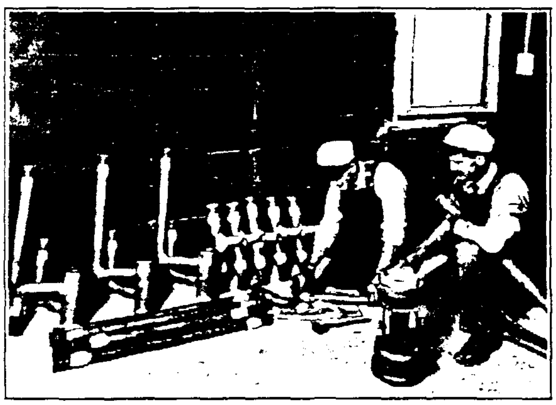
Plumbers in Four Additional States Urge More Lead

Masters and Journeymen Work to Protect Public and Plumbing Business

RECENT action by the Maine and Iowa Master Plumbers Associations and by the Associations of Journeyman Plumbers in Massachusetts and Ohio advocating more lead in plumbing installations is a fine demonstration of the way both masters and journeymen are working together for the common purpose of improving plumbing conditions. Plumbers organizations all over the country have for some time been fostering a movement to strengthen and modernize plumbing ordinances by improving the design, materials and workmanship of plumbing installations for the protection of public health and property. Another object of this movement is to protect



WALTER P. MILLER

Lead pipe, installed with a plumber's skill, will make the plumbing in this modern hotel durable and trouble-free and a plumber's job to make repairs and alterations.

those engaged in the legitimate plumbing business against the competition of handymen and others who are unfit to make sanitary installations and who create undesirable competitive conditions in the industry detrimental both to owners of plumbing businesses and to properly trained journeyman plumbers.

Maine and Iowa Masters Advocate Lead

In March, Maine became the eighth and Iowa the ninth states whose master plumbers associations adopted resolutions urging members to advocate more lead in plumbing, because the durability and other desirable qualities of lead make it necessary in the best plumbing installations and because only plumbers thoroughly skilled and experienced in their trade are able to install and repair lead work. Therefore extensive requirement of lead in plumbing aids in accomplishing both the purposes already stated. The Iowa and Maine resolutions, although they differ from each other in wording, are similar in context and are also similar to the resolutions that have been published in LEAD from time to time as adopted by other states. State master plumbers associations in New Jersey, Illinois, Wisconsin, Ohio, Pennsylvania, Michigan and Indiana passed such resolutions in 1933 and 1934.

Mr. G. J. Palmer of Ames, Iowa, re-elected President of the Iowa Master Plumbers Association.

As in these other states, Maine master plumbers do not intend to let the matter drop with mere passage of a resolution at their annual convention. With characteristic New England thoroughness a committee was appointed to see that the resolution's mandate was carried out.

The Iowa resolution was passed without a dissenting vote at one of the state association's most successful annual conventions at which all officers were re-elected for another year.

Massachusetts, Ohio Journeymen Act

At the annual meeting of the Massachusetts State Association of Journeyman Plumbers a resolution similar in intent was also passed after a great deal of favorable discussion on the subject of lead work. To assure prompt action delegates were instructed to report back at the next meeting just what action has been taken by their locals and what progress has been made in the interim. Other state journeymen's organizations who had previously taken such action are in New York and New Jersey.

Although Ohio journeymen have not passed any such resolution, they are embarking on an active campaign to accomplish the same results. Mr. Ed. Switalski, the State Secretary, has launched the drive by a letter sent to all locals in the state in which he calls the attention of members to the benefits to be derived by public and plumbers alike through the greater use of lead in plumbing and urges them to act in their own localities to obtain it.

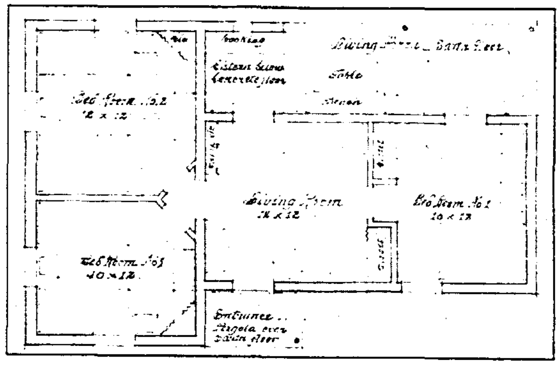
All of this activity shows that both master and journeyman plumbers realize that they have in lead a common protection for which they should work together and that at the same time they will benefit the public through better plumbing installations for which the public will eventually thank the plumbing industry as a whole.

White Lead Paint for Low Cost Virgin Islands Housing

PROVING that white lead paint, although it is a paint of highest quality, is an extremely economical paint to use is the fact that it is specified for one of the lowest cost housing projects in the world. In the Virgin Islands a subsistence housing program is being carried out at rentals or instalment purchase terms that the lowest income group can afford to pay. On plots of five-acre average size, two, three or four room houses are provided with budget allowances of from $550 to $1000. The houses are designed to serve the simple needs and habits of this class in a practical way at a cost they can afford.

Recommendations of the architects to the Virgin Islands Public Works Department for painting all exterior metal and woodwork except the galvanized iron roofs call for three coats of lead and oil paint. Not only is this paint economical in first cost (at present prices it costs around $2.00 to $2.50 a gallon) but it will be economical to maintain so that this low income group will not be unduly burdened with paint maintenance or repair bills. Another point to note is that the climate is such as to be hard on paint, with high temperatures and humidity. This simply indicates once more that white lead is suitable under all sorts of conditions for it has proven itself in every climate by many years of actual service.

The architect for this Virgin Islands project is W. Pope Barney with whom is associated Roy W. Banwell, both of Philadelphia. The paragraphs from their specifications pertaining to this subject read as follows:



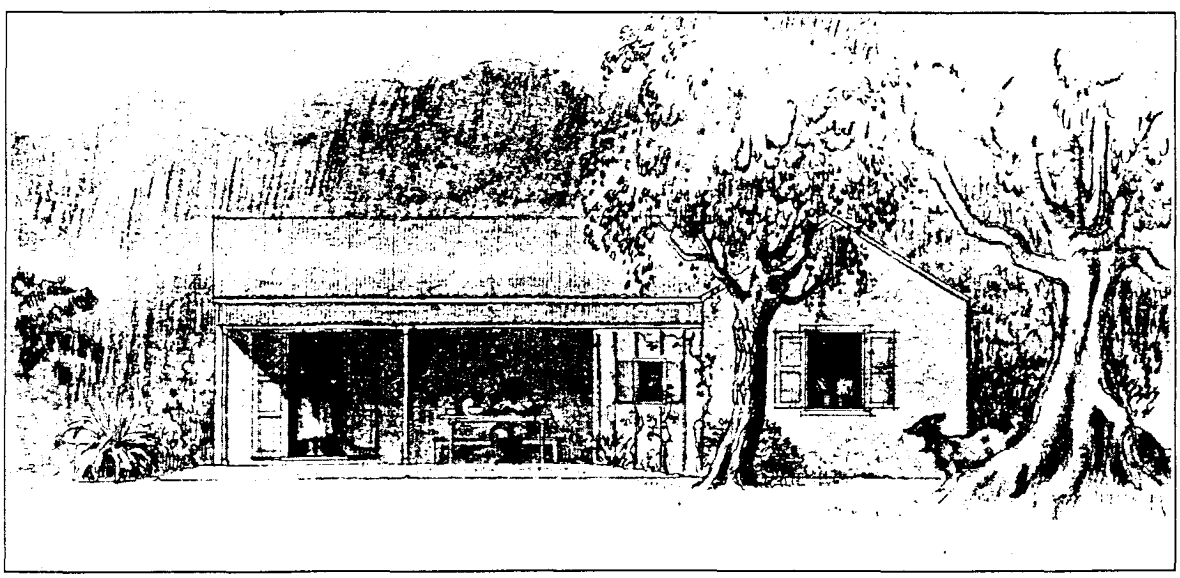
Plan of Virgin Islands subsistence homestead which may be built in three stages as a two-room unit with third and fourth rooms added later.

"Paint material shall be best quality white lead paste. Paint shall be put on only on bone-dry surfaces. Do not paint on highly humid days. Priming coat shall be mixed as follows: White lead paste 100 lb., 2 gal. raw linseed oil, 2 gal. of turpentine, 1 pt. drier. It is imperative that the wood surfaces get a generous covering of this coat to satisfy the porosity.

"2nd coat 100 lb. white lead paste, 1 gal. raw linseed oil, 2 gal. turpentine, and 1 pt. of drier.

"3rd coat 100 lb. white lead paste, 3 gal. raw linseed oil, 2 pt. of turpentine, and 1 pt. of drier."

These recommendations also apply to slum clearance projects in the Virgin Islands designed by the same architects.



A view of a four-room subsistence homestead as designed for the Virgin Islands.

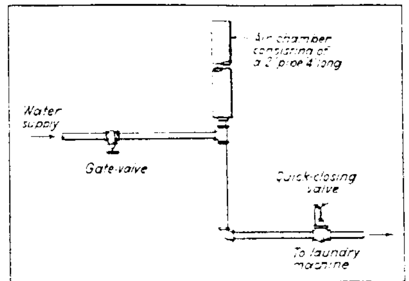
How Water Hammer Pressures Were Reduced in an Actual Plumbing Installation

By Anton A. Kalinske[1] *and Henry Pommerenck*[2]

THE presence of undesirable and dangerous water hammer pressures is manifested in a piping installation in two ways: (1) pounding or knocking and vibrating pipes; (2) leaks and breakages. Pounding and vibrating of pipes, besides being extremely annoying and especially undesirable in places such as hospitals, is dangerous in itself, as leaky joints will develop ultimately. If excessive water hammer pressures occur in a piping installation it is obvious that the weakest part of that system will be the first to fail, such as joints and pipes of low tensile strength material.

If it is definitely shown that high water hammer pressures do exist in an installation and have been the cause of various leaky joints and breakages, the remedy is not the replacement of the failing parts by stronger ones, but rather the prevention of the development of too high water hammer pressures. It is fool-hardy to expect to make a piping installation so strong and rigid that high water hammer pressures will not cause any damage. It is just a means of postponing the "day of reckoning."

Sketch showing location of air chamber with respect to the quick-closing valve.



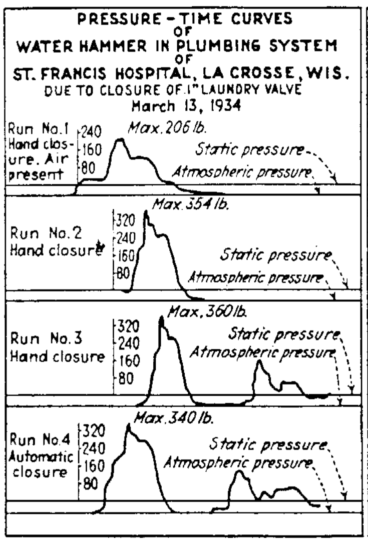


FIGURE 1

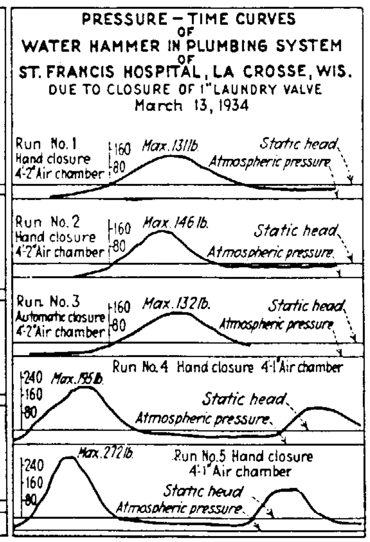


FIGURE 2

The development of excessive water hammer pressure can be corrected in general in two ways: (1) the elimination of a rapid-closing valve; obviously this is not always possible; (2) the installation of some sort of relief device, such as an air-chamber. Air-chambers seem to be about the best device available at present to use for the reduction of water hammer pressures in ordinary plumbing installations. However, unless they are of proper size and properly located their effect in reducing any water hammer pressure may be negligible. For this reason it is impossible to give any all-inclusive solution that will solve every water hammer problem. Instead each problem must be studied and analyzed individually, taking into consideration all the inherent characteristics of that particular piping installation.

A water hammer problem that came to the attention of the writers recently and which resolved itself into a fairly simple solution occurred at the St. Francis Hospital, LaCrosse, Wisconsin. The water hammer was produced by ordinary quick closing laundry valves which could be either float or hand operated. The presence of excessive water hammer pressures was suspected because of the annoying pipe noises and pounding which occurred whenever these valves operated. Investigation also revealed that va-

A close-up view of the testing apparatus used to determine the intensity of water hammer. The cylindrical drum revolves and the curves shown in Fig. 1 and 2 are made on it.

[1] Research Fellow, Hydraulic & Sanitary Eng. Dept., Univ. of Wis.
[2] Itinerant Instructor in Plumbing, State Vocational Schools of Wisconsin.

rious leaks and breakages had also occurred in the piping of the hospital. This piping was made of metal other than lead.

In order to obtain a picture of what actually occurred in this installation and find out of what magnitude the water hammer pressures were, our special water hammer recording device was connected to the 1 in. supply line a few feet from one of the laundry valves and the valve was operated both by hand and automatically. From the curve in Figure 1 it is seen that the operation of one of these valves produced a pressure of about 350 lb. per sq. inch. The static head was about 75 lb., which means an increase in pressure of over 4½ times the static head.

As shown in Figure 2 the installation of a vertical air chamber, 4 ft. long and 2 in. in diameter, a few feet from the valve caused a reduction of this pressure to approximately 140 lb. and elimination of all the noises present before the air chamber was installed. An additional air chamber would undoubtedly cause further reduction but this was not considered necessary. Figure 2 also shows that the installation of an air chamber 4 ft. long and 1 in. in diameter, at the same point reduced the pressure only to 195 lb. in one case and to 272 lb. in another case.

In this case provision did not have to be made for keeping air in the air chamber to take care of any leakage and solution into the water, as there was a valve in the line beyond the air chamber which was closed when the laundry machines were not in operation thus causing the line to drain and fill with air. In other cases some provision must be made for adding air to the chamber, and this is done by installing an air valve in the top of the chamber, and making it possible to remove water pressure from the chamber, draining the water from it and letting air in under atmospheric pressure.

Lead Helped Build Ancient Roman Gate Without Mortar

PORTA NIGRA (Black Gate) at Treves, Germany, the largest Roman monument north of the Alps, was constructed without the use of mortar, the huge stone blocks being held together by iron clamps or dowels embedded in lead. This method of construction was common in early times and the remarkable state of preservation of many ancient structures on which it was employed proves its efficiency.

Treves is a historic city founded by the Romans 2000 years ago and is the center of the Moselle wine district. Somewhat off the beaten track of international travel, it is a spot beautifully situated and delightfully unspoiled, famous for its wine merchants and wine cellars. At Treves also is located the unique German Wine Museum. Since the wine industry of the district was founded by the Romans, there is much to include in this museum. It treats the subject historically, scientifically and commercially.

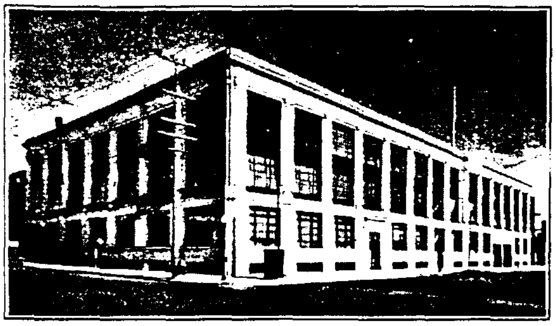
Porta Nigra was erected more than 15 centuries ago by Emperor Constantine the Great of Rome and stands as an enduring monument to the methods of its builders. Its weighty sandstone blocks, secured by iron and lead, have withstood the ravages of time to a remarkable degree. This method of avoiding the use of mortar has been used in fine construction in recent years (LEAD, March, 1934) having survived since the days of ancient Greece and Rome. It is particularly suited to marble work, where, by its use, the faces of the marble blocks may be placed in close contact without a separation of mortar between. It may also be used where through flashings make it necessary to secure copings by means of dowels and is frequently employed for fastening all kinds of metal into masonry.

A modification of this use of lead is the modern expansion bolt described in LEAD for January, 1933 and March, 1935. The difference is that in the expansion bolt the lead is in solid form when used and is expanded mechanically to fill the hole in the masonry and thus make a firm anchorage.

VIKO HAAS

Porta Nigra, Treves, Germany, built by the Romans more than 15 centuries ago without mortar, using iron clamps set in lead instead.

Concrete is Beautified and Protected With White Lead



GABRIEL MOULIN

Concrete building of Liggett & Myers Tobacco Co., San Francisco, recently painted with pure white lead paint.

WHITE lead makes an excellent paint for concrete, stucco and brick. This is well illustrated by the San Francisco building of the Liggett and Myers Tobacco Co., a concrete structure recently painted with two coats of pure white lead and linseed oil by Maundrell and Bowen, San Francisco painting contractors.

One reason for painting surfaces of this type is to exclude moisture which will penetrate the somewhat porous surface of the unpainted concrete, stucco or brick, making the building interior damp and eventually, particularly after freezing, causing deterioration of the building materials. Another reason is for decoration.

Painting of the Liggett and Myers building was accomplished with only two coats of white lead and boiled linseed oil paint. This was done, Mr. George Bowen, the contractor, explains, by looking the surface over carefully after the first coat was applied. Where there were any signs of unusual absorption, these spots were touched up. He stressed the importance of waiting from ten days to two weeks between application of the first and second coats. This procedure, together with the invariable use of white lead and boiled linseed oil on concrete and stucco, has made his firm extremely successful with this kind of painting.

There is a big opportunity for painters in the painting of brick, stucco and concrete if they will tell owners of this type of building of their need for paint. For three coat work, the following formulas are suggested:

PAINTING STUCCO, CONCRETE, BRICK, STONE

			Third Coat	
	Priming Coat	*Second Coat*	*Flat Finish*	*Gloss Finish*
Soft Paste White Lead	100 lb.	100 lb.	100 lb.	100 lb.
Boiled Linseed Oil	3 gal.	2 gal.	—	3 gal.
Spar Varnish	2 gal.	—	—	—
Pure Turpentine	1¼ gal.	1¼ gal.	1¾ gal.*	—
Liquid Drier	—	½ pt.	—	½ pt.
Gallons of Paint	9⅜ gal.	6½ gal.	5 gal.	6¼ gal.
Approx. Coverage per Gallon	200 sq. ft.	400 sq. ft.	600 sq. ft.	600 sq. ft.

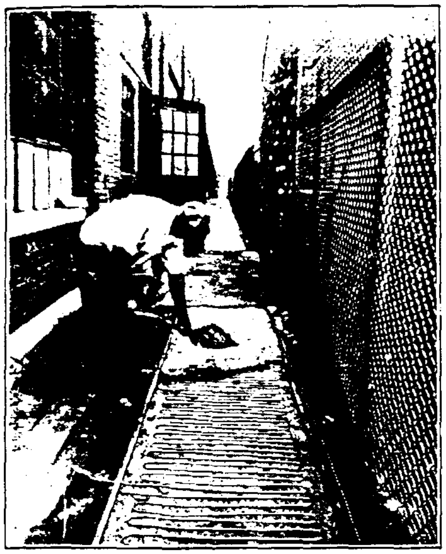
* Flatting oil may be substituted.

Since these surfaces vary in roughness and porosity, the exact footage a gallon of paint will cover is impossible to estimate, the above figures being merely a fair average. Stucco, concrete and brick mortar should be allowed to stand and dry for at least six months before painting, or, if necessary to paint sooner, may be artificially aged by washing with a solution of 2 lb. zinc sulphate in a gallon of water or with ordinary carbonic acid water.

New Possibilities for Lead Covered Heating Cable

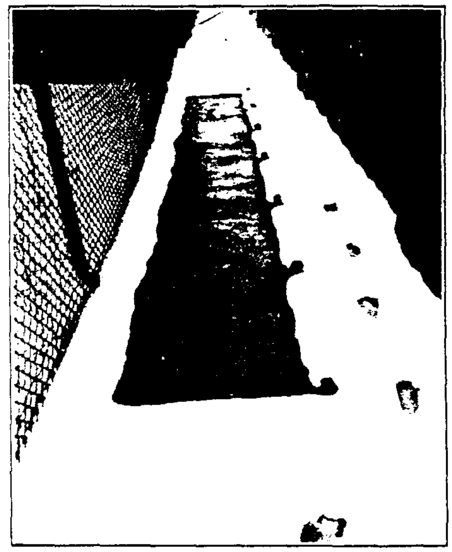
AN experimental installation of lead-covered resistance cable has demonstrated the practicability of keeping sidewalks free of snow and ice by electricity. This type of cable has been used for some time for soil heating in hot beds and greenhouses, which was described in LEAD, November, 1931. In the Fall of 1934, when the Rockbestos Products Corp., of New Haven, Conn., manufacturer of soil heating cable, was laying a new section of concrete walk at its plant, several thousand feet of cable were installed under the walk, as shown in one of the photographs, and proved to be perfectly practicable in keeping the wired section of the walk free of snow and ice by turning on the current to the cable.

This experiment opens the possibility of many new uses for heating cable of only slightly different design than soil heating cable. Walks in front of all types of buildings may be kept safe at all times and the labor of removing snow and ice eliminated. Everyone has experienced trouble opening and closing garage doors in winter, but a little heating



(LEFT) *Lead covered cable for sidewalk heating in place as walk is laid.*

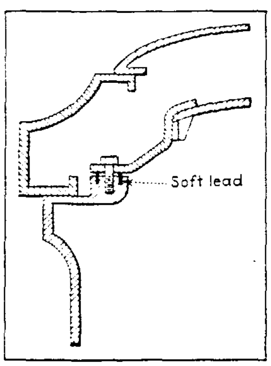
(RIGHT) *Section of walk kept clear through snow storm by heat from cable underneath.*



cable under the concrete apron leading into the garage would forever remove this nuisance. Dangerous outside steps and slippery grades on walks and drives may be kept clear of snow and ice by the simple turn of a switch.

It is only necessary to figure on supplying the proper wattage per square foot to raise the temperature of the walk above 32 deg. F. regardless of outside temperature. The labor of laying the cable is negligible and cost of operation will depend somewhat on local power rates. As a precaution against possible corrosion of the lead cable sheath resulting from free lime in new cement, the cable should be coated with asphaltum paint before it is laid. This will protect the lead until the cement has become carbonated after exposure.

Lead Makes Permanent Tight Seal for Closing Caskets

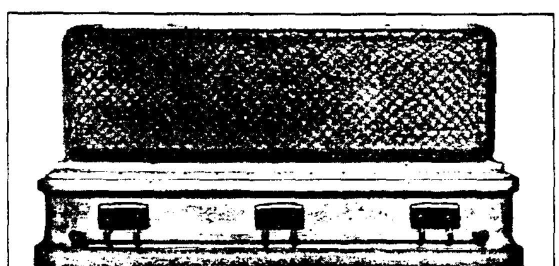


Detail of lead casket seal. As screws are tightened lead strips are flattened and permanently seal the joint.

WROUGHT bronze caskets of the National Casket Company are permanently and positively sealed against air and moisture by means of soft lead. The diagram shows how this is accomplished. Two continuous strips of soft lead run around the innerseal. When the screws are tightened in the proper rotation, these strips of lead are expanded, forming a perfect seal. Since lead is so durable this seal will never deteriorate and will remain permanently tight.

The properties of lead which make this type of seal possible, durability and softness, are responsible for other similar uses. For instance, lead-headed nails (LEAD, July 1934) used for fastening galvanized sheet metal operate on the same principle, for as they are driven home, the soft lead shoulder flattens out, sealing the nail hole permanently against moisture. No other common metal enjoys this combination of characteristics that makes lead so useful for all kinds of tight seals. Its choice for sealing caskets, where absolute dependability is essential, is a strong endorsement of its value for such purposes.

A device, said to stand up to 2000 lb. pressure, employs a lead alloy in much the same manner for sealing holes, cracks and other leaks in containers for gases and liquids.



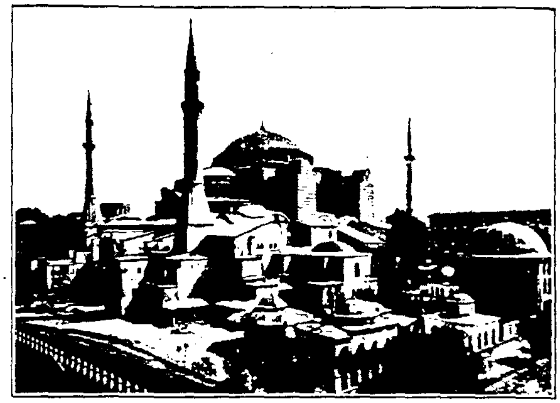
Bronze casket with lead innerseal. Row of screws indicates location of lead seal.

St. Sophia's Old Lead Roof One of Many in Istanbul

CONSTANTINOPLE, or Istanbul, has aptly been termed the "City of Lead Domes". Studded with mosques as it is, the domes and minarets are generally covered with durable sheet lead. Perhaps best known of the mosques of Istanbul is famed St. Sophia, built between 532 and 537 A.D. St. Sophia's dome and other roofing is sheet lead. Its present roof dates from the middle of the seventeenth century when the building was badly damaged by a severe fire, repairs having later been made between 1847 and 1849. Although it has been eighty-six years since these repairs were made, the photograph on the cover shows the excellent condition of the lead roof today.

When Byzantine Emperor Justinian dedicated St. Sophia in 538 A.D., he said, "Solomon, I have surpassed thee," and for 915 years St. Sophia was the richest shrine in Christendom, bearing out these words. But when Constantinople was captured by the Turks in 1453, Sultan Mohammed made St. Sophia a shrine of the Moslem faith. Recently Mustapha Kemal Pasha has decreed a new era in St. Sophia's long and brilliant history. He has made it a museum, dedicated to culture and open to all races and religions.

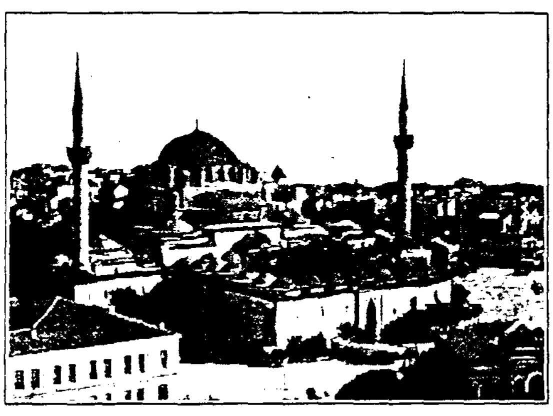
Istanbul is not the only Old World city where lead roofs seem to dominate, for all over Europe will be found great cathedrals and public buildings, many erected centuries ago, with roofs of lead. In America, too, are many well known buildings with lead roofs, including the National Cathedral, Washington, D. C., the Chapel at Princeton University, the Prudential Life Insurance Company Building in Newark, New Jersey, and the Henry Ford Museum at Dearborn, Mich. (LEAD, July, 1931).

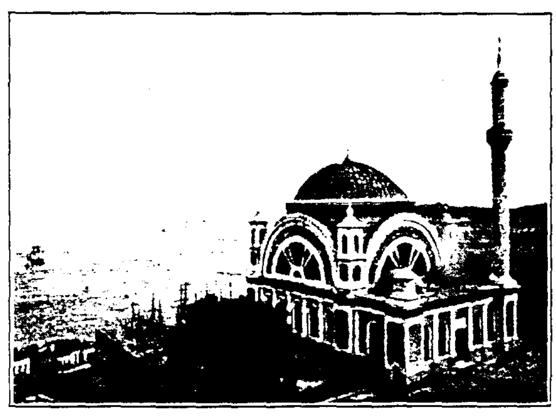


SEBAH VE JOAILLIER

St. Sophia is one of the world's best known buildings. Its roof is sheet lead.

Aside from its great durability, lead has other advantages for roofing that place it in a class by itself. Since lead sheets used for roofing are thicker than sheets of other metals for the same purpose, a proportionately longer life may be expected in addition to the longer life due to the innate durability of lead itself. The color is agreeable and harmonious with all other building materials, and acquires a *natural* patina improving with age. Water running off a lead roof does not stain light paint and masonry with which it may come in contact. Lead roofing is a genuine material, uniform throughout, and is therefore not subject to troubles resulting from surface imperfections.





Two more lead-roofed mosques in Istanbul, "the City of Lead Domes."

SEBAH VE JOAILLIER

THE LEAD INDUSTRIES ASSOCIATION INVITES INQUIRIES ON ANY SUBJECT RELATING TO LEAD AND WILL BE GLAD TO COOPERATE WITHOUT OBLIGATION IN THE SOLUTION OF YOUR LEAD PROBLEMS

MADISON SQUARE PRESS
NEW YORK