

LEAD

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HIGHLIGHTS

- An engineer of the water department in America's largest city tells of the excellent performance of calking lead and lead services in New York.
- A few actual examples of the great durability of lead pipe in service in different parts of the country are cited.
- This month's Portfolio of American Landmarks is devoted to one of the loveliest mansions in old Natchez, Miss., painted inside and out with white lead.
- A famous old Massachusetts church gets its periodic freshening up with white lead paint.
- Large private real estate developers find lead plumbing and white lead paint fit well into mass production of houses.
- A commercial photographer gets fine service from lead-lined wash and waste and hypo tanks.

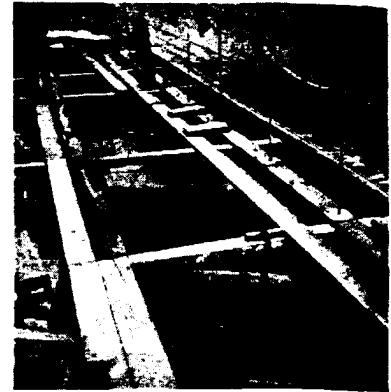
Pouring and calking lead joints in a 20-in. cast-iron water main in New York City, forming a part of New York's great distribution system of 5,000 miles of cast-iron mains with lead joints, and thousands of lead water services



DAYTON SN



Two views of a 60-in. cast-iron water main with lead joints in New York City installed in 1850. Despite its 91 years of continuous service no trouble with either pipe or joints has been recorded. Pictures were taken when the main was recently relocated slightly



Calking Lead and Lead Services Have Fine Record in New York City

CONFRONTED, especially in the Borough of Manhattan, with one of the most complex systems of sub-surface structures of any municipality in the world, New York City has long relied on lead-calked cast-iron water mains as well as lead services as embodying the utmost in dependability and long life.

The construction and maintenance of the water distribution system of New York City has required expert engineering to overcome the many problems encountered in this city. When a new main is to be laid, the city water department must ascertain how long the water may be permitted to be shut down in any given block, this time usually being limited by the commercial interests which depend on water to keep their businesses operating. Traffic must be kept moving. When the trench is dug, it often discloses a multitude of other utilities, all of which must be identified. Among these may be gas mains, sewer mains, pneumatic

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mail tubes, ducts carrying high and low tension power lines, telephone and telegraph lines, and subway and railroad tunnels. The water mains must either be routed around these other services or the services themselves relocated. During this process, great care is taken not to disturb the surface or elevated railway structures or adjacent service installations of utilities.

Because of these many problems associated with the laying of water mains and the necessarily high cost of such operations, every effort is expended to make the work as nearly permanent as possible. All operations are under the constant supervision of a water department inspector. Materials used are selected for their ability to give trouble-free service for many decades without further attention. The consistent use of lead for calking cast-iron mains and for services during the last century has

demonstrated the superiority of this material. A noteworthy example is a 60 in. main laid in 1850, which during its 91 years of service to the city, has shown no record of a single failure, either of the cast-iron pipe itself or of its lead calked joints.

The Department engineer in charge of construction for the Borough of Manhattan, made the following comments during a recent interview on the experiences of the New York City Department of Water Supply, Gas and Electricity:

"We have a number of problems that are peculiar to this city and which must be carefully considered at all times. Manhattan is being constantly rebuilt underground as well as on the surface and all possible care is exercised to protect our water mains against any undue disturbances. The flexibility of the lead-calked joints in cast-iron mains takes care, to a considerable extent, of any movement of these mains without dangerously



Pouring and calking lead joints in some of New York's 48-in. cast-iron mains. The center view gives an idea of the complexity of New York's underground system



stressing the pipe itself. This same flexibility of lead protects the joints against the damaging effects of vibration which may be transmitted to the pipe from heavy overhead traffic. In a like manner, lead services easily stand up under vibration or shifts in the sub-structure.

"Lead-calked joints in cast-iron mains and lead services give us little or no trouble. We have 5,000 miles of cast-iron mains representing about 98 per cent of our water distribution system; connected to these mains are many thousands of lead services. It is remarkable how few failures of either lead joints or lead services are found.

"Every joint poured is supervised by a Department Inspector on the job.



Lead connections joining old lead services at left to a new main in New York. Note goose-necks to provide for movement

High pressure mains are tested to 450 lb., low pressure mains to 125 lb. hydro-static pressure. When we close the trench, we feel assured that the mains, short of unavoidable accidents, will need no further attention for decades to come."

All calking lead and lead service pipe purchases by the city of New York conform to rigid specifications which are identical in substance with the Lead Industries Association Standards for these materials. They are also in conformity with the new Commercial Standards promulgated by the United States Department of Commerce through the National Bureau of Standards, just announced, which become effective June 25.

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Lead Pipe 50 to 100 Years in Service

A FIFTY-ONE-YEAR-OLD lead water service pipe, 52-year-old lead water, waste pipe and fittings, and lead waste pipe between 75 and 100 years old—these are only a few scattered examples of the permanence of lead. None of these have come to light because they outlived their usefulness; all are in perfect condition after all those years of service; all had high salvage value and had performed without maintenance expense.

The first of these is a lead service pipe installed in 1890 in Philadelphia, the date being established by the permit in the possession of the Water Bureau. This service was 28 ft. long with an inside diameter of $\frac{1}{2}$ in. In the words of Joseph J. Quindlen, the

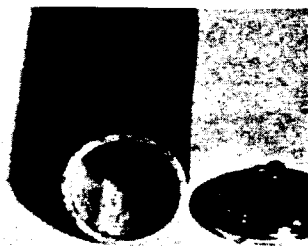
plumber who removed it, it "is in as good condition as it was when it was installed; the only reason we took it out was the ferrule was stopped up." Service pipe is subjected to difficult conditions including soil corrosion, ground movement and traffic vibration, yet this 51-year-old service is typical of thousands of lead pipes in the ground still functioning faultlessly after a half century and even more of constant use.

The second example comes from the old Governor Bushnell residence in Springfield, Ohio. There lead water supplies, waste pipes and traps which were installed in 1888, were found in such perfect condition in 1940 when the building was remodeled that none

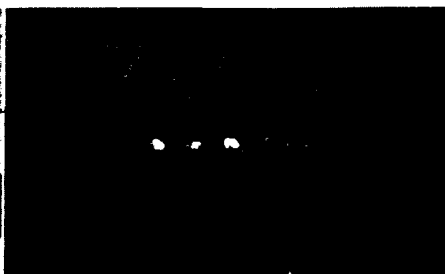
was removed except where structural changes made it necessary. Most of the original lead was therefore left in place by the Victor Plumbing Co., doing the plumbing remodeling, to continue its useful work for years to come.

The third example, unearthed by Chief Plumbing Inspector James R. Walker of Waterbury, Conn., is lead waste pipe recently removed from a nearby farm house where it was installed between 75 and 100 years ago. The information comes from the present 82-year-old owner of the house who states that his grandfather had the installation made. This pipe, too, was in perfect condition.

What better recommendation could any material have for buried service pipe and concealed plumbing than such countless records of reliable, permanent performance of lead.



Lead waste pipe between 75 and 100 years old recently removed from a Waterbury farm house



Pieces of lead service pipe in perfect condition after 51 years of continuous use in Philadelphia



Perfectly preserved lead water and waste pipe in use 52 years in a Springfield, Ohio, residence



No. 8

THE southern tradition of gracious living which was so completely a part of the Ante-Bellum South has been preserved through the years by the romantic charm of the beautiful and stately mansions which still stand there today.

Visitors in the south frequently find in Natchez, Miss., the embodiment of this romantic atmosphere. Much credit is due the Natchez Garden Club for the preservation of the traditions of this country by the organization in 1932 of the Annual Natchez Pilgrimage, which next year will throw the doors of some twenty beautiful Natchez homes open to visitors between March 20 and April 6.

Of the many fine examples of ante-bellum architecture to be seen on this Pilgrimage, Melrose is considered to be the most outstanding and the best preserved. Built in 1845, the excellent condition of this mansion today is a silent endorsement of the pure white lead paint which has protected it in the past and which now protects and preserves both exterior and interior for the admiration of future generations.

Melrose, A Gracious Ante-Bellum Mansion



Melrose, in Natchez, Miss., built in 1845, is a perfect example of the stately mansions of the old South and one of the best preserved of the ante-bellum homes. It is fronted by a classic portico upheld by huge columns, smaller copies of which frame the doorways. Pure white lead and oil protects this beautiful landmark

The dining room at Melrose has the great punka or fan suspended from the ceiling, kept in motion during meals by slaves or servants pulling on a long silken rope. In this room and the rest of the interior, pure white lead paint, either white or tinted to pleasing shades, gives lasting decoration

PHOTOS COURTESY NATCHEZ GARDEN CLUB



Rear of Melrose, which is one of the few mansions still following the old custom of housing kitchen and servants' quarters in a separate building. at right. White lead is used on both structures



The front drawing room of Melrose, containing many relics of the old South, is, like the rest of the interiors, painted with pure white lead

THIS IS NO. 8 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.

A Historic New England Church Gets A New Dress of Pure White Lead



The lovely 121-year old First Church of Christ, Springfield, Mass., has just received another freshening with pure white lead paint, so well able to aid in the preservation of this historic edifice



Painters applying white lead to the side of the church, using long extension ladders



Swinging boatswain's chairs were used to apply white lead to the lofty steeple



Painting the imposing front with pure white lead paint, working from extension ladders

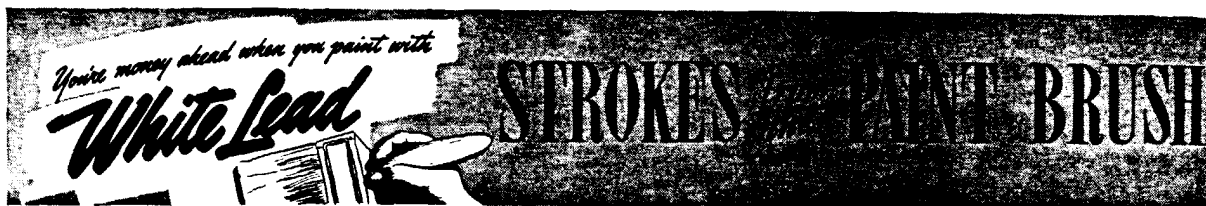
"O NCE more a fresh coat of white has been applied to the Meeting House. One can hardly view it from across the square at such a time without a feeling of love and veneration for the old church as it stands with its new dress, the symbol of light and purity."

Quoted above are the opening lines in the booklet published by the First Church of Christ of Springfield, Mass., to celebrate its three hundredth Anniversary in 1937. This spring the 121-year old church has another fresh coat of paint; and this time, as it was last time, the paint used is pure white lead and oil.

Organized in 1637, the First Church of Christ has literally grown up with the city of Springfield. The present church building is the fourth that has stood proudly on Court Square which now is surrounded by commercial and governmental buildings. Occupying such a prominent location in the center of Springfield makes it even more important that this church be painted with not only a durable material but also one which will never fail by unsightly cracking or scaling. The pure white lead paint which has been used in the past more than adequately fulfilled these requirements. The white lead and oil which has been applied this spring will serve the church in the same trustworthy manner that has characterized this material for centuries.

The painting of a church of this size involves more than the ordinary amount of skill and experience. All painting of the sides was done by means of long extension ladders; the steeple, which extends to a great height, was painted from swinging boatswain's chairs. All paint was mixed and applied by a crew of five men working under Vining & Borrner, painting contractors of Springfield. This historic building might well have been included in our "American Landmark" series, but the present painting seemed to warrant special attention.

PHOTOS BY
STANDARD PHOTO SERVICE



Painting By The Sea

THE belief that paint of some special or "doctored" formula is required in the vicinity of salt water is usually based on some misconception as to the limitations of a paint film. Most common is the failure to recognize paint as a temporary coating, the durability of which bears a direct relationship to climatic and other environmental conditions. Consequently, with weathering at the seashore being more severe in many respects than that experienced elsewhere, it is to be expected that even the most weather-resistant paint should prove less durable than when exposed to a milder climate.

Conditions Not Different, but More Intense

Probably the major error in the reasoning of those who believe paint of regular formulation inadequate near salt water is that the climate is not only exceptionally severe but unusual factors are involved as well. Granted temperatures go to extremes, humidity fluctuates widely, fogs are frequent and storms heavy, but these elements are also met with, to a greater or lesser degree, wherever paint is applied. Taken in combination with the sun's rays intensified by water and beach reflection, they do represent a severe test, but, chemically speaking, they do not present any unusual problems requiring special solution. In other words, the pure white lead paint which has proven the most durable decorative treatment in Arizona and Iowa likewise is the most effective coating at the seashore, there being few localities from coast to coast which, during the course of the year, fail to run the gauntlet of a wide variety of climatic conditions.

One of the fallacies of the arguments of those who believe the weathering of a seashore environment to be

unusual rather than merely exceptionally severe, is that so-called "salt water", or rather salt in the air, has an adverse reaction on an oil paint film. Science disproves this theory because the fog and precipitation resulting from the evaporation of salt water contains no salt, only fresh water entering the atmosphere. Where salt water or spray may come in contact with a painted surface, as in the case of docks, boat houses, beach cottages, etc., there is, naturally, some acceleration in the breakdown of paint films. However, washing away of the film is not excessive if the pigment in the paint is basic carbonate of white lead, because it is not only insoluble in water but highly resistant to the action of salt solutions as well. But, science aside, it is only logical that the same white lead paint which is used extensively for the protection of all marine craft, from ocean liners down to rowboats, should prove adequately resistant to occasional wetting by waves and spray.

Actinic Rays of Sun Most Destructive

Contrary to popular belief, the actinic rays of the sun are probably the most destructive element to paint in a marine environment. Failure is particularly rapid in paints containing considerable quantities of extender pigments, i.e., chalk, sand, barytes, which become transparent in linseed oil, allowing destructive actinic rays to penetrate the film, greatly reducing its durability. On the other hand, white lead is opaque in linseed oil, and paint composed of this most durable pigment is not only resistant to actinic forces, but the resulting firm and elastic film is sufficiently pliable, as well, to withstand surface movements due to changes in temperature and surface moisture conditions. This type of paint film is able to stand more abuse than any other.

Slight Formula Adjustments

Although painting should never be attempted during periods of fog or excessive humidity, paint is readily applied during what might be termed normal "sticky" weather at the seashore with but slight formula variations necessitated by the exceptional climatic conditions. A slight reduction in the usual linseed oil content will harden the paint, the better to withstand a moist environment, while an increase in liquid drier expedites the setting-up of the paint film. This reduction in oil should never exceed 10 per cent from that contained in the standard formula for the surface to be decorated, while as much as a quart of drier can be added per gallon without reducing the durability of white lead paint. To maintain brushing consistency, one-half as much turpentine should be added to the mix as the linseed oil deleted. Only local experimentation can determine the optimum variations under specific conditions.

Although even these changes from standard formulas are frequently considered unnecessary near salt water, extra care as to application is essential at all times. When frequent periods of fog or excessive humidity result in "sticky" weather, the poor drying conditions necessitate an extended period between coats to assure the firm setting-up of a paint film. Many a failure blamed on paint formulation is, really, the result of faulty application.

COMMERCIAL STANDARDS

As this issue of LEAD goes to press, announcement has been received of the new Commercial Standards for Lead Pipe, Traps and Bends, and Calking Lead promulgated by the Department of Commerce through the National Bureau of Standards. Full particulars may be obtained from the Bureau in Washington or this Association, and the next issue of LEAD will carry the complete story.



Two views of some of the houses in the Hartford developments. All are painted with pure white lead paint and have lead waste pipe and fittings in the plumbing as shown below

PHOTOS BY
WYCKOFF MILLS



Lead Plumbing and Paint Well Suited to Large Private Developments

WHILE government financed housing has been in the spotlight so much of late, private builders are moving ahead apace to do their share in providing much needed homes for defense workers and others at costs within their means. This is particularly noticeable in such defense manufacturing centers as Hartford, Conn. There are several good examples in Hartford, such as Hillside homes, a development of 70 houses already completed by John Howard Payne Homes, Inc., and Saybrooke Manor, consisting of 64 homes in the \$5,000 to \$6,500 price class now under construction by Lifetime Homes, Inc. "Lifetime Homes," incidentally, is an aptly applied name as exemplified by the plumbing, which employs durable lead bends, lead drum traps, lead waste pipe for tubs and lavatories, and lead roof flashings. Lead is similarly used in the plumbing in Hillside Homes. The houses in both developments are

painted with pure white lead and oil. These projects are both developments of N. K. Winston & Co. of New York, which plans further projects as land can be acquired.

The developer states that finer homes are being provided at lower cost by use of "assembly-line" production methods. He says, "These are the same methods employed in huge automobile factories, where raw ma-

SEAL OF
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terials are purchased in vast quantities, where every step of production has been developed scientifically to assure maximum efficiency at minimum cost." He further mentions the "specially trained crews of craftsmen" who do the construction.

It is interesting to note how well lead in the hands of plumbing craftsmen, adapts itself to these methods because most lead work is done in the

shop under the best working conditions where it can be planned to flow smoothly through the shop in any kind of weather without interruption. Lead is unique among plumbing materials in that respect.

White lead, too, adapts itself admirably to these methods. Instead of purchasing small amounts of a number of different kinds and colors of paint, a large amount of one product, white lead, can be bought and mixed for the various purposes and conditions and tinted to the desired colors. Furthermore white lead, properly mixed, may be used satisfactorily for all kinds of painting conditions such as winter painting when necessary (LEAD, Nov., 1940), or painting along the seacoast (pg. 6, this issue).

Plumbing in both Hillside Homes and Saybrooke Manor is being done by Austin J. Burrows. Hartford plumbing contractor. The painting contractor is Connecticut Painting Co. of Hartford.



At left, the plumber is preparing and wiping up the lead waste pipe, traps and bends, so they can be installed, as shown at right, with no wiped joints having to be made in place. This results in fast, efficient work

Lead-Lined Sinks Function Well in Commercial Photographic Laboratory

LEAD is an extremely useful material for handling photographic solutions both in the commercial photographic laboratory and in the amateur's private dark room. Materials coming in contact with these solutions must be resistant to attack by the solutions, many of which are corrosive, so that they will have long useful lives and so that they will not contaminate the solutions and spoil the pictures. They must also be adaptable in many cases to widely varying construction conditions and must be reasonable in cost.

Readers will be interested to know that the many excellent photographs taken by Dayton Snyder of Stamford, Conn., appearing in this and other issues of LEAD, have emerged from the

depths of lead-lined tanks. In Mr. Snyder's laboratory are two tanks lined with sheet lead, each tank being 36 in. long, 24 in. wide and 5 in. deep. The tanks are wood into which the lead lining, with "burned" joints, has been set. There are cooling and heating coils in the bottom of each tank. One tank is a wash and waste tank, while the other is for acid hardener hypo containing glacial acetic acid and alum.

These lead tanks have been in constant use for over three years and are in perfect condition today. Mr. Snyder has pointed out that in his 20 years as a professional photographer he has never had tanks so suitable as these lined with lead although he has tried a great many materials.



DAYTON SNYDER

Lead-lined wash and waste tank, left, and hypo tank in photographer Dayton Snyder's laboratory at Stamford, Conn., after more than three years of use

In these days of wide use of photography, where equipment is installed under many different conditions, lead is extremely useful because it may be so easily fabricated to fit varying construction requirements. Thus size, shape and other factors are no obstacle where lead is used.



THE *Lead* LIBRARY

of Free Technical Information

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.

WHAT TO EXPECT FROM WHITE LEAD PAINT

An attractive 28-page booklet with charts, formulas, and mixing instructions covering some of the problems of painting and how white lead meets these problems.

PAINTING YOUR HOME 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.

SHEET LEAD INSTALLATION DETAILS

A detailed analysis of the principles and application of lead flashing and sheet lead work for small homes. Reprinted from Sheet Metal Worker, June, 1939.

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

*BRUSH UP ON YOUR PAINTING

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

LASTING LEADWORK IN MODERN PLUMBING

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

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

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.

LEAD CHIMNEY CAPS

Notes on the installation and advantages of lead chimney-cap protection, reprinted from American Artisan, May, 1940.

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.

* Not previously listed.