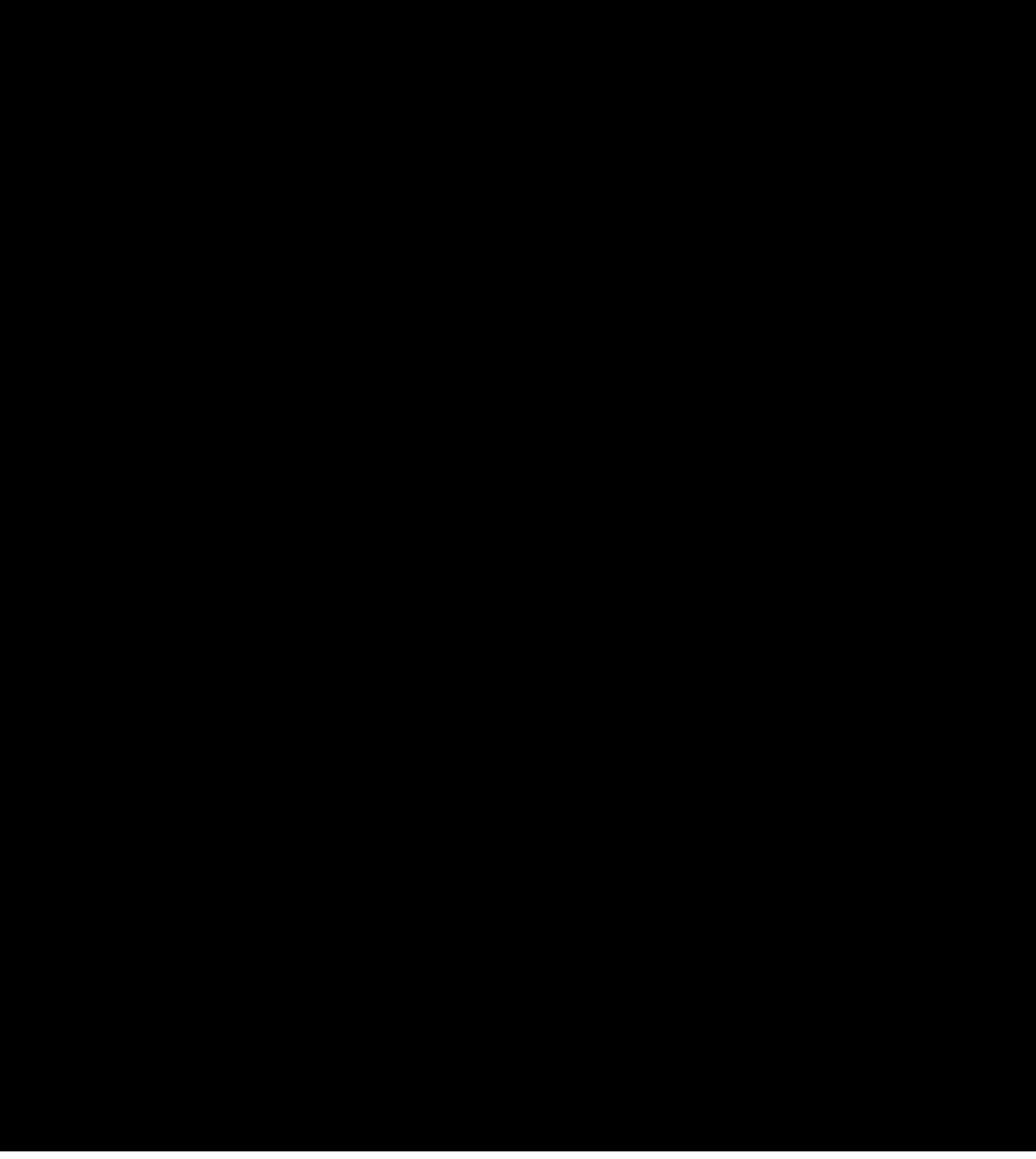


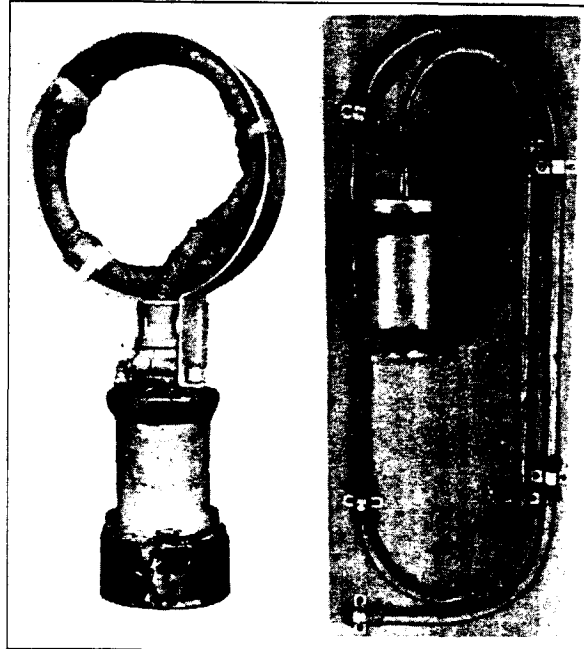


Lead Loading-Coil Cases Advantageous in Telephone Work

LOADING-COIL cases used in connection with telephone systems are designed to be used underground or on poles. Therefore water and even moist air must be kept out of them and they must be resistant to corrosion. The Bell Telephone Laboratories have developed a new type of case made of antimonial lead which has several advantages over the previous copper-bearing welded steel cases and even earlier cast iron cases, according to the Bell Laboratories Record.

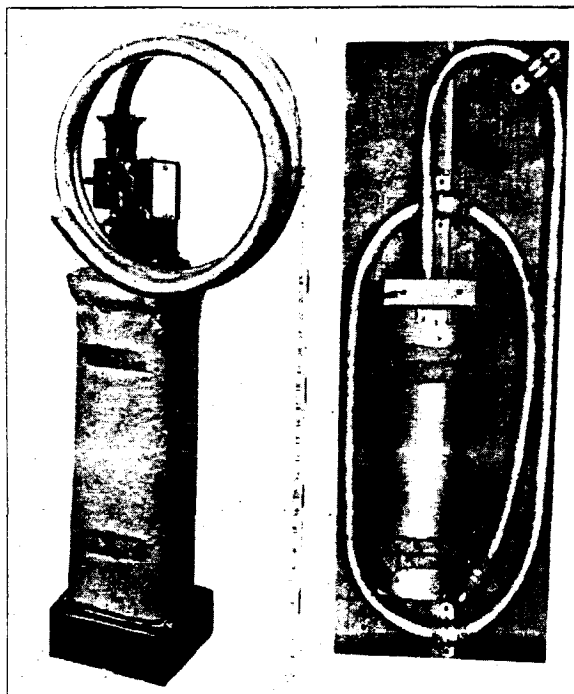
The new case is made of an antimonial lead sleeve of the type used for splicing cable with a lead top and small stub lead-covered cable soldered in one end and a lead bottom in the other. The following paragraphs are quoted from an article describing the development of the new cases by J. E. Ranges in the April, 1936, issue of Bell Laboratories Record:

"A lead alloy for housing loading coils has many advantages over other materials which could be used. Sleeves of lead-antimony alloys are made of the correct size and in large quantities for cable splicing, and as a result of the large production, the cost is relatively low. Its properties are well known also, and it is a material that can be easily worked with simple tools. In addition it permits a ready seal between the case and the stub



COURTESY BELL TELEPHONE LABORATORIES

Comparison in shipping size between old style steel, left, and new lead loading-coil cases, each housing five coils.



COURTESY BELL TELEPHONE LABORATORIES

Comparison of old style steel, left, and new lead loading-coil cases for loading program circuits, each housing six coils. The lead case weighs only half as much as the other.

cable. Another important advantage of this alloy is its ability to withstand the corrosive effects of the elements encountered either in aerial or underground installations. No expensive finishes are required to prolong its life. Lead-antimony is not so strong as cast iron or steel, but freedom from corrosion, ease of working, and low cost are the controlling factors for the smaller size cases.

"Another advantage of the lead case is the greater ease with which it may be installed. With the heavier and more bulky welded case it had been standard practice for the cases to be transported to the point of installation and set in place by a construction gang, specially equipped for heavy work. A splicing gang would come along later to connect the loading with the cable. With the much lighter lead sleeve cases it became the accepted practice for the splicing gang itself to transport and place the cases as well as to splice them into the cable."

Whereas the old type cases required different protective coatings depending upon whether they were to be used underground or for aerial installations, the lead cases require no protective coating and may be used for either type of installation without alteration. Also the lead cases are small enough to be suspended from the same steel strand that supports the cable to be loaded.

Lead Covered Skylight Bars and Ornamental Lead Frieze

A MOST unusual and attractive structure is the swimming pavilion of the G. L. Duffy residence, Three Tree Point, Seattle, Wash. In its construction lead has been used to good advantage for both ornamental and utilitarian purposes.

The terrace facing the pool is equipped with a large open fireplace and is protected from above by a glass roof. This roof is built of glass held by lead-covered steel skylight bars. A cross-section of one of them is shown in the accompanying drawing. This type of skylight has been used on many fine buildings, large and small, and the thick lead covering over the steel provides exceptional durability under all sorts of climatic conditions. In this case, the salt spray from the nearby ocean makes corrosion a particularly important danger. Since lead is more durable than any other common metal when exposed to the atmosphere or to salt water (see report of tests in LEAD, March, 1931), there need be no fear of undue deterioration of the skylight bars on this pavilion.

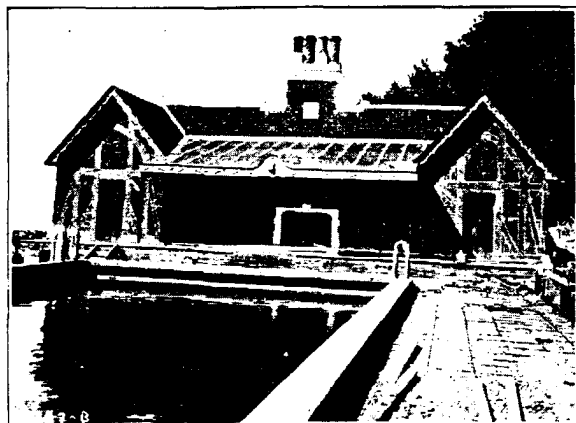
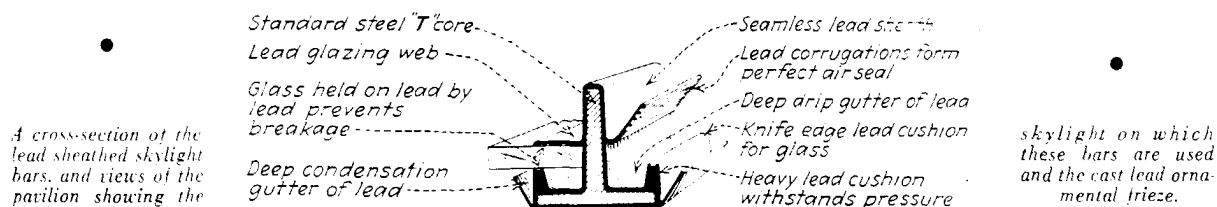
Along the front of the skylight roof is an attractively ornamented cast lead frieze. This frieze is supported by and completely covers a wood frame. Behind the frieze is a lead-lined gutter, the apron of which runs up under the lower end of the skylight as flashing. Not only is lead appropriate for this frieze because of its

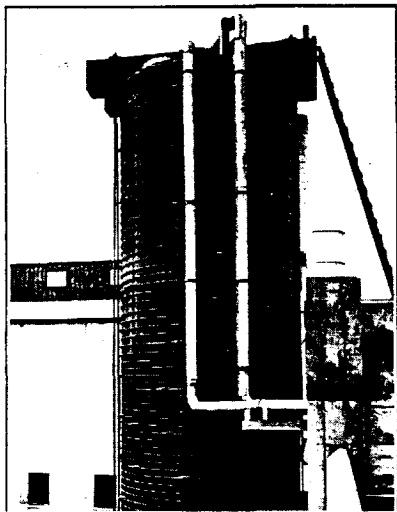


Swimming pavilion, Three Tree Point, Seattle, Wash., with Puget Sound in the background. E. J. Ivey, Seattle, architect.

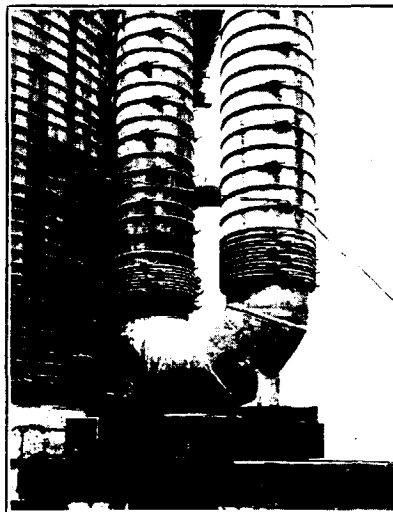
durability, but the soft quality of lead castings and the pleasing silver gray color of lead are attractive. Furthermore, years of exposure under these trying conditions will not cause discoloration or staining, but will simply cause the lead to acquire a natural patina that improves with age.

The architect for this swimming pavilion was E. J. Ivey of Seattle and the contractor was E. E. Smiley of the same city.

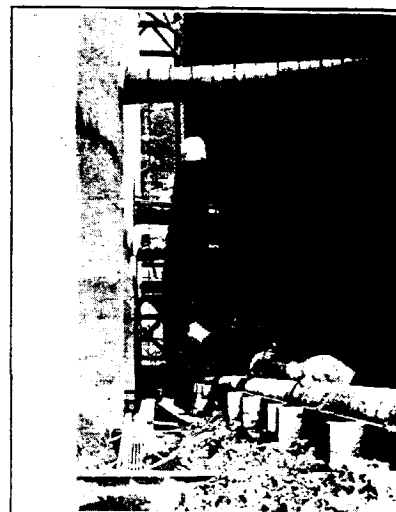




Six inch antimonial lead acid lines into acid recovery tower, Weyerhaeuser Timber Co., Pulp Division



One of 15 antimonial lead return bends on wood-stave vomit-stack gas line. The bends are 24 in. in diameter and lead burned from $\frac{3}{8}$ in. thick lead, weighing about 1600 lbs. apiece.



Showing 24 in. antimonial lead return bend and elbow on wood-stave vomit-stack gas line and 12 in. antimonial lead acid sewer line.

New Sulphite Pulp Plant Has Much Lead Equipment

THE new Weyerhaeuser Timber Company sulphite pulp plant at Everett, Wash., is equipped with approximately 100 tons of lead products to resist corrosion from sulphurous compounds used in pulp manufacture. While practically all lead pipe and sheet lead for this installation was made with a 6 per cent antimony content, there are some locations in the mill where especially severe conditions, resulting from corrosion or heat or both exist and a tellurium antimonial lead alloy was used. A multitude of lead shapes was employed, ranging from simple extruded pipe to complicated, specially constructed shapes, the ease of working and burning lead making it particularly adaptable.

There are some 35 tons of lead in the Jenssen gas cooler, which is similar in general design to those used in sulphite mills throughout this country and Canada. Here the tellurium lead alloy is used for the 8 in. tees which connect the leads to the gas cooler from the cast iron header of the sulphur burning equipment. All other lead in this section of the plant is straight 6 per cent antimonial lead. The 12 in. headers, 27 ft. long, have $\frac{3}{8}$ in. walls; all 8 in., 16 in. and 20 in. lines have $\frac{1}{4}$ in. walls; and the 8 in. by 3 in. risers and return bends, and the 10 in. by 5 in. water seals are $\frac{7}{16}$ in. wall elliptical antimonial lead pipe. All elliptical pipe, and other sizes up to 12 in. inside diameter, are seamless.



These are 8 in. antimonial lead sprays with lead flanges for the acid system.



Lead piping in acid filter system tank bottoms. Tank walls were built on later.

drawn with special dies and mandrels to insure uniform wall thickness and standard cross-section.

The cooled gas is carried to the Jenssen towers by 20 in. antimonial lead lines, and 6 in. lines carry the liquids serving the acid towers. The acid recovery tower, the acid filters and acid storage are served with hard lead lines. The sewer system for the acid building is made of 10 in. antimonial lead with $\frac{1}{4}$ in. walls. All bends and sweeps were designed to reduce friction to the minimum, and all joints and seams burned inside and out to insure maximum service.

In a number of places in the plant, lead handles a special problem. Fifteen 24 in. diameter $\frac{3}{8}$ in. wall elbows and return bends used on wood stave lines were made

from sheet lead to handle the vomit-stack gases. To handle stock washing, 8 in. hard lead spray heads were built to specification. A high pressure line in the acid recovery system was made from tellurium antimonial lead to carry the extra load at a minimum cost. Mr. O. C. Schoenwerk, engineer, was responsible for the design of all this lead work and for supervising its installation.

Lead is one of the most useful materials available to the chemical engineer because of its excellent corrosion-resistant characteristics when exposed to a wide variety of chemicals. Alloys such as antimonial lead and the more recent tellurium lead and tellurium antimonial lead have widened its field and increased its usefulness.



Top of elliptical hard lead pipes in gas cooler unit, showing water seal lead jackets.

Installation of elliptical antimonial lead gas cooler unit.



Oldest Active Plumber Advocates Lead

ALEXANDER MUIRHEAD, a young plumber, left his home in Edinburgh, Scotland, in 1874, to ply his trade and seek his fortune in the United States of America. He landed in the City of Boston, Massachusetts, after a fast passage across the Atlantic of fourteen days. His first job was with Mr. Alexander Campbell, master plumber, in the town of Charlestown, Massachusetts. After working for Mr. Campbell for two and a half years, he decided to go West. In 1876 he left for New York City, then went overland to San Francisco, where he boarded the steamer "John L. Stephens", an old side-wheeler, for Astoria, Oregon. He got his first

job as a plumber installing all the sheet lead and lead piping on the U. S. revenue cutter "Thomas Corwin", a wooden boat being built in the Astoria Shipyards. When the "Thomas Corwin" was finished, he sailed up the Columbia to Westport and worked as a plumber for the Westport Salmon Cannery. He then went on to Portland, Oregon, where, in 1879, Mr. Muirhead imported a bathtub from Scotland which was made of zinc $\frac{1}{4}$ in. thick, and a porcelain pan type toilet that he installed in his own home. In the year 1888, Mr. Muirhead launched out in business with Mr. Murhard, under the firm name of "Muirhead & Murhard Co." This is

the oldest plumbing firm in Portland, Oregon, and is still doing business. The accompanying picture of Alexander Muirhead at the age of eighty-six years shows him as he is today. He believes he is the oldest master plumber in the United States who goes down to his office every day. His slogan is "Lead, and how to work it, is what the plumber should know".

Old timers who can look back on long years of experience in the plumbing industry readily realize the great value



At 86, Alexander Muirhead of Portland, Ore., believes he is the oldest active plumber in the country.

that lead has held for them. Wherever lead is used, it is responsible for a high level of craftsmanship in the plumbing industry, a level of craftsmanship attained by few other industries and one which protects the plumber and public alike against irresponsible, incompetent workers.

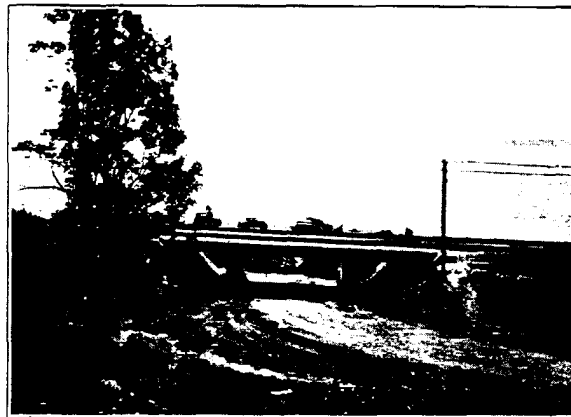
NOTE: Perhaps there are other old timers among the friends of lead who can outdo Mr. Muirhead in point of age and service. If so, we would like to have their stories and photographs.

Sheet Lead Reduces Vibration on Railroad Underpass

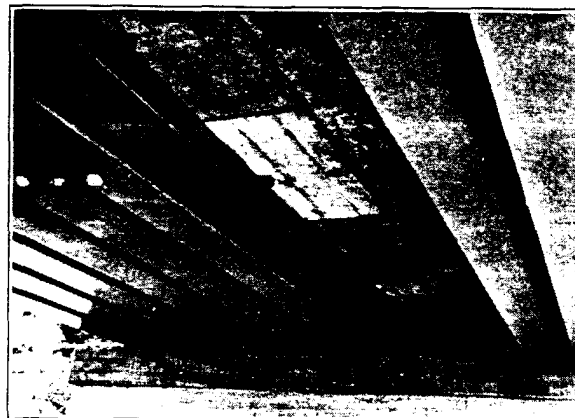
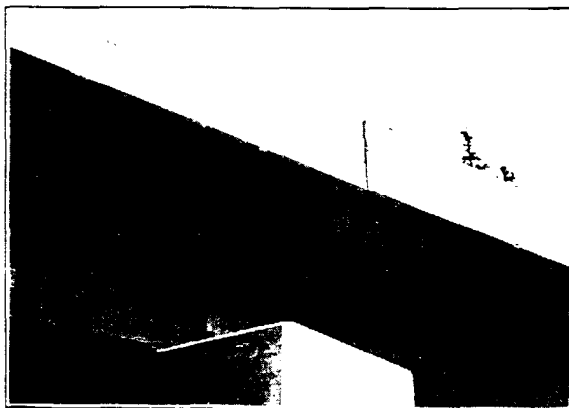
THE Great Northern Railway, working with the Engineering Department of the City of Seattle, selected lead to reduce vibration and for several other reasons in the construction of a small underpass bridge on their main line at Golden Gardens, Seattle, Wash.

This bridge is constructed of pre-cast and pre-cured concrete slabs, resting on horizontal steel girders. These slabs weigh slightly more than two tons each and are bolt-anchored to the steel under-structure. The railroad bed and ties rest immediately on top of the concrete.

Sheet lead plates, in widths of 13 and 15 in., and of $\frac{1}{8}$ in. thickness, were inserted over the entire area between concrete slabs and steel girders. The lead serves many purposes. Primarily it is used as an anti-vibration material, absorbing the vibration resulting from the constant freight and passenger traffic passing over this main-line bridge. It also takes up any differences in the surfaces of steel and concrete, its softness and flexibility permitting a perfect settling of the two materials and



Great Northern Railway underpass at Golden Gardens, Seattle, Wash., on which sheet lead was used to reduce vibration and for other reasons.



Details of concrete and steel construction of Great Northern Railway underpass. The sheet lead is between the concrete and steel and the edge of the lead is just visible between these materials.

compensating for any surface irregularities. This at the same time prevents cracking of the concrete slabs under the stress and weight of railroad traffic, especially where the concrete might otherwise rest unevenly on the steel. Furthermore, the softness of the lead protects against the sliding and vibrating action of the concrete

over the steel, which would have the effect of abrading the paint, thus permitting rust and subsequent deterioration of the steel work.

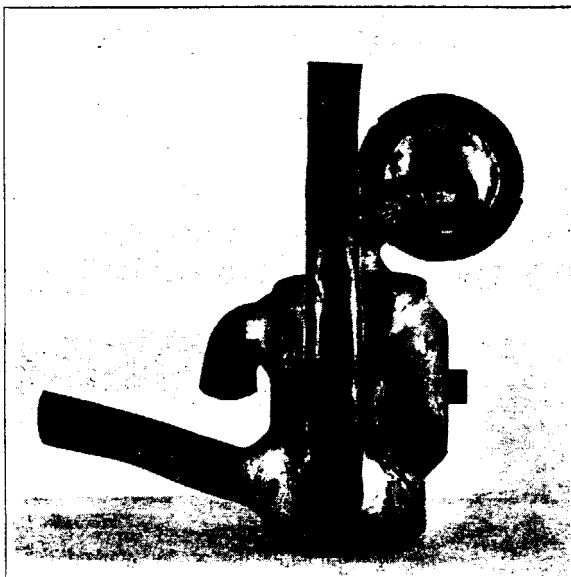
This bridge was built for the Great Northern Railway in 1933, the contract being handled by the Cascade Construction Co., Seattle, Wash.

Old and Modern Lead Plumbing in Pasadena, California

ALTHOUGH 40 years of life separates the lead plumbing goods shown in photographs here, there is a close relationship between them. One is the reason for the other.

Forty-seven years ago the lead pot trap illustrated was installed in the Hotel Mission at Marengo and Colorado Streets in Pasadena, Calif. When the building was being remodeled seven years ago this pot trap was removed by E. O. Nay Co., Pasadena plumbing contractors, and found to be in perfect condition and clean inside despite 40 years of continuous service. A further point of interest about this old lead work is that the pipe is the old-fashioned kind made from sheet lead with burned seams.

The other picture shows modern lead work about to be installed in the William R. Nash residence in Pasadena by the same firm of plumbing contractors. The lead bends had already gone out to the job when this photograph was taken. This lead work was done by

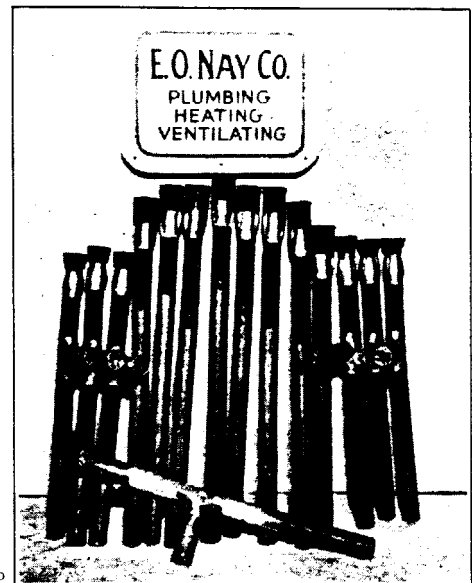


A. E. ARNOLD

Lead pot trap in perfect condition after 40 years of continuous service in Hotel Mission, Pasadena, Calif.

Lead work wiped up in the shop for a Pasadena, Calif., plumbing job. The lead bends had already been sent out.

A. E. ARNOLD



Harold Shirk and T. B. Hursh, journeymen plumbers, and is a fine example of the kind of skilled craftsmanship that is a credit to the plumbing industry and assures the home-owner of high-class workmanship.

The connection between the two photographs is this. Time and again old lead plumbing is found that has given long, trouble-free service. These old installations clearly demonstrate the fact that lead offers the best means for a plumber to give his customers high quality plumbing. That is why so many of the country's leading plumbers insist on installing lead work for the concealed parts of plumbing installations. They know it will add to their reputations and bring old customers back and new ones in and that it costs no more installed than less durable materials.

It is also why so many cities, of which Pasadena is a leading example, require by ordinance that concealed wastes be lead. Thus the public is protected not only against expensive plumbing repairs but against unsanitary conditions resulting from failing plumbing. Wide-awake authorities and plumbers in Pasadena have recognized the proved performance of lead in actual service and have further recognized that all new materials and methods that may be introduced are not necessarily progressive. They do not believe in experimenting with the health of the community.

Better Paint Campaign Has Traveling Office and Display

TO SATISFY requests for further information about the causes of paint failures and methods of preventing them which resulted from programs put on at 18 state and regional lumbermen's conventions and to take care of requests from lumber association secretaries to bring these programs to their district meetings, the Forest Products—Better Paint Campaign has established a field service department.

The Douglas Fir Plywood Association presented the Campaign with a specially built trailer coach to use as a traveling field office. This coach is constructed mainly of douglas fir plywood with double walls and the interior has been beautifully decorated with lead and oil



Traveling field office and exhibit presented to Forest Products—Better Paint Campaign by the Douglas Fir Plywood Association, shown in front of the U. S. Forest Products Laboratory at Madison, Wis., before starting on its tour.

to show typical forest and mountain scenes from the districts in which most building lumber is produced. On the outside walls of the coach glass-covered educational exhibit cases are mounted to attract the public to the use of forest products and better paint. Eight of the eleven exhibit cases were prepared by the U. S. Forest Products Laboratory to tell the story of wood, its uses, proper and improper painting. Pictures of the laboratory and some of the more important testing machines are included.

The field office also carries laboratory and photographic equipment. The coach is parked in the cities visited so that the public may examine the exhibits. The

Retail Lumber Dealers Associations sponsor the tours of the coach and receive credit for having the exhibits on display. It has already made a tour of the principal cities in Virginia and is now touring New England. Eventually it will have been on display in cities throughout the entire country, but this program will probably require about three years to complete.

The Forest Products—Better Paint Campaign is sponsored by the Lead Industries Association as a contribution to the lumber industry to increase lumber markets through the use of better paint. Also cooperating are all the national and regional lumber manufacturers associations, the International Society of Master Painters and Decorators, the National Lumber Dealers Association, and others. The 19 associations cooperating in this campaign are:

American Forest Products Industries, Inc., Arkansas Soft Pine Bureau, California Redwood Association, Douglas Fir Plywood Association, International Society of Master Painters and Decorators, Inc., Lead Industries Association, National-American Wholesale Lumber Association, National Door Manufacturers Association, National Association of Commission Lumber Salesmen, Inc., National Association of Woodwork Jobbers, National Lumber Manufacturers Association, National Lumber Dealers Association, Northern Pine Manufacturers' Association, Red Cedar Shingle Bureau, Southern Cypress Manufacturers Association, Southern Pine Association, West Coast Lumbermen's Association, Western Pine Association and Western Red Cedar Lumber.

Leaflet on Lead Shower Pan Installation Now Available

AN ILLUSTRATED four-page leaflet giving step-by-step detailed information on the correct installation of lead shower pans, with drawings of correctly installed shower pans and bathtub flashing, and setting forth briefly the advantages of this type of waterproofing, has been prepared by the Lead Industries Association. Architects and plumbing contractors will find it a useful guide in getting maximum results from this material. "Lead Shower Pans—Proved Waterproofing by Plumbers" will be mailed free upon request.

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
