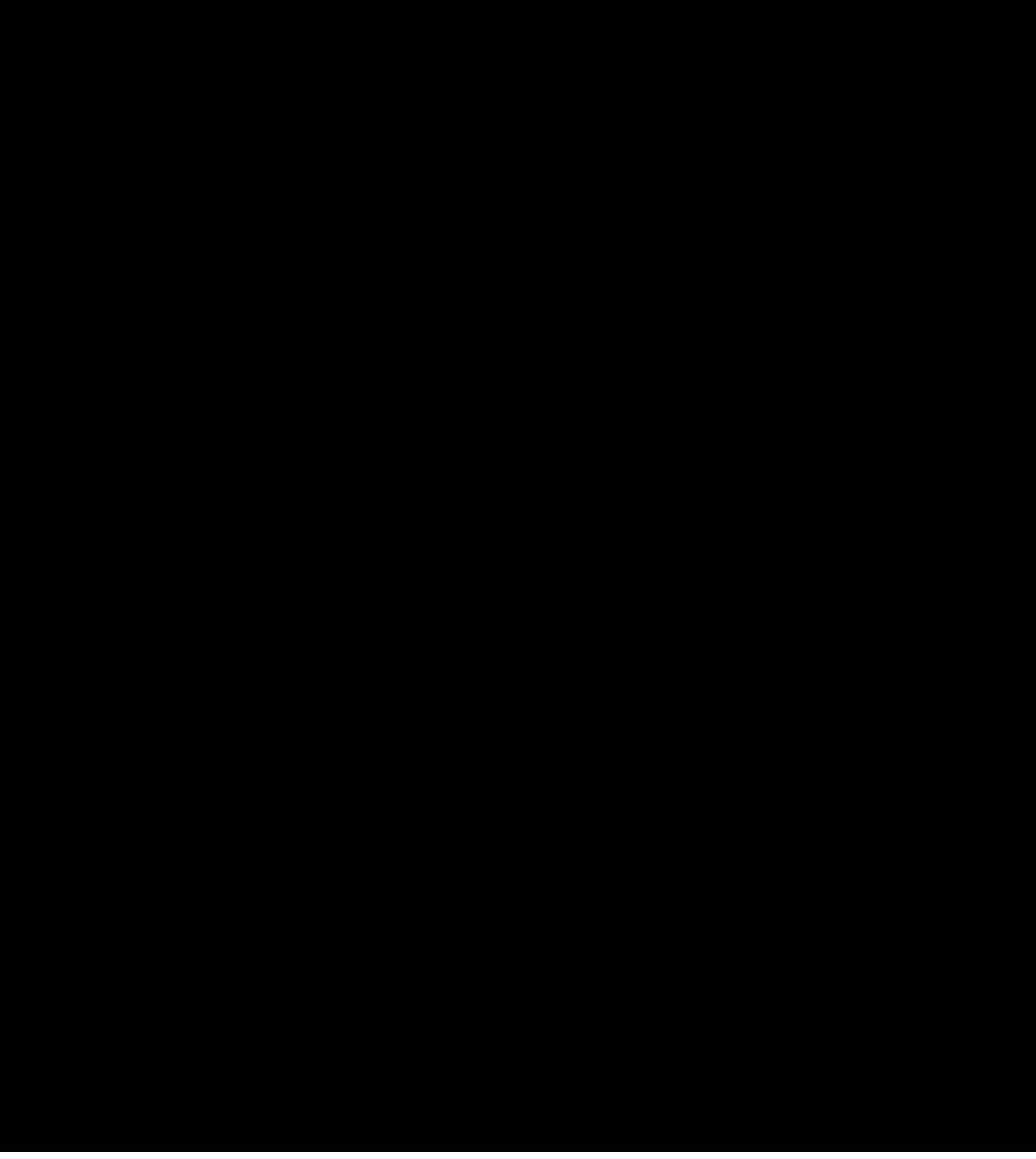
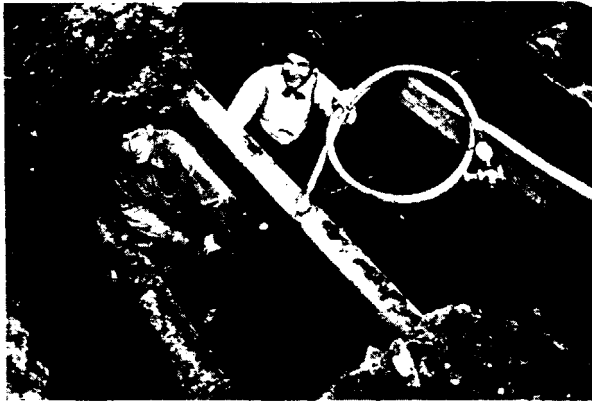




Lead Services Standard in Large New York Cities



Installing a lead service pipe in Schenectady, N. Y. Note the fittings which were welded to the pipe in the shop, saving time on the job

INDUSTRY and thrift are well known attributes of the people who live in New York State's rich Hudson and Mohawk River valleys. Where these two valleys join in the vicinity of Albany, Schenectady, and Amsterdam it is only to be expected that lead service pipe is used in abundance. In fact in all three of these cities all small services must be lead, serving a population of some 300,000 people.

In Albany, capital of the state of New York, the Rules and Regula-

tions of the Water Department exact the installation of AA(XS) lead pipe from the tap to the house. It is required to be installed by a master plumber for the entire distance.

Schenectady, too, just a few miles from Albany and famous as the home of General Electric and other great industries, uses all lead services from main to curb. Here, likewise, they are

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

installed by licensed master plumbers.

In Amsterdam, noted for its carpet mills, the situation is a little different, but lead is used just the same for all services under 2 in. in diameter. Here, however, the requirement is made by the plumbing code, which provides for AAA(XXS) lead from main to house installed by master plumbers.

In all three of these cities, because of the cold winters in the locality, it is necessary to bury the services at considerable depth to avoid freezing. Thus the added expense of deep excavations to make repairs or replacements makes the durability of lead doubly desirable. Likewise, if freezing does happen to occur, lead can stand a certain amount without bursting and can be easily thawed electrically because of its high resistance.

These features are in addition to the well known durable metal, thick walls, flexibility, non-clogging, and non-staining of lead service pipe, all of which combine to give it extremely long life and low cost over a period of years.

Famous Home Boasts Centuries-Old Lead Work

LEAD, one of our most important modern construction materials, is unique in the traditional beauty, long life, and service of its applications in the building field. Typical of one phase of this tradition is the Cotswold House at Dearborn, Mich. This house was originally built in England about 1600, and is constructed mainly of



stone. Of predominant interest, however, are its ornamental lead gutters and leaders, which, after over 300 years of service, are still in use today and show no signs of wear. Such excellent condition is but one more example of lead's superior resistance to atmospheric corrosion, and the attractive design of the gutters is a tribute to the craftsmen of those years whose art has been handed down through centuries to the present time. For ornamental work, lead possesses

many advantages. Its pliability allows lead to be formed into many attractive shapes and designs and the silver-gray patina to which lead weathers blends admirably with any type of construction or material. It is important, too, that lead does not stain, for modern architecture places great stress on white or light colored outside walls. This characteristic of non-staining is one of the basic reasons why lead flashing is so popular in modern construction.



The Cotswold home and one of the lead gutters, in service for over 300 years and still in excellent condition

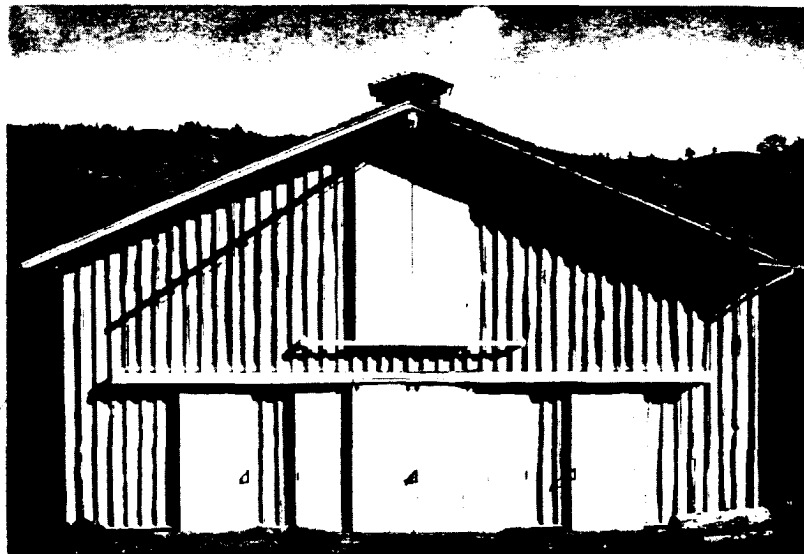
Western Ranch Beautified With Pure White Lead

IN THE heart of the California range country, in Sonoma County, pure white lead and oil paint has helped to provide beauty and protection for the new 9,000-acre ranch of E. L. Walbridge. Included in this ranch group are a spacious, rambling ranch house, a guest house, cottages for the caretaker and chauffeur, a bunk house, barns and a stable. The entire unit was carefully planned by Eldridge T. Spencer, architect, of Spencer, Blanchard & Mayer, San Francisco, Cal., to provide the utmost practicability as well as to blend attractively with the surrounding hills and countryside.

The exteriors of all buildings are of 1 x 12-in. unsurfaced redwood boards with hand-split vertical redwood battens. The interiors are of native pines and wood shingles were used for the roofs. According to the architect, the problems involved in painting the exteriors of the buildings were to obtain a clean, light color on the rough-sawn split redwood boards without filling in too much of the texture; to treat the wood in order to preserve it; and to prevent it from turning dark. To accomplish this, two coats of pure white lead and linseed oil were applied, reduced with turpentine for a flat finish. All surface wood and metal were given four coats of lead and oil.

Regardless of climatic or geographic conditions pure white lead and oil is well suited to any type of surface, and the beauty and durability of white lead paint jobs are unsurpassed.

Views of buildings on the Walbridge ranch in Sonoma County, Cal., Eldridge T. Spencer, architect. Regardless of climate, pure white lead and oil is unsurpassed for paint decoration and protection



More Housing Projects Rely on Lead Plumbing



At left, the temporary workshop in the Omaha project. Above, a detail of lead roughing in under the first floor

SCOTT STUDIO

○ MAHA, Neb., Shreveport, La., and Syracuse, N. Y., are three more important cities showing definitely the trend toward more and more lead in the plumbing of large housing projects. The reasons for this distinct trend are simple; in the first place, it is almost universally known that lead is the only plumbing material that combines the essential qualities of durability, flexibility, non-clogging, smooth easy-sweep bends, permanently bonded joints, and, above all, craftsmanlike installations. In the second place, architects, engineers and con-

tractors have found, through past experience, as in the two recent Buffalo U. S. H. A. projects (LEAD, Sept., 1939), that lead plumbing need not command a premium. The unique characteristics of lead working are responsible for this.

In Omaha, following the excellent example of the Logan Fontanelle Homes (LEAD, March, 1938), the new South Side Terrace Homes project displays much lead work. This project consists of 56 buildings, all of fire-proof construction, containing 525 apartments. All soil and waste pipe

are of lead and cast iron with lead joints and all roof flashings and drum traps are lead. The project is approximately half completed and, in all, 12,000 lb. of sheet lead, 2,600 lb. of wiping solder, 22,000 lb. of lead waste pipe and 50,000 lb. of calking lead have been used.

N. R. Brigham and J. M. Nachtigall, of Omaha, were the architects for South Side Terrace Homes. The general contractor was Peter Kiewit Sons Company, Omaha, and A. D. Jacobson, of Kansas City, was the plumbing contractor.

Although on a slightly smaller scale, the Alexanderine Courts Apartments project, in Shreveport, demonstrates the same high standards of installation. This project consists of 14 buildings, twelve of which have 8 four-room apartments and the other two have 12 four-room apartments. Each apartment contains a tub bath. All closet connections were made with 4-in. lead bends. All branch wastes and vents were of lead pipe and joints in cast-iron soil lines were calked with lead stamped with the Seal of Approval. Roof flashings were all of 4-lb. sheet lead with 18 x 18-in. aprons, with a 14-in. boot turned down inside the soil stack. Lead drum traps were used for all bath tubs and laundry

View showing part of the lead work wiped up in the job shop and ready to be installed in the Alexanderine Courts Apartments project in Shreveport





Details of sheet lead roof drain and vent pipe flashing and of a branch lead bath waste with lead vent connections wiped in for the U.S.H.A. project in Syracuse

GENE LOGAN



trays. Moreover, in Shreveport, all service pipe from the main to neutral ground must be AA(XS) lead pipe.

The architects for these apartments were Fooshee & Cheek, Frank Dunham, Associate, of Dallas, Tex. The general contractor was the Byrne Company, of Shreveport, and the Shreveport Plumbing Company was the plumbing contractor.

Similar practice was employed in the Syracuse U. S. H. A. Housing project, designed by Randall, King, Veeder & King, architects, of Syracuse. All soil and waste pipe were cast iron and lead. All cast-iron soil, drain, and sewer pipe was joined by lead-calked joints. Extra heavy lead bends were used for all water closets and all roof flashing for vent pipes and roof lead-

ers was of 6-lb. sheet lead. In this installation 11,475 lb. of lead pipe, 27,848 lb. of sheet lead, 32 tons of calking lead, 702 extra-heavy lead bends, 2,000 lb. of solder were used.

The general contractors were Wm. L. Crow Company, New York City, and W. J. Burns Company, Syracuse, and A. Blaustein, of New York City, was the plumbing contractor.



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.

WHITE LEAD PAINT FOR MUNICIPAL, COUNTY AND STATE GOVERNMENTS

Specifications and information covering the purchase, use, and application of white lead paint.

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.

SUMMARY OF NOTES ON LEAD ROOFING

Reprinted from Sheet Metal Worker.

SHEET LEAD SHIELDING X-RAY ROOMS

A discussion of X-ray protection and installation methods reprinted from Sheet Metal Worker.

PLUMBING CODES—AN ANALYSIS AND SURVEY

By Robert Dick, Member, Research Committee, American Society of Sanitary Engineering.

A detailed study of modern plumbing ordinances, their purpose, deficiencies, proposed remedies and future outlook.

LASTING LEADWORK IN MODERN PLUMBING

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

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



ERNEST GRAHAM

Above, Hook Small Homes, Fort Lauderdale, Fla., painted with pure white lead. Lead bends, bath wastes, vent flashings and shower pans were also used. Robert Little, Fort Lauderdale, architect



DICK WHITTINGTON

Above, a Western Building Company home at Santa Monica, Cal., using pure white lead and oil paint, also lead shower pans, flashing and downspouts. Below, home in Mineral Wells, Texas, painted with pure white lead and oil



DURABILITY



STYLABILITY

White
Helps
Build

IN BUILDING

FOR developments, the four painting advantages illustrated above must be obtainable from the paint material used without increasing the building budget. White lead combines these qualities to a greater extent than any other paint. Its durability, serviceability and stylability are unsurpassed and yet it costs less to paint with pure white lead and oil than with many paints lacking its good qualities. White lead has original low cost of materials: its high spreading rate speeds up building operations. Maintenance costs and complaints are eliminated by its durable performance. Moreover, white lead may be used for any type of surface. This means only one material need be stocked. Also, because white lead may be tinted to any shade or color, large stocks of different colored paints are avoided on the job, eliminating much waste. White lead, too, is available everywhere with the same high quality always.

ILITY

SERVICEABILITY

ECONOMY

White Paint
Helps in Development
Building Selling

IN SELLING

PEOPLE judge by what they see, and an attractively painted house practically sells itself. With white lead, houses can be readily color-styled by tinting the white lead to unlimited shades and colors. With white lead, owners can always redecorate easily since an excellent surface is always left for repainting. White lead's superiority is well known and people know that they will not be incurring unnecessary maintenance expense. Where other materials may rapidly become unsightly and spoil future sales for the builder, white lead painted homes retain their original attractiveness for years. Moreover, when white lead surfaces become dirty, they may be speedily washed. Because white lead styles homes easily and lasts longer, houses so painted are better investments for the purchasers. They know they're money ahead. The known quality of white lead paint stamps the entire house as well built in the eyes of the purchaser.



ERNEST GRAHAM

Above, another view of the Hook Small Homes, Fort Lauderdale, Fla., where white lead and other lead products figured prominently in their decoration and protection

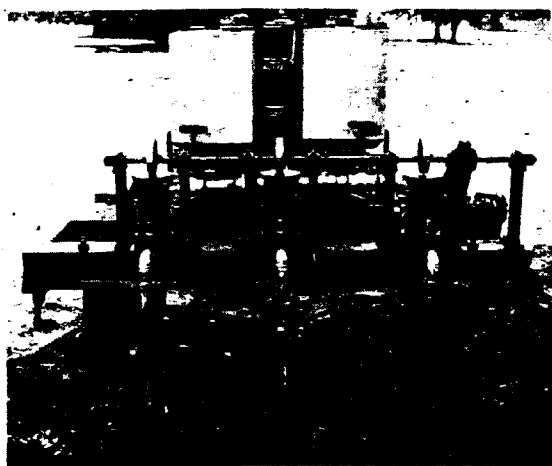


House in Westwood Hills, Cal., painted with white lead and oil and using lead shower pans. Floyd Ribble, of Beverly Hills, was the architect, for the Janss Investment Corporation, of Los Angeles. Below, another Western Building Company home, at Santa Monica, painted with white lead

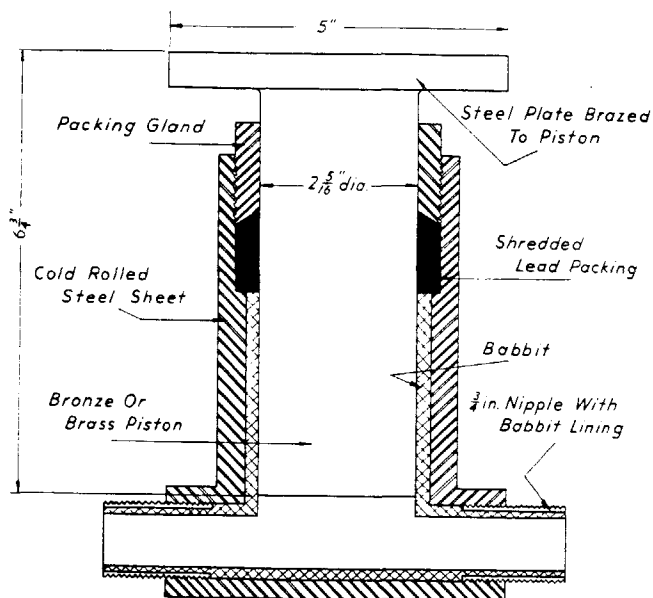
DICK WHITTINGTON



Lead Wool Packing for Carbon Bisulphide Pump



A carbon bisulphide pumping machine, and at right, drawing of the pump showing lead wool packing



LEAD, because of its corrosion-resistance and lubricating qualities, has recently helped to solve a difficult problem in modern agricultural engineering, that of obtaining suitable power equipment for injecting carbon bisulphide into soil.

Carbon bisulphide (CS_2) is a clear, volatile liquid that vaporizes readily to give an extremely toxic gas which is heavier than air. When injected into the soil and sealed in to prevent excessive loss, it kills all plant roots as well as fungi that are within the treated soil mass. Moreover CS_2 has the advantage of leaving the soil within a few weeks time so that, upon tillage and aeration of the soil, crops can again be grown. At present it is the only successful control for oak root fungus.

However, up to now, practically all CS_2 has been applied by hand labor, a tedious method and one practicable for small areas only. In order to provide widespread application power equipment was deemed vitally necessary. However, a study of the requirements for successful machine application of carbon bisulphide led to several conclusions. From these it was apparent that a positive displacement type of pump should be used.

Since no suitable commercial pumps were available that would withstand the corrosive action of CS_2 , a suitable one was designed and constructed by Orval C. French, Division of Agricultural Engineering, University of California, as reported in *Agricultural Engineering*, Sept., 1939.

Owing to the non-lubricating properties of CS_2 and also to the fact that it is a solvent for most lubricants, a piston with rings for a seal was not practical. Likewise, a plunger with leather cups was not desirable since CS_2 deteriorates leather. To overcome these difficulties a simple displacement pump with shredded lead outside packing was used. The lead packing eliminates the necessity of oil lubrication

and is resistant to any corrosive or solvent action of CS_2 . Also the use of a bronze plunger and babbitt-lined cylinder, both alloys using lead, provide wearing surfaces that effectively resist corrosion from carbon bisulphide and impurities that may be present. The entire system in its present form has been proved very practicable according to Mr. French.

Carbon bisulphide is one of many commonly corrosive chemicals whose destructive action lead resists. The following is a list of other chemicals with which lead may be used under general conditions. This does not signify that lead is the only material that is suitable with these chemicals nor does it cover all conditions of usage.

Aluminum Sulphate	Malachite Green Mother	Sodium Hydrosulphite
Ammonia Vapor	Liquor	Sodium Hyposulphite
Ammonium Sulphate	Mixed Acids	Sodium Sulphate
Antimony Tri-Chloride	Nitration Mixture of	Sodium Sulphide
Bleach Liquors	H-Acid	Sodium Sulphite
Brown Acid Mother Liquor	Para-nitrophenol	Sulphonations
Carbonates Soluble	Phosphoric Acid	Sulphur Chloride
Chlorine Gas	Phosphorous Chloride	Sulphur Dioxide
Hydrofluoric Acid	Reductions	Sulphuric Acid
Koch's Acid	Sodium Bisulphate	Sulphurous Acid
	Sodium Chloride	Sulphuryl Chloride
	Solution, or sea water	Zinc Chloride

Homes Built With Assistance of U.S.D.A. Extension Service Painted With Pure White Lead and Oil

SUPERVISED by the Alabama Extension Service of the United States Department of Agriculture, the construction of a new home for Willis and Julia Thurman, Negro small land owners in Elmore County, Alabama, is a typical example of rural housing rehabilitation and the part white lead and oil paint plays in it. The Thurman's farm was one unit of a 326-acre tract divided in four parts owned and worked separately by the Thurmans and Mrs. Thurman's three brothers. All business obligations and transactions were assumed jointly. Up to recently, however, none of the owners had been interested in enlarging or modernizing their one-room shanty houses.

In 1933, F. G. Manley, county agricultural agent, and I. V. Bledsoe, home demonstration agent, gave a demonstration at the Thurman's home in cooking, sanitation, health protection and other features. As a result, the Thurmans became interested in having the advantages a new and more livable home would give them and their children. Plans and financing were discussed with the extension service agents, and a new house with modern facilities was soon erected at a cost of only \$690.50. Frame construction was used and all painting was done with white lead and oil.



Insert, the Thurmans' old home, and above, the new white-lead painted house at the time of the demonstration

COURTESY EXTENSION SERVICE,
U. S. DEPARTMENT OF AGRICULTURE



similar to the practice of the Farm Security Administration (LEAD, September, 1938).

It is interesting to note the consistency with which builders of low-cost homes rely on white lead. Where budgets are cramped—the real test of every dollar's worth—the unsurpassed advantages of white lead, durability, beauty, and efficiency, are obtained at even lower cost than many less satisfactory materials. Moreover, these benefits, clearly shown in low-cost construction, are still more apparent in buildings in the higher brackets.

The use of white painted homes is definite forward progress in rural rehabilitation and housing. By getting

away from the dark and depressing unpainted cabins of past years, the new houses are more attractive, cheerful, and raise the pride and morale of families and communities.

The Thurmans' home was publicly exhibited with guests showing tremendous interest, both in this house and in accounts of the 23 similar projects the Extension Service in Alabama has under way. We are indebted to T. M. Campbell, Negro Field Agent of Tuskegee Institute, Alabama, for information on this progressive development.

At left, a home at Lemon City, Fla., and at right, a new Texas farm house, both built under the Extension Service supervision to rehabilitate poorly-housed families. White lead plays a major part in rural re-housing such as this



Pertinent Factors in Interior Painting and How White Lead Meets Their Requirements

INTERIOR painting is a question of great importance in the decoration and protection of public buildings. It is essential that those who purchase and specify painting for such structures study their painting problems

from a careful and analytical approach. Painting is assumed, all too often, to be just something that occurs from time to time. As a result, painting expenditures are often much greater than would be necessary had

careful attention been given. The accompanying table indicates briefly the functions of interior painting, the necessary qualities of a suitable paint and how pure white lead and oil meets these requirements.



MIXING INSTRUCTIONS FOR INTERIOR PAINTING



San Antonio High School. Various interior paints have been tried for several years in San Antonio schools with little success. As a result white lead is now largely relied upon

NEW WORK

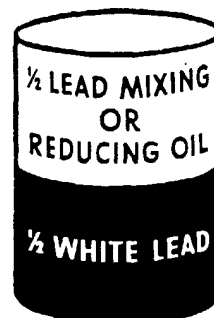
FOR unpainted inside wood, take about one-third of the white lead paste and mix it with an equal volume of linseed oil and two-thirds as much turpentine to make the priming coat. If raw linseed oil is used, add $\frac{1}{4}$ pint liquid drier for each gallon of paint made.

For unpainted plaster and wall board, take about one-third of the white lead paste and mix it with a third again as much lead mixing or reducing oil to make the priming coat.

In both cases, follow with two coats described at left. Coverage per gallon:

Priming Coat: on wood—700 sq. ft.
on plaster—800 sq. ft.

REPAINTING



USE ABOVE FORMULA FOR BOTH COATS

COVERAGE
800 SQ. FT.

PERTINENT FACTORS IN INTERIOR PAINTING

PURPOSE	QUALITIES NECESSARY IN PAINT USED	HOW WHITE LEAD MEETS THESE REQUIREMENTS
DECORATION To improve appearance and provide cheerful interiors conducive to better work and study.	The paint should be obtainable in an unlimited variety of shades and colors with assurance that these shades and colors may be duplicated at any time.	White lead may be easily tinted to an unlimited variety of shades and colors. Moreover, white lead is tinted to the amount needed for each color only. Consequently, it is not necessary to stock a large supply of standard colors of paint, much of which will not be used, with resultant waste.
SANITATION To keep walls, ceilings, and trim free from accumulations of dirt and other matter.	The paint must be truly washable, not merely once, but repeatedly. In order to promote cleanliness, accumulations of dirt, grease, finger marks, etc., must be easily washed off without injury or erosion of the paint film.	White lead is really washable. Numerous tests have shown how ink, pencil, crayon, dirt, and other surface disfigurements are easily removed. Basically responsible for this quality is the fact that white lead is not affected by moisture, allowing repeated washing without injury to the film. Moreover it is not porous and dirt cannot become imbedded in the film.
LIGHT REFLECTION To provide better dispersion of light, saving electricity and reducing eye-strain.	The paint must be obtainable in a flat finish and must flow on smoothly and evenly without humps or ridges which will interfere with uniform light dispersion.	A smooth flat finish is easily obtainable with white lead, either by the use of lead mixing or reducing oil, or by adjustment of the oil and turpentine proportions. White lead always flows smoothly and freely from the brush, eliminating surface irregularities.
PROTECTION To protect the surface from interior moisture and other conditions.	It must form a smooth but elastic paint film which will anchor itself solidly to the painted surface, wearing from the outside in so as to maintain always an unbroken film over the surface.	Like lead itself, white lead paint is flexible, absorbing surface movements without cracking the film. It has a unique affinity for oils and is amazingly tough, bonding itself tightly to the surface. Moreover, white lead wears from the outside in, maintaining continuous surface protection.
ECONOMY For maximum economy, maintenance cost as well as initial cost must be low. The foregoing functions must be obtainable for the longest time without repainting.	The material used should have excellent durability and continued good appearance, brought about by washing, to put off repainting as long as possible. The original cost per sq. ft. applied* should be low. Of tremendous importance too, the surface should always be in good condition for repainting to avoid costly surface preparation at the time of future repainting.	Years of experience have proved the unsurpassed durability of white lead. This durability, plus the fact that the original freshness of the painted surface can be maintained by washing, increases the length of time that may pass before repainting is necessary. Moreover, when repainting finally does become necessary, white lead surfaces are always in good condition and do not need expensive surface preparation. A further advantage is that the high quality of white lead can be duplicated at any time in the future.

**To analyze interior painting costs, the following formula should be used:*

$$Cx = \frac{Cg}{Sg} + \frac{Cld}{Sld}$$

where Cx = final cost per sq. ft. of painting.

Cg = cost per gallon of paint,

Cld = cost of a labor day,

Sg = sq. ft. covered per gallon

Sld = sq. ft. covered by one painter in one labor day.

For white lead, these figures will be: Ng is 800. Nld 1500-1600

and Cg in the neighborhood of \$2.50†. The final figure should be divided by the years of life you expect from the paint. With three coats of pure white lead and oil, ten to twenty years of life may be assumed. By checking white lead costs against other paints, the reason is obvious why pure white lead and oil is used so widely in painting the interiors of schools, hospitals, office buildings, apartments, churches, factories and other buildings.

†Exact price dependent on local and market conditions of all ingredients.



**You can't beat lead
for making PAINT**

YOU know how lead lasts. You know it's got what it takes to stand up against the attacks of time and weather.

That's why it's good where there's a tough job to do.

Now maybe you never realized that white lead is made from lead. But it's a fact.

And being in the family, so to speak, white lead paint has lasting qualities all its own.

That's not just my opinion, because I work in a lead mine.

Ask any good painter and he'll tell you the same.

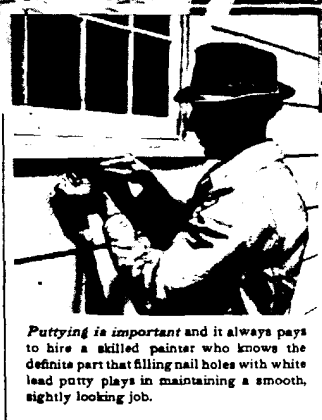
He'll tell you how white lead lies smooth and snug, doesn't crack or brittle up — how it stays on the job for years.

Fact is, you can't beat a paint that's made from lead. And you're money ahead, because this is a case of the best being the cheapest too.

. . .

Want to know more about this whole subject? Write for "What to expect from White Lead Paint."

LEAD INDUSTRIES ASSOCIATION
420 Lexington Avenue, New York, N. Y.



Puttying is important and it always pays to hire a skilled painter who knows the definite part that filling nail holes with white lead putty plays in maintaining a smooth, slightly looking job.



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

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