

LEAD

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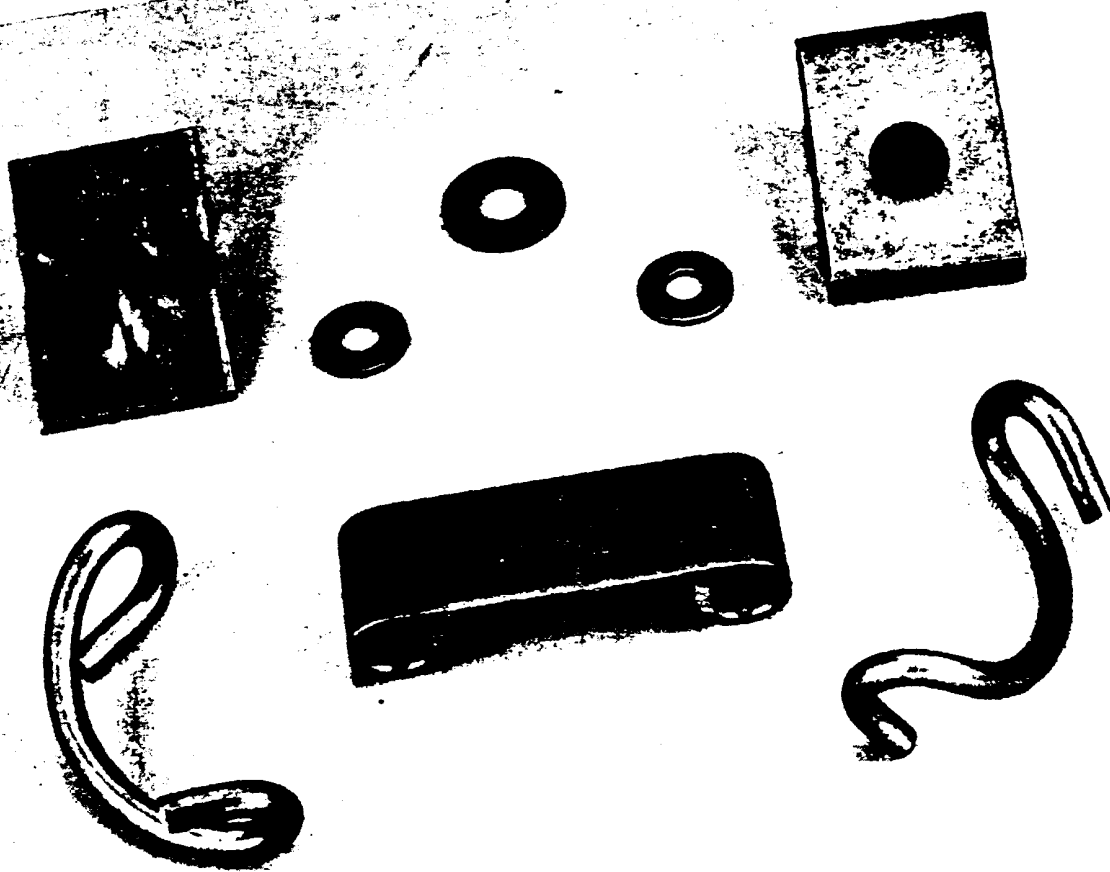


PHOTO BY DAYTON SMITH
Pole line hardware with hot dip pure lead coating manufactured by the Western Electric Company. The use of lead coatings in place of other metals will release much needed zinc, tin, chrome and nickel for war uses. Photos about two-thirds actual size.

Lead Industries Association New York, N. Y.

Increased Use of Lead Coating on Iron and Steel is Resulting from Recent Studies

THE use of lead as a protective coating on iron and steel is not new but it is not as common as the more familiar zinc coating or galvanizing. Lead is known to be more resistant to atmospheric corrosion than zinc but the brighter appearance of galvanizing and the difficulty in obtaining a lead coating free from pin holes has retarded its use.

However, recent studies of lead coating processes have resulted in improved technique for hot-dip application which produces satisfactory results for many purposes. It appears that rust stains on the surface of hot-dip lead coated articles are superficial and generally soon disappear since the pin holes are apparently sealed by the products of corrosion.

One process now in commercial use is simple and is done with equipment of the same type as is used for galvanizing. The articles to be coated are pickled scrupulously clean. Placed in a perforated basket they are dipped first in dilute sulphuric acid, then in a weak solution of hydrochloric acid and finally in a bath of dissolved zinc ammonium chloride.

While still damp, they are then dipped into the coating pot which contains the lead at a temperature of from 675 deg. to 700 deg. F. upon the surface of which floats a layer of flux $\frac{1}{8}$ in. to $\frac{1}{4}$ in. deep. This flux consists of about 85 percent zinc chloride and 15 percent ammonium chloride. The baskets are agitated in the coating bath for a period of about one minute. The articles are then removed and centrifuged to remove excess metal and, while still hot, may be tumbled to remove superficial discolorations.

Articles ranging in size from small washers to thin curved sections six to eight feet long are being coated by this process, but only the smaller items are tumbled. The presence of small amounts of tin, antimony, or certain other metals in the lead bath is advantageous. Several manufacturers

offer lead alloys especially designed for use as a coating material.

Not only does the lead coating process compare favorably in cost with galvanizing but there are advantages over the other process. The work is done at lower temperatures and therefore under more pleasant working conditions. Lead does not corrode the iron dipping pots, nor does it dross and have to be reclaimed in a smelting operation.

The weight of a lead coating ranges between 50 and 150 milligrams per square inch whereas zinc coatings usually run about 200 milligrams per square inch. In addition, lead out-ranks all other metals as a base for paint and requires no weathering or special preparation before painting.

Another means of depositing lead coatings on iron and steel is electroplating. Under certain conditions, hot dipping results in distortions or

undesirable surface stresses which do not occur in electroplated objects. There is an increasing use of electro-deposited lead on laboratory apparatus, linings of gas shells, nuts and bolts, refrigeration brine tanks, and equipment used in viscose and other industries.

Although lead is not suitable for coatings on objects that require brightly finished surfaces and is not highly resistant to abrasion, its high corrosion resistance, ease of handling and plentiful supply indicate that recent improved application processes will make possible the saving of large quantities of zinc, cadmium, chrome, nickel, and tin which have hitherto been required for protective coatings on iron and steel.

Lead coated articles perform best under atmospheric exposure. They do especially well in industrial atmosphere contaminated with the acid fumes of sulphur.

The Lead Industries Association, 420 Lexington Avenue, New York City, will be pleased to answer any inquiries for additional information on lead coating practices.

Chester, Pennsylvania, Housing Project Uses Lead for Traps as Well as for Waste and Vent Lines

CHESTER, Pennsylvania, like all established ship building centers is producing enormously increased numbers of cargo ships. To provide suitable living quarters for the mechanics and other workmen, both private and Federal agencies are building many new residences.

One of the larger privately constructed operations is Highland Gardens, a 783-unit, low-rent project of permanent construction which will soon be ready for occupancy. Perkins and Culhane of Chester, are the builders.

The buildings are of brick with

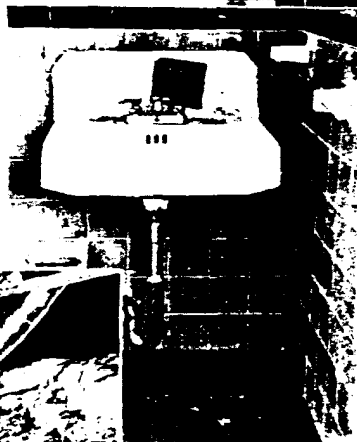
Highland Gardens Housing Project, Chester, Pennsylvania



wood floors and interior framing. The living units are two-stories with plastered walls, tile baths and hardwood floors.

Centre—Note use of exposed lead trap under lavatory

Below—Lead waste line under floor



Wiping lead joint on Chester, Pennsylvania job

The plumbing is done in accordance with the Chester code, using lead wastes from lavatories, sinks and bathtubs. Also exposed lead traps are used under sinks and lavatories in accordance with the War Housing Critical List which allows no brass for this purpose. All lead traps bear the Seal of Approval of the Lead Industries Association which indicates that they meet the rigid weight and dimension requirements of the Association, which are the same as those set forth in the Commercial Standards CS-96-41 of the National Bureau of Standards.

Lead plumbing in these homes is not only providing long-lived sanitary safety, but is doing it with the least critical metal suitable for the purpose. Since the supply of lead is, at present, plentiful in comparison with other metals, it is doubly desirable to use it for every purpose for which it is suitable.

Lead Arsenate Slows Spread of Japanese Beetle

SINCE its first appearance in America at Riverton, New Jersey, in 1916, the Japanese beetle has been rapidly spreading along the Atlantic seaboard and is now penetrating far inland in the Middle Atlantic States and South. This pest is a native of Japan, but having left all of its parasites and diseases behind and found climate and food conditions in this country favorable, it has been carrying on a major invasion that the people of its native land could hope to imitate.

The Japanese beetle feeds on both foliage and fruits of many economically important plants and trees. Both Federal and State governments have been active in research and exterminating activities and many thousands of dollars are being spent annually in the effort to control this destructive pest. Certain parasitic diseases have been discovered which show promise of effectively reducing the beetle population, but until these can be produced in sufficient quantities, farmers in infested or threatened areas can retard additional spreading

by trapping the adults and poisoning the grubs. Late Fall and early Spring plowing are also effective in destroying the grubs.

Lead arsenate has been found to be effective in destroying the grubs in the ground. The Southern Planter, America's oldest farm paper, states "Valuable sods and lawns can be protected from grubs by treating with lead arsenate, 10 pounds per 1,000 square feet. The chemical can be mixed with water, one pound to two gallons, and sprayed on the sod and washed off the grass before it dries, or mixed with sand, one pound of lead arsenate and ten pounds of sand

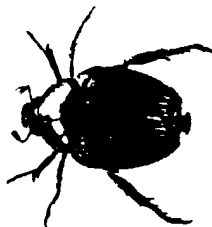
and spread evenly over the sod." This treatment will give protection for five years.

Many insect pests have threatened American farmers in the past and most of them have been brought under control by means of concerted action and cooperation. The Japanese beetle is a menace which every American should endeavor to combat by eliminating it from his own property and cooperating with others of his community in preventing its spread.

Spreading lead arsenate mixed with sand on lawn



Japanese Beetle (Enlarged)



Well Kept Houses Influence Help to Remain on the Farm

NOT many of us realize it, but gum turpentine, used extensively in high grade paints, is a farm crop in certain parts of the South. Turpentine farming, like rubber farming, requires skilled laborers who can tap or "chip" the trees properly without causing killing injuries.

One of the problems of the turpentine farmer is that of keeping a crew of efficient, contented men on the job and working steadily through the long season when the sap of the pine trees is running. The men usually live in "camps" which are really small, permanent settlements with houses provided by the employer. Naturally, the more comfortable and attractive the camps are made, the more satisfied the occupants will be and the less likely they will be to move to other employment.

Taking advantage of this fact, one turpentine farmer in Georgia has instituted a program of camp improvement which includes the painting of the buildings with pure white lead paint. Judge Harley Langdale, who is the world's largest individual producer of gum turpentine and rosin, has always been a firm believer in

top quality paint and its effect on workers' morale. Judge Langdale and his son Harley, Jr. who is in charge of the woodland enterprises, have been deeply impressed by the wide interest in the 4-H Club paint demonstrations which are being co-sponsored by the Lead Industries Association, the American Turpentine Farmers Association Cooperative and the regional lumber manufacturers and they are using this interest to help develop their workmen's pride in their homes and their work.

A painting program was started at Blanton, a camp near Valdosta,

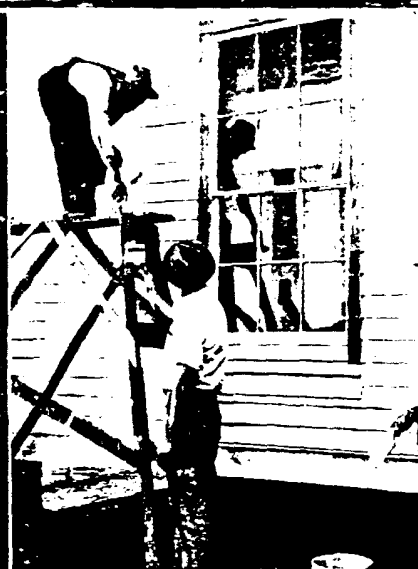
Georgia, and will be extended through all of the Langdale camps and farms. No labor has left the newly painted camps and word has spread through the woods so that others are anxiously waiting the arrival of the painting crew with their brushes, white lead, linseed oil and gum turpentine. Mr. Langdale, Jr. says that the men now living in the painted houses seem to have a new lease on life. "Their attitudes," he says, "are of contentment and pride in their living quarters and themselves."

On all the jobs only pure white lead, linseed oil and gum turpentine are used. The painting crews were pleased with the ease of mixing and application and the owners have found that paints so mixed on the job are economical and satisfactory.

*Top—One of the camp houses, attractive in its new coat of white lead paint
Lower Right—The painters like the way white lead spreads*



Lower Left—Applying the second coat to one of the houses



Government Encourages Established Uses of Lead as Well as Substitutions for Other Metals

THE new War Housing Manual, effective December 12, 1942, issued by the War Production Board contains the Housing Utilities Standards and revised War Housing Critical List. The Utilities Standards, as heretofore, require that water service pipe materials permitted by the Critical List be used. Section 723 of the New Critical List dealing with permitted service pipe materials now reads as follows:

"Pipe and fittings of ferrous metal only to the extent that less critical substitute materials are not commercially available: lead; reinforced concrete; asbestos cement; wood pipe and metal banded; zinc coating permitted or ferrous metal pipe 2" or smaller."

Lead is the only metal listed, other than ferrous metal, which is commonly used for water services and it is less critical than iron and steel. Fortunately lead is a thoroughly time-tested material and sufficient quantities are promptly available. The War Housing Critical List also permits the use of lead for its other essential construction uses, such as soil, waste and vent pipes, calking flashings and paint.

Further evidence of the desirability of using lead wherever it serves satisfactorily or in place of more critical materials is provided by the official War Production Board release issued in connection with its relaxed Lead Order M-38-c in November. This order removes some of the minor restrictions placed on the use of lead early in 1942 so that there are now no restrictions whatsoever on lead for the essential purposes listed in the War Housing Critical List and many other applications.

The WPB said in part, "Lead is the least critical of the important metals. While substantial amounts still are required for stockpiling for unknown military demands, produc-

tion and imports are sufficient to encourage the use of lead where it serves essential functions or where it will replace a more critical material." WPB further stated, "One purpose of this amendment is to permit use of lead where it serves better than other materials inasmuch as the supply has improved since the original order was written. . . . It is also the purpose of this order to encourage the substitution of lead for other more critical materials wherever possible."

The consistency of this WPB attitude is emphasized by the latest list showing relative scarcity of materials issued by WPB's Conservation Division. Here again lead is the only common metal placed in the least critical group, materials available in sufficient quantity to be substituted for others. The situation is also recognized in the latest WPB Iron and Steel Order M-126 which permits the substitution of lead, but no other metal, for iron and steel.

Other Government agencies likewise recognize the condition. The Army Corps of Engineers, for in-

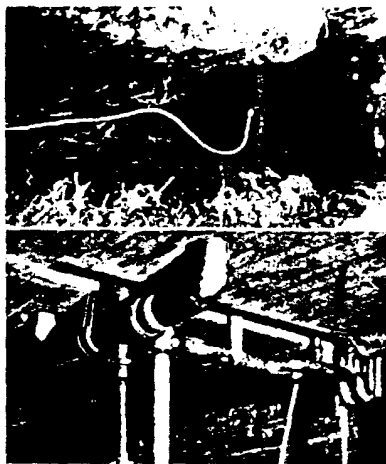
stance, in November sent to its officers a new circular letter dealing with Conservation of Critical Materials. This letter listed critical materials commonly used in construction and placed lead last, least critical, with copper, steel, iron, zinc and other metals all more critical than lead. The letter also devoted a paragraph to lead, which directed attention to the easing of restrictions on lead by the Army and Navy Munitions Board and said that lead may be substituted for any other metal where advantageous and practical to do so. It specifically mentioned that lead may be used for caulking.

These developments are important to architects, engineers, contractors and all others who have occasion to specify or use metals at present. A time-tested metal, lead, is at their disposal, in many cases eliminating the need for recourse to untried substitutes. It is possible to continue to paint with red lead, blue lead and white lead and to know that the finest results will be obtained from such painting. Lead water service, soil, waste and vent pipes, traps, bends, shower pans and flashing can all be used with the knowledge that the resulting installation will be of fine quality. Advantage may also be taken of the new hard lead fittings like closet floor flanges and calking ferrules, just announced, to save critical metal. Lead may also be used for flashings.

To some, specifying lead for water service, soil, waste and vent pipe, traps and bends, for example, instead of iron or steel, may not seem to make a worth-while saving, but in a one-family one-story dwelling, these uses would need steel in an amount equal to that required for more than 15 Garand rifles and zinc in an amount equal to that used in six hand grenade fuses. Multiply that by the thousands of dwelling units being constructed and the important savings possible can be realized. This applies to other lead products, too. The beauty of this is that the savings may be made at no sacrifice in quality, often with improved quality.

Uses of lead which conserve other metals

*Upper—Water service pipe
Lower—Waste, traps and bends*



Buy War Savings Bonds and Stamps at your Bank or Postoffice



Two-Coat Painting on New Wood An Old Story to One Hundred Per Cent White Lead Paints

THE two-coat system of exterior painting on new woodwork which has achieved considerable popularity in the past few years is not, by any means, a new discovery. Competent master painters who are familiar with the characteristics of their materials have long known how to make pure white lead paints which will adhere, cover and protect with only a priming and a finish coat. They have used this knowledge in the service of their customers who required durable paint jobs at minimum cost. However, the two-coat paint job differs from the three-coat job both in the paint mixtures and in the manner of application. This is particularly true of the priming coat which must be so formulated and applied that it will both seal and hide the surface and build up a foundation for the finish coat.

The durability of a paint job depends not only on the quality of the materials but also on their formulation and application. In making the primer for a two-coat application, the painter must take into consideration hiding power and film thickness as well as penetration and sealing. The primer must take the place of the usual first and second coats and its consistency must be such that it can be applied heavily without sagging or running and will still dry uniformly clear through to the wood.

Film Thickness Important

It is well to note here that, since the paint film of a first class two-coat job is nearly as thick as that of a three-coat job, there will not be a great difference in the amount of material required. A two-coat job that

saves substantial quantities of material will suffer from lack of proper thickness of the paint film.

Skilful Application

Special attention should be given to the application of a two-coat paint job. Since the first coat must provide both priming and body it must be relatively heavy and special care must be taken that it is applied in uniform thickness over the entire surface. This will require a little more time and labor than the usual priming coat. Although there is less brushing out required, the application should be made in shorter stretches and laid off carefully board by board.

The importance of uniformity in application is realized when one considers the behavior of paint exposed to weather. Due to the attacks of weather, good paint wears down slowly by a "chalking" or powdering process. This is a perfectly natural and proper process and one of the desirable characteristics of white lead paint. It results in the slow gradual reduction in thickness of the paint film but causes accumulated dirt to slough off and maintains a clean and bright appearance. This "chalking" takes place uniformly over the entire painted surface. If the paint film is uniform in thickness, well and good, but if there are thin spots here and there, bare wood may be exposed at the thinly covered areas while the remainder of the surface is still in excellent condition. However, water entering the wood so exposed can cause failure of the surrounding paint which would otherwise last considerably longer.

The application of paint by hand

is not quite as simple an operation as it looks. This is especially true if the paint is heavy in body. A skilled mechanic can estimate the amount of material he is depositing as he goes and can keep the thickness of paint film uniform over the entire area. Skillful and careful application of the first coat of a two-coat white lead paint job may add an extra year, or perhaps even two years, to its life.

Labor Savings Overrated

There is naturally less labor required for the application of two coats of paint than there is for three coats, but this does not mean that there is only two-thirds as much. Of course, one third of the brush work is eliminated, ladders and staging need to be placed only twice instead of three times, but there are certain fixed costs of preparation, protection, transportation, etc. which will not vary whether the number of coats of paint is two or five. The extra physical labor required to handle the heavier bodied primer also must be taken into consideration.

Bearing in mind the fact that film thickness of a durable two-coat paint job, and therefore quantity of materials, should approach that of three-coat application, and that especially careful application is important, the buyer of a new paint job should not be too much surprised if the cost of a first-class two-coat white lead paint job closely approaches the cost of the more highly approved three-coat job. Also if, after careful consideration, the application of a two-coat job is deemed advisable, the buyer will make sure that the paints are properly formulated with pure white lead and that they are skilfully applied. There is nothing better than pure white lead paint for either two or three coat application and there is no substitute for good workmanship.



No. 17

Ridgefield, Connecticut City of Tree Shaded Estates



The Elms Inn, Ridgefield, Conn., in operation since 1799. Although this interesting old landmark has not been painted for 12 years, it remains in excellent condition today protected and beautified by pure white lead paint. This building was erected in 1816 and the porches added later.

The Governor George E. Lounsbury House, Ridgefield, Conn. This century old house protected with pure white lead paint was the home of George Lounsbury, Governor of Connecticut 1899-1900 (Built in 1844)



This charming early American Home situated at the corner of Market and Main Streets in Ridgefield, Conn., is typical of the many beautiful old homes to be seen in this New England town. White lead and oil decorates and protects this landmark

STANDING on a site purchased from the Indians in 1708, Ridgefield is located in the heart of one of the most picturesque regions in New England. The town is noted for its beautiful homes, shade trees and spacious lawns, but the citizens are no less proud of the part their ancestors played in the War for Independence.

Like many others in the battle areas, the citizens of Ridgefield were forced to defend their town against the organized troops of the enemy with only such weapons as they could muster in their homes.

The Battle of Ridgefield on April 27, 1777, was the valient attempt of the militia reinforced by the farmers of the neighborhood, to cut off the retreat of the British troops after a raid on the nearby town of Danbury. In this engagement, General Wooster received the wound which resulted in his death.

Many fine old houses in the colonial tradition line the streets of Ridgefield giving evidence of the prosperity and good taste which prevailed in New England in the early days of the Republic. The pride which the owners of these homes have in their houses is evidenced by the excellent condition in which they stand after long years of usefulness. The use of pure white lead paint to help maintain them in such condition is equally a matter of pride with many of their owners who look forward to many more years of pleasant residence.

Hard Lead Calking Ferrule Stands Severe Tests is Adaptable to Welded or Wiped Solder Joints



Hard lead calking ferrule, showing smooth, clean appearance

EXTENDING the list of plumbing specialties that can be made of non-critical material, the latest development is a calking ferrule of hard lead. Like the closet floor flange and the drum trap cover described in a previous issue, the new ferrule will be of value in conserving brass and at the same time maintaining high standards of durability and sanitary safety.

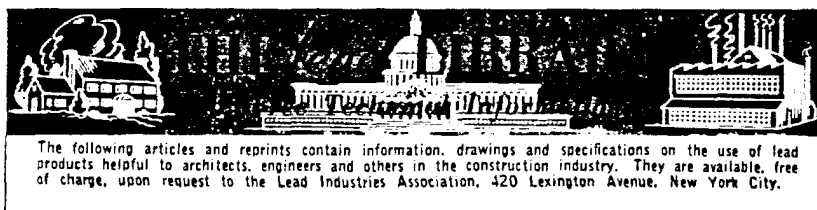
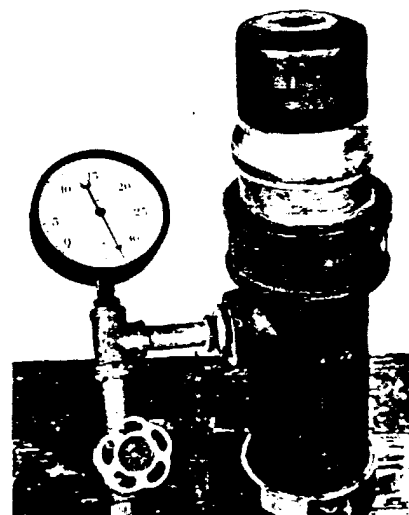
Designed for quick and easy fabrication, the hard lead ferrule has a re-

cess to receive the lead pipe thus providing a continuous inner surface through the pipe and fitting. This recess construction also facilitates setting up the work preparatory to wiping the joint and in addition provides a ready made lap joint ready for welding in cases where this manner of joining pipes is to be used.

The new ferrule may be calked into a cast iron hub with either lead wool or poured lead. Actual tests have shown that it will withstand pressures far in excess of those created in any required inspection tests. It will be made in two, three and four inch sizes and is expected to be available to the trade soon.

This calking ferrule, being of non-critical material, will not be subject to priority restrictions. It is another important step towards the goal of keeping high quality lead plumbing available for current building operations.

Hard lead calking ferrule under hydrostatic test



The following articles and reprints contain information, drawings and specifications on the use of lead products helpful to architects, engineers and others in the construction industry. They are available, free of charge, upon request to the Lead Industries Association, 420 Lexington Avenue, New York City.

PAINTING YOUR HOUSE by Dr. F. L.

Browne, Senior Chemist, Forests Products Laboratory, Madison, Wisc.

A discussion of house painting reprinted from American Forests, May, 1939.

SOME PAINTING PROBLEMS AND THE ANSWERS

By Dr. F. L. Browne, Senior Chemist, Forests Products Laboratory, Madison, Wisc.

Reprinted from the National Real Estate Journal, Sept., 1939.

STAMFORD'S DOUBLE LIFETIME HOME

A complete analysis of hard lead flashing, white lead paint, lead plumbing, plywood and red cedar Certigrade shingle details and installation methods. Reprinted from the American Builder, July, 1939.

BRUSH UP ON YOUR PAINTING

A practical article on the selection and application of paint reprinted from House Beautiful, June, 1941.

DON'T GAMBLE WITH PAINT

An instructive article on the selection of paint for farm use reprinted from the March 1942 issue of Country Gentleman.

WHITE LEAD PAINT FOR DEFENSE HOUSING

Reprint from Bulletin of the Producers' Council including specifications and graphic mixing instructions for exterior and interior White Lead Paint.

HOW LUMBER AND PAINT KEEP YOUR HOME ALWAYS IN STYLE

A brief digest of the advantages of painted lumber homes with color-styling suggestions and other interesting information.

LASTING LEADWORK IN MODERN PLUMBING

By T. N. Thompson, Technical Editor, Plumbing and Heating Journal.

Reprinted from Plumbing and Heating Journal, Feb., 1939.

COMMERCIAL STANDARDS:

Calking Lead, CS94-41
Lead Pipe, CS95-41
Lead Traps and Bends, CS96-41

Official publications by the Government Printing Office of the above Commercial Standards as promulgated by the U. S. Department of Commerce through the National Bureau of Standards, effective June 25, 1941.

NEW SIMPLIFIED STANDARD FOR LEAD TRAPS AND BENDS

File size leaflet with new standards for lead traps and bends as well as existing standards for lead pipe and calking lead, and other informative data.

LEAD PLUMBING FOR DEFENSE HOUSING

Reprint from Bulletin of the Producers' Council including information on the Emergency Plumbing Standards and the Defense Housing Critical List.

SPECIFY **SEAL OF LEAD INDUSTRIES' APPROVAL** MATERIAL

UPON REQUEST, THE LEAD INDUSTRIES ASSOCIATION WILL BE GLAD TO MAIL "LEAD" REGULARLY, FREE OF CHARGE, TO THOSE INTERESTED, AND WILL COOPERATE WITHOUT OBLIGATION IN THE SOLUTION OF YOUR LEAD PROBLEMS