



U.S. Coast Guard History Program

**U. S. TREASURY DEPARTMENT
COAST GUARD
INSTRUCTIONS FOR PAINTING
UNITED STATES COAST GUARD
VESSELS, BOATS, AND STATIONS**



1935

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The following instructions for painting Coast Guard vessels, boats, and stations are promulgated for the government of those concerned and shall be strictly observed.

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Assistant Secretary

PAINTING INSTRUCTIONS

Section 1.--General requirements.

Section 2.--Preparation of surfaces, and method of applying paint.

Section 3.--Surfaces not to be painted.

Section 4.--Use of aluminum paint.

Section 5.--Treatment of bright woodwork.

Section 6.--Outside painting.

Section 7.--Inside painting.

Section 8.--Bottom painting.

Section 9.--Boats for ships and stations.

Section 10.--Structures and vehicles. (omitted)

Section 11.--Repainting and preservation. (omitted)

Section 12.--Cement and compositions. (omitted)

Section 13.--Formulas.

SECTION 1--GENERAL REQUIREMENTS

1-A. Extent--The following requirements apply to all types of floating equipment (except aircraft), and shall govern for work done by contractors, the Depot, or ship's force insofar as applicable.

It is believed that these instructions adequately describe the painting characteristics necessary to secure the desired color schemes for the various types of craft, as well as their protection against deterioration, and that normally no question of painting will arise which is not provided for herein. It is evident, however, that it is not practicable to enumerate in these regulations the color scheme for each small fitting or surface to be painted, nor is it necessary to do so, It being understood that in such cases the general color scheme will be followed and that responsible officers will see to it that the finish on all craft of the same class and type within a force shall be the same throughout. It is recognized that experience in the use of these instructions may develop possibility of their improvement. Responsible officers are asked to cooperate with Headquarters by reporting any difficulty experienced in the use of the painting instructions and to present constructive suggestions.

The taste and inclination of individual persons are not to be permitted to change the prescribed color schemes, nor shall any eccentric or odd painting of any kind be permitted. It will henceforth be the policy of Headquarters to hold commanding officers responsible for unauthorized alterations in painting which may be found to exist aboard units of their command, and for failure to require on the part of junior officers in their command observance of these instructions.

1-B. Apexior, creosote, etc., not painted.--At the next general repainting, all vessels and boats shall be painted throughout in colors required by these instructions, except that surfaces covered with composition, No-oxid, Apexior, creosote, or other approved materials shall not be painted.

1-C. Compartments finished in natural color of the wood.--Where compartments are finished in the natural color of the wood, this condition shall be continued so long as the wood is free from disagreeable stains and blemishes, but when these occur to the extent that the appearance is unsightly, then such compartments shall be painted in colors prescribed herein for similar spaces.

1-D. Exceptions.--Departures from these requirements shall be made only by specific authorization from Headquarters. Headquarters may make exceptions to these requirements in such instances where it becomes advisable, for the best interests of the service, to apply special or experimental paints to meet certain conditions.

If for any particular purpose, commanding officers deem a departure from these requirements to be necessary, they shall communicate the facts to Headquarters, stating specifically the particular purpose to be served by the change and wherein these instructions are deficient in their application to the surfaces in question. During the building of contract-built vessels and boats and before delivery to the Government, Headquarters will permit the use of paints, of proper color, mixed in accordance with contractor's private formulas, provided same have been demonstrated to be equal to the mixtures stated herein and have received the approval of the inspector. The appearances of more vessels are ruined by unauthorized alterations in the color scheme than by all the normal acts of wear and corrosion. A correctly painted vessel is a product of these painting instructions and proper administration. The accepted colors are set off against one another only after careful thought and design, with due consideration given the protective qualities of the particular paint which is required. A new vessel comes from the builder's yard painted as the current instructions provide; but after her command has been changed several times, it is not unusual to find that numerous unauthorized alterations in the kind and color of paint have been completed, with the result that the original craft has disappeared as regards her intended appearances. It is necessary, therefore, to stress the importance of maintaining the original kind and color of paint used until and unless amendments to the existing painting instructions have been issued. A conscientious administration of these instructions on the part of the responsible officers will insure and make unnecessary any adverse comments.

1-E. Quality of materials.--The quality of all materials used on Coast Guard craft in connection with painting and cementing shall conform with the requirements of the latest leaflet specifications for same as issued by the Navy Department, the Federal Specifications Board or by Headquarters.

Ships receiving a standard navy paint, which in quality or quantity is not satisfactory, should immediately determine exactly and to what extent the defects exist and if possible, determine the cause of the defects, and report the findings to the navy yard where the paint was manufactured. The invoice number under which the paint was received should be stated in the correspondence for identification.

Ships receiving specially authorized paints should, if possible, compare it with the standard paint intended for the purpose and submit to Headquarters a complete report covering the results obtained.

If in the opinion of the commanding officer, any painting material previously used has proven unsatisfactory, he shall submit to Headquarters a report describing the condition of the material and the manner in which it failed so that Headquarters may be guided thereby in prescribing a suitable substitute.

1-F. Mixtures to be used--The mixtures for the several colors used for ship's structure, fittings, piping, etc., shall in general conform with the latest formulas herein mentioned.

Ships shall not make requisition for paints other than those mentioned herein, except for a necessity, which must be stated on the requisition. Whenever paints in accordance with the formulas stated herein are required by ships in commission, they should, if practicable (with the exception of red lead, egg-shell paints and the zinc-turpentine primer), be obtained from navy yards "ready mixed "instead of obtaining the ingredients and mixing same on board ship. If not issued ready mixed, paint used by the ship's force shall be mixed according to the latest formulas herein mentioned, or as hereinafter provided. Paints kept in stock over long periods tend to deteriorate and become difficult to mix readily. In order to have comparatively fresh materials to work with, the stock of paint should be so controlled as to have products not older than 12 months on hand at any time.

1-G. Use of whitewash and shellac--Whitewash or shellac shall never be applied to any iron or steel parts of a vessel. Whitewash is prescribed, however, for the interior surfaces of wooden lighters not creosoted.

1-H. Graining--Graining shall be done only as directed by Headquarters, and shall be limited to the surfaces so authorized to be treated.

1-I. Heat- and oil-resisting paints. Heat- and oil-resisting paints are permitted on surfaces in the machinery spaces exposed to extreme heat and to the action of oil, but such paints are not to be used for general painting. The use of such paint is intended for the exterior un-galvanized, un-machined, steel and iron parts of machinery; and for similar surfaces

(see art. 7-Y). In general aluminum paint is superior and preferred to heat- and oil-resisting paints.

SECTION 2-PREPARATION OF SURFACES AND METHOD OF APPLYING PAINT

2-A. Preparation of surfaces--In all painting attention shall be given to the character of the surface on which the paint is to be applied. In all cases the surface shall be clean and dry. In preparing new work for painting, all steel and iron surfaces shall be thoroughly scraped, scaled, and cleaned down to the bare metal, and care shall be taken to clean off all oil, dirt, scale, grease, and other foreign matter. It is essential to get the paint on the metal, not on an intermediate coating. Iron and steel always comes dirty and covered with oxide; and as the surface is not porous, the paint does not penetrate it, but has to stick on the best way it can. If the dirt and such is painted over and comes off, the paint comes off with it; if the metal is actually rusting and the rust is painted over, the corrosion is perhaps made slower, but it does not stop. Therefore, it is most important that the preparation of the surfaces for painting be given close attention.

Either the sand-blast or pickling process is prescribed in the case of new construction, but aboard ships in commission all dirt and loose scale and oxide are removed with steel-wire brushes and scrapers.

Projecting angles, edges, and bolt and rivet heads are the places which first show rust through the paint. This is partly because the brush draws the paint thin at such places. To overcome this it is necessary to go over the work between coats and paint all edges for about an inch from the edge or angle and all bolt and rivet heads with an extra coat.

New galvanized work is difficult to paint; even though it looks clean, it should be thoroughly washed with ammonia, vinegar, or acetic acid, and the paint rubbed on well with the brush.

2-B. Red lead paint for priming--Red lead paint is only used for protecting iron and steel surfaces. Experience indicates that from a practical standpoint this material is certainly one of the best, if not actually the best, for this purpose. Except where other paints or special protective coatings are hereinafter required to be applied directly to the bare metal, red lead shall be used as the priming coat for iron and steel structure.

On new work the entire steel and iron structure, except in fuel oil and water tanks and that to be covered with cement or composition, shall receive a priming coat of red lead (formula no. 9), or with red lead paint made in accordance with medium weight formula giving ~a weight of about 24 pounds to the gallon. This latter formula shall be used wherever possible in preference to formula no. 9 contained in section 13, particularly when the paint is mixed on the job or at the contractor's yard. (See Sec. 13 for this and other red lead formulas.) In no case, however, shall red lead be applied to the bottom plating of a vessel within 2 months of the actual date of launching, ~nor shall red lead be used for touching up on the bottom at subsequent drydockings, except in the case of

vessels operating in fresh water. Compartments finished in red lead only shall have two coats in all, the priming coat touched up as necessary, being considered the first coat.

The priming coat of red lead is omitted on galvanized surfaces, provided the galvanizing forms an intact coating. The priming coat of red lead may also be omitted behind slab cork and other insulating material cemented directly to the structure, provided the cement used for securing the insulation has been accepted by Headquarters as affording to the steel sufficient protection against corrosion.

2-C. Method of applying paint.--Painting shall be done only in clear, moderately warm weather, when it is not below 490 F. Great care shall be taken that each coat is thoroughly dry before applying the next coat. It should be the practice to observe when the paint appears to be thoroughly dry and then to wait at least 48 hours longer before applying another coat.

Red lead shall be used on iron or steel structure behind sheathing not directly cemented to the structure and on structure beneath corrosion-resisting steel or other metal decking.

2-D. Painting near sewers.--Paints containing compounds of lead should not be used while the vessel is laying near sewers where fumes from decaying organic matter occur, since these gases are very likely to darken the lead paints. Ultramarine blue, which contains sulphur in a form in which it may be set free, should not be used with white zinc for a similar reason. Prussian blue, on the other hand, does not contain sulphur and may be used with lead paints.

2-E. Painting new woodwork.--New wood is often very difficult to paint successfully, due to the resins in certain species, particularly yellow pine and cypress, which tends to destroy any paint that is applied over such areas. Though it is best to allow new woodwork to stand for a long period of time for "weathering", this procedure is objectionable for obvious reasons, and, therefore, coating all knots and other places where resin appears with shellac is a common precaution; a little dry lead may be mixed with the shellac for use on very resinous knots, etc. New woodwork to be painted should be allowed to become as dry as possible and should be painted only after several successive days of warm, dry weather. All window and door frames exposed to the weather should receive a good coat of paint applied to back of frames before they are brought from the shop; this prevents the absorption of moisture and hinders decay.

2-G. Minimum number of coats required.--In general, the quantity of paint applied shall be the minimum required properly to preserve the surface. As many coats as may be necessary shall be applied to produce this result. However, once the correct color scheme has been obtained and the surfaces are properly protected, every effort shall be made to keep the application of paint to a minimum. In no case is the appearance of painted surfaces more satisfactory and more pleasing to the eye than when the old paint, of proper color, is clean, intact, and smooth. On the smaller craft, there is entirely too much painting and too little scrubbing. Painting ship for the purpose of presenting a neat appearance at inspection, where the color scheme is correct, is not approved. The proper

use of sand and canvas on the hulls of steel or wooden vessels will do much to obtain the desired result.

The minimum number of coats and the kind of paint to obtain the specified finish on new work shall be in accordance with the following table:

SECTION 3-SURFACES NOT TO BE PAINTED

3-A. Surfaces not to be painted.--Too much time is wasted on board ship in scraping paint off screw threads, gaskets, and other places which should never have been painted in the beginning. Attention to the following rules on the part of responsible officers will greatly improve the condition and the appearance of the ships and boats.

In general, nothing should be painted which can be kept bright. This must not be construed to mean that all such surfaces must be kept bright, but rather that bright brass work, machined metal surfaces, exposed composition parts of machinery and apparatus, and similar surfaces shall be kept bright and polished.

No paint shall be applied to surfaces that have not been kept painted, and any paint on the surfaces of the above-mentioned or similar fittings shall be immediately cleaned off.

Paint shall not be applied to fittings in such a way as to cause the bearings to become frozen. Weep holes in chocks, foundations, gun beds, and the like shall at all times be kept open.

Special care shall be exercised in painting, to see that no paint is applied to the working surfaces, screw threads, oil holes, and grooves; and to prevent rubber gaskets in doors, airports, manholes, hatches, deck scuttles, or in any other fittings from becoming covered with paint, grease, or oil, as paint causes the rubber to deteriorate rapidly. When paint is accidentally applied to gaskets it shall be immediately and thoroughly removed; petroleum spirits shall be used for this purpose.

3-B. Paint to be kept off electrical fixtures-- light fixture guards, switch and plug-in receptacle covers, junction box covers, fuse box covers (if of smooth or polished materials) and electrical fittings of composition (except those on weather decks which may be painted)~ shall not be painted, but shall be kept bright and polished.

Care shall be taken that no paint is applied to the rubber or silk insulation of electric cables, nor to ground connections.

3-C. Canvas work.--Canvas outfits including all boat covers, awnings, weather cloths, miscellaneous covers, etc. (except mast coats, and fixed portions of bridge rail weather cloths previously painted), shall not be painted, but such articles shall be left bright for scrubbing.

3-D. Coast Guard seal and emblem.--Care shall be taken that Coast Guard seal and emblem, builder's name plates, and similar fittings with dull and stippled finish be allowed to remain in such condition.

3-E. Instruction and nameplates. Instruction plates on CO, built-in systems, boat number plates, plaques, tablets, etc., shall not be painted but these and similar articles shall be kept clean by occasional wire-brushing.

3-F. To be left bright and polished-- In addition to the foregoing, the following surfaces are not to be painted, but shall be kept clean, bright, and where practicable, polished (see also art. 7-Y):

Brass taffrails and half-chocks.

Brass turnbuckles; brass bollards, cleats, pinrails, and belaying pins.

Brass scuttle covers and deck plates.

Small drain cocks; brass and finished steel nuts, and exposed finished parts generally.

Cold-drawn finished steel handrails and their stanchions.

All parts of hardware and bright brass work generally.

Finished brass handrails and grabs.

All toggle pins and their chains, and dogs and nuts for all hatches, skylights, manholes, and the like.

Label plates and compartment name plates; all instruction plates, and lettering generally.

Airport rims, airport dogs, wing nuts, and ring nuts; bearing edges of airports, watertight doors, hatches, and similar fittings.

Airport lens frames when of polished brass or composition.

Engine telegraph and bell pull chains and leads.

Alemite fittings, oil cups, grease cups, and holes for oiling.

Valve bonnets, glands, nuts, or any mechanical parts of valves.

Electrical insulators of all kinds.

Metal lagging on machinery and piping, and on boilers, etc., excepting where the surface is corroded or otherwise disfigured, where authority has been obtained to paint the same.

Air-intake screens, vent screens, and gauze for ventilating systems.

Machined metal surfaces of machinery, bolts, bolt heads, studs, nuts~ and cylinder heads of reciprocating engines, pumps, and the like.

Floor plates (upper surfaces) gratings in machinery spaces (may be painted aluminum). (See art. 7-B.)

Discharge nozzles for built-in Lux systems.

Operating gear for sluice valves, flooding and sprinkling valves, and the like.

SECTION 4--USE OF ALUMINUM PAINT

4-A. Use of aluminum paint.--Aluminum paint shall be used on miscellaneous small fittings not portable, whereon the galvanizing has become thin or imperfect. Aluminum paint may also be used as a priming coat in lieu of red lead (except underwater surfaces more or less continuously wet) where rapid drying properties are important.

Aluminum paint shall not be used as a priming coat or finishing coat over slab-cork insulation or over other boat insulating material, nor over ground cork. In compartments painted aluminum, cork shall be painted with inside white, colored with lampblack to match the aluminum paint.

Aluminum paint is composed of aluminum powder and water-resisting spar varnish in the proportion of 2 pounds to 1 gallon. The ingredients may be received on board the ship or at the unit with the aluminum powder in the flake form and mixed with the varnish when ready for use. The aluminum powder and paint described above should not be confused with the ready-mixed bronzing paints used heretofore.

This aluminum powder may be mixed with asphalt paint as a corrosion-resisting covering for steelwork not continuously immersed in sea water.

4-B. Surfaces to be painted aluminum.--Aluminum paint is specified for use in the following instances:

Interior machinery.

Machinery spaces, boiler spaces, holds, storeroom-is, workshops, hawser rooms, and lazarets.

Wire mesh doors and bulkheads whereon the zinc coating has become poor or the appearance is otherwise objectionable (except that small sections of wire mesh bulkheads forming a part of the boundary of a compartment may be painted to match the general color scheme, but such practice shall be restricted).

Battle ports and storm covers for airports.

Wind scoops and frames of airport screens.

Hose reels, and hose spanners, and saddles and straps of galvanized hose racks.

Handles of sheath-screw davit cranks, and dogs of watertight doors within compartments.

Galvanized scuttle and hatch gratings, and galvanized scuttle covers.

Galvanized ratlines and boat-boom fittings.

Miscellaneous galvanized deck pads and fittings attached to the hull whereon the galvanizing has become poor, but not including those surfaces required to be painted in color.

Galvanized rail stanchions within inclosures.

Metal clothes lockers and ditty boxes.

General mess lockers, dish racks, etc., of metal, but not those of stainless galvanized grabs within enclosures, and exposed galvanized grabs on exterior surfaces whereon the galvanizing has become thin or imperfect, or on which it has been found impracticable to continue the use of the standard paint, but a wide application of this paint for handrails and handgrabs on exterior surfaces is not approved.

All aluminum surfaces, including fittings, and aluminum parts generally where exposed to the action of seawater (such surfaces may also be varnished or lacquered).

Gratings in machinery spaces, where not kept bright and polished.

SECTION 5--TREATMENT OF BRIGHT WOODWORK

5-A. Standard finish of furniture and furnishings.--The finish of furniture and furnishings, including generally all joiner work of hardwood within compartments in the case of new construction, shall be as follows:

Mahogany:

Cabin, commanding officer's quarters and fleet commander's quarters, including the trim of entrances from other compartments.

White oak (golden oak finish):

Wardroom and warrant officers' quarters, offices, radio room, chart room where not an immediate part of the wheelhouse, emergency cabin, dispensary, sick bay, operating

room, commissioned and warrant officers' sanitary spaces, armory, and all other spaces not specified to be finished otherwise.

Ash:

Crews' quarters, and the furnishings in compartments within this area; galley and bakery, chief petty officers' quarters, crews' washrooms, and crews' sanitary spaces generally, laundry, mess issuing rooms, and interior woodwork of pantries; not including entrance doors and trim thereto when opening from a compartment finished in oak or mahogany.

Teak:

Wheelhouse, including chart boards and other furnishings in the wheelhouse, as well as those on the bridge wings, compass platform, and in the vicinity of the wheelhouse where in any instance outside joiner work is specified; all exterior wood doors.

Cherry:

Passengers' cabins on harbor tugs except where now finished otherwise; wherever cherry or birch is specified or authorized in lieu of oak or mahogany.

5-B. Finish required for joiner work and other surfaces.--Exposed parts of all joiner work within the vessel except that specified to be painted, and all furniture, and furnishings of hardwood, together with the following surfaces and work of a similar nature, shall be left bright and finished as hereinafter stated:

To be left bright for scrubbing:

Weather decks of wood on all craft except wooden patrol boats and picket boats, and excepting those parts on other craft for which specific authorization has been had from Headquarters to paint the same.

Upper surfaces of all box type gratings, including fantail gratings, and all surfaces of slat type gratings within refrigerators and commissary spaces.

Crews' mess tables and benches.

Wooden drain boards, and tops of dressers in pantries and commissary spaces generally if of wood.

Meat blocks, meat boards, and bread boards.

Interior surfaces of dough troughs and their tops.

To have an oil finish: -In the case of new construction those surfaces above stated (except weather decks) are to have an oil finish; thereafter such surfaces are to be left bright and

scrubbed as directed. In addition to the foregoing, the following and similar articles shall be kept bright and oiled.

Spare oars and spare boat hook staffs, in stowage.

Wood fenders, stern rollers, hatch rollers, and hatch bolsters.

To be kept bright and varnished:

Hand grabs, handrails, and bridge and quarter rails of hardwood.

Buffalo or monkey rails on harbor cutters, harbor launches and ocean tugs, and chock rails on all craft.

Companion ladders, deck ladders, and steps of hardwood.

Side ladders and steps (except the lower surfaces of platforms and gratings thereto, which are to be painted, and their upper surfaces which are to be left bright for scrubbing).

Boat booms and boat strong backs (except padding on the latter, which is to be painted).

Corner posts of wood deckhouses, all hardwood sash and blinds, including their trim, if of good appearance, otherwise these latter surfaces shall be painted to match the color scheme.

Wooden bitt heads, wooden cleats and sheer poles of wood.

Capstan bars, wooden buckets and similar articles.

Skylights, frames, companionways and hatches, including their covers, if of hardwood and of good appearance, otherwise they shall be painted to match the general color scheme.

All hardwood doors, including their trim, with exception as in the foregoing.

Masts whereon yards are hoisted or hoops travel (to be kept bright and greased).

Drop-leaf chart boards, lockers for weather recording instruments, and similar articles on bridge if of hardwood.

5-C. Manner of finishing exposed surfaces.--Finish of exposed parts as contemplated in article 5-B shall consist of stain (where mahogany, cherry, birch, or similar woods are specified) and filler thoroughly cleaned leaving no dark spots due to rough work or imperfect cleaning; one coat of shellac and four coats of varnish of approved brand, each well brushed out (no gum runs to show) and allowed to dry hard, with the exception that in the case of exterior work as hereinafter defined, no filler or shellac is to be used. The

priming coat of shellac and first two coats of varnish shall be sand-papered smooth; the third coat of varnish shall be rubbed down lightly with curled hair; except in the case of exterior work exposed to the weather and to the action of the sun's rays, the last or fourth coat of varnish shall be rubbed to a semi-dead gloss with pumice and oil and cleaned off with water (all pumice shall be removed). The fourth coat of varnish may be omitted at the discretion of the responsible officers.

5-D. Exterior woodwork defined.--Window sills, jambs, blinds (both inside and outside) and other surfaces exposed to the direct rays of the sun, together with all surfaces indicated in article 5-B, and including the bright woodwork in the galley, pantries, bathrooms, and sanitary spaces generally, are to be treated as exterior woodwork and are to be varnished with water and heat-proof spar varnish of approved brand and standard manufacture. Except in the case of those surfaces in the galley, pantries, bathrooms, and sanitary spaces generally which are to be rubbed down, all woodwork herein defined as exterior woodwork shall be left with the natural gloss.

5-E. Treatment of unexposed parts.--All unexposed parts, except drawer sides and runs which can be reached after assembling, shall have one coat of shellac and one coat of varnish (so-called satin finish). Interiors of bookcases, desks, secretary bureaus, etc., in the case of furniture required to be stained, shall be stained and receive the single coats of shellac and varnish prescribed for unexposed parts. The interiors of other articles, including the inside drawers, and excepting surfaces to be lubricated, shall likewise receive a satin finish of shellac and varnish.

Drawer sides and runs, the edges of window sashes and their pulley stiles, and similar working parts, shall not be varnished or shellacked, but these surfaces shall be lubricated with paraffin oil.

5-F. Quality of finishing materials.--The stain to be used shall be penetrating oil stain producing a dark mahogany finish to match the standard color adopted by Headquarters, in the case of those surfaces required to be finished mahogany;~ stained to an approved shade in the case of those surfaces specified to be finished in cherry; or of color as directed. All surfaces shall be of a uniform color. In general, the panels shall be stained and filled before assembling. After the stain has thoroughly dried in, all surfaces shall be rubbed off before any varnish is applied. The filler shall be best quality silex pigment paste filler of an approved and uniform color as directed. All surplus filler shall be rubbed from the surface before it is allowed to dry. In the case of mahogany, teak, cherry, birch, etc., the filler shall be stained the desired color. Shellac shall be clear shellac cut in denatured or ethyl alcohol.

Where an "oil finish" is specified, equal parts of boiled oil and turpentine shall be used.

Only the best quality interior varnishes should be used. Cheap rosin varnishes never take well, even when new, never keep clean and deteriorate rapidly. A rosin varnish will never become entirely free from "tack."

5-G. Preparation of surface and application of varnish.--All surfaces shall be smooth and those to be varnished, except unexposed parts, shall be made perfectly smooth by scraping and sandpapering. Any article which shows dark spots due to filler sticking to surfaces not properly smoothed shall be refinished as directed. All varnish shall be applied in smooth thin even coats, leaving no light edges. It shall be applied preferably at a temperature of not less than 790 F. The freshly varnished work shall be kept in a dust-free room, and full time shall be allowed for the different coats to dry before applying the next coat; not less than 3 days in the case of exterior spar varnish and at least 1 week in the case of interior varnishes should be allowed between coats for drying. In the case of exterior woodwork where the use of filler and shellac is prohibited, the wood shall be filled with varnish; the surface sandpapered lightly between coats, just enough so that each succeeding coat will take hold well and the finish coat well flowed on. The use of putty is prohibited except in nail holes. Stain and filler shall not cloud the grain and shall leave the flake in quartered oak as clear as possible.

In the case of chairs, stools, and other articles of a similar nature, all parts whatsoever shall be finished. Small articles, such as fire ax racks, mountings for clocks, and barometers, etc., when completed, may be dipped in a solution of 75 percent dipping oil and 12 percent each of filler and drier and then rubbed down.

The sheathing or staving in radio rooms, wheelhouse, refrigerators, and similar bright work shall be given one coat of heavy lead and oil paint on inside or non-visible surfaces before being put in place. The faying surfaces of door and window jambs and like trim shall be treated in a similar manner.

In general, all wood doors of hardwood throughout the vessel shall be finished bright to match the furnishings in the compartment where located. Doors of softwood and doors of hardwood where the appearance is marred by disagreeable stains or blemishes, shall be painted in kind and color of paint to match the adjacent structure.

5-H. Refinishing bright wood work.--handrails, outside doors, and similar bright work shall be refinished once each year. Interior joiner work, furniture, and furnishings should not be refinished or re-varnished unless and until it becomes highly desirable to do so and then such work shall be performed under the direction of competent persons.

The use of scrapers, paint and varnish removers, or paint-burning torches on varnished surfaces or painted woodwork is prohibited except when used under the supervision of a competent person. The use of special paint removers shall be confined to the removal of paint from surfaces to which varnish is to be applied.

In refinishing wood furniture, joiner work, etc., if in fair condition, wash with weak solution of ammonia to remove grease, etc., then rub with no. 00 sandpaper. If necessary, remove old varnish or paint with remover, wash off with benzine, remove dark spots, etc., and, when dry, sandpaper and proceed as with new work.

Often the best way to refurbish or renovate furniture and bright woodwork is to wash it. The ammonia solution stated above may be used for this purpose, but a standard product used for the purpose in the trade is known as green soap. It looks like vaseline and is available in drug stores; it is a commercial product obtainable at hardware stores at very reasonable cost and is known by the trade name of "Murphy's Oil Soap" and has been used with very excellent results at certain stations for cleaning varnished floors and furniture. Take a soft cloth pad, soak it in warm water, put a teaspoonful or two in the damp pad and run it over the polished surface until circles of froth are formed. This application will remove butter, finger marks, or sirup from the surface of chair arms and tabletops, for instance, and usually will remove deeper stains. After the entire surface has been covered with a generous application of lather, take another cloth, dampen it with tepid water and wipe the surface clean. Then wipe it a third time with a soft, dry cloth, rubbing with the grain, and the surface should look like new, except for possible scratches and burns. To remove the foggy appearance so frequently noticed on polished furniture, dampen a clean piece of cheesecloth with a solution made from 1 quart of clear water to which has been added a tablespoonful of vinegar and apply it to the surface, rubbing with the grain.

In using furniture polishes, take a piece of cheesecloth and wring it out after saturating it with hot water. When the cloth is cool, shake the polish thoroughly and spray a bit of it on the rag in the palm of the hand and clean off the furniture. The cloth will probably turn black and dirty. After cleaning in this manner, take a dry cloth and rub with the grain until the finger no longer makes an imprint on the surface.

The first step in repairing scratches is to remove any slivers so that no protruding wood is visible. For small scratches, a package of 'dye of the required color may be obtained and mixed with water until it becomes the shade desired. A tint just a fraction lighter than the wood to be colored should be used, because too much soaking will darken the wood and make it different from the surrounding wood. It is best to test the color by dipping a blotter into the mixture. The next step is to take some plain white shellac and with a camel's-hair brush, using light delicate strokes, fill in the scratch, being careful not to overlap the edges. If the shellac should become higher than the depression, it may be scraped off with a razor blade. For larger scratches, stick shellac may be burned in. Stick shellac is available in many wood colors, but the operation of its application is harder and requires a sure, steady touch. Using a spatula, and after heating the point, it should be rubbed hurriedly on no. 0 sandpaper to remove soot or smoke and the shellac then burned into the depression, trying to bring it exactly even with the surface. The heated blade should be used as a smoother as in leveling out sealing wax. Cleaning and oiling or waxing the surface after repairing the scratch will make the job look better.

Wood which has turned white because a hot dish has been placed upon it or liquid has discolored it may be restored to its original appearance in most cases by the application of turpentine to the spot. Another method is to pour alcohol on the spot, allowing it to remain a few seconds, after which it is pushed or scooped off with a small piece of cardboard. In either case the spot should then be rubbed dry with linseed oil. The alcohol is prone to soften the finish, so absolute caution is necessary during this operation.

5-I. Sample boards to be submitted.--Sample boards showing the hardwood finish shall be submitted and approved in the case of all new work and care taken that a similar finish is used throughout. Articles of furniture used on Coast Guard craft, and purchased for such use, shall be properly finished to match the standard colors adopted by Headquarters.

SECTION 6--OUTSIDE PAINTING

6-A. Intent.--The outside finish for all vessels shall be as specified hereinafter. Work not specifically covered herein shall be painted the same as similar surfaces or as directed by Headquarters (see art. 1-C).

6-B. General plan for painting.--The general scheme for painting cutters is that the outside of hulls above the bottom paint shall be white (formula no. 6), and, except at the water line, on the rigging, and at the top of smokestack, and in the case of the guns, bright woodwork, and other surfaces specifically required to be painted otherwise; there shall be no paint in sight other than white and spar (formula no. 7) color. In the case of steel patrol boats, it is intended that the standard light gray (formula no. 5) be substituted for the white and spar color above stated, with the addition of gray deck paint (formula no. 20) for exposed steel decks. Except for the hulls of harbor cutters, harbor haunches, and certain seagoing tugs, which are to be painted black (formula no. 5); it is also intended that the general color scheme for cutters apply to such craft. Patrol boats and picket boats of wood construction are to have all exterior surfaces painted light gray (formula no. 5), except as otherwise specified herein (see secs. 3 and 5).

For convenience, the colors of paint for different types of craft are set forth in the following table, and no variation from the colors specified will be permitted without authority from Headquarters:

6-C. Life buoys, life floats, etc.--Ring life buoys on cutters shall be painted white with the designating inscription as follows: The vessel's name (or designating number, if the vessel has no name) shall be placed on the top semicircle; on the bottom semicircle, "U.S. Coast Guard" shall be inscribed. Block lettering 2-4 inches high shall be used; the inscription shall be painted in black and arranged to be easily legible without the necessity of rotating the life buoy from the stowed position. If considered necessary, the ring life buoys may be covered with a light gray canvas screen in the case of light gray painted craft, but the buoys themselves shall be kept painted white.

Metallic or Franklin life buoys shall be left unpainted and of the natural oxidized color.

Ring life buoys at stations or on standard motor lifeboats attached to stations shall have markings the same as for cutters substituting the word "Station" followed by the designated aviation identification number of the station in place of the vessel's name in the top semicircle.

All life floats shall be marked in a similar manner to life buoys; the legend shall be painted on the long sides, white on light gray floats, and black on white floats. The life floats on vessels with light gray hulls shall be painted light gray; for all other craft, they shall be painted white. Where more than one life float is to be carried, they shall be numbered in characters of same size and color as is prescribed for the lettering.

Life preservers shall be stenciled with the vessel's name or designating number, except that in the case of those carried in station boats, they shall be stenciled with the station's name.

Bucket racks, deck chests, boat booms, boat strong backs, wood buckets, oars, and similar articles of equipment or outfit that may float away shall be branded with the vessel's name or designating number.

6-D. Ship's names, trucks, etc.--The metal letters of ship's names (unless of composition, in which case they shall be kept bright and polished) shall be painted in accordance with the following table:

Color of hull: Color of lettering

White Gold leaf.

Light gray Black.

Black Straw color.

Bow ornaments where fitted and trucks and balls for jack and ensign staffs on all craft, except those painted light gray, shall be gold-leafed.

6-E. Distinguishing numbers on bows and transoms.--The distinguishing numbers on bows and transoms of patrol and picket boats shall be in accordance with Headquarters standard plans. For the marking of boats attached to vessels and stations see articles 9-K, 9-L, 9-M, 9-N.

6-F. Aerial identification.--For purposes of aerial identification, visual radio call letters shall be painted on the housetops or compass platforms of all vessels fitted with radio equipment. Each Coast Guard boat not equipped with radio shall have its designating number in the same relative position so far as practicable. Picket boats shall have their numbers painted on the cabin trunk tops and the motor lifeboats shall have their numbers on the engine trunk tops.

The letters or numbers shall conform with Coast Guard Plan No. 95239, "Standard Air Marking, Alphabet and Numbers", and shall be painted in black on an - International Orange color panel. This color shall match orange yellow no. 5 of the Color Card Supplement No. 3-1 to U. S. A. General Specification for Paint and Related Materials. The width of the orange panel depends upon the height of the letters or numbers and shall

extend beyond them, top and bottom, one-half of their height. The letters or numbers shall be painted athwartship with tops of letters toward the vessel's bow and shall be as large as can be placed in the space available.

Type plans which have been distributed for the following classes of cutters and boats are correct except that the International Orange panel supersedes the straw color designated thereon and shall be applied on all craft hereby affected:

Sebago and Escanaba class cutters, as per plan no. 51446.

Champlain class cutters, as per plan no. 48037.

Tampa class cutters, as per plan no. 36698.

165-foot patrol boats, as per plan no. 165408 or 167028.

125-foot patrol boats, as per plan no. 125197.

100-foot patrol boats, as per plan no. 100118.

78-foot and 75-foot patrol boats, as per plan no. 90859.

38-foot cabin picket boats, as per plan no. 91261 (revised).

36-foot cabin picket boats, as per plan no. 90860.

Motor lifeboats as per plan no. 91927 (revised).

Vessels for which there are no detail plans shall be governed by the foregoing instructions. The various letter or number combinations shall be carefully worked out so that proper size and spacing will be obtained.

6-G. "E's" for excellency.--"E's" for excellency in engineering competition and gunnery exercises shall be painted by the ship's force. In order to insure uniformity in size of the "E's" on smokestacks, and elsewhere, the following standard sizes are adopted:

All "E's" shall be white rectangular block letters of the following dimensions:

Height of letter to be one-half the fore and aft dimension of the stack. Width of letter to be four-tenths the fore and aft dimension of the stack. Length of middle portion of letter to be two-tenths the fore and aft dimension of the stack.

The "E's" on smokestacks shall be located with the top edge of the letter one-half the fore and aft dimension of the stack below the top of the stack, and the center of the letter on the center of the stack with the same rake as the stack. The vertical location of the letter may vary slightly if necessary to clear seams or fittings on the stack.

The "E" for the 5-inch gun shall be a white rectangular block letter located on the slide as indicated on drawing no. 57796. The dimensions shall be: Height 10 inches, width 8 inches, length of middle portion 4 inches, width of all portions 2 inches.

The "E" for the 4-inch gun shall be a white rectangular block letter located on the slide as indicated on drawing no. 53074. The dimensions shall be: Height 10 inches, width 8 inches, length of middle portion 4 inches, width of all portions 2 inches.

The "E" for the 3-inch gun shall be a white rectangular block letter located on the carriage as indicated on drawing no. 50289. The dimensions shall be: Height 5 inches, width 4 inches, length of middle portion 2 inches, width of all portions 1 inch.

The "E" for the 6-pounder gun shall be a white rectangular block letter located on the upper part of the stand as indicated on drawing no. 54614.

Note--The dimensions prescribed herein are in all cases those with the letter projected on a vertical plane. The drawing numbers indicated above are those of the Bureau of Ordnance, Navy Department.

6-H. Smoke bands, and black areas on masts; rigging.--The smoke band for cutters shall have an over-all width (depth from top of hood) equal to one-half the fore and aft dimension of the stack. In the case of 165-foot patrol boats and 125-foot patrol boats, the over-all width from top of hood shall be within the limits of $1/6D$ to $1/4D$ where D equals the fore and aft dimension of the stack. All vessels

of the same class and type within a force shall use the same dimension for this band.

Only such areas on masts as are painted black when the vessel is commissioned shall be kept painted black in service. The extension of these areas beyond that originally authorized, or the painting of additional areas black without specific authorization from Headquarters is prohibited.

The lanyards, service, and seizings of standing rigging and other exposed hemp rope shall be tarred at least once every 6 months. The exposed parts of wire rigging and other wire rope (except that actuating through blocks) shall be painted light gray (formula no. 5) as often as may be necessary to prevent rust. Under no circumstances shall the insulators in the rigging be painted, tarred, varnished, or coated in any way; no parceling, seizing, or tar shall be on the rigging where it bears against the insulators.

Wire rope actuating through blocks or over sheaves shall be covered with a preservative of the following or equally good composition.

Lubricating machinery oil 1 pint.

Stockholm or American tar 1 quart.

Tallow or Albany grease 5 pounds.

Graphite 1 pound.

6-I. Aluminum fittings.--Such fittings as are of aluminum, where exposed to the action of salt spray, shall be preserved from corrosion with a suitable paint, varnish, or lacquer. Salt spray has a very deleterious effect on exposed aluminum.

6-J. Painting of guns; running-light boxes and wheelhouse visors.-- The painting of guns and mounts shall be in accordance with "Ordnance Instructions, United States Coast Guard."

Side running-light boxes shall be painted green for starboard and red for port on their inner surfaces and light gray or white on their outer surfaces to match the color of the vessel.

The under side of wheelhouse visors shall be painted light green to prevent glare.

6-K. Anchor chains.--Anchor chains (except those parts required to be painted white or light gray) shall be kept coated with black asphaltum varnish (formula 47). Galvanized chains shall not be painted, but shall be re-galvanized when the zinc coating has become imperfect to such an extent that corrosion is set up. The swivels and detachable links of chain cables shall be kept lubricated with white lead and tallow.

All anchor chains shall be marked as follows: The first stud-link each side of the 15-fathom shackle shall be painted white; the second stud-link each side of the 30-fathom shackle shall be painted white; the third stud-link each side of the 45-fathom shackle shall be painted white, etc. In addition, the studs of the painted links shall be marked with 1 turn of wire for 15 fathoms; 2 turns of wire for 30 fathoms, etc.

6-L. Weather decks of wood.--Weather decks of wood, except those canvas covered and those on wooden patrol boats and picket boats, shall not be painted unless by express authority of Headquarters. Weather decks on wooden patrol boats and picket boats shall be painted with gray deck paint (formula no. 20).

6-M. Searchlights and radio-compass coil housings.--Exterior parts of the drum, trunnion arms, and base of all searchlights shall be painted to match the surrounding paintwork (formula no. 6 for those on vessels with white or black hulls, and formula no. 5 for those on light gray vessels). The outside of those located on masts shall be painted spar color for the former-named vessels, and light gray for the latter-named vessels; elsewhere they are to be painted as above stated. No bearing surface or working member of any part of the searchlights, nor any bolt, locking nut, or part necessary for access to the interior shall be painted. Nameplates, oiling holes, oil cups, etc., shall be kept free of paint. Signal shutters and iris shutters shall not be painted, but shall be wiped off with oil frequently and kept clean of verdigris. Lenses and arc-viewing screens should be kept clean and free from paint.

When repainting radio-compass coil housings, a nonmetallic paint will be used exclusively, white for vessels with white and black hulls, and light gray for vessels with light-gray hulls.

Article 6-B indicates the general plan for outside painting, while the following table details the specified kind and color of paint to be used on each individual fitting or surface, and surfaces, fittings, etc., shall be finished with kind and color of paint as specified therein without any unauthorized variations:

6-N. Antenna wires.--The wires of antennas should be wire brushed and cleaned thoroughly with gasoline and vinegar. Petrolatum should then be applied and the excess removed. Every 6 months the grease should be wiped off and fresh petrolatum applied; this will prevent corrosion, with the consequent dropping of copper sulphate which ruins awnings and boat covers.

SECTION 7--INSIDE PAINTING

7-A. Interior finish for compartments.--The interior finish for the compartments of all craft shall be as specified hereinafter. Interiors of compartments and work not specifically covered herein, shall be painted the same as similar compartments or as directed by Headquarters (see art. 1-C). It is intended that there be 1 color only for each compartment as a finish, and 1 for flooring, except where a dado or other colors are specifically required.

7-B. Uncovered steel decks and flats.--Interior uncovered steel decks and flats of sanitary spaces such as showers, washrooms, toilet spaces, laundry, sculleries, etc., shall be finished in black or gray boot-topping (formulas nos. 3 and 4). Uncovered steel decks and flats elsewhere within enclosures such as paint and oil rooms, hawser room, steering engine room, anchor engine room, windlass room, and storerooms, shall be finished in light-gray boot-topping (formula no.4). This includes, also, uncovered steel decks in passages, in wheelhouse, and elsewhere, except those specified to be finished otherwise. Uncovered steel decks and flats in workshops (enclosed workshops) and machinery spaces generally, shall be kept bright and polished; areas around the boundaries and those parts not used as walking areas may be finished in light-gray boot-topping (formula no. 4). Similar decks and flats in magazines and -handling rooms shall be finished in white. The boot-topping specified above shall be applied over a priming coat of red lead, and the boot-topping should be kept touched up so that at all times there is an equivalent of two coats of boot-topping on such decks.

7-C. Uncovered wood decks.--Uncovered wood decks in officers' quarters, including wardroom country and adjacent spaces, the steerage and adjacent spaces, shall be finished in green shellac (formula no. 25). Uncovered wood decks elsewhere than as stated above shall be finished in light-gray boot-topping (formula no. 4); this requirement may be modified in the crews' quarters where, on cutters, there is a calked deck, in which case the deck may be scraped and finished bright with clear shellac so as to maintain the natural

color of the wood where its appearance is good; or after smoothing, thin coats of light-gray deck paint may be applied from time to time.

7-D. Wash strakes in living quarters and sanitary spaces.--In general, a wash strake extending in width to the top of the bounding angle, or if there is no such angle, to about 6 inches up from the deck, shall be painted around the bottom of all bulkheads and boundaries, the same color as the deck covering, in all living and messing spaces, including those spaces not specified to have a dado or higher wash strake. Uncovered sections of deck outside the linotile areas, or where linoleum has been cut back, shall be similarly painted. In the case of sanitary spaces, storerooms, ice-machine room, steering engine room, lamp room, galley, scullery, towing-engine room, and similar spaces, except when painted aluminum, the wash strake shall extend to the top of the coaming, if any, otherwise 5 inches up.

7-E. Light-gray dado.--A light-gray dado (formula no. 4 or formula no. 5) 24 inches in vertical height and parallel to the walking fiat, shall be painted around the boundaries of all machinery and hold spaces including the shaft alley, hawser room, lazaret, etc., except that no dado will be required when the compartment is finished with aluminum paint. In the case of wooden patrol boats and picket boats, this dado shall be 12 inches in vertical height.

7-F. Stanchions.-- Stanchions within enclosures shall have a wash strake or dado the same height and color as is required for such spaces; the balance of such stanchions shall be painted to match the color scheme of the compartment where located, except that areas where it is difficult to maintain the paint because of finger marks, etc., may be painted the same color as the deck covering (or these areas may be cross-pointed, or brass covered), but such surfaces shall be limited to actual requirements.

7-G. Bilge paintings steel vessels.--The entire steel structure within the bilges of all compartments not tanks or cofferdams, shall be finished in red lead up to and including the bottom surfaces of steel fiats and floor plates, including foundations, bulkhead stiffeners, and all structure within this area, excepting where composition, No-oxid or other approved materials is required or authorized, and except the bilges in magazines, commissary holds, and fore and main holds, of steel or iron vessels which shall be finished in white; but red lead shall not be used as the finish coat on fuel-oil bulkheads in bilges, nor shall composition of any kind be painted over (see arts 7-H and 1-B). Where the bilges are herein specified to be finished in white, outside white (formula no. 6) shall be used as the finish coat over inside white and a pruning coat of red lead.

7-H. Bilge painting, wooden vessels.--In the case of wooden craft, all structure in the bilges shall be protected with creosote where not now painted, or with light-gray boot-topping (formula no. 4) in the case of those bilges now painted. Steel and iron piping, and other steel or iron fastenings, structure, etc., in the bilges of wooden craft, shall be kept touched up with red lead.

7-I. Boundaries of fuel-oil tanks in bilges.--The boundaries of all fuel-oil tanks within the bilges of all craft, including the bounding bar to shell, shall be finished in white (formula no. 27).

7-J. Cargo battens, slat gratings, and shutters.--Cargo battens, within dado areas, slat gratings, and shutters in storerooms and holds, shall be painted light gray (formula no. 5 or formula no. 4). Cargo battens above the dado areas shall be painted aluminum.

7-K. Shelving, bins, etc., in holds.--Shelving, bins, etc., in store-rooms, issue rooms, holds, etc., shall be finished with aluminum paint (formula no. 11).

7-L. Tanks.--The entire steel structure in all feed tanks shall be painted with red lead, except where special composition has been specified or approved. All reserve feed-water tanks now coated with cement shall immediately be cleaned thoroughly to bare metal and given two coats of red lead. All other fresh water and drinking or auxiliary water tanks shall be coated with- cement. Metallic brown paint has been used for water tanks but has not proven satisfactory and should be discontinued.

The interior of wooden water tanks, as on certain tugs, shall not be painted, except as specifically directed otherwise.

The interior surfaces of fuel oil tanks shall not be painted. During construction, however, a rust-preventive compound or nonvolatile oil such as fish oil shall be applied to these surfaces, except where the structure has been pickled or sand-blasted, in which case a coat of after-pickling paint shall be applied immediately following the pickling or sand-blasting process, and this coating shall be kept touched up for protection during the construction period. Before the introduction of fuel oil into such tanks, they shall be thoroughly wire brushed to remove all loose particles of paint, etc.

After-pickling paint is made from the following formula:

Quantities for 100 gallons: Pounds

Metallic brown dry 400

Spar varnish 429

Paint dryer 246

7-M. Cofferdams and pipe tunnels.--The entire steel structure within cofferdams, and that in double-bottom compartments not assigned as tanks, shall be finished in inside white (formula no. 27), including the bottom plating therein. The interior of pipe tunnels and, in general, the exterior surfaces of fuel oil bulkheads, shall be finished in white or aluminum.

7-N. Kind and color of paint for miscellaneous fittings.--In general, the surfaces of all fittings within compartments shall be painted to match the color of adjacent structure, except where specified to be finished otherwise. This applies to grille work over doors, to grille work and perforated panels in doors and the like, frames of airports (see art. 3-F), stacks of fin-type radiators, and cast-iron radiators, darkening screens for deck lights and dead lights when stowed in vicinity of openings, quadrants and hydraulic steering gears, metal ladders to compartments (except those within the machinery space which may be painted aluminum), and fittings and fixtures of a similar character. Cast-iron radiators shall not be painted aluminum.

Steering wheel and compass stands within the wheelhouse, pedestals for peloruses, repeater compasses, and similar apparatus within the wheelhouse; distribution panels, control boxes, mail boxes, controller panel boxes for searchlights, mechanical ventilation fans, and similar devices within compartments shall be painted olive green.

7-O. Metal work in way of joiner work.--Metal work in way of built-in joiner work or casings shall be thoroughly painted with two coats of red lead before the joiner work is installed. After commissioning these surfaces shall be examined from time to time and touched UD as necessary to reserve the structure.

7-P. Carbon dioxide fire-extinguishing equipment.--The cylinders of carbon dioxide gas, both in the built-in and portable fire-extinguishing units, shall be painted red. All operating parts shall be left bright, especially the valve and distant control gear on the built-in systems. Piping, except nozzles, shall be painted to conform with the colors of the adjacent structure, and marked with identification bands as provided in article 7-W. Special care shall be taken to keep discharge nozzles polished and free from paint, particularly those located in or near the bilges.

7-Q. Indication of load water line.--The load water line may be indicated on the inside of the vessel in the machinery spaces and hold spaces by a metallic-brown stripe, 1 inch in width, connecting the load water line label plates.

7-R. Manhole covers.--All access manholes to fuel-oil tanks shall be finished with red striping paint. Other manhole covers are to be finished to match the color of the deck space therein.

7-S. Electric cables.--Electric propulsion cable and tape-armored cables in general, which are provided with a woven covering impregnated with a fireproof paint, shall not be repainted after installation except with an approved fireproof paint. Other electric cables shall be painted to match the deck or bulkhead, etc., to which they are attached. The latter are to be primed with two coats of shellac before painting.

7-T. Electrical fittings.--Electrical fittings of composition, and those with a non-corroding finish should not be painted except where exposed to the weather, or where it is particularly desirable to have these painted to harmonize with the finish of a particular compartment, as in officers' quarters; but those surfaces which, in article 3-B, are

required to be kept bright and polished, shall not be painted, it being intended that the covers to junction, switch, and plug-in receptacles and boxes, be kept bright and not painted, including the light-fixture guards, polished surfaces, etc.

The use of paint on the inside of field frames and housings of motors eventually results in paint getting on field coils, leads, and brush riggings. Only the best grade of insulating varnish shall be used. All fiber insulating pieces and bushings shall be carefully cleaned and scraped and coated with insulating varnish. Electrical leads should be properly served and painted with varnish.

7-U. Painting of cork insulation.--Linoleum on decks shall not be painted or shellacked (see art. 7-X), but that on the sides of compartments shall be painted in color to match the general color scheme.

Exposed surfaces of compressed cork-slab insulation shall be painted to match the general color scheme of the compartment (see art. 4-A).

Surfaces shall be cork painted only as directed by Headquarters. Where cork paint is specified, the surfaces to be so painted shall be given, in addition to the priming coat of paint, a thick coat of under cork (formula no. 34). The ground cork shall then be applied and left until thoroughly hard and dry. Where ceiling is omitted there shall then be applied two or more coats of paint to give the finish required by article 7-Y. Where ceiling is fitted, no paint will be required over the ground cork. In a compartment generally finished in gloss the cork paint shall also be glossed.

7-V. Metal doors and wire mesh bulkheads.--All metal doors shall be finished in kind and color of paint prescribed for the compartment where located. Metal doors and wood doors specified to be painted, and opening to the exterior, shall have their inside surfaces finished to match the exterior of the vessel. Galvanized wire mesh bulkheads will not be painted provided the galvanizing is in good condition, both as regards the intactness of the zinc coating and the appearance; otherwise they shall be touched up with aluminum paint (formula no. 11).

7-W. Piping.--All piping and voice tubes shall be painted the shade and color of the adjacent surfaces. In addition to the regular painting, all piping except voice tubes shall be painted (marked) with identification bands as follows:

The identification striping shall be applied to the piping as a circumferential band or bands of the color and in number as indicated above. When one band is required, it shall be 2 inches wide; where more than 1 band is required, the bands shall be 1-inch wide with 1-inch wide spaces between them. The striping shall be applied in conspicuous locations and at suitable intervals so that every pipe, excluding voice tubes, shall have at least one striping designation in each compartment through which it passes. Identification striping shall not be placed on flanges or on fittings.

The identification stripes shall be left off pipes in cabins, officers' wardrooms, and mess rooms, and in warrant officers' mess rooms.

On sprinkling pipes in magazines, etc., a narrow strip on top in way of sprinkling holes shall be left unpainted.

Piping on the outside of the vessel shall be painted the same color as the surrounding structure and shall be without striping, except as provided below.

As a general rule copper and brass pipe should not be painted. Galvanized piping will be painted to match the general color scheme.

Fuel-oil filling connections and fuel-oil vents shall be painted spar color (formula no. 7) on vessels with white or black hulls and light gray (formula no. 5) on vessels with light-gray hulls. Both the vents and the filling connections shall be marked with the 2-inch red stripe painted thereon which is specified for fuel-oil piping generally. In the event there is insufficient room on the filling connection for the 2-inch stripe, then the outboard flange shall be painted red. Gasoline vents and filling connections shall be similarly painted and marked, but with two 1-inch stripes as required for gasoline piping generally. Fireplugs shall be painted green, but not including brass-mounted valves (bonnets and hand wheels).

7-X. Treatment of linoleum.--For many years the accepted treatment of linoleum was to shellac it. The shellac was applied to the linoleum frequently, and finally the shellac presented a scabby appearance where the brittle shellac broke off in spots as the coating, resulting from numerous applications, became thicker. Dirt was shellacked in with the different applications, and the conditions became very unsanitary. The alcohol in the shellac dissolved the binder in the linoleum and so softened and disintegrated the surface of the linoleum itself that the linoleum was ruined and useless. In places water had found its way through cracks in the shellac and had rotted the linoleum. In addition to these objections, it has been found that the fabric back of the linoleum acts as a wick thereby drawing moisture under the covering by capillary action. Moisture once between the linoleum and steel deck soon softens the waterproof cement and corrodes the steel. Owing to these objections, the use of linoleum on steel decks or flats will be discontinued in the future, and in the case of linoleum now in service, the following will govern.

A close inspection shall be maintained of all linoleum-covered decks. Where the bond between linoleum and steel deck is broken in toilets, wash rooms, storerooms, and sanitary spaces generally, or over large areas of spaces occupied by enlisted personnel, the covering shall be removed to the bare steel and the deck painted as is specified in article 7-B for such spaces, with the walking areas protected by

all-rubber mats or runners. Where large areas are affected in officers' and warrant officers' quarters, the practice of laying linotile with Dolfinite no. 1480, or equal, cement in place of the linoleum shall be followed. When the bond is broken in way of doors, boundary angles, and radiators, the deck covering shall be cut back and the exposed steel

deck cleaned and painted to match the linotile or wash strake. Linotile, 6-inch squares, 3/16-inch thick, in the following colors shall be used on steel decks:

Cabin, cabin stateroom, and bath No. 130 surf green

Officers' mess room Do.

Warrant officers' mess room Do.

All other spaces No. 64 brown.

For the reasons outlined above, the use of shellac for coating linoleum now in service is prohibited. This applies also to linotile.

Experience has shown that a high-grade wax for surface dressing is the best coating for linotile and linoleum, and that such a wax gives an attractive appearance. Where good judgment is used in keeping the amount of wax to a minimum, the surface is not slippery and presents no hazards at sea. In treating the linoleum or linotile with a wax preparation, these surfaces should be dry and the wax should be applied in a thin coat and well rubbed in to avoid tracking. The water-soluble carnauba wax compounds, manufactured for such use and recommended by outstanding manufacturers of cork and rubber flooring, should be used for linotile and linoleum dressing.

Dolfinite cement no. 1480 for patching is available in 1-quart cans at the New York and San Francisco stores.

7-Y. Kind and color of paint for compartments.--The top and sides of the interior of compartments on all craft shall be finished with kind and color of paint as specified in the following table:

All exterior, ungalvanized, unmachined, steel and iron parts of machinery shall be painted with a heat and oil-resisting paint where exposed to extreme heat and to the action of oil. Such surfaces not exposed to the action of oil or extreme heat shall be painted with the same kind of paint as used on adjacent surfaces. The color scheme for machinery shall be aluminum, including gasoline motors (see arts. 1-I and 3-F).

Condenser shells, except composition, and exhaust trunks, the outside of smokepipes and uptakes within inclosures, boiler casings, and steam drums where not metal lagged, casings generally, the inboard propulsion shafting where not practicable to keep it bright and polished, air flasks, air, oil, and water tanks, as well as those surfaces specified in the first part of this article, shall be finished in aluminum on all craft. The requirements for painting piping, gratings, floor plates, wiring, electrical equipment, and the tops and sides of machinery compartments, are contained elsewhere in these instructions.

It is intended that this article provide a standard scheme of painting machinery, and also restrict the surfaces that may be painted. Section 3 sets forth those surfaces which in

general are not to be painted, and which are to be left bright and polished. In this connection, the following should never be painted:

Metal lagging on turbines, reciprocating engines, piping, pumps, tanks, coolers, heaters, evaporators, and boilers, unless special authority has been obtained to paint the same because of corrosion or other defect. The greatest care shall be taken that galvanized surfaces of lagging are not disfigured in such a way that painting to improve appearances may become necessary. Emery cloth or other abrasive, or lye water, should be used very sparingly, as continued use will wear off the galvanizing and rusting will follow. A light film of oil should be kept on these surfaces to prevent deterioration.

Machined metal surfaces of reciprocating engines and pumps and other machinery, such as columns, moving parts, flanges, bolts, bolt heads, studs and nuts, blower fans, sliding contacts, and pivotal points. This includes also the cylinder heads of reciprocating engines and pumps, except such parts as are exposed to water in bilges. These surfaces shall be kept free of paint and lightly wiped with oil or grease.

Exposed composition parts of machinery and apparatus, including also valve bonnets, glands, nuts, or any machined part of valves, name plates, and instruction plates. Their surfaces should be left bright and kept polished.

SECTION 8--BOTTOM PAINTING

8-A. Cleaning the bottom of steel and iron hulls.--It has been stated in a preceding article on preparation of surfaces to be painted (art. 2-A), that all surfaces must be carefully cleaned and free from foreign matter. This statement is particularly true in the case of ship-bottom paints because of the service conditions to which these paints are subjected.

8-B. Preparation of under-water body for paint.--In no case shall paint or other coatings be applied over damp, oily, or greasy surfaces, or any foreign substances. Steel surfaces to be repainted shall be carefully and thoroughly cleaned; loosely adhering paint and blisters shall be removed and the metal in way thereof thoroughly scraped, scaled, and cleaned to a bare surface. All surfaces shall be thoroughly dry before any preservative coating is applied. Oil and grease frequently found near the water line must be cleaned off with scrapers and gasoline or some other solvent of grease. Even though all loose paint and scale has been scraped and chipped off, the anticorrosive paint will flake off almost as soon as it has been applied if the oil and grease have not been removed. The bottom shall be cleaned of barnacles, or other marine growth, and all pits and holes shall be thoroughly cleaned so that no rust or spots of scale remain embedded therein. No paint of any kind that firmly adheres and affords protection is ever to be removed. Great care shall be taken where any evidence of corrosion exists, to remove the paint and all indications of rust and to see that the surface of the metal is thoroughly dry before paint is applied.

8-C. Care in cleaning plating of vessels of light construction.-On plating of vessels of light construction, old paint and rust shall be removed by means of scrapers and wire

brushes; scaling hammers shall be used only where there exists actual scale which cannot otherwise be removed. On galvanized plating, neither scaling hammers nor steel scrapers shall be used.

8-D. Standard bottom paints.--Although in the past a number of proprietary bottom paints were used, the only paints now used as standard are those hereinafter mentioned.

Responsible officers shall take particular care to make certain by a check of the original containers that the bottom paints applied are included among those approved, if the prescribed Navy formulas are not used.

8-E. Anticorrosive paint.--Anticorrosive bottom paint (formula no. 14 RC). This paint is intended to prevent corrosion and consequent destruction of the under-water portion of the hull. Anticorrosive paint is rather thin-bodied and with qualities which allow the paint to readily penetrate and coat all irregularities of the surfaces. Anticorrosive paint is not sufficiently strong to be used alone, nor will it protect the ship from fouling; it is for use on iron or steel only, and because it is not efficient without a covering of antifouling, it shall always be covered with a coat of antifouling paint. The anticorrosive paint shall extend from the keel to the lower edge of the boot-topping.

8-F. Antifouling paint.--Antifouling bottom paint (formula no. 15 RC). Antifouling paint is to help in preventing the fouling of the ship's bottom by barnacles and moss and the consequent loss of speed and increased fuel consumption. The antifouling paint should not come in contact with the steel plating of the ship's bottom, as it is not designed to prevent corrosion, and pitting may occur if it is so applied. The antifouling paint is intended for use over the anticorrosive paint only; it shall cover the same areas as prescribed for the anticorrosive paint.

8-G. Boot-topping paint.--Boot-topping paint (formula no. 2 for black hulls, and formula no. 3 for white and gray hulls). Since boot-topping generally has no antifouling properties, its immersed extent shall be restricted to the minimum necessary to accomplish its purpose. No boot-topping shall be applied to wooden hulls under 50 feet in length, but in lieu thereof, the bottom copper-brown paint required for such craft shall be extended to the height prescribed for boot-topping. On steel or iron vessels, and on the ice-plating of wooden vessels, boot-topping is to extend from bow to stern, and shall extend to a definite height above the normal load water line amidships, viz: 15 inches for vessels 250 feet in overall length; other vessels in proportion, or the following tabulated heights amidships may be used corresponding to the nearest 25 feet length (the location of the bottom edge is as stated hereinafter):

Overall length in feet: Height amidships, in inches

325: 23.4

300: 21.6

275: 19.8

250: 18.0

225: 16.2

200: 14.4

175: 12.6

150: 10.8

125: 9.0

100: 7.2

75: 5.4

50: 3.6

The height of the boot-topping at the forward perpendicular shall be increased by one-third the height amidships, and the height aft shall be reduced by one-third the height amidships. Commanding officers shall sufficiently alter this line to the minimum extent necessary, to prevent intersecting the lowest row of airports but all vessels of the same class and type within a force shall use the same dimension. The bottom edge of the boot-topping shall coincide with the normal light operating water line of the vessel under ordinary circumstances. Boot-topping shall be applied over a primer of zinc and turpentine as hereinafter stated, in two coats.

8-H. Copper-brown bottom paint for wooden hulls.--The underwater body of wooden hulls shall be kept well painted with brown copper paint manufactured under the Coast Guard formula and obtainable from the New York and San Francisco stores.

A mixture of zinc oxide (American process) and gum turpentine (spirits of turpentine) shall be used as the priming coat for all steel and iron surfaces on the under-water body of all craft, except such as are specified to be painted with red lead. This priming coat shall extend from the keel to the upper edge of the boot-topping, and shall be mixed as hereinafter stated.

The American zinc and gum turpentine specified above shall be in the proportion of 5 pounds of dry zinc oxide to 1 gallon of gum turpentine (spirits) which is a good brushing consistency, but a small amount of petroleum spirits may be added, if necessary, for spraying. Venice turpentine contains about 30 percent pure turpentine while the remainder is a slow-drying rosin that becomes brittle and flakes off, therefore it should never be used in paints. French zinc is a highly refined zinc oxide, somewhat more

expensive than the American dry zinc although of no greater value than the American zinc for the purpose intended.

The turpentine used with the zinc is to act only as a vehicle in applying the zinc oxide on the hull and is expected to completely evaporate, leaving the zinc oxide as a chalk powder which is bound to the hull by the application of the anticorrosive paint.

8-I. Red lead as bottom paint.--The bottoms of steel vessels operating only in fresh water shall be coated with red lead or with anticorrosive and antifouling paint. Red lead shall be used as the primer for all steel structure required to be painted when pickled or sand-blasted on new construction prior to erection, or when the bottom is sand-blasted after erection, provided the painting occurs at least 2 months before launching time. In no case, however, shall red lead be applied to the bottom (including those areas in way of the boot-topping) within 2 months of the actual date of launching, nor shall red lead be used for touching up on the bottom at subsequent drydockings.

8-J. Zinc and steel protectors, and propellers.--No paint shall be applied over zinc protectors, and such paint as becomes smeared on their surfaces or edges shall be immediately and entirely removed. Red lead putty shall, however, be used for bedding the zincs with iron screws for fastenings.

The outside surfaces of steel protectors shall be painted. These protectors shall be set in red lead and their inside and outside edges shall be calked.

Steel and iron propellers shall be painted with the kind and color of paint specified for the under-water body generally, but propellers of composition shall not be painted.

8-K. Drying time for bottom paints.--Ship bottom paints containing coal tar and rosin (formula no. 14 RB and formula no. 15RB and the improved formulas nos. 14 RC and 15 RC) do not deteriorate rapidly on exposure to air; it is important, however, that these paints be given ample time to dry before a vessel is undocked.

Anticorrosive paint shall be allowed at least 8 hours' drying before the antifouling paint is applied. Antifouling paint, on the other hand, shall be allowed 6 hours' drying time before a vessel is placed in the water. About 12 hours should be allowed between the first coat of copper paint and the second; the boat should be launched as soon as the second coat has set.

All proposals relating to drydocking steel vessels should specifically state the requirements as to drying time and that the ship bottom paints will be supplied by the Government (see art.8-M for drying time of copper paint).

8-L. Routine drydock painting, steel vessels.--The routine during docking periods shall consist of cleaning the bottom and preparing the surfaces for paint; when properly clean and dry, touch up all bare spots on the under-water body (including those surfaces in way of the painted water line) with a single coat of the zinc primer; after the primer has dried

sufficiently, apply single coats of anticorrosive and antifouling paint from the keel up to the lower edge of the boot topping, allowing the prescribed drying time between the coats of paint and between the antifouling paint and the time of undocking. The boot-topping to be applied in two coats over the zinc primer. In the event it is found impracticable to touch up the bare spots with the zinc primer, then the bottom paints are to be applied directly to the bare metal. Special attention shall be given to the water-line area as well as the rivets in all painting subsequent to launching, and those who have the command and care of the ship shall carefully prevent abrasion of the paint along the water line. The time in dock required to allow red lead to dry properly prohibits its use after commissioning, therefore it is necessary to adhere to the use of the zinc primer as required in article 8-H. (See also art. 8-I.)

8-M. Routine drydock painting, wood vessels and boats.--The underwater body of a wood hull to be repainted shall be thoroughly cleaned of foulness with fresh water and shall be scrubbed, scraped, and sandpapered if necessary, to obtain a smooth surface, taking care that all oil and grease are removed (see arts. S-A, S-B). It is desirable that the bottom be allowed to dry thoroughly, the boat to remain hauled out for 2 or 3 days, and longer if possible. Careful examination of the entire under-water body shall be made to discover evidence of marine borer attack and, if found, such localities or spots shall be treated by carefully burning with torch or replacing destroyed material. All entrance openings of borer shall be securely plugged or cemented. When painting the bottom, two coats shall be applied thoroughly brushed out so that no portion is left uncoated. All copper paints must be well mixed before using and shall be kept constantly stirred while applying; this is of utmost importance. All copper paints tend to settle in the containers, therefore, all settlings or lumps of the material at the bottom of the container should be thoroughly stirred until the paint is uniform. This paint should be frequently stirred while using, and should always be stirred before pouring off any for use. The aim should be to have no pigment nor residue at the bottom of the container when the paint is consumed. Merely turning a can upside down to allow the settled pigment to work its way down is not a satisfactory method of mixing. Brushes used must be absolutely clean. In the case of self-bailing boats, the freeing trunks shall be thoroughly painted by using special brushes or by temporarily plugging freeing slots, filling them with copper paint, draining and collecting the remaining paint after suitable interval of time.

8-N. Estimating the quantity of bottom paint required.--For estimating the quantity of paint to be used on the under-water body, the following spreading rates may be used: Anticorrosive, 270 square feet per gallon; antifouling, 243 square feet per gallon; boot-topping, 684 square feet per gallon. The area of the under-water body in square feet may be estimated from the following formula:

$$15.5 \times \text{the square root of } WXL$$

where W is the displacement in tons

L is the water-line length.

8-O. Schedule for painting bottoms of wooden craft--All wooden vessels and small boats regularly kept afloat shall have their underwater bodies well painted with Coast Guard formula brown copper paint as follows:

Once each year if located on the Great Lakes or other fresh-water points. Twice each year (April and September) if located on the Atlantic coast north of and including New York, N. Y., or on the Pacific coast north of San Francisco, Calif.

Three times each year (March, July and September) if located on the Pacific coast south of and including San Francisco, Calif.

Four times each year (about Mar. 1, May 15, Aug. 1, and Oct. 15) if located on the Atlantic coast south of and including Norfolk, Va., or on the Gulf.

Once each year for vessels with wood hulls completely protected by metal sheathing (other than copper) when in salt water.

8-P. Schedule for painting bottom of steel vessels.--All steel or iron vessels shall have their under-water bodies well painted as provided in section 5, if practicable, as follows:

Once each year for all vessels in fresh water.

Twice each year, if practicable, for all vessels in salt water.

8-Q. Requisitioning bottom paints for steel vessels.--Bottom paints for steel vessels shall be procured as provided in article 715 (3), *Pay and Supply Instructions*.

SECTION 9--BOATS FOR SHIPS AND STATIONS

9-A. General plan for painting.--In general, boats shall be painted white or light gray, depending upon the color of the vessel to which issued. No boats shall be finished bright except upon specific authority of Headquarters. All boats shall be painted in accordance with the following standard scheme as nearly as their designs permit.

9-B. To be kept bright and varnished.--The following parts of all boats shall be kept bright and varnished with an approved spar varnish:

Structural fenders of gunwale (half-round chafing battens).

Cappings and clamps.

Wood towing and quarter bitts and cleats of wood.

Masts and spars.

Thwarts (if the boat has side air cases or compartments, only that portion of thwarts between inboard sides of air cases or compartments shall be kept bright; outboard portions shall be painted spar color) except those in dories and punts.

Water breakers and breaker stands.

Flagstaffs, running-light posts, and awning stanchions.

Backboards, gangboards, and coamings.

Stretchers, hand grabs, gratings, and hardwood fittings and trimmings generally.

Coxswain's seats, tillers, rudder yokes, and steering oar planks.

Top of rudder and transom above lower edge of fender at gunwale.

Stern benches (if of hardwood and of good appearance, otherwise to be painted spar color), seat stanchions, and gas tank cover boards.

9-C. Oars and canvas gear.--All oars and boat-hook staffs in boats shall be kept bright and scrubbed with sand and canvas. Boat covers, covers for masts and spars, covers for engine inclosures, boat cloths and portable canopies, weather cloths and sprayhoods, and similar canvas work shall not be painted.

9-D. To be painted light gray.--Excepting the foregoing parts, and those elsewhere specified to be kept bright and polished, the entire outside and inside of boats on light-gray vessels shall be painted light gray (formula no. 5). The floor boards, bilges (except those required to be creosoted), engine beds, and structure within the engine compartment, cabin, and other compartments of motor lifeboats, motor launches, motor dinghies, power surfboats, and other motor boats with closed compartments (including picket boats), shall be painted light gray (formula no. 5) to a height of 12 inches above the walking flat. This does not include the compartments below deck as in self-bailing boats.

Compartments below decks in motor lifeboats are now treated with creosote. Such surfaces should be retreated with creosote at least every 6 months, but creosote shall not be applied over painted surfaces, nor shall paint be applied over creosote.

9-E. To be painted white.--With exceptions as in the foregoing articles, all boats on white vessels, and those at stations when regularly kept out of water, shall be painted on the outside with outside white paint (formula no. 6). This includes also life cars. Boats at stations which are regularly kept afloat shall be painted white (formula no. 6) on the outside above the bottom paint. All boats shall be painted white on the inside (formula no. 6) down to the level of the risings or tops of side compartments. This includes the inside of all compartments down to the light-gray paint line; and includes further, the outside of all compartments such as engine inclosures, cabins, and end compartments that

project appreciably above the gunwale of the boat and virtually become white deck houses rising above the sheer, down to the spar color paint line.

The inside of all compartments not ordinarily exposed to view, such as compartments below decks of self-bailing boats, shall be painted with outside white (formula no. 6) throughout, except such as are required to be creosoted.

Ring life buoys on all boats shall be painted white and marked with the vessel's name or station's official designation as prescribed in article 6-C.

9-F. To be painted spar color.--In all boats below the risings (except within compartments), and including the footlines, floor boards, bilges (except where creosoted), solid removable platforms and flats, and decks on level of thwarts, shall be painted spar color (formula no. 7). This includes also the tops of compartments and engine inclosures below the gunwales, including tops and sides of air cases (such surfaces shall be painted spar color outside down to the floor boards) except boats on light-gray vessels.

It is intended that spar-color paint be used only on the interior of the boats, but outside closed compartments, and that such paint be kept below the risings, covering the walking flats, platforms, floor boards, etc., and extending up the sides and across bulkheads to the height of the risings, except that such compartments (as small engine inclosures) as are wholly below the gunwale shall be painted all spar color on their exterior surfaces.

9-G. Bottom painting.--All wooden boats regularly kept afloat and other wooden boats mostly kept in the water shall have their underwater bodies painted with brown copper bottom paint, as specified in Section 5 for wooden craft. The water line for painting shall be about as specified in the above-mentioned section (see art. 8-G). Dories, punts, bateaux, and similar flat-bottom boats ordinarily kept on the beach, in the marshes, or afloat, shall have their under-water areas protected with the copper brown bottom paint required for other wooden craft kept afloat. Otherwise, these craft shall be painted white and spar color as provided for the larger boats. In all instances, the gunwale fenders shall be finished bright.

9-H. Running light boxes.--Side running light boxes will be painted in kind and color of paint as specified for vessels.

9-I. Brass fittings and rubber gaskets.--Brass work of all boats, such as bitts, cleats, chocks, cutwater, fender facings, rails and stanchions, thwart knees, airport rims and bearing edges, airport lens frames when of smooth or polished brass, airport wing nuts and dogs, rubber gaskets in airports, doors, or shutters, bell and bell brackets, steering wheel, nonskid treads, bell pulls, boat number plates, label plates, etc., shall not be painted, but such fittings and fixtures shall be kept bright and polished. Engine exhaust pipes shall be left bright.

9-J. Aluminum fittings.--Aluminum fittings such as thwart knees, breasthooks, thwart stanchions, stern chocks, foot braces, and similar aluminum fittings are to be protected

against corrosion as provided in articles 4-B and 6-I. In the case of aluminum scuttles, all joints of screw and screw handle in scuttle covers are to be freely and regularly oiled. The threaded hole in scuttle grating shall be kept thickly coated with grease, and all surfaces of scuttles shall be periodically wiped with an oily rag. These requirements for aluminum fittings, particularly those pertaining to the scuttles and screw-down ventilators, are absolutely imperative and must be complied with.

9-K. Identification symbols.--Letters in accordance with Headquarters' standard plans shall be fitted on each bow of ship's boats in accordance with the following instructions. On vessels having a one-word name, the first letter of the name shall be used. When a name consists of 2 words the 2 initial letters shall be used with double spacing between. Boats for patrol boats, harbor boats, and picket boats without names shall use the official number of the vessel; such numbers shall be painted in black on the transom or stern quarters in block letters 3 inches in height.

9-L. Details of letters for ship's boats.--Standard letters are cast brass 6 inches in height with a bevel of 9 1/2 degrees. These letters shall be painted black.

9-M. Details for letters for station boats.--Each boat at stations shall be marked on each bow with the legend "U. S. Coast Guard" and on each side of the stern with the legend "(Station's name)." The above lettering shall be painted in solid black plain block letters, 3 inches in height, on the hull in the following locations:

Standard motor lifeboats, "U.S. Coast Guard" to be placed 21 inches from the intersection of the planking and stem on the bow, on the fourth plank below sheer line, and "(station's name)" on the stern to be 18 inches from the intersection of the planking and the stern post and on the third plank below the sheer line.

Boats of all other types to have legends painted 18 inches from the intersection of the planking at the stem and stern posts and on the third plank below the sheer line.

The above size and shape of letters will apply to legends on transoms when required.

9-N. Marking boat gear.--Oars, boat hooks, staffs, breakers, breaker stands, and all other articles of equipment except life preservers that may float away in case of accident to the boat shall be suitably marked with the boat number.

(SECTIONS 10-12 OMITTED)

SECTION 13--FORMULAS

The numbers herein referred to in connection with formulas, are, unless otherwise stated, Navy formula numbers, and as paints are to be obtained ready mixed, except for red lead, etc., there is no need to list the Navy formulas here. The formulas mentioned, however, are those listed in "Instructions for Painting and Cementing Vessels for the United States Navy, 1931." Most of these formulas are contained in the "Coast Guard Stock Catalog."

Approved red-lead formulas are herein listed for convenience of contractors and personnel. Preference should be given the formulas in the order of notation, especially where drying time permits, and where the paint is to be mixed for the particular job. (See art. 2-B.)

COLORS

Color designation in War Department specifications and publications refer to the following:



* reconstructed from *Instructions for Painting United States Coast Guard Vessels, Boats, and Stations, 1935*

NOTE: The color chart above was taken from *Instructions for Painting, United States Coast Guard Vessels, Boats, and Stations, 1935*. The colors herein were captured from the source as they currently exist, possible variations from the original shading could not be avoided.

