Cast Lead Models Help Teach Our Navy To Indentify Enemy Ships

BECAUSE battles move with lightning speed, tremendous advantage lies with the fighter who first recognizes the units of the enemy's forces and is thus able to strike the first blow. For this reason the American forces are carefully trained to identify enemy equipment from all possible angles of perspective. To accomplish such training, models have been found to be of great value. A model may be viewed from all sides and from all possible angles in rapidly changing perspective and with its accompanying shadow so that a fighter may learn to recognize it from any point of view.

Of great importance is the quick recognition of ships. For training, the United States Navy is now using accurate scale models of the ships of the enemy navies. These models are made in part or entirely of lead alloy, die cast to remarkable accuracy. Several scales are used, some of the larger models having wood hulls with cast lead superstructures. The smaller models are entirely of lead. The fidelity of reproduction shown on these models is remarkable, even to such detail as portholes and windows in the hull and on the bridge of a destroyer small enough to slip into a pocket. In many cases the turrets may be turned so that the ship may be seen as it might appear when engaged in battle.

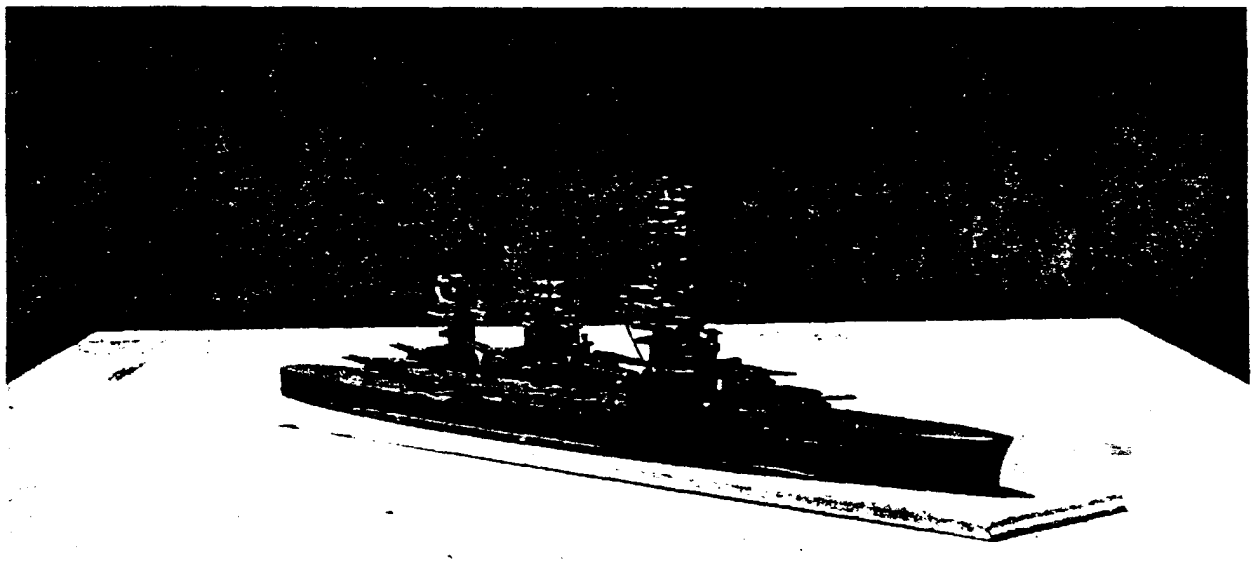
Students are thus able to familiarize themselves with the three dimensional shape of ships instead of having to depend upon printed matter which has been used for many years. In addition, with the aid of a few simple props it is possible to photograph the models to produce realistic pictures of enemy ships under all conditions of light and weather. Thus can be made a graphic record of knowledge which otherwise would take a lifetime of sea duty to acquire.

These cast lead ship models are a development of a widespread hobby which American amateurs have followed for many years, that of building scale models. The hobbyists have, in their effort to produce accurate miniatures, needed fittings and parts which they found difficult or impossible to fabricate. These parts such as turrets, torpedo launchers, cranes, davits, anchors, and even railings made of cast lead alloy have been available for application to their hand made hulls. Now certain manufacturers who previously made such fittings have turned their entire factories to the manufacture of scale models for the armed forces.

In addition to ships and planes, tanks, trucks and other rolling equipment are being made of lead. The lead alloy is sensitive to the mold and is sufficiently rigid to stand considerable rough handling which may be necessary in placing it for the students' observation. Similar uses of cast lead models for peace-time teaching or photographic uses, which will keep this war-developed industry busy when the war has ended, are an interesting possibility.

WAR BONDS
That You Buy
Will Help to
SINK ENEMY SHIPS

A scale model of a Japanese warship, the Fuso, used for training students in ship recognition. This model about 14 in. long is a wood hull with superstructure and fittings of cast lead alloy.



PHOTOS COURTESY OFFICE OF PUBLIC RELATIONS U. S. NAVY DEPT.

LIA25788

All Welded Lead Plumbing Installation In Oklahoma City Housing Project

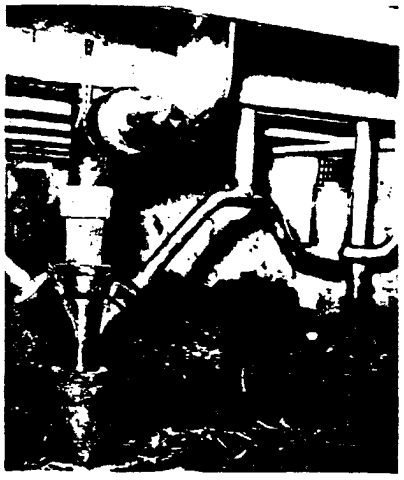
AN outstanding example of resourcefulness and willingness to contribute to the war effort is the plumbing trade's adoption of lead welding as a means of joining lead plumbing pipes. An educational campaign to teach plumbers the craft of lead welding has been quietly conducted for some time and is now bearing fruit in a satisfactory manner.

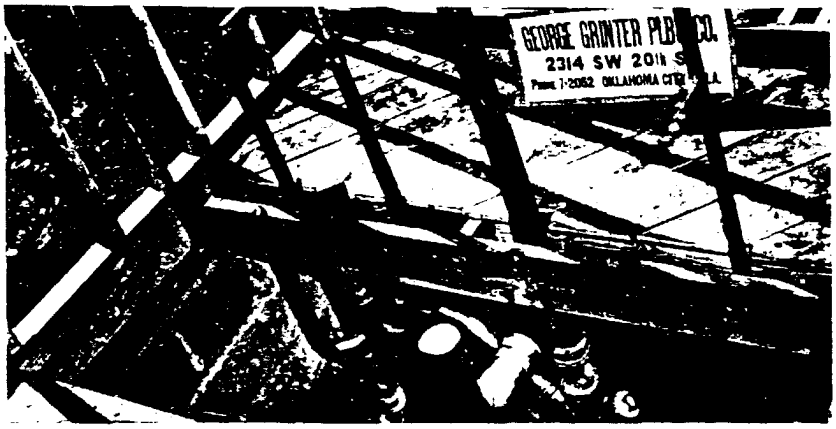
The accompanying photographs show an excellent example of lead work executed entirely by means of lead welding without the use of any wiping solder whatever. This installation in a privately financed low rent housing project in Oklahoma City, Oklahoma, complies with the local plumbing code and the use of lead welding in place of wiped solder joints is a voluntary contribution to the war effort by means of the total elimination of tin from the pipe joints.

The background for this job includes instruction facilities which are typical of many cities throughout the United States. Two classes in lead welding were established in the Oklahoma City Trades School on November 11, 1943, under the sponsorship of Plumbers' Local Union No. 369. Thirty-two students attended night classes 5 hours each week. The effectiveness of the instruction is indicated by the fact that on January 15, 1944, two months after the class was established, a plumbing installation made with lead welded joints was accepted by the plumbing inspector as satisfactory.

While the use of lead-tin solder is allowed by the WPB for plumbing installations the fact remains that tin is a scarce metal. There is every reason to believe that tin supplies for solder will be short for some time after the war is ended while production facilities are being restored. The specification of lead welding on plumbing pipes, whether outright or as an alternate, should be considered by every architect and engineer as a conservation measure and as a means of facilitating the procurement of the materials necessary for construction.

Close up leadwork showing welded joints in detail.





Complete roughing in for one living unit. All joints in leadwork are welded.

Leaded Greases Prove Effective In Improving Wire Rope Lubrication

THOUSANDS of operations in American industry depend in some part on the use of wire rope or hoisting cable. Practically all metals are hoisted from the mines by means of steel cables which for safety's sake are regularly inspected and carefully maintained.

An important feature of wire rope maintenance is lubrication. A hoisting cable is subject to friction, not only from the sheaves over which it passes but from the rubbing of the strands on one another whenever the cable bends. Even the changes in tension which occur with variations in load cause the strands to rub together as the rope stretches. This internal movement is not great but it is none the less sufficient to cause severe wear if lubrication is not provided. The very slightness of the motion adds to the problem because, while it has a tendency to work the lubricant out it is not sufficient to carry a replacing amount in. Thus it is of extreme importance that wire rope be lubricated with a material which is not easily squeezed out from between contact surfaces.

For these reasons a grease loaded with powdered lead has shown excellent results as a lubricant for steel cables. The finely divided lead is carried between the wire strands with the grease when the lubricant is applied. When pressure occurs as the result of bending or tension in the cable the lead is not squeezed out but is compressed into a thin film between the steel surfaces. This film, having its own lubricating properties, will stand

LIA25789

many more recurrances of pressure than will lubricants composed of grease alone.

Two experimental 2800 ft. lengths of 5/8 in. diameter hemp center hoist ropes laid up in the regular lubricant to which 15 per cent, by weight, of lead had been added, showed after two and one half years of active service, excellent retention of lubricant in hemp center, remarkable freedom from deformation of wire strands, a protective film of lead on the strands and great increase in life of cable. Since these experimental ropes were made over 500,000 ft. of wire rope so lubricated in sizes from 5/8 in. to 2 1/2 in. diameter has been put into service in many widespread locations.

In several western metal mines hoist cables lubricated with leaded grease have been in use for some time and are giving excellent service. The film of lead provided by the lead bearing grease not only improves the lubrication but also protects the steel from the humid conditions found in many mines.

The importance of lasting lubrication on steel cables is not confined to mining operations. Any steel cable subjected to continuous bending and variations of tension will be benefited by the film of lubricating lead imparted to it by the application of lead bearing grease.

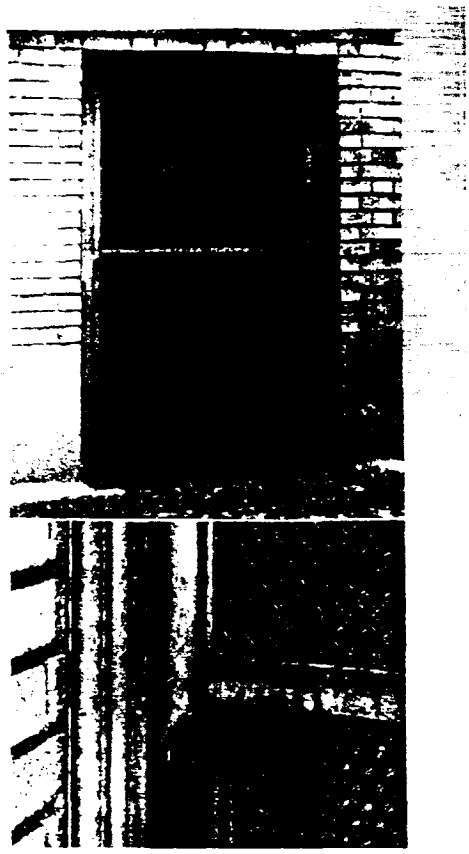
Lead Glazing Strip Replaces Troublesome Putty in Window Sash

IN the designing and building of structures there is one problem which recurs in many different forms, that of making a permanent weatherproof joint between two dissimilar materials. In some cases usage and experience have developed practices which involve the use of a third material as a joining medium and in these cases the permanence of the joint is dependent upon the life of the joining material.

A perfect example of this situation is the setting of glass in window sash. For many years putty has been used for this purpose with only reasonably satisfactory results except where white lead putty was used. There is now, however, a permanent, weatherproof, and flexible joining material which can be easily manipulated to allow the replacement of glass. This material, a lead glazing strip, has been proved successful by many years of service in locations where weather conditions were quite severe. It was made as long ago as 1913 but was sold and used in only a limited area. The performance of this lead glazing strip has been so outstanding that owners of buildings in which it was installed *more than 25 years ago* have insisted on its use on new structures.

Nazareth Academy, Rochester, N. Y., where lead glazing strips installed in 1915 so pleased the owners that they insisted on their use in a recently constructed addition.

ROWE PHOTOS



Ground floor window in Nazareth Academy glazed with lead glazing strips and detail of sash.

The photographs on this page are of the buildings of the Nazareth Academy, Rochester, New York. The original building was built in 1915 and the lead glazing strips installed throughout at that time are still in excellent condition. There are a number of other examples of long trouble free service of this puttyless glazing, some of which will be shown in future issues.

The lead glazing strip is installed by setting it in place in a specially milled groove in the sash, placing the glass and bending the lead down over the glass with a simple hardwood tool no glazing points are needed. In addition to solving the troublesome problem of a weathertight joint between sash and glass the lead glazing strip eliminates the tedious cleaning of glass after painting because the paint needs to be applied only to the lead.

LIA25790

A Rechargeable Pocket Flashlight Battery

THE long desired rechargeable flashlight battery has at last been produced. And it is nothing more sensational than the well known lead-acid storage battery that is a part of so many of the electrical systems which serve us in nearly every moment of our modern lives. The principal reason that this dependable servant which starts our cars, operates our telephones, propels our submarines and does innumerable chores for us every day has not been adapted to flashlight use is that no case had been developed which would retain the acid solution in contact with the lead plates and prevent leakage if the battery were in other than an upright position.

Now, however, the Ideal Commutator Dresser Company of Sycamore, Illinois has produced a lead-acid battery which is perfectly safe from leakage and which will operate in any position. In this battery the plates and separators are so arranged that capillary attraction holds the liquid in its proper place and the space above the plates is provided with an ingenious system of baffles so that, even if the liquid gets shaken to the top, it can not leak out though the battery is inverted.

The lead-acid flashlight battery is easily charged by means of a simple inexpensive charging unit which attaches to any A-C electric outlet. Since a single lead-acid cell produces only 2 v. a special 2-v. lamp is required in place of the 3-v. lamp commonly used with the two cell dry flashlight battery.

This battery will be especially valuable to watchmen, meter readers and similar workers who find a flashlight to be a necessary part of their equipment. It can be placed on charge at the end of the working day and will be fully charged ready for service at the beginning of the next day just as the lead-acid starting battery in an automobile is recharged in the period of operation between necessary starts.

DAYTON SNYDER

Rechargeable lead and flashlight batteries and charger.

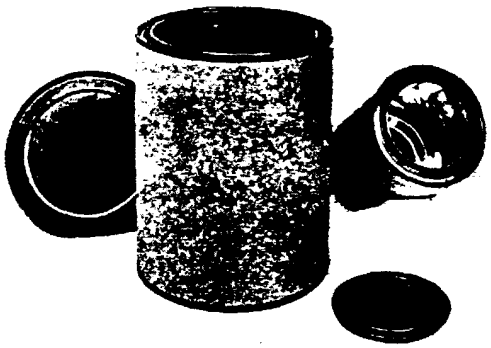
At the present time production of the lead-acid flashlight battery is limited to essential work by scarcity of the materials used for the leak proof case. It is hoped that this obstacle may be removed and since the supply of lead is adequate that this battery will soon be available for purchase generally.

Lead Foil Lining In Fibre Container Solves Liquid Packaging Problem

A SERIOUS problem facing manufacturers of many products today is lack of metal containers. Most dry materials which in the past were packaged in air tight tins can be handled in cardboard boxes or even in paper sacks but liquids such as paints require strong tight containers which are not only leak proof but must be able to stand considerable rough handling.

A solution of this problem is offered in a lead foil lined cylindrical fiber container with metal ends. These "cans" are almost exactly the same shape and size as metal cans of the same capacity. They are made of spirally wrapped fiberboard to which is cemented, with a bituminous adhesive, a thin sheet of lead foil. The top and bottom are of enameled black plate crimped over the lead lined fiber in a strong and leak proof joint.

Lead foil lined fibre containers suitable for many liquid materials.



Lead foil lined can used as a paint container.

The fiber cylinder provides strength to withstand any normal amount of rough handling and it is made impervious to liquid by the lining of lead foil.

This type of can, being the same size as metal cans previously used, does not require any change in labels. It is much lighter in weight than some other types of containers that have been tried and is not subject to breakage.

Lead foil lined fiber containers are suitable for most of the materials for which tin plate cans are commonly used except, of course, foods and substances which must be kept under vacuum or pressure. They can be filled and packaged on the same equipment as is used for metal cans.

LIA25791

Paint Tinting and Color Mixing

THE tinting of paint and the mixing and selection of colors is one of the most interesting details in the execution of a painting project but one that is approached by many architects as well as painters with a certain feeling of dread. This is unfortunate because color mixing is not difficult and it can be a very pleasant experience for anyone familiar with the necessary materials.

Most paint is relatively light in tint and so is made of a white base colored to the desired shade by adding the proper amount of tinting colors. Pure white lead paint is the ideal base for tinted paints both exterior and interior. It responds quickly to the influence of tinting colors to produce almost any conceivable shade except the very deep clear tones known as trim colors which are used for special purposes and usually for finish coat only. In addition, pure white lead paint will provide most of the tinting colors with a maximum degree of resistance to fading.

Color mixing requires a knowledge of tinting colors and their characteristics. Theoretically any tint can be produced by combining the proper proportions of the three primary colors red, yellow and blue. In practice however, unexpected difficulties appear when this method is tried for the reason that the tinting pigments available are not pure colors. For instance the best yellow might contain a little red. A very good blue might also contain some red and if these two were mixed they would probably produce a bronze green or even a muddy brown instead of a bright clear green. A trained eye could perhaps detect the overtones in the tinting colors but other obtainable yellows and blues might have different but equally troublesome overtones.

Fortunately the lack of pure or true colors does not constitute any handicap in mixing tints for paint application. Practically every shade used for decorating is a combination of two or more colors. It is comparatively easy to select the tinting color which will produce approximately the desired shade and then modify the result with very small additions of other suitable colors. A person with a normal eye for color can quickly learn to select the foundation tint for any desired paint color as well as the required modifying colors.

It is not necessary to learn the characteristics of every tinting color on the market. The best practice is to become familiar with a small workable group and expand the knowledge as opportunities permit. A good way to learn what the different tinting colors will do is to mix them experimentally with small quantities of white lead paint on a plate or "palette" of glass. As each tinting color is tried the resulting color in various strengths should be applied to a board with notations of the tinting color, to be used as a reference record. After the straight colors have become familiar, modified shades should be tried and later color matching is a very interesting project.

Probably the most serviceable colors are the "earth colors". French ochre, raw and burnt sienna, and raw and burnt umber. With these pigments can be produced a wide variety of ivory, buff, tan, brown and warm grey tones. The umbers are also used to darken or grey tints which are too sharp or bright. Lampblack is also used for this purpose as well as for producing cool grey tones. The earth colors are the most nearly permanent of all tinting colors.

The chrome yellows (lemon, medium and orange), will produce cream, ivory, yellow, peach and orange tints.

A wide range of greens from yellow green to blue green are obtained with chrome green (light, medium and dark) and chromium oxide green.

Prussian blue, cobalt blue and ultramarine blue are the commonly used blue colors.

Reds are used mostly to modify other colors although occasional strikingly effective examples of predominating red shades are seen. English vermillion, rose red, venetian red and indian red provide a useful range of the red colors.

Tinting colors vary considerably in strength. Lampblack and prussian blue are both very strong colors. The chrome yellows and chrome greens are also very strong in their chemically pure state. French ochre has probably the lowest tinting power. It is wise to use only the best tinting colors since any difference in cost will be largely offset by the greater tinting strength of the better color. Cheaper colors will probably be less permanent and in some cases will be muddy instead of clear bright tints.

The above suggestions cover the beginnings of paint tinting, that is, becoming familiar with tinting colors and their effects when mixed with white lead paint. The importance of experimentation and observation cannot be overemphasized. Only by this means can the ability to choose the right tinting color be developed. It is intended to carry this discussion further in a future issue to cover the procedure of tinting working batches of paint.

For experiments with color the qualities of durability and permanence possessed by pure white lead paint are not essential but its responsiveness to tinting colors makes it a most desireable medium for even this transient use. The easy workability of pure white lead paint is helpful no matter how small the quantity used.

WORTH NOTING

LEAD IN CAST IRON—U. S. Patent No. 2,340,854 covers a method of producing malleable cast iron by the use of up to 1 per cent lead in the mixture. It is claimed that such cast iron can replace more expensive steel in many instance and can be used where ordinary cast iron would be too brittle. Assigned to Crane Co.

VIBRATION ISOLATION — Time Saver Standards, Architectural Record, December, 1943, detail lead-asbestos anti-vibration pads for use in building column footings in railroad stations or other structures subject to vibration. Similar pads were described in past issues of Lead.

FERROUS SULFATE EQUIPMENT — Chemical Industries, January, 1944, page 70, has an article "Manufacture of Ferrous Sulfate" describing among other things, the use of lead lined reaction vessels, settling tanks and crystallizers in this process to resist corrosion. The use of ferrous sulfate as a coagulant in water purification is said to have expanded greatly.

LIA25792

No. 24

Historic Houses Of Portsmouth N. H.

IN 1610, only ten years after the landing of the Pilgrims on Plymouth rock, a group of settlers headed by one John Mason sailed into the beautiful inlet now known as Portsmouth Harbor and established the first community in what is now New Hampshire.

For two hundred years Portsmouth increased in size and importance and for a while showed promise of rivaling New York commercially. The coming of steam and iron hulled ships changed the trend of development but while Portsmouth is not a great commercial center it is a city of great importance to the nation. It has been a naval base since early in this nation's history and many famous ships and men in the past as well as the present have called Portsmouth their home port.

There is preserved in Portsmouth an unusually complete community of the fine old 18th century houses which marked the prosperous towns of early America. Their architectural beauty is treasured by their owners with the same veneration as is extended to the exquisite furniture, the Copley portraits, and fine silver and china many of them shelter. As the silver is polished regularly so is the white lead paint protection renewed whenever the ravages of weather begins to make it look a little shabby. Portsmouth people are no less proud of their architectural heritage than of the history of their city.

The Baird-Dwight house built in 1803. The trim New England neatness emphasized by its pure white lead paint compensates for the lack of garden entourage.

The Governor Langdon House built in 1784 is still owned and occupied by decendants of that patriot who pledged all of his money and a warehouse full of rum to provide arms for Starks Continentals. It is today painted with pure white lead paint.

The Jacob Wendell house built by Jeremiah Hill in 1789 has an unusual decorative detail of a whale oil lamp in the entrance pediment repeated on the dormers. These carvings are clear and sharp under their protection of pure white lead paint.

DAYTON SNYDER

THIS IS NO. 24 OF A SERIES REPRESENTATIVE OF THE MANY AMERICAN LANDMARKS IN VARIOUS SECTIONS OF THE COUNTRY THAT ARE PRESERVED FOR THE FUTURE WITH PURE WHITE LEAD AND OIL PAINT. MANY OF THEM HAVE ALWAYS BEEN PROTECTED WITH THIS RELIABLE MATERIAL ACCORDING TO AVAILABLE RECORDS.

LIA25793

Lead Coating Used on Foundry Chaplets

THE use of lead alloy as a corrosion resisting coating material on iron and steel objects is constantly expanding into wider fields of usefulness. One of the latest applications of this material is to foundry chaplets.

Chaplets are small metallic supports used to hold in place the previously prepared cores which are placed in the sand molds used for making metal castings. Since chaplets bridge the space between the mold and the core, they will of course be immersed in molten metal when the mold is run and will melt and become part of the finished casting. Therefore it is necessary that chaplets be clean and free from rust or scale which might cause the occurrence of imperfections or defects in the finished casting.

Lead alloy coatings which have proved to be effective in preventing the rusting of iron and steel objects and sheet metal, are now being used on foundry chaplets which were formerly coated with tin. This change from tin to lead alloy will save appreciable quantities of tin for essential war and food industry uses without reducing the effectiveness of the protection afforded to the castings from oxide inclusions.

The chaplets shown in the photograph were made by the Angell Nail & Chaplet Co. of Cleveland, Ohio. Lead alloy coated chaplets have proved to be entirely satisfactory and there is no reason why lead should not have been used years ago for this application. This is merely another case where the pressure of war has brought about a readjustment of manufacturing processes and the introduction of new methods which have every prospect of being permanent.

Foundry Chaplets lead coated for protection against rust.

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 17, N. Y.

PROPERTY PROTECTION WITH WHITE LEAD PAINT
A 28 page booklet on the protective value, durability and beauty of pure white lead paint with quantity estimating tables, formulas and mixing and tinting instructions for exterior and interior use.

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 detail- and installation methods. Reprinted from the American Builder, July, 1939.

STOP DEMON RUST
Leaflet giving concise, simple instructions in the use of the rust preventing qualities of Red Lead Paint in protecting farm machinery.

SUMMARY OF NOTES ON LEAD ROOFING
A brief description of the uses of lead for roofing and flashing purposes and the proper practices of its application. Reprinted from "Sheet Metal Worker".

LASTING LEADWORK IN MODERN PLUMBING
By T. N. Thompson, Technical Editor, Plumbing and Heating Journal.
Reprinted from Plumbing and Heating Journal, Feb., 1939.

LEAD EQUIPMENT USED IN INDUSTRY
By F. E. Wormser, Secretary of Lead Industries Association
A summary of the uses of lead in the production and handling of corrosive chemicals. Reprinted from "Metal Progress" to be included in the next edition of "American Society of Metals Handbook."

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.

COMMERCIAL STANDARDS:
Calking Lead, CS91-41
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.

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.

NEW LEAD COATING PROCESS ELIMINATES USE OF ZINC ALLOYS
By W. Yonkman, Engineer, Western Electric Co.
A description of a successful hot dip lead coating process with complete instructions for changing over from hot dip galvanizing using the same equipment. Reprinted from Products Engineering, May, 1943.

PAINTING LEAD COATED SHEETS

In our last issue an article on the painting of lead coated steel sheets called attention to the fact that lead is receptive to paint and holds it well without the use of special surface preparation or treatment.

This should not be taken to mean that the precaution of cleaning customary before any painting operation should be omitted.

Some manufacturers of lead coated sheets are now finishing their product with an oil wipe which leaves a film of grease on the surface. Any such grease must be removed by washing with mineral spirits or other solvent so that the paint may be brushed directly onto the natural surface of the lead.

The lead surface has excellent paint retaining qualities and does not require weathering or treatement with chemical washes before being painted.

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

PRINTED IN U. S. A.
BY PUBLISHERS PRINTING COMPANY
NEW YORK CITY

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