 sq.

Formula No. 29—Third Coat, Semi Gloss Finish (Interior Plaster)

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead	100 lbs.	100 lbs.
or Carter white-lead	$\frac{3}{4}$ gal.	1 gal.
Pure turpentine	$1\frac{1}{4}$ gals.	$1\frac{1}{4}$ gals.
Floor varnish	$\frac{1}{2}$ pint	$\frac{1}{2}$ pint
Dutch Boy liquid drier	$\frac{1}{2}$ pint	$\frac{1}{2}$ pint
Gallons of paint	$5\frac{3}{4}$ gals.	
Coverage (800 sq. ft. per gal.)	4,200 sq. ft.	

Enamel Finish. When a prepared enamel is to be used as the finishing coat, the priming and second coats should be followed by enough coats of the flat finish formula to completely hide the surface and furnish a flat uniform ground. The finish of prepared enamel may then be applied.

Repainting Plaster. Plaster that has previously been painted with an oil paint, and is in good condition, need not be primed. The old paint serves as the priming coat.

Simply apply Formula No. 23 (or Formula No. 27) as a first coat, and when this has properly dried and hardened, finish with Formula No. 24 or No. 25 (or Formulas No. 28 or 29).

Preparing the Surface. It is always advisable to allow plaster at least six months to dry and season thoroughly before attempting to paint it. Fresh plaster contains free alkali which has a tendency to keep paint from drying properly and to cause colors to bleach out.

A good many people do not care to let their walls go unpainted for six months. In such cases, painters oftentimes artificially "age" the new plaster by treating the surface with a solution made by dissolving two pounds of zinc sulphate in one gallon of water. After this solu-

tion is applied, sufficient time is allowed for the plaster to dry before priming.

Before applying any paint, be sure that the plaster or old paint is clean and smooth. Go over the wall lightly with fine sandpaper or a wide putty knife to remove grit, loose plaster or paint, taking care not to scratch the surface.

Fill all cracks and holes with patching plaster. The proper filling of cracks is essential to a good-appearing and permanent paint job on plaster. The plaster should be first cut out in the shape of an inverted V or triangle:

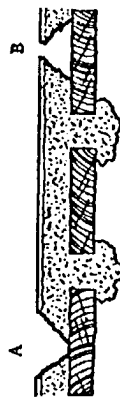


Figure 2

A—Wrong method of cutting "V". B—Correct method, the "V" being inverted so that its point is on the surface



Figure 3

How the cut-out crack should be filled to obtain the best possible results. See method for applying filler

The edges of the opened crack should be soaked with water to aid the patching plaster in forming a bond with the old wall. Fill the crack to within a quarter inch of the surface and allow

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the patching plaster to set partially before leveling up to the wall surface.

All loose dust and dirt should be removed before painting. If the surface is excessively dirty or covered with grease, it should be washed. This is especially true of kitchen, bathroom and laundry walls and ceilings.

Walls that have been calcimined should be washed with sponge and warm water before applying the priming coat.

Removing Wallpaper. To remove wallpaper, use a broad knife or similar tool after first saturating the paper with warm water. The plaster should then be washed to remove all traces of paste. If the surface uncovered is unpainted or in a porous condition, it should be treated according to the directions for painting new plaster walls.

Painting Over Wallpaper. It is frequently possible to paint successfully over wallpaper provided there is but one layer on the wall and that layer in fairly good condition. All sections of loose paper should be torn away and if there are any cracks underneath, they should be repaired with patching plaster and the seams rubbed with No. 0 sandpaper. Painting is then done as if on bare plaster.

Some wallpapers contain bleeding colors. When any light paint is applied over them the oil in the paint dissolves the color and discoloration results. This can be stopped usually, by the application of two thin coats of shellac over the priming coat. If this difficulty is anticipated it would be well to test a little light paint on the dark colors and if bleeding results it would probably be easier to remove the paper than to apply the two coats of shellac.

If the paper is textured in a pleasing manner

it need not be removed but it should be remembered that textures cannot be hidden completely with paint and if the texture is displeasing, the paper should be removed.

Applying Flat Paint. The beauty of a wall painted with flat paint depends to a large degree on how the paint is applied, especially the final coat. Flat paint dries more quickly than gloss paint and joints or laps will show if the work is not done properly.

Start at one end of the wall at the top, painting a section or "stretch" about three feet wide and work down (not across) the wall. Special care should be taken to keep the edge of the freshly painted surface wet until the entire section of the wall being painted is completed. This is necessary in order to avoid lapping which occurs if the edge is allowed to set or dry.

When the bottom of the wall is reached, start another stretch about the same width, joining it to the first one and working down the wall as before. Repeat the process until the whole wall is painted, making sure to work fast enough to keep one section from drying before another is joined to it.

With paint made from Dutch Boy or Carter white-lead and Dutch Boy Lead Mixing Oil you will have no difficulty in obtaining a good job, if you will take the one precaution of keeping the edges of the stretch wet.

Estimating Area. In estimating the number of square feet in a room to be painted it is the practice to consider the walls, ceiling and woodwork as separate units. It is necessary to do this as paint for plaster is mixed differently from that for wood, and the ceiling and side walls are not usually painted the same color.

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To find the area of wall surface to be painted, measure the distance around the room and multiply by the distance between the baseboard and the picture molding or ceiling. Subtract from this figure the area occupied by the doors and windows. Divide the result by 800, which is about the number of square feet of surface one gallon of paint will cover. The answer is the number of gallons of paint needed for one coat.

To find the area of the ceiling, multiply the width by the length. To this figure, add the area of the four strips of wall surface above the picture molding. Divide the total area thus obtained by 800 which gives the number of gallons of paint needed for one coat.

If walls or ceiling are irregular in shape, divide into rectangles, figuring separately the area of each rectangle. The sum of the areas gives the total amount of surface to be painted and dividing by 800 gives the number of gallons of paint needed for one coat on smooth plaster.

If the surface is very porous (as on some composition wall boards) or has a rough finish, a spreading rate of less than 800 should be used in estimating the number of gallons of paint needed.

Stippling. A stippled effect is produced simply by striking the wet surface, before the paint has set, with a special type of brush known as a wall stippling brush. The ends of the bristles pick up the paint and re-distribute it, resulting in a uniform pebbly surface that eliminates heavy brush marks or small surface blemishes. Since a paint coat to be stippled can be applied with less attention to even brushing, this method adds practically nothing to the labor required for the job.

Painting Fabric Coverings. To overcome defects in plaster walls or to anticipate others which it is feared may develop, plaster walls are

sometimes covered with muslin or a specially prepared fabric of some kind which is then painted. No difficulties are encountered in painting such fabric coverings. The painting is done in the regular way just as if plaster were being painted, and the finished job is practically indistinguishable from ordinary painted plaster. If the fabric has been previously treated with a size, no priming coat is necessary.

Painting Wall Board. Composition wall board, which is used on many interiors to take the place of plaster, may be painted with satisfactory results. Such surfaces may be treated like plaster walls and the painting should be done in accordance with the recommendations given for painting plaster. See page 46.

Washing Painted Walls. White-lead remains insoluble in water so walls painted with it can be successfully washed. In fact, walls painted with white-lead and Lead Mixing Oil withstand frequent washings without apparent change or injury. In washing, the following procedure will be found effective.

A workable portion of the wall should be sponged with a good white soap solution, the work progressing from the baseboard toward the ceiling. This section should then be rinsed with clear water and the adjoining section cleaned in the same manner. The white soap solution should effectively remove ordinary dust and dirt which accumulates on most walls.

When the walls have become badly soiled, it is sometimes necessary to use a stronger solution than white soap. Some of the washing powders, which do not contain an excessive amount of alkaline material, prove very effective in such cases. Many cleaning powders contain abrasive

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material and their repeated use will naturally wear down the paint film regardless of how hard it may be. A little experimenting will enable one to determine just how strong a soap solution is necessary to produce the desired cleansing action without injuring the paint film by either chemical or mechanical action.

CHAPTER VI

Colored Paints

The materials used for tinting white-lead paint are known as colors in oil. These are concentrated color pigments, some of which are natural earths and others chemical compounds. Both types are put through several manufacturing processes and thoroughly mixed with oil to a paste that can be easily incorporated into the white-lead paint thus producing the desired color. They also may be used straight as self colors when properly thinned.

What to Look for in Oil Colors. High quality tinting materials should possess several desirable properties. First, they should be true in tone. The tone must be clean and pure, with no off casts of gray, blue or brown. This will facilitate the matching of color chips and insure pure, clean, lively tints.

Second, they should be high in tinting strength. This means that only a minimum quantity of color will be needed to produce a given tint, thus lessening costs.

Third, the tinting pigments should be extremely fine. Fineness of grind (a result of proper milling) produces the desired smooth, even textures in the finished job.

The final consideration is dispersion ability. The small amount of turpentine that is ground into Dutch Boy soft paste colors hastens the tinting action and lessens the tendency to form small lumps of concentrated color which may cause streaking.

Dutch Boy Colors in Oil. The Dutch Boy color in oil line contains all of the colors necessary for the proper production of any tinted or colored paint job. Over seventy-five years of color

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making experience, backed by careful laboratory control, is the painter's guarantee of getting the best colors in oil that can be made.

Coloring the Paint. It is best practice to mix the colors in oil into the paint before you add all of the liquid vehicle. However, Dutch Boy soft paste colors in oil are so finely ground that they can be easily incorporated with the paint even after it has been thinned to brushing consistency.

It is always advisable, when following a color formula or matching a particular color, to add and thoroughly mix in small quantities of color at a time. Otherwise it is very easy to put in too much color leaving no alternative but to add more white paint to reduce the color strength.

Coloring Enamel. It is general practice when tinting an enamel paint to thoroughly incorporate the required colors in oil with a small quantity of the enamel paint, producing a very deep color of the desired tone. This mixture is then stirred gradually into the balance of the enamel until the proper color is reached.

Where deep colors are required for tinting enamels, colors in oil should not be used. Super-fine or coach colors, which are ground in Japan, are more suitable for this work.

Color Formulas. On the following pages we are giving formulas for some of the more popular colors. Those from No. 25 to No. 43 are of the lighter type and consequently are more suitable for interior use. All are based on the use of Dutch Boy colors in oil. The quantities recommended are based on the use of 100 pounds of white-lead and should be adjusted accordingly if a smaller or greater amount of white-lead is to be colored.

The unmarked colors are permanent for all

practical purpose. Those colors marked with a double asterisk will fade rather quickly, especially when exposed to strong sunlight. Those with a single asterisk are fairly permanent. Of course, all colors fade to some extent, but no one knows from experience, there are certain ones that resist fading for a long period and others that no quite rapidly, as well as all degrees in between.

Exterior Colors

- Russet Brown—No. 6
 1/2 gal. burnt umber
 1 qt. raw sienna
 *Lemon Yellow—No. 7
 1/4 pt. C. P. lemon chrome yellow
 1 qt. burnt sienna
 *Silver Green—No. 8
 1 pt. C. P. chromium oxide green
 Fern Green—No. 9
 1 qt. C. P. chromium oxide green
 Buff—No. 10
 1/2 gal. raw sienna
 1 qt. C. P. chromium oxide green
 Kaffia—No. 11
 1/2 gal. raw sienna
 1 qt. raw sienna
 Old Ivory—No. 12
 1/2 pt. raw sienna
 Warm Drab—No. 13
 1/2 pt. burnt umber
 Light Chocolate—No. 14
 1/2 pt. burnt umber
 Chestnut Brown—No. 15
 1 qt. burnt umber
 Dust Drab—No. 16
 1 qt. raw umber
 *Pale Ivory—No. 17
 1/4 pt. C. P. medium chrome yellow
 *Cream—No. 18
 1/4 pt. C. P. medium chrome yellow

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*Colonial Yellow—No. 19
1 pt. C. P. medium chrome yellow

Light Gray—No. 20
1/4 pt. lampblack

Smoke Gray—No. 21
1/8 pt. lampblack

**Shutter Blue—No. 22
1/2 gal. C. P. prussian blue
1 pt. lampblack

Stone Gray—No. 23
1/8 pt. lampblack

1 pt. french ochre

Quaker Gray—No. 24
1/8 pt. lampblack
1/2 pt. C. P. light chrome green

Interior Colors

Nile Green—No. 25
1/2 pt. C. P. light chrome green

Aquagreen—No. 26
1/8 pt. C. P. medium chrome green

Opaline Green—No. 27
1/4 pt. C. P. dark chrome green

Corsage Green—No. 28
1 pt. C. P. dark chrome green

Dove Gray—No. 29
1/2 pt. raw umber

Moon Mist—No. 30
1/8 pt. burnt umber

Cuban Sand—No. 31
1/4 pt. burnt umber

Sandy Beige—No. 32
1/2 pt. burnt umber

Ruff—No. 33
1/2 pt. raw sienna

Ivory—No. 34
1/2 pt. C. P. medium chrome yellow

Sulphur Y

1/2 pt.

Buttercup—

1/2 pt.

Sunset Tan

1/2 gal.

Peach—No.

1/4 pt.

Opera Pink

1/8 pt.

Orchid—N

1/4 pt.

Sky Gray—

1/4 pt.

Starlight—

1 pt.

Clear Gray

1/2 pt.

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India Red—

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1/2 gal.

3 qts.

1/2 pt.

1/2 pt.

Y

****Bottle Green—No. 2**

- 1 gal. C. P. dark chrome green
- 3 qts. Dutch Boy linseed oil*
- 1 pt. pure turpentine
- ½ pt. Dutch Boy liquid drier
- Yield—1½ gals.

Red Brown—No. 3

- ½ gal. indian red
- 3 qts. raw sienna
- 3 qts. Dutch Boy linseed oil*
- ½ pt. pure turpentine
- ½ pt. Dutch Boy liquid drier
- Yield—2½ gals.

Chromium Oxide—No. 4

- 1 gal. C. P. chromium oxide green
- 3 qts. Dutch Boy linseed oil*
- ½ pt. pure turpentine
- ½ pt. Dutch Boy liquid drier
- Yield—1½ gals.

Chocolate Brown—No. 5

- 1 gal. burnt umber
- 1 qt. indian red
- 3 qts. Dutch Boy linseed oil*
- 1 pt. turpentine
- ½ pt. Dutch Boy liquid drier
- Yield—2½ gals.

Whenever these dark colors are to be used as the finishing coat on stucco, brick, concrete or stone, Lead Mixing Oil is preferred as the vehicle. In the above formulas, use 3 quarts of Dutch Boy Lead Mixing Oil instead of linseed oil and omit the turpentine and drier.

* If boiled oil is used, add only half the amount of drier specified. 56.
** See page

CHAPTER VII

Decorative Wall Finishes

When decorative treatments other than plain paint effects are desired, one or more of the treatments described in detail on the following pages may be used. All of these treatments are produced over a flat painted ground. All are fairly simple to do and require no special equipment. Suitable stencil paper, masking tape and the proper wall and stippling brushes are the only tools necessary.

Stippling. The pebbly texture that results from stippling is one of the most useful methods a painter can employ to provide a uniform surface and lend additional interest to the finishing coat of paint on walls and ceilings. Directions for producing this effect are given on page 52.

Crumpled Roll Finish. To produce this finish, select two harmonious colors differing enough in tone to offer a pleasing contrast.

The ground coat (Formula No. 23) is tinted to the desired color, applied, and allowed to dry. Then the finishing coat is brushed on, a workable section at a time, and "rolled" as described below while still wet. Prepare the finishing coat according to the third coat flat finish formula on page 46, and tint it to match the second color selected.

The "rolling" is done with a double sheet of newspaper or other absorbent paper crumpled tightly into an elongated wad seven to eight inches in length. Newly printed newspapers should not be used because the printing ink may come off the paper and spoil the appearance of the wall.

Starting at the top left hand corner of the freshly painted surface and rolling diagonally

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downward, turn the roll of crumpled paper over and over with the fingers, pressing it firmly against the wall to keep it from slipping. (See Figure 4.)

Continue the rolling to the bottom of the wall and repeat for the next strip, permitting the end of the roll of paper to just overlap the edge of



Figure 4

the previous strip. Care should be taken to apply no larger section of the finishing coat than can be conveniently rolled before it sets up.

New rolls should be substituted when the paper becomes so saturated with paint as to leave an indistinct impression. Experiment with this finish will show that the size of the figure is determined by the closeness with which the paper selected for use is crumpled. Paper crumpled loosely will produce a more or less widely spaced

effect, while closely crumpled paper will produce an exceptionally uniform treatment.

After a wall has been rolled it should be examined. All blank or missed spaces should be patted with the crumpled paper, and all blurs touched up and rerolled while they are still wet.

The principal problem involved in a treatment of this type lies in the selection of the two colors to be used. Such colors as ivory for a ground and tan for a finishing coat combine nicely, as do salmon pink and pale smoke gray.

If considerable difference exists between the colors selected for use, an effect may be expected that is sharper and more clearly defined than in the case of two colors which are more or less similar. Just as a dark finish may be employed over a light ground, in the reverse way a light finish may be employed over a dark ground.

It must, however, be kept in mind that as only about one-third of the ground coat shows through, the finishing coat is the one which determines the dominant color of the decorative effect.

In new work the second coat should be tinted to the desired ground color, while the third coat should be colored in a sufficiently different manner to show a proper degree of contrast when removed by rolling in the manner previously described. On repaint work, however, the side wall color already in place, if in good condition and free of grease and dirt, may be employed as the ground, and in such an instance the single finishing coat to be applied over it should be tinted with proper reference to the ground so that the desired degree of difference will be apparent.

Where a three-tone finish is desired, another coat of flat paint, tinted to a third color, should

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be applied over the two-tone effect and then rolled as previously described.

The crumpled roll finish should not be attempted on rough-finished surfaces, since the high points of the plaster will prevent the paper from reaching the paint in the depressed portions, thus leaving an indistinct pattern.

Sponge Mottle Finish. In the sponge mottle finish the colors chosen for the ground and mottling coats should differ sufficiently to show the desired degree of contrast in the finished effect.

A flat ground, properly tinted, should first be applied and allowed to dry. Prepare this ground according to the third coat flat finish formula on page 46; use this formula also for the mottling coat.

Now cut a coarse fibre sponge in half in order to make a flat surface, soaking one of the halves in water to soften the fibres and then wringing it out carefully.

To do the mottling, lightly press the flat side of the sponge into some of the mottling coat paint, previously spread on a board, and then stamp the wall with it here and there. (See Figure 5.) Go over the entire surface in this way, making no attempt to follow a set pattern. Much of the charm of the sponge mottle finish is lost if the sponge markings are placed in straight lines and at fixed intervals.

More than one mottling color may, of course, be employed. Use a separate sponge for each color.

A beautiful and changeable effect may be secured by using a semi-gloss finish (see page 47) over a flat ground coat. By tinting both the ground and the mottling coats to the same color



Figure 5



Figure 6

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an effect of tracery may be obtained due to changes in the angle of reflected light.

Diamond Effect. This is a simple modification of the sponge mottle effect. It may be used as a panel treatment or as an all-over sidewall treatment. The sidewalls are first painted in the regular manner. When the last coat has dried thoroughly, apply one-inch masking tape in a diamond-shaped pattern. A sponge mottle finish is then applied (see directions for Sponge Mottle Finish, page 64) and the masking tape removed. This treatment is suitable for almost any type of room. (See Figure 6.)

Masking tape is invaluable for establishing an even clean-cut line where more than one color is employed. Other uses for which this tape may be found helpful are in panel work, in striping, in producing an even line where a sidewall is divided into horizontal bands and in establishing a dado line.

Stencil Finish. When a decorative note of color is required in wall or ceiling panels or simply in small spots here and there in the panels, the stencil offers a ready means of supplying it. It is also invaluable as a quick method of securing a frieze, a panel border where moldings are missing or a border effect at the top of a dado or wainscoting.

Although a stencil can be applied with ease, there are two points which should not be overlooked in connection with its application. First, care should be taken to avoid the use of too thin a paint as a stencil color. The paint should be of paste consistency, thinned slightly with Dutch Boy Lead Mixing Oil. The resulting mixture should be applied with a brush carrying very little paint. Second, care should be taken actually to compare the stencil color directly against the ground over which it is to be applied,

since those colors in the immediate vicinity of the stencil will influence and seem to change its color characteristic.

Bubble Effect. This effect is produced by first applying a light colored ground and when this is thoroughly dry the bubble effect is produced by stippling through circular openings which have been cut in a stencil board. These circles should be of unequal size. The stencil is applied by stippling around the outer edge of the circular opening and gradually blending the paint from the outer edge toward the center. This type of treatment is not only appropriate for use in nurseries but may be used successfully in tea rooms, night clubs, breakfast rooms, etc. (See Figure 7.)

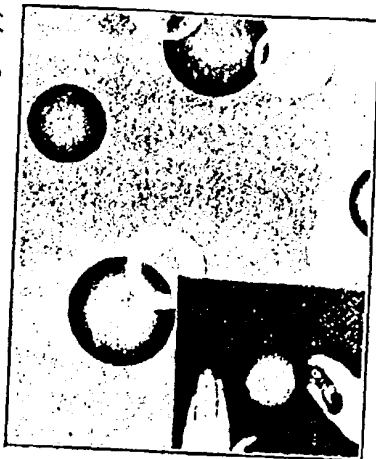


Figure 7

Mask Stencil Treatment. A new adaptation of the stencil is the Mask Treatment which enables one to obtain any width border desired without

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cutting a new pattern. It varies from the stencil treatment in that only one side of the design is cut in the stencil board while the other side is open. Figure 8 shows a very simple mask design.



Figure 8

sign. After the width of the border design is decided upon, the stencil paper is held against the wall or fastened with masking tape and the space above the mask is then filled in with the desired color. If a more elaborate effect is desired, a second color may be used to outline the edge of the design. This effect is particularly appropriate for use in halls but is adaptable to nearly every type of room.

Striping. Where a simple method of treatment is required to lend a distinctive air to an interior which has been painted in a plain one-tone effect, striping may be used with good re-

sults. Striping is simply a narrow banding line or lines of some harmonizing color or colors of greater strength than applied on the side wall.

For general use this line may be anywhere from one-half to two inches in width outlining all window frames, door frames, and running parallel with any other interior trim.

The striping line should be applied direct to the side wall a few inches out from the wood trim, the distance depending largely on the width of the stripe, which is, in turn, determined by the size of the room. The usual distance from the baseboard is about one to three inches for a three-quarter inch stripe.

Striping is also employed where imitation stone effects are required as a method of marking their outline.

Paneled Effects with Paint. Large interior surfaces are sometimes found that would appear far more interesting if paneled than if left in large unbroken areas.

Striping or stenciling with paint to produce panels offers a simple solution of the problem. In laying off the side wall in panels, considerable discretion should be exercised in order that the panels may be interesting in shape. When panels have been outlined and the decorative panel treatment carried out, a solid striping line of color or a stencil border should be applied to frame properly each panel. The border or stile for the average room should be about six or eight inches in width.

Modernistic Effect. This is produced over an old side wall on which a flat paint has been applied, or over a new wall after a flat paint ground has been established. In addition to the paint and paint brush, the only tool required is a guide, cut from regular stencil paper. This guide

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may be cut out in the form of a triangle, square or semi-circle, and while one edge is held between the thumb and fingers of the left hand, the other edge is pressed against the surface. After the brush has been dipped in the paint and is worked fairly dry, the edge of the card pressed against the wall is struck with the bristles of a brush, as in the case of stippling, and this



Figure 9

stippled effect is carried from the edge of the card on to the sidewall, fading out at a distance from two to four inches from the edge of the guide. The guide is then removed, placed at an angle, and the same stippling process continued until the wall is covered with a uniform group of interlacing stencil lines. (See Figure 9.)

Polychrome Finish. The polychrome or multi-colored finish is interesting for use where spots

of color are required to accentuate certain moldings composed of individual units such as the egg and dart, bead, floral motifs, etc., that may be present in the interior. It is, as a general rule, most satisfactory for use as an added touch of decoration where a plain one-tone treatment has been employed on side wall and ceiling.

This finish is best obtained by applying to the various units composing the molding several different colors which have been extended into tints by the addition of white-lead. These tints should be quite light and nearly equal in value. Tinting parts of the molding in certain of these light colors offers a particularly effective treatment for large rooms, since it lends a colorful touch to an interior that might otherwise appear cold and uninteresting.

Should the effect appear too bright it can be toned down, when the paint is dry, by the application of a thin glaze coat as described on page 73 under "Antique Finish".

Frisket Stipple. This effect is obtained over a smooth surface after a ground coat has been properly applied and is dry. The only tools needed to carry out this wall finish consist of a sheet of paper suitable for cutting into a frisket or stencil, a four-inch wall brush, a wall stippler and a few yards of masking tape.

A suitable design should then be sought. An outline of trees is illustrated in Figure 10. When chosen, it should be traced upon the paper. Distant views or easily silhouetted figures will be found to be the best subjects. The length of the stencil is determined by the amount of variety the decorator desires in his subject; its depth by the size of the room to be decorated. It is important that the design should run off the two edges of the sheet on the same level so that when

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the stencil is removed and the design repeated, there will be no gaps or obvious joints. The design is then cut out. The lower part of the design is the portion which is attached to the wall to produce the frisket design shown in Figure 10.



Figure 10

The ground coat will be determined by the design that is selected. For example, pale blue for a sky line; for a desert, light buff. The walls are prepared in the regular manner as directed in Chapter V, page 45. The ground coat is applied, based on a regular finishing coat formula. When the paint is dry, the frisket is attached to the wall at the proper distance below the ceiling line, using masking tape to hold it securely in place. The distance from the ceiling line is determined by the size and character of the design and to

some extent by the size of the room. Twelve to eighteen inches is a normal distance. The same paint used for the ground coat is lightened, by adding white paint, for use on the area above the frisket. After the paint has been applied over a workable surface, it should be blended by stippling. When one stretch is completed, the masking tape is removed and the frisket is placed on the next stretch and the process repeated. When the entire wall has been coated and stencilled, free hand alterations may be made in the outline by inserting birds, altering the height or shape of trees, etc., in order to increase the interest and provide an effective variation in the pattern. There is practically no limit to the subjects which can be treated with the frisket stipple; namely, a desert scene, a mountain scene, or sky line design of buildings.

Glazed or Antique Finish. This method of finishing the plain one-tone wall, or elaborate moldings, is most effective and gives a rich depth of tone. It is also indispensable where the colors used need to be softened. The effect is obtained by first preparing a thin semi-transparent glaze as follows:

5 lbs. Dutch Boy white-lead
1 gal. Dutch Boy Lead Mixing Oil
1 qt. pure turpentine

To this should be added sufficient tinting material to produce the depth of tone required. Apply this glaze over the dry finishing coat and then, while the glaze is still wet, wipe lightly over it with a ball of clean cheesecloth. This operation will remove a certain amount of the glaze, permitting enough to remain on the surface to give an antique effect.

Paint Blend. If the old surface on which this

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Figure 11



Figure 12

finish is to be applied is in good condition for repainting, a coat of paint based on Formula No. 23, page 46, should be prepared. This is divided into three batches; a main batch which is tinted to the desired ground coat color and two smaller batches tinted to colors that will harmonize with the ground. The ground coat paint is applied over a workable portion of the surface, and while it is still wet, individual brushes are used to apply the other colors in well-assorted groups here and there over the wet ground as shown in Figure 11. Before the paint has set up, these irregular spots should be smoothly blended by stippling into the wet ground as shown in Figure 12.

The principal advantage of this finish is the fact that the painting and the blending can be accomplished at the one time instead of having to wait until the ground coat is dry before doing the blending.

Department of Technical Paint Service and Decoration. If you have some special decorative problem of a technical nature that is not covered in this book, address your inquiry to us and our Department of Technical Paint Service and Decoration will give it prompt attention.

Individual color schemes will be prepared for the interior or exterior of any house or building if the information requested on page 112 is submitted. Blue prints or photographs are of great assistance in planning schemes for the more elaborate problems, and all material of this kind will be returned.

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CHAPTER VIII

Metal Painting

In all kinds of tests, under every conceivable condition, red-lead has stood up better than any other paint material for painting metal surfaces. Nearly all the railroads use it for the protection of cars, bridges and other structures. It is used on vessels in the United States Navy. It protects gas holders for public service corporations, oil tanks for the big oil companies and the steel in skyscraper skeletons. Large users of paint are aware of the value of red-lead in paint form as a rust preventive and have learned to rely upon it to keep down maintenance costs.

Nearly every house has eave-troughs, valleys, gutters, down-spouts and flashings in the roof drainage system that should receive red-lead protection. Farm machinery, metal roofs, pipes, water tanks, troughs, fences and many other small and less spectacular things can be made to last long and look well by the timely use of red-lead.

In fact, every piece of tin, iron and steel about the premises should be red-leaded if it is to last. Rust is a danger signal that calls for prompt treatment.

Materials. The red-lead user may either mix up his own paint, using dry or paste red-lead, or he may prefer Dutch Boy Quick-Drying Red-lead Primer, especially adapted to the average job of metal painting around the home. This is a pure red-lead paint and contains no other pigment but red-lead. It is to be used as it comes in the container, hence no special mixing directions are required. Of course, the instructions in this chapter as to surface preparation and number of coats apply to no matter what type of red-lead paint is used. The formulas given are for the use of Dutch Boy paste red-lead.

Painting Exterior Metal

Formula No. 30—Priming Coat

Materials	Amounts
Dutch Boy paste red-lead	100 lbs.
Dutch Boy linseed oil*	2½ gals.
Pure turpentine	1½ gals.
Dutch Boy liquid drier	1½ pints
Gallons of paint	5 gals.
Coverage (600 sq. ft. per gal.)	3,000 sq. ft.

Formula No. 31—Second Coat

(Light Brown)

Materials	Amounts
Dutch Boy paste red-lead	100 lbs.
Dutch Boy linseed oil*	2½ gals.
Dutch Boy lampblack	1½ pint
Pure turpentine	1½ pint
Dutch Boy liquid drier	1½ pints
Gallons of paint	5½ gals.
Coverage (600 sq. ft. per gal.)	3,150 sq. ft.

The lampblack is added to the red-lead for the second coat to change the color of the paint to a light brown. This enables the painter to see readily if any places have not been covered properly. Moreover, a slightly shaded second coat facilitates the inspection of the final coat in the same way.

Formula No. 32—Third Coat

(Black)

Materials	Amounts
Dutch Boy paste red-lead	100 lbs.
Dutch Boy lampblack	6½ gals.
Dutch Boy prussian blue	1½ gals.
Pure turpentine	15½ gals.
Dutch Boy liquid drier	1½ gals.
Gallons of paint	28½ gals.
Coverage (600 sq. ft. per gal.)	17,100 sq. ft.

* If genuine boiled linseed oil is available, such as Dutch Boy boiled oil, use one-third boiled oil to two-thirds raw oil and omit the drier.

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Repainting Exterior Metal. Dutch Boy Quick-Drying Red-lead Primer or a paint based on Formula No. 30 should be used also for painting metal which has previously been painted. If the original paint is unbroken, then only two coats are required and the finish coat of the desired color should be mixed in accordance with the previous formulas.

Light Finishing Coat. If a light-colored finishing coat is desired, it will be necessary to use white-lead paint. This may be tinted to any of the colors given in Chapter VI using the following white-lead formula:

Formula No. 33—Finishing Coat (For Light Colors)

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead	100 lbs.	100 lbs.
or Carter white-lead	3 gals.	3 gals.
Dutch Boy linseed oil		1 qt.
Pure turpentine	1 pt.	1 pt.
Dutch Boy liquid drier	6 1/2 gals.	1 pt.
Gallons of paint		
Coverage (700 sq. ft. per gal.)	4,375 sq. ft.	

It is not possible, however, to cover the red-lead color with one coat of an extremely light-colored paint. Two coats will be needed except for colors as dark in shade as the dark gray colors given in Chapter VI. If one of the lighter colors is desired, the second coat of red-lead may be omitted and a properly tinted white-lead coat substituted, followed by the finishing coat as above.

Painting Water Tank Interiors. A water tank, like a leader pipe on a house, is one of those things which rusts more often from the inside out than from the outside in. The reason is that its interior is seldom kept as well protected against corrosion as the exterior.

The interior of an industrial water storage

tank should receive at least three coats of paint. These coats should be mixed as follows:

Formula No. 34—Priming Coat

Materials	Amounts
Dutch Boy paste red-lead	100 lbs.
Dry powdered litharge	8 lbs.
Dutch Boy boiled linseed oil	1 1/2 gals.
Pure turpentine	1 qt.
Gallons of paint	4 1/2 gals.
Coverage (600 sq. ft. per gal.)	2,700 sq. ft.

Formula No. 35—Second Coat

Materials	Amounts
Dutch Boy paste red-lead	100 lbs.
Dry powdered litharge	8 lbs.
Dutch Boy boiled linseed oil	1 1/2 gals.
Pure turpentine	1 qt.
Dutch Boy lampblack	1/2 pt.
Gallons of paint	4 1/2 gals.
Coverage (600 sq. ft. per gal.)	2,775 sq. ft.

Formula No. 36—Third Coat

Materials	Amounts
Dutch Boy paste red-lead	100 lbs.
Dry powdered litharge	10 lbs.
Dutch Boy boiled linseed oil	1 1/2 gals.
Pure turpentine	1 qt.
Dutch Boy lampblack (optional)	1 pt.
Gallons of paint	4 3/4 gals.
Coverage (600 sq. ft. per gal.)	2,625 sq. ft.

The dry litharge called for in each formula should be made into a paste with turpentine. In the case of Formulas No. 34 and 35 the three quarts will be more than sufficient for this purpose. In Formula No. 36, however, it will be necessary to use some of the boiled oil for mixing with the dry litharge. In each coat the litharge is mixed with thinner and added to the paint just prior to application.

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It is of the utmost importance to allow sufficient time between coats for the paint to dry thoroughly. Each coat of paint should be hard before the succeeding coat is applied.

The last coat on the inside should be allowed to dry at least one week under favorable conditions; or better, two weeks before filling the tank. The success of the job will largely depend upon this.

All the paint should be brushed out thin. Under no circumstances should it be flowed on.

It is always wise to empty the tank once a year and carefully examine it. If any small rust spots are found, they should be attended to. With such care, and complete repainting at stated intervals, there is no reason that a tank should not last a lifetime in most cases.

Litharge is not used in the paint for the outside of the tank. A tank's exterior should be treated in the same manner as any other steel structure.

Area Red-Lead Paint Will Cover. In estimating the quantity of red-lead paint needed for a job, it is safe to allow 600 square feet to the gallon, one coat. The area which any paint may be expected to cover is approximate at best as the spreading capacity of a paint is greatly influenced by such variable factors as temperature, consistency of the paint, the "elbow grease" behind the brush and the condition of the surface being painted. For example, badly pitted and rough metal will take more paint than a perfectly smooth surface. With Dutch Boy red-lead, however, 600 square feet per gallon is a conservative figure and under all except the most unfavorable conditions it may be expected to cover more than this.

Preparing the Surface. To obtain the best results with red-lead, care should be exercised in applying as well as mixing the paint. A vital point is to clean off all loose rust, dirt and other foreign material before commencing to paint. Wire brushes and scrapers will be found to be effective in removing rust and scale. The sand blast will give good results and is strongly recommended, but thorough scraping and brushing will usually be satisfactory. Rust, the great enemy of iron and steel, is an accelerator of further rusting, because it always contains some moisture. If rust is allowed to remain it will work disaster even after the paint has been applied. Besides, rust and dirt are likely to cause peeling.

Number of Coats. Three coats of paint are necessary on all outside work. Two coats will do for metal indoors. In no case will one coat of paint completely cover bare metal. To the naked eye, the metal may appear to be covered but under the microscope it is another story. Many small pinholes and air bubbles will be found. Even a second coat will not absolutely cover all these pinholes. A third coat is really necessary. Of course, the more the paint is brushed out, the more the pinholes and air bubbles are worked out. Plenty of good brushing effort is essential to a first-class job.

Mixing the Paint. Paint is made with Dutch Boy paste red-lead exactly as white-lead paint is made with heavy paste white-lead, by simply adding linseed oil a little at a time and stirring constantly with a wooden paddle. Dry red-lead is mixed with oil in the same manner, the only difference being that it is less easy to incorporate the oil.

If the paint is to be tinted, "break up" or soften the red-lead first with just enough linseed

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oil to make a workable paste; then add the coloring material and finally the remainder of the oil. When drier is used, put it in after the coloring material and before adding the final oil. (See white-lead mixing directions on page 15 which are similar.) For best results paint made from dry red-lead should be allowed to stand overnight before it is used. It takes time for the oil to thoroughly wet the dry pigment particles.

Applying the Paint. Steel and iron should never be painted during wet weather nor when covered with dew or frost. Early morning painting during the late summer months is not recommended as a usual thing. It is always better to wait until the sun has had time to dry everything out. It is bad practice to attempt painting in freezing weather.

Red-lead paint can best be applied with a round or oval brush. Be sure to use plenty of paint, covering the surface well and not attempting to make a gallon of paint go too far. Pay particular attention to bolts, rivet heads, edges and corners, as they are more subject to destructive influences than perfectly flat surfaces.

The priming coat is the most important. Extra care and precaution should be taken during its application.

Allow plenty of time between coats for the previous coat to dry thoroughly. A week is not too long, especially for the priming coat.

Painting Galvanized Iron. No paint can be recommended to stand up satisfactorily on galvanized iron at all times because the coating left by the galvanizing process has a tendency to repel paint. Sometimes the paint takes hold properly right away; other times considerable difficulty is encountered in making the paint adhere.

It has been the experience of practical painters that paint made of pure red-lead and linseed oil gives good results most consistently. The best results are obtained by allowing the galvanized iron to remain exposed to the weather at least six months before painting it.

Apply three coats of paint mixed in accordance with the formulas for painting exterior metal, page 77.

Do not merely spread the priming coat upon the metal and expect it and succeeding coats to stick at all hazards. Brush the paint out well and use enough pressure to force it into every microscopic irregularity in the surface. Many an otherwise good job of painting on galvanized iron has gone wrong simply because the paint was not brushed on "close", as the painters say.

Painting Metal Ceilings, Trim and Sash. Painting metal ceilings with red-lead or white-lead paint will practically eliminate the most common trouble experienced with interior sheet-metal work of this type, the formation of rust spots.

When the ceiling is to be finished in white or a very light tint, it is recommended that all the coats, including the priming coat, be of white-lead.

For priming use the following:

Formula No. 37—Priming Coat

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead	100 lbs.	100 lbs.
or Carter white-lead	2 gals.	2 gals.
Dutch Boy linseed oil	$\frac{3}{4}$ gal.	1 gal.
Pure turpentine	1 pint	1 pint
Dutch Boy liquid drier		

Gallons of paint
Coverage (600 sq. ft. per gal.) 6 gals.
3,600 sq. ft.

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For the second coat use Formula No. 24 (page 46). The finish coat can be flat (Formula No. 24) or semi-gloss, as desired.

Painting Radiators. Pipes and radiators never before painted should first be cleaned thoroughly with wire brushes to remove all traces of rust, dirt and grease. Then apply a priming coat of Dutch Boy Quick-Drying Red-lead Primer or a red-lead paint based on Formula No. 30.

In the case of pipes and radiators that have been painted before and that show some defect such as blistering or peeling, the old finish should be removed and the foregoing priming coat applied. If the old finish shows no defects, the priming coat may be omitted.

In the painting of pipes and radiators the decorative requirements of the room should be considered. The finish may be in aluminum or bronze, or in some light-tinted paint which will harmonize with the color scheme of the room. The metallic powders, if these are used, should be thinned to suitable painting consistency with Dutch Boy Lead Mixing Oil.

If a light-tinted flat paint is decided upon, apply a second coat, tinted to approximately the color desired in the finishing coat, based on Formula No. 24. Then follow with the finishing coat tinted to the desired color and mixed according to Formula No. 24 or, if a semi-gloss finish is desired according to Formula No. 29. When a full gloss is desired a good prepared enamel should be employed for the finishing coat.

Ample time should be permitted to elapse between coats so that each may dry and harden thoroughly before the next is applied. If it is possible to permit the steam to pass gradually through the pipes between coats, the drying may be hastened in this way. However, the steam

should not be turned on full. If the pipes are submitted to sudden heating, the coating will undoubtedly be affected.

It should also be kept in mind that nearly all light tints show a tendency to darken slightly due to heat. This should be taken into consideration when the color is selected.

Booklet on Metal Painting. If you are concerned with the painting of large metal structures—buildings, bridges, tanks, etc.—write us for a copy of "Structural Metal Painting". This booklet is devoted entirely to metal painting and treats the subject fully from all angles.

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CHAPTER IX Painting Small Boats

Under this classification, so far as painting practice is concerned, we may include everything from a canoe to a sizable yacht. The pride with which the average boat owner keeps his craft bright and shining—no matter what its size or shape—is traditional. Paint, of course, is the natural medium for this decorative urge just as it is for protective purposes. We have therefore devoted this chapter to directions and proper formulas for painting the various types of craft coming under the head of small boats.

It should not be assumed from this that white-lead and red-lead as well as other Dutch Boy products are used for nothing larger than yachts. On the contrary, the same products used for painting small boats have long been used for protecting and decorating the biggest liners and steamships. The painting of ships of this size, however, is more or less a specialized field and it is felt that a detailed discussion would be out of place in this handbook. In general, it may be said that the same procedure and the same formulas recommended in this chapter for smaller boats also apply to larger craft. Of course, the decoration of the interior of any boat or ship is no different from the decoration of other interior surfaces. This subject is quite completely handled in Chapters IV, V and VII.

Preparing the Surface. If the surface is of new wood, dust it off carefully and cover all knots and sappy streaks with orange shellac. The shellac can be made by thinning dry orange gum shellac with good quality denatured alcohol, proportioned on the basis of three pounds of shellac to one gallon of alcohol, or the liquid shellac may be purchased as "3 pound cut pure orange

shellac". Brush the shellac on thin. If it is put on too thick the paint will alligator, leaving the knots bare.

Painting the Hull. Prime the new wood with a thin coat of paint mixed as follows:

Formula No. 38—Priming Coat

(Boat Exterior)

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead or Carter white-lead	100 lbs.	100 lbs.
Dutch Boy linseed oil	4 gals.	4 gals.
Pure turpentine	1½ gals.	2 gals.
Dutch Boy liquid drier	1 pint	1 pint
Gallons of paint	9 gals.	9 gals.
Coverage (600 sq. ft. per gal.)	5,400 sq. ft.	5,400 sq. ft.

After the priming coat has dried thoroughly, fill all cracks, nail-holes, dents and other defects in the surface carefully with putty. It should consist of Dutch Boy or Carter white-lead, either soft or heavy paste, stiffened to putty consistency with dry whiting. An even harder putty is made with Dutch Boy red-lead instead of white-lead.

Use sandpaper to smooth down the rough places. Then apply a second coat of paint mixed as follows:

Formula No. 39—Second Coat

(Boat Exterior)

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead or Carter white-lead	100 lbs.	100 lbs.
Dutch Boy raw linseed oil	1½ gals.	1½ gals.
Pure turpentine	1 gal.	1½ gals.
Dutch Boy liquid drier	1 pint	1 pint
Gallons of paint	5½ gals.	5½ gals.
Coverage (700 sq. ft. per gal.)	3,850 sq. ft.	3,850 sq. ft.

Repeat the second coat as many times as desired. Many boatmen put on five or six coats brushed out very thin. Without question this is

† When boiled oil is used, reduce drier to ½ pint.

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the best practice, as a number of thin coats produces much better results than the same amount of paint put on in thick coats.

Finish with a coat of paint mixed as follows:
Formula No. 40—Flat Finishing Coat

<i>(Boat Exterior)</i>		<i>Soft Paste</i>		<i>Heavy Paste</i>	
Materials					
Dutch Boy white-lead	100 lbs.			100 lbs.	
or Carter white-lead				3 gals.	
Dutch Boy Lead Mixing Oil	3 gals.				
Gallons of paint	6 gals.				
Coverage (700 sq. ft. per gal.)	4,200 sq. ft.				

(or)

Formula No. 41—Flat Finishing Coat

<i>(Boat Exterior)</i>		<i>Soft Paste</i>		<i>Heavy Paste</i>	
Materials					
Dutch Boy white-lead	100 lbs.			100 lbs.	
or Carter white-lead				2 gals.	
Pure turpentine	1½ gals.			½ gal.	
Spar varnish	½ gal.				
Gallons of paint	6½ gals.				
Coverage (700 sq. ft. per gal.)	4,550 sq. ft.				

The preceding formulas give a "flat" or gloss-less finishing coat paint, which wears much better under water than a glossy paint rich in oil.

An excellent flat paint for use as the second and finish coats can be mixed on the basis of 3 gallons of Dutch Boy Lead Mixing Oil with 100 pounds of soft or heavy paste white-lead.

Painting Deck, Spars and Outside of Cabin.
Use the same formulas for the priming and second coats on the deck, spars and outside of the cabin as for painting the hull. Then apply the following finishing coat except on decks. Use Formula No. 8, page 23 for decks, employing a good outside spar varnish in place of the floor varnish. Be sure to allow plenty of time between

coats for the preceding coat to become dry, at least forty-eight hours.

Formula No. 42—Gloss Finishing Coat
(Boat Exterior)

<i>Materials</i>		<i>Soft Paste</i>		<i>Heavy Paste</i>	
Dutch Boy white-lead	100 lbs.			100 lbs.	
or Carter white-lead				3 gals.	
Dutch Boy raw linseed oil	3 gals.			1 quart	
Pure turpentine	1 pint			1 pint	
Dutch Boy liquid drier	6½ gals.				
Gallons of paint	4,375 sq. ft.				
Coverage (700 sq. ft. per gal.)					

Inside woodwork and walls should be treated according to instructions given in Chapters IV, V and VII.

Painting Metal Surfaces. Iron and steel hulls, keels, masts or other rustable metal surfaces of a vessel should be protected with two coats of Dutch Boy red-lead. The painter may use either Quick-Drying Red-Lead Primer for this purpose or if he wishes to mix his own paint, Dutch Boy paste red-lead. In either case, the metal must be cleaned of all rust and loose dirt and otherwise prepared to receive paint (see page 81).

If it is desired to mix up the paint, using Dutch Boy paste red-lead, the following formula should be used:

Formula No. 43

(Metal Work on Boats)

<i>Materials</i>		<i>Amounts</i>	
Dutch Boy paste red-lead		100 lbs.	
Dutch Boy linseed oil*		2½ gals.	
Pure turpentine		1½ pints	
Dutch Boy liquid drier		1½ pints	
Gallons of paint		5 gals.	
Coverage (600 sq. ft. per gal.)		3,000 sq. ft.	

* If Dutch Boy boiled oil is available, use one-third boiled and two-thirds raw oil, omitting the drier.

On ornamental parts, finish with white-lead tinted to suit. (Refer to page 78, paragraph headed "Light Finishing Coat".) Below the waterline, finish with anti-fouling, if desired.

Repainting. In repainting, use the same formulas given for painting new work, except that the priming or first coat may be omitted. Old coats should be smoothed down well and the surface dry before new coats are applied.

Remember that paint will not adhere properly to a boat's bottom that is covered with dirt, water plants, marine animals, etc. Clean off all such accumulations by scraping or scrubbing.

Stop up all leaks before applying any paint. Cracks and seams can be filled up with caulking cotton soaked in paste white-lead, nail-holes with bits of pine, and very small leaks with white-lead putty.

Paint applied over an uneven surface is bound to present a bad appearance. Where the old paint is rough, sandpaper it down smooth and touch up all bare spots before applying the first coat.

Row Boats. Do not attempt to paint immediately after taking the boat from the water. Let it dry thoroughly. Then apply two coats of paint, inside and outside, mixed according to the following formula:

Formula No. 44

(*Row Boats—Exterior and Interior*)

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead or Carter white-lead	25 lbs.	25 lbs.
Pure turpentine	3½ pints	4 pints
Spar varnish	½ pint	¾ pint
Dutch Boy liquid drier	1 gill	1 gill
Gallons of paint (coverage 700 sq. ft. per gal.)	1¼ gals.	8½ sq. ft.

If a colored paint is wanted, tint the last coat. The addition of a very little lampblack or drop-black will produce a gray. A little Chinese blue will make a light blue. (For other colors, see Chapter VI, using only one-quarter of the quantity of ingredients called for, as Formula No. 44 is based on 25 pounds of white-lead instead of 100 pounds.)

The finish produced by two coats of paint mixed according to Formula No. 44 will be "flat" or lustreless. If a semi-gloss finish is desired, use Formula No. 44, modified by the use of an additional pint of spar varnish.

Canvas Canoes. When the paint is so badly cracked and broken that the canvas shows through in places, it is best to remove the old coat entirely by means of a paint remover and start anew. After the old paint is off, sandpaper the surface and apply a coat of paint composed of:

Formula No. 45

(*Canoes*)

Materials	Soft Paste	Heavy Paste
Dutch Boy white-lead or Carter white-lead	4 lbs.	4 lbs.
Pure turpentine	¾ pint	1 pint
Spar varnish	¼ pint	½ pint
Dutch Boy liquid drier	1 gill	1 gill
Gallons of paint (coverage 700 sq. ft. per gal.)	¼ gal.	175 sq. ft.

Tint as desired. (See Chapter X, page 93, "Small Paint Jobs".)

The above formula should make enough paint for the first coat on one canoe. Put the paint on thick and work it well into the canvas by careful brushing. When dry, sandpaper the surface

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and then apply two coats of japan color thinned with spar varnish and just enough turpentine to make the paint brush out smooth. One pint of japan color and one pint of varnish should be sufficient to do the work.

If the old paint on a canoe is in good condition, the white-lead paint need not be applied. Simply sandpaper the old coat down smooth and apply the two coats of japan color and varnish.

To refinish the inside of a canoe, sandpaper the old varnish thoroughly and put on one coat of good spar varnish. One pint of varnish should be sufficient.

Patching. To mend a hole in a canoe, insert a piece of canvas beneath the torn part, pasting the patch on with a little white-lead and rubbing varnish, and clinching it to the ribs of the canoe with brass or copper tacks. Very small holes can be fixed by plugging them with white-lead stiffened slightly with whiting.

CHAPTER X

Small Paint Jobs

Simplified Mixing Directions. There are many jobs of painting for which only a comparatively small amount of paint is needed. For jobs of this kind, mix your paint according to the following simplified directions.

Gloss Paint. Paint which gives a gloss finish is used for practically all exterior painting.

To make a gloss paint, mix either soft paste or heavy paste white-lead with an equal volume of linseed oil, stirring the oil in a little at a time in the case of the heavy paste. Then add, if heavy paste is used, $\frac{1}{4}$ pint each of turpentine and drier for every gallon of paint. If soft paste is used, omit the turpentine and merely add $\frac{1}{2}$ pint of drier to each gallon.

These directions give a fairly heavy paint such as is generally used for a gloss finishing coat. If for any reason a thinner paint is wanted, add more linseed oil and turpentine. For priming new, unpainted wood increase the quantity of paint by half with a mixture of linseed oil and turpentine, using one part oil and two parts turpentine.

Flat Paint. Where a dull or so-called "flat" finish is desired, as for interior decoration on either woodwork or plaster walls, a flattening liquid instead of linseed oil should be mixed with the white-lead. The best material for this purpose is Dutch Boy Lead Mixing Oil, but turpentine may be used if this cannot be obtained. Dutch Boy Lead Mixing Oil comes in one and five-gallon cans. It produces a flat finish which is remarkable for its beauty, washability and durability.

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To make flat paint mix together equal parts (by volume) of soft or heavy paste white-lead and Dutch Boy Lead Mixing Oil (or two-thirds the volume of turpentine). Pour the liquid into the white-lead a little at a time, stirring thoroughly before adding each additional quantity. If turpentine is used, add one tablespoonful of drier for each pint of paint. If Dutch Boy Lead Mixing Oil is used, add no drier.

Flat paint, mixed as directed, may be used for undercoats as well as for the finishing coat on woodwork and for all coats on plaster except the priming coat. For the priming coat on unpainted plaster, it is better to use a special primer, such as Dutch Boy wall primer, which will seal all fine cracks and porous places in the surface.

Formulas for securing a number of popular colors are listed below. These formulas give the amount of Dutch Boy color in oil required to tint one gallon of paint made with white-lead. A lesser or greater quantity of paint may be tinted to the desired color simply by decreasing or increasing proportionately the amount of color in oil called for by the formula.

Tint	Color in Oil	Amount per gal.
Ruff	Raw Sienna	$\frac{1}{4}$ pt.
Fawn	Raw Umber	$\frac{1}{4}$ pt.
Pink	Burnt Sienna	$\frac{1}{4}$ pt.
Light Blue	Chinese Blue C.P.	$\frac{1}{4}$ tube
Light Green	Med. Chr. Green C.P.	$\frac{1}{4}$ pt.
Colonial Yel.	Med. Chr. Yel. C.P.	$\frac{1}{4}$ pt.
Tan	Raw Sienna	$\frac{1}{4}$ tube
Light Gray	Lampblack	$\frac{1}{4}$ tube
Lead Gray	French Ochre	$\frac{1}{4}$ pt.
Ivory	Burnt Umber	$\frac{1}{4}$ pt.
Warm Gray		

A little english venetian red added to any of the foregoing colors except the greens will give a warmer tint. In the case of the greens, the warmer effects are secured by adding yellow. If a colder color is desired, add a little chinese blue to the pink, greens, drabs and grays and a little chrome green with a touch of blue to the cream, yellow and buff. To soften or gray a color, add a little lampblack. To lighten a color, simply use less color in oil or more white-lead; to darken it, add more color in oil.

How Much Paint to Make. One pound of white-lead paste, thinned as directed under "Gloss Paint" and "Flat Paint", will make about one-half pint of paint or enough to cover about fifty square feet of surface, one coat. Other quantities will cover as follows:

Pounds of White-Lead	How Much Paint It Makes	Square Feet It Covers
5	$2\frac{1}{2}$ pints	220
$12\frac{1}{2}$	3 quarts	525
25	$1\frac{1}{2}$ gallons	1,050
50	3 gallons	2,100
100	6 gallons	4,200

For more specific information on surface preparation, which is usually necessary even on small jobs, refer to the chapter covering the type of material that is to be painted.

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CHAPTER XI

Common Painting Defects Their Cause and Cure

Good paint doesn't fail prematurely unless it is improperly mixed, carelessly applied or asked to do the impossible. Pure white-lead paint, properly mixed and skillfully applied to a surface it to receive it and exposed to ordinary atmospheric conditions, always does what it is advertised to do—last long, look well during its entire life and wear away gradually, leaving a perfect surface for repainting.

Assuming that the paint you applied conformed to these requirements of proper mixing, brushing and exposure, yet developed certain localized defects, after the job had stood for some time, the chances are that some defect in the construction of the building was the cause of the failure.

It has been proved that if moisture is allowed to get behind the paint film because of some defect in the construction of a building, it will do the same kind of damage it causes if paint is applied directly over it. Everyone knows that surfaces should be dry when painted, but if the timber is allowed to become water-soaked from the inside after it is painted, a paint failure will be brought about.

Some of the causes of paint failure, not usually considered as such, are listed here:

Poor fitting of siding material over drip caps on window and door headers.

Poor fitting of siding against casings of doors, windows and corner boards.

Insufficient or incorrect placing of metal flashing where porch or dormers fit into house.

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Quantities of Materials Needed to Make One Gallon of Paint

TABLE A—New, Unpainted Outside Wood:

Soft Paste White-Lead		Heavy Paste White-Lead	
Priming Coat	Second Coat	Priming Coat	Second Coat
11 lbs.	17 lbs.	16½ lbs.	10½ lbs.
3½ pints	2 pints	2 pints	2 pints
1½ pints	2 pints	2 pints	2 pints
2 oz.	2 oz.	2 oz.	2 oz.
600 sq. ft.	700 sq. ft.	600 sq. ft.	700 sq. ft.

TABLE B—Repairing Outside Wood:

Soft Paste White-Lead		Heavy Paste White-Lead	
First Coat	Second Coat	First Coat	Second Coat
14 lbs.	10 lbs.	14 lbs.	10 lbs.
2 pints	2 pints	2 pints	2 pints
2 pints	2 pints	2 pints	2 pints
2 oz.	2 oz.	2 oz.	2 oz.
700 sq. ft.	700 sq. ft.	700 sq. ft.	700 sq. ft.

Dutch Boy white-lead
or Carter white-lead
Dutch Boy linseed oil
Pure turpentine
Dutch Boy liquid drier

Coverage, one coat
* If linseed oil is used, reduce drier to 1 oz.

Building a porch skirting down to the ground level with wood touching the moist ground.

Building all or part of house over unconcreted ground which becomes especially fruitful as a cause for trouble when insufficient or no ventilation is provided to carry off vapors rising from open ground.

To cure the paint troubles brought about by any of the above causes, it will be necessary to correct the defect in construction which leads to the paint failure. The paint which is cracking, peeling, scaling, etc., must be removed clear down to the bare wood, the wood allowed to dry out thoroughly and the building defect corrected. After this, the surface may be painted to stay painted.

Another common cause of paint failure is painting too soon after siding and trim have been exposed to rain. Some painters make the mistake of figuring that a few hours of rainless weather are enough to thoroughly dry out lumber which has actually been saturated as the result of a heavy rain.

If it is certain that there exist no constructional defects like those outlined above, then any trouble that develops must be attributed either to wrong materials or improper painting practice. The remainder of this chapter is devoted to a description of some of the paint failures that crop up from time to time and what you can do to avoid or correct them.

Checking. (Figure 1) This defect takes the form of fine splits or ruptures in the paint which break the surface into innumerable small irregular areas but which are in the top coats only and do not extend through to the surface underneath. Slight checking is not a serious defect because the durability and the protective value of the

paint are not affected, nor does checking make repainting more difficult.

The cause of checking is usually too soft an undercoat. It can be avoided by allowing plenty of drying time between paint coats and by making sure that each undercoat is properly formulated to insure its being harder than the succeeding coat.

Alligatoring. (Figure 2) This defect is similar to checking in character although the ruptures in the paint film are much wider and the surface broken into larger irregular areas. Like checking, it affects the top coats only and does not extend through to the surface underneath.

Alligatoring, however, gives the surface an unsightly appearance. It seriously affects the durability of the paint and makes repainting difficult. The cause of alligatoring is always too soft an undercoat. This may be due either to the use of too much oil, to insufficient drying time between coats or to the use of impure oil or other vehicles which dry to a soft film.

To avoid alligatoring, make sure that the undercoats have plenty of time in which to dry and that they are properly formulated to insure their being harder than the succeeding coats.

Quite often, alligatoring on outside wood surfaces has been traced to the use of yellow ochre as a priming coat. While the use of this type of primer has been long discontinued, some old houses still retain their priming coat of this material and still cause trouble. The only safe remedy in cases of this kind is the complete removal of the paint, including the ochre, by means of torch and scraper, and then repainting with three coats of white-lead mixed in accordance with our regular formulas.

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Cracking and Sealing. (Figure 3) These two defects are closely related since sealing is a later stage of cracking. Cracking is a rupture of the paint film extending clear down to the wood. This allows moisture to enter behind the paint film which loosens the paint and scaling results. This defect is caused by the use of a paint which becomes hard and brittle as it ages and can no longer follow the movement of the wood surface underneath. White-lead paint remains elastic.

If cracking and scaling have occurred over the entire surface it is usually advisable to remove all of the old paint by means of torch and scraper before repainting. Otherwise, the old films will probably continue to scale, carrying the new paint with them. Our regular formulas should be followed for the repainting.

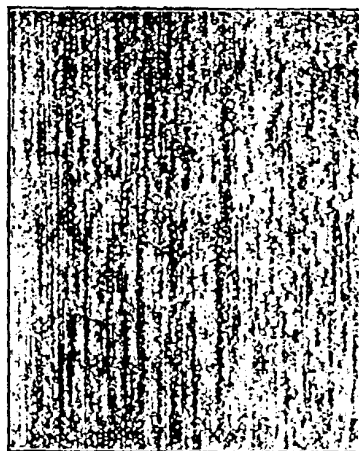


Figure 1—Checking

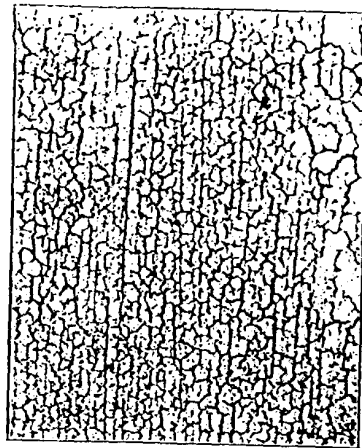


Figure 2—Alligatoring

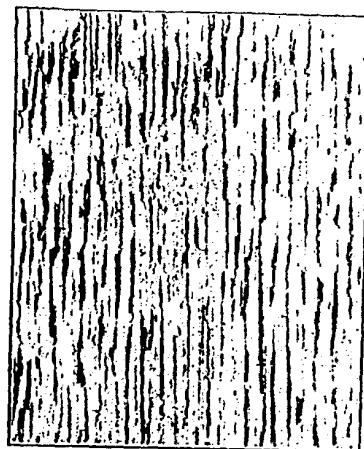


Figure 3—Cracking and Sealing

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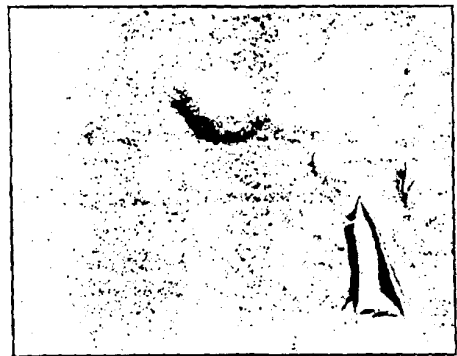


Figure 4—Blistering and Peeling



Figure 5—Spotting

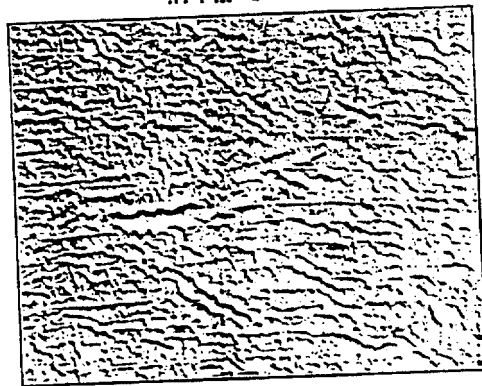


Figure 7—Wrinkling

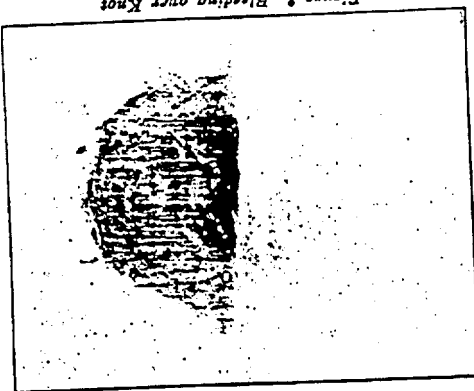


Figure 8—Bleeding over Knot

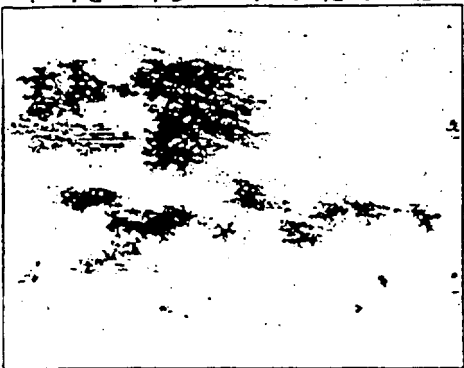


Figure 9—Discoloration over Cedar or Redwood

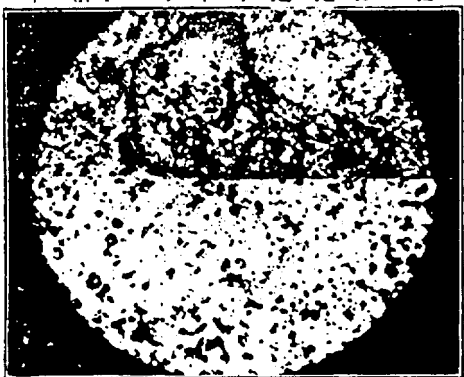


Figure 10—Dirt Discoloration (upper half) and Mildew (lower half). Greatly Magnified

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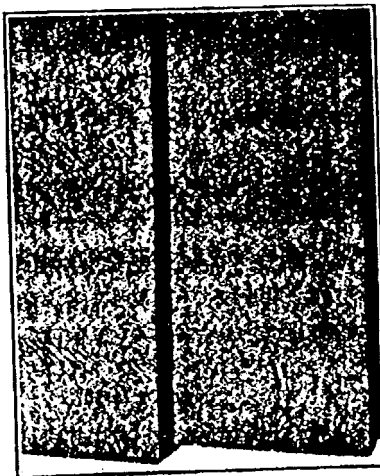


Figure 11—Sagging

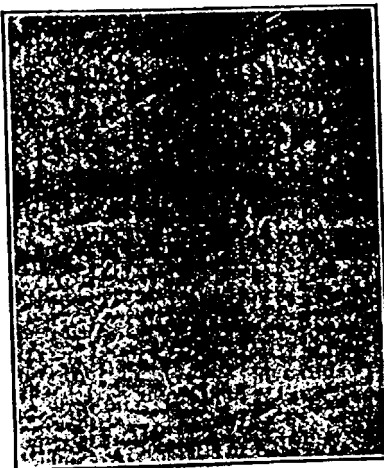


Figure 12—Running

Blistering and Peeling. (Figure 4.) The most common cause of blistering is moisture present in the material behind the paint film. Peeling quite naturally follows blistering, in most cases, since the paint which has blistered no longer grips the surface properly and a comparatively small amount of pressure is sufficient to force it completely from the surface.

In some cases, the heat of the sun is enough to increase the vapor pressure of the moisture in the material so that it will cause blistering. In interiors, it is usually the heat of a radiator or a riser, which causes the trouble. The more moisture-tight a paint is, the more apt it is to blister. Therefore a paint that permits some escape of the moisture behind it, and that grips the surface properly, is less likely to show this trouble.

The best way to avoid blistering is to make sure that the surface to be painted is thoroughly dry. In the case of porch columns which are painted on all sides, it is necessary to be particularly careful because if the moisture is in the column when it is painted, blistering is apt to occur even when pure white-lead paint, which possesses unusual tenacity, is used for the painting. Sometimes, porch columns are pierced, at the top and bottom, to allow ventilation within the column and thus dry out the moisture which may be present.

On repainting a blistered surface, it is necessary to scrape off all the defective paint, allow the wood to dry out thoroughly and repaint as on new work. The priming coat on such work should be permitted to dry for a considerable time and it will be found that this,

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if properly designed, will permit the wood to dry out further, and yet will tend to prevent the entrance of moisture from the outside. If leaks or faults in construction are responsible for the presence of moisture, these should of course be properly repaired before anything else is done.

Spotting. (Figure 5.) Spotting is characterized by loss of gloss, fading and early chalking in spots or small areas due to absorption of oil from the finishing coat by the porous surface underneath. It is very likely to occur on new work that is only given two coats or old work painted with one coat. Spotting usually shows up more prominently with dark tints and colors. This defect will not occur when sufficient coats of properly formulated paint are applied.

Washing. (Figure 6.) This condition occurs when a paint film contains pigments that are soluble in water or when soluble compounds are formed by chemical reactions after the paint has been applied. Washing may be noticed in the form of streaks near the lower edge of clapboards and in accumulations on column footings or building foundations. The material that is dissolved out of the paint will collect in these places and when the water evaporates the streaks can be plainly seen.

White-lead never develops water soluble compounds and surfaces painted with properly mixed white-lead paint will never give this trouble.

Wrinkling. (Figure 7.) The principal cause of this defect is an excessively thick coat of paint, sometimes exaggerated by excessive drier. When paint is left in too thick a film it is impossible for it to dry uniformly and after the surface skin has formed the later drying of the part underneath causes the surface to wrinkle.

There are sometimes contributing factors such as changes in temperature or excessive humidity during the drying period, but even under unfavorable drying conditions, wrinkling can be avoided if the coat being applied is brushed out to a thin even film. The use of some turpentine helps to retard the wrinkling of paint.

It is not customary to remove the old paint when wrinkling has occurred, although in some cases this is the easiest way of producing a first-class repaint job. If the wrinkling has occurred only on limited portions, rub down the ridges with a fairly coarse sandpaper before repainting.

Bleeding over Knots. (Figure 8.) Bleeding of this type is caused by the oil in the paint dissolving out substances in the knot and can usually be prevented by coating knots with thin rosin-free shellac after the priming coat of paint has been applied. One half the knot in the photo has been so treated.

Discoloration over Cedar or Redwood. (Figure 9.) This appearance of dark spots through or on the paint film is caused by dark colored water soluble substances in the wood which are brought to the surface by moisture and deposited there. This trouble is not in any way caused by the paint and the way to prevent it is to allow the lumber to weather thoroughly before it is painted.

Dirt Discoloration and Mildew. (Figure 10.) These two conditions are frequently confused with each other. The illustration will indicate the difference. Note the fibrous, fungus-like appearance of the mildew in the lower half of the picture.

Finishing coats that contain too much linseed oil are likely to dry soft and tacky, forming the

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type of surface that catches and holds every particle of dust and dirt. On the other hand, a finishing coat made on the basis of our formula will produce a glossy but sufficiently hard film to resist excessive dirt collection. In addition, it will stand up better when exposed to weather.

Mildew is a dark colored fungus growth which tends to form under the combined conditions of moisture, warmth and shade. It also develops more readily on soft paint films than on harder ones. Where mildew exists, remove all the fungus possible before repainting and for the finishing coat use a paint mixed on the basis of $2\frac{1}{2}$ gallons of oil to the hundred of soft paste white-lead, increasing the turpentine to 3 pints. The addition of eight ounces of calomel (mercurous chloride) or preferably 4 oz. mercuric chloride (corrosive sublimate) to every hundred pounds of white-lead, for both coats, is an aid in retarding the growth of mildew. Mercuric chloride is a deadly poison and must be used with great care.

Early Loss of Gloss and Early Chalking. If pronounced sudden loss of gloss or chalking occur shortly after painting, it is probably due to incorrect formulation of the paint or to the presence of moisture in some form (frost, fog, rain, etc.) during the drying time of the paint.

Discoloration from Copper Screens. Unprotected copper screens exposed to the weather are affected by moisture and gases present in the atmosphere. The formation of copper salts results. These salts are washed down over the surface of the paint film by rain. When the paint contains certain white pigments, the salts actually stain the film so that it is impossible to remove the discoloration. Pure white-lead paint is never stained by these salts and any normal discoloration that is deposited on the surface of

a white-lead film from this source does not become fixed, but is washed away.

Running and Sagging. (Figures 11 and 12.) Running and sagging are associated defects. Both are due, nearly always, to the application of too heavy a coat of paint. If the paint is high in oil content, the tendency is to apply it too freely, and consequently the paint will run or sag. A paint of correct formulation, brushed on a suitable surface in a workmanlike manner, never will show either of these defects. The preparation of a surface which has shown these defects is similar to the preparation of a surface that has shown wrinkling; that is, the rough portions of the surface are smoothed with sandpaper before the first repaint coat is applied.

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Department of Technical Paint Service and Decoration

If you have some special problem of a technical nature that is not answered in this book address your inquiry to us and our Department of Technical Paint Service and Decoration will give it prompt attention.

If you have some special problem in decorating or color selection to solve, please cover in your inquiry the points that are listed below. This will aid our colorists in selecting suitable schemes of treatment for your specific problem which will be forwarded free of charge, together with samples of the colors recommended, and the formulas required to produce them.

The more information given regarding any problem, the more complete will be the answer concerning it. If blue prints or photographs of the exterior or interior in question are available, these should be forwarded.

Exterior

If you desire a color scheme for the exterior of a building, please give us the information requested below:

1. Type of building.
2. In what direction does it face?
3. Give approximate size of building including width, depth and number of stories.
4. Of what material are the outside walls constructed?
5. Are they painted, stained or natural and what is the present color?
6. Of what material is the roof composed?
7. Is it painted, stained or natural and what is the present color?

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8. Describe approximate amount of trim (large, normal or small).
9. Are there window blinds?

10. If there are any gables or porches, state number and location.

11. If there is any foliage near the building, is it plentiful or moderate?

12. What are the principal colors of neighboring buildings?

13. Have you any color preference?

Interior

If you desire color suggestions for the interior of a building, please give us the information requested below:

1. Name each room to be decorated—living room, dining room, bedroom, etc.—indicating exposure (north, south, east or west) in each instance.

2. Give rough floor plan of rooms in building. State dimensions including height of ceiling.

3. Are the walls and ceilings of rough or smooth plaster?

4. Are they papered, painted or calcimined?

5. What is the present color of the wood trim and will it be painted, stained or left natural?

6. Of what color and material is the floor and will it be painted, stained or left natural?

7. Describe color, size and location of fireplaces, wainscot, beams, panels, columns or other architectural details.

8. Describe materials of which floor coverings and furniture are composed, stating dominant color of each.

9. Have you any color preference?

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Hotels, Public Buildings, etc. Our Decorative Service is not confined to dwellings, but is also available without cost or obligation, to owners or those in charge of hotels, apartment houses, office buildings and similar structures.

Special Hospital Service. The interior color treatment of hospitals is influenced by factors that are peculiar to the hospital field alone. Our Hospital Service Department has made a careful study of these factors and is equipped to prepare color and paint specifications for any type of hospital. Naturally, this service must be an individual one to properly fit conditions as they exist in any one institution and for this reason a complete description of the building, including floor plans with the functions of the various rooms clearly indicated, is necessary. This service is rendered without cost or obligation.

Painting Contract Form

For all ordinary jobs of exterior and interior painting the following contract between painter and property-owner will fill requirements:

(Date)
We agree to paint the property located at
(Address)
and owned by (Name of owner)
.....
doing the work listed herein in accordance with
the following specifications:
1. Paint is to be applied only when the surface is thoroughly dry.

2. All surfaces shall be clean, smooth and free from dust, dirt, grease, mortar, loose paint, scale, etc.

3. All paint shall be evenly spread and thoroughly brushed out.

4. On new work, after priming, knots and sappy streaks shall be shellacked with one coat brushed out thin.

5. All exterior work shall be allowed to dry from two to four days before the next coat is applied and for interior work at least twenty-four hours for each coat.

6. All nail-holes, dents, cracks, joints or other defects in the surface shall be puttied after the priming coat has been applied and is thoroughly dry.

7. Before any paint is applied, plaster surfaces, either new or old, must be made clean and smooth and all cracks and holes filled with patching plaster.

8. Walls that have been calcedimine shall be washed until all calcedimine is removed before applying any paint.

9. All new plaster, stucco or concrete shall be aged before painting by washing with a solution made by dissolving two pounds of zinc sulphate in one gallon of water.

10. All gloss paint used shall be pure Dutch Boy or Carter white-lead, mixed in proper proportions with Dutch Boy linseed oil, pure turpentine and Dutch Boy liquid drier. Flat paint shall be pure Dutch Boy or Carter white-lead, mixed in proper proportion with Dutch Boy Lead-Mixing Oil.

11. All material and tools to be furnished by the painting contractor.

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(Here list and specify in detail all work to be done.)

Price for all work specified above \$.....

Terms of payment:

After first coat is applied \$.....

On completion of job \$.....

(Signed)
(Signature of Contracting Painter)

Accepted
(Signature of Owner of Property)

Products of
National Lead Company

Acetate of Lead

White—Broken, Crystals, Granular, Powdered
Brown—Broken

Acid Concentrating Plants (Simonson-Mantius
Vacuum Process)

Chamber Acid

Sludge Acid

Spent Acid

Acid Separating Plants (Simonson-Mantius
Vacuum Process)

Sludge Acid

Alloys, Die Casting

Alloys

Lead

Tin

Zinc

Alloys, Slush Mold Casting

Ammunition

Lead Shot

Loaded Shotgun Shells

Metallic Cartridges

Antimonial Lead

Babbitt Metal

Bar Tin

Barium Sulphate

Bars, Lead

Barytes

Basic Lead Chromate

Basic Lead Sulphate

Blue

White

GLD31426

Battery Grid Metal
 Battery Straps
 Bearings
 Armature
 Bronze Backed, Babbitt Lined
 Die-Cast
 Frary Metal (Ulco Brand)
 Journal
 Bends
 Flanged
 Hardlead
 Lead
 Blatchford Patented Base
 Britannia Metal
 Burning Lead
 Calking Lead
 Cames, Lead
 Smooth Faced, Rustic, Antique
 Reinforced as well as plain
 Carbide
 Cartridges (U. S. Brand)
 Casket Trimming Metal
 Castings, Ornamental or Pipe Fitting
 Castor Oil
 Chemical Apparatus, Special Lead Lined
 Cinch Anchors (See Expansion Bolts)
 Clock Weights
 Cocks, Plug, Hardlead
 Coils
 Lead Lined or Lead Covered Copper or Steel
 Colors
 Dry and in Oil
 In Japan

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Expansion Bolts
 Cinch Anchors
 Cinch Lead Screw Anchors
 Cinch Cylinders
 Ferrules, Combination
 Fittings
 Hardlead Flanged
 Lead or Tin Lined, Flanged or Screwed
 Lead Lined Soil Pipe
 Flake, White
 Flaxseed, Ground
 Flaxseed, Meal
 Frary Metal
 Gaskets, Lead
 Hammer Metal
 Hammers
 Babbitt
 Lead
 Hardening Lead
 Hyposulphite, Lead
 White and Black
 Impression Lead, Hoyt's
 Lead, Pulverized
 Lead Mixing Oil
 Linseed Oil
 Raw, Boiled, Double Boiled, Varnish, Stand-
 oil Type, etc.

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Litharge
 Locomotive and Machinery Castings
 Magnus Metal Ingots
 Mold Metal, Rubber
 Music Plates
 Needle Metal
 Net Leads
 Nickel-Bronze
 Orange Mineral
 Organ Pipe Metal
 Ornaments, Lead
 Pewter
 Phosphor Bronze Castings
 Phosphor Tin
 Pig Lead
 Pig Tin
 Pinking Blocks
 Pipe
 Block Tin
 Brass Lined and Copper Lined Steel
 Lead (Antimonial, Chemical, Common, Com-
 position)
 Lead, Tin Lined
 Lead or Tin Lined Brass, Copper or Steel
 Lead or Tin Covered Brass, Copper or Steel
 Soil, Lead Lined
 Printers' Metals (See Type Metals)
 Pumps
 Hardlead Centrifugal Acid
 Tin Lined Hardlead Centrifugal Acid

120

Red-Lead
 Dry and in Oil
 Liquid
 Pure Red-Lead in Ready to Use Form (in
 Colors)
 Roofing Sheets, Hoyt Hardlead
 Sash Weights, Lead
 Screws, Brass Trap
 Sheet Roofing Metal, Hoyt Hardlead
 Sheet Lead
 Antimonial, Common, Chemical, Crawproof
 (or Reinforced)
 Sheet Tin
 Shot, Lead
 Chilled, Drop, Air Rifle
 Shot Shells (U. S. Brand)
 Solder
 Acid Core
 Bar (All Sizes)
 Cake
 Capping Bar
 Drop
 Fusible Bar and Wire
 Ingot
 Meter Bar
 Pig
 Pulverized
 Radiator Bar
 Ribbon or Tape
 Rosin Core
 Segment (Cut Wire)
 Sheet
 Slabs
 Tinner's Bar
 Triangular Bar
 Wire

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Spelter
 Stair Treads, Non-Slip
 Stamping Metal
 Tanks, Homogeneous Lead or Tin Lined
 Tank Connections, Lead Lined and Covered
 Tape, Lead
 Tin Bars
 Tin Wire
 Tint Plates
 Titanox A (Titanium Oxide)
 Titanox B
 Titanox C
 Titanoxl (Lead Titanate)
 Traps, Lead
 Trolley Wheels
 Tubes
 Tin Lined and Tin Covered Brass, Copper
 and Steel
 Tubing
 Block Tin, Composition, Lead, Hoyt Hardlead
 Type Metals
 Autoplate
 Electrotype
 Intertype
 Linotype
 Monotype
 Stereotype
 Typograph
 Valves
 Hoyt Hardlead
 Lead and Tin Lined Acid
 Wall Primer
 Washers, Lead

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Wedge Lead
 White-Lead
 Coach and Car
 Dry
 Grinders' Special
 In Oil
 Regular Grind (or Heavy Paste)
 Soft Paste (Ground with Turpentine for
 Ease in Mixing)
 Pulp
 Wire
 Iron, Lead Coated
 Lead
 Lead-Copper
 Wool, Lead

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DUTCH BOY ALL-PURPOSE SOFT PASTE

The new soft paste can be used for inside flat as well as outside gloss.

DUTCH BOY COLORS IN OIL

High tinting strength, true color tone, quick dispersion. These colors need no thinning before being added to paint.

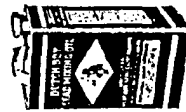


DUTCH BOY LINSEED OIL

Guaranteed pure, well-settled linseed oil with a minimum of foots. Raw, boiled or standoil type. Sealed packages.

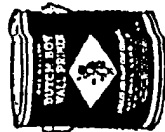
DUTCH BOY LEAD MIXING OIL

Makes, with white-lead, a flat paint that seals, protects and beautifies all porous surfaces—interior or exterior.



DUTCH BOY WALL PRIMER

A special primer for use as first coat in painting plaster with white-lead. Hides as it seals as it spreads.



DUTCH BOY QUICK-DRYING RED-LEAD PRIMER

A natural color, quick-drying, pure red-lead paint in ready to use form. Economical, durable.



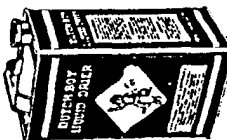
DUTCH BOY RED-LEAD

Pure, highly oxidized red-lead in paste form. Unexcelled for painting metal.



DUTCH BOY LIQUID DRIER

A properly balanced, metallic-type drier, made from highest quality ingredients. Insures safe, efficient drying.



Look For The Dutch Boy Trademark



THIS famous little character, our Dutch Boy Painter trademark, is put on our products as a means of identification and as a protection to the buyer against substitution. He stands for purity of paint materials and signifies certain satisfaction.

You will find the Dutch Boy Painter on all packages of Dutch Boy white-lead, both soft paste and heavy paste, Dutch Boy linseed oil, Dutch Boy Lead Mixing Oil, Dutch Boy wall primer, Dutch Boy red-lead, both paste and liquid, and on other products of our manufacture.

Look for the Dutch Boy trademark—it assures you of a product made to fit the needs of the job in hand.

The Handbook on Painting
MEMORANDA

The Handbook on Painting
MEMORANDA

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