

5 LEAD 5



THE BUFFALO TERMINAL OF THE NEW YORK CENTRAL RAILROAD RESTS ON
LEAD ANTI-VIBRATION MATTRESSES

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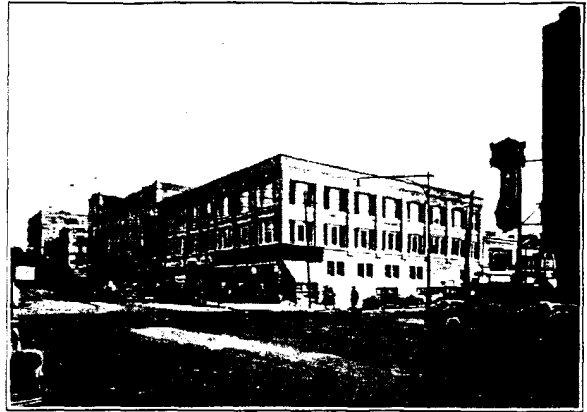
NUMBER 5

IIIIY 1021

Large Amount of Lead for New York Edison's Improvements



Note the vastly improved appearance of Eighty-sixth Street east of Fifth Avenue, Brooklyn, after removal of overhead wires shown at the left



MORE than 60,000 tons of new lead will be utilized in the manufacture of cables to be installed by the New York Edison System in its underground transmission and distribution system in the ten years 1931 to 1940, inclusive. New cable to be installed in this period will have approximately 80,000 tons of lead sheathing. Old cable to be retired has about 18,000 tons of lead sheathing.

Most of the work contemplated in the ten-year program will be done in the boroughs of Brooklyn, Queens and The Bronx, and in Yonkers, where there are still areas with overhead transmission and distribution. As the Manhattan system service is underground, the installation in this borough will consist of replacements and reinforcements as required by increased load.

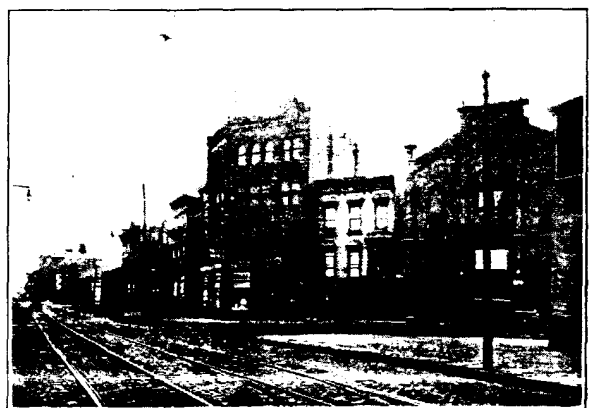
The ten-year program contemplates the expenditure of several hundred million dollars. The goal of the present program, put into effect by Matthew S.

Sloan, President, is the replacement of all overhead transmission and distribution with an underground alternating current network system covering the greater part of New York City and Yonkers. The network will consist of a solid grid of street mains to which energy from generating station and sub-station feeders is supplied by means of transformers. For the most part new feeders to the network will come directly from the generating stations. Mains supplied by radial lines of distribution that now exist will be tied in to the common network. It is the aim of President Sloan to place underground by 1940 all mains except those in outlying, sparsely settled areas.

"Advantages of the underground network program we now have under way accrue mostly to our customers and the general public," Mr. Sloan said. "Some economy of operation is effected, of course. The removal of poles and wires from the streets not



Flushing Avenue east of Broadway, Brooklyn, before and after unsightly overhead lines gave way to dependable underground cable



only improves the appearance of the neighborhoods, and enhances property values, but, further, our customers are given an added measure of reliability and continuity of service.

"If an accident occurs to any feeder anywhere along the line, both the feeder and its transformers are automatically disconnected from the network. The transformers on the adjacent feeders supply the network so that service is not interrupted."

This vast improvement, Mr. Sloan pointed out, is another benefit arising from the unified management of the five companies comprising the New York Edison System. Not only has the consolidation effected a saving of money that can be applied to the ten-year program, but in addition it has brought a standardization of operation and combination of technical knowledge that is of benefit to customers and the general public as well as the System.

"With the generating station and substation feeders connected to transformers located at frequent intervals and with the street mains supplied by these transformers interconnected at every block, the entire System will be one vast gridiron of transmission lines and mains," Mr. Sloan explained. "Our more than two million customers, in their homes, office buildings and industrial plants, no matter what their location, will thus be given every known protection to continuity of their electric service."

Lead-Lined Tubs in the Old and New Manner

ON the top floor of a New York office building a tenant wanted a sunken bathtub in which he would have plenty of room to stretch. The largest tubs generally manufactured are 6 ft. long, and this was not big enough to suit him. Jarcho Bros., who were installing the plumbing, met the situation with the aid of sheet lead coated with asphalt paint.

They built a sunken concrete tub more than 7 ft. long and lined it with sheet lead in the same manner in which shower room floors are lined. Over this they placed wire lath and lined the whole thing with tile. Thus they had built a miniature swimming-pool for their client.

An interesting parallel to this ultra-modern sunken tub is what is reputed to be the first bathtub built in this country, constructed by Adam Thompson early in the nineteenth century. It was made of solid mahogany and lined with lead to retain the water and protect the wood.

Lead Tubes Open New Market

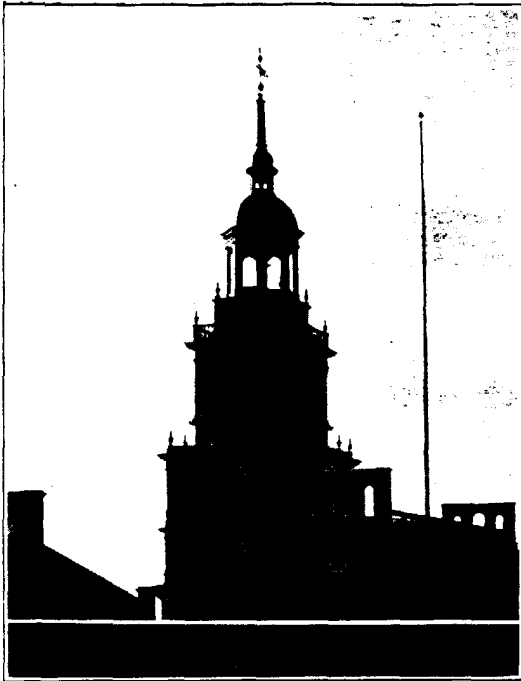
THE pliability and chemical corrosion resistance of lead lends itself excellently to the manufacture of collapsible tubes for the packaging of viscous fluids, pastes and allied substances. Although collapsible lead tubes are generally made in moderate sizes, about that of a ten-cent mucilage container, they are sometimes found of rather large proportions, such as the tube pictured here containing a roofing compound made by the Philip Carey Co. of Cincinnati. This



This huge collapsible tube is nearly a foot long

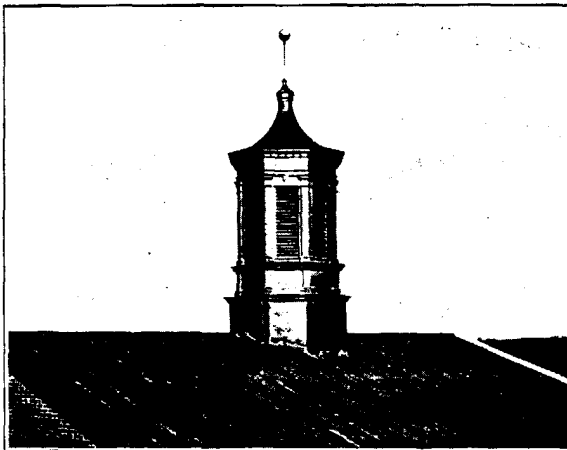
product is Carey Noah's Pitch, a plastic compound of asbestos fibre and oils, for repairing leaks of all kinds. Noah's Pitch has long been marketed in cans and drums to contractors, and the recent addition of the tube package to the previous line has been to provide a convenient form in which the individual may use the product and thus add a new market to that already established.

A tube of this product is handy for anyone to keep around the house, where it is readily available when necessary. Only the amount required at the moment need be squeezed from the tube, the cap replaced, and the remainder kept in good condition for future use at a moment's notice. Also it is easy to squeeze the compound directly from the tube onto the leak to be repaired. It is marketed in tubes of two different sizes— $1\frac{1}{2}$ lb. and $1\frac{3}{4}$ lb. The larger size is interesting in that it requires a tube $11\frac{1}{2}$ in. long and $2\frac{3}{8}$ in. in diameter.



The extensive lead-work on this beautiful replica of Independence Hall is described in the article

TO achieve his object, Mr. Ford has collected at Dearborn, Michigan, authentic relics of old America in unbelievable numbers. He has erected a group of handsome buildings to house these collections, and in these buildings each trade is chronologically represented from the early settlement of this country to the present day. There are exhibits depicting the development of transportation; agriculture; communication; mines and metallurgy; weaving, spinning and sewing; photography; costume; education; and, in short, the development of every-

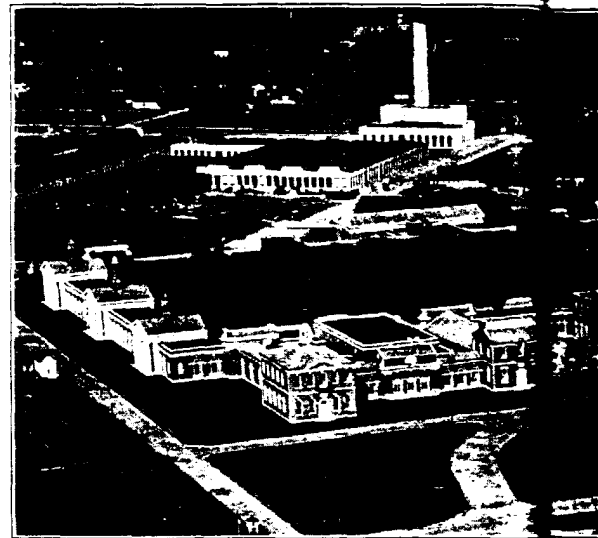


This cupola and roof are hard lead

Early American Mode of Life

"We ought to know more about the families who founded this nation, and how they lived and the force and courage they had. One way to do this is to reconstruct as nearly as possible the conditions under which they lived. Then we have a history that is intimate and alive, instead of something in a book.

"Here in Dearborn, we are assembling a complete series of every article used or made by the first settlers in Amer-



FORD MUSEUM, DEARBORN
Robert O. Ford, Inc., A

thing that goes to make up our lives. These are all housed in a group of handsome colonial buildings, having for its central unit a replica of Independence Hall in Philadelphia. In a cement slab in the main entrance the footsteps and signature of Thomas Edison and the spade of Luther Burbank are preserved. Nearby are Edison's workshops from Menlo Park and Fort Myers, and an old American village with its town hall, inn, smithy, school and church, all genuine relics that have been restored to their original state.

The buildings had to be erected to fittingly preserve the invaluable historical relics which Mr. Ford has collected. In the selection of a sheet metal for the exterior of the Ford Museum the following deciding factors were recognized: extreme durability, necessary to measure up to the long-life character of the building construction; extreme ductility, required to allow the material to be readily shaped into flashings, gutters and coverings, conforming to the complicated conditions of the construction; a material

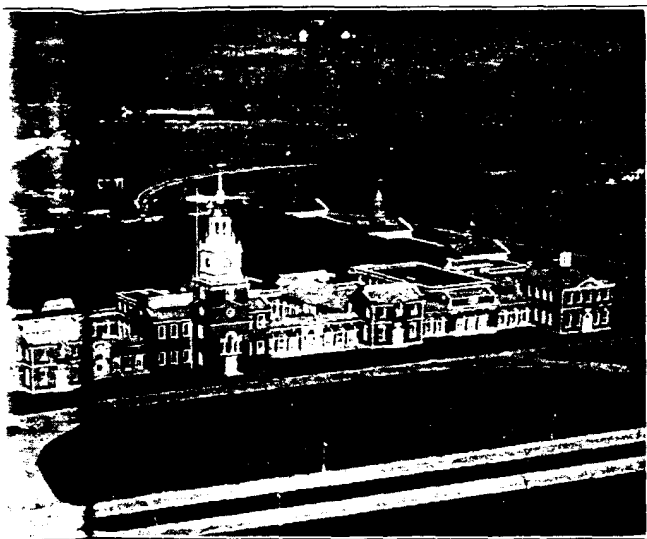
Life Recreated in Ford Museum

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ica, and in many instances we are extending the series down to the present time. When we are through we shall have reproduced American life and preserved in actual working form at least a part of our history and tradition.

"Improvements have come so quickly that the past is being lost to the rising generation, and it can be preserved only by putting it in a form where it may be seen and felt. That is the reason behind this collection."

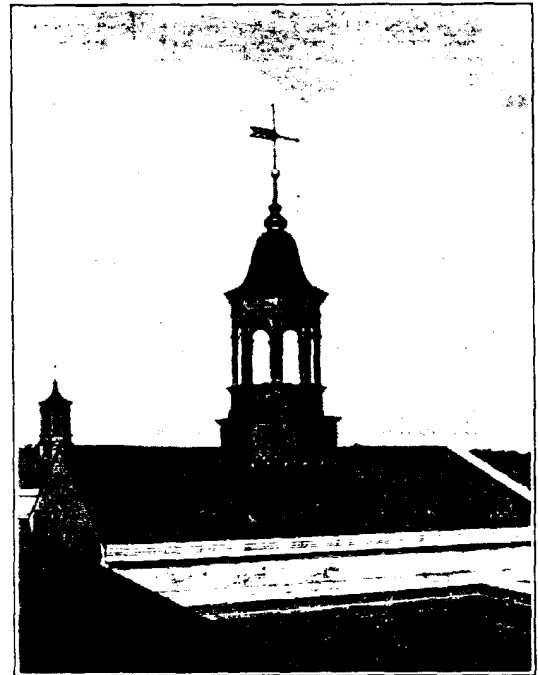
—HENRY FORD.



MUSEUM DEARBORN, MICHIGAN
Robert E. Inc., Architects

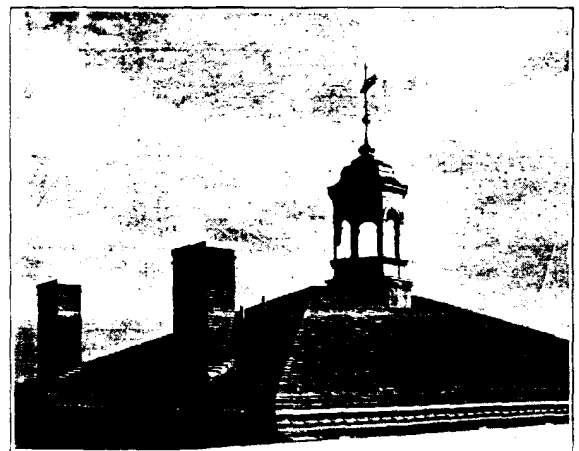
which could be worked from sheets, pressed or cast to form the ornamental sheet metal details; a material electrolytically inert in connection with iron or copper; a material which would not decompose in the presence of industrial gases, causing staining of the white paint finish; a material to which paint would adhere strongly; and lastly a material whose natural color when left exposed would be compatible with the architectural design. Lead is the only material which meets all these requirements. Hard lead was accordingly selected for the sheet metal work.

It was used in forming all flashings in connection with slate roofs and gutter linings, covers for tops of all exposed wood cornices, coverings for all wood railing caps and roofing on all pitched gable roofs and tower decks, besides many miscellaneous details. The urns, cupola roof, and spire on the replica of Independence Hall, as well as the ornamental spray wreaths which occur under the clock dials, are of hard lead. A large amount of hard lead covers the entire exterior surfaces of eight cupolas.



Eight handsome cupolas and most of the gable roofs are entirely covered with hard lead

In laying the lead on the gable roofs, continuous batten strips running from ridge to eaves were laid. These were beveled, 2 x 4 strips bolted to the roof, narrow edge down. The lead covering was applied with a separate cap joined to the roof sheet with a folded seam made square and permitting expansion. All fastenings were made concealed with lead tabs folded into the joints. Joints exposed to water and in ornamental work were burned.



Gutters, cornice coverings, flashing, and the leader-head just visible at the bottom, as well as the cupola, are hard lead

Leaded Oils An Essential Part of Modern Lubrication

THE virtues of a lead in the form of white lead, litharge, and other pigments, as a cure for hot bearings have been known for a long time. When a journal was running hot it used to be the practice of millwrights to feed a quantity of white lead into the bearings, with the result that the temperature was at once reduced. In railroad work, where the unit pressure on axle bearings is extremely high, a lubricant containing lead has been in use for a long time. However, this remedy was considered of a temporary nature only, as an excessive quantity of the white lead or litharge in a lubricant increased the wear on the bearing on account of its mildly abrasive nature.

Lead "soaps," of which lead oleate is a representative chemical compound, are now being used in lubricating compounds. For example, the Research Department of the Pennsylvania Lubricating Company, Pittsburgh, Pa., has succeeded in developing a lubricant containing lead oleate in a very pure form. This product is sold under the trade name of "Penola Leaded Compound," and in it all advantages resulting from the addition of the lead compound are retained, while the disadvantages have been eliminated. It is claimed to be the ideal "border-line" gear lubricant for critical conditions of tooth pressure and rubbing speed. It is a composition of highly refined low cold-test blended oils, chemically and inseparably combined with pure lead oleate; it maintains an effective lubricating film and prevents metal-to-metal contact where ordinary lubricants break down. It is suitable for lubrication of both gears and adjacent bearings and is manufactured in eleven grades of density, from No. 0, which compares in viscosity with a medium motor oil, to No. 10, which is of a stiff

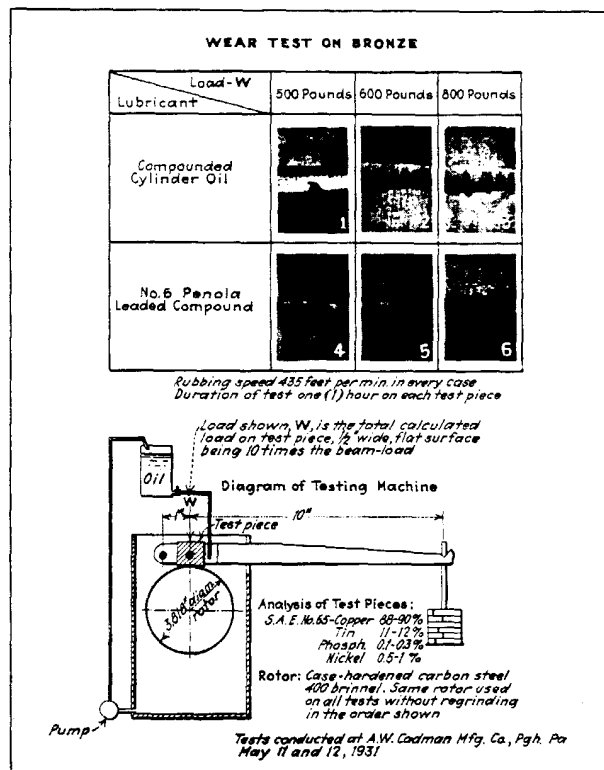
consistency, so as to thoroughly cover every operating requirement.

The underlying theory of this leaded compound as a "border-line" lubricant is that when the unit pressure gets to be so high that the mineral oil film breaks down, the lead oleate which it contains starts to function as a lubricant. For example: tests have shown that under a pressure of 10,000 pounds per

square inch the oil film from a mineral oil like cylinder stock of the 600 type, breaks down completely, and scoring immediately takes place on account of the metal-to-metal contact of the rubbing surfaces. Tests have shown that the leaded lubricant withstands unit pressures up to 48,000 pounds per square inch. In other words, this lead oleate lubricant has a factor of safety nearly five times greater than ordinary straight mineral oil.

This leaded lubricant is finding a field in the lubrication of gears of all types for the reason that the unit pressures there are intense on account of the extremely narrow areas in contact. In the case of gears of the hypoid type now

widely used in automobiles and in gear reduction units in steel mills and other similar types of gears, it is imperative to use leaded oil properly to protect the gears and have a reasonable factor of safety. The present tendency in gear lubrication practice is to use the lightest viscosity of the leaded lubricant commensurate with the duty imposed, with the result that a minimum amount of heat is generated at the point of mesh and in the bearings on account of the lower internal friction of the lighter lubricant. At the same time adequate tooth and bearing protection is assured because this new lubricant produces a lubricating film nearly five times stronger than ordinary lubricants.



The accompanying illustration shows the result of wear tests on bronze blocks by a steel rotor, the same metals used in worm speed reducers. One set of tests were made using the leaded compound and the other using a well-known lubricant generally recommended by worm gear manufacturers. The photographs show conclusively how much less wear results when the leaded lubricant is used.

Lead Enriches An Entrance

THE new Kips Bay Boys' Club building on East Fifty-second Street, New York, Delano and Aldrich, architects, has been awarded the certificate of architectural merit of the First Avenue Association. Here is pictured the attractive entrance. In the glass oval over the door is a boy's head wrought in lead, while the transom window is also of leaded glass. Note that it bears the address in lead. By this use of the metal, which will remain unaltered in color and appearance, the entrance has been made decidedly distinctive.

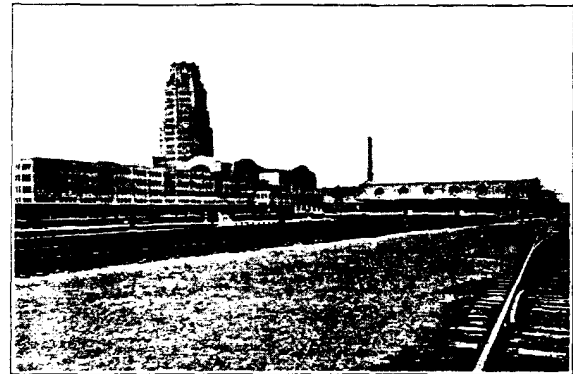
In addition, wherever pipes have pierced the roof, as in the case of the vent stacks, 6 lb. soft lead flashing was used. George E. Gibson Company were the plumbing contractors.



Wurts Bros.

Entrance to Kips Bay Boys' Club with attractive ornamental glazing over the door

Lead Vibration Insulation in Another Large Terminal



The track side of the New York Central's Buffalo Terminal shows the need for vibration insulation

FOR many years the New York Central Railroad has given much attention to the problem of eliminating or deadening vibration in its terminals and other buildings adjacent to its tracks. Without some precautionary measures being taken, trains would set up vibration in these buildings that would be most annoying to the occupants. As a result of extensive studies made some years ago by the Central's terminal engineers, a lead and asbestos mat was developed for vibration dampening.

These mats have been used under almost all of the buildings erected during the past ten years in the Grand Central Zone in New York, where adjacent to the New York Central's tracks, and have proven eminently satisfactory. Now their use is spreading to other localities. In the November, 1930, issue of LEAD a detailed description of similar mats and their application by the Pennsylvania Railroad in Philadelphia was given.

In the summer of 1929 the New York Central opened its large new terminal in Buffalo, N. Y. Here again the building was vibration-proofed by setting its columns on lead-asbestos mats. They are like those that the railroad has used so successfully in New York, consisting of top and bottom layers of $\frac{1}{8}$ " sheet lead enclosing two layers of $\frac{3}{8}$ " asbestos board, and at the center a sheet of No. 20 gage iron.

This attention to detail was maintained throughout the entire construction of the terminal. Appealing to the eye, the building is also admirably suited to care for its functions as a terminal. Mr. F. B. Freeman was Chief Engineer, and Fellheimer and Wagner of New York were the architects.

Home Builder Insures Satisfaction With White Lead



A miniature farm painted with white lead and oil paint

THREE large-scale home-building developments of John H. McClatchy, who has been a builder of homes for nearly thirty years, in and around Philadelphia call for white lead and oil in considerable quantities for painting. This high-grade paint is used for all exterior paint work and typifies the general high quality of materials employed in the construction of these homes. Often cheap materials go to make up the homes in real estate developments with the idea that the speculative builder's responsibility ends as soon as the house is erected and sold. Far-sighted builders go beyond this, however, and realize that they must use good materials to insure lasting satisfaction and to cause satisfied buyers to pass on the word to others. By the use of white lead Mr. McClatchy can assure his prospective purchasers that they will not have to lay out several hundred dol-

lars for repainting a year or two after they have taken possession of their new homes.

The McClatchy developments are of three entirely distinct classes and exemplify the universal applicability of good paint, pure white lead and oil. One is in the Sixty-ninth Street section of Philadelphia and consists of studio homes costing \$6950. A second is in Overbrook, a Philadelphia suburb, where the homes range in cost from \$18,500 up. The third is at Colonial Village, Wayne, Pa., and is made up of miniature farms on two and two-fifths acres of land. These latter sell for \$22,750.

Mr. Edward Haldeman of Philadelphia was the painting contractor on all of these enterprises.



These charming suburban homes are well protected with white lead and oil paint



White lead was the choice for painting these \$6950 studio homes in Philadelphia

Useful Information About Lead

"USEFUL Information About Lead," the Association's new book announced in the January issue of LEAD, is now ready for distribution. It will be sent to those requesting copies for a nominal charge of \$.50 per copy, postpaid. It is stiff bound, contains 104 pages, and is profusely illustrated. Aside from including comprehensive tables of the properties of lead, and the characteristics, manufacture and uses of lead compounds and alloys, it contains chapters on each of the principal lead-consuming industries such as cable, storage-batteries, paint, architecture, ammunition, plumbing and chemical industries. It also deals briefly with the mining, smelting, refining, and history of lead. It is a book which everyone interested in lead should possess.

[The Lead Industries Association invites inquiries on any subject relating to lead and will be glad to cooperate in the solution of your lead problems.]