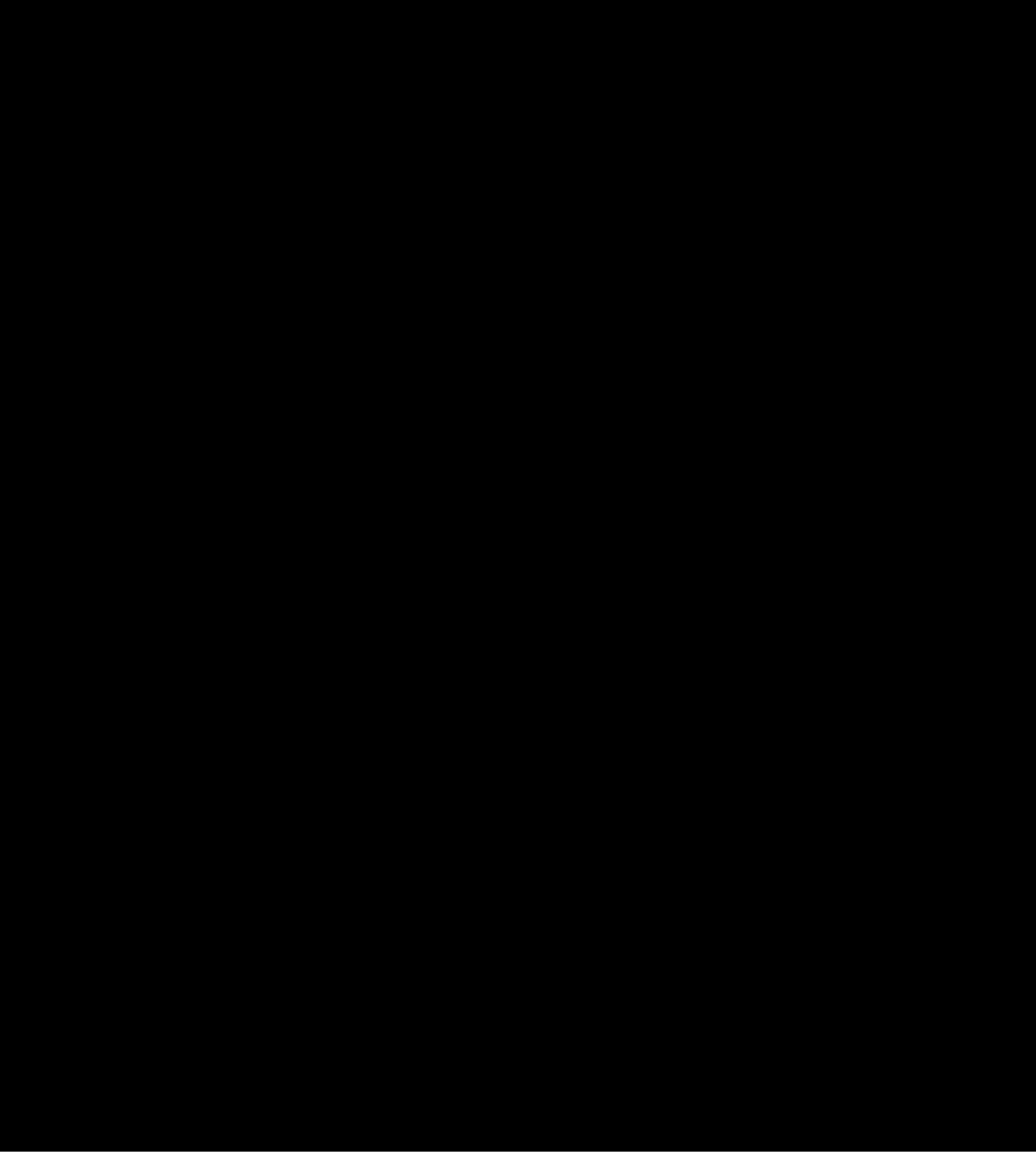




White Lead Paint and Lead Roofs at Saratoga Spa

SARATOGA SPA, at Saratoga Springs, N. Y., is a unique development, owned by the State of New York and operated by it through the Saratoga Springs Authority. A complete plant has been erected providing baths, drink hall, research laboratory, recreational facilities and hotel, all designed so that the curative naturally carbonated mineral waters of Saratoga Springs may be scientifically administered under the most favorable conditions. The best results can thus be expected from the "cure" under the supervision of a specially trained medical staff with the most modern and complete equipment at its disposal.

The waters of Saratoga Springs are the only naturally carbonated mineral waters known to exist east of the Rockies in this country. The State owns 163 springs in the area, but all but 19 have been shut off



Administration Building and Simon Baruch Laboratory at Saratoga Spa., N. Y. Note lead roofed arcades.

signed by such leading architects as Joseph H. Freeland, Dwight James Baum and Marcus T. Reynolds. Principal materials of construction were red brick, limestone, marble, and slate for the roofs. The roofs of the arcades and pavilions of the Administration Building, Drink Hall and East and West Bath Houses are hard lead batten roofs. These will be described in detail in an early issue of LEAD. All the exterior trim is painted with pure white lead paint in keeping with the high quality of the \$8,500,000 plant which New York State has built. The Saratoga Springs Authority is headed by Pierrepont B. Noyes, of Oneida, as president. W. P. Beazell is managing director and Walter S. McClellan, M.D., medical director.



The Drink Hall at Saratoga Spa, viewed from the portico of the Administration Building.

in order to control the flow. Of these 19, the waters of three are bottled, while six of the others are used for the baths, and the remainder flow free for spring-side drinking or to demonstrate the pressure of the carbon dioxide gas that sends the water high into the air.

The buildings are Georgian in character and de-



A. G. MICHAELSON

College students on vacation drawing rickshaws at Saratoga Spa. All outside painting of the buildings is with pure white lead.

Leaded Windows in Beautiful University Library



H. C. DAVIDSON

A detail of one of the lovely leaded windows in the University of Washington library.

LEADED windows have graced the finest buildings of the world for many centuries. That there is no diminution in their popularity among leading architects is well demonstrated by the new addition to the Library at the University of Washington. Nearly four tons of lead and solder were required for the leaded windows of this lovely building.

All the windows were made of clear and colored cathedral glass, glazed with $\frac{1}{2}$ in., $\frac{5}{8}$ in. and $\frac{3}{4}$ in. antimonial lead comes. The windows were specially designed and constructed by the C. C. Belknap Glass Company of Seattle, Wash.

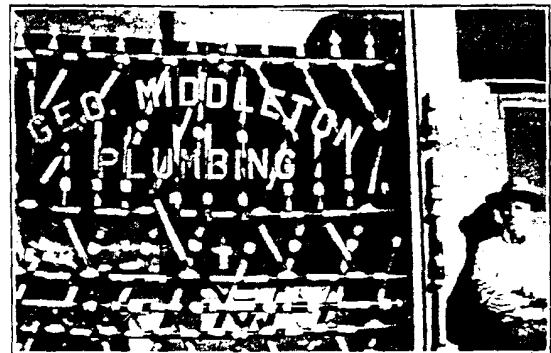
Leaded windows are also appropriate on buildings of less monumental character for they are often employed on moderate sized residences. They are particularly popular for rooms of special character, such as game rooms, play rooms, libraries, music rooms or bars, where they may be made to tell a story in keeping with the room and thus add greatly to the decorative effect. Less elaborate leaded windows, the lead comes simply forming geometrical designs, are also effective, particularly on small homes. Interior windows and doors may also often be improved by the use of leaded glass.

Plumber Uses Lead Craftsmanship to Attract Customers

HERE is a plumber who is proud of his craft. His window display, photographed in July, 1935, shows both that he believes in lead work and knows how to do it. The 4 in. joint he displays was wiped by him when attending the New York Trade School in 1908. Mr. George Middleton, Providence, R. I., plumber, is the man responsible for this fine display of craftsmanship. The inside walls of his shop are similarly decorated with lead work.

By this display, Mr. Middleton demonstrates to the public that he is an employer of the finest, most durable materials in his installations and that he is a master of his craft, capable of doing the skilled work necessary to do good plumbing. He is also doing the plumbing industry a good turn by showing the public that skill is required of good plumbers and that not any ordinary mechanic is capable of doing plumbing work. In other words he is capitalizing on lead work, the art of the plumbing trade. If

more plumbers followed a similar course they would suffer less from the competition of handymen and others unskilled in the true art of plumbing, and their business would benefit accordingly.



Joint wiping window display used to attract customers and demonstrate the plumber's skill.

Thin Sheet Lead Effectively Sound-Proofs a Bedroom

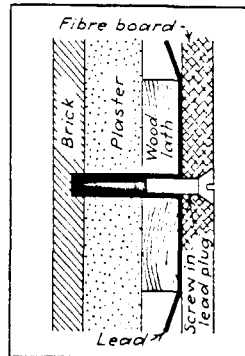
AN interesting application of lead for sound-proofing was reported in the June 22, 1935, issue of the French magazine, *Génie Civil*. Two rooms, one a bedroom and the other containing a phonograph, were separated by a plastered brick wall. The noise of the phonograph, even when at a distance from the wall, caused considerable disturbance in the bedroom. The noise transmitted was between 30 and 40 decibels and it was desired to reduce this to 10 decibels or less. Tests at the Conservatoire des Arts et Métiers had shown that lead 1 mm. thick effects a reduction of 31 to 36 decibels and 2 mm. thick of 37 to 43 decibels, depending upon frequency.

Horizontal wood laths were fixed to the wall and over these sheet lead 2 mm. (about 0.08 in.) thick was placed. The wall was then finished with fibre board and the whole secured by screws passing through the fibre board, lead, and laths into the plaster. To prevent transmission of sound through the fastenings, the screws were set in lead plugs. In this way the lead hung free except where fastened, which experience has indicated gives better results than confining it. The wall was finished with wall paper over the fibre board.

Despite the fact that floor and ceiling were not sound-proofed and that a pipe was common to the two rooms, offering an avenue for transmission of sound, results are said to be highly satisfactory. And it all was accomplished at low cost by the addition of a structure whose total thickness is 22 mm. (about 0.88 in.) This is a great advantage of using lead for sound proofing. The following table, summarizing results of tests under the direction of M. Cellerier at the Conservatoire des Arts et Métiers, shows how much greater thicknesses of other materials are required to accomplish sound reduction equivalent to that of very thin lead:

SOUND REDUCTION FACTORS OF VARIOUS BUILDING MATERIALS

MATERIAL	THICKNESS in mm.	REDUCTION in decibels
Cork pieces without agglutinant.....	50	8.6
Pumice concrete	84	15.0
Kelp	33	19.3
Pure cork	51	26.6
Fibrous mineral wool, "banroc" and perforated sheet iron.....	64	27.0
Cellular concrete	48	32.3



Sketch and photograph showing method of installing lead sound-proofing in a bedroom.



CENTRE D'INF. DU PLOMB OUVRE

MATERIAL	THICKNESS in mm.	REDUCTION in decibels
Vegetable fibre impregnated with magnesium cement, coated with cement on both sides.....	120	36.0
Wood fibre impregnated with magnesium cement, coated with plaster on both sides.....	137	36.7
Cork lumps, coated with plaster both sides	76	37.4
Cement and pumic mass of greyish color	32	38.0
Cement and pumice mass of greyish color	52	39.3
Cement and pumice mass of greyish color	82	44.6
Oak	22	33.5
Plaster square	54	33.5
Bricks with plaster coating of 1 cm. on each side.....	80	36.4
Plaster square	60	38.0
Hollow bricks of 8 cm., plastered (1 cm. plaster on each side).....	100	41.7
Concrete with plaster coating of 1 cm. on each side.....	60	43.0
Lead sheet 1 mm. thick.....	1	35.0
Lead sheet 2 mm. thick.....	2	39.0

F. H. A. Loans on Soil Heating Cable

BOTH private and commercial growers of flowers and other plants will be interested to learn that soil heating cable is now included as an item of equipment eligible for loans under the Federal Housing Administration. This is the lead sheathed cable described in LEAD, November, 1931, and May, 1935, and indicates the increasing importance of this useful article as a means of surer and more economical growing.

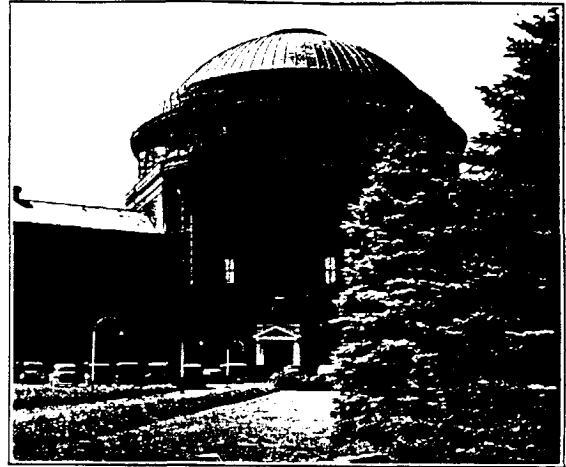
Fine Lead Roof at Rahway at New Low Cost

(Continued from September LEAD)

INSTALLATION of hard lead on New Jersey's Rahway Reformatory dome was described in detail in the September, 1935, issue of LEAD. It is natural that the authorities in charge of this work have selected the finest material for such a job.

Lead makes an ideal roofing for many reasons. Because of the low cost of lead metal it can be used in much greater thicknesses than other metal roofing and still be competitive in cost. For instance, on the Rahway Reformatory, the lead has a thickness of 3/64 in., more than twice the thickness of the old roofing. When this additional thickness is combined with the great corrosion resistance of lead, greater than any other common metal when exposed to the atmosphere, a much longer life can naturally be expected of a lead roof. The soft gray color of lead is another added attraction and it becomes more beautiful with age. Nor is there any danger of staining other materials adjacent to lead, for it does not cause discoloration.

Lead has a background of many centuries as a roofing material, particularly abroad, where many of the world's finest buildings, erected by architects whose names have lived through centuries, are roofed with lead. In the past, however, lead has been an expensive roofing material, for, since it is low in strength, it had to be used in great thicknesses. Modern metallurgy, however, developed hard lead, lead containing certain percentages of antimony, for roofing purposes. Hard lead has about twice the strength of ordinary lead and therefore permits the use of thinner sheets. But hard lead originally was quite expensive and this reacted against its use although it cost less than much greater thicknesses of soft lead. **In recent months the cost of hard lead has been reduced so that the archi-**

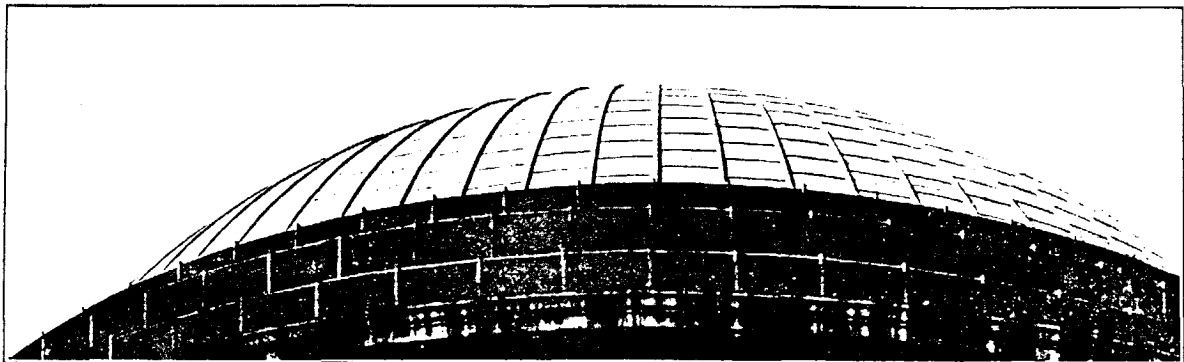


A. G. MICHAELSON

The Rahway Reformatory dome completely reroofed with hard lead down to the cornice.

tect, who has always favored lead but often was prevented from using it because of high cost, can now employ it at prices approximately the same as other good roofing materials. For instance, it cost the State of New Jersey little, if any, more to reroof the Rahway Reformatory with the finest roofing material available. Many fine buildings in this country, roofed with hard lead at much higher cost, indicate its true worth.

Only comparatively few people realize that lead is one of the lighter types of roof. It weighs, for instance, about the same as wood shingle roofs, generally less than asbestos shingles, about half as much as slate, or felt and gravel or slag, half as much as Spanish tile and a quarter as much as shingle tile. Hard lead roofs weigh only about 300 lbs. per square.



A. G. MICHAELSON

A detail of the dome at Rahway which has just been recovered with hard sheet lead down as far as, but not including, the cornice.

Strict Codes, Enforced, Correct Unsafe Handyman Plumbing

THE following is a quotation from a letter from Mr. G. W. Reed, plumbing inspector, Danville, Ill., who was responsible for the discovery and correction of the horribly unsanitary conditions described and for the prosecution of the handyman who perpetrated them:

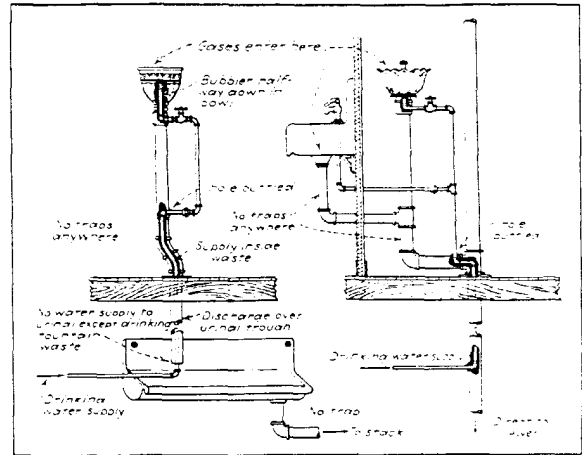
"These pictures of the basin and two drinking fountains were taken in a building inhabited by some two hundred children and were used daily. The waste pipe continues to the basement and emptied over a trough urinal. There is no trap under urinal nor drinking fountains. No water connection to the urinal, the water from drinking fountains used to flush the urinal.

"The water pipe to fountains runs through the center of the two inch waste line. A hole drilled through the two inch, large enough for water pipe to slip through and then made tight by means of putty.

"Notice on second floor the putty was picked off, and bits of it are on the floor.

"The light shades on the top of fountains are set on with putty. The top of bubbler on second floor fountain is about half-way to the shade.

"This work was installed by a handyman and had been in use several years.

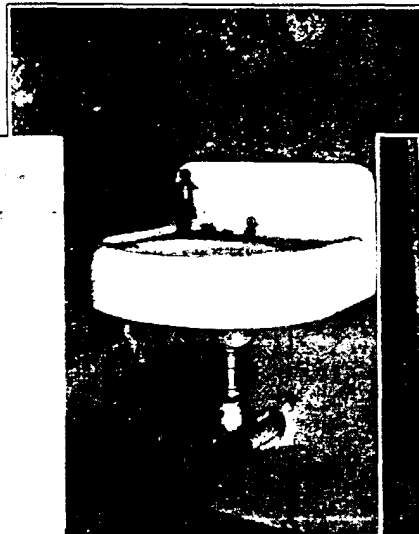
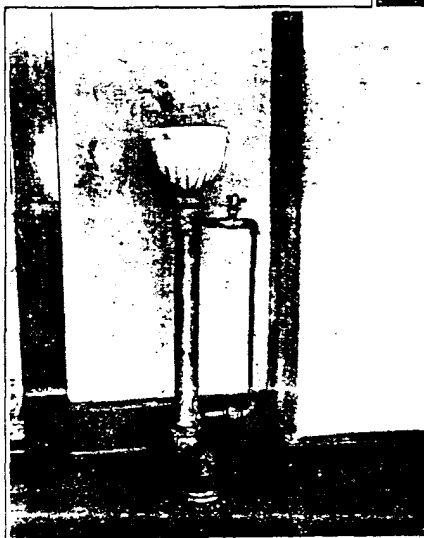


How the handyman installed the unsanitary plumbing illustrated below.

"It has been entirely torn out and replaced, in a sanitary condition."

It is needless to point out to anyone familiar with plumbing the unsanitary features of this installation. Waste matter may pollute the drinking water and nothing prevents noxious gases from entering the building. In fact, children drinking from these fountains had to put their faces right down where foul gases had to be inhaled.

Drinking fountain, with untrapped waste emptying into urinal trough and supply pipe inside waste.



Lavatory with untrapped waste direct to sewer. The fountain bowls at left and right are old light globes.



There can be no stronger argument than actual cases like this for rigid control of plumbing by ordinance and strict, alert plumbing inspection. Handy-men who do jobs like this are monkey-wrench mechanics unable to handle the tools of the skilled plumber. They would be stumped if faced with joining or bending lead pipe, and they would be unable to pass a plumber's license examination.

Conditions similar to this, although not so flagrant perhaps, exist in many places. Where control over plumbing is lax or where plumbing codes do not exist or are unsatisfactory, even some engaged in the

plumbing business may be responsible for them. Real plumbers, skilled in their trade and recognizing their responsibility to the public, have a public duty to perform in agitating for proper control of plumbing, strict licensing of plumbers, and the use of materials that result in durable, high quality, sanitary installations. Such a material is lead, and it is usually found that where lead is extensively required by plumbing codes for those purposes for which it is so well suited, the class of plumbers is high and public health conditions better, because only real plumbers can handle lead.

Plumbing Inspector Educates Public About Lead Plumbing

MR. CHARLES H. GREGORY, plumbing inspector of Kingston, N. Y., believes that the public should be better informed about plumbing. Then it is better able to understand the reasons for rigid control of plumbing and the necessity of employing capable, licensed plumbers. The following article, reprinted from the Kingston Daily Freeman of May 17, 1935, shows one means Mr. Gregory has employed to educate the public of his city.

Advantages of Lead In Interior Plumbing

"Plumbing Inspector Charles H. Gregory today issued the following statement in regard to the advantages of lead in interior plumbing:

"The basic reason for public control of plumbing is 'the protection of persons against injury to health and property.'

"To insure such protection, to safeguard the public against unsanitary plumbing and damages from the use of cheap or defective material and to guard against improper installation, it is manifestly necessary to have public regulation of the location, construction, installation, inspection and sanitary maintenance of plumbing. In providing regulation, safety and durability should be made the minimum requirements, and the minimum should never be lowered for economical or other reasons.

"Necessity for the protection of health is obvious, but necessity for the protection against property damage may not be quite so clear. Nevertheless this is also very important, as the owner of the small home . . . is generally uninformed as to the merits of various kinds of plumbing and must rely solely upon adequate public regulation of plumbing to protect his hard-earned investment, as well as his health.

Waste Pipe

"1. Greatest durability—Lead pipe, properly installed, makes the most durable plumbing installation known, whereas galvanized pipe may last only a few years and on the average will not last as long as the building in which it is installed.

"2. Cutting of wood structure minimized—An installation of lead waste pipe reduces the cutting of the wood structure to a minimum because the outside diameter of lead pipe is smaller than either galvanized or cast iron pipe. Lead pipe also has sufficient flexibility to allow almost any length of lead pipe to be reeved through holes bored in beams, making fewer joints and smaller holes. Rigid pipes also require larger holes than lead pipe to provide ample clearance when beams sag due to the weight of heavy tile floors and fixtures.

"3. Fewer joints—In addition to reducing the number of joints as mentioned above, flexible lead pipe can be bent to the necessary angles, eliminating many elbows, 45 degree elbows and nipples required by more rigid types of installations.

"4. Superior joints—Bonded wiped joints or cast-iron calked joints are preferable to threaded joints on galvanized iron pipe, as threads are cut into the walls of the pipe reducing wall thickness, and, consequently, the strength of galvanized pipe. Galvanizing is also removed for a space beyond screw joints and rusting can readily begin at these points.

"5. Smooth bore—Lead pipe has an exceedingly smooth inner surface throughout, reducing the possibility of being choked by an accumulation of hair, lint, grease and other solid matter that often clogs rough surfaced pipe.

"6. Provides for settlement—The flexibility of lead pipe allows it to adjust itself to building settlement

without difficulty, whereas settlement places a strain on a rigid pipe system liable to cause breakage at the joints where wall thickness has been reduced by thread cutting, or at joints where rusting may have commenced, as where galvanizing has been removed adjacent to the joints.

"7. Easier to meet Code requirements as to grades—All plumbing codes require $\frac{1}{4}$ inch per foot pitch for

waste and soil pipes. . . . Lead pipe, because its joints require less space, can be installed to the proper grade when cast iron or galvanized pipe can not.

"8. No greater cost—Despite the many advantages of lead pipe for waste lines outlined above, a lead pipe installation costs no more than screw pipe for the same purpose. It is folly to use anything but the best when the best costs no more."

Hand Wrought Lead Ornaments Gain Popularity

ALTHOUGH lead has been popular for many centuries for architectural decoration, the last few years have witnessed a surprising increase in its popularity for a wide variety of small ornamental objects largely used in interior decoration. Pictured here are a few examples of hand wrought ornamental work made by Mr. Frank Edmands, of Seattle, Wash.

The picture frames are made from hard lead sheet and suggest an entirely appropriate and new application of lead. The soft color of lead does not detract from the center of attention, the picture, but it is pleasing and tastefully ornamented to be attractive and set off the picture.

The flower boxes for pedestal use are made of

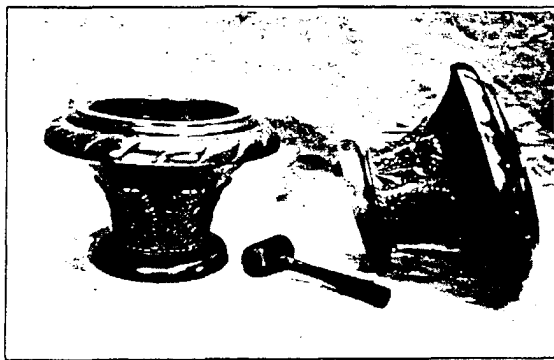


Candle holders and novel ash tray hand wrought from lead.

sheet copper completely covered with 2 lb. sheet lead into which the ornamentation has been worked. The same thing may be accomplished by using hard lead of greater thickness.

The other picture shows a novel ash tray or match safe idea made from antimonial or hard sheet lead, while the candlesticks are wrought from $2\frac{1}{2}$ lb. sheet lead.

Appearance of such ornamental objects as these in many department stores, florists, novelty stores and elsewhere attests to their popularity. There is an opportunity in this type of lead work for the artistically inclined to employ a new medium of expression for interior ornamentation. Contrast may be provided by tinning portions of the surface.



Beautiful urns ornamented in sheet lead.



Ornamental hard lead picture frames.

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