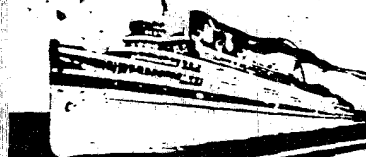


7-16-17

Dutch Boy PHOENIX METAL



For **MARINE
SERVICE**

NATIONAL LEAD COMPANY

NEW YORK BOSTON DETROIT CHICAGO
CINCINNATI CLEVELAND ST. LOUIS SAN FRANCISCO
PHILADELPHIA
NATIONAL LEAD & CO. LTD.
PITTSBURGH

NY 1001652

General Painting Specifications for the Use of Architects and Practical Painters



National Lead Company

New York Boston Buffalo Chicago
Charleston Cleveland St. Louis San Francisco

(John T. Lewis & Son, Co., Philadelphia)
(National Lead & Oil Co., Pittsburgh)

Dutch Boy PHOENIX Metal

For MARINE SERVICE

THE wide use of Dutch Boy PHOENIX metal in ships' engines eloquently bespeaks its all-around fitness for marine service. No metal is better suited for this class of heavy work.

Dutch Boy PHOENIX metal is strictly a tin-basis babbitt. It is tough. It is hard. It is elastic.

Bearings lined with this "best of babbitts" retain oil on their surface remarkably well. With Dutch Boy PHOENIX in the boxes, friction is practically nil.

Best of Babbitts

Dutch Boy PHOENIX metal can be poured or peened into places. When poured there is practically no loss through drossing. It has great resistance to crushing strain but it does not score the journal if the bearing heats.

To use Dutch Boy PHOENIX metal is to practice economy. Aside from downright economical service, it is just as cheap if not cheaper in first cost than inferior compositions when quantity and quality are considered. Being high in tin content, Dutch Boy PHOENIX metal is very light and bulks large to the pound. Moreover, there is no appreciable loss by drossing when Dutch Boy PHOENIX metal is melted.

Fits the Ladle

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1. FOUNDATION PRINCIPLE. To insure the best results the painter himself must always first consider the kind and condition of the surface to be painted, and the prevailing weather; then decide on the proper composition and consistency of the paint. Pure white-lead paint is the only paint of established reputation known to be always reliable and satisfactory, which in its preparation and application permits the exercise of the painter's intelligence in adapting it exactly to all requirements. No paint mixed beforehand without knowledge of surface—whether brick, stone or plaster, whether new woodwork or an old weather-beaten structure—can be equally suitable for all

2. PREPARATION OF SURFACE. All woodwork must be thoroughly dry and seasoned before any paint is applied. No exterior painting is to be done when rain or snow is falling, during fog or until after dew or moisture which may be on the surface has completely disappeared. From old work which has been painted before, all loose paint, scales, dirt and dust must be

CALIFORNIA		
SWEDS	OVERSEAS	HOMES POST
		San Fran.
Harvard	Albino Pacific & S. Co.	
Yale		
M. Mahine	Dodge Lumber Co.	
Francis C. Howard	Dallas S. & Co.	
Francis M. Leggett	Hastings Lumber Co.	
Miner E. Bates	Shaw Lumber Co.	
Winthrop	Shaw Lumber Co.	
O. J. Mahoney	Shaw Lumber Co.	
Shaw Mahoney	Shaw Lumber Co.	
Redondo	Redondo Lumber Co.	

NAME	OWNERS	HOME PORT
Howard	Alaska Pacific B. S. Co.	San Fran.
Yak.		
M. Makin	Dodge Lumber Co.	
John C. Howard	Duffell B. S. Co.	
George H. Leggett	Domestic Steamship Co.	
James K. Johnson	North Lumber Co.	
Whitcomb	Alaska Steamship Co.	
O. J. Mahoney	Alaska Mahogany Lumber Co.	
Oliver Mahoney		
Bushnell	Bushnell Steamship Co.	

	Control	Variant	R. B. Co	New	London
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U. S. Coast Guard	Washington
Light House Dept.	:
U. S. Shipping Board	:

SHOPS	DEWHEES	Home Ports
Manter	A. Heath Packing Co.	Chicago
T. T. Marford	Danaham Tanning Co.	
W. H. Mackness		
Wm. Marshall	C. W. Edwards & Co.	
Nevada	Gambrell Lins	
Argo	Graham Martin Co.	
City of Boston Harbor		
Portland	Edward Hines Lumber Co.	
N.H.	Indiana Transit Co.	
W. H. Sawyer		
Indianapolis		
Thompson Research	J. C. Smith & Co.	
Ice Union	L. M. & I. S. Transit Co.	
City of Fremont		
Henry Lyden	Lester Jarvis Company	
San Antonio	Marshall W. N. Co.	
Christiansburg	D. Sullivan & Co.	
San N. Durham		
Wm. E. Fitzgerald	International Harvester Co.	
Wm. H. Wolf		
The Harvester		

Bureau **Standard Oil Co.** **Whiting**

H. G. Whelan	Memphis Rev. Coal Co.	New Orleans
H. W. Whelan	Ole Manufacturing Co.	" "
Robert Hines		

Graham Mowbray	Boston Virginia R. R. Co.	Boston
Cas. E. Brown	" "	"
J. V. Stoddard	" "	"
E. J. ...	" "	"

V. Standard
 Edison Light
 General
 Chalmers E. & Co.

Manufacturers
 Walter Dwyer
 Ray Ford
 Fred H. H.

Contractors S. B. Co.
 Crowell & Thompson S. F. Co.

Arthur Country Co
Davos Mann Co

.....

[illegible]

New England C. A. C. Co.
Gen. Manager, East Co.

2. **KNOT KILLING.** Immediately after the woodwork is in place, all knots and sappy streaks shall be varnished with pure grain alcohol orange shellac varnish (knot killer). Where knots are very numerous, a little dry red-lead may be used with the shellac.

4. **PATTY.** After the priming coat of putty, as heretofore specified, is thoroughly dry, patty up all knot holes, dents, cracks and other defects in the surface with a pure limed oil patty composed of equal parts of white lead and whiting. If desired, one part powdered litharge to five parts each of white lead and whiting may be added, except on light tinted work. On repainting old work, places where patty is to be applied, such as window sash, should receive a coat of half limed oil and half turpentine before pattering. Yellow nail holes and cracks often mar the appearance of what is otherwise good work—the result of using

5. **USE GRAIN ALCOHOL.** Preparations of wood alcohol (deadly poisonous), cheap shellac, rosin, etc., are dangerous to health, and apt to cause the knots to turn yellow.

6. BOILED LINSEED OIL. Its use on wood is rarely advisable, especially for graining. Its nature is to dry quickly on the outside and remain gummy a long time underneath. But on stucco and concrete strictly kettle-boiled oil should be used. It is less likely than raw oil to degenerate under the influence of heat, contact, etc. Much so-called boiled oil is simply raw oil with cheap driers added.

2. **DRYER.** Only the best drier, free from rosin, shall be used. Owing to the difference in strength in driers, the painter is permitted to vary the quantity of drier in any of the following formulas at his discretion. Use only enough to set the paint sufficiently. On exterior work in cold weather, from one-fourth pint to one-half pint more drier should be used than is given in the formulas.

2. TINTING MATERIALS. In producing tints and shades, John T. Lewis & Bros. Co.'s colors in oil or those of equally high-grade shall be used. If colors in oil are used in quantities large enough to affect the consistency of the paint, the quantity of

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Suits	Owens	Hewitt & Pugh
Ward James	Amer. Fur & Hide Co.	Dubois
Ans. Adams	Guthrie Druggist & Dock Co.	"
John Carver	Ed. Larkin & N. J. B.T. Co.	"
J. H. Brown	" " "	"
B. H. Powell	" " "	"
John Lamborn	" " "	"
E. A. Allen	" " "	"
C. M. Channing	Provident Steamship Co.	"
Geo. W. Howe	G. A. Tomlinson	"
Shaw	"	"
Shawyer	"	"
Benjamin	"	"
Ball Bros.	"	"
Frank C. Ball	"	"
Howe & Mann	"	"
James E. Davidson	"	"
Brown	"	"
Ransom	"	"
Robert	"	"

Bank	D. L. & W. B. R. Co	Headquarters
Chamber	.	.
Carving	.	.
Patron	.	.

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• **MIXING.** Fast, mixing, even with the best of materials, is not likely to make durable paint. The important thing is to give the lead and oil a chance to incorporate themselves in that close union which they always make if let alone, and which is the secret of the superiority of white-lead and linseed oil paint over all others. The following directions give best results. The order is important.

- (1) Break up the white-lead with the paddle, using only enough oil to bring it to the consistency of colors in oil.
- (2) Add your colors for tinting. Coloring matter added after the paint has been thinned is likely to break up in lumps which leave streaks when brushed out.
- (3) Put in drier.
- (4) Add remainder of oil, stirring well.
- (5) Last of oil put in turpentine.

To strain paint through cheesecloth or a wire strainer before using will be a safeguard against lumpy colors and consequent streakiness. Paint also spreads further if strained.

IN COVERING CAPACITY. How much surface will a gallon of paint cover? Opinions vary greatly, and much depends upon the weather, the surface to be painted, the consistency of the paint itself, and, more than any other one thing, the difference in the way the workman brushes out the paint. Pure lead and oil paint mixed according to the formulas in the specifications have been brushed out by different painters over surfaces varying from 400 sq. ft. to the gallon, to 800 sq. ft. to the gallon, one coat. A fair average for a priming coat on a good surface of wood is 575 sq. ft., and for body and finishing coats, 600 sq. ft. to the gallon, one coat.

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11. DESIGNATION OF PAINT TO BE USED. All woodwork, brick, stone and concrete which are to be painted shall be painted with Dutch Boy pure white-lead, manufactured by National Lead Company, Collier or Dutch Boy pure hard oil, pure turpentine and dry fine from rosin, all according to the former hereinbefore designated for each kind of work. Each coat must be allowed to dry thoroughly before the next is applied. All metal shall be painted first with Collier, Southern or St. Louis Lead & Oil Co.'s pure dry red-lead, or Dutch Boy red-lead, Collier or Dutch Boy pure hard oil and pure hampback flake in all thoroughly mixed according to formulae hereinbefore given for each specific purpose. Dry red-lead paint shall not be mixed more than 24 hours before application. When preferred, white-lead and red-lead, mixed according to formulae (b), paragraph 3, may be used for priming new woodwork, brick, stone, stucco or concrete.

The following formulas take no account of tinting materials. See paragraph No. 8 for adding color to the formulas.

12. NEW WOODWORK OUTSIDE.
All paint for new woodwork outside shall consist of the materials named in paragraph No. 11, and shall be mixed as follows:

- (a) **Prinning Cost**—See also 23(b)
 100 pounds pure white lead,
 4 gallons pure raw linseed oil,
 2 gallons pure turpentine,
 1 pint drier, free from resin.

Note.—The primer may exercise his own discretion in using a larger or smaller quantity of oil according to whether the wood is old or new, or of what species and how weathered. The oil should be as yellow as possible and unadulterated. The primer may, if he wishes, add a little turpentine, but it is inadvisable to increase the quantity of turpentine, as in southern exposures, it serves to blister the wood. Where this is done a great amount of linseed grease shall be made in the same proportion, and the oil brushed on a mixture of the two, and the primer is for oil. If the primer is not satisfied with the oil, he may brush on a mixture of the two, and the primer is for oil. The primer should be thoroughly brushed on.

There should be thoroughly symbolized in the fact that we are aware that painters often use a much heavier primer than the above. When users of primers specify only two coats, they are using a heavier primer in secondary order to cover the surface satisfactorily. In order to reduce the quantity of all other materials to suit conditions. We very often find, however, that three coats always are required, and that the second coat should be applied even of which should be a thin coat, as specified in our formulae, will do more in its use than three coats of the heavier primer. In fact, this practice were universal, there would be less blistering paint and less money would get more for his money. All for three coats.

- (b) Body Coat
two pounds pure white-lead.

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is dry, rub down with No. 6 sandpaper. Repeat coats of formula (b), paragraph 14, until no dark places show through.

- (d) Next, make an enamel by adding pure white-lead, as specified in paragraph No. 11, to light enamel varnish in the proportion of three pounds of white-lead to one gallon of varnish. Break up the white-lead with a little turpentine to a thick paste and then mix well with the varnish. Apply as paint. After the enamel is dry, rub down with pumice and water and apply a second coat of the same enamel. This completes full gloss finish.
- (e) For silk finish, rub down the last coat with fine pumice and water, clean off and finish with rotten stone and water. Finally, chamois down. (Or, expense of rubbing down last coat may be avoided by applying one coat of egg-shell enamel.)
- (f) To obtain old ivory effect, tint last flat coat (paragraph No. 14c) with just enough raw sienna and medium chrome yellow to turn it off the white, before applying enamel (paragraph No. 14d). The enamel coats must be tinted in like manner.
- (g) Where whiteness is desired, mix the lead for the last coat before the enamel coat with turpentine, 100 pounds to 3 gallons, and let it stand over night or longer, to settle. Then draw off the thinners from the top and bring to

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brushing consistency by adding turpentine and light enamel varnish.

- (h) Body Coat—First Coat over Old Work, or First Coat over Shellac on New Work
 - 100 pounds pure white-lead (drawn as above),
 - 2 gallons turpentine,
 - $\frac{3}{4}$ gallon light enamel varnish,
 - $\frac{3}{4}$ pint light drier, free from rosin.

15. OLD WOODWORK OUTSIDE.

All old woodwork outside shall be painted with materials named in paragraph No. 11, mixed as follows: (If badly weather-beaten, use more oil and less turpentine for priming.)

- (a) Body Coat
 - 100 pounds pure white-lead,
 - 2 gallons pure raw linseed oil,
 - 2 gallons pure turpentine,
 - 1 pint drier, free from rosin.
- (b) Finishing Coat
 - 100 pounds pure white-lead,
 - $3\frac{1}{4}$ to 4 $\frac{1}{2}$ gallons pure raw linseed oil,
 - 1 pint pure turpentine,
 - 1 pint drier, free from rosin.

16. OLD WOODWORK INSIDE. All

paint for old woodwork inside shall be of materials named in paragraph No. 11, mixed as follows:

- (a) Body Coat
 - 100 pounds pure white-lead,
 - 1 gallon pure raw linseed oil,

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27. **PAINTING THE FLOOR.** There are two kinds of floors that require painting, new floors laid with soft wood, hemlock or white pine, and old floors that have become worn, scratched, stained or otherwise marred. New floors of hard wood, such as oak, ash, maple or yellow pine, may be painted, if desired, but waxing or varnishing or staining makes a handsomer finish.
- Success with newly painted floors depends chiefly upon the choice of right materials and knowing how to use them. In fact, the only important particular in which the film of floor paint seems to differ from that on a window frame, door or the

If the floor is newly laid, make sure that the wood is dry and smooth and clean. If the floor has an old coat of paint that is rough and scaly or thick and gummy, it should be cleaned down to the wood either by scraping, planing, burning or by the use of a liquid paint remover. If the last method is used the surface must be finished afterwards with a coat of strong vinegar to destroy any trace of the alkali in the remover. Make sure that every part of the floor is firm and solid. After sandpapering and cleaning, the floor is ready for the priming coat, which is always the most important.

250 pounds pure white-lead,
6 gallons pure raw linseed oil,
1 gallon pure turpentine,
1/4 pint drier, free from rosin.

After the priming is dry, all joints, cracks, nail holes, and other defects should be filled with a good alkali filler. It is desir-

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gills to mix the filler with enough coloring matter to give it the tone of the wood.

The filler should be firmly pressed into the joints and smoothed over with a putty knife. When entirely dry, sandpaper carefully to remove any surplus.

Body Coats

- 200 pounds pure white-lead,
- 5 gallons pure raw linseed oil,
- 5 gallons pure turpentine,
- 1 pint drier, free from resin.

Finishing Coat

- 200 pounds pure white-lead,
- 5 gallons pure raw linseed oil,
- 5 gallons pure turpentine,
- 1/2 gallon floor varnish.

16. PAINTING 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, and that is almost certain to cause blistering and peeling. To prevent trouble of this sort give the underside of the floor, also the tongue and grooved edges of the boards, whether soft or hard wood, a primer mixed as follows:

- 50 pounds of Dutch Boy red-lead or pure dry red-lead,
- 25 pounds of white-lead,
- 5 gallons raw linseed oil,
- 1 gallon turpentine,
- 1/4 pint drier, free from resin.

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Such painting should last for ten years or longer. Make the outside coats the same as for interior floors.

17. OTHER FINISHES FOR HARD-WOOD FLOORS. For hardwood floors that are not to be painted, four kinds of treatment may be named—oiling, varnishing, shellacking and waxing. The processes overlap more or less, and vary according to the kind of wood. The treatment selected should also depend upon the way the floor is to be used.

Open-grained hard woods, such as oak, birch, ash or walnut, should be treated first with a paste filler; close-grained hard wood, like maple or cherry, requires 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.

(a) 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

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should be wiped frequently with an oiled cloth.

- (b) **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 alcohol, are recommended for either soft or hard wood floors. Sand-paper between coats, rubbing down with oil and pumice stone on the last coat if a dull finish is desired.
- (c) **Varnishing Finish.** When a floor is to be varnished it is poor policy to try to save money on the varnish. A high-grade floor varnish, the best varnish, containing 100 pounds of hard resin to 50 gallons of oil, is none too good. Assuming that the wood has been suitably prepared, 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. A white shellac varnish, which dries quickly, is sometimes used. Varnish is the cleanest and most satisfactory finish if properly done, and it lasts well so long as the surface is not scratched or scuffed.
- (d) **Wax Finish.** Floor wax, purchased from dealers, may be softened with a very little kerosene oil and then reduced to a paste by mixing with turpentine. This is spread on the floor in a thin coat, allowed to dry, and is then rubbed down with a heavy-weighted

brush. Several coats should be applied in the same way. 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.

Brick, Stone, Concrete or Stucco and Plaster

30. PREPARING BRICK AND STONE SURFACES. If any mortar has become loose and washed out, repoint all such damaged places with mortar or portland cement before any paint is applied. Boiled oil and turpentine, half and half, may be applied on new brickwork before first coat. After priming, correct small defects in the surface with putty. New brick shall not be primed until dry. At least two or three days of dry weather shall precede painting. No painting shall be done in cold weather. Trust new mortar or cement as in paragraph No. 21.

31. PREPARING STUCCO OR CONCRETE. Stucco or concrete work should stand and dry at least a year before paint is applied. If painted within less than a year, it may be aged artificially by washing with 20 parts zinc sulphate to 80 parts water, or with ordinary carbonic acid water.

22. PREPARING PLASTER WALLS.
When thoroughly dried, go lightly over the wall with fine sandpaper or a wide putty knife to remove loose plaster, taking care not to scratch the surface. No painting shall be done over fresh plaster.

23. BRICK, STONE, STUCCO AND CONCRETE. All brick, stone, stucco or concrete which are to be painted shall be painted with materials named in paragraph No. 11, mixed according to the following formulas. Strictly kettle-boiled linseed oil shall be used as specified whenever possible, especially on stucco and concrete. If strictly kettle-boiled oil is not available, the alternative specifications for raw oil and a drier shall be used.

(a) Priming Coat:

100 pounds pure white-lead,
7 gallons pure boiled linseed oil, (or
7 gallons pure raw linseed oil and
1½ pints drier),
1 gallon turpentine.

(b) Alternate Priming Coat—Often preferred for wood, brick, stucco, stone or concrete.

70 pounds pure white-lead,
30 pounds pure dry red-lead, or Dutch
Boy red-lead,
5 gallons pure raw linseed oil,
½ gallon pure turpentine,
1 to 1½ pints drier, free from rosin

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(c) Body Coat

100 pounds pure white-lead,
4 gallons pure linseed oil (1½ boiled,
2½ raw), (or 4 gallons pure raw
linseed oil and 1 pint drier).

(d) Finishing Coat

100 pounds pure white-lead,
3½ gallons pure linseed oil (1½ boiled,
2 raw), (or 3½ gallons pure raw
linseed oil and 1 pint drier),
1 pint pure turpentine.

24. PLASTER WALLS. For painting plaster walls (interior) use materials named in paragraph No. 11, mixed according to the following formulas:

(a) Priming Coat

100 pounds pure white-lead,
7 gallons pure boiled linseed oil,
1 gallon pure turpentine.

(b) Body Coat

100 pounds pure white-lead,
1½ gallons pure raw linseed oil,
1½ gallons pure turpentine,
1 pint drier, free from rosin.

(c) Finishing Coat—Flat Finish

100 pounds pure white-lead,
2½ gallons pure turpentine,
1 pint light enamel varnish,
½ pint drier, free from rosin.

(d) Finishing Coat—Eggshell Gloss Finish

100 pounds pure white-lead,
1 gallon pure raw linseed oil,

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- 2½ gallons pure turpentine,
 ¼ pint drier, free from rosin.
- (e) **Finishing Coat—Oil Gloss Finish**
 200 pounds pure white-lead,
 3 gallons pure raw linseed oil,
 1 gallon pure turpentine,
 1 pint drier, free from rosin.
- (f) **Finishing Coat—Varnish Gloss Finish**
 1 gallon light enamel varnish, mixed
 with 3 pounds pure white-lead,
 drawn as specified in paragraph
 No. 14.

Iron, Steel and Other Metal Work

25. STRUCTURAL IRON AND STEEL BEFORE ERECTION. Before it leaves the shop all structural iron and steel work shall be cleaned of all mill scale, dirt, rust and oil and receive one coat of pure red-lead and linseed oil paint as specified in paragraph No. 11, mixed according to formula (a), paragraph 30. Surfaces which will be inaccessible after erection shall receive two coats of the same paint before erection.

26. STRUCTURAL IRON AND STEEL AFTER ERECTION. All structural steel and iron work shall be cleaned after erection. If there are abrasions in the paint, they shall be repainted with red-lead and oil paint as specified in formula (a) paragraph 30, after removing all rust with a stiff wire brush. After retouched places have dried, the entire surface shall receive one

coat of red-lead and oil paint as specified in formula (b), paragraph 30. If steel or iron is to be exposed add a third coat as specified in formula (a), paragraph 31.

27. PREPARING OTHER METALLIC SURFACES. Other metallic surfaces, as well as those named in paragraphs Nos. 25 and 26, shall be thoroughly cleaned; where solder fluids have been used the surface shall be cleaned with benzole before paint is applied. All loose paint and particles of rust shall be removed from old painted metal surfaces with a wire brush or a scraper.

28. FINISHING METAL WORK TO SUIT COLOR SCHEME. Where the color of red-lead paint specified for metal work does not conform to color scheme, white-lead and oil paint tinted as desired shall be applied over the red-lead paint.

29. DUTCH BOY RED-LEAD. By this is meant red-lead and linseed oil, both of highest purity, ground into a paste which stays soft just as white-lead-in-oil does, and which carries the Dutch Boy trademark.

Put up in this paste form, in convenient cans and kegs, and free from the rapid drying qualities of dry red-lead, this red-lead has an increased usefulness to the painter.

Besides retaining all the desirable qualities which make dry red-lead the most effective preservative there is for metal, Dutch Boy red-lead makes a highly desirable primer for pitchy and sappy hard woods.

such as yellow pine, cypress, spruce, etc. Unless a good, hard foundation is laid the resinous matter in the wood is likely to soften under the heat of the sun and work its way to the surface—a frequent cause of scaling and cracking of outer coats.

The ease with which Dutch Boy red-lead may be tinted makes it easy to obtain favorite dark colors with it. An ounce or two of lampblack added to a hundred pounds of red-lead gives it a light coffee color. Increasing the lampblack yields a succession of rich browns. Results from other coloring pigments are equally interesting. Where light tints are desired, the finishing coats should be tinted white-lead.

30. PAINTING INTERIORLY EXPOSED METAL WORK. All interiorly exposed metal work, such as pipes, automatic sprinklers, steam and hot-water radiators, and all interiorly exposed structural metal work, shall receive two coats of red-lead and oil paint as specified in paragraph No. 11, mixed according to the following formulae:

Note.—In following all the red-lead formulae, use one-third boiled and two-thirds raw linseed oil, provided genuine boiled oil, such as Dutch Boy boiled linseed oil, is available. If raw oil only is used, add one-half pint of drier free from resin to every gallon of paint. If desired, one-quarter pint of turpentine may also be added for each gallon of paint to insure better application.

- (a) **Priming Coat (basis 100 pounds lead)**
100 pounds Dutch Boy red-lead,
3½ gallons pure linseed oil,
or,

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100 pounds dry red-lead,
3½ gallons pure linseed oil.

Equivalent Formula (basis one gallon oil)

40 pounds Dutch Boy red-lead,
1 gallon pure linseed oil,
or,

26 pounds dry red-lead,
1 gallon pure linseed oil.

- (b) **Body Coat (basis 100 pounds lead)**

100 pounds Dutch Boy red-lead,
3½ gallons pure linseed oil,
12 ounces lampblack,
or,

100 pounds dry red-lead,
3½ gallons pure linseed oil,
12 ounces lampblack.

Equivalent Formula (basis one gallon oil)

36 pounds Dutch Boy red-lead,
1 gallon pure linseed oil,
4½ ounces lampblack,
or,

27 pounds dry red-lead,
1 gallon pure linseed oil,
3½ ounces lampblack.

31. PAINTING EXTERIORLY EXPOSED METAL WORK. All exteriorly exposed metal surfaces, such as tin, galvanized iron, iron or steel used in roofing, cornices, valleys, gutters, down-spouts, railings, gratings, fire-escapes, smokestacks, etc., shall receive three coats of red-lead and oil paint as specified in paragraph No. 11, the

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first two coats mixed according to formulas (a) and (b), paragraph 30. The tendency is to apply the paint too thin. An excess of oil on metal gives a soft, elastic ground coat which is often detrimental to the following coats. Adhere strictly to the formulas and brush each coat out well. Paint on the underside of roofing shall be allowed to dry hard before the roof is laid. Mix the third coat according to one of the following formulas:

(a) Finishing Coat (basis 100 pounds lead)

100 pounds Dutch Boy red-lead,
 $2\frac{1}{4}$ gallons pure linseed oil,
 6 pounds lampblack,

or,

100 pounds dry red-lead,
 $2\frac{1}{4}$ gallons pure linseed oil,
 $6\frac{1}{2}$ pounds lampblack.

Equivalent Formula (basis one gallon oil)

38 pounds Dutch Boy red-lead,
 1 gallon pure linseed oil,
 $2\frac{1}{4}$ pounds lampblack,

or,

57 pounds dry red-lead,
 1 gallon pure linseed oil,
 $2\frac{1}{4}$ pounds lampblack.

The quantity of lampblack used in formulas (a), paragraph 31, will give a light brown color. If a darker brown is desired the lampblack may be increased up to 10 pounds or $10\frac{1}{4}$ pounds for the Dutch Boy and the dry red-lead respectively (100 pounds lead basis), and up to $3\frac{1}{4}$ or $2\frac{1}{4}$

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pounds for the Dutch Boy and the dry red-lead respectively (one gallon oil basis). Such an increase in the proportion of lampblack used will not materially affect the consistency of the paint.

To meet the requirements for a finishing coat where, owing to difficulty in application or to other reasons, a thinner paint is desired, the following formulas are given:

(b) Finishing Coat, Light Brown (basis 100 pounds lead)

100 pounds Dutch Boy red-lead,
 $3\frac{1}{2}$ gallons pure linseed oil,
 6 pounds lampblack,

or,

100 pounds dry red-lead,
 $4\frac{1}{4}$ gallons pure linseed oil,
 $6\frac{1}{2}$ pounds lampblack.

Equivalent Formula (basis one gallon oil)

59 pounds Dutch Boy red-lead,
 1 gallon pure linseed oil,
 $2\frac{1}{4}$ pounds lampblack,

or,

88 pounds dry red-lead,
 1 gallon pure linseed oil,
 $2\frac{1}{4}$ pounds lampblack.

(c) Finishing Coat, Dark Brown (basis 100 pounds lead)

100 pounds Dutch Boy red-lead,
 $4\frac{1}{4}$ gallons pure linseed oil,
 10 pounds lampblack,

or,

100 pounds dry red-lead,
 $5\frac{1}{4}$ gallons pure linseed oil,
 $10\frac{1}{4}$ pounds lampblack.

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Equivalent Formula (basis one gallon oil)

24 pounds Dutch Boy red-lead,
2 gallons pure linseed oil,
2 1/2 pounds lampblack,
or,
20 pounds dry red-lead,
2 gallons pure linseed oil,
2 pounds lampblack.

Tiffany Finish

A blending of various colors, sometimes called the Tiffany finish, gives to side walls a beautiful mottled appearance, as if light were shining on them through stained glass windows. It is especially appropriate for libraries, assembly rooms, schools, churches, banks and offices, and may even be used in homes where the rooms are large. The colors should be kept soft and unobtrusive. The treatment is applicable either on plain plastered walls or on walls covered with any kind of fabric or on any of the composition boards used as a substitute for plaster.

The walls are first to be painted according to paragraph No. 24 as if no special finish were required. The last two of the body coats should be tinted to an ivory shade by mixing with each two pounds of white-lead, 25 ounces raw sienna, 7 ounces medium chrome yellow and 1/4-ounce lamp-black. Stipple the last coat with a ball of cheesecloth.

The finishing coat consists of semi-transparent colors called glazing or lake colors, which require only thinning with raw linseed oil or turpentine. If only one glazing color is to be used, cover the wall with it and then while it is still wet, wipe it away in spots, letting the ivory ground work show through more in such places than elsewhere. After wiping in the high lights, prounce the edges with a ball of cheesecloth until the blending is satisfactory. Then stipple all over with a stippling brush. If several glazing colors are desired, the process is similar except that each color must be prepared in a separate can and applied, in patches, with its own brush. Frequently the tone of the finish is darkest at the baseboard, becoming gradually lighter towards the top. Sometimes the color is put on in horizontal bands and then blended. Some good combinations are blue and orange, blue and brown, green, red and yellow, light blue and white, bronze and copper.

A somewhat different method is to paint upon the ivory ground work patches of opaque color, such as venetian red, chrome yellow, prussian or chinese blue, depending upon the tone desired, then blending these colors in the way already described, and finally applying over all a coat of glazing color, of burnt sienna, for example. This glazing coat is then thoroughly stippled. How the colors are applied is less important than the selection of them and the skill used in blending them.

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Helpful Hints

Cracking and scaling result from undue hardness and rigidity in the paint film. Metal and wood expand or contract as temperature changes and the paint coat must either be elastic enough to stretch and shrink as the temperature changes, or else it has to break. Paint made only of pure white-lead and pure linseed oil is so elastic that it will not crack.

Moderate chalking need cause no alarm. It is the natural wearing down of the paint, and it is this characteristic of lead and oil that provides a smooth, even surface for repainting. If chalking becomes excessive as a result of using too little oil or oil of a poor quality, repaint, using plenty of oil and little or no turpentine.

To prevent the sagging or running of paint, brush it out thoroughly and secure quick drying by adding more drier and more turpentine. Running is less likely to occur on a flat or dull than on a glossy surface.

Light spots often appear in work where lampblack is one of the color ingredients. Since spotting appears worst where the wood is most porous, a good preventive is to give the porous places a coat of linseed oil before applying the first coat of paint. Where spotting has occurred, brush over the spots with linseed oil before repainting.

If there is blistering, due to sap in the wood, or to damp foundations, or to leaky gutters, or to cancer painting, or to having used fatty oil, shut fast and remove the

cause. Then scrape or burn off the blistered paint and prime saw with a thin coat of pure white-lead mixed with one part linseed oil to three parts turpentine.

Paint for shingled roofs should not be made heavy, as for regular housework, but very thin—a mere stain. For all metal work, about the roofs or elsewhere, use Dutch Boy red-lead.

Touch up missed places before the paint has begun to set, otherwise the laps will show.

Moisture in wood is the greatest foe to paint. Wood in new buildings is almost always water-soaked. Let it dry before painting. Be equally careful when repainting. Wait for dry weather and examine the surface carefully for moisture before painting. Do not paint just after a frost.

Be sure to mix plenty of paint, both for body and trim. It is better to have some left than to run short, especially if you are using a tinted paint. The left-over is useful for painting various odd places. Often the body and trim colors can be thrown together for such work, bringing the mass to a neutral color by adding lampblack.

For priming yellow pine, the following formula is recommended:

- 40 pounds Dutch Boy red-lead,
- 60 pounds Dutch Boy white-lead,
- 2 1/4 gallons raw linseed oil,
- 2 1/4 gallons turpentine,
- 1/2 gallon drier, free from rosin.

The excess of turpentine and drier seems to harden the gum in the wood, while the red-lead helps make a very hard-drying film upon which to lay the body and finishing coats.

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